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January 8, 1968—September 13, 1968

HON. JESSE M UNRUH
Speaker

HON. CARLOS BEE
Speaker pro Tempore

HON GEORGE ZENOVICH
Majority Floor Leader

HON. ROBERT MONAGAN
Minority Floor Leader

JAMES D. DRISCOLL
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Volume 25, Number 9—The Last Frontier

DETERRENT EFFECTS OF CRIMINAL SANCTIONS

PROGRESS REPORT

of the

ASSEMBLY COMMITTEE ON CRIMINAL PROCEDURE

MAY 1968

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LETTER OF TRANSMITTAL

To the Speaker and Members of the Assembly:

Your Interim Committee on Criminal Procedure, in accordance with your instructions, herewith respectfully submits a progress report on the deterrent effects of criminal sanctions, a study being conducted by the committee in accordance with House Resolution 163 of the 1967 Regular Session.

Respectfully submitted,
W. CRAIG BIDDLE, *Chairman*

PREFACE

The Assembly Committee on Criminal Procedure has always been vitally concerned with the crime problem in the State of California. It has become apparent that intelligent deliberation and legislation regarding this vexing problem is extremely difficult because much information is lacking

During the 1967 Regular Session, the committee undertook an examination of the effectiveness of current criminal penalties in the deterrence and control of crime as well as an exploration of possible alternative methods to accomplish this same goal.

This examination—known officially as the deterrent effects of criminal sanctions—will not be completed before the summer of 1969. Our accomplishments, however, have been considerable, and the committee is well on its way to gathering unique and heretofore unknown information. To this extent, the committee's efforts will have considerable impact in the months and years ahead. Legislative recommendations will follow the conclusion of the full study.

Members of the committee wish to express gratitude to those who participated in the work during sessions and interim, and who provided valuable assistance in the gathering of material for our studies. The committee would like to give special acknowledgement to Dr. Dorothy Miller of Social Psychiatric Research Associates and the Assembly Office of Research staff, who served as special consultants to the committee for this study.

INTRODUCTION

The difficult problem of crime has perplexed Members of the Legislature and the general public for many years Because of the increasing concern given the issue by all members of our society, the Assembly Committee on Criminal Procedure began to examine ways in which more information and knowledge could be obtained in order to cope realistically with this problem

The basic concern was to learn more about the entire issue of deterrence and prevention The traditional role of the Legislature in combating crime has been to increase the penalty for first one crime and then another Members of the committee noted, however, that this did not always produce the desired effect The prime example—which served to bring the problem into focus—was that of marijuana In 1961 the Legislature substantially increased the penalties for possession, yet since that time its expanded use, particularly among juveniles, has continued at an explosive rate. What the Legislature had done seemed totally ineffective

Under the direction of its chairman, W Craig Biddle, the committee determined that a major study of the existing penalty structure and possible alternatives should be undertaken This was begun in the spring of 1967 using both outside consultants and staff from the Assembly Office of Research

It was decided that the study would be divided into three parts (1) a survey of public knowledge of criminal penalties, (2) an examination of the effectiveness of the present adult correction system; and, (3) an examination of alternatives to the policy of criminal penalties

KNOWLEDGE SURVEY

In order to examine the deterrent effect of increasing penalties for various crimes, it was decided to find out exactly how knowledgeable the general public —and selected groups within it—was about specific penalties It was felt that if a deterrent is to be effective, then a potential criminal must *know* which penalties go with which crimes—knowledge essential in the process of weighing consequences The findings of this study are presented in full in part one page 12.

CRIMES AND PENALTIES

This report examines the effectiveness of California's penalties and correctional programs for adult offenders Many persons have assumed that long prison sentences gave greater protection to society as well as deterring persons from committing criminal acts The knowledge survey indicated, however, that adult prison inmates had the highest degree of knowledge of penalties, yet at least half had not been restrained in their actions because of this knowledge

Furthermore, it was known that California ranked fifth among all states in the length of time it held people in prison—almost 10 months longer than the national average Yet our crime rate is higher and as many men fail on parole here as in other states where prison time was considerably less

This report—"Crime and Penalties in California" —completed by the Assembly Office of Research for the committee, sought to determine several factors·

(a) Does the longer prison term deter criminal acts and provide an added margin of public safety?

(b) Do our prisons assist inmates in becoming productive members of the community upon their release?

(c) Because there are not unlimited funds for correction—and the increasing population can only mean increasing cost—are there less costly but more effective alternatives to a program of long prison sentences, particularly for the less serious, nonviolent offenders?

This report has answered those and other questions It is presented in full as part two page 25

ALTERNATIVES TO CRIMINAL PENALTIES

The third part of the committee's study assumes a different form and direction from the previous two

Criminal penalties cannot by themselves control crime Some members of our society are too impulsive, criminally oriented or disturbed to be constrained by such means. The committee therefore felt that some effort should be made to find ways of making selected crimes more difficult to commit While such an approach will probably be less effective in the area of violent crimes (crimes of passion), it may be of considerable importance in those crimes involving property—burglary, robbery, auto theft, forgery and theft Some experimentation among law enforcement agencies is taking place, but it is only in the beginning stages

A part of this project involves obtaining a much more refined picture of the crimes that are taking place each year in California For example, there were 234,500 burglaries committed in California in 1966, but it is not known how many of these were committed by an organized group and how many were minor thefts from an unlocked garage Or, how many aggravated assaults were the result of drunken bar brawls versus how many were attacks from dark alleys Neither intelligent legislation or law enforcement resource allocation can take place until this type of information is available.

The format of the third phase project is that of a request for proposal The committee has submitted this project to various research firms throughout the state in order to select the most competent firm at the most reasonable price to gather the necessary information It is hoped the project will be completed by the summer of 1969 The request for proposal is contained in full in part three page 65

PART ONE

PUBLIC KNOWLEDGE OF CRIMINAL PENALTIES: A RESEARCH REPORT

Social Psychiatry Research Associates
February 1968, San Francisco, California

Dorothy Miller, D.S.W.
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Don Miller
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PUBLIC KNOWLEDGE OF CRIMINAL PENALTIES: A RESEARCH REPORT

Social Psychiatry Research Associates

INTRODUCTION

In every organized society in the world, the problem of illegal or harmful acts perpetrated by one man upon others has presented a control problem Every type of punishment, from banishment to death, from incarceration to maiming, has been tried The current rising incidence of crime seems related to factors other than the deterrent power of punishment, no matter how severe or cruel it may be However, retaliation and revenge against a wrongdoer has a morality older than recorded history Indeed the course of civilization might be traced in terms of its treatment of, and attitude toward, its deviant members Further, a man is believed to be accountable for his acts, and a penalty is the sanction that supports accountability

In this humane age, Californians recognize the futility of retribution and seek to rehabilitate rather than to retaliate We call our prison system a correction and or rehabilitative unit; we assign indeterminate sentences so that a criminal might be freed when he is rehabilitated rather than when he has served a specific time period behind bars

Yet all of this has developed from an older philosophy of penalty, of punishment, and of incarceration. Thus, we convict, institutionalize and attempt to reconstruct a person at the same time Such conflictual ends produce disappointing results.

Most experts maintain that increasing penalties have no effect upon decreasing crime, but that efficiency of law enforcement, of the certainty of being "caught" is the strongest deterrent to crime Auditors, for example, try to develop systems which make embezzlement difficult to carry out and to set up controls which lead to certainty of detection Banks do not rely solely upon legal sanctions to protect them against embezzlers, but develop efficient control and detection systems

As we have moved from rural to urban society, many of the informal social control and detection systems have broken down Strangers are not good order-keepers As urbanization increases, crime increases As crime increases many people suggest increasing penalties Very few would suggest decreasing urbanization

In the face of the rising incidence of crime, numerous measures have been enacted by legislative bodies in an attempt to impede the runaway rise of unlawfulness While it can be argued that the *existence* of penalties may in fact deter *some* crime, it is not clear that the increasing of already existing penalties has an equally increasing deterrent effect A traditional response to an increase in crime has been to increase penalties to deter increased criminal activity That such an increase in penalties does, in fact, deter crime, however, remains to be demonstrated

In order to examine the deterring effect of increased penalties, a potential criminal must be viewed as considering the penalty for the crime prior to committing the unlawful deed—to weigh the consequences, as it were Theoretically, then a crime would occur only if the possible gain from the commission of the crime exceeded the penalty for that crime Illustrative of the reason for increasing penalties for a crime against persons or property is the following consideration a potential lawbreaker would give the situation "The penalty for forgery is one (1) year, which really is not a very long time Therefore, I will chance the penalty and forge a $1,000 check If, however, the penalty for forgery were five (5) years, which really is a very long time, I would not chance that penalty for the gain of $1,000 " This kind of thinking would constitute the rationale for a recommendation to increase the penalty for forgery

However, if a deterrent is to be effective, it follows then that a potential criminal must *know* which penalties go with which crimes—knowledge essential in the process of weighing consequences The foregoing conclusion, if acceptable, prompts the queries *How knowledgeable are criminals, potential criminals and law-abiding citizens on the subject of crime and punishment?* Would those persons with the greatest knowledge about a crime—which is to say those persons who know specific penalty—be the least likely to commit a crime? If the deterrent theory is valid, persons with the most knowledge of the penalty would engage in the least amount of the crime, as the knowledge of the penalty would prevent the criminal act It follows, therefore, that knowledge about a penalty would decrease that crime

How effective are penalties, and in what areas is it reasonable to expect penalties to be related to controlling crime? It is generally recognized that increased penalties are ineffective in controlling crimes committed against the self, such as homosexual behavior, drug addiction, and prostitution Similarly, penalties are regarded as ineffective deterrents of the crimes of passion, such as murder and assault [1]

The issue at hand is whether or not increased penalties decrease the incidence of crimes which arise from an individual's decision to act toward realizing a specific goal, such as robbery, embezzlement or forgery The person engaging in the criminal act had

[1] Despite increasing the penalty for murder to the death penalty etc, the murder rate in the United States has remained constant for the last 30 years (FBI Statistics)

intended to so engage himself despite his knowledge that a law is being broken for which *a* penalty exists.

The issue of the deterrent value of penalties has been investigated by a number of criminologists Andenaes,[2] in an historical review, concludes that penalties and repressive measures may deter, but only in the context of the interplay between moral reprobation and legal implementation He emphasizes that the greatest deterrent is the fear of apprehension and conviction in a complex, total social consequence, only a part of which may be the penalty per se!

The problem of "bad checks" was studied extensively by Beutel[3] who found that those states in which this was a felony offense were actually plagued with a higher rate of the passing of bogus checks than were states in which the crime was merely a misdemeanor By way of explanation he suggests that the excessively severe penalties imposed by felony states may reduce the risk of conviction, thereby leading to results contrary to their purposes

The relative ineffectiveness of penalties is further documented by Schwartz and Orleans[4] in a field experiment with taxpayers They found that conscience appeals were significantly more effective than sanction threats in influencing tax compliance—although both had some effect The threat of punishment, however, appeared to produce a resistance to compliance, unless compliance was also secured through appeals to conscience and a sense of civic responsibility

A psychological approach taken by Claster[5] in his study of delinquent and nondelinquent boys adds another dimension to the assertion that penalties do not deter He found that delinquents view themselves as more likely to commit criminal acts than do nondelinquents, and that delinquents also have a distorted view of themselves vis-à-vis the legal structure which leads them to believe that they are immune to arrest If this is in fact the case, increasing penalties would have no deterring effect, as the potential criminal would not consider himself as likely to be arrested and subsequently subject to the increased punishment

In spite of research findings which suggest the contrary, the belief persists that penalites are effective deterrents to crime In an extensive study of the public's attitudes toward crime and the police, Ennis[6] found that the ordinary citizen's sense of justice includes a vengeful element—a desire for punishment over and above monetary compensation for loss While this vengeance embedded within the citizenry is no indication that punitive measures reduce crime, it does perhaps offer a clue as to why the practice persists and is not discarded in spite of scientific evidence which documents its ineffectiveness

[2] Andenaes, Johannes "The General Preventive Effects of Punishment" *University of Pennsylvania Law Review*, Vol 114, 7 May 1966 pp 949–983

[3] Beutel, Frederick K, "Results of a Study of the Bad Check Problem" *Experimental Jurisprudence*

[4] Schwartz, Richard D and Orleans, Sonya 'Our Legal Sanctions," *University of Chicago Law Review* Vol 34 274, pp 274–300

[5] Claster, Daniel, "Comparison Risk Perception, Between Delinquents and Non-Delinquents," *Journal of Criminal Law, Criminology and Police Science*, Vol 58 No 1, 1967, pp 80–86

[6] Ennis, Philip H, Crime, Victims and the Police," *Trans-Action*, June 1967, pp 36–44

While there have been many studies in this area, a crucial assumption has been ignored: *If penalties are to deter, we must assume that members of society know what the penalties are* If we are to assume that the consequences of an act will deter persons from committing that act, they obviously know what those consequences are That they do, in fact, know the penalties, however, has not been empirically examined

SCOPE OF THIS STUDY

In an attempt to investigate public knowledge regarding criminal penalties in California, with the use of social survey methods, we asked a number of citizens to answer the following questions

1 *How knowledgeable are the people in California about penalties for various crimes?*

2 *What is the public's perception of the "crime problem" and what do they think should be done to lessen the crime rate?*

3 *What is the relationship between knowledge of penalties and criminal behavior?*

4 *If knowledge about penalties does not deter crime, what might?*

All of these questions may be viewed differently by different social and ethnic groups in our communities We, therefore, also were concerned about the effect of race, age, educational and occupational categories upon responses to such questions

METHODOLOGY

In order to examine these questions, a questionnaire was designed and administered to various groups and subgroups in California.

The questionnaire was designed to tap the respondents' knowledge of penalties for specific crimes, knowledge of the cost of incarcerating criminals, and knowledge of the recent changes in criminal penalties Questions were also posed regarding attitudes about how serious respondents felt the crime problem to be, and what they felt would help ease the crime rate Hypothetical situations were presented to elicit ideas about what would deter the respondents from potential criminal activity. Data on the respondents' age, education, occupation, and race was obtained Additional comments made on the questionnaire by the respondents were coded These comments which reflected their attitudes toward criminals fell into the following categories· (1) punitive, (2) somewhat punitive, (3) rehabilitative or ameliorative, (4) admission of ignorance, or (5) miscellaneous or mundane comment

Prior to the final study, a pilot study was conducted to test the questionnaire A group of male registered voters, chosen at random, along with a group of prisoners, California Youth Authority wards, and classes of boys from high and low delinquency area high schools participated in this pilot study As a result of the pilot, the revised questionnaire was developed for this survey.

This representative sample includes 3,348 male registered voters selected at random from Alameda, Contra Costa, San Francisco, Los Angeles, Kern, and San Bernardino Counties. (Since most crime occurs in large urban areas, we selected four urban counties and two rural, suburban counties for this study.) An equal number of Democrats and Republicans were selected from lists of registered male voters Questionnaires were then administered, largely by mail, to these subjects. A letter from the Chairman of the Criminal Procedure Committee accompanied the questionnaire which requested the cooperation of each subject.

The questionnaire was also administered to two (2) adult subsamples 115 male inmates of the Deuel Vocational Institute and 54 students at the University of the Pacific.

As most crimes in California are committed by males between the ages of 15 and 29, 96 boys from a low-delinquency high school in San Francisco, 165 inmates of the CYA Preston School of Industry, and 98 students at a high-delinquency San Francisco high school were selected for a subgroup

A total of 3,348 questionnaires were administered to these variously selected groups. The total number of usable questionnaires returned was 1,567 or nearly one-half of the total number administered. This rate of return for a survey is relatively high, since only one mail-out was used Had a careful followup or additional time been available, the return rate could have been increased. However, we feel this group is representative of the most vocal and articulate of Californians, and represent the opinion-leaders Information in this report is based on these 1,567 completed forms

HOW REPRESENTATIVE WAS THIS SAMPLE?

The special subgroups selected for study were representative young men who live in high and low delinquency areas. The mailed survey sample, when evaluated for possible bias, was found to be largely representative of the urban adult California population as reflected by comparison with the distribution of the sample with U S census figures and projections As shown in Table I, the age, ethnic and occupational distribution compared closely, while the sample group were better educated than the general California population

The education of the sampled group as measured by years of completed formal schooling revealed that the sample contained an overrepresentation of the college-educated group Presumably these college-educated citizens who are overrepresented in this sample are representative of those persons most likely to participate in surveys, most likely to be community leaders, most likely to be influential, and most likely to symbolize the opinions and attitudes of the younger, more active, and better educated citizenry in California Since population trends indicate that this group will be ever-growing in the future, perhaps the responses from this sample point to attitude trends of the future

TABLE I

Age, Education and Race of Respondents in Sample Compared With U.S. Census Statistics for Selected California Counties (N = 1024)

Age	*Sample Percent*	*U S. census Percent*
20–29	28	23 9
30–39	18	18 7
40–49	17	20 6
50–59	17	15 9
60+	15	20
Under 21, no response	6	
	100	100

(No statistically significant difference between two groups on age)

Education	*Sample*	*U S census*
Elementary	8%	28%
High school	44%	48%
Some college	23%	14%
College graduate	24%	10%

(General population has more college educated persons than would be expected from census projections Thus responses reflect attitudes of best-educated group in California)

Race (In urban areas)	*General Population Sample*	*U S census*
White	69%	76%
Nonwhite	31%	24%

(No statistical difference by race between two groups)

MAJOR FINDINGS

The major findings from the survey relates to the four central questions investigated.

Each of these central questions raise other questions, some of which were analyzed, others of which, remain for further study.

1. *How knowledgeable are the people in California about penalties for various crimes?* Eleven questions were asked about penalties for various crimes.

TABLE II

Average Number of Correct Answers Regarding Penalties For Crimes And Percent of Possible Answers For All Groups Tested. (N = 1567)

	Mean number correct responses	*Percent of total items correct*	*N*
General Population	M = 2 6	24	1,024
College men	M = 3 2	29	54
Low-delinquent high school boys	M = 3 0	27	96
High-delinquent high school boys	M = 3 0	27	113
Youth authority	M = 3 4	31	165
Adult corrections	M = 6 3	57	115
			1,567

Among the general public there was considerable variation in the extent of knowledge about sentences for selected felonies. First of all, a range of 21 percent to 49 percent of the respondents had complete ignorance or were unable to ever guess the maximum sentences for these crimes Futhermore, even among those who made an estimate, the percent of correct responses ranged from 8 percent to 39 percent If one combined the number of correct responses into a single

index score of accuracy, *no one person correctly answered all 11 questions about penalties,* while, at the other extreme. *69 percent of the respondents answered 3 or less items correctly.* This finding is evidence that there is profound lack of information concerning criminal penalties This finding is less true for the delinquent or institutionalized groups since first-hand experience would presumably expose such groups to information about penalties But, while criminal groups knew more about penalties than did the general population. such knowledge had seemingly not deterred them from criminal acts

The general population had the least amount of knowledge about criminal penalties, while those who had engaged in crime had the greatest knowledge of penalties It appears that knowledge of penalties comes *after* the crime—that is, penalties cannot act as deterrents since these are unknown until after a person has committed a crime or become a prisoner. Since approximately one-third of all persons who are imprisoned once, continue to engage in crime after their release, it would appear that even when they have knowledge about penalties, it does not act as a strong deterrent to their continuation of criminal activity

Knowledge of criminal penalties varied among the population tested according to certain crimes, as shown in Table III

TABLE III

Percent of Correct Responses Regarding Penalties for Specific Crimes by California Citizens, High School, College and Institutional Population

Knowledge of penalties	General population (percent correct)	Low-delinquency		High delinquency.	Institutional	
		College (percent correct)	High School (percent correct)	High School (percent correct)	Youth Authority (percent correct)	Adult Corrections (percent correct)
(4) Assault and deadly weapon	35	26	24	33	30	59
(5) Second degree burglary	15	22	26	26	16	63
(6) First degree robbery	8	11	11	10	21	85
(7) Forcible rape	24	30	14	22	36	52
(8) Taking a car and leaving it	35	44	36	31	40	65
(9) Check from closed account	17	20	27	42	33	50

As can be seen the general population had the most knowledge about penalties for assault with a deadly weapon and borrowing a car; among college men, the penalty for borrowing a car was best known; among low delinquency high school boys, the car borrowing penalty was also the best known one; among the high delinquency high school boys, the penalty for cashing a check from a closed account was best known; among boys now in a Youth Authority institution, the best known penalty was for borrowing a car; while convicts were most knowledgeable about penalties for first degree robbery Between these groups, the differences in amount of correct knowledge about criminal penalties was marked, as can be seen by comparing the general population's knowledge against the Deuel Vocational Institution inmates percent of correct answers. Criminals have the greatest knowledge about penalties, yet seemingly have been deterred the least from crime

Did respondents under- or overestimate penalties? Among the general population, the tendency *was to underestimate* the penalties, as can be seen in Table IV below which examines the knowledge of penalties for six crimes

TABLE IV

General Population Responses Indicating Under-, Correct, Over-, or No Estimate of Severity of Sentences for six crimes. (N = 1,024)

	Under-estimate (percent)	Correct answer (percent)	Over-estimate (percent)	No estimate (percent)	Total (percent)
Assault with deadly weapon	--	35	40	25	100
Second degree burglary	52	15	5	28	100
First degree robbery	65	8	1	26	100
Rape	35	24	20	21	100
Joy riding	28	35	15	22	100
Check on closed account	59	17	--	24	100

As can be seen, over one-half of the population underestimated the penalties for second degree burglary, first degree robbery, and writing a check on a closed account Could this finding indicate that the actual maximum penalties now levied for those crimes are viewed by the public as being excessive?

The finding that over one-fourth of all the respondents could not *even* guess what the penalty for these crimes were. indicates the great lack of knowledge about criminal penalties in the community.

Several crimes were reviewed by the Legislature in the 1967 session and penalties increased. In general, this action reflected an attempt on the part of the Legislature to respond to growing public concern over the rise of "crime in the streets" All of the crimes for which the penalties were raised involved great bodily injury to the victim—the crimes which have created the greatest fear in the minds of the public. These crimes were rape, robbery, and burglary where great bodily injury was involved The minimum for all these crimes was increased to 15 years imprisonment

The penalties for these crimes as well as two additional crimes were included in the questionnaire. Driving under the influence of alcohol, and possession of marijuana were added to the three crimes with increased penalties. Both of these offenses are currently of public concern, as both have received much attention from the public media The last Legislature had not increased penalties for these crimes

These five items received greater percentages of "don't know" responses than other questions about criminal penalties Nearly 50 percent of the population answered that they did not know if the Legislature had acted or not on the crimes involving great bodily injury For the other two crimes, about a third of the population could not answer the questions

When answers were given, people were more likely to respond that the *Legislature* had not acted at all Very few were able to give correct answers While the Legislature had supposedly responded to public appeal and increased the penalties for crimes of violence to

victims, this was not known by the public. Table V shows the percent of correct responses made to these five questions

TABLE V

Percent of Correct Answers on Recently Increased Penalties for Crimes by General Public, High and Low Delinquency Groups and Institutional Populations

Knowledge of increased penalties	General population (percent)	College (percent)	Low delinquency high school (percent)	High delinquency high school (percent)	Institutional	
					Youth Authority (percent)	Adult Corrections (percent)
Rape	16	17	30	27	24	43
Drunk driving	39	46	48	34	26	37
Robbery with bodily injury	20	20	23	33	30	76
Burglary with bodily injury	16	15	25	29	21	57
Possession of marijuana	36	65	38	16	25	47

The public was as likely to say they did not know as to guess one of the answers to questions involving crimes of a personal nature—driving under the influence of alcohol or possession of marijuana. Where an incorrect answer was given, it was most likely to be that these *penalties* had been *decreased.* (The Legislature did not decrease any penalties.)

Thus, people were in general unaware that the Legislature had taken any action at all when in fact the Legislature had increased the minimum penalties for crimes involving bodily injury to the victim. The public was inclined to answer "don't know" as often as to give a correct response on questions concerning drunk driving and possession of marijuana. (The only major exception occurred among college students who were correct in 65 percent of cases on the question about marijuana.)

When the public did answer these items, they tended to underestimate the amount of the penalty, as is shown in Table VI below.

TABLE VI

General Public's Estimate of Severity of Penalty for Five Crimes. (N = 1,024)

	Underestimate (percent)	Correct answer (percent)	Overestimate (percent)	Can't guess (percent)	Total (percent)
Rape with bodily injury	22	16	13	49	100
Driving under influence of alcohol	21	39	4	36	100
Robbery and bodily injury	28	20	6	46	100
Burglary and bodily injury	30	16	5	49	100
Possession of marijuana	16	36	10	38	100

When there seems to be a public outcry against crimes, this finding may indicate that a legislative body should pause and reflect that most people in the general public will *not* know of their action of increasing legal penalties. Further, the public thinks that *penalties for most crimes are actually less than they really are!*

We asked the respondents their concern about the crime rate. Over one-half of the respondents indicated that the present crime rate is so great that it constitutes a public problem. Another one-fourth indicated that the crime rate is higher than it should be. Hence, among the population responding to the survey, nearly three-fourths indicated concern about California's rising crime rate.

2. *What is the public's perception of the "crime problem" and what do they think should be done about it?*

What do people feel will help to lessen the rising crime rate in California? A question asked about various alternatives.

As can be seen in Table VII responses to the question varied

TABLE VII

Responses to "What Do You Think Would Help Most to Lessen the Current Crime Rate?"

	N	Percent
Better opportunities for poor people	246	24
More law enforcement officers	109	11
Social and psychiatric help for offenders	81	8
Stiffer sentences and longer imprisonment	250	24
Increased scientific study of the causes of crime, etc	291	28
No response	47	5
Total	1,024	100

One-fourth of the respondents felt that stiffer sentences and longer imprisonments would be the greatest help in lessening the current crime rate. Who are these people, and how knowledgeable are they about the dimensions of the problem?

Respondents from the general population averaged a correct score of 2.8 responses out of a possible 11 responses regarding the penalties for various crimes. However, people who felt that stiffer sentences and longer period of imprisonment should be applied correctly answered questions about criminal penalties in only 18 percent of the cases, i.e., to answer correctly an average of 2 questions out of the total of 11. Thus those respondents who felt stiffer penalties were needed, were even *less* knowledgeable about present penalties than was true for the general population. For this group, the lack of knowledge about existing penalties was not a consideration in suggesting increased penalties as a solution to the crime problem.

In general, the older, retired and less well-educated groups were more primitive in their general attitude about crime as compared with the younger, better-educated, or employed respondents. Conversely, the better-education group suggested more scientific study about the causes of crime or better opportunities for jobs and education. In general, there were two groups of respondents. One group wanted short-term answers for the present crime situations, i.e., more law enforcement officers and stiffer sentences. The other group felt attention should be paid, with a long-range view, to the indirect causes of crime, such as poverty, poor education, lack of opportunities, etc. For example, the better educated the respondent, the more likely he was to see the need for more scientific study regarding the causes of crime. Persons from the lower socioeconomic groups, such as laborers or semiskilled

workers, were more likely to suggest better opportunities for the poor as a remedy for the rising crime rate in California

Forty percent of the respondents added comments on their forms Of those who commented, 18 percent felt that judges were too lenient, that police should have more power, and in general, indicated a sense of irritation of the present administration of justice An additional one-third were mildly punitive in their attitude toward the courts and police power Only a few respondents commented about penalties, per se Most comments calling for stricter law enforcement pointed at the courts and its administration of the present laws Twenty percent of those who wrote comments expressed concern about individual rights, or the guarantees of protection from excessive legal harassment It was also of interest to note that one-fourth of those who commented noted their ignorance of the penalties and expressed some amazement at how little they knew about such laws Many also commented favorably upon the work of the Criminal Procedure Committee

Since some respondents suggested longer imprisonment, how much did the public know about the cost of prison? The average cost per year for caring for a prisoner in California is $2,560 The respondents were asked to estimate this cost, and the results are shown in Table VIII

TABLE VIII

Estimate of Cost of Prison Among General Population and Other Subgroups.

	Don't know (Percent)	Underestimate $1,500 (Percent)	Correct $2,560 (Percent)	Overestimate $3,100 (Percent)	Total (Percent)
General population	36	9	23	32	100
College men	26	4	24	46	100
Low delinquency high school	42	18	26	15	100
High delinquency high school	47	18	22	13	100
Youth Authority	32	24	24	20	100
Adult Corrections	23	30	30	17	100

Only one-fourth of the people knew the actual cost of keeping a prisoner for each year, while another one-third couldn't even guess It is of interest to note that the respondents who are presently in an institution tended to underestimate the actual cost of their care while one-third of the general public overestimated the cost of caring for a prisoner

3 What is the relationship between knowledge of penalties and criminal behavior?

As was shown in Table II, (page 12), persons who have already engaged in crime have the most knowledge about penalties This seems paradoxical, i e that if knowledge of penalties is an essential ingredient for deterrence, then how is it that criminals have the most knowledge and are seemingly the least deterred?

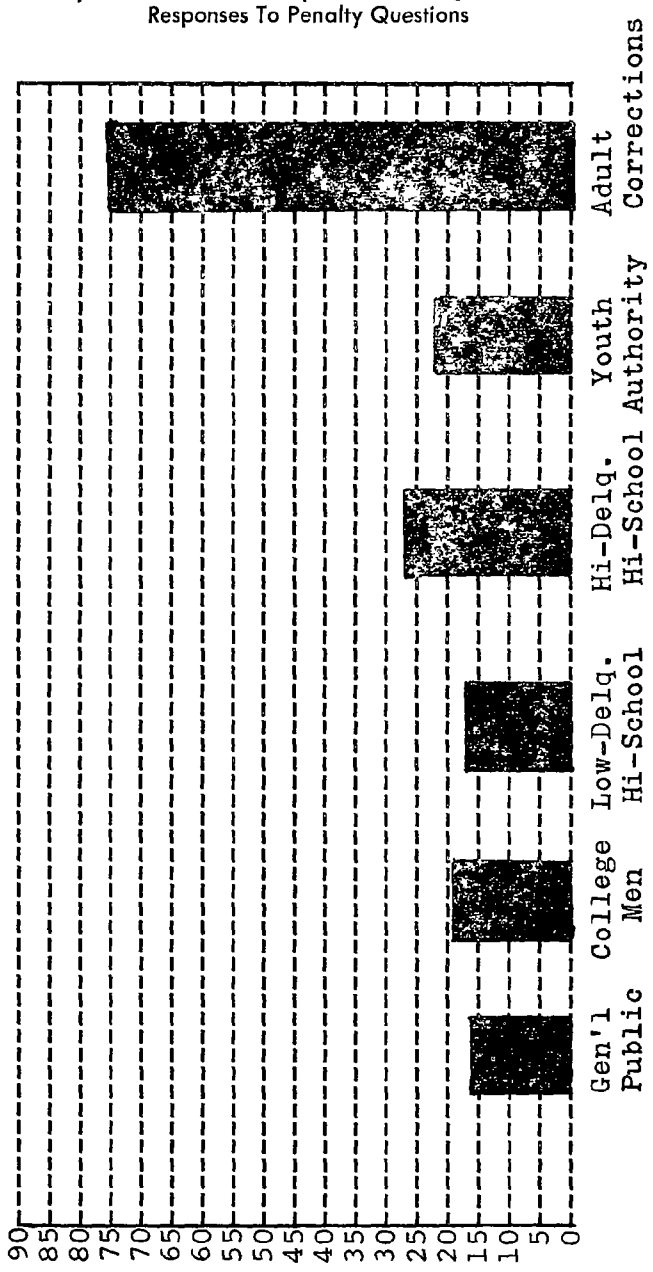
Two-thirds of the institutionalized persons also indicated that the crime rate is too high and constitutes a public problem, similar to the responses of the general population But they differed as to what they thought should be done to remedy this high crime rate

What do criminals think would lower the crime rate? As can be seen in Table VII both institutionalized groups felt that better opportunities for poor people (32 percent), social and psychiatric help for offenders (23 percent) and increased study of causes of crime (26 percent) would help in lessening the crime rate

In Chart I, the influence of criminal activity upon knowledge about penalties is shown

CHART I

Comparison Between Groups on Percentage of Correct Responses To Penalty Questions



As can be seen, as the group's identity as a deviant one increases, so does the amount of correct knowledge about criminal penalties To put it another way, those who knew the least about criminal penalties were the least likely to engage in crime

Of course, *this does not mean that knowledge of criminal penalties causes crime.* It may simply mean that a penal institution is a fine training grounds for learning law and criminology But it also seems to indicate that penalties become of interest to a person only *after* he engages in criminal behavior Knowledge of penalties does not seem to deter, but it may be important for "copping a plea" or making the best "deal" in court

It can be conjectured that the cause of criminal behavior lies elsewhere, and the understanding of the motivation for criminal actions does not involve a balance sheet of penalty vs gain Rather, people engage in crime and learn of the penalties, not as deterrents, but only as factors of a criminal career faced *after the* fact

4 If knowledge about penalties does not deter a person's criminal actions, what might?

The questionnaire included two items which attempted to learn about personal deterrence factors The first question was· "If you were convicted of a serious crime, such as forging your employer's signature to a $1,000 check or stealing a color TV, what would bother you the most?"

The question elicited responses regarding "external controls," i e sanctions involving the law, prison, stigma of a bad record, etc , and "internal controls," i.e., family sanction, loss of reputation or self-feelings of guilt

Table IX shows that the general public, college men and high school adolescents would be bothered most, if convicted, by feelings of guilt, or by concern about what his family would think of him.

TABLE IX
Responses to "What Would Bother You Most About Committing a Crime?" For All Groups (Percentage)

	General public	College men	Low delinquency	High delinquency	Youth Authority	Adult Corrections
External controls	32	23	40	42	59	61
Internal controls	68	78	60	58	41	39

(percentages rounded)

However, those now confined in a correctional institution, i e , those who *have* been convicted of a crime are bothered more by the external sanctions, i e., the loss of a job, or imprisonment than they are by feelings of guilt or concern about what others might think.

Does such a finding indicate that internal sanctions prevent criminal activity, or is such a finding a reflection of the change in attitude which accompanies criminal action?

In order to explore such a question further, each respondent was asked "If you had suffered such a run of bad luck that you needed money *badly,* and found that you were in a position to accept a bribe or a fix without much fear of getting caught, what, if anything, would stop you?

As can be seen in Table X, the more delinquent or criminal the group, the less important are internal sanctions as deterrent to crime That is, those who look only to external sanctions as a deterrent to thievery, are much more likely to, in fact, engage in stealing than are those who feel internal sanctions would deter them.

TABLE X
What Would Deter Criminal Behavior? Comparison of All Groups

	General public (Percent)	College men (Percent)	Low delinquency (Percent)	High delinquency (Percent)	Youth Authority (Percent)	Adult Corrections (Percent)
External controls	23	31	45	44	57	6
Internal controls	77	69	55	56	43	40
Total	100	100	100	100	100	100

Thus, from these two findings one might argue that the best deterrent for crime would be to develop social systems that would strengthen internal sanctions rather than to depend solely upon stiffer penalties or more law enforcement officers. In short, it is man's view of himself as a lawful and responsible person that will deter crime, not just the legal sanctions applied by strangers in authority positions

SELECTED DEMOGRAPHIC FACTORS

In order to study the possible influence of education, occupation, age and race upon public knowledge about penalties, the data was analyzed for each of those variables

Education: Those respondents in the general population with more than a high school education had the same amount of knowledge about criminal penalties, as did those with less than a high school education Chi-square shows no significant difference between high school and college-educated respondents with relation to the number of correct answers made

Occupation: Respondents from the general public were divided into three occupational groups, white collar, blue collar and other When compared on the number of correct responses to the criminal penalty questions, there was no statistical significant differences between the groups using a chi-square That is, about 70 percent of all groups answered fewer than three questions correctly (It is of interest to note that questionnaires were returned by 21 attorneys; 4 of whom answered 9 of the 11 penalty questions correctly, 8 answered 8 correctly, etc. Thus, even attorneys and other legal professionals were unable to correctly answer the criminal penalties questions)

Age: The respondents were scored as being above or below the average on the number of correct answers

(M = 3) and classified by age as shown in Table XI below

TABLE XI

Age of Respondents from General Public Compared on Above and Below Mean Scores on Correct Answers to Criminal Penalties Percentage (M = 3 Correct Responses Out of 11 Possible Responses)

Age	Below mean score (Percent)	Above mean score (Percent)	Total (Percent)
20–29	66	34	100
30–39	66	34	100
40–49	78	22	100
50–59	73	27	100
60+	71	29	100

Younger respondents tended to have slightly better knowledge of penalties than did other respondents although this was not statistically significant

Race: The general population sample was classified according to the number of correct answers made above and below the average correct responses to the questions regarding criminal penalties As shown in Table XII below, there were no significant differences in the knowledge of criminal penalties among the three major race divisions

TABLE XII

Race	Below mean correct response (Percent)	Above mean correct response (Percent)	Total (Percent)
White	71	29	100
Black	70	30	100
Oriental, other	74	26	100

Thus, the social and demographic variables of the respondent's education, occupation, age and race did not differentiate on the amount of knowledge these groups had about criminal penalties All groups in the general population were generally unaware of the penalties now in existence for the various crimes

SUMMARY

A total of 3,348 questionnaires were administered to registered voters and others from four urban counties and two suburban-rural counties in California as well as to deviant subgroups. A questionnaire regarding knowledge of criminal penalties and persons' concerns and attitudes toward crime was administered to males from the general public and to other selected groups A total of 1,567 forms were collected The sample of the general public used in this research totaled 1,024 completed questionnaires The general public sample was compared with the U S census figures for the six counties studied, and the sample was found to be representative by age and race, and to be overrepresented in education by the college educated Thus the sample represents a better-educated group within the population than would be expected Thus, among the general population, respondents were likely to be the most articulate, most concerned, and most motivated among those sampled Time did not permit extensive followup, so that these returns represent the most cooperative of the subjects chosen These respondents are likely to be the opinion-leaders of their community and as such, their responses should be of great concern to the California State Legislature Since these respondents represented the better educated and most highly motivated group, how did this group view the crime problem, what did they know of criminal penalties, and what did they think would help lessen the crime rate?

1 *How knowledgeable were Californians about penalties for crimes?* They were extremely ignorant about penalties for crimes Out of 11 possible items, the means score was only 2 6 answers correct. In fact, most persons underestimated the severity of the penalties now in existence, although one-fourth of these respondents felt that in order to lessen the crime rate, penalties should be increased When questioned about the recent legislative action in increasing penalties for certain crimes, about one-half of the respondents couldn't even guess whether the penalties had been changed or in which direction In short, the general public simply *does not know* what the penalties are for various crimes. How then could increased penalties deter crime? [7]

2 *What is the public's perception of the "crime problem" and what do they think should be done about it?* About three-fourths of all respondents felt the crime rate was too high and many felt crime constituted a public problem In general, the public seemed to form two opinion groups about what should be done to lessen the California crime rate The better educated, younger, employed group looked to indirect or long-range solutions aimed at removing the causes for crime, such as better opportunities for poor, social and psychiatric help for the offenders, or increased scientific study of the problem. The older, less well-educated and unemployed group felt that a more direct, immediate reaction seemed indicated, i e , stiffer sentences and longer imprisonment, or more law enforcement officers Some of this group complained, in written comments, about the leniency of judges and the lack of effective law enforcement. This group did not seem to wish increased penalties, per se, but focused upon the problems they saw in the administration of justice Also, this group was somewhat less well informed about present penalties, even when they were advocating "stiffer sentences."

3 *What is the relationship between knowledge of penalties and criminal behavior?* While this question could not be answered directly, there was some evidence that the more delinquent the group of respondents, the more knowledgeable they were about penalties That is, the more criminal their behavior, the less likely they were to have been deterred by knowledge of penalties Penalties appear to be important to

[7] A return rate of 47 is fairly high for a "one-shot" mailout for such a survey See the sections on mailed questionnaires in Stephens, S F and T J McCauley, *Sampling Opinion* and Kish, Leslie, Survey Sampling, pp 539–540

delinquent or criminal groups, not as deterrents but as bargaining items after their arrest

4. *If knowledge about penalties do not deter criminal actions, what might?* Two questions were asked about personal attitudes toward criminal behavior. It was found that the less delinquent groups were controlled and concerned by "internal sanctions," i e , by guilt, opinions of others, family attitudes, etc , while the more delinquent the group, the less concerned they were with internal, personal sanctions against crime. Rather, they were concerned about not getting caught and about going to prison But evidently "external sanctions" are not as effective as deterrents against crime as "internal" personal attitudes and self-sanctions The best program for prevention of crime would have to strengthen these "internal sanctions" if real deterrence of criminal behavior was to develop

The responses about criminal penalties were not influenced by the respondents' age, education, occupation or race They were influenced by identification with a delinquent or criminal subgroup Those persons now in correctional institutions, who while most knowledgeable about criminal penalties, were least deterred by their greater knowledge about criminal penalties

APPENDIX ITEM I

CALIFORNIA ASSEMBLY COMMITTEE ON CRIMINAL PROCEDURE
SURVEY REGARDING THE PUBLIC'S KNOWLEDGE OF CRIME IN CALIFORNIA

For items 1 through 10, check the space next to the answer which best describes your knowledge or feeling about the question

Please Check Only One Space

1. Do you feel the crime rate in California is
   1 ____about what one would expect
   2 ____lower than one might expect
   3 ____higher than one might expect
   4 ____so high as to be a major public problem

2 What do you think would help most to lessen the current crime rate? (Check only *1* space)
   1 ____better opportunities for poor people
   2 ____more law enforcement officers
   3 ____social and psychiatric help for offenders
   4 ____stiffer sentences and longer imprisonment
   5 ____increased scientific study of the causes of crime
   6 ____other, please specify_____

3 How much does it cost taxpayers to keep a person in prison for one year?
   1 ____$1 550
   X2 ____$2,500
   3 ____$3,100
   4 ____don't know, can't guess

4 What is the maximum penalty, the *most* a person could get, if he was convicted of assault with a deadly weapon?
   X1 ____10 years
   2 ____15 years
   3 ____30 years
   4 ____life imprisonment
   5 ____death penalty
   6 ____don't know, can't guess

5 What is the maximum penalty, the *most* a person could get, if he was convicted of 2nd degree burglary?
   1 ____10 years.
   X2 ____15 years.
   3 ____ 30 years
   4 ____life imprisonment
   5 ____death penalty
   6 ____don't know, can't guess

6 What is the maximum penalty, the *most* a person could get, if he was convicted of 1st degree robbery?
   1 ____10 years
   2 ____15 years
   3 ____30 years
   X4 ____life imprisonment
   5 ____death penalty
   6 ____don't know, can't guess.

7 What is the maximum penalty, the *most* a person could get, if he was convicted of forcible rape?
   1 ____10 years
   2 ____15 years
   3 ____30 years
   X4 ____life imprisonment.
   5 ____death penalty
   6 ____don't know, can't guess

8 If a person takes a car which does not belong to him, uses it for a few days and then leaves it parked, unharmed and unchanged, what is the maximum penalty, the *most* he can get, if he is caught and convicted?
   1.____1 year
   X2 ____5 years
   3 ____10 years
   4 ____30 years
   5 ____don't know, can't guess

9 If a person uses a leftover check from a closed account to purchase a $75 radio, what is the maximum penalty he could get if he was caught?
   1 ____He would be required to make the check good as he is just overdrawn
   2 ____Up to one year in jail because he didn't intend to cover the check
   X3 ____He would go to prison for up to 14 years because that is forgery
   4 ____don't know, can't guess

For questions 11 through 16, check the space which describes what the Legislature did last year in regard to the minimum penalty (the *least* a person could get) for the crime listed

10 Rape with great bodily injury to the victim.
   1 ____minimum decreased to one year
   2 ____no change made in the minimum
   X3.____minimum increased to 15 years
   4 ____minimum increased to 25 years
   5 ____don't know, can't guess.

11. Driving under the influence of alcohol
   1 ____minimum decreased to one year.
   X2 ____no change made in the minimum
   3 ____minimum increased to 15 years
   4 ____minimum increased to 25 years
   5 ____don't know, can't guess

12. Robbery with bodily injury to the victim
   1 ____minimum decreased to one year
   2.____no change made in the minimum.
   X3.____minimum increased to 15 years
   4 ____minimum increased to 25 years.
   5 ____don't know, can't guess.

13 Burglary with bodily injury to the victim.
   1 ____minimum decreased to one year.
   2 ____no change made in the minimum.
   X3 ____minimum increased to 15 years
   4 ____minimum increased to 25 years
   5 ____don't know, can t guess

14 Possession of marijuana
   1 ____minimum decreased to one year
   X2 ____no change made in the minimum
   3 ____minimum increased to 15 years
   4 ____minimum increased to 25 years
   5 ____don't know, can t guess

15 If you were convicted of a serious crime, such as forging your employer's signature to a $1,000 check or stealing a color TV, what would *bother* you the most? (Check only *1* space)
   1 ____It would not make any difference because my record is bad anyway
   2 ____I would feel stupid because I got caught
   3 ____I would go to prison
   4 ____I would lose by job, possessions, etc
   5 ____My family would turn against me.
   6 ____My reputation would be ruined
   7 ____I would feel ashamed and guilty

16. If you had suffered such a run of bad luck that you needed money *badly*, and found that you were in a position to accept a bribe or a fix without much fear of getting caught, what, if anything, would *stop* you? (Check the one which would be most likely to *stop* you)
    1 ____If I needed money badly enough, I would take the bribe
    2 ____If I thought I could get away with it, I might accept the bribe
    3 ____I would be afraid to trust the person who would offer a bribe
    4.____Knowing I might be arrested
    5 ____I would be afraid of my family's disapproval
    6 ____I would feel guilty even if no one found out about it
    7 ____I cannot imagine myself having to make such a decision, therefore I can't evaluate my decision.

17. Has a serious crime ever been committed against you? (i e have you ever been robbed, assaulted, had your car stolen, house burglarized, etc ?)
    1 ____no
    2.____yes If so, what crime?_____

18. Have you ever known anyone besides yourself who was a victim of a serious crime? (If you have known more than one, check the space that describes the most recent victim)
    1 ____no, I do not know anyone who was ever a victim.
    2 ____yes, a member of my immediate family.
    3 ____yes, some other relative
    4 ____yes, a friend or neighbor.

19. **Please indicate your age.**
    1.____under 20.
    2.____20–29.
    3.____30–39.
    4.____40–49
    5 ____50–59
    6 ____60 or over

20 What is the highest level of school you finished?
    1 ____grade school or less
    2 ____some high school
    3 ____high school graduate
    4.____trade school or special training (barber or beauty school, business school, union training, etc)
    5 ____some college
    6 ____college graduate or above

21 What is your (father's *) present occupation?
    1 ____professional, executive
    2 ____business manager, officer in armed forces, performer, teacher, civil service
    3 ____clerical, sales, personal service (barber, beautician, etc).
    4 ____skilled labor, craft, farmer, armed service enlisted
    5 ____semiskilled, unskilled, domestic.
    6 ____student
    7 ____unemployed at present
    8 ____retired, incapacitated, institutionalized
    9 ____other, please specify_____

22 Please indicate your race.
    1 ____White
    2 ____Black
    3 ____Oriental.
    4 ____Mexican-American.
    5 ____Other, please specify_____.

X—Correct answers
* For youth questionnaire only

California State Assembly

PART TWO

CRIME AND PENALTIES IN CALIFORNIA

Prepared by: The Assembly Office of Research for the
ASSEMBLY COMMITTEE ON CRIMINAL PROCEDURE

MARCH 1968

STAFF: Robin L. Lamson, Reasearch Specialist
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3—L-3331

CALIFORNIA LEGISLATURE
ASSEMBLY RULES COMMITTEE
March 5, 1968

Honorable W Craig Biddle, Chairman
Assembly Criminal Procedure Committee
State Capitol
Sacramento, California

Dear Mr. Biddle:

In response to your committee's request, the Assembly Office of Research has prepared this analysis of the relations between crime and penalties in California.

The report raises serious questions about our present penalty policies The staff of the Assembly Office of Research has therefore recommended for your committee's consideration certain suggestions for more effective use of state funds to control crime.

Respectfully submitted,
ARTHUR BOLTON
Director
Assembly Office of Research

PART 2

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CRIME AND PENALTIES IN CALIFORNIA

SUMMARY OF FINDINGS

There is no evidence that more severe penalties deter crime more effectively than less severe penalties

There is evidence that critical deterrents vary according to type of individual and type of offense, some responding to external police controls, others to internal moral restraints.

There is evidence that fear of arrest, conviction and imprisonment deter many persons from many types of crimes, but no evidence that fear of lengthy incarceration affects any significant number of criminal decisions

There is no evidence that prisons rehabilitate most offenders.

There is evidence that larger numbers of offenders can be effectively supervised in the community at insignificant risk and considerable savings in public expense.

The timing of parole release for lesser offenders is determined by arbitrary and unscientific criteria that do not further the ends of justice, economy, or public safety.

SUMMARY OF RECOMMENDATIONS

The Legislature should direct the Adult Authority to release to parole all offenders at expiration of their statutory minimum parole-eligible period, with the exception of those convicted of willful homicide, aggravated assault, forcible rape, and other specified crimes of serious personal violence, and those with histories of professional criminality or habitual extreme violence

The resulting savings in annual prison costs and further capital outlay be appropriated to subsidize local supervision of offenders, increased use of local custody, and improvements in statewide crime control technical resources and local law enforcement.

These recommendations are consistent with proposals made by·

> The President's Crime Commission which has recommended greatly increased use of local supervision.
>
> The American Bar Association which has stated that "no confinement is preferred to partial or total confinement, in the absence of affirmative reasons to the contrary."

INTRODUCTION

In the fall of 1967 the Assembly Criminal Procedure Committee was requested by the Legislature to study the effectiveness of current criminal penalties in the deterrence and control of crime and to examine alternative methods of deterrence and crime control

The human and economic consequences of crime in this state and the recent apparent rise in crime rates have made crime control a matter of increasing concern to the Legislature.

The recent apparent rise in crime rates does not indicate any alarming change in human behavior

> Uniform crime reports for the nation and the California Bureau of Criminal Statistics' reports over the past years have shown steady increases in reported offenses for all categories and particularly for property type offenses.
>
> There is an awareness now that much of these reported offenses do not represent actual increases in serious criminal behavior as much as they represent an accounting for a level of felony offenses that before were probably not reported
>
> To the extent that felony arrests somewhat reflect the number of persons engaged in serious crime, it appears that there has been almost no rate change in California over the past seven years except in the drug area . .[1]

However, the California crime problem could increase greatly in the near future because of shifts in the age distribution of the state population

> A projection of California's population growth over the period 1965 to 1975 reveals that the younger, "crime-susceptible" population group, age 14 to 29, will increase at twice the general population increase rate This means that we will be "holding even" with this fantastic growth if the crime rate increases 60 percent [2]

Unless our present system of criminal justice and corrections is improved, our annual state and county cost of $600 million in operating expenses could rise to $900 million Another $1 billion in capital outlay could be required by 1975 [2]

These figures do not include direct costs to citizens in damages, check forgeries, etc

These increased expenditures also do not imply any improvement in community safety or the quality of justice, but merely maintenance of the present level.

This report deals with the effectiveness of the California criminal penalty system

It is based on two research projects authorized by the committee:

—A survey of public knowledge of criminal penalties and recent increases in penalties; and of public attitudes toward crime.

—An analysis of national and state statistics on crime rates, penalties, parole programs and related material

A future research project and report will investigate alternative methods of crime prevention not emphasized in the present California system.

I. CRIMINAL PENALTIES AND DETERRENCE:

California and the Nation.

Legislation in past years has been based on the belief that more severe penalties (longer sentences and longer time served):

—Deter the public from committing crimes

—Deter convicted criminals from committing more crimes

—Protect the community from criminals.

The implicit assumption has been.
The more time served = the more correction and rehabilitation = the more deterrence = the more community protection.

We can find no evidence that state correctional institutions rehabilitate effectively

If the assumption that severe penalties reduce crime were true, government could—though at considerable expense—control crime effectively.

Unfortunately, the assumption is not correct. This expensive system does not work

We can find no evidence that crime can be reduced by increasing time served

If lengthy incarceration operated as a deterrent, crime rates should be lowest in states where the time served by convicts is highest They are not.

Penalties and Crime Rates for the 12 Largest States—1964*

	Median time served (months)	Per 100,000 population			
		Crimes reported	Homicide	Aggravated assault	State prisoners (1965)
Pennsylvania	32 1	856	3 3	63	61 5
California	29 6	2,424	4 1	138	145 6
Illinois	28 7	1,713	5 5	149	78 4
New York	26 9	1 497	4 6	118	96 9
Florida	24 1	1,927	8 6	184	122 7
Ohio	24 0	1 011	3 5	58	111 3
Indiana	23 8	1,166	3 0	149	91 9
United States	21 0	1 366	4 8	102	----
North Carolina	20 2	932	7 6	212	102 6
Michigan	18 1	1,537	3 3	118	88 5
Massachusetts	17 9	1,376	2 0	47	36 3
Missouri	17 2	1,540	5 4	107	78 8
Texas	17 0	1,363	7 5	127	123 3

* Sources U S Department of Justice, Federal Bureau of Prisons and Federal Bureau of Investigation (84) P 51, Table R-6, (81) P 54, Table 2

[1] California Department of Justice, Bureau of Criminal Statistics (15), p 31, Table I-4, p 30

[2] California Youth and Adult Corrections Agency (26) p 13, p 65

The median time served [3] in the 50 states runs from 9 months in New Hampshire to 39 months in Hawaii High and low crime rates are found at both ends of the scale of median time served.

The table demonstrates the absence of any consistent relation between severity of penalties and crime rates·

—In the 12 largest states, median times served range from 17 to 32 months

—Crime rates range from 856 to 2,424 per 100,000 population [4]

—If the three extreme cases are excluded, we find that Texas, with the lowest median time served of large states (17 months), reports a crime rate of 1,363 Illinois, with the highest median time (29 months), reports a crime rate of 1,713.

Similarly, the states which yearly support the greatest number of prisoners (per 100,000 population) in state institutions at state expense show no lower crime rates than the states which support the smallest number

Variations in crime rates cannot be explained by differences in average length of incarceration

The crime rate data is, of course, defective California overreports comparatively, Pennsylvania and North Carolina underreport [5] However, these are the crime statistics published by the Federal Bureau of Investigation for the 12 states containing 62 percent of the U S population No more comprehensive or better facts are available

If the various discrepancies in crime classification and reporting are assumed to cancel each other out for at least some large states—a plausible hypothesis—then the crime rates for large states are similar, while the median times served vary greatly.

Thus a policy of severe penalties is not justified on grounds of effective deterrence

On the other hand, if the crime rates are assumed to be so inaccurate as to be meaningless, then we have no comprehensive facts about the frequency of crimes.

Thus a policy of severe penalties has no objective evidence whatsoever to justify it.

The median stay in California prisons is 30 months, fifth highest in the nation

The State of California maintains one of the most expensive correctional systems in the nation to implement a penalty policy of entirely unproven effectiveness

[3] Severity of penalty is traditionally defined as the amount of time served

The *median* time served by a given group of prisoners is the midpoint of the series of time periods served by the members of the group half the prisoners serve more months, half serve less

[4] According to Ronald H Beattie, Chief, California Bureau of Criminal Statistics, differences in the classification and reporting of crimes account for the extreme rates of Pennsylvania, California, and North Carolina The highest probability is that urban states have similar true crime rates

[5] Statement by Ronald H Beattie, Chief, California Bureau of Criminal Statistics

The cost of the California correctional system · [6]

	Yearly cost	*Disposition of persons entering criminal justice system yearly*
State correctional agencies ____	$120,000,000	4%
Prisons and youth authority__	108,000,000	
Other (parole) _____	12,000,000	
County probation and jail _____	110,000,000	96%

II. CRIMINAL PENALTIES AND DETERRENCE:

Detailed studies.

—Do severe penalties deter the noncriminal public from committing crimes?

—Do severe penalties deter the criminally oriented —the successful criminal or the convict—from committing crimes?

To answer these questions, this chapter presents analyses of the effects of recently increased penalties in California, the effects of regional variations in penalties, the state of public and criminal knowledge of penalties, and consequences of penalties on the behavior of released convicts

A. VISIBLE DETERRENT EFFECTS OF RECENTLY INCREASED PENALTIES. NONE.

1. Attacks on peace officers have increased.

Half of the arrests for felonies in this state each year are made in Los Angeles County

In the City of Los Angeles, the rate of attacks on police went from 2 5 per 100 policemen in 1952, to 8 4 in 1961, to 15 8 in 1966—an increase of 528 percent [7]

In 1961 the first special penalties for attacks on the police were enacted by the Legislature and such penalties were further increased in the sessions of 1963 and 1965

Before 1961, a person who assaulted *anyone* with a deadly weapon *could* receive a fine up to $5,000 and/or up to 1 year in jail, or up to 10 years in a state prison

By 1966 all sentences for attacks on peace officers required commitment to the state prison and persons using a deadly weapon received a mandatory sentence of five years to life in a state prison

The State of California has thus experienced more than five years of increased penalties for attacks on law enforcement officers

During this same period, 1961 to 1966, the rate of attacks on Los Angeles policemen went from 8 4 per 100 officers per year to 15 8, an increase of 90 percent

[6] California Youth and Adult Corrections Agency (26), p 2 These costs do not include police and court costs included in the total $600 million criminal justice expenditures cited on page 26 of this report

[7] Los Angeles Police Department (48)

After five years of increasing penalties, a Los Angeles policeman was almost twice as likely to be attacked as he was before the increases

Four officers were killed in the four years preceding the increase in penalties. Four officers were killed in the four years after the increase.

The Los Angeles experience is a prime example of the futility of relying on more severe penalties to reduce crime.

The police in Los Angeles are fighting an uphill battle Increased penalties have not helped them During the period covered by the report on violence against police (1952–1966) the population of Los Angeles increased by 54 percent; the number of felonies reported each year increased from 74,000 to 209,000, *but the number of policemen increased by only 25 percent.*

2. *Marijuana offenses have increased.*

In 1961 the Legislature removed the sentence of 0–12 months in the county jail as an *optional* penalty for the possession of marijuana and *required* that possessors serve 1–10 years in the state prison. Penalties for sale and for offenders with prior convictions were also increased

The changes in marijuana penalties and the recent jump in arrest rates received much press coverage

In 1961 almost 3,500 persons were arrested for marijuana offenses

But, in 1966 over 18,000 persons were arrested for marijuana offenses [8]

Those who believe that increased penalties will deter crime must assume that the public is aware of the penalties for various offenses and that knowledge of the severity of punishment inhibits wrongdoing.

Further evidence of the ineffectiveness of severe penalties emerged from the Assembly study of public knowledge of penalties "C. below". The two groups which showed the greatest knowledge of the penalties for illegal use of marijuana were those groups believed to be among the greatest users· college students and the criminally oriented, i e , adults in jails or prisons.

3. *Court decisions reverse legislative intent.*

The marijuana problem also illustrates another dimension of the ineffectiveness of severe penalties· *court reversal* of legislative intent.

When penalties seem too harsh to those engaged in the day-to-day administration of justice, or when courts are crowded, officials tend to substitute lesser accusations for greater, or to acquit.

In California more than 75 percent of marijuana arrests each year are adults.

In 1961, 47 percent of adults arrested were convicted and 26 percent were sent to state prisons In 1966 after the penalties were increased, 31 percent of adults arrested were convicted and only 13 percent were sent to state prisons [9]

The reasonableness of such reversal to those responsible for justice is brought out by a comparison given in a recent legislator's statement Under present law, a judge may sentence a person who steals and demolishes a car, or embezzles a million dollars, or seriously injures another person, to less than a year in jail A young woman found to have one marijuana seed in her purse must be sentenced to a year or more in the state prison

B. VISIBLE DETERRENT EFFECTS OF REGIONAL VARIATIONS IN THE SEVERITY OF PENALTIES· NONE.

Misdemeanors in one locale are often felonies in another, and court practices in sentencing also vary widely Comparative studies have demonstrated the usual lack of relation between penalties and crime rate

Bad-check writing qualifies as a "typical" crime. It contributes heavily to the property crimes that constitute 90 percent of the U S crime rate [10]

An exhaustive study of bad-check writing in Nebraska,[11] where bad checks over $35 establish a felony, found that the enforcement of the felony provisions of the law varied from nil in some counties to a high rate of criminal sentences in others

No correlation between felony sentences and the number of bad checks written per capita in the various counties was found ". in Nebraska itself there is no evidence that felony provisions deter bad-check writing "

Research in Colorado, where the offense is only a misdemeanor, also demonstrated no correlation between the strictness of the penalties actually imposed and bad checks per capita

Comparison of four counties of Nebraska with four Colorado counties matched for similar social and economic conditions also indicated no significant difference in bad-check writing rates

In Colorado, where penalties were more lenient, there were fewer short-check losses.

C. THE PUBLIC HAS LITTLE KNOWLEDGE OF PENALTIES.

Survey of public awareness of severity of penalties.

It has generally been assumed that the public knowledge of criminal penalties was quite extensive.

Second, it has been assumed that if the penalty for a criminal act were severe enough the potential lawbreaker would be deterred, the gain would not be worth the risk

In the fall of 1967, the Criminal Procedure Committee contracted with the Social Psychiatry Research Associates of San Francisco to test these two assumptions [12] In addition to surveying the knowledge and attitudes of the general public with respect to criminal penalties, specific subgroups were also queried These were (1) students at the University of Pacific, (2) students from a San Francisco school with a low delinquency history, (3) students of a San Francisco school with a history of a high delinquency

[8] California Department of Justice, Bureau of Criminal Statistics (18), p 6, 7, Tables A and B

[9] California Department of Justice, Bureau of Criminal Statistics (18), pp 69 and 72, Chart 11A and C

[10] Fourteen percent of yearly admissions to California state prison are bad-check offenders

[11] Beutel (4), pp 353–355, Tables 60 and 61

[12] A full report may be obtained from the Assembly Committee on Criminal Procedure

rate, (4) inmates of the California Youth Authority Preston School of Industry, and (5) male inmates of the Deuel Vocational Institution

The survey disclosed that the California public knows little about criminal penalties The public awareness is reflected in the following table:

TABLE I

	Number correct responses *	*Percent of total items correct*
General population	M=2 6	24
College men	M=3 2	29
Low-delinquency high school	M=3 0	27
High-delinquency high school	M=3 0	27
Youth Authority	M=3 4	31
Department of Corrections	M=6 3	57

* M = mean (average) number of correct responses

There were 11 questions designed to test knowledge of the severity of criminal penalties Of these, the general public answered only 2 6 correctly. Many persons refused to even guess at the penalties, but when they did, most underestimated their severity.

Significantly, the most delinquent group—prison inmates—were able to answer 6 3 of the questions correctly While this indicates a much higher awareness on their part than was exhibited by the general public, it is obvious that this additional knowledge did not deter them from criminal acts.

The persons surveyed were queried to test their knowledge of legislative action taken during the 1967 session to change the penalties for rape, robbery, and burglary resulting in great bodily injury to the victim For each of these crimes, the Legislature had increased the minimum term from 5 to 15 years Questions were also asked pertaining to crimes (drunk driving and possession of marijuana) where the Legislature had taken no action The answers (see Table II) again reflected a low level of public awareness.

TABLE II

Percent of Correct Answers on Recently Increased Penalties for Crimes by General Public, High and Low Delinquency Groups and Institutional Populations

Knowledge of increased penalties	General population (percent)	Low delinquency		High delinquency high school (percent)	Institutional	
		College (percent)	High school (percent)		Youth Authority (percent)	Adult Corrections (percent)
Rape	16	17	30	27	24	43
Drunk driving	39	46	48	34	26	37
Robbery with bodily injury	20	20	23	33	30	76
Burglary with bodily injury	16	15	25	20	21	57
Possession of marijuana	36	65	38	16	25	47

Nearly 50 percent of the respondents indicated that they were not aware what legislative action had been taken Those who answered, on the other hand, were more likely to believe that no action had been taken at all

On matters of opinion (as opposed to knowledge of fact), responses were much more definite The respondents were asked about their perception of the present crime rate in California Over one-half felt that criminal activity in this state was so great that it constitutes a major public problem Another one-fourth felt that the crime rate was higher than it should be Three-quarters of the population responding to the survey, therefore, indicated concern about the crime rate

The persons surveyed were also asked what they thought would help most to lessen the current crime rate Table III shows the solutions most commonly offered

TABLE III

	Percent
Better opportunities for poor people	24
Increased scientific study of the causes of crime	19
Social and psychiatric help for offenders	8
More law enforcement officers	11
Stiffer sentences and long imprisonment	24
Other	9
No response	5
Total	100

Thirty-five percent suggested either more severe sentences or more law enforcement officers as a solution to the problem This group, which scored lowest in their knowledge of criminal penalties, were older, retired, and less educated than the total sample.

Sixty percent of the respondents favored the less punitive methods for stemming the rising crime rate: better opportunities for the poor, social and psychiatric services for offenders, and increased scientific study of the causes of crime This group, when compared with the remainder of the sample, were younger, better educated and employed.

D. SWIFT AND CERTAIN APPREHENSION: THE MISSING LINK BETWEEN CRIMINALS AND PENALTIES.

It was noted earlier that the subgroup that was most aware of the severity of criminal penalties were prison inmates Many of these offenders have been previously jailed or imprisoned Experience of incarceration is not a certain deterrent to criminal behavior.

If severe penalties do not deter, what will?

One group, those from the school with the history of a high delinquency rate, indicated they feared most the loss of their jobs, their possessions, going to prison (unrelated to the length of the sentence), and a general feeling of embarrassment at being apprehended

Respondents from the school with a history of low delinquency indicated they feared loss of family support, a ruined reputation, and feelings of guilt and shame

The implications of these responses are that the low delinquency group is deterred from criminal behavior by social sanctions and *internal* controls such as loss of self-respect, while the high delinquency group is deterred mainly by such *external* controls as fear of being caught and the practical consequences of conviction [13]

[13] There is also evidence that strongly suggests that critical deterrents differ according to type of *offense* as well as type of *individual* A recent article on this subject concludes from empirical data that the legal system may be operating very ineffectively "It punishes most severely those persons and crimes that are least deterrable and it punishes least severely those persons and crimes that are most deterrable" See William J Chambliss (32) Types of Deviance and the Effectiveness of Legal Sanctions *Wisconsin Law Review*, Volume 1967, No 3

However, the significance of these verbal responses to "if" questions, and other conjectural psychological material, is somewhat uncertain in the absence of a perfect law enforcement and information system that would permit exact comparisons between verbal responses and actual behaviors.

Studies of the relation between law enforcement capability and crime rates are scarce and fragmentary but three examples are offered here that indicate that improved external controls unquestionably reduce the frequency of some of the commonest crimes or increase the likelihood of apprehension greatly

In 1954 New York City increased the number of police by 125 percent in one ethnically mixed precinct of 120,000 people. In a four-month period the felony crime rate in that area was reduced by 55 percent. Robberies, burglaries, grand larceny and auto theft decreased approximately 70 percent Of further importance, felonies cleared by arrest rose from 20 percent to 66 percent.[14]

A study of response time and arrest rates in Los Angeles further supports external factors, in this case technical capability, as significant controls

A one-month study in Los Angeles in 1966 of 4,704 incidents (of which 1,905 were "reported crimes") demonstrated a close relation between speed of police response and effective enforcement When response time (by the police) was one minute, 62 percent of reported crimes ended in arrest. When all cases with response time up to 14 minutes were grouped together, only 44 percent led to arrest.[15]

This and other studies led the President's Crime Commission to conclude that "a greater expenditure of funds is warranted to mount a concerted effort to reduce the total response time in the apprehension process"

Another approach described by the crime commission[16] supports the case for investment in better external controls

> Reducing the conspicuousness of police officers could possibly increase the probability of detecting criminal action because the offender is not aware of the police presence In some cities, special forces travel in work clothes in unmarked cars The Long Beach, California, Police Department sends two plainclothesmen on bicycles into high crime areas According to the New York *Times:* October 25, 1966, "No screaming sirens or flashing lights announce them They operate inconspicuously, silently, independently and with mobility up sidewalks, between buildings, or through parks" In one year, the two policemen made arrests in eight strong-arm robberies, five armed robberies, eight burglaries Street crimes were reported to have been reduced markedly, supporting the general assumption that increasing the apprehension probability tends to deter crime, or at least to displace it

[14] Richard Dougherty "The Case for the Cop" *Harper's Magazine*, April 1964, p 129 (38) p
[15] President's Crime Commission The Police (75), p 58
[16] President's Crime Commission (74), p 12–13

E. THE AMOUNT OF TIME SERVED HAS NO MEASURABLE EFFECT UPON CRIME AMONG RELEASED CONVICTS.

Allowing for discrepencies in parole policies and reporting systems, recidivism rates in all states are generally constant

The rates vary from 10–15 percent year to year, but these fluctuations show no relation to differences in median time served

The most careful analyses of recidivism[17] statistics for California, New York and other large states, Minnesota, Wisconsin and federal prisons fail to show any significant differences in rates Variations always produce explanations based on differences in definitions or parole policies for different places or different years[18]

Because many states, including California, have increased the use of probation and other noninstitutional devices, it is possible that the most serious and habitual offenders are being concentrated in state prisons Even this trend, if it is true, has not clearly affected the regularity of recidivism rates

For any large state in the nation, whether median stay is long or short, it is safe to predict that about 35 percent of persons paroled from state prisons will return in a few years because of a technical parole violation *or* a new felony conviction Another 15 percent will be fined or jailed for minor offenses[19]

Returns with a new commitment—including the commission of another felony—are considerably lower. Since 1958 in California these rates (one–two years after release) have varied from 13–19 percent.[20] These returns are also typical of the national picture. Whether "recidivism," with its varying definitions, or "returns with new commitment" are accepted as the measurement of institutional effectiveness, no evidence can be found to support extended incarceration as a determinate element in the deterrence of crime

Crime and recidivism rates vary according to conditions in the world external to the prison system All special studies indicate that the success of parole depends on the supportive factors in the environment to which the parolee returns, and that, for most offenders, lengthy incarceration merely increases the difficulty of adjustment to normal life

No authority can be found to support the value of severe penalty policies as deterrents for the majority of convicted offenders

The summary statements of experts in the field all assert that the important elements of deterrence and rehabilitation lie elsewhere:

The California Youth and Adult Corrections Agency (26), p 155

> There is evidence from many sources that the severity of the punishment is less significant as a

[17] Webster s defines 'recidivism" as habitual or chronic tendency to relapse into crime or antisocial behavior patterns Parole authorities use the term to cover anything from minor lapses (subjectively judged by parole agents to warrant return to prison) to recommitment for new felony convictions It is obvious that actual "return to prison" rates are influenced by the moods of legislators and administrative bodies Recommitments for new felonies are the only solid statistics available
[18] See Appendix Items C 1 through C 9
[19] Glaser (42), p 28
[20] California Department of Corrections (11)

deterrent than the certainty of detection. Potential criminals do seem to calculate the chances of being apprehended more than the punishment for the offense if caught . . Loss of freedom in any degree, isolation from family and the community, no matter how many treatment services are provided, is substantial punishment.

Glazer (The Effectiveness of a Prison and Parole System) (42), p 482

There is evidence that the extent of any deterrent effect does not increase at a uniform rate in proportion to increments in the severity of a sentence However, this does not eliminate the possibility of major deterrents occurring from a certain sentence.

Garrity (The Effects of the Length of Incarceration Upon Parole Adjustment and Estimation of Optimum Sentence) (41), p 42

If rehabilitation or reform of the person is the objective, it appears from the analysis of this study that in a large number of cases the sentence has little if any effect upon the person.

The President's Crime Commission (69), p 165

Institutions tend to isolate offenders from society, both physically and psychologically, cutting them off from schools, jobs, families and other supportive influences and increasing the probability that the label of criminal will be indelibly impressed upon them. The goal of reintegrations is likely to be furthered much more readily by working with offenders in the community than by incarceration

For the important legislative question—Would reducing the length of incarceration increase recidivism? —evidence is available

F. TIME SERVED CAN BE REDUCED WITHOUT INCREASING RECIDIVISM.

The evidence ranges from the extraordinary situation created by the U S Supreme Court Gideon decision, to the experience of the States of Washington and even California when arbitrary decisions were once made to reduce time served

In all these cases no significant increase in recidivism rates was found

In some cases a decrease in recidivism accompanied the reduction of time served

1. *The Gideon Case* [21]

A 1963 decision of the Supreme Court required the State of Florida to discharge 1,252 prisoners long before the normal release dates These were indigents who had been tried for felonies without counsel.

The Florida Department of Corrections selected for study 110 of these early releases and 110 full-term releases [22] matched in great detail for equally serious criminal histories and other significant factors (The small final sample was the result of rigorous selection for true matches) None of these persons were placed under parole supervision.

Twenty-eight months after discharge, 13 6 percent of the Gideon early release group had returned to criminal activity Twenty-five and four-tenths percent of the full-term release group had returned to criminal activity

2. *California Women Prisoners*

In 1959 the California Women's Board of Terms and Paroles changed parole policies The median time served each year from 1957–1959 was 24 months By 1965 the median stay was reduced to 12 months

The prison return rate in 1959 for those paroled 2–3 years earlier (who had served 24 months) was 35 3 percent

The prison return rate in 1964 for those paroled 2–3 years earlier (who had served only 17–20 months) was 28 8 percent

TABLE IV *

Median Time Served and Parole Return for Women First Paroles 1957–1965

Year	*Median time served —first parole (months)*	*Prison return rate after 2–3 years*
1957	24	28 8
1958	24	32 2
1959	24	35 3
1960	20	29 0
1961	20	33 1
1962	17	26 5
1963	15	29 8
1964	13	28 8
1965	12	--

* California Department of Corrections (11)

3. *Washington State*

In 1958 Washington decided to reduce the median time served in the state prisons In three years median stay was reduced from 30 months to approximately 20, and this policy has been maintained since 1961.

The recidivism rate in Washington since 1961 has not changed significantly The failure rates (after two to three years parole) continue to vary from year to year within a small range

California parole policies are different and failure rates are constructed differently, but within the same

	Washington [24]		*California* [24]	
Year	*Median stay (months)*	*Percent parole failures* [23]	*Median stay (months)*	*Percent parole failures* [23]
1958	27	--	27	37 9
1959	30	34 6	24	40 1
1960	24	43 5	24	42 6
1961	21	51 6	27	42 8
1962	20	49 6	27	46 7
1963	17	42 3	30	46 1
1964	19	46 8	30	42 5
1965	20	49 2	30	--
1966	21	--	30	--

[21] Florida Division of Corrections (40)

[22] 60 percent of the Gideon group served less than a year and a half, 47 percent of the full-term group served less than that time

[23] Washington parole failure rate is made up of recommitments to state prisons, out-of-state sentences, and "whereabouts unknown" cases The California rate consists of recommitments to state prisons Both rates apply to parolees released two to three years earlier

[24] Washington statistics (90) (91)
California statistics (7) (11)

time also vary in ways unrelated to median times served.

4. California Parole Violators

California parolees are sometimes sentenced to jail terms for misdemeanors The Adult Authority must then decide to either continue the offender on parole while he is in jail, or return him to prison as a parole violator.

The California Department of Corrections compared 315 parolees who had served jail sentences and were then reinstated on parole, with 194 who were returned to prison as technical violators following their jail sentences [25]

The two groups were well matched with regard to commitment offense, age, race, and narcotic history.

The jail group served an average of seven months.

The prison group served an average of 20 months

The ultimate parole success of both groups after reparole was the same. 45 percent.

III. PENALTIES AND THE PUBLIC SAFETY

If severe penalties do not deter criminal behavior effectively, can they be justified on the grounds that public safety is improved because criminals are temporarily isolated?

In theory, the imprisonment of all felons for life would maximize the public safety

This is in practice impossible because:

—It would cost the state several billion dollars over the next five years,[26]

—It would be an extraordinary injustice to the 60–70 percent of released prisoners who do not commit more serious offenses

The next alternative, frequently mentioned by those who believe that severe penalties deter, is to keep all prisoners in for their full terms of sentence.

This alternative must also be rejected:

—It is estimated that it would cost the State of California at least $100–200 million per year to keep all presently incarcerated offenders for their full terms.[26]

Four more reasons can be cited as objections to the latter alternative They are also grounds for rejection of continuance of the present system of lengthy prison terms

—The great majority of criminals are in the community, not in prison

—Ninety-five percent of the men in California state prisons will be returned to the community

—There is no evidence that the California state prisoner's average stay of 30 months has contributed to his rehabilitation more than would a stay of 20, 12, or 6 months

—Prisons are, for many offenders, the least effective rehabilitation system

[25] California Department of Corrections (10)
[26] Space General Corporation (63), p 22

A. THE GREAT MAJORITY OF CRIMINALS ARE IN THE COMMUNITY, NOT IN PRISON.

1. The Criminal Justice System Has Little Quantitive Impact Upon Crime.

In 1966 in California [27] 56,942 crimes of personal violence were reported Fifty-one percent of these were cleared by arrest or other methods Only 4,397 adults were convicted Only 1,672 adult violent offenders were committed to state prisons—*2 percent of the number of offenses reported*

Three hundred sixty-two thousand twenty-five felony property crimes were reported Twenty-one percent of these were cleared by arrest or other methods Only 11,207 adults were convicted Only 2,037 adult property offenders were committed to state prisons—*0 5 percent of the number of offenses reported.*

The Impact of the Criminal Justice System Upon the California Crime Problem—1966 *

	Crimes reported	Cleared (arrest or other)	Adult arrests	Adult felony complaint filed†	Adults convicted†	Committed to state prison †
Total personal violence	56,942	29,289 51%	28,317	12,378	4,397	1,672 J355
Willful homicide	897	767 86%	1,297	901	230	227 J1
Aggravated assault	29,652	19 136 65%	14,686	5,510	2,350	369 J113
Robbery	22,315	7,082 32%	9,445	4,230	1,614	983 J225
Forcible rape	4,078	2,304 57%	2,889	1,737	203	83 J16
Total property felonies	362,025	74 485 21%	44,702	21,982	11,207	2,037 J958
Burglary	234,535	47 851 20%	24 312	11,999	5,529	1,300 J483
Auto theft	86,929	19,141 22%	11,106	5,019	2,513	360 J340
Other grand theft	40,561	7,493 19%	9,284	4,964	3,165	377 J135
Drug law violations			19,403	10,862	4,867	876 J247

J Commitments to California Youth Authority (Juveniles)
* California Department of Justice, Bureau of Criminal Statistics (15) p p 51, 54, 55, 59, 85, 96
† Discrepancies caused by time lags in court processes and omission of juveniles in arrests, complaints, and convictions

Estimates of unreported felonies would double or triple these crime figures A true measure of the impact of property crime would also have to include dollar amounts involved in fraud and embezzlement, said by the President's Crime Commission to be greater than the money lost in burglary, theft, and auto theft

With the exception of crimes of personal violence, the present criminal justice system has little quantitative impact upon the mass of offenders and offenses

Most crime is property crime The criminals who commit it are in the community, not in prison, and it is highly probable that the prison population represents the least skillful criminals [28]

[27] California Department of Justice, Bureau of Criminal Statistics (15)
[28] The median educational level of state prisoners is 7th grade One thousand seven hundred of the men in prison in 1967 were illiterate (California Department of Corrections)

Further, in the case of crimes of personal violence more than half are committed by family members or other persons previously known to their victims—in the case of willful homicides, more than 78 percent [29] These "crimes of passion" have occurred with predictable frequency through the ages regardless of the penalties in vogue

The facts leave no doubt that public safety is not increased by lengthy incarceration of nonhabitual and nonviolent offenders in state institutions

2. *The Criminal Justice System Is Not Consistent Enough to Serve the Ends of Justice or Public Safety Effectively.*

a Severe penalties can cause courts to *reverse* or *distort* legislative intent, for reasons of traditional justice or expediency

Mandatory (severe) sentences rarely accomplish the ends they seek The certainty of punishment which is sought by such provisions is illusory There are numerous discretionary devices—ranging from acquittal of the guilty to reduction of the charge—by which the judge, if that is his purpose, can frustrate the effect of a mandatory sentence The experience with such sentences shows that such devices are commonly employed [30]

Mandatory sentences prevent the courts from basing their sentences on the relative importance of these factors in each case Judges and prosecutors often regard punishment by long mandatory terms as unreasonably harsh, and they are faced with the dilemma of adhering to the statutory requirement or avoiding it to produce results that seem to be just in individual cases

Furthermore, the avoidance of mandatory sentences may be almost a practical necessity, since an undermanned prosecutor's office depends on the possibility of leniency to obtain guilty pleas

An office which does not reduce charges for offenses carrying long mandatory terms or which routinely seeks to obtain convictions under mandatory habitual offender laws would become overwhelmed with trials because defendants would have no incentive to plead guilty

There is persuasive evidence of nonenforcement of mandatory sentencing provisions by the courts and prosecutors. For example, where certain offenses carry long mandatory prison terms, prosecutors frequently reduce the charge to a lesser offense if the defendant agrees to plead guilty The result of this practice is that in a number of jurisdictions convictions for offenses carrying severe mandatory sentences are rare In California

Of all felony prosecutions, 5 6 percent go to jury trial Considering the enormous volume (about 37,000 annually) of felony cases involved, only a 1 percent increase in jury trial load could be disruptive to the courts involved The criminal court subsystem is, therefore, highly dependent upon the maintenance of a high rate of guilty pleas, usually to offenses less severe than the original charge [31]

Many examples of distortions of court processes are available

Marijuana

As previously mentioned (page 28) the 1961 increases in the severity of penalties for possession or sale of marijuana exemplify the ineffectiveness of severe penalties as deterrents Arrests rose about 500 percent in the five years following the increases

Tracing these events further through the court processes provides clear documentation of reversal of legislative intent

More than 75 percent of marijuana arrests each year are adults

In 1961, 47 percent of adults arrested were convicted and 26 percent were sent to state prisons

In 1966, 31 percent of adults arrested were convicted and only 13 percent were sent to state prisons [32]

Assault With Intent to Commit Murder

In 1966, 301 persons were charged with this grave offense and eventually convicted of a criminal act However, only 31 such cases were convicted as originally charged in that year The remainder were convicted of lesser offenses; 33 being reduced down to the level of simple assault [33]

Kidnap for Ransom and Reward

When injury to the victim takes place during the commission of this offense, either the death penalty or life imprisonment without parole is mandatory. In 1966, 179 individuals were so charged and convicted of a criminal act but only 36 were convicted as originally charged; the rest were convicted of lesser offenses [33]

Bad Checks

The number of bad checks reported as felony offenses varies greatly among counties. In 1965 San Mateo County reported 114 per 100,000 population Fresno County reported 1,211 per 100,000 population [34]

Of 4,389 forgery and check defendants in 1966, 3,522 pleaded guilty; 109 received jury trial.[35]

> In Wisconsin, offenses other than forgeries are punishable at most as misdemeanors with a fine of not more than $5,000 and/or imprisonment of up to one year Since Wisconsin reports that 16 percent of the admissions to state prison are for bad-check offenses, and California (with a more punitive statute which treats most of the check offenses as felonies while they are only misdemeanors in Wisconsin) reports only 14 percent admissions for bad checks, *it is obvious that there must be some other factors besides statutory provisions to account for California's lower bad-check commitment rate* [34]

[29] California Department of Justice, Bureau of Criminal Statistics (17) p 74
[30] President's Crime Commission (73), p. 16.
[31] California Youth and Adult Corrections Agency (26), p 22
[32] California Department of Justice, Bureau of Criminal Statistics (18), pp 6 and 7, Tables A and B
[33] California Department of Justice, Bureau of Criminal Statistics Unpublished tabulations
[34] Institute for the Study of Crime and Delinquency (44), p 34
[35] California Department of Justice, Bureau of Criminal Statistics (15), p. 85.

In summary, we quote the President's Crime Commission [36]

> Our system of criminal justice has come to depend upon a steady flow of guilty pleas

b. The end results of the justice process are determined by geography—the differing court practices prevalent in different jurisdictions—not law, reason, or consideration of public expense

In 1966, *29 percent* of the adult arrests made in San Diego County resulted in the filing of a felony complaint *Eighty-five percent* of San Joaquin County adult arrests proceeded to felony complaint filings

The California Youth and Adult Corrections Agency report of 1967 to the Governor describes the problem concisely · [37]

In California in 1965 the courts disposed of 30,840 convicted felons.

> There is no generally accepted and applied standard or criteria by which the courts make their alternative dispositions, as a county by county comparison illustrates
> (For example) it would appear that a person convicted of an offense in Stanislaus County has a 16 times greater chance of being committed to the state than if he were convicted in Marin County.
> Among all 58 counties, imposition of prison sentences ranged from 0 to 63 percent of the convicted felony defendants Among the larger counties the range was 18 to 44 percent in 1964.

California jail sentencing policies·

> On September 24, 1965, there were nearly 17,000 persons in city and county jails under sentence of a court
> Jail sentencing practices vary widely from county to county.
> . . in a special five-county study completed in 1965 by the Bureau of Criminal Statistics, California Department of Justice, it was found that there was nearly 20 percent variation in use of jail sentences of less than 30 days.
> The average time served for superior court commitments varied from 117 in one county to 169 days in another county.

County costs and commitments·

> An attempt was made to compare various factors to the commitment rates of the counties in order to see if these disparate rates could be accounted for by (1) level of probation services as measured by the relative amount spent for probation services; (2) felony arrest rates, and (3) juvenile referrals for delinquent acts
> Separate tabulations were also constructed which compared these data with all county correctional costs per $100 assessed valuation
> None of these data correlate. For example, Sacramento County with a relatively high level of commitments (75 9) spends nearly as much for probation services as Santa Clara County which has less than half the commitment rate (31 4). Many other comparisons are possible, yet none seem to explain the disparity.
> The inescapable conclusion is that the commitment rate variations reflect different sentencing policies of the criminal and juvenile courts in each county
> . . . a person convicted of an offense in Stanislaus County has a 16 times greater chance of being committed to the state than if he were convicted in Marin County . . .
> It would appear also that the state is already subsidizing Stanislaus County (and other above-average commitment rate counties) by incarcerating juveniles and adults which other counties handle through their own probation department and jail services
> It would seem, further, that the taxpayers in low commitment rate counties are paying not only for their own probation services but a portion of the costs of probation services which other counties are relieved of by sending more offenders to the state

B. INCARCERATION, ESPECIALLY LENGTHY INCARCERATION, OFTEN DOES NOT BENEFIT THE PUBLIC SAFETY.

1. The Isolation of Criminals Is Only Temporary; 95 Percent Will Eventually Be Returned to the Community, and There Is Much Evidence That Most Prison Experience Is Destructive.

2. Many, Perhaps Most, Offenders Can Be Supervised In the Community.

That prisons usually do not rehabilitate has long been recognized by the authorities

> It is probably in the prisons, more than in any other area of the entire correctional process, that the paradox of social contradictions come into full play While it is generally recognized that the prisons rarely, if ever, reform, they remain in their present state as monuments to our futility [38]

Two recent articles from *Time* magazine and the *Wall Street Journal* describe "the paradox" in considerable detail as part of a general discussion of the value of prisons (See Appendix Items H1 and H2 for full texts)

The American Bar Association, in its report on Sentencing Alternatives and Procedures summarizes the current professional opinion

> It is, of course, fundamental to the criminal law, and most particularly to the sentencing process, that paramount consideration be given to the protection of the public
> The manner in which the criminal law seeks this objective has a necessarily punitive element The most common manifestation is physical isolation

[36] President's Crime Commission (73)
[37] California Youth and Adult Corrections (26), pp 24, 28, 199, 200
[38] Bloch and Geis (6), pp 572–73

from the community in a maximum security institution for a term of years thought roughly commensurate with the gravity of the committed offense

But it would be a short-sighted system which viewed such punishment as an end in itself . the vast majority of offenders will be released and will again, substantially free of official restraint, be presented with the opportunity to offend

The President's Crime Commission was not breaking new ground when it observed that "removing a man completely from the community may impede his successful reintegration later, and the atmosphere, associations, and stigma of imprisonment may reinforce his criminality" The same point can be stated in another way:

> The typical American state prison, as presently constituted, offers little more than repressive discipline, with here and there a dash of social and vocational education With some exceptions, if a person is kept in a prison for a long time, he tends to become institutionalized, and less and less capable of social life As a result, when discharge finally comes, many are less capable of living in society than when they entered Many of them are much worse because whatever skills and industrial contacts they have had, have been lost
>
> Even those who serve short sentences are devoid of friends or relatives and they are feared, shunned, and discriminated against on every hand It is no wonder that so many return to prison (Slovenko: Crime, Law and Corrections 1966)

The advisory committee agrees with these observations, and would allocate to them a dominant position in the development of an approach to sentencing [39]

But these academic analyses make no mention of the crucial fact of the prisoner's experience: exposure to random or systematic violence

Less than half the felony offenders committed to California prisons in 1966 had prior police records of major seriousness [40]

It is highly probable that the majority of persons incarcerated each year in California prisons are subjected to severe punishment not intended by the justice system:

> While it is true that every prisoner does not live in the constant fear of being robbed or beaten, the constant companionship of thieves, rapists, murderers, and aggressive homosexuals is far from reassuring [41]

What is often neglected in official statements is not that prisons fail to rehabilitate but the *active* nature of the destruction that occurs in prisons

> We may . persist in incarceration of persons who do not need institutional control We can take a minor property offender and help him to develop into a more serious offender by unnecessary and long incarceration as surely as if we conducted vocational training in hate, violence, selfishness, abnormal sex relations, and criminal techniques [42]

The prison world is, to begin with, necessarily entirely unlike normal society

> The maximum security prison represents a social system in which an attempt is made to create and maintain total or almost total social control
>
> The detailed regulations extending into every area of the individual's life, the constant surveillance, the concentration of power into the hands of a ruling few, the wide gulf between the rulers and the ruled—all are elements of what we would usually call a totalitarian regime The threat of force lies close beneath the surface of the custodial institution
>
> The prison official is a bureaucrat, but he is a bureaucrat with a gun [43]

Even more important, prison society has other rules than the regulations enforced by legitimate authority, also maintained by force

> The inmate code has been built up through many years and results, in part, from the conception of some lawbreakers that society and the symbols that represent it (prison officials in this case) are natural enemies The code is, and results from, an attitudinal configuration that a minority group to exist must have cohesiveness and be secure within itself
>
> Emotionally, the attitudinal configuration is charged with hate, the hate that comes to persons who fail, and who have their failures "rubbed in" by the dominant group [44]

Inmate social codes often require that prisoners participate in—or at least fail to report—numerous illegal and self-destructive practices:

a Conspiracies to control other inmates by threats and violence

During the recent work stoppages at Folsom and San Quentin Prisons, the Sacramento *Bee* reported that "No violence has been reported at either prison, although officials announced many of the men were staying away from work in *fear of reprisal from strike leaders*" [45]

It is almost impossible to get solid and specific descriptions of the patterns of prison violence from officials or inmates

We reproduce here two pages from the draft of an unpublished study of the causes of prison violence

[39] American Bar Association (1), pp 62, 63, 75.
[40] California Department of Justice, Bureau of Criminal Statistics (15), p 106; p. 109 Chart V-E
[41] Sykes (66), pp XIV–XV
[42] California Youth and Adult Corrections Agency (26), p 152-a
[43] Sykes (66), pp XIV–XV
[44] Clemmer (33), p 152
[45] February 21, 1968 Emphasis added

sponsored by the National Institutes of Mental Health:

The "illustrations" are incidents that occurred in California prisons

For the impact of the patterns implied, only one statistic can be offered: eight inmates were stabbed to death by other inmates in California's "correctional" facilities last year This amounts to a homicide rate roughly seven times larger than the general rate for the state

Gambling is one of the favorite pastimes of men doing "time " On occasion, it is also a source of overt violence, particularly when a gambler attempts to cheat, or when he is unable, or refuses to pay his losses Normally, gambling is not a major problem with respect to violence—but when cheating or failing to pay enters the picture, the violence may be of the highest order

Example: X bets a carton of cigarettes with Y on a football game X loses the bet, but cannot pay because he does not have the cigarettes, nor the money to purchase the amount of his losses Y may simply punch X here and now (if any violence is assumed) On the other hand, Y may decide to turn the debt over to A and B who specialize in debt collecting A and B press X for the amount he owes X stalls, lies, and cannot pay A and B, after issuing an ultimatum, catch X alone and stab him to death X may have been able to pay the debt by borrowing from a "loanshark," and paying three for the price of two, . .

When narcotics come into the prison, there is a severe drain upon the inmate economy As a result, stealing from cells, robberies of individuals with canteen purchases, and borrowing from "loansharks" may increase Additionally, the prospect of acquiring the narcotics for nothing, through force, as it is, becomes a factor Existing tensions are heightened, and acts of violence become increasingly probable

Example: V acquires a supply of narcotics which he intends to sell W and X, learning that narcotics are available, approach V and inquire how much it will cost them to buy a gram The price is more than W and X have, but they tell V to wait and that they will return shortly W and X go into a cell block to rob the cell of an inmate they know has cigarettes During the process of robbing the cell, they are witnessed by Y, a close friend of Z, whose cell they are stealing from When Z returns to his cell later Y informs him of what he saw After acquiring lengths of pipe, Y and Z go looking for W and X When they find them they attack viciously, and without warning W and X both die an hour later from the beating administered them

A and B also learn that V has narcotics for sale. When they inquire and find out they do not have enough money to make a purchase, they withdraw to figure out where they can get enough Convinced that they cannot acquire the necessary amount to make the purchase, they decide to catch V alone and take everything he has—killing him if necessary A and B then lure V to a meeting on the pretense they want to buy Upon arriving at the meeting place, V is slugged over the head, stabbed repeatedly, and succumbs on the operating table 30 minutes later

b Homosexuality

A former warden of San Quentin (Clinton T. Duffy) pointed out that "There's plenty of sexual activity in our prisons, but it's the wrong kind " He explained: "No inmate, no matter how good his intentions, is entirely spared homosexual advances, and many succumb Some can never resume a normal relationship What they believe to be a temporary expedient in prison becomes a permanent problem after they get out "

Donald Webster Cory, author of a number of books and articles on homosexuality, contends that prison authorities "make only the slightest efforts to combat" homosexual activity among inmates, "while the facts of the entire prison system encourage such practices " [46]

We reproduce here, verbatim, a recent letter from a prisoner to a sociologist:

Dear Sir:

I delayed this letter purposely because I've been engaged in mental combat with my peers for almost two months now, figuring on a drastic change Well the change came! ! !

But now I'm almost afraid to pass on the happening because it could very easily confuse you However, on the contrary, I feel I must let you share this with me, you being my only link to the outside besides my mother

Sir, the first day I came to the Mainline [47] from R G C [48] I knew I wasn't in the right frame of mind to wage war on my peers and programmers [49] alike One has to be hard, evil and self-centered in order to make it here

It all started when a pal of mine told me he was being pressured for his canteen (cigarettes, etc) By my being fair size and having plenty status from old timers, I took it upon myself to try and help the pal Anyway, I asked the main party involved in the little scheme to give the guy a chance and not to jump on him in a mass, after which I was thoroughly beaten and hospitalized

Upon my release I was promptly tagged as "fink" and had to lock up to avoid further engagement in combat The problem of getting in protective custody was easy I told the programmer I was a homosexual It seems my problems have just begun

[46] Congressional Quarterly Service (36), p 26
[47] A California state prison
[48] Reception and guidance center
[49] The prison staff

> Sir, in all seriousness I am losing my faith in people
> I hope the programmer returned your check You see, personal checks are taboo Thanks anyway I dig the feeling more than the money
>
> Peace, Sir

Given these realities of prison life, it is not surprising that a 1966 study by the Institute for the Study of Crime and Delinquency found that normal society had failed to communicate its good intentions to prison inmates [50]

> The authors agree that the conflict which exists between custody concerns and treatment concerns, is a detrimental factor in total involvement in any treatment program
>
> Most (inmates) looked upon treatment programs as phony

Seventy percent of inmates polled answered "yes" to the question: Do you believe that therapy and treatment programs are games?

> "Most cons know how to walk that walk, talk that talk, and give the counselor what he wants to hear "
>
> (Inmates) felt that "rehabilitation," as the department defines it, does not exist [51]

Given these realities of prisoners' experience, it is highly questionable whether the commitment of many first offenders or nonviolent offenders to state prisons is a beneficial or economical state policy

2. *Many, perhaps most, offenders can be supervised in the community*

The Department of Corrections testified before an Assembly committee [51] in 1965 that "the present processing examinations into the backgrounds and characteristics of offenders disclosed many could be released within 60 to 90 days "

The Board of Corrections testified at the same hearing that there is " . need for greater flexibility regarding minimum terms Minimums have been adjusted upward over the years on a patchwork basis, frequently in emotional response to particular situations We have minimums aggravated by deadly weapons, prior felonies, and combinations of them together with cumulative or consecutive sentences that in some instances work to create injustices and cause confinement for greater periods than necessary " [52]

The President's Crime Commission advocates increased use of community supervision:

> The correctional strategy that presently seems to hold the greatest promise, based on social science theory and limited research, is that of reintegrating the offender into the community
>
> These justifications seem to be borne out by the record of probation services themselves Probation services have been characteristically poorly staffed and often poorly administered Despite that, the success of those placed on probation, as measured by not having probation revoked, has been surprisingly high
>
> One summary analysis of outcomes observed in 11 probation studies indicates a success rate of from 60 to 90 percent
>
> An exhaustive study was undertaken in California when 11,638 adult probationers granted probation during the period 1956–58 were followed up after four years Of this group, almost 72 percent were successful in terms of not having their probation revoked
>
> These findings were not obtained under controlled conditions, nor were they supported by data that distinguished among the types of offenders who succeeded or the types of services that were rendered Nevertheless, all of the success rates are relatively high They are the product of a variety of kinds of probation administered at different times and places Even when interpreted skeptically, they are powerful evidence that a substantial number of persons can be placed on probation and have a relatively high rate of success
>
> Offenders can be kept under probation supervision at much less cost than in institutions (about one-tenth as much)
>
> Objections might be raised as to the validity of such comparisons, since expenditures for probation services are now much too meager However, with the 1-to-10 cost ratios prevailing, probation expenditures can clearly be increased several fold and still remain less expensive than institutional programs This is especially true when construction costs, which now run up to and beyond $20,000 per bed in a correctional institution, are included The differential becomes even greater if the cost of welfare assistance for the families of the incarcerated and the loss in taxable income are considered [53]

California has conducted successful experiments in community supervision of offenders [54]

There is evidence that probation and parole agents can deal effectively with both juveniles and adults *when the agents have sufficient time for close supervision.*

The Youth and Adult Corrections Agency Report of 1967 listed a number of projects that indicate the practicality of nonincarceration or early release: [55]

> Special intensive parole supervision, revealed " that the only variable found to make a real difference in parole outcome is the *amount of time* the agent has to devote to supervision "
>
> (CDC Special Intensive Parole)
>
> The failure rate for experimental wards released directly from the reception center to the "Com-

[50] Institute for the Study of Crime and Delinquency (45), pp 79, 81
[51] Regarding Assembly Bill 290, 1965 From California Youth and Adult Corrections Agency (26), p 198
[52] California Youth and Adult Corrections Agency (26), p 198
[53] President's Crime Commission (74)
[54] California State Assembly (24), pp 41–56.
[55] California Youth and Adult Corrections Agency (26), pp 66, 68

munity Treatment Project" is 29 percent while the failure rate for control wards is 48 percent Control wards include those who completed regular institutional programs and were released to regular parole

(CYA Community Treatment Project)

The parole failure of wards with a history of narcotic addiction was 54–67 percent for wards supervised in *small caseloads* and subjected to anti-narcotic testing while the comparison group had an 81 percent failure in the same period

(CYA Evaluation of the Narcotic Treatment Control Program)

In 1964 the California Legislature authorized an intensive supervision parole system called the Work Unit Program The program objectives are: (1) Increased community protection (2) Increased assistance to the parolee (3) Savings in institutional costs

Parole agent caseloads were considerably reduced, and the amount of supervision and aid to each parolee accordingly increased

The parolees in this program as of September 1967 were a much more difficult group than conventional parolees: [56]

	Work unit parole ($770 per man)	*Conventional parole ($570 per man)*
Assaultive history	37%	3%
Opiate history	16%	33%
Both of above	6%	--
Other	41%	64%

The work unit parole group contained 12 times as many men with assaultive histories as the conventional group, but a one-year followup of work unit parolees showed a return to prison rate of 19 6 percent versus 23 0 percent for conventionally supervised parolees

Only 38 of the 6,708 men released to all types of parole in the first year of the Work Unit Parole Program (April 1965 to May 1966) were convicted of a felony involving serious violence during that year (0 6 percent)

IV. PUBLIC SAFETY AND PUBLIC MONEY

Incarceration, especially lengthy incarceration, for many offenders is a misuse of public funds better allocated for local law enforcement and local rehabilitation

> [The policy of the State of Vermont] is based upon the cumulative experience of modern correctional practice which undertakes to build sound correctional programs to square with the facts that, first, almost all criminal violators do return to the open society and, second, that traditional institutional prisons not only fail to reform or rehabilitate but operate to increase the risk of continued criminal acts following release It is recognized that sole or even primary reliance upon closed, custodial institutions is self-defeating and also results in wasteful high costs to the taxpayers of the state [57]

[56] California Department of Corrections (9)
[57] Quoted in American Bar Association (1), p 75

The State of California may be spending $30 million each year for the lengthy incarceration of lesser offenders whose rehabilitation could be better accomplished elsewhere at much less expense Prison cost savings from earlier parole could also be used in the improvement of local law enforcement—a more effective deterrent to crime

> the reliance on the protective function of the prison assumes that all long-term prisoners are more dangerous than short-timers Examination of prisoner case histories and of their behavior in prison does not support the assumption Prison wardens generally agree that only a small minority of their inmates can be considered dangerous [58]

The annual budget of the California institutional corrections system is nearly $110 million

The cost of maintaining one adult prisoner in 1966–67 was $2,628, including all institutional costs, excluding capital outlay

The average parole cost in that year was $572 per parolee [59]

The average policeman in that year was paid $7,500–$8,500 [60]

For every five lesser offenders released to parole one year before the present average time served (30 months), one policeman could be added to local law enforcement, or several could be trained to higher levels of effectiveness [61]

The preliminary findings of the state-financed 1965 Space-General Corporation's pilot study clearly showed that major expenditures in the California prison budget were directed to caring for nonviolent, less dangerous offenders

The study reported that the career cost [62] of the average forger or check offender in this state is $16,900 The career cost of the average homicide offender is $5,800

Another study in 1967 called the worthless check problem " a staggering cost to the public . an inexcusable waste of precious resources in law enforcement and corrections obsolete and unenforced criminal laws which do not deter " [63]

In 1967, 31 5 percent of the felon population in California state prisons had been committed for property offenses: burglary, auto theft, other theft, and forgery and checks 15 8 percent had been committed for narcotics and dangerous drugs offenses—a group whose proportion of true "criminality," given the present severe penalties, is not known [64]

This property and narcotics group consists of more than 10,000 persons—maintained by the state at an institutional cost of more than $26 million each year

[58] Johnson (46), pp 409–10.
[59] California Legislature (25), p 110
[60] Peace Officers Research Association of California, Inc (55), pp 1–4
[61] These prison cost savings would depend upon closing institutions
[62] Career costs are defined as the estimated lifetime costs of processing and incarcerating offenders as they move through the criminal justice system, not only for the first time, but for all subsequent returns through the lifetime of the individual offender (63), p. 237; (64), pp. 32, 37
[63] Institute for The Study of Crime and Delinquency (44), cover
[64] California Department of Corrections (11), Appendix C9

Incarceration also has a heavy impact on the welfare caseload.[65] Eight thousand one hundred families—5 percent of the Aid for Dependent Children (family group—parent absent)—need support because the father is incarcerated in a state prison or local jail.

This costs $16,621,200 per year (average about $171 per month per family).

California has experience with alternatives to lengthy incarceration:

The Parole Unit Work Program Evaluative Report[66] of 1967 stated that:

> Approximately 13,000 men were paroled in the first two years after the work unit system went into effect. (About 5 percent fewer persons were returned to prison than would have been expected because of more difficult cases).
>
> The total prison man-months aggregate to at least 1,300 man-years of prison time which would have been imposed.
>
> It is not known whether the low rate of prison returns can be permanently maintained, although the most recent followup data do indicate a continuation of these improved outcomes. Depending upon the method used to calculate per capita cost, the savings in institutional costs already realized by this reduction of 1,300 man-years of prison time represent something between $780,000 and $2,500,000.
>
> Beyond the yearly operations cost the eventual savings would include a deferment of capital outlay investment for construction of new institutions at a cost approximating 10 to 20 million dollars for a major institution.
>
> Added to that savings are the additional factors of reductions in welfare payments to dependent families (monthly average allotment per family $180), contributions to the tax structure by wage earners, and savings in county and other local taxes represented by the 300 or more cases not prosecuted for new crimes (estimated cost figure of $4,000 for processing each new felony conviction). There are also important savings related to the reduction in criminal acts that have direct property and personal damage implications.

A simple illustration of another misuse of funds is the discrepancy between costs of "rehabilitation" in state prisons and aid in the reestablishment of parolees.

The operation of the state prisons costs more than $2,600 per prisoner each year. But,

> The average inmate receives approximately $25 when he leaves the institution and another $25 four to six days later at the parole office. If the released client has no family or friends to lend support, how does he provide for himself until he finds a job . . .[67]

When the taxpayer buys lengthy incarceration for the nonviolent or nonhabitual offender, he receives "protection" from *that* offender for a few years. But, at the same time, he educates him in crime, welds him into associations with other criminals, and breaks his constructive ties with the community.

There is no evidence that his expenditure lowers the crime rate significantly. The great majority of criminals are in the community—more than 400,000 felonies reported each year, and only 5,000 commitments to state institutions.

There is also no evidence that the taxpayer's expenditure reduces his chances of being harmed by "rehabilitated" ex-convicts who have served long terms since the degree of *community* supervision and aid is the chief factor determining parole outcome.

> The state correctional agencies, which receive each year less than 4 out of every 100 persons entering the criminal justice system, spend more ($120 million) than the rest of the system—county probation and jail services—which handles the other 96 of the 100 offenders ($110 million). . . the system is imbalanced.[68]

The adult correction system spends only 10 percent of its $83 million budget on parole supervision. It is not clear that the taxpayer is willing to maintain this high investment in lengthy prison terms because of a desire to "punish the guilty."

Public opinion supports rehabilitation

A nationwide Harris Survey of 1966 cited in the California Youth and Adult Corrections Agency Report of 1967 stated that:

> Contrary to the punitive attitude many experts have expected to find, revenge against the offender has a low priority in the attitude of Americans toward the "national crime problem." The response:

Prisons are	*Prisons are*	*Prisons should be*
mainly corrective	57%	77%
mainly punitive	19%	11%
not sure	24%	12%

> When asked why they held the opinions expressed, the respondents showed considerable sympathy with the basic goals of contemporary correctional endeavors.

The following recommendations, prepared by the staff of the Assembly Office of Research, are respectfully submitted to the Assembly Committee on Criminal Procedure for their discussion and consideration. They represent possible approaches to further development of successful crime control programs in California.

V. RECOMMENDATIONS

A. A RATIONAL PAROLE POLICY.

The dual aims of successful rehabilitation and the effective use of public funds to control crime are obstructed by the absence of a clear, positive, and legislatively authorized parole policy.

[65] Information furnished by Mr. Tom Joe, Research Specialist, Assembly Office of Research.
[66] California Department of Corrections (9).
[67] Institute for the Study of Crime and Delinquency (45), p. 87.
[68] California Youth and Adult Corrections Agency (26), pp. 2, 175.

While the courts decide whether or not a man shall be convicted of a specific offense, once convicted it is the Adult Authority that decides how long each prisoner shall remain incarcerated.

> The length of sentence is fixed by either the Adult Authority for men or Women's Board of Terms and Parole for women, within the minimum and maximum limits prescribed by law. These authorities also establish the time for release on parole . . .[69]

To determine the optimum time any individual should serve is an extremely difficult, if not impossible, task since there are no scientific guidelines

> Most criteria used by institutional staff (and paroling authorities) with their particular emphasis on conformity to institutional life appear to have little relation to success or failure on parole[70]

Excerpt from November 14, 1967, Assembly Committee on Criminal Procedure hearing:

> **Chairman Biddle**: Do they (the Adult Authority) take into consideration the assistance or use of base expectancy tables at all?
>
> **Mr. Dickson** (former Chairman of the Adult Authority) No.
>
> **Chairman Biddle:** What about parole prediction factors as far as parole is concerned?
>
> **Mr. Dickson**: We find out that they're not much value to us.

That the parole board is not certain of the basis for their decisions is further illustrated by this effort to describe their policy:

> In the past all boards have devoted some attention to statistical summaries of length of institutional stay and parole outcome However, there has been no clear trend of their modifying policy because of continuous and systematic evaluation of their decision actions[71]

The variation in median time served by prison inmates from one year to the next reflects the absence of any reliable yardstick that might be used by the paroling authorities The average time served, for all offenses, over the last 10 years has ranged from a low of 24 months to a high of 30 months This variation, by the agency's own analysis, resulted from something less than objective study "There is no evidence," stated the agency report, "that this variance has come about via careful analysis of available materials on parole outcome in relation to length of stay"[72]

Instead, the time that an individual spends in prison seems to depend on three factors

1 The values and feelings of individual parole board members
2 The "mood" of the public
3 Institution population pressures.

Obviously, these "criteria" are not a legitimate, systematic basis for action Moreover, to the extent that they give an artificial, if temporary, uniformity to the actions of a specific parole board they imply a rationality which, in fact, does not exist

There is no procedure that guarantees parole board scrutiny of all the facts about the individual case:

> At present, a counselor spends from 5 to 15 minutes with the inmate in evaluating his "progress" of the previous *year*. (Inmates) wonder, what kind of an accurate evaluation even a qualified person could make in that length of time? (Regardless of whether the report is favorable or unfavorable, it is our feeling that it exerts very little, if any, influence over the Adult Authority decision)[73]

But even if there were more extensive evaluations, decisions based on greater knowledge of individual cases would still be largely intuitive or expedient

There is no scientific basis for the prediction of individual behavior The continued efforts of experts in criminology to establish base-expectancy tables have not produced significant results

> While "base expectancy" tables may be used ultimately for the purpose of parole performance prediction by "base expectancy" category, it is not believed that the magnitudes of criterion correlations in current studies warrant this usage at the present time[74]

Sutherland and Cressey, the authors of an exhaustive study of crime assert

> While certain behaviors . remain relatively inflexible throughout life, behavior like crime and serious infractions of parole regulations appear to depend much more completely upon a process of continuing social interaction.
>
> If this be correct, the criminal behavior of a person can be accurately predicted only if the behavior of the persons with whom he will come in contact is known[75]

The parole board, therefore, operates without a clear and rationally justified policy[76] Responsibility for decisions involving deep considerations of justice, public safety and cost is vested in a board legally and scientifically unequipped to justify *any* policy towards less serious offenders

As a result, California general parole policy, reflecting emotion, not facts, has become increasingly conservative, punitive and expensive

Median time served has increased from 24 months in 1960 to 30 months in 1966:

Between 1959 and 1965 early returns to prison for parole violations doubled,[77] while commitments for *new* felony offenses remained the same

[69] California Department of Justice, Bureau of Criminal Statistics (15), p 41
[70] California Youth and Adult Corrections Agency (26), p 67
[71] California Youth and Adult Corrections Agency (27), pp 68, 69
[72] California Youth and Adult Corrections Agency (27), pp 68, 69
[73] Institute for the Study of Crime and Delinquency (45), p 78
[74] California Youth Authority (30), pp 1 and 2
[75] Sutherland and Cressey (65), p 660
[76] A letter requesting a statement of parole decision criteria was addressed to the Adult Authority by the Criminal Procedure Committee in October 1967 It was not answered See Appendix Item E 3
[77] From 4 1 percent to 9 5 percent Department of Corrections (11)

Without legislative direction, the parole board is required—or feels required—to establish "eligibility" and "ineligibility" criteria for each parole release decision [78]

Their ineligibility criteria consist of actual evidence of past commission of serious crimes It is apparently the social consensus that personal violence is a far more serious matter than property crimes. Therefore, in the absence of accurate predictive tools, the aggressive *history of an individual* is a reasonable, though imperfect, basis for decision about his release or nonrelease into the community

Their *eligibility* criteria consist of evidence of past "good behavior" in institutions (a criterion rejected by many authorities) plus parole board "knowledge" of the personal situation to which the parolee is about to be released, e g , the presence of family and friends or the existence of employment possibilities *This evidence is conjectural in a way the ineligibility criteria are not* It consists of guesses about future situations and guesses about the parolee's responses to them. It is partly based upon practical considerations—that a man without a job is more likely to commit a crime —and partly based upon a welter of unvalidated psychological theory

Eligibility criteria are extremely vague When applied to lesser offenders they cannot distinguish between individuals either with justice or with practicality They encourage maximum impact of parole board or public mood upon parole decisions

Some correctional systems in recent years have given earlier release to larger classes of offenders. Such parolees have consistently done as well or better than those held longer [79]

Since available evidence indicates that fear of apprehension, conviction and loss of freedom are among the prime deterrents to crime, and *not* imprisonment of any particular length, the direct implication of the increasingly successful use of probation and early parole is that most of the lesser offenders presently imprisoned could be released immediately without serious consequences

The fact that *some* parolees will inevitably again commit crimes, including serious crimes, appears to be the basis of most social and governmental opposition to more lenient parole policies The State of California Special Commission on Insanity and Criminal Offenders (report of July 7, 1962, p. 39) faced this problem squarely

> The only way to assure that no danger will result is not to release anyone This would be intolerable not only as a matter of public policy and constitutional law, but as a matter of public economy Furthermore, not only must calculated risks be taken, but simple mistakes will be made in particular cases These risks and these mistakes are an inevitable part of custodial administration

Calculations of the actual size of the impact of parolee crime also suggest that the consideration of public safety perhaps need not or cannot be the controlling element in parole policy

Approximately 6,000 to 7,000 prisoners are paroled each year in California, some being offenders with serious records Ten to fifteen percent are returned with new felony convictions within 1 to 2 years after release This contributes perhaps 900 offenses to the 400,000 felonies reported annually About 105 of these are likely to be crimes resulting in serious personal injury [80]

If larger numbers of *lesser* offenders were released much earlier to adequate parole supervision, it is most probable that the effect on total crime, including violent crime, would be insignificant (See page 53 regarding success of intensive supervision)

Eligibility criteria, because they are highly imperfect, should not be the basis of government decisions involving the expenditures of considerable sums of public money and the future lives of lesser offenders

*In*eligibility criteria, while not perfect, offer an objective guide to parole board members

These criteria can be defined by statute If this were done, the parole board would not be required to interpret legislative intent, the critical factors would be disclosed by the inmates' previous history.

> Thus, a case which had low public concern for risk could be considered for release almost immediately following minimum legal eligibility (At present, virtually no adult felons are released at the point of minimum legal eligibility though *the Legislature in setting minimum limits presumably expected cases to receive such consideration*) [81]

Moreover, a release policy based solely upon criteria of *in*eligibility determined by positive evidence of serious criminality is a logical extension of the probation policy strongly recommended by the American Bar Association· "A sentence *not* involving confinement is to be preferred to a sentence involving partial or total confinement *in the absence of affirmative reasons to the contrary* " [82]

The decision to base nonrelease solely upon positive evidence of serious criminality would have the following effects

1 Relieve the Adult Authority of responsibility for decisionmaking on arbitrary or controversial bases

2 Increase considerably the number of parolees established in the community at $500–$770 per year instead of retaining them in nonrehabilitative state prisons at a cost of more than $2,600 per year

3 Counteract the cumulative effects of inconsistencies between court sentencing and release processes

4 Make possible the reallocation of up to $30 million annually from prison expenditures to more effective crime control efforts [83]

[78] See Special Intensive Parole Criteria (Appendix Item E 1) and Adult Authority Statement (Appendix Item E 2)

[79] See pages 27 through 31 and 53, 54

[80] Although no comprehensive statistics are available, there is evidence that approximately 1 5 percent of *all* parolees commit serious violence within the first year of release

[81] California Youth and Adult Corrections Agency (27), p 71

[82] American Bar Association (1), p 64

[83] This conclusion is based on the application of the cost ratio described in (2) above to a rough estimate of the number of nonviolent offenders presently incarcerated

The basis of legislative direction of parole policy should be *All offenders shall be released to parole at the expiration of statutory minimum parole-eligible period except those convicted of willful homicide, aggravated assault, forcible rape, and other specified crimes of serious personal violence, and those with histories of professional criminality or habitual extreme violence*

B. COMMENCE TRANSFER OF SAVINGS FROM STATE CORRECTIONS TO PAROLE SUPERVISION, IMPROVEMENTS IN LOCAL LAW ENFORCEMENT, AND INCREASES IN STATEWIDE TECHNICAL CRIME CONTROL CAPABILITY

Depending upon the speed of implementation of a new parole policy, state prison costs could be reduced by approximately $30 million yearly by 1971.

1 Increased parole supervision would absorb at least one-quarter of these savings [84]

The remainder should be used to subsidize improvements in local law enforcement and technical capability.

More than conventional, technical police training is required to meet new kinds of crime problems

2. The structure and traditional roles of present law enforcement agencies are not adequate to meet the pressures of modern urban society

The population continues to shift from rural into urban areas and concentrations of low-income or unemployed people continue to grow

Besides the increases in individual crime that accompany increasing urbanization, local police must now cope with the consequences of civil disorder caused by communal or generational rejections of traditional law and traditional civil morality. Conventional police suppressive measures have often aggravated these disorders, according to the President's Commission on Civil Disorder

3 The state should further support the statewide Criminal Justice Information System

Given the large number of felonies, and the relatively small number of arrests and convictions accomplished each year, it is clear that many skillful criminals are in the community

Local police and court functions require instant or rapid access to statewide information on gun records, stolen property records, modus operandi records, fingerprint records, outstanding warrants, individual criminal records, case records, etc [85]

At present such information is usually obtained, if at all, by manual searches through incomplete files

4 The state should further support the California Crime Technological Research Foundation This foundation was created by the 1967 Legislature to coordinate basic research into the nature of crime, criminals, and methods of detection, apprehension, and treatment The budget allocation for this foundation is only $50,000

C CANCEL FURTHER CAPITAL OUTLAY FOR LARGE PRISONS.

The Department of Corrections has requested $29 million for the construction of a new 2,400-man medical correctional institution near San Diego,[86] but it appears that only 600 "beds" are intended for medical cases

Considering that all authorities recommend minimal use of traditional institutionalization, and that the State of California has already invested considerable money in correctional institutions of uncertain value, further investment in large institutions at this time is not justified

D. CLOSE SAN QUENTIN

This institution will soon require the expenditure of $20–30 million to bring it up to minimal standards of adequacy [86]

Before such a great capital outlay for the remodeling of a large institution of this type is authorized, the Legislature should consider the following points:

a The expert opinions cited in Section III-B (1. and 2) of this report [87] unanimously oppose such large institutions on the grounds that placing large numbers of offenders together in an atmosphere of institutional isolation from the community maximizes the destructive effects of incarceration

b A practical alternative would be investment—in this case—in small facilities truly convenient to employment opportunities, to make the implementation of work furlough programs, etc , physically possible

c Inmates requiring maximum security custody could be transferred to Folsom or Deuel Vocational Institution This solution might be contingent upon a reduction of total prison population Means to accomplish this reduction are also suggested in this report in Section V-A

E. SUBSIDIZE LOCAL CUSTODY AND LOCAL REHABILITATIVE FACILITIES.

Funds presently intended for state institution capital outlay should be used to improve local jails and establish small specialized facilities for offenders who would otherwise be sent to large state prisons. The Youth and Adult Corrections Agency recommends minimal use of state institutions and increased use of short-term local custody when probation or parole supervision is not possible [88]

Considerable expenditure would be necessary to bring local jails up to minimum physical standards. Increased staffing would also be necessary to supervise work furlough programs and other efforts at reestablishment of offenders that only community custody makes possible

The status of some of these programs is experimental but the possible gains in reductions of net

[84] This assumes maintenance of the prison costs ($2,600 per year) to parole cost ($500–$770 per year) ratio previously mentioned

[85] California Department of Justice (20), pp 2, 3

[86] California Legislature (25), pp 872–873

[87] The American Bar Association, the President s Crime Commission, and numerous qualified individuals See also the description of San Quentin in Appendix Item H 2

[88] California Youth and Adult Corrections Agency (26), pp 152a, 180–182

public expense (savings in costs of maintenance, welfare costs for dependents, etc) are high

The state should therefore take positive action to encourage local retention of prisoners

F. REQUIRE PRIVATE CITIZENS AND LOCAL GOVERNMENTS TO ACCEPT RESPONSIBILITY FOR MECHANICAL DETERRENTS.

The use of a $600 million state and local criminal justice system to counter the effects of irresponsible lack of caution on the part of private citizens is not a proper use of public money.

1. Automobile Locks

No automobile should be sold in California after 1970 unless its ignition lock prevents shutting off the motor without removal of the key. Almost one-half of the cars stolen in California each year—40,000—have the keys left in the ignition [89] Other immobilization devices are possible.

2. Checking Account Restrictions

The opening of checking accounts without a reasonable deposit and a credit investigation should be prohibited According to the Retail Credit Association, the cost of an effective credit investigation is $1

3 Civil Prosecution of Insufficient Funds Offenses

Insufficient funds offenses should be prosecuted civilly (True forgery offenses should remain in the Penal Code)

4. Improve Residential Building Codes

Building code standards should require the installation of adequate locks and lighting The estimated cost for a 1,500-square-foot house is not more than $150.

5. Improve Area Safety Standards

Local law enforcement agencies should be empowered to enforce adequate lighting and access standards within their jurisdictions

[89] U S Department of Justice (85), p 4

MODEL LEGISLATION

An act to add Sections 3042 5 and 5003 3 to, and to add Article 3 3 (commencing with Section 3070) to Chapter 8) of Title 1 of Part 3 of, the Penal Code, relating to crime control, and making an appropriation therefor.

The people of the State of California do enact as follows:

SECTION 1 This act shall be known and may be cited as the Crime Control Act of 1968

SEC 2 The Legislature declares

That the magnitude of crime in this state, the extent of its human and economic consequences, and the mobility of criminals make crime a matter of statewide concern,

That effective crime control depends upon the quality of local law enforcement and local rehabilitation of offenders, and

That, therefore, the public safety will be better served by allocating funds previously devoted to the extended maintenance of nonviolent in state prisons to local supervision of offenders and improvements in county and city law enforcement

SEC 3 Section 3042 5 is added to the Penal Code, to read

3042 5 (a) It shall be the policy of the State of California that every state prisoner committed to the jurisdiction of the Director of Corrections who has not previously been paroled pursuant to his current sentence shall be released on parole at his minimum parole eligibility date unless (1) he is within the provisions of subdivision (e) or (2) the Adult Authority or the California Women's Board of Terms and Parole, as the case may be, has reasonable grounds for belief that the prisoner has twice committed acts inflicting great bodily harm on others or has twice attempted to commit acts likely to inflict such harm or (3) the authority or the board possesses substantial evidence that the offender, if released, will immediately commit acts inflicting great bodily harm on others

(b) Between January 1, 1969, and June 30, 1969, the authority or the board and the Director of Corrections shall review the case of any prisoner who became eligible for parole, by reason of expiration of his minimum parole eligibility period, prior to January 1, 1969, to determine whether by the standards of subdivision (a) of this section, he shall be granted parole If the authority or board finds that by such standards, parole is required, it shall promptly grant such prisoner his parole

(c) Between January 1, 1969, and December 31, 1969, the authority or the board and the Director of Corrections shall complete review proceedings for all prisoners eligible for parole by reason of expiration of their minimum parole eligibility periods during that year

(d) If the authority or the board concludes that a prisoner falls within any of the three categories defined in subdivision (a) as ineligible for parole at the expiration of his minimum parole eligibility period, and therefore declines to grant parole to that prisoner immediately upon expiration of such minimum period, it shall state in detail in writing the evidence that constitutes the grounds for its conclusion and shall furnish a copy of such writing to the prisoner

(e) This section does not apply to any prisoner convicted at any time of murder, voluntary manslaughter, mayhem, kidnapping, rape by force or violence or threat of great and immediate bodily harm, first-degree robbery, or a violation of Section 216, 217, 217 1, 218, 219, 220, 226, 244, 245, 246, or 278.

SEC 4 Article 3 3 (commencing with Section 3070) is added to Chapter 8 of Title 1 of Part 3 of the Penal Code, to read.

Article 3 3. Prison Cost Savings

3070 The director shall annually determine and report to the Governor and the Legislature the amount of "prison cost savings," as defined in subdivision (c) of Section 3071, during the preceding fiscal year and estimated "prison cost savings" for the current fiscal year and the next fiscal year

3071 (a) The state shall maintain the level of state appropriations for the institutional portion of the Department of Corrections at the level of expenditure of the 1967–68 fiscal year, adjusted annually thereafter on the basis of the average annual increase in institutional costs during the period 1959–1968. Average annual increase shall be computed by a for-

APPENDIX ITEM A 1—Federal Bureau of Prisons

Median Time Served, by Offense, by First Releases With Sentences of One Year or Longer, by State: 1964 (excludes Alaska and New Jersey)

Region and state	Total released	Median time served (in months)[a]	Median time served, by offense[b]: Homicide	Robbery	Sex offenses	Assault	Burglary	Forgery fraud and embezzlement	Auto theft	Other larceny	Drug laws	Other offenses
United States	68,188	21 0	48 5	36 1	31 4	21 3	20 1	17 1	17 9	16 5	32 8	14 1
NORTHEAST	8,343	24 2	51 1	32 4	27 7	23 1	23 1	20 1	20 3	21 7	24 0	17 6
Maine	451	10 5	22 8	42 0	18 9	10 0	10 8	11 8	7 4	7 4	--	9 8
New Hampshire	91	9 0	--	7 2	26 0	--	10 0	--	--	--	--	--
Vermont	180	10 4	--	--	34 5	9 9	12 3	9 6	6 7	9 0	--	7 4
Massachusetts	754	17 9	32 3	18 3	17 0	21 9	19 6	17 7	15 8	15 5	18 8	14 0
Rhode Island	113	17 2	--	28 5	19 8	--	15 5	--	--	--	--	16 3
Connecticut	800	15 6	54 0	23 7	18 0	14 7	15 7	16 4	12 0	10 7	16 8	11 0
New York	4,371	26 9	45 4	34 9	32 8	25 2	26 0	22 9	26 3	22 4	24 0	25 6
Pennsylvania	1,583	32 1	c	35 6	34 0	28 4	30 5	30 0	25 3	27 6	32 5	21 3
NORTH CENTRAL	18 078	20 3	53 0	36 4	29 2	22 1	20 2	17 1	17 8	16 2	28 0	14 2
Ohio	3,413	24 0	46 2	42 1	33 8	32 5	19 8	17 5	27 6	19 9	28 1	15 8
Indiana	1,205	23 8	c	c	c	41 0	23 0	21 5	17 6	18 9	32 0	18 8
Illinois	2,854	28 7	c	35 2	42 9	17 8	26 8	21 8	30 3	11 3	30 6	10 2
Michigan	3,606	18 1	43 4	30 2	28 1	18 0	18 0	15 8	14 0	15 3	25 5	16 1
Wisconsin	1,283	14 1	36 0	29 3	11 1	15 0	15 1	13 9	12 5	14 4	17 3	10 7
Minnesota[d]	662	31 1	c	47 3	45 2	32 7	25 1	28 9	28 7	28 0	--	29 3
Iowa	853	23 2	51 0	42 0	26 1	8 2	25 7	26 2	21 3	23 0	20 0	9 8
Missouri	1,948	17 2	45 6	34 2	27 5	20 0	17 1	14 8	16 2	14 4	24 5	13 9
North Dakota	141	13 3	--	--	12 0	--	14 6	11 5	--	--	--	--
South Dakota	382	12 8	--	--	33 0	--	15 3	11 1	--	10 3	--	10 2
Nebraska	851	15 1	15 9	32 6	17 5	16 1	16 0	14 4	15 4	14 3	--	8 5
Kansas	880	22 9	c	44 0	38 6	32 7	27 6	18 8	37 4	19 0	--	14 5
SOUTH	30,874	19 3	48 0	36 4	32 5	18 4	19 2	16 1	16 5	14 7	30 7	12 3
Delaware	95	15 7	--	24 0	--	--	17 5	--	--	8 3	--	--
Maryland	2,557	15 0	39 6	34 9	21 8	11 3	14 9	12 1	1 0	10 3	31 5	14 6
District of Columbia	612	33 4	c	38 1	35 3	28 7	32 8	24 2	22 5	18 0	51 0	24 9
Virginia	1 751	24 0	40 3	52 9	36 0	20 6	22 5	23 7	19 1	19 1	34 3	13 3
West Virginia	508	25 4	c	c	c	31 7	20 7	32 5	--	19 0	--	25 2
North Carolina[e]	2,648	20 2	49 6	32 5	43 7	24 8	18 0	14 7	17 1	16 0	--	14 2
South Carolina	969	17 8	44 7	39 2	21 0	17 7	21 3	15 8	8 7	16 0	--	8 6
Georgia	2,809	20 4	46 9	29 7	35 6	16 4	20 9	17 8	15 4	16 7	--	12 9
Florida[e]	2,929	24 1	50 6	33 9	34 8	22 7	23 7	19 6	19 8	17 7	18 2	17 3
Kentucky	1,582	19 6	54 5	55 5	34 7	25 7	14 2	15 5	10 0	9 8	24 0	9 1
Tennessee	1,288	23 0	42 0	51 2	50 0	16 1	29 4	15 4	17 4	16 7	--	12 5
Alabama	2,331	16 8	c	51 2	44 3	21 2	16 6	15 2	--	12 9	--	9 0
Mississippi	821	21 7	57 6	36 0	38 7	20 6	21 2	20 3	--	19 8	--	16 0
Arkansas	991	16 9	28 5	24 6	16 3	18 0	16 9	16 5	--	11 7	--	8 0
Louisiana	1,821	22 4	33 8	36 0	28 6	24 0	20 9	17 0	20 0	15 7	54 0	20 3
Oklahoma	1,659	16 1	60 0	31 9	17 5	14 8	17 4	13 8	17 2	12 8	14 0	11 4
Texas	5,503	17 0	31 2	32 6	27 2	19 1	16 4	14 3	10 4	14 3	27 8	9 7
WEST	10,893	23 1	44 8	30 4	34 9	27 7	20 9	18 0	20 2	17 9	40 0	16 5
Montana	342	11 0	--	23 3	28 0	15 0	11 8	9 4	9 0	9 4	--	--
Idaho	262	18 2	--	24 0	30 0	16 1	18 9	17 2	--	15 0	--	14 0
Wyoming	204	15 2	--	--	27 6	--	15 7	14 4	--	13 8	--	9 0
Colorado	1,251	11 4	43 5	26 8	24 8	16 3	10 6	10 7	10 5	8 5	19 2	8 2
New Mexico	437	21 8	45 6	43 5	29 4	19 7	19 7	19 4	25 1	22 5	30 0	17 4
Arizona	835	22 0	32 0	34 6	25 7	18 9	20 4	19 2	24 0	22 7	33 6	13 2
Utah	303	22 4	--	c	34 8	26 4	21 2	21 1	--	22 5	--	16 0
Nevada	205	10 1	39 0	25 0	38 4	20 0	16 2	17 2	--	14 3	--	c
Washington	784	21 6	30 0	34 2	24 5	29 6	21 6	20 2	20 2	19 7	--	18 0
Oregon	877	17 0	39 0	31 6	40 0	21 0	16 5	15 9	13 4	15 3	13 8	16 4
California	5,287	29 6	51 2	42 0	39 7	36 1	24 8	20 2	23 3	20 9	41 1	21 7
Hawaii	106	39 0	--	48 0	34 0	--	42 0	32 4	--	--	--	--

[a] Medians in this table differ from those in other tables due to the use of different group-intervals in computing the data
[b] Median is in months Median not shown where number of cases is less than 10
[c] Median is higher than 180 months
[d] Figures include V-discharges Minnesota Youth Act cases are excluded
[e] Figures include V-discharges
Source (83)

mula based on relevant factors such as, but not limited to

(1) Wholesale price index

(2) Wage index

(3) Proportion of the population in the State of California in the 15 to 30 age group

(b) Actual expenditures for operational costs for the institutional portion of the department shall not exceed the total costs as fixed by the Legislature in the Budget Act each year

(c) "Prison cost savings" for any fiscal year shall be the difference between the state appropriations for the institutional portion of the Department of Corrections for such year as determined pursuant to subdivision (a) and the actual costs for such year as determined pursuant to subdivision (b).

3072 At the close of the 1968–69 fiscal year, and at the close of each fiscal year thereafter, the Controller shall, on the order of the Director of Corrections, transfer to the Crime Control Fund any unexpended funds in the appropriation for support of the Department of Corrections that constitute "prison cost savings"

3073 (a) There is in the State Treasury the Crime Control Fund, in which shall be deposited any funds transferred thereto pursuant to Section 3072.

APPENDIX ITEM A 2—Federal Bureau of Prisons

Average Time Served by Felony First Releases, by State, 1964

State	Number of felony first releases	Median time served, in months (0 5 10 15 20 25 30 35 40)
HAWAII	106	
DIST. OF COLUMBIA	612	
PENNSYLVANIA	1,583	
MINNESOTA	662	
CALIFORNIA	5 287	
ILLINOIS	2,854	
NEW YORK	4,371	
WEST VIRGINIA	508	
FLORIDA	2,929	
OHIO	3,413	
VIRGINIA	1,751	
INDIANA	1,205	
IOWA	853	
TENNESSEE	1,288	
KANSAS	880	
LOUISIANA	1,821	
UTAH	303	
ARIZONA	835	
NEW MEXICO	437	
MISSISSIPPI	821	
WASHINGTON	784	
UNITED STATES	68,188	
GEORGIA	2,809	
NORTH CAROLINA	2,648	
KENTUCKY	1,582	
NEVADA	205	
IDAHO	262	
MICHIGAN	3,606	
MASSACHUSETTS	754	
SOUTH CAROLINA	969	
MISSOURI	1,948	
RHODE ISLAND	113	
TEXAS	5,503	
OREGON	877	
ARKANSAS	991	
ALABAMA	2,331	
OKLAHOMA	1,659	
DELAWARE	95	
CONNECTICUT	800	
WYOMING	204	
NEBRASKA	851	
MARYLAND	2,557	
WISCONSIN	1,283	
NORTH DAKOTA	141	
SOUTH DAKOTA	382	
COLORADO	1,251	
MONTANA	342	
MAINE	451	
VERMONT	190	
NEW HAMPSHIRE	91	

Source (83)

(b) The Crime Control Fund is continuously appropriated in accordance with the following provisions Annually, on order of the Director of Corrections·

(1) The Controller shall transfer 30 percent of such fund to the Department of Corrections for support of parole activities for improving the level of services,

(2) The Director of Corrections shall allocate to all counties and cities applying therefor, and whose applications have been approved by the California Council on Criminal Justice pursuant to Section 3074, each in proportion to its population, a total of 60 percent of such fund, such allocated moneys to be used for technical improvements in detection of crime, apprehension of criminals, and collection of evidence of criminal responsibility, for improved training of peace officers, or for increasing the number of peace officers, or for any combination thereof

(3) Five percent shall be transferred by the Controller to the Department of Justice for support of the criminal justice information systems

(4) Five percent shall be transferred by the Controller to the Crime Technological Research Foundation.

(c) The director may adopt rules and regulations to implement this section

3074 Any application by a county or city for allocation of funds pursuant to Section 3073 shall be reviewed by the California Council on Criminal Justice to determine whether, if funds are allocated, they will be expended for one or more of the purposes described in paragraph (2) of subdivision (b) of that section If the council finds that such is the case, it shall approve the application and so advise the Director of Corrections

SEC 5 Section 5003 3 is added to the Penal Code, to read

5003 3 To reflect the reduction in prison population resulting from the operation of Section 3042 5, the director shall, whenever, and as soon as, such reduction permits, consistent with good standards of occupancy, reduce the number of prisons in the state prison system

SEC 6 This act shall become operative on January 1, 1969

APPENDIX ITEM B 1—Department of Justice, Bureau of Criminal Statistics

Felony Crimes Reported, 1966

Offense	1966	
	Number	Rate per 100,000
Total (7 major offense groups)	418,967	2,182 7
Crimes of personal violence	56,942	296 7
Willful homicide	897	4 7
Robbery	22 315	116 3
Aggravated assault	29,652	154 5
Forcible rape	4,078	21 3
Property crimes	362,025	1,886 0
Burglary	234 535	1,221 9
Grand theft, except auto	40,561	211 3
Auto theft	86,929	452 9

Source (15)

APPENDIX ITEM B 2—Department of Justice, Bureau of Criminal Statistics

Felony Crimes Cleared, 1966

Offense	1966	
	Number of crimes cleared	Ratio of clearances to total crimes reported
Total (7 major offense groups)	104,406	24 9
Crimes of personal violence	29,289	51 4
Willful homicide	767	85 5
Robbery	7,082	31 7
Aggravated assault	19,136	64 5
Forcible rape	2,304	56 5
Property crimes	74,485	20 6
Burglary	47,851	20 4
Grand theft, except auto	7 493	18 5
Auto theft	19,141	22 0

Source (15)

APPENDIX ITEM B 3—Department of Justice, Bureau of Criminal Statistics

Police Dispositions of Adult Felony Arrests, 1966

By Type of Disposition with Separate Totals for Offense Groups

Offense	Total arrested	Police disposition of arrests				Percentage of total arrests			
		Released	Other jurisdiction	Misdemeanor complaint filed	Felony complaint filed	Released	Other jurisdiction	Misdemeanor complaint filed	Felony complaint filed
Total	114,283	27,599	6,939	19,596	60 149	24 1	6 1	17 1	52 6
Homicide	1,297	261	63	72	901	20 1	4 9	5 6	69 5
Robbery	9,445	3,492	534	1,189	4,230	37 0	5 7	12 6	44 8
Aggravated assault	14,686	3,494	244	5,438	5 510	23 8	1 7	37 0	37 5
Burglary	24,312	6,604	1,199	4 510	11,999	27 2	4 9	18 6	49 4
Grand theft, except auto	9,284	2,249	508	1,563	4,964	24 2	5 5	16 8	53 5
Auto theft	11,106	3,100	1,944	1 043	5 019	27 9	17 5	9 4	45 2
Forgery and checks	9,281	819	652	1,260	6 550	8 8	7 0	13 6	70 6
Rape	2,889	718	85	349	1,737	24 9	2 9	12 1	60 1
Other sex offenses	3,309	340	53	411	2,505	10 3	1 6	12 4	75 7
Drug law violations	19,403	5 309	1,125	2,107	10 862	27 4	5 8	10 9	56 0
All other	9,271	1,213	532	1,654	5,872	13 1	5 7	17 8	63 3

Source (15)

APPENDIX ITEM B 4—Department of Justice, Bureau of Criminal Statistics

Disposition of Felony Defendants In California Superior Courts, 1966

By Offense at Point of Disposition and Type of Disposition

Offense	Total disposition	Total defendants	Dismissed and off calendar, further prosecution	Total less dismissed and off calendar, further prosecution	Disposed of without conviction					Convicted					
						Dismissed and off calendar, no further prosecution	Acquitted								
							By jury	By court					By court		
								Trial	On transcript		On plea of guilty	By jury	Trial	On transcript	Percent convicted
Total	40,832	38,401	697	37,704	5,704	2,919	692	873	1,220	32,000	23,089	2,236	2,147	4,528	94 9
Murder	366	358	29	329	99	39	28	23	9	230	102	95	25	8	69 9
Manslaughter	237	237	3	234	18	6	6	2	4	216	136	35	23	22	92 3
Manslaughter, vehicle	163	160	4	156	20	8	8	2	2	136	89	23	6	18	87 2
Robbery	2,155	1,977	40	1,937	323	147	60	60	47	1,614	1,045	345	119	105	83 3
Assault	2,956	2,862	90	2,772	422	186	80	79	68	2,350	1,523	244	225	358	84 8
Burglary	7,039	6 541	155	6,386	857	462	119	123	153	5 529	4 275	405	303	546	86 6
Theft, except auto	3,715	3,556	33	3,523	358	207	56	40	55	3,165	2,337	142	155	531	89 8
Auto theft	3 072	2,852	47	2,805	292	114	30	32	86	2 513	2,034	73	96	310	89 6
Receiving stolen property	1,276	1,201	13	1 188	176	103	19	17	37	1,012	772	46	55	139	85 2
Forgery and checks	4,604	4,389	45	4,344	349	215	27	30	77	3,995	3,522	109	95	269	92 0
Rape	369	341	8	333	130	48	42	31	9	203	111	51	27	14	61 0
Statutory rape	593	576	13	563	90	40	11	28	11	473	382	10	32	49	84 0
Lewd and lascivious conduct	822	811	24	787	174	69	49	38	18	613	442	58	67	46	77 9
Sex perversion	486	476	18	458	32	14	6	2	10	426	291	22	34	79	93 0
Other sex offenses	493	473	12	461	48	29	6	5	8	413	261	25	36	91	89 6
Drug law violations	7,240	6,721	111	6,610	1,743	886	76	307	474	4,867	2,867	334	603	1,063	73 6
Deadly weapons	590	554	6	548	78	43	6	11	18	470	339	33	35	63	85 8
Drunk driving	539	533	4	529	33	21	8	1	3	496	382	27	20	67	93 8
Failure to render aid	248	242	4	238	28	17	2	4	5	210	146	10	13	41	88 2
Escape	802	730	8	722	27	17	4	4	2	695	644	26	16	9	96 3
Bookmaking	1,069	976	1	975	178	71	--	15	92	797	510	7	34	246	81 7
Contributing	244	244	--	244	--	--	--	--	--	244	173	13	25	33	100 0
All other	1,664	1,591	29	1,562	229	147	31	19	32	1,333	706	103	103	421	85 3

Source (15)

APPENDIX ITEM B 5—Department of Justice, Bureau of Criminal Statistics

Commitments Of Felony Defendants Convicted In California Superior Courts, 1966

By Convicted Offense and Type of Sentence

Convicted offense	Total	Civil commitment		Criminal commitments												
		CRC	Mental Hygiene	Total less civil commitment	Department of Corrections		Youth Authority	Probation					Jail	Fine	Percent			
					Death	Prison		Total	Felony		Misdemeanor				Department of Corrections	Probation	Jail	All other
									Straight	With jail	Straight	With jail						
Total	32,000	961	350	30,689	20	6,711	1,831	16,754	5 395	5,678	4,498	1,193	4,777	596	21 9	54 6	15 6	7 9
Murder	230	--	--	230	a17	a210	1	2	--	2	--	--	--	--	98 7	0 9	--	0 4
Manslaughter	216	--	--	216	--	110	9	97	44	51	2	--	--	--	50 9	44 9	--	4 2
Manslaughter, vehicle	156	--	--	136	--	15	4	106	18	40	31	17	11	--	11 0	78 0	8 1	2 9
Robbery	1,614	27	--	1 587	--	983	225	371	69	292	5	5	8	--	61 9	23 4	0 5	14 2
Assault	2 350	--	7	2,343	1	368	113	1,365	297	364	536	168	457	39	15 7	58 3	19 5	6 5
Burglary	5,529	187	15	5,327	--	1,300	483	2,539	813	1,112	435	179	996	9	24 4	47 7	18 7	9 2
Theft except auto	3,165	48	1	3,116	--	377	135	1,737	496	460	617	164	538	29	12 1	55 7	26 9	5 3
Auto theft	2,513	20	4	2,489	--	360	340	1 115	299	381	313	122	653	21	14 5	44 8	26 2	14 5
Receiving stolen property	1,012	16	--	996	--	122	52	620	159	223	161	47	197	5	12 2	62 3	19 8	5 7
Forgery and checks	3,995	101	--	3,894	--	893	99	2,330	910	863	425	132	563	9	22 9	59 8	14 5	2 8
Rape	203	1	19	183	--	83	16	71	20	45	6	--	12	1	45 3	18 8	6 6	9 3
Statutory rape	473	--	10	463	--	31	23	378	90	94	128	26	85	6	6 7	73 0	14 0	6 3
Lewd and lascivious conduct	613	3	173	437	--	164	4	266	199	62	4	1	2	1	37 5	60 9	0 5	1 1
Sex perversion	426	2	36	388	--	36	--	288	87	13	181	7	24	40	9 3	74 2	6 2	10 3
Other sex offenses	413	1	59	353	--	77	3	236	73	37	102	24	31	6	21 8	66 9	8 8	2 5
Drug law violations	4,867	542	4	4,321	--	876	247	2,957	1,263	1,188	400	106	223	18	20 3	68 4	5 2	6 1
Deadly weapons	470	2	--	468	--	91	8	247	92	63	82	10	100	22	19 4	52 8	21 4	6 4
Drunk driving	496	1	--	495	--	18	4	417	102	152	122	41	48	8	3 7	84 2	9 7	2 4
Failure to render aid	210	--	--	210	--	6	7	168	42	56	49	19	27	4	2 9	79 0	12 9	5 2
Escape	695	5	--	690	--	432	32	54	14	31	5	4	172	--	62 6	7 8	24 9	4 7
Bookmaking	797	--	--	797	--	5	--	429	122	23	279	5	57	306	0 9	53 6	7 1	38 4
Contributing	244	--	17	227	--	--	3	180	--	--	139	41	43	1	--	79 3	18 9	1 8
All other	1,333	5	5	1 323	2	154	23	823	148	126	476	75	250	71	11 8	62 2	18 9	7 1

a Two defendants received death sentences as the result of appeals from prior year death sentences and one defendant received a prison commitment from a similar appeal
Source (15)

APPENDIX ITEM B 6—Department of Justice, Bureau of Criminal Statistics

Commitments Of Felony Defendants Convicted In California Superior Courts, 1966

By Area of State, County, and Type of Sentence

Area and county	Total	Civil commitment		Criminal commitments												
								Probation						Percent		
					Department of Corrections				Felony		Misdemeanor					
		CRC	Mental Hygiene	Total less civil commitment	Death	Prison	Youth Authority	Total	Straight	With jail	Straight	With jail	Jail	Fine	Department of Corrections	Probation	Jail	All other
Total	32,000	961	350	30,689	20	6,711	1,831	16,754	5,385	5,678	4,498	1,193	4,777	596	21 9	54 6	15 6	7 9
Southern California																		
Los Angeles	16,005	567	163	15,275	7	2,636	1,019	8,466	2,608	2 160	3,061	637	2,642	505	17 3	55 1	17 3	10 0
Orange	987	25	32	930	1	274	48	477	70	318	38	51	126	4	29 6	51 3	13 5	5 6
San Diego	1 583	28	26	1,529	1	432	48	1,007	418	413	117	29	25	16	28 3	65 9	1 6	4 2
Imperial	175	8	1	166	--	45	16	84	36	19	24	5	21	--	27 1	50 6	12 7	9 6
Riverside	797	7	9	781	2	228	57	395	109	148	104	34	91	8	29 4	50 6	11 7	8 3
San Bernardino	1,005	24	11	970	--	337	52	440	278	41	116	5	137	4	34 7	45 4	14 1	5 8
Santa Barbara	293	11	2	280	--	82	21	104	55	16	28	5	66	7	29 3	37 1	23 6	10 0
Ventura	424	17	12	395	2	94	32	184	61	89	18	16	80	3	24 3	46 6	20 2	8 9
San Francisco Bay																		
Alameda	1,401	35	14	1,352	--	239	61	886	387	270	199	30	156	10	17 7	65 5	11 5	5 3
San Francisco	1,729	102	3	1,624	--	169	61	1,096	278	455	279	84	292	6	10 4	67 5	18 0	4 1
Santa Clara	920	17	6	897	[a]2	124	35	501	129	258	69	45	223	12	14 0	55 9	24 9	5 2
Contra Costa	572	16	4	552	1	125	32	350	172	135	39	4	41	3	22 8	63 4	7 4	6 4
Marin	142	4	1	137	3	39	2	80	13	51	8	8	13	--	30 6	58 4	9 5	1 5
Napa	76	3	4	69	--	18	2	43	3	18	12	10	6	--	26 1	62 3	8 7	2 9
San Mateo	474	20	5	449	--	80	19	300	51	149	60	40	47	3	17 8	66 8	10 5	4 9
Solano	141	2	--	139	--	[a]42	7	79	39	8	27	5	10	1	30 2	56 8	7 2	5 8
Sonoma	215	1	1	213	--	58	13	88	13	47	14	14	53	1	27 2	41 3	24 9	6 6
Balance of state																		
San Joaquin Valley																		
Fresno	573	24	2	547	[a]1	187	36	301	38	219	20	24	22	--	34 4	55 0	4 0	6 6
Kern	304	--	2	302	--	120	18	127	37	68	15	7	37	--	39 7	42 1	12 2	6 0
Kings	73	--	1	72	--	21	5	26	13	9	4	--	20	--	29 2	36 1	27 8	6 9
Madera	64	2	--	62	--	7	2	36	9	16	6	5	17	--	11 3	58 1	27 4	3 2
Merced	109	--	1	108	--	18	10	62	5	44	9	4	18	--	16 7	57 4	16 7	9 2
San Joaquin	476	11	7	458	--	139	29	179	84	66	12	17	110	1	30 3	39 1	24 0	6 6
Stanislaus	415	4	3	408	--	155	26	165	25	100	28	12	62	--	38 0	40 4	15 2	6 4
Tulare	270	4	8	258	--	77	12	143	26	103	6	8	26	--	29 8	55 4	10 1	4 7
Sacramento Valley																		
Sacramento	859	12	11	836	--	386	68	309	67	202	23	17	72	1	46 2	37 0	8 6	8 2
Butte	141	--	2	139	--	41	7	61	36	16	8	1	30	--	29 5	43 9	21 6	5 0
Colusa	16	--	1	15	--	4	1	5	--	4	--	1	5	--	--	--	--	--
Glenn	24	--	--	24	--	3	--	20	10	10	--	--	1	--	--	--	--	--
Placer	47	--	--	47	--	19	1	25	4	17	1	3	2	--	--	--	--	--
Shasta	142	3	--	139	--	36	8	62	17	29	8	8	32	1	25 9	44 6	23 0	6 5
Sutter	43	--	--	43	--	17	3	17	8	7	1	1	6	--	--	--	--	--
Tehama	45	--	1	44	--	25	3	16	3	12	1	--	--	--	--	--	--	--
Yolo	72	2	--	70	--	21	3	30	12	12	4	2	16	--	30 0	42 8	22 9	4 3
Yuba	56	--	--	56	--	17	5	16	9	7	--	--	18	--	30 4	28 6	32 1	8 9
Central Coast																		
Monterey	399	6	3	390	--	108	23	168	44	37	46	41	89	2	27 7	43 1	22 8	6 4
San Benito	35	--	1	34	--	3	--	24	8	4	6	6	7	--	--	--	--	--
San Luis Obispo	93	--	3	90	--	21	1	55	28	15	10	2	13	--	23 3	61 1	14 5	1 1
Santa Cruz	154	2	1	151	--	40	11	89	42	28	16	3	10	1	20 5	58 9	6 6	8 0
North Coast and Mountain																		
Alpine	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Amador	9	--	--	9	--	7	--	1	1	--	--	--	1	--	--	--	--	--
Calaveras	24	--	--	24	--	13	--	7	2	2	3	--	4	--	--	--	--	--
Del Norte	33	--	1	32	--	11	--	14	5	2	7	--	7	--	--	--	--	--
El Dorado	36	--	--	36	--	5	3	19	11	8	--	--	8	1	--	--	--	--
Humboldt	138	1	1	136	--	56	15	29	15	7	6	1	35	1	41 2	21 3	25 7	11 8
Inyo	27	--	--	27	--	13	--	9	5	2	1	1	4	1	--	--	--	--
Lake	35	--	--	35	--	14	--	21	14	5	1	1	--	--	--	--	--	--
Lassen	30	--	--	30	--	23	--	4	2	2	--	--	3	--	--	--	--	--
Mariposa	7	--	--	7	--	1	1	5	--	--	4	1	--	--	--	--	--	--
Mendocino	104	1	2	101	--	18	5	35	13	9	13	--	41	2	17 8	34 7	40 6	6 9
Modoc	16	--	1	15	--	7	--	8	4	4	--	--	--	--	--	--	--	--
Mono	9	--	--	9	--	3	--	5	3	2	--	--	1	--	--	--	--	--
Nevada	40	1	1	38	--	15	7	12	6	1	5	--	4	--	--	--	--	--
Plumas	22	--	1	21	--	3	--	13	4	2	6	1	5	--	--	--	--	--
Sierra	1	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Siskiyou	64	--	1	63	--	11	3	36	19	6	9	2	11	2	17 5	57 1	17 5	7 9
Trinity	13	--	--	13	--	2	--	8	3	1	4	--	3	--	--	--	--	--
Tuolumne	43	1	--	42	--	22	--	12	3	5	2	2	8	--	--	--	--	--

[a] Santa Clara and Fresno Counties each had one defendant who received a death sentence as the result of an appeal from a prior year death sentence Solano County had one defendant who received a prison commitment as the result of an appeal from a prior year death sentence

Note Percentages shown only where totals show 50 or more cases

Source (15)

APPENDIX C 3—Wisconsin State Department of Public Welfare

Excerpt from A Study of the Relationship Between Time Served and Later Parole Violation Experience

FINDINGS

The findings should be used cautiously since there were only two factors out of many for which statistical controls were applied Plans being made for a later study which will control for more factors are discussed in a later part of this report

The data in Table 1 show that there was considerable variation in violation rates by length of time served Of the 22 comparisons made in this study, 19 show that the longer an offender served, the higher the violation rate

Ten of the groups compared in Table 1 consisted of offenders with *no prior felonies* In all 10 comparisons, the more months served, the higher the violation rate The differences in violation rates were found to be statistically significant for four of the larger offense groups; larceny, burglary, fraud, and auto theft This indicates that the differences were greater than would be expected by chance variations alone, but it does not provide any explanation as to why the difference occurred There was one small exception to the above general finding In the group of fraud cases with no prior felonies those who served 18 months or more had substantially the same violation rate as did those who served 12 to 17 months Thus, the two groups could well be combined

Ten of the comparisons involved offenders *with prior felony* records Seven of these groups experienced increasingly higher violation rates as the institutional stay lengthened, three of the differences being statistically significant In the three remaining comparisons, the violation rates were about the same

The direct relationship between length of incarceration and later parole violation might have been related to the following the judges may have given longer sentences, and the parole board may have deferred release longer when the more difficult cases were being considered Another possible explanation may be that prolonged stay might have had deleterious effects related to longer association with more sophisticated criminals, discouragement over not being released, and family breakup resulting from lengthy incarceration

The finding of the direct relationship between time served and higher parole violation rate is consistent with Daniel Glaser's finding for adult male federal parolees He found this true for both those who had no prior institutional commitments and those with previous institutional commitments

Source (94)

APPENDIX ITEM C 1—Pennsylvania Board of Probation and Parole

Combined Table of Parolees Released Over a 15-Year Period from June 1, 1947 to June 30, 1962

Status	Number	P C
Returned to prison	9,560	31 7
Cases closed by maximum expiration	15,415	51 1
Died on parole	546	1 8
Pardoned	16	--
Received new sentence on detainer	41	0 1
Discharged because of illegal sentence	1	--
Still active after five years	4,593	15 3
Fifteen year total	30,172	100 0

Source (57)

APPENDIX ITEM C 2—State of Washington, Department of Institutions

Parole Failures by Length of Time on Parole for Inmates Released to Parole During the 1959–1966 Fiscal Years (as of June 30, 1967)

Year paroled	Number released to parole	1–6 months		7–12 months			13–18 months			19–24 months			25–30 months			31–36 months			Total		Reinstatements on parole[b]		Adjusted total cumulative parole failures[c]	
		Parole failure		Parole failure			Parole failure			Parole failure			Parole failure			Parole failure			Parole failure					
		No	Percent	No	Percent	Cum percent	No	Percent	Cum percent	No	Percent	Cum percent	No	Percent	Cum percent	No	Percent	Cum percent	No	Percent	Abscond	Other	No	Percent
1959	773	118	15 3	104	13 5	28 8	84	10 9	39 7	22	2 8	42 5	9	1 1	43 6	6	0 8	44 4	343	44 4	75	[e]	268	34 6
1960	1,168	231	19 8	156	13 4	33 2	139	11 9	45 1	43	3 7	48 8	16	1 4	50 2	15	1 3	51 5	600	51 5	93	[e]	507	43 5
1961	1,564	358	22 8	254	16 3	39 1	166	10 6	49 7	65	4 2	53 9	50	3 2	57 1	21	1 3	58 4	914	58 4	105	[e]	809	51 6
1962	1 168	273	23 4	185	15 8	39 2	124	10 5	49 7	42	3 6	53 3	22	1 9	55 2	14	1 2	56 4	659	56 4	80	[e]	579	49 6
1963	1,226	220	17 9	149	12 2	30 1	84	6 8	36 9	51	4 2	41 1	38	3 1	44 2	25	2 0	46 2	567	46 2	20	29	518	42 3
1964	912	185	20 3	109	12 0	32 3	62	6 8	39 1	45	4 9	44 0	42	4 6	48 6	26	2 9	51 5	469	51 5	17	26	426	46 8
1965	1,093	162	14 8	187	17 1	31 9	135	12 4	44 3	77	7 1	51 4	35	3 2	54 6	11	1 0	55 6	607	55 6	25	44	538	49 2
Subtotal 1959–65	7,904	1,547	19 6	1,144	14 5	34 1	793	10 0	44 1	345	4 4	48 5	212	2 7	51 2	118	1 5	52 7	4,159	52 7	415	99	3,645	46 1
1966[d]	1,235	156	12 6	258	20 9	33 5	123	10 0	43 5	30	2 4	45 9	------	------	------	------	------	------	567	45 9	16	32	519	42 1
Total	9,139	1,703	18 6	1,402	15 3	33 9	916	10 0	43 9	375	4 1	48 0	212	2 3	50 3	118	1 3	51 6	4,726	51 6	431	131	4,164	45 6

Status

[a] Does not include paroles to detainers

[b] Reinstatements include absconders and others who were judged parole failures, but later returned to active parole supervision

[c] Adjusted parole failures includes those returned to Washington correctional institutions, sentenced out-of-state or were in a "whereabouts unknown"

[d] Due to difference in time exposed to parole, the cumulative violations will be subject to change

[e] Data are not available

Source (91)

APPENDIX ITEM C 4—Division of Parole, Executive Department

Parolees Under Supervision All or Part of Year, Returned by Parole Board to Correctional Institutions as Parole Violators and Returned by Courts as New Commitments, and Rates of Return per 100 Parolees Under Supervision During Ten-Year Period 1956 Through 1965 *

Parolees	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
Number under supervision all or part of year	13,460	13,460	13,596	14,661	15,016	14,293	14,610	14,984	15,071	15,364
Number returned to institutions by parole board as parole violators	1,509	1,599	1,443	1 581	1,807	1,715	1,764	1,923	1,979	1,973
Rate of return	11 2	11 9	10 6	10 8	12 0	12 0	12 1	12 8	13 1	12 8
Number returned to institutions by courts as new commitments	247	209	218	256	274	209	222	256	251	212
Rate of return	1 8	1 6	1 6	1 7	1 8	1 5	1 5	1 7	1 7	1 4

* Total returned in any year is sum of those returned as parole violators and as new commitments
Source (53)

APPENDIX ITEM C 5

Summary of Followup Studies of Inmates Released from U.S. Prisons

Prison system	Year of release	Duration of follow up	Releasees covered	Researchers	Sources of followup information	Percent returned to prison	Percent convicted or accused of new felony
Federal	1943–44	Approx 5 yrs	All releasees (25% parolees)	U S Bureau of Prisons	F B I fingerprint record	24	(not tabulated)
California	1946–49	3 yrs	The 88% who were paroled	Calif Bd of Corrections (Beattie)	State parole and criminal identification records	44	28
Wisconsin	1952–56	2 yrs	The approx 85% who were paroled or conditionally released	Wisc Dept of Public Welfare (Mannering)	State parole and criminal identification records	31	14 (convicted)
New York	1956	Parole period or up to 5 yrs	The 76% who were paroled	N Y Board of Parole (Stanton)	State parole records	44	7 (convicted)
Federal	1956	Approx 4 yrs	Every 10th adult male releasee (31% parolees)	U of Ill (Glaser)	Some F B I fingerprint records, prison and probation office tracing	31	28
Washington	1957–59	½ to 2½ yrs	99% of all releasees	Wash Dept of Institutions (Babst, Suver, Kusano, Little)	State parole records	20 (another 19% in "wanted" status)	13
Pennsylvania	1947–57	Parole period Aver 2⅕ yrs Max 5 yrs	The approx 70% who were paroled	Pa Board of Parole (Jacks)	State parole records	31	17

Source (42)

APPENDIX ITEM C 6—Department of Corrections

CUMULATIVE PERCENTAGE

Male Felons Returned to California Prison Each Year After *Release* in 1958–1966

Returned * to California Prison After Release by Parole or by Discharge From Prison

Year of return	Year of release from prison								
	1958	1959	1960	1961	1962	1963	1964	1965	1966
Returned After Release by Parole or by Discharge From Prison									
Number	4,666	7,075	5,621	6 351	8 237	6 476	8,158	9,226	7,193
Percent	100 0	100 0	100 0	100 0	100 0	100 0	100 0	100 0	100 0
Year of release	9 2	7 5	9 9	8 3	11 3	11 6	9 9	12 0	8 6
1st year after release	26 8	26 5	31 3	29 4	34 1	34 2	31 6	30 5	
2nd year after release	35 4	38 1	40 6	40 8	44 5	43 8	40 4		
3rd year after release	40 3	42 7	44 9	45 5	48 8	46 8			
4th year after release	42 6	45 3	47 0	47 6	50 6				
5th year after release	44 6	46 9	48 7	48 7					
Returned After Parole									
Number	3,739	5 751	4,871	5 689	7,457	5,821	7,216	8,163	6,489
Percent	100 0	100 0	100 0	100 0	100 0	100 0	100 0	100 0	100 0
Year of release	10 2	7 8	10 6	8 7	12 0	12 4	10 7	13 0	9 2
1st year after release	29 7	28 3	33 6	31 4	36 3	36 7	34 2	32 9	
2nd year after release	39 2	41 3	43 4	43 5	47 2	46 6	43 1		
3rd year after release	44 2	46 0	47 9	48 2	51 5	49 6			
4th year after release	46 4	48 7	50 0	50 2	53 2				
5th year after release	48 2	50 2	51 8	51 3					
Returned After Discharge from Prison									
Number	927	1,324	750	662	780	655	942	1,063	704
Percent	100 0	100 0	100 0	100 0	100 0	100 0	100 0	100 0	100 0
Year of release	4 6	6 0	5 9	4 8	5 1	4 4	3 7	4 6	3 0
1st year after release	15 2	18 2	16 8	12 5	13 3	12 2	12 4	12 4	
2nd year after release	20 5	24 2	22 1	18 1	18 6	19 2	19 6		
3rd year after release	24 5	28 1	25 3	21 9	23 3	21 8			
4th year after release	27 2	30 8	26 9	25 2	25 1				
5th year after release	30 0	32 5	29 3	26 4					

* Includes parolees returned before and after parole discharge
Source (11)

CUMULATIVE PERCENTAGE

Male Felons Returned to California Prison Each Year After *Parole* in 1958–1966

Returned From Parole Without or With a New California Felony Commitment or After Discharge From Parole

Year of return	Year of parole								
	1958	1959	1960	1961	1962	1963	1964	1965	1966
Number paroled	3,739	5,751	4,871	5 689	7 154	5,821	7,216	8,163	6,489
Percent	100 0	100 0	100 0	100 0	100 0	100 0	100 0	100 0	100 0
Returned From Parole Without a New California Felony Commitment									
Year of parole	5 2	4 1	5 7	4 9	7 0	9 0	7 9	9 5	6 5
1st year after parole	14 7	14 2	19 2	18 3	22 2	26 2	24 2	22 7	
2nd year after parole	18 9	21 7	24 6	26 1	29 5	32 8	29 7		
3rd year after parole	20 9	23 7	26 8	28 8	31 9	34 4			
4th year after parole	21 3	24 6	27 5	29 7	32 6				
5th year after parole	21 6	24 8	27 9	30 0					
Returned From Parole With a New California Felony Commitment									
Year of parole	5 0	3 7	4 9	3 8	5 0	3 4	2 8	3 5	2 7
1st year after parole	14 8	13 9	14 3	13 0	14 0	10 4	9 8	10 0	
2nd year after parole	19 0	18 4	18 0	16 7	17 2	13 3	12 8		
3rd year after parole	20 3	19 3	19 2	17 8	18 3	14 3			
4th year after parole	20 6	19 7	19 5	18 1	18 5				
5th year after parole	20 8	19 9	19 6	18 2					
Returned With a New California Felony Commitment After Discharge From Parole									
Year of parole	--	--	--	--	--	--	--	--	--
1st year after parole	0 2	0 2	0 1	0 1	0 1	0 1	0 2	0 2	
2nd year after parole	1 3	1 2	0 8	0 7	0 5	0 5	0 6		
3rd year after parole	3 0	3 0	1 9	1 6	1 3	0 9			
4th year after parole	4 5	4 4	3 0	2 4	2 1				
5th year after parole	5 8	5 5	4 3	3 1					

CUMULATIVE PERCENTAGE

Women Felons Returned to California Prison Each Year After *Release* in 1958–1966

*Returned * to California Prison After Release by Parole or by Discharge From Prison*

Year of return	Year of release from prison								
	1958	1959	1960	1961	1962	1963	1964	1965	1966
Returned After Release by Parole or by Discharge From Prison									
Number	326	380	428	572	615	562	565	484	573
Percent	100 0	100 0	100 0	100 0	100 0	100 0	100 0	100 0	100 0
Year of release	8 6	9 5	5 1	11 0	8 1	11 9	10 8	14 0	13 1
1st year after release	27 0	27 4	22 0	28 1	29 3	31 9	32 7	33 5	
2nd year after release	34 4	37 1	33 1	38 3	35 4	42 3	41 8		
3rd year after release	40 5	40 3	38 3	43 5	41 3	47 5			
4th year after release	44 5	43 7	40 9	47 0	43 3				
5th year after release	44 5	44 7	42 5	49 0					
Returned After Parole									
Number	320	359	412	562	605	556	553	467	558
Percent	100 0	100 0	100 0	100 0	100 0	100 0	100 0	100 0	100 0
Year of release	8 8	10 0	5 4	11 2	8 1	12 1	11 0	14 6	13 5
1st year after release	27 5	28 4	22 0	28 7	29 2	32 2	33 7	34 3	
2nd year after release	35 0	38 5	33 8	38 9	35 5	42 9	42 5		
3rd year after release	41 2	41 8	38 7	44 3	41 2	48 0			
4th year after release	45 3	44 8	41 5	47 8	43 3				
5th year after release	45 3	46 0	43 2	49 9					
Returned After Discharge From Prison									
Number	6	21	16	10	10	6	12	17	15
Percent	100 0	100 0	100 0	100 0	100 0	100 0	100 0	100 0	100 0
Year of release	--	--	--	--	10 0	--	--	--	--
1st year after release	--	9 5	18 8	--	30 0	--	--	11 8	
2nd year after release	--	14 3	25 0	--	30 0	--	8 3		
3rd year after release	--	14 3	25 0	--	40 0	--			
4th year after release	--	23 8	25 0	--	40 0				
5th year after release	--	23 8	25 0	--					

* Includes parolees returned before and after parole discharge

CUMULATIVE PERCENTAGE

Women Felons returned to California Prison Each Year After *Parole* in 1958–1966

Returned From Parole Without or With a New California Felony Commitment or After Discharge From Parole

Year of return	Year of parole								
	1958	1959	1960	1961	1962	1963	1964	1965	1966
Number paroled	320	359	412	562	605	556	553	467	558
Percent	100 0	100 0	100 0	100 0	100 0	100 0	100 0	100 0	100 0
Returned From Parole Without a New California Felony Commitment									
Year of parole	7 2	7 5	4 4	8 2	7 3	9 4	9 2	13 3	12 4
1st year after parole	20 0	22 0	18 4	20 5	25 6	24 8	26 6	30 0	
2nd year after parole	24 7	27 9	27 2	28 8	29 9	33 5	34 2		
3rd year after parole	27 5	30 6	30 5	33 1	33 8	36 8			
4th year after parole	30 0	33 4	32 0	35 2	35 2				
5th year after parole	30 0	34 0	32 5	36 7					
Returned From Parole With a New California Felony Commitment									
Year of parole	1 6	2 5	1 0	3 0	0 8	2 7	1 8	1 3	1 1
1st year after parole	7 5	6 4	3 6	8 2	3 6	7 4	6 9	4 3	
2nd year after parole	10 3	10 3	6 6	10 1	5 6	9 2	8 1		
3rd year after parole	12 8	10 9	8 0	11 0	7 1	10 8			
4th year after parole	13 4	11 1	9 0	11 9	7 3				
5th year after parole	13 4	11 7	9 2	12 1					
Returned With a New California Felony Commitment After Discharge From Parole									
Year of parole	--	--	--	--	--	--	--	--	--
1st year after parole	--	--	--	--	--	--	0 2	--	
2nd year after parole	--	0 3	--	--	--	0 2	0 2		
3rd year after parole	0 9	0 3	0 2	0 2	0 3	0 4			
4th year after parole	1 9	0 3	0 5	0 7	0 8				
5th year after parole	1 9	0 3	1 5	1 1					

APPENDIX ITEM C 7—Department of Corrections

Rate of Male Felon Parolees Returned to California Prisons to Total Individuals Experiencing Parole Supervision During Calendar Year

Rate Returned With a New California Commitment
Rate Returned Without a New California Commitment
1956 through 1966

Calendar year	Total male felons experiencing parole supervision*	Total returned		Returned with a new California commitment		Returned without a new California commitment†	
		Number	Percent	Number	Percent	Number	Percent
1956	10,846	1,147	10 6	632	5 8	515	4 8
1957	11,450	1,375	12 0	733	6 4	642	5 6
1958	11 052	1 709	15 4	812	7 3	897	8 1
1959	12,516	1,596	12 8	786	6 3	810	6 5
1960	13,382	2,145	16 0	1,068	8 0	1,077	8 0
1961	14,143	2,388	16 9	999	7 1	1,389	9 8
1962	16,607	2,693	16 2	1,152	6 9	1,541	9 3
1963	16 713	3,300	19 8	1,166	7 0	2,134	12 8
1964	17,548	3,028	17 3	945	5 4	2,083	11 9
1965	18,977	3,334	17 5	1,069	5 6	2,265	11 9
1966	18,029	2,815	15 6	1,005	5 6	1,810	10 0

* Count of individuals estimated for 1956 through 1961, actual count of individuals for 1962, 1963, 1964, 1965 and 1966
† Male felons suspended from active parole and returned to Narcotic Treatment-Control Unit not included.
Source (11)

APPENDIX ITEM C 8—Department of Corrections

Number of Men Paroled and Cumulative Percentage of Parolees Returned to Prison Each Year After Parole, 1955–1966

	Year of parole											
	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
ALL MEN PAROLED												
Total number paroled	3,419	4,117	3,849	3,739	5,751	4,871	5,689	7,457	5,821	7,216	8,163	6,489
Percent paroled of total paroled or discharged	77 1	80 5	81 6	80 1	81 3	86 7	89 6	90 5	89 9	88 5	88 5	90 2
Year during which returned (Percent)												
Same year as paroled	5 6	6 5	7 0	10 3	7 8	10 6	8 8	11 9	12 4	10 7	12 9	9 2
1st year after year of parole	21 0	22 4	27 2	29 6	28 2	33 5	31 3	36 1	36 7	33 9	32 7	
2nd year after year of parole	29 8	31 3	34 0	37 9	40 1	42 6	42 8	46 7	46 1	42 5		
3rd year after year of parole	32 9	33 9	36 3	41 2	43 1	46 0	46 6	50 3	48 7			
4th year after year of parole	33 8	34 8	37 4	41 9	44 3	47 0	47 8	51 1				
5th year after year of parole	34 1	35 2	37 6	42 4	44 7	47 5	48 1					
6th year after year of parole	34 4	35 3	37 8	42 7	44 8	47 6						
7th year after year of parole	34 5	35 4	37 9	42 8	45 0							
8th year after year of parole	34 5	35 5	37 9	42 8								
9th year after year of parole	34 5	35 5	38 0									
10th year after year of parole	34 6	35 5										
11th year after year of parole	34 6											
FIRST PAROLES												
Number of first paroles	2,975	3,557	3,253	3,088	4,637	3,906	4,435	5,415	4,058	4,611	4,831	3,809
Percent of total first paroled or first discharged	85 8	87 3	86 9	94 9	86 5	89 9	92 6	92 7	93 6	92 4	91 9	92 7
FIRST PAROLES TO CALIFORNIA SUPERVISION												
Number of first paroles to California	2 609	3,103	2,879	2,756	4,141	3,496	3,968	4,836	3 635	4,128	4,334	3,397
Percent of first paroles to California	87 7	87 2	88 5	89 2	89 3	89 5	89 5	89 3	89 6	89 5	89 7	89 2
Year during which returned (Percent)												
Same year as paroled	6 0	6 7	6 8	10 2	8 0	10 6	8 6	10 5	10 2	8 8	10 0	6 8
1st year after year of parole	22 2	23 2	28 7	30 3	28 2	33 8	30 2	34 3	33 0	29 0	27 0	
2nd year after year of parole	31 5	32 8	35 2	39 0	40 2	43 2	42 0	45 2	42 5	37 5		
3rd year after year of parole	34 6	35 6	37 8	42 7	43 4	46 7	45 8	48 8	44 9			
4th year after year of parole	35 5	36 6	38 8	43 5	44 5	47 7	46 9	49 7				
5th year after year of parole	35 7	36 9	39 0	44 0	45 0	48 1	47 2					
6th year after year of parole	35 9	37 0	39 2	44 3	45 1	48 3						
7th year after year of parole	36 0	37 2	39 3	44 4	45 3							
8th year after year of parole	36 0	37 2	39 3	44 4								
9th year after year of parole	36 0	37 2	39 4									
10th year after year of parole	36 0	37 2										
11th year after year of parole	36 0											

Source (11)

APPENDIX ITEM C 9—Department of Corrections

Characteristics of Felon Population in California State Prisons, June 30, 1967

Characteristics	Total males		California Institution for Women	
	Number	Percent	Number	Percent
Grand total	26,168		1,158	
Reception-guidance centers (adult felons only)	950		60	
Narcotic treatment-control units (nonsuspended adult felons)	138		--	
Other than adult felons*	3,334		†287	
Total, excluding RGC and other	21,746		†811	
Offense	21,746	100 0	811	100 0
Homicide	1,934	8 9	124	15 3
Robbery	5,449	25 0	61	7 5
Assault	1,210	5 6	58	7 2
Burglary	3,711	17 1	57	7 0
Theft except auto	934	4 3	76	9 4
Auto theft	606	2 8	14	1 7
Forgery and checks	1,586	7 3	207	25 5
Rape	658	3 0	--	--
Other sex	1,148	5 3	5	0 6
Narcotics and dangerous drugs	3,434	15 8	175	21 6
Escape	217	1 0	10	1 2
Habitual criminal	97	0 4	1	0 1
All other	762	3 5	23	2 9
Ethnic group	21,746	100 0	811	100 0
White	11 891	54 7	450	55 5
White, Mexican descent	3 577	16 4	54	6 7
Negro	5 931	27 3	284	35 0
Other	347	1 6	23	2 8
Age in years	21 746	100 0	811	100 0
Under 20	231	1 1	9	1 1
20–24	3,992	18 3	117	14 4
25–29	5,211	24 0	185	22 8
30–34	4,003	18 4	168	20 7
35–39	3,101	14 3	138	17 0
40–44	2,204	10 1	99	12 2
45–49	1,289	5 9	45	5 6
50–54	775	3 6	25	3 1
55–59	472	2 2	14	1 7
60 and over	468	2 1	11	1 4
Median age in years	31 8		32 8	
Percent under 21		2 8		2 5
Percent under 25		19 4		15 5

* Includes recalcitrant tuberculars, mentally disordered sex offenders, county diagnostic cases, Mental Hygiene, Youth Authority wards, federal prisoners, safekeepers, and California Rehabilitation Center narcotic addicts received under W&I Code 5000 et seq.
† Includes 30 women felons housed in California Rehabilitation Center
Source (11)

APPENDIX ITEM C 10—Department of Corrections

Characteristics of California Male Felon Parolees

Characteristics	December 31, 1964*		December 31, 1965*		December 31, 1966*		December 31, 1967*†	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Offense	11,330	100 0	11,947	100 0	11,480	100 0	10,964	100 0
Homicide	781	6 9	807	6 8	876	7 6	805	7 3
Murder 1st	445	3 9	470	3 9	477	4 1	440	4 0
Murder 2nd	156	1 4	163	1 4	195	1 7	169	1 5
Manslaughter	180	1 6	174	1 5	204	1 8	196	1 8
Robbery	1 790	15 8	2,026	16 9	2,137	18 6	2,055	18 7
Assault	331	2 9	361	3 0	375	3 3	389	3 5
Burglary	1,941	17 1	2,163	18 1	2,073	18 0	2,111	19 3
Theft except auto	505	4 5	559	4 7	549	4 8	597	5 5
Auto theft	228	2 0	270	2 2	250	2 2	320	2 9
Forgery and checks	1,722	15 2	1 622	13 6	1 387	12 1	1,197	10 9
Rape	299	2 6	315	2 6	295	2 6	260	2 4
Lewd act with child	375	3 3	426	3 6	332	2 9	422	3 9
Other sex	185	1 6	203	1 7	191	1 7		
Narcotics and dangerous drugs	2,519	22 3	2,581	21 6	2,462	21 4	2,309	21 1
Escape	211	1 9	175	1 5	137	1 2	108	1 0
Habitual criminal	97	0 9	92	0 8	91	0 8	80	0 7
All other	343	3 0	347	2 9	325	2 8	311	2 8
Prior commitments	11,330	100 0	11 947	100 0	11 480	100 0	10,964	100 0
None	1 884	16 6	1 827	15 3	1,675	14 6	1,515	13 8
Jail or juvenile	5 240	46 2	5 531	46 3	5 471	47 7	5,379	49 1
One prison	2 488	22 0	2 730	22 9	2,582	22 5	2,420	22 1
Two prisons	986	8 7	1 075	9 0	1 065	9 3	1 003	9 1
Three or more prisons	732	6 5	781	6 5	684	5 9	647	5 9
Times on parole	11,330	100 0	11,947	100 0	11 480	100 0	10,964	100 0
First parole	8 326	73 5	8,369	70 0	7,771	67 7	7 332	66 9
Second parole	2,203	19 4	2,525	21 1	2,429	21 2	2,289	20 9
Third parole or more	801	7 1	1,065	8 9	1,280	11 1	1,343	12 2
Sentence	11 330	100 0	11 947	100 0	11,480	100 0	10,964	100 0
Life	630	5 6	654	5 5	661	5 8	618	5 6
Other	10 700	94 4	11,293	94 5	10,819	94 2	10,346	94 4
Ethnic group	11,350	100 0	11 947	100 0	11,480	100 0	10,964	100 0
White	6,410	56 5	6 513	54 5	6,145	53 5	5,790	52 8
White, Mexican descent	2,107	18 6	2,282	19 1	2,223	19 4	2,139	19 5
Negro	2,568	22 7	2,902	24 3	2,885	25 1	2,815	25 7
Other	245	2 2	250	2 1	227	2 0	220	2 0
Length of time on present parole	11,430	100 0	11,947	100 0	11,480	100 0	10 964	100 0
Less than one year	5,821	51 4	6 228	52 1	5,175	45 1	5,307	48 4
1 year but less than 2	2,750	24 3	3,479	29 1	3 965	34 5	3,324	30 3
2 years but less than 3	1,664	14 7	1,090	9 1	1,159	10 1	1,296	11 8
3 years but less than 4	459	4 0	471	4 0	411	3 6	379	3 5
4 years but less than 5	110	1 0	154	1 3	246	2 1	148	1 3
5 years and longer	526	4 6	525	4 4	524	4 6	510	4 7
Place of parole	11,330	100 0	11,947	100 0	11,480	100 0	10,964	100 0
California	10,018	88 4	10 693	89 5	10 310	89 8	9,872	90 0
Out of state	895	7 9	852	7 1	815	7 1	803	7 3
Custody CRC	--	--	--	--	--	--	31	0 3
Deport or custody	417	3 7	402	3 4	355	3 1	258	2 4

* Includes men in narcotic treatment-control units, of which there were 65 on December 31, 1964, 42 on December 31, 1965, 117 on December 31, 1966 and 102 on December 31, 1967
† Includes 31 male felons under CRC jurisdiction in 1967
Source (11)

APPENDIX ITEM C 11—California Adult Authority

All Offenses—Median Time Served in Prison Male Felons First Paroled, 1945–1966

Year of parole	Number	Time served in months: Median
1945	1 183	26
1946	1,600	27
1947	1 676	26
1948	1,911	26
1949	2,098	26
1950	1,987	27
1951	2,282	30
1952	2,185	30
1953	2,717	30
1954	2,874	30
1955	2,975	30
1956	3,557	29
1957	3,253	30
1958	3,088	27
1959	4,637	24
1960	3,907	24
1961	4,435	27
1962	5,415	27
1963	4,058	30
1964	4,611	30
1965	4,831	30
1966	3,800	30

Source (7)

APPENDIX ITEM D 1—Florida Division of Corrections

Comparison of clear recidivism, "marginal failure," and nonrecidivism among those released into society as the result of *Gideon* motions and those released by expiration from the Florida Division of Corrections, May thru August, 1963

Success-failure groupings	Gideon motion release group: Frequency	Gideon motion release group: Percentage	Expiration release group: Frequency	Expiration release group: Percentage
Clear recidivists	12	10 9	27	24 5
"Marginal failures"	3	2 7	1	0 9
Nonrecidivists	95	86 4	82	74 6
Total	110	100 0	110	100 0

Source (40).

APPENDIX ITEM D 2—Pennsylvania Board of Probation and Parole

A Comparison of Releases and Repeaters of the Same Type of Crime Over 20-Year Period, October 1, 1966 Report

Type of crime	Nonrepeaters: Number	Nonrepeaters: Percent	Repeaters: Number	Repeaters: Percent	Total released
Burglary	11,907	88 9	1,480	11 1	13,387
Robbery	7,151	94 7	399	5 3	7,550
Larceny	5,262	94 0	337	6 0	5,599
Sex offenders	4 323	97 4	116	2.6	4,439
Assault and battery	2,494	96 2	99	3 8	2,593
Homicide	2,568	99 5	13	0 5	2,581
Forgery	1,704	90 9	170	9 1	1,874
Drugs and narcotics	885	89 1	108	10 9	993
Others	1,525	96 0	64	4 0	1,589
Total	37 819	93 1	2,786	6 9	40,605

This table shows the number actually repeating the same type of crime and the rank order is as follows, burglary, drugs and narcotics, forgery, larceny, robbery, assault and battery, sex offenders, and criminal homicide Here again burglary ranks first while sex offenders and criminal homicide rank lowest on the list.
Source (35)

APPENDIX ITEM E 1

Example of Parole Criteria Developed by California Department of Corrections for Special Intensive Parole Unit Project

Positive factors

Anticipation of constructive response to parole supervision

Recognition of positive employment factors—known outside work placement which looked good or steady employment potential in the man himself

Satisfactory or superior institutional progress

Definite substantial home or family placement

Negative factors

Inmates who had been committed on charges of murder in the first degree

Inmates whose records included the commission of a crime of exceptional violence or brutality

Inmates whose clinical studies indicated that there existed an exceptional record of violence, regardless of criminal history

Inmates whose institutional conduct included incidents involving unusual violence

Inmates whose crime or the circumstances surrounding it was such that arrest, trial or sentencing excited an unusual amount of interest on the part of newspapers or public officials

Inmates who received an excessive amount of publicity or official attention because of activities while in prison or on parole

Inmates whose previous life or recent status in the community had been such that they are relatively well-known persons

APPENDIX ITEM E 2—CALIFORNIA ADULT AUTHORITY

Excerpts From Adult Authority Chairman Fred R. Dickson's Remarks to Sentencing Institute for Superior Court Judges, April 1 and 2, 1966, Santa Barbara, California

Listed below are many of the factors a parole board needs to analyze when an inmate appears for a parole consideration hearing, the weight given to each facet of a case, of course, varies with the individual

What is the criminal history and/or crime pattern?

What are the court and district attorney views at the time of commitment?

What is indicated in the probation officer's report, prior to sentencing?

Is his behaviour pattern one of violence or that of non-aggressive criminality?

What is his social and psychological history?

How much time has he served, and has he had prior sentences?

Has he learned from his prison experiences or is he likely to repeat his criminal behaviour?

What are his rights under the law, minimum, maximum and legal eligibility for parole?

Has he responded to his rehabilitative program and has the prison system offered a meaningful corrective program, do they have such a program? If there is no corrective program available, must he remain in confinement?

Is the prison experience making him more criminal and will a denial of parole psychologically damage him further?

Have there been any changes in his attitude, has he made progress?

What are his needs for psychiatric care, is he receiving this attention?

If he needs psychotherapy is he not receiving it because he refuses to accept it or because it is not available?

Source (8)

Has he developed insight into the problems bringing him to prison, and is he now better able to cope with these problems?

What specific problem or problems does he present?

What are his preparations for release, if he has no plan how is he being prepared? Is he getting help in this area? Does he have a release plan, and if so, is it realistic?

Is there any outside assistance available to help him become established on the "outside"?

Does he have a job or a reasonable employment opportunity upon release?

Are there any family resources, will be help with or add to the family problem?

Does he have need for specialized assistance and is it available?

How much parole assistance will be receive?

APPENDIX ITEM E 3

October 31, 1967

MEMORANDUM

TO Joseph A Spangler
Administrative Officer
California Adult Authority

FROM: Robin L Lamson, Assembly Office of Research
for Assemblyman W. Craig Biddle

RE *Criminal Procedure Committee Interim hearing November 14, 1967*

The Assembly Criminal Committee is currently involved in a study of the deterrent effects of criminal sanctions The basis for this study rests in the fact that while the penalties for various criminal acts have been increasing, the crime rate has not shown a corresponding decrease This has increased the interest of the committee in learning more about deterrence.

The specific area of interest that affects the Adult Authority is that of the length of prison sentences for crimes California ranks as one of the top states in terms of the length of time a person must serve. The committee would like to have the following information

1 How were the present periods of time served for offenses determined? For example, the median time served for robbery, first, has increased from 37 to 43 months since 1960. What was the basis for this increase? The same question—in reverse—could be asked about burglary, second, which shows a decrease Please focus mainly on first offenders—those under first commitment to the Department of Corrections

2 What has been the recidivism rate for first offenders over the last 10 years? Does there appear to be any relationship between time served and recidivism?

3 How does the Adult Authority know when a man has served enough time and is "ready" to return to society? What are the criteria used in this decision making process?

4 Would the Adult Authority members favor a complete indeterminate sentence policy in California? Why or why not?

5 Would the Adult Authority be interested in cooperating with the Assembly Criminal Procedure Committee in developing a research experiment designed to gather information on the most beneficial length of time a first offender should serve in prison before parole?

APPENDIX ITEM F 1—
State of California Youth and Adult Corrections Agency

Offender Population Projections

Crime and delinquency nationally and in California have been in a relatively constant relationship to population

Crime is a young man's game—83 percent of all juvenile and adult offenders are in the age group 14 to 29 years The total population in California will increase over 25 percent in the period 1965 to 1975, but the 14–29 years old "crime susceptible group" will increase 60 percent in this same period (to nearly 7 million persons from 4⅓ million).

Total statewide costs of the criminal justice system (including law enforcement, courts, and corrections) is $652 million Continuation of current programs, as Space General Corporation computed it, will cost over $3½ billion for the period 1965–70

By 1975 there will be over 380,000 offenders in custody or under supervision of the system components at any one time In terms of "flow" or movement, however, this means that there will be the following increases.

	1965 (thousands)	1975* (thousands)
Number misdemeanant arrests	600	960
Number felony arrests	109	174
Number delinquency arrests	278	444
Subtotal arrested	987	1578
Number misdemeanant cases to trial	400	640
Number felony cases to trial	37	59
Number initial delinquency determinations	97	155
Subtotal to court trial	534	754
Number misdemeanant sentences to jail or probation	250	400
Number felony sentences to jail or probation	21	33
Number felony and civil commitments to CDC	8	13
Number commitments to CYA	8	13
Subtotal sentenced or committed	287	459
Average population CDC institution	28	36
Average population CYA institution	5	7
Average population county juvenile facilities	6	8
Average population county adult facilities	26	32
Subtotal incarcerated	65	83
Number on county probation†	157	251
Number on state parole	30	42
Subtotal probation and parole	187	295

* State corrections population based on CYA and CDC research division published projections, all other projections are based on increase of current rates by 60 percent
† Probation estimates based on 1965 Bureau of Criminal Statistics, "Crime and Delinquency in California," Table VI-1, Active Adult Probation Cases 12/31/65 with reciprocal support cases excluded, and Table IX-2, movement of total delinquency and dependency cases in each probation department, 1965
Source (26)

APPENDIX ITEM F 2—
State of California Youth and Adult Corrections Agency

Trends in Aggressive Crime in California *

Increases in the national crime rate appear to be more a function of what is reported For example, during the 10-year period, 1948–57, the *Uniform Crime Report* reported the rate of all major offenses increased from 1 147 to 1,630 or 42 percent *For the aggressive crime group, the increase was only 4 percent*, while for property crimes the increase was 46 percent Looking at the four offenses in the aggressive crime group, it is seen that murder and nonnegligent manslaughter showed a pronounced decrease of 23 percent during this period Thus, during the period 1948–57, there is little evidence of any real rise in reported offenses of the aggressive crime types

Because of revisions in reporting instituted in 1958, a separate analysis has to be made of the crime rates reported for the period 1957–64 Over this period, there was an overall rate growth of 63 percent in the seven major offense groups The property offenses showed an increase of 66 percent. In the aggressive crimes, there was almost no change in the murder and nonnegligent manslaughter rate Overall, the personal violence crimes increased 46 percent, but this is influenced by the nearly 50 percent increase in aggravated assault—which is the type of offense the reporting of which encompasses many offenses which were previously regarded as a lower level of seriousness

* *From the Annals of the American Academy of Political and Social Science*, 3/66, by Ronald Beattie and John P Kenney

TABLE 1

Rates Per 100,000 Population of Estimated Total Major Offenses in the United States Published in Annual *Uniform Crime Reports*, 1948–1957 [a]

Year	U S population in hundred thousands	Total major offense groups	Personal violence offenses					Total property offenses
			Total	Murder	Rape	Robbery	Aggravated assault	
1948	1,466	1,146 7	106 4	5 2	11 0	37 5	52 7	1 040 3
1949	1 491	1,179 4	108 3	4 7	11 0	39 7	52 9	1,071 1
1950	1,519	1,174 8	103 8	4 6	10 9	35 0	53 3	1,071 0
1951	1 540	1,218 6	100 2	4 4	10 9	33 8	51 1	1,118 4
1952	1,564	1,298 5	109 0	4 6	11 0	37 2	56 2	1 189 5
1953	1,590	1,354 2	113 7	4 5	11 3	39 7	58 2	1,240 5
1954	1,619	1,397 0	114 7	4 2	11 1	41 6	57 8	1,282 3
1955	1,651	1,366.9	106 7	4 1	11 6	34 8	56 2	1,260 2
1956	1,681	1,521 4	107 4	4 1	12 1	33 8	57 4	1,414 0
1957	1,712	1,630 1	110 7	4 0	12 3	35 9	58 5	1,519 4

[a] Source Population Estimates, U S Bureau of Census, Major Offenses, *Uniform Crime Reports*

TABLE 3

California Offense Rates Per Estimated 100,000 Population Aged 10–39: Major Offense Groups, 1954–1964 [a]

Year	Population age 10–39 in thousands	Seven major groups	Personal violence offenses					Total property offenses
			Total	Willful homicides	Forcible rape	Robbery	Aggravated assault	
1954	5,165	2,600 4	447 6	8 1	36 7	194 3	208 5	2,152 9
1955	5,339	2,578 3	428 4	7 8	34 9	171 6	214 2	2,149 8
1956	5,565	2,969 4	477 3	8 5	41 1	183 0	244 7	2,492 0
1957	5,870	3,305 6	511 6	8 5	44 4	197 3	261 5	2,794 0
1958	6,130	3,397 9	525 5	8 9	46 7	205 8	264 0	2,872 4
1959	6,377	3,182 0	496 7	8 1	44 1	181 1	263 4	2 685 3
1960	6,622	3,797 8	569 1	9 4	42 4	230 5	286 8	3,228 7
1961	6,905	3,723 7	554 7	8 8	43 0	215 1	287 8	3,169 0
1962	7,165	3,861 3	556 1	9 4	40 7	217 7	288 3	3,305 2
1963	7,484	4,077 4	566 0	8 8	40 9	220 2	296 3	3,511 4
1964	7,788	4,445 9	614 0	9 7	43 1	240 7	320 5	3,831 9

[a] Source Population, California Department of Finance published estimates, Offenses, *Annual Reports—Crime in California*

TABLE 4

California Arrest Rates Per Estimated 100,000 Population Aged 10–39: Major Offense Groups, 1957–1964 [a]

Year	Population age 10–39 in thousands	Seven major groups	Personal violence offenses					Total property offenses
			Total	Willful homicides	Rape	Robbery	Aggravated assault	
1957	5 870	1,234 4	373 4	14 1	47 8	151 9	159 6	861 0
1958	6,130	1 284 7	375 3	12 5	46 5	147 9	168 3	909 4
1959	6,377	1 189 0	361 9	11 1	45 3	134 0	171 6	827 1
1960	6,622	1,401 2	414 3	16 1	44 3	175 0	178 0	986 9
1961	6,905	1,392 4	423 9	13 9	45 1	179 1	185 7	968 5
1962	7 165	1 404 4	413 9	14 1	46 5	169 5	183 8	990 5
1963	7,484	1,412 9	404 0	12 7	44 7	155 9	190 7	1 009 0
1964	7,788	1,441 8	396 1	12 6	41 9	151 7	189 7	1,045 7

[a] Source Population, California Department of Finance published estimates, Offenses, Adult and Juvenile Arrests, *Annual Reports—Crime in California*

In California the crime reports compiled by the Bureau of Criminal Statistics appear to be considerably more reliable measures Over the period of 1954 to 1964, the rate per thousand of population of ages 10–39 showed an increase of 32 percent for aggressive crimes, and 78 percent for property crimes The rate for homicide was 20 percent increase for the period

The above data is somewhat paradoxical when compared to California's *arrest* rates for the same population over the period 1957 to 1964. This tabulation assumes that arrest bookings are a more accurate reflection of the trends in aggressive crimes than the offense reported.

These data show *no increase* in homicide, robbery, and rape over this seven-year period Again, it is believed that the rise in aggravated assault rates lies more in policy and procedural changes in law enforcement than in an increased rate of unprovoked assaults

Correlating violent crimes with age of offender, it is to be noted that more than one half of the offenders were 25 years of age and over With respect to property offenses, there were over four times the incidences involving persons under 25 years as those involving persons 25 years and over Violent crimes are not particularly a young man's game, but property crime is—and property crime occurs at the rate of nearly six times that of violent offenses.

TABLE 5

Sex and Age of Persons Arrested in 1964 and Charged With Major Offenses as Reported by 3,977 Agencies With an Estimated Population of 132,439,000 [a]

Offense	Total arrests	Number of women	Percentage women	Age				Percent		
				Under 18	18–24	25–39	40 and over	Under 18	Under 25	40 and over
Total	777,816	97,919	12 6	377,394	194,780	137,808	67,834	48 5	73 6	8 7
Personal violence	134,891	14,093	10 4	24,903	41 390	46,227	22,371	18 5	49 1	16 6
Murder	6,412	1,144	17 8	546	1 558	2,590	1,718	8 5	32 8	26 8
Forcible rape	9 450	----	----	1,776	4,043	2 846	785	18 8	61 6	8 3
Robbery	39,134	2 072	5 3	10,790	15 694	10,548	2,102	27 6	67 7	5 4
Aggravated assault	79,895	10,877	13 6	11,791	20,095	30,243	17,766	18 4	39 9	22 2
Property	642,925	83,826	13 0	352,491	153,390	91,581	45,463	54 8	78 7	7 1
Burglary	187 000	6 847	3 7	96,087	53,266	29,495	8,152	51 4	79 9	4 4
Larceny	358 569	72,864	20 3	193,670	76,437	53,549	34 913	54 0	75 3	9 7
Auto theft	97,356	4,115	4 2	62,734	23,687	8,537	2,398	64 4	88 8	2 5

[a] Source Crime in the U S , *Uniform Crime Reports, 1964*, Tables 19 and 22
Source (26)

APPENDIX ITEM F 3

County Expenditures for Jails and Other Adult Correctional Facilities

County	Appropriation	Cost/100 population	Tax rate per $100 to support service
Los Angeles	$18,630,669	$268 05	130
San Diego	1,491 537	116 54	075
Orange	1,110,720	96 48	047
Alameda	1,859,050	172 73	101
Santa Clara†	------	------	----
San Francisco†	------	------	----
San Bernardino	1,231,457	194 01	099
Sacramento	1,329 010	217 29	119
San Mateo	268,185	49 09	189
Contra Costa	581 753	107 14	479
Fresno	845 077	195 24	095
Riverside	969,477	233 97	105
Kern	891 314	259 65	107
Ventura	414,654	122 90	053
San Joaquin	788,570	255 04	141
Santa Barbara†	------	------	----
Monterey	353,855	141 83	073
Tulare†	------	------	----
Marin	407,529	211 09	095
Stanislaus	437,547	222 53	143
Sonoma	243,175	301 22	071
Solano	46,564	27 07	193
Santa Cruz	100 812	85 11	044
Merced	249 521	214 04	113
Humboldt	226 517	202 08	113
San Luis Obispo	164,187	103 05	069
Butte†	------	------	----
Imperial†	------	------	----
Yolo†	------	------	----
Napa	36,795	45 65	309
Shasta	94 351	101 45	445
Placer	46,845	57 08	253
Kings	178,557	276 52	123
Mendocino	60,873	132 09	070
Yuba	30,000	62 11	040
Madera	79,367	170 56	629
El Dorado†	------	------	----
Sutter	30,116	58 28	234
Siskiyou	92,994	243 52	122
Tehama	17,975	61 34	023
Nevada	15 450	60 59	027
Glenn	21,990	109 04	036
Lake	39 998	203 04	077
San Benito	28 715	152 30	053
Tuolumne	49,792	274 43	095
Lassen	34,474	190 57	124
Del Norte	93,856	469 21	309
Inyo	45,892	316 50	090
Colusa	38,249	263 79	060
Plumas	22 290	166 28	028
Calaveras	35,788	310 30	098
Amador	8,180	69 32	168
Trinity†	------	------	----
Modoc	24,672	324 63	088
Mariposa	10,986	180 10	055
Mono	61 610	2,117 18	199
Sierra	1,300	46 15	018
Alpine†	------	------	----
Total	$33,860 237	$214 96	Average

* Note Line separates 10 metropolitan counties (population over 500 000)
† Appropriations not available, included in operating appropriations for sheriff
Source *California Taxpayers Association*, Department County Budgets, March 66.

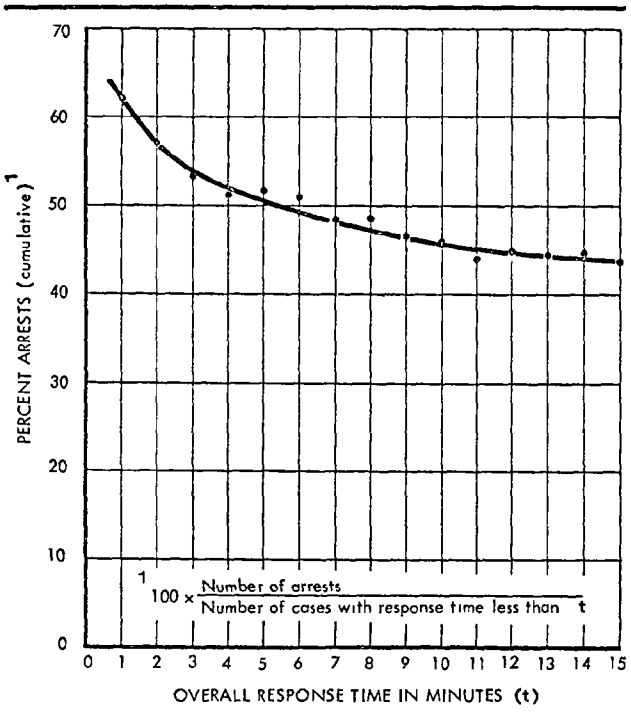
APPENDIX ITEM F 4

Comparison of 1965 County Commitment Rates * to State Correctional Departments to Level of Probation Services and Arrest Rates

Counties (over 100,000 population)	Commitment rate	Probation service costs per 100 population	Adult felony arrest rate per 100 000 population	Probation referrals for delinquent acts—rate per 100 000 population
Stanislaus	103 9	$241	1,578	7 0
San Joaquin	79 6	209	1,751	7 5
Sacramento	75 7	320	1,914	9 1
Merced	75 6	150	897	6 9
Los Angeles	73 8	377	2,865	2 4
Santa Cruz	69 4	205	2,113	13 1
San Diego	68 5	303	995	5 7
Ventura	67 3	207	1,279	6 9
Riverside	66 0	346	1,888	6 4
San Francisco	65 3	524	3,304	6 9
Kern	63 4	332	1,711	9 8
Average	61 9	$304	----	5 0
San Bernardino	60 9	$308	1,718	5 3
Sonoma	60 5	238	1,152	7 1
Tulare	59 8	189	1,333	4 9
Fresno	59 5	193	1,754	5 4
Contra Costa	53 9	497	1,714	5 9
Alameda	50 9	519	1,877	7 8
Santa Barbara	46 5	310	1,275	4 5
Humboldt	45 2	176	806	7 5
Monterey	41 1	224	1,506	8 2
Orange	40 6	333	1,622	5 1
San Mateo	35 1	423	1,347	4 6
Solano	34 4	246	1,090	2 8
Santa Clara	31 4	341	1,257	7 2
San Luis Obispo	30 8	215	1,140	5 1
Marin	6 4	320	1,304	6 9

* Commitment rate is the total first commitments to the state correctional departments (CDC and CYA) divided by county population
Source (26)

APPENDIX ITEM G 1



Percent of Arrests in Relation to Overall Response Time
Source (74)

APPENDIX ITEM H 1

CRIMINALS SHOULD BE CURED, NOT CAGED

What are prisons for? To reform criminals, replied 77% of Americans in a recent Harris Poll. But 80% of the nation's "correctional" employees merely guard 426,000 inmates in a hodgepodge of archaic institutions that range from adequate to appalling. Only 20% of the country's correctors work at rehabilitation And 30% of all released offenders (75% in some areas) are reimprisoned within five years, often for worse crimes

What eludes U S penology (from the Latin *poena*, meaning pain) is the basic recipe of effective punishment speedy, inescapable prosecution, a fair chance for a fresh start, and state-upheld values that offenders can reasonably acknowledge as superior to their own. For one thing, 77% of reported U S crimes are never solved, many are never even reported Thus, most caught criminals see their problem as bad luck rather than bad character. Indeed, such are the human mind's defenses that the guilty often feel innocent Dostoevsky astutely depicts a would-be murderer viewing his act as "not a crime."

All the more resistant is the typical U S. offender a failed male youth who wears the outcast labels of slum dweller, minority-group member, school dropout, unsuccessful employee and law violator Stripped of self-esteem, this loser compensates by hating and hurting life's winners And the U S criminal-justice system all too often reinforces his contempt for society's values. If the suspect cannot afford a skilled lawyer, he is pressured to plead guilty without a trial For the same crime, different judges hand out wildly disparate sentences

Perhaps the most appalling aspect of all this is the fact that the number of crimes is increasing because the number of young people is growing, and they commit most crimes Viewing this situation objectively leads to two basic conclusions First, the U S is now spending $1 billion a year for corrections in ways that can only increase crime Second, a dramatically different approach can decrease it—for the same money

Barriers to Reform

The notion that imprisonment corrects criminals is a surprisingly recent idea Before the 18th century, prisons were mainly used not to punish but to detain the accused or hostages—the debtor until he paid, for example To combat crime, Europeans castrated rapists, cut off thieves' hands, tore out perjurers' tongues. England boasted 200 hanging offenses When crime still flourished, reformers argued that overkill punishment is no deterrent In 1786, the Philadelphia Quakers established incarceration as a humane alternative Seeking penitence (source of "penitentiary"), the Quakers locked convicts in solitary cells until death or release So many died or went insane that in 1825 New York's Auburn Prison introduced hard labor—in utter silence Until quite recently, the U S relied almost entirely on the spirit-breaking Auburn system of shaved heads, lockstep marching and degrading toil in huge, costly, isolated cages that soothed the public's fear of escapes

The caging syndrome has crippled U S penology in every way Because forbidding forts refuse to crumble (25 prisons are more than 100 years old), there is often no way to separate tractable from intractable men—the preliminary step toward rehabilitation Of course barriers to reform go far beyond the limitations of buildings It is ironic that only in Mississippi are married convicts allowed conjugal visits with their wives; sexual deprivation in other American prisons incites riots, mental illness and homosexuality By using strong inmates to control the weak, authoritarian officials create an inmate culture that forces prisoners to "do your own time"—trust no one freeze your mind, be indifferent Roughly 80% of adult inmates need psychiatric help. But ill-trained, ill-paid guards are so concerned with security that treatment staffs can barely function All American prisons have only 150 full-time psychiatrists, half of them in federal institutions, which hold only 5% of all prisoners

Even humane prison officials are still generally paying mere lip service to "individualized treatment"—the new ideal of curing each prisoner's hang-ups and converting society's misfits to crime-free lives. In progressive prisons, to be sure, guards are taught to break up the inmate culture by friendly communication; inmates are classified in graded groups, promoted for good conduct and hustled toward parole Indeed, the average stay today is 21 months; the average lifer exits in 20 years

Yet all this usually amounts to what Penologist Howard Gill calls "bird-shot penology" All the bands, baseball, radios and rodeos cannot gloss the fact that real rehabilitation is rare Caging still outranks curing; short funds dilute short-stay effectiveness And prison job-training is a scandal Federal prisons do well, yet only 17% of released federal inmates find jobs related to their prison work Most state prisoners get no usable training because business and unions have rammed through laws preventing competition by prison industries At least one-third of all inmates simply keep the prison clean—or do nothing.

Building Community Bases

To attack the basic prison problem—isolation from society—the President's Commission on Law Enforcement and Administration of Justice advocates a drastic shift to "Community-based corrections" Two-thirds of all offenders are already being supervised outside the walls, on probation or parole But probation is still widely regarded as clemency rather than treatment; only one-third of American courts have reasonably adequate probation staffs Burdened with over 100 cases apiece, plus pre-sentence reports for judges, many probation officers can give offenders only ten or 15 minutes, once or twice a month To cut average caseloads to 35 per officer, the commission urges a quick and major staff increase—sevenfold in misdemeanor cases, which now too often turn jail graduates into prison felons

There is no question that probation can be more effective than prison In one experiment by the California Youth Authority, convicted juvenile delinquents were immediately returned to their homes or foster homes, where parole officers grouped them according to their special characteristics and then provided intensive treatment—tutoring, psychotherapy, occasional confinement After five years, only 28% of the experimental group had their paroles revoked, compared with 52% of a similar group that was locked up after conviction By giving 600 more delinquents such treatment California avoided paying $7,000,000 for a new reformatory Supervising adult felons on probation costs $200 a year, v $2,000 for imprisonment, and about $13,000 per inmate to build new prisons By tripling its probation staff in 1963, New Mexico cut its prison population 32%, now saves $4,000,000 a year in prison costs and welfare payments to prisoners' families The whole prison ethos can be changed Just as astronauts train by simulating space conditions so prisons should be located right in the inmates' community, where a vastly augmented treatment staff could use local resources to help the offender identify with anticriminal people and succeed at legitimate work

To reduce regimentation, says Criminologist Daniel Glaser, no prison should house more than 100 inmates, v 4,000 in many of today's bastilles, small groups of tractable prisoners could live in Y M C A-type hotels or apartments And prisons should exploit the ironic fact that mere aging is now the main cause of going straight Since youths are the most defiant prisoners, they should be scattered among older, wiser men, not segregated as now In a community setting prisons can expand work-and-study furloughs, arrange part-time release programs with industry, universities and therapy groups such as Alcoholics Anonymous At the federal penitentiary in Danbury Conn, for example, Dictograph Products Inc sponsors a training program for microsoldering hearing aids, hires the trained convicts after their release Geared to problem solving, such treatment reconciles offenders with relatives, schools, employers It is urgently needed in local jails, which should be integrated into state correctional systems Under this concept, prisons would resemble hospitals, "punishment" would produce functioning human beings—the way to crime prevention

Searching for Reinforcement

Crucial to such reform is a more rational definition of criminal behavior For example, half of all county-jail inmates are in for drunkeness—something far better treated at public-health detoxification centers In mass arrests of small drug pushers, police mainly cut supplies and raise prices, which addicts then meet by more thefts and burglaries In New York City, the daily toll is almost $1,000,000, and addicts account

for half the city's convicts Not only are big suppliers untouched, a national trend to mandatory sentences and no parole or probation in drug cases is defeating curative efforts

In general, sentences should be far more flexible An American Bar Association committee recently urged maximum five-year terms, except for dangerous offenders* But even with good pre-sentence reports, trial judges cannot predict whether *x* years will suffice Some countries require written sentence opinions for higher-court review American law should probably hand the job to penal experts Federal judges already may send convicted persons to classification centers before sentencing, New York's bail-pioneering Vera Institute of Justice is retraining such people for three months before the judge decides In California, which leads the U S. and most of the world in systematic penology, judges give indeterminate sentences, and correction officials then determine the offender's fate according to his well-tested possibilities In 1966, only 7% of California felons went to prison Of all state inmates, 20% actually work outside in 80-man forestry crews, saving California millions

Thus far, most American prison reform has focused on the traumas of release The pacesetting federal system, which includes a no-wall unit at Seagoville, Texas, has institutionalized the 'halfway houses" pioneered by religious groups to shelter ex-convicts seeking jobs Intensive prerelease training at federal centers has cut some graduates' repeater rate by 15% Texas boasts a remarkable six-week course at a relaxed center near Houston, where civilian volunteers (bankers, auto salesmen, personnel experts) teach felons how to get loans, buy cars, apply for jobs—things many never knew Result a repeater rate of 13 9%, down from 37% five years ago

All this suggests that prisons are slowly absorbing a key lesson of modern psychology desirable behavior is best induced by "positive reinforcement"—rewards rather than punishment Thus, federal prisons and 24 states now use work-release schemes pioneered by North Carolina, where 12,000 select convicts have earned $10 million in ten years—even working as court reporters, while partly supporting their families, partly paying their prison keep and landing future jobs At California's San Joaquin County Jail, one recent prisoner was an ex-airplane dealer who spent all day flying charter planes, duly landed for the night lockup The big problem though, is how to 'reward' far less promising inmates At the new federal juvenile unit in Morgantown W Va , one well-researched solution is to let delinquent boys loaf completely—or choose to work and study for 'points' that pay off at a penny apiece Earnings can hit $40 a week, cutting confinement time in the process

Some critics argue that many of the new ideas still fail to solve the criminal's basic problem his firm belief that society is wrong, not he As critics see it, even the best prison is still a totalitarian society that spurs human resistance and reinforces the criminal's cynicism In this view the solution is getting criminals to reform themselves in the process of reforming other criminals This approach has worked wonders in New Jersey with groups of 20 delinquent boys housed at Highfields, the old Lindbergh mansion After working at daytime jobs the boys spend evenings listening to a selected boy's woes—and then deflating his rationalizations Nonviolence is enforced by an adult sitting quietly outside the circle, but things get rough, for no boy leaves Highfields until he has proved to both his peers' and the adult's satisfaction that he has mastered his hang-ups enough to attain a very practical goal—avoiding future arrest

In 1964, North Carolina courageously put young felons into an open prison camp staffed entirely by group-therapy veterans —recently paroled California convicts It worked until the legislature nervously stopped the money (The head parolee later became a professional penologist) Several states profitably rely on Author Bill Sands *(My Shadow Ran Fast)*, a reformed California armed robber, whose Seven Step Foundation sends ex-convicts into prisons to counsel inmates and runs "freedom houses" to help releasees Of 5,000 Seventh Step graduates so far, only 10% have returned to prison An ex-New York prisoner named Hiawatha Burris has carved a new career persuading reluctant employers to hire ex-cons. With federal funds, Burris started Washington's Bonabond, a convict-run agency that has bonded and guided 441 men in new jobs Bonabond has never had to pay off Only 7% of its charges have been rearrested, none for crimes against their employers Some employers now skip the bond and just take Bonabond's word

"We might feel that in prison we've paid our debt, says Burris, 'but we know the community doesn't think so Doing time is not enough—we have to give back to the community" And that may be the most profound point The goal of crime prevention can be reached partly by attacks on crime-breeding social conditions, partly by creating more efficient police and courts But also vital is a new concept of mutual reconciliation between convict and community the outcast must be allowed to earn his way back and thereby learn to believe in himself.

Toward Self-Respect

Can prisons be abolished? Not quite perhaps 15% of inmates are dangerous or unreformable But Attorney General Ramsey Clark, for one, estimates that 50% of today's inmates do not belong in prison, removing them would sharply improve attention to the rest And caging must go It is scandalous that in the U S only about 2% of all prison inmates are now being exposed to any kind of reform-oriented innovation

What most convicts really need is neither repression nor sentimental treatment as patients, but rather opportunity for restitution Never was American prison morale so high as during World War II when the nation relied on convicts to work their heads off producing almost $300 million in war goods and food Never was morale so low—and riots so rife—as when idleness returned after the war On many occasions, prisoners have fought fire and flood with a zest and courage that amazed and won the communities they saved. As guinea pigs in countless medical experiments, they have voluntarily suffered malaria, cancer, syphilis and other ugly ills for the public benefit—and their own

The key is self-respect prisons are full of men who perhaps above all need a chance to serve society in order to respect themselves When the law-abiding public accepts that fact, U S penology will be on the road to genuine rehabilitation

Source (67)

* A seeming example Winston Moseley, 33, convicted for the 1964 murder of Kitty Genovese whose screams were disregarded by 38 neighbors in New York City Now a lifer at maximum-security Attica Prison (the wall alone cost $1 275 000 in 1931) Moseley was recently hospitalized in Buffalo for a self-inflicted wound Last week he escaped from the hospital, raped a housewife, terrorized the area until an FBI agent talked him into surrender Whether or not Attica is the right place for Moseley he obviously needs confinement

APPENDIX ITEM H 2

Inside San Quentin

Big California Prison Illustrates Difficulties Of Rehabilitating Men

Officials Cite Lack of Funds, Problem of Keeping Order, Some Incorrigible Inmates

Twenty Stabbings Each Year

By RONALD A BUEL
Staff Reporter of THE WALL STREET JOURNAL

SAN QUENTIN, Calif —The food is lackluster, the accommodations are crowded and the guards are tough But, when more than half of San Quentin's 4,000 prisoners refused to report to their prison jobs recently, the usual grievances weren't cited.

The complaints, in fact, sounded strangely like a sociologist's checklist The state prison's rehabilitation and vocational training programs, the inmates said, sadly fail to live up to expectations, and they charged that the parole system, designed to shepherd criminals back into society, was so unfair that it only heightened their bitterness

Warden Louis S Nelson's immediate response was to lock all the prisoners in their cells so they could "cool off" But officials concede that there is room for improvement "We're not trying

to whitewash this place," says J L. Park, associate warden, "but we're doing the best we can with a limited budget"

San Quentin has become a focus of controversy When it was established in 1852, prisons were viewed simply as instruments of punishment for evildoers Now the consensus of penologists and sociologists is that prisons should take as much interest in rehabilitation as in confinement But the resources are lacking Moreover, there is a sizable segment of the public strongly opposed to any steps in the direction of what it regards as the "coddling" of prisoners

The Budget Gets Cut

Money is indeed a problem As part of Ronald Reagan's program to trim state spending, San Quentin's $8 million budget was cut by 10% last year Seven of the prison's 389 guards were dismissed, but the axe fell more heavily on other personnel, three of the 18 vocational instructors were dropped, as were 20 others in counseling and rehabilitation positions

San Quentin has been successful at confinement—only seven men have escaped in the last five years—but its record at rehabilitation hasn't been good Half the men released from the prison are back in jail within five years—a recidivism rate no lower than that of 20 years ago

Sociologists say institutions around the nation have similar records About 80% of all prisoners released eventually are jailed again, it's estimated But, although penologists consider California's 12-prison system one of the nation's more progressive ones, criticism of it has been particularly strong

One San Quentin official concedes in private conversation, "No one involved with it can honestly defend San Quentin and California's prison system" Independent critics are more vocal —and theoretical "If I ran San Quentin," says Rick Cluchey, a former inmate (kidnapping) now turned social critic and reformer, "the first thing I'd do is tear down the walls throw away the barbed wire and take away the guns"

Glass and Philosophy

'The treatment center I'd replace it with," Mr Cluchey continues, "besides having plenty of glass, would be dedicated to the philosophy that being removed from society is punishment enough A man shouldn't be punished once he's inside '

Warden Nelson doesn't have much time for philosophy "I've been accused of being a simple man, and I think that's true," he says "I believe in a system of reward and punishment" He points out that he has plenty of practical problems to contend with 'This is no Boy Scout camp," Mr Nelson says, opening a case of homemade knives, bludgeons and zip guns confiscated from inmates

San Quentin's 400 acres are located on a peninsula jutting into San Francisco Bay 12 miles north of San Francisco There is a walled-in 40-acre compound containing more than two dozen buildings most of them old and deteriorating Officials emphasize that merely keeping order is a constant problem

The median age of the 3,999 inmates is a young and volatile 32 About 14% of them are killers, and another 16% are imprisoned for assault or sexual offenses Each year there are about four killings and 20 stabbings in the prison not to mention countless scuffles in the yard The racial mix is volatile too, half the prisoners are white, 32% Negro and the remaining 18% Mexican-Americans A racial clash last year embroiled 1,300 prisoners, of whom eight were shot by guards quelling the violence

Close Quarters

Crowded living conditions cause additional friction "San Quentin has been overcrowded since the day it opened," says Mr Park, the associate warden About 2,100 of the inmates are living in pairs in the cells, which are 11-foot by 4½-foot cubicles with 7-foot ceilings This arrangement contributes to another continuing problem—homosexuality, either voluntary or enforced by aggressive inmates known in prison jargon as "jockers"

To the occasional visitor, the atmosphere of San Quentin seems calm, orderly—and monotonous The mornings, often shrouded in the damp chill of the bay, begin with a blast on an amplified buzzer at 6 15 This starts an unvarying schedule of meals (followed by shakedowns for silverware), work or idling in the yard, and final return to the cells by 10 20 p m The food is bad, although prison officials say they've been trying to improve it. "Would you like to eat beans all the time?" one inmate asks Death Row inmates recently held a hunger strike to protest the quality of the meals

Some inmates have night classes in various subjects or attend meetings of such groups as Alcoholics Anonymous Once a week there is a movie selected by the prisoners (last Saturday's choice Cool Hand Luke, a drama of prison brutality) The Black Muslims have been given permission to hold services once a week, by prison fiat, they must open the meetings to all, so San Quentin may have the nation's only integrated Black Muslim services

Overall, the authorities seem to be in firm control But the peaceful surface view tells little of the tensions beneath, prison officials suggest There are cliques of "low-riders" (hardboiled hoodlums), Muslim militants, homosexuals and even Nazis Prison politicians circulate an inflammatory underground newspaper called The Outlaw (it promoted the strike in February) that officials have been unable to suppress It is printed on the prison's own duplicating machines

"Who's kidding whom about all the things that go on' asks Leo S Shepard, who directs one cell block Mr Shepard describes the scene when his men return from work or the yard for the 4 p m head count 'The men arrive, all 900 of them at once, and they're running all over the damn place, shouting and causing confusion It takes at least 15 minutes for my nine men to lock them up"

Amid such pressures prison officials are little inclined to be sanguine about rehabilitation They trace tension within the prison to "a small percentage of agitators found within any criminal group," and contend that some of them are incorrigibles who can't be rehabilitated But outside students of prison systems tend to disagree

"The prison's tension and pressures aren't the result of agitators," says one sociologist familiar with San Quentin, "but of real grievances—inmate boredom, the tough, inhuman attitude of many guards and administrators, and the fact that nearly 4,000 men are thrown together in a small place that is dilapidated and unfit"

Learning a Trade

Since the average inmate has only a seventh-grade education, penologists consider vocational training programs important, looking to the time when a man may return to society And the prisoners seem to agree, there are long waiting lists for the courses San Quentin offers in 23 trades, ranging from auto mechanic to baker to plumber But only 300 men, or less than 8% of the prison population, can be accommodated in the programs 'If we only had the funds and the facilities, we could easily double enrollment," says Keith Hayball, supervisor of education

Less popular is the prison industries program which currently involves about 800 men San Quentin has a furniture factory, a detergent compounding plant, a clothing factory, a laundry and a big cotton textile mill Selling products, primarily to local government agencies, helps the prison's budget, and Paul Lemon, industries director, considers the work good therapy as well "The men learn skills and good work habits, and the end product gives them a feeling of accomplishment," he says

The men who are paid two to 16 cents an hour, depending on experience, feel differently They point out—accurately—that there aren't any cotton textile mills anywhere else in California Says one inmate "When I came here they told me I needed work skills so they were assigning me to the cotton textile mill Hell, I had a record of stability in technically skilled jobs I refused to go so they said, 'We'll see how you like to hang around the yard'" Eventually, the inmate got into the vocational training program instead

"Actually, assignment to a plant job is likely to mean that we have an opening, not that it's the best possible treatment," one official concedes He adds, "A great deal that goes on at San Quentin is falsely justified in the name of treatment" In the textile mill, an official notes that the machinery is old-fashioned "We do that on purpose," he says "We like to keep as many men as we can as busy as possible"

The prison has programs with academic orientations One of the more successful ones enrolled 185 inmates in a series of college classes Financed as an experiment by a $69,000 grant from the Ford Foundation, it ended in January, and there are no signs that additional money will be forthcoming Stuart Adams, the research criminologist who supervised the program,

says it "made a small dent in the climate and atmosphere of the prison if only because it gave some of the men something intellectual to discuss while standing in the chow line"

What the inmates do talk and think about is a subject of intense interest among the sociologists. Of one group, the prisoners who don't know when they may get out of San Quentin, or who don't expect ever to get out, Mr. Cluchey says, "They create a fantasy world." His observation is that these men build a social structure of their own inside the prison, concerned largely with power.

"The men look for any way possible to elevate themselves to show that they are the toughest or the smartest," he says. "It may mean fighting among themselves, or pressuring others into homosexuality, or it can mean accumulating prison status through gambling debts on dominos, or making book on the horses with the daily newspapers."

Looking Ahead

For the prisoners who expect to be released in the foreseeable future, there is an obvious and absorbing topic. What they will do in the outside world. "What's the first thing you're going to do when you get out?" one convict asked a friend who was anticipating parole. The second man replied soberly that he would try to learn a new job and find an apartment in a nice neighborhood. "No man," the questioner said to the accompaniment of raucous laughter, "I mean the first thing you're going to do."

The parole system is a source of deep resentment among inmates. Under California's indeterminate sentence system, the Adult Authority (parole board) has enormous latitude in fixing prison terms. In hearings before the authority, prisoners aren't allowed counsel and can't produce witnesses or testify in their own behalf. Yet the authority can revoke parole for minor violations, the bulk of them not criminal offenses.

Penologists point out that California felons serve longer sentences than comparable criminals in most other states. But Joseph R. O'Brien, San Quentin's classification and parole representative, emphasizes that the authority has a serious responsibility. "You have to realize who the client is," he says. The Adult Authority's client isn't the inmate, it's the public."

Some critics of the system cite the case of Micl Murphy, a parolee who was working as an actor in San Francisco. Mr. Murphy developed laryngitis, to continue performing, he took some cough medicine. But codeine in the medicine showed up in a routine urinalysis ordered by the authority. Mr. Murphy's parole agent recommended that no action be taken against him, but the parole board noted that he had used drugs in the past and sent him back to prison for six months. There are many who defend strict parole policies, of course, arguing that lax parole practices are responsible for much crime.

Inmates complain bitterly that 'the bulls (custodial officials) run the board." The seven-member Adult Authority now includes a dentist and a lawyer; the other members are two former policemen, two parole agents and a former district attorney. At one session of the board, an inmate says, a former policeman hoisted his shirt to display scars. "that punks like you gave me." Critics suggest that the board include sociologists or psychologists. Mr. O'Brien replies that such members "would be working in theory, not practicalities."

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PART THREE

REQUEST FOR PROPOSAL

Prepared by: The Assembly Office of Research for the
ASSEMBLY COMMITTEE ON CRIMINAL PROCEDURE

SPRING 1968

STAFF: Robin L. Lamson, Research Specialist
Betty Spacy, Secretary
Veronica Crump, Secretary

SECTION I

THE PROBLEM

Crime trends are determined from summary statistics that fail to distinguish between serious and nuisance crimes However, it would be possible to sample into specific offenses to determine several levels of seriousness For example, it is obvious that the beating and raping of a six-year-old child differs from the alleged rape of a somewhat compliant bar pickup Yet, statistically they are given equal weight in the crime count

The present system of gathering crime statistics does not permit any real evaluation of offense the degree of seriousness and impact on the existing justice structure This proposal seeks to develop a more refined method of judging the seriousness of offenses with the ultimate aim of employing the system statewide so that we may have a more accurate crime picture (See Appendix A for a full statement)

SCOPE AND LEVEL OF EFFORT

(A) This research proposal seeks to

1 Determine existing crime reporting practices by police agencies with respect to specific categories of selected general crime classifications,
2. Identify degrees of differences in crime definition in police reporting;
3 Develop accurate definitions of categories of offenses in the selected general classifications;
4. Define levels of seriousness of general classifications and categories within the classifications

(B) Crimes selected for intensive study are arson, robbery, felonious assaults (with particular emphasis on P C 217, assault with intent to commit murder; P C 217 1, attempt to kill or assault public officials; P C 242, battery; P C 245, assault with a deadly weapon), burglary, rape and kidnapping with emphasis on P.C 209, punishment of kidnapping for ransom or reward. Each offense will be treated separately and will in and of itself constitute a project The offenses have been selected because of their violent nature reflecting a greater degree of seriousness in terms of perceived social wrong with the exception of burglary It was chosen due to the larger volume of reported offenses and the extreme variation in categories of the offense

(C) Police and sheriff's departments serving representative communities possess the basic data in their files in the form of complete offense reports including dispositions The number of reports to be reviewed for each offense and within each agency should be sufficient to provide statistical validity and will cover both urban and rural areas

(D) Definitions need to be developed for each category of offense within each general classification A scale of weighting to determine levels of seriousness will follow Both preliminary definition systems must be approved by the project director before data is gathered Schedules will be developed for use in the field review of crime reports

(E) An important feature of the field data gathering will be to determine how closely the police reports are classified with respect to preliminary classifications of categories of offenses developed by contractor A scheme will be developed for showing the number of cases in which the police agree with adopted classification and the number with which they disagree The differences in police classification should evolve

(F) Police and sheriffs' departments from which data are to be gathered are as follows

1 Police departments, *larger cities*	2 Police departments, *medium and small cities*	3 Sheriff's *departments*
San Francisco	Riverside	Kern
Los Angeles	San Mateo	San Joaquin
San Diego	Burbank	Los Angeles
Bakersfield	Stockton	Alameda
San Jose		Contra Costa
Berkeley		Riverside
San Bernardino		

(G) The Bureau of Criminal Statistics of the Department of Justice reported for the year 1966 the following number of offenses in each of the selected crime classifications from which the indicated sampling of report reviews will be made

	Number of Reported cases	Sample
Arson	1,500	100 percent
Robbery	22 000	{10 percent larger agencies {20 percent medium and small agencies
Felonious assault	29 000	{Same as for robbery with modification for specific {Penal Code section violations
Burglary	234 000	5 percent
Rape	4 000	20 percent
Kidnapping	(The Bureau of Criminal Statistics is presently completing a *comprehensive study of report reviews of kidnapping cases for the* year 1966 All cases evolved from robbery or rape cases No cases were reported for ransom Review of this report will determine whether additional study is required)	

PRODUCTS TO BE FURNISHED

1. A standard set of crime definitions for those offenses included in this request for proposal that can be used in accurately categorizing those offenses reviewed in law enforcement files

2 A ranking system of crimes as to their seriousness including the criteria for the ranking This should include both objective costs (size of annual public loss, taxpayer cost to process, incarceration, etc) and subjective costs (to the victims, social value structure, etc) Both products one and two should clearly indicate the method and techniques used in defining and obtaining the information

3 The results of the statistical sample of law enforcement crime files when applied to the ranking system, e g , how do the crimes sampled in California appear when ranked according to the seriousness system

4 Information which will provide the Legislature with a logical basis for making statutory changes in the criminal law including more realistic basis for assessment of penalties and a means for re-evaluating the existing criminal law with respect to the six offenses studied. This should include recommendations and suggestions as to how this information might be used by the Criminal Procedures Committee The impact upon the system of criminal justice brought about by recommendations and suggestions should be estimated and included in the final report

5 Recommendations concerning other possible uses of the study results as well as further possibilities for research revealed during the study, including justification for this additional study.

SECTION II

THE PROBLEM

Crime deterrence and prevention today relies almost exclusively upon legislative penalties (prison or jail sentences, fines probation) or the morality of citizens in society There is considerable evidence that while vital, neither of these two forms of criminal deterrence are sufficient to prevent all criminal acts Many criminals are too clever or too impulsive to be restrained by such factors

A third method of deterrence is that of making the commission of a crime more difficult through physical means and/or careful planning This method has received little overall attention except for a few selected crimes such as embezzlement While it is doubtful if crimes of passion and personal violence can be reduced by such methods, such crimes constitute but a small portion of crime Most crime is property crime and this is capable of being influenced by physical means.

Little is known about the nature and effectiveness of programs designed to make crime more difficult by utilizing physical or technical means to reduce the opportunity or increase the chances of apprehension The development of information and specific deterrent study projects is the purpose of this proposal

SCOPE AND LEVEL OF EFFORT

(A) This research proposal seeks to·

1 Gather sufficient statistical information on selected crimes to obtain specific and detailed information as to the nature of these crimes

2 Develop specific and detailed field study projects in the community so as to evaluate the feasibility and effectiveness of a program of deterrence based on the methods of making the committing of a criminal act more difficult

(B) The four crimes selected for examination are auto theft, burglary, robbery, and bookmaking The first three contain considerable potential for mechanical manipulation

1 Auto theft is a crime that should lend itself well to this type of project It is an offense that introduces many young persons to a criminal career

2 Burglary is the single largest crime in California and the United States It also has one of the lowest clearance rates by law enforcement.

3 Robbery is an offense of great public concern because of the serious nature of violence associated with it.

4 Bookmaking differs from the others in that it lacks a victim It, therefore, poses unique prevention and deterrent problems

(C) Step two of paragraph (A) cannot be undertaken until information is assembled as to the nature and kind of crimes under study; i e how a criminal act can be made more difficult depends upon how well the act is understood Considerable innovation and imagination will be needed to develop the proposals

(D) Since considerable overlap with Section I of this request for proposal exists in terms of the procedures needed to gather the information, obtaining the information from law enforcement files for Sections I and II should be done at the same time (see paragraph (C) under Scope and Level of Effort of Section I)

(E) To this extent, the same law enforcement agencies should be used to gather information as outlined in paragraph (G), Section I

(F) The sample size for robbery and burglary has already been determined in Section I and is sufficient for this part of the proposal (paragraph G, Section I)

Auto theft should be handled as follows

Number of reported cases	*Sample*
87,000	5%

There were 1,389 bookmaking offenses reported in the state in 1966, 1,282 were reported in Los Angeles County A 100 percent sample in Los Angeles should be made A study should be made in other areas, however, to determine why so few offenses of this nature have been reported

(G) The contractor should examine those factors connected with auto theft, burglary, robbery and bookmaking that have significance from a preventive standpoint For example

1 General·

(a) Geographic distribution of sample offenses (location of offense)

(b) Demographic characteristics of sample offenses

2. Specific:
   (a) Auto theft: condition of security of vehicles when stolen (locked, keys in ignition, broken window, etc.)
   (b) Type of vehicle (make, model and year),
   (c) Owner/operator or user;

3 Burglary
   (a) Possible related offenses—real intent of offenders (rape, kidnap, assault, etc — estimated only, in many cases),
   (b) Nature of structure and means of entrance;
   (c) Preventive or alarm measures in effect (dog, lights, alarm, etc.),
   (d) Prior victimization history.

4 Robbery
   (a) Use of weapon—armed or unarmed,
   (b) Degree of physical violence,
   (c) Time and date of offense;
   (d) Preventive measures available and/or in use,
   (e) Prior victimization history.

5 Bookmaking:
   (a) Because of the general lack of information on this subject, the contractor will want to carefully examine the 1966 Los Angeles cases to determine a profile on offense characteristics, offenders and "victims."

PRODUCTS TO BE FURNISHED

1 Statistical information needed in identifying those aspects of the selected crimes that is useful in determining how these crimes may be made more difficult to commit

2 Proposals for specific field tests designed to make the commission of a crime (or selected aspects of it) more difficult, if not impossible.
   (a) A minimum of two proposals for each selected crime will be required
   (b) As far as possible these proposals should not require additional law enforcement personnel for their operation to any great extent
   (c) Cost factors in the proposals should be kept in mind from a practical financing standpoint, although no specific dollar limit has been determined.
   (d) Field test proposals should be kept within a 12-month research period as much as this is feasible.

3 The contractor should supply full evidence as to how he has arrived at his conclusions He should also provide any suggestions on additional research activity developed as a result of this section.

REPORTS AND DELIVERY TIME—Sections I and II

The contractor shall deliver to the project director the following items in the quantities and during the time periods listed below

Item	Description	Quantity	Delivery
1	Detailed work plan and schedule	4	Two weeks after effective date of contract
2	Progress report	4	Two months after effective date of contract
3	Progress report	4	Four months after effective date of contract
4	Preliminary comprehensive report	4	Six and one-half months after effective date of contract (The Chairman of the Criminal Procedures Committee shall be allowed two weeks for review and suggestions.)
5	Final comprehensive report		One month after the two-week review period is over

The progress reports will outline the progress to date, explaining only revisions in work plan or schedules for the following period, discuss problems encountered and the methods used to surmount them, and include other information deemed pertinent by the project director

Evaluation: Proposals will be evaluated in accordance with the following criteria
   (a) Technical excellence and feasibility of methodology proposed,
   (b) Technical competence and experience of personnel to be assigned,
   (c) The availability of or access to necessary research facilities;
   (d) Quality of proposed innovative approach to performing the work;
   (e) Economic efficiency of proposed methodology and managerial controls over performance and schedules,
   (f) Reasonableness and justification of price quotations in relation to tasks to be performed

NOTE The Assembly Rules Committee and the Criminal Procedures Committee reserve the right to make award hereunder without discussion of proposals received. Therefore, proposals should be submitted initially on the most favorable terms, from a price and technical standpoint

Period of performance shall be eight months after award of contract if at all possible The period may be extended to 12 months if absolutely necessary with proportional changes in the report delivery schedule.

Type of contract: The offerer's proposal shall be based upon the issuance of a firm fixed price contract. If two leading proposals are judged equal in all other respects, the lowest price will be the deciding factor.

Cost data: A cost breakdown shall be submitted with the offerer's proposal and shall include but not be restricted to the following items:

Personnel (title)
Employee benefits (rates)
Supplies (itemize)
Communications (telephone, postage)
Services (reproduction)

Consultants (daily fee)
Travel (itemize for staff and consultants)
Per diem (itemize)
Other costs
Total costs

Subcontractor contemplated: If subcontractor or outside consultants are contemplated, a description of these persons or agencies, their tasks, schedules and costs, etc shall be included

COORDINATION OF INFORMATION GATHERING BETWEEN SECTIONS I AND II

Separate technical and price proposals should be submitted for Sections I and II The Contractor should indicate added costs in Section I as a result of gathering information for Section II

NOTE It is important to require only one entry into law enforcement record systems so as to maximize their cooperation

Confidentiality of information: Except as necessary to carry out the provisions of this contract, the contractor shall not disclose any information obtained in the performance of this contract, or make or supply any reports relative to the work called for, except to the Criminal Procedures Committee

Covenant against conflict of interest: The contractor additionally warrants that no part of the total contract price provided herein shall be paid directly or indirectly to any officer or employee of the California State Assembly as wages, compensation, or gift for, or in any manner related to, acting as officer, employee, subcontractor or consultant to the contractor, in connection with any work contemplated or performed under or in connection with this contract

Ownership of documents: All papers and documents required to be prepared under the contract shall become the property of the California State Assembly upon payment to the contractor of all amounts due Such papers and documents may thereafter be used by the California State Assembly as it may see fit without additional compensation to the contractor

Cost for preparation of proposals: All offerers are hereby advised that the costs of preparing their proposals in response to this RFP, and any costs related thereto, shall be borne by their respective firms The California State Assembly shall incur no obligations whatsoever for such costs, whether or not a contract is awarded as the result of this RFP

Employment practice: The contractor shall comply with the provisions of the California Fair Employment Practices Law and with applicable provisions of the Federal Civil Rights Act

Proposal requirements a Twenty (20) copies of the proposal must be submitted by the close of business (5.30 pm PST) _____ and shall be addressed to

Honorable W Craig Biddle, Chairman
Criminal Procedures Committee
Room 5175, State Capitol
Sacramento, California 95814

The envelope shall bear the identification—*RFP No 82531*

b The proposal shall be submitted in two parts, *technical* proposal and *price* proposal The offerer's proposal must disclose his technical approach in as much detail as possible In addition, the requirements of the administrative and cost proposal section of the RFP must be complied with *Offerers are advised that paramount consideration shall be given to the evaluation of technical proposals, in the award of a contract hereunder*

Unnecessarily elaborate brochures and other presentations beyond that sufficient to present a complete and effective proposal are not desired and may be construed as an indication of the offerer's lack of cost consciousness Elaborate artwork, expensive paper and bindings and expensive visual and other presentation aids are neither necessary nor desired

c The format of the proposal should take the following form

1 Introduction and/or overview.
2 Technical approach
3 Work program
4 Schedules
5 Costs
6 Personnel qualifications
7 Facilities and equipment
8 Subcontractors and other resources

Proposals may not exceed 40 pages

d Requests for procedural information concerning this RFP shall be referred to Robin L Lamson, Project Director, Assembly Office of Research, Telephone No (916) 445-9098.

The project director will exercise immediate control over the project subject to the policy set by the Criminal Procedures Committee He will advise the contractor regarding project policy and objectives and provide liaison with local agency representatives to facilitate the project development and execution.

The project director may, at his option, invite one or more of the offerers to elaborate on their proposals before final offerer selection is made If the offerer proposes changes in the statement of work or proposes alternative programs, such changes and alternatives will be considered, provided it can be demonstrated that the project goal will be achieved and the total program benefit from these changes

e Bidders conference will be held in the State Capitol on May 10, 1968, at 10·00 a m.

APPENDIX ITEM A

FULL STATEMENT OF THE PROBLEM

THE PROBLEM

California's system of crime classifications is so broad that meaningful statistical information cannot be developed. Offenses are accounted for in general classifications—robbery, burglary, larceny, etc. Within each of these categories there is included a wide span of actual criminal acts from those considered most serious to those which are of minor consequence. For example, the burglary of an open garage port or tool shed by a child who takes a tennis ball does not carry the social danger of professional burglarizing of a well organized business. Systematic studies are needed to provide rational subclassifications with relation to the level of seriousness of offenses. The standard classifications now used are based on the legal definition of crimes, grouping into each large class a congeries of violation assumed to be reasonably alike since they are all given an equal value of 1.

The standard classifications for felony crime reports used in California are the same as those used in the *Uniform Crime Reports* of the F.B I · Willful homicide, robbery, aggravated assault, forcible rape, burglary, grand theft, and auto theft These classes of offenses are those most likely to be reported to the police They involve violence against person or property or thefts The gross numbers of offenses in these classes during a period of time are transferred into rates, considered to be index figures, which purport to measure the kind and intensity of injuries to the community caused by criminal acts

This method of measurement is defective. First, this is due to the underreporting of criminality. By arbitrary rule, only the most serious of the concurrent crimes in an event is counted, such as when a homicide, rape and theft occur together, the rape and theft are not counted Because all offenses in a class are considered equivalent, the extent of social injury caused by the offenses cannot be properly evaluated. Each class contains criminal events which show great variations in that respect in spite of the fact that their legal definitions may coincide

Professors Sellin and Wolfgang in their book, *The Measurement of Delinquency* propose a weighting system for crimes involving personal injury or loss of property as a basis for indexes They used the same offenses as used by the Bureau of Criminal Statistics for felony crime reports but ignored the specific labels attached to these acts by law They examined the objectives, effects of the acts, and objectively ascertainable aggravating circumstances Numerical values were given to each event; thus a graduated scale for each offense resulted

A further factor involved is the lack of an integrated criminal statistics system which provides for regular collection of *all* official information relating to crime and delinquency. As emphasized by the President's Crime Commission, if a serious effort is to be made to bring crime under control, a determined effort must be made to obtain facts about crime Safe streets require information on what makes the streets unsafe The thrust of the crime commission's report was toward a national integrated system of criminal statistics; however, each state must develop its own system first. Ronald Beattie, Chief of the Bureau of Criminal Statistics, California Department of Justice, proposes that the system should account for all offenses reported, the offender charged, and the disposition made of all persons and the charges accompanying them through the total process of criminal justice This calls for a full accounting of the activity of each agency, at each level—law enforcement, prosecution, courts and corrections, with a view to relating pertinent information from each agency to show exactly what happens to each individual offender who is processed through the system

Beattie goes further to point out that the first phase in the creation of the full accounting for the activities of each agency is a careful analysis of crime reports in the police agencies for the purpose of redefining and refining crime classifications and clarifying categories of offenses within each classification. This will serve to clearly differentiate the relative severity of crimes and make possible establishment of an acceptable scale of severity

The President's Commission on Law Enforcement and Administration of Justice raises crime classification issues with respect to citizen reporting of offenses. In its study of victims, the commission reported that the more serious the crime, the more likely it is to be reported. However, Phillip Ennis indicates that the scale of seriousness applied by the citizen shows only 65 percent of aggravated assaults in the sample were reported to the police; 46 percent of simple assaults, 60 percent of grand larcenies; but only 37 percent of petty larcenies Insurance recovery was reported to appear to play a role in the high rate of reported auto thefts (89 percent) and reported victimizations that are the result of automobile negligence (71 percent) Victims at the border of the criminal law apparently do not think the police should be involved Only 10 percent of the consumer fraud victims called the police, whereas 26 percent of the ordinary fraud victims (mainly those involving bad checks) did so.

Another observed problem has been the degree of distortion in offense reporting with respect to the arrest, prosecution, adjudication and correction processes. For example, a police agency may charge all persons with robbery who are arrested for carrying a concealed weapon The charge may be changed later on, once a complete investigation has been made, but the initial preliminary investigation would carry the robbery classification The California Adult Authority has frequently referred to the fact that many men convicted of burglary should have been charged with rape since this was their intent in breaking into a residence.

Thus, the present crime classification system is shown to have a number of deficiencies These deficiencies are manifested by providing the Legislature an inadequate means for evaluating or reevaluating classes of offenses when considering new statutory offenses, increasing or decreasing penalties, eliminating or reducing current offenses to lesser degrees, or reclassifying the offense either as a new felony or misdemeanor Likewise, the present classification is inadequate for logical administrative decision making and for evaluating social problems resulting from crime

If a proper crime classification system existed which reflected a clear definition of each category of offense, the Legislature would be in a much better position to address itself to statutory changes For example, burglary in California is currently divided into two general categories, first and second degree If within each of these categories a scale of severity existed, a logical structure of penalties could be devised which reflected the social wrong inflicted upon society Perhaps, even some categories of second degree burglary could be classified as misdemeanors This could have a considereable effect on the prosecution, adjudication and corrections programs

Police agencies could benefit from redefined and refined classifications in relation to policies and operations For example, the investigatory process in terms of deployment of personnel and time spent on investigations of categories of burglaries defined as being of lesser severity might be substantially changed, conceivably leading to more efficient and economical police operations.

A more realistic appraisal and evaluation of the crime problem as it affects society would be possible if there existed clearer definitions of categories of offenses which would reflect the severity in terms of social wrong to society. Development of logical curative programs would be much more feasible and reasonable from the standpoint of achievement of goals

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VOL. 25 REPORT 7

THE RECREATION GAP

A STUDY OF THE GROWING PROBLEM OF MEETING THE DEMAND FOR RECREATIONAL OPPORTUNITIES THROUGHOUT CALIFORNIA

by the

ASSEMBLY COMMITTEE ON
NATURAL RESOURCES, PLANNING, AND PUBLIC WORKS
CALIFORNIA STATE LEGISLATURE

Edwin L. Z'berg, *Chairman*

PART II 1965–67 COMMITTEE REPORTS

O. James Pardau, *Consultant*

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January 2, 1967

HONORABLE JESSE M. UNRUH
Speaker of the Assembly, and

HONORABLE MEMBERS OF THE ASSEMBLY
State Capitol
Sacramento, California

GENTLEMEN:

The Assembly Committee on Natural Resources, Planning, and Public Works submits herewith Part II of its 1967 report to the Legislature,[1] which deals with its studies of recreation planning and management in California.

This element of public policy, which is of profound importance to the quality of California life as the state continues its unprecedented growth, has generally not received adequate priority in the formulation of programs for meeting the spectrum of social needs in California. However, the growing gap between the supply of and the demand for outdoor recreation opportunities—especially in and near the large urban areas—is making it increasingly clear that this demand can no longer be met with short-range, stop-gap programs, but rather must be achieved by the formulation of a comprehensive, long-range program which will provide an orderly, continuously funded process for determining and meeting these needs.

Therefore, in accordance with its broad responsibilities in the field of comprehensive resources planning and management, the committee conducted an in-depth study of this matter. In its investigation of this complex subject, the committee held a series of intensive public hearings throughout the state, and received the carefully considered views of over two hundred witnesses, many of whom are experts in recreation planning and management in both the public and private sectors.

The attached report outlines the major dimensions of the overall subject, and presents a series of recommendations which if enacted should go far toward solving this problem of growing concern to all Californians.

The committee is grateful to the large number of citizens and professionals who presented their thoughtful, responsible views during the course of this study. They are to be commended for their interest in and contribution to the process of public policy formulation in this important field.

Respectfully submitted,

Edwin L. Z'berg

EDWIN L. Z'BERG, *Chairman*
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[1] 1967 Committee Reports
Part I: Conflict in the Redwoods (Coastal Redwoods Management)
Part II: The Recreation Gap (Recreation Planning and Management)
Part III: Man's Effect on California Watersheds (Forest Practices and Watershed Management)
Part IV The Last Frontier (The Conservation and Development of Marine and Coastal Resources)
Part V. Highway Beautification, Beautification and Maintenance of the Capitol Mall, Highway and Freeway Planning, Regional Planning in the Lake Tahoe Basin, the Filling of San Francisco Bay

INTRODUCTION

California is the most populous and rapidly growing state in the Union, with projections suggesting an estimated near doubling by 1980 of the 1960 population of 16 million people, and a tripling of the 1964 population of some 18 million people by 2020. Although the ultimate realization of such staggering estimates of growth is dependent upon the interaction of a series of constantly changing variables—and there is some recent evidence that new factors may be exercising previously unanticipated influence on these projections—there appears to be little doubt that California's unprecedented growth will continue into the foreseeable future, and on the basis of past experience probably at a rate even greater than the projections suggest.

The reasons for such spectacular growth are a matter for continuing discussion and speculation. However, foremost among them must be the singular variety and abundance of the natural resources found in the Golden State—a bounty of land, water, minerals, wildlife, vegetation, climate, and scenic beauty perhaps unmatched anywhere in the world. The impact of rapidly growing population on these unique natural resources is becoming increasingly evident, and the decisions in allocating these resources among competing uses are ever more difficult—especially in the face of the growing realization that the short-range approaches of the past are not only failing to solve many problems of growth, but may in fact be aggravating them

Nowhere is this more true than in the field of outdoor recreation Although it has been increasingly clear for some time that the demand for recreational opportunities has been outpacing the supply, that this demand will be intensified by the increasing leisure, mobility, and disposable income of an exploding population, and that the supply of outdoor recreational resources is essentially finite and will be inexorably reduced by the nonrecreational demands of growth, comprehensive and meaningful programs to meet this problem have yet to be formulated and funded. Public policy has failed to meet this need apparently because of the inability or unwillingness of government at all levels to assign recreation a high enough priority in its programs, although in response to immediate pressures it has formulated—and funded—massive, long-range programs in such equally vital areas as education, water development, and freeway construction.

While, as will be outlined subsequently, there have been clear warnings of the impending crisis, and a number of excellent special purpose programs have been developed by various levels of government and private interests, the essential fact is that most efforts to solve this problem have been concentrated on relatively modest, short-range bond issues, and have failed essentially to recognize the need for ongoing, continuously and dependably funded programs which will enable an orderly, long-range planning process for the acquisition and development of recreation areas by all levels of government and the private sector. The need for such an approach is clearly demonstrated by the air of emergency surrounding passage of the 1964 $150 million "stop-gap" state recreation bond issue. Although these funds will provide some emergency relief, it is clear that they will make only a limited contribution toward the meeting of the huge deficit in existing and projected statewide recreation needs.

Although as would be expected the major demand for outdoor recreation opportunities is in and near the large urban areas throughout the state, in the broader context it is clearly a statewide problem because of the high mobility, disposable income, and increasing leisure of the people. Therefore, while the emphasis in any new, comprehensive recreation policy clearly must be on assistance to local government in meeting the huge unmet demand it faces, attention must also be paid to providing a continuing supply of opportunities in the less populated, but increasingly utilized rural and scenic areas throughout the state.

Because of the importance of this matter to the future growth and development of California and the maintenance in some measure of today's quality of life, the committee initiated an in-depth study of the problem with the objective of formulating a comprehensive, coordinated policy for meeting—and funding—long-range outdoor recreation needs throughout California.

In its review of this complex subject, the committee felt that the following matters were of basic importance, and included them among its specific study objectives:

1. Inventory of existing recreational resources and facilities throughout California, including parks, recreational areas, riding, hiking, and bicycle trails, small craft harbors, etc. (classified according to the system established in the nationwide plan of the Bureau of Outdoor Recreation);
2. Determination of the unmet existing and projected demand for these recreational resources and facilities;
3. Examination and evaluation of the programs, and coordination thereof, of federal, state, and local government and private interests, for meeting the existing and projected demand for recreational opportunities throughout California, with special emphasis on
   a. The California Public Outdoor Recreation Plan, 1960, Parts I and II, with analysis of

its degree of implementation and relationship to

b. The California Comprehensive Outdoor Recreation Plan, as required by Public Law 88-578 for the state to be eligible for funds under the Land and Water Conservation Fund Act of 1965, including detailed analysis of the elements of the comprehensive plan to be planned and managed by—and the mechanics for coordinating among—the Departments of Parks and Recreation, Fish and Game, Conservation, and Water Resources;

c. The California State Development Plan being prepared by the State Office of Planning, with analysis of the elements focused on comprehensive recreation planning, and their relationship to the Comprehensive Outdoor Recreation Plan, including the coordination of studies of short- and long-run population projections, economic growth indicators, access to recreation areas by public and private transportation, proximity to projected population centers, disposable income spent for recreation, availability of leisure time, determination of land-use priorities, etc ;

d. Programs of other state agencies having potential impact on long-range recreational planning such as the Highway Transportation Agency, the Department of Agriculture, etc.;

e. Programs of federal agencies such as the Departments of Interior (especially the National Park Service, Bureau of Outdoor Recreation, Bureau of Reclamation, and Bureau of Land Management), Agriculture (especially the U.S. Forest Service), and Commerce (especially the Bureau of Public Roads), the Housing and Home Finance Agency, and the Army Corps of Engineers, authorized under such federal legislation as the National Park Service Act of 1929, various federal housing acts, the Wilderness Act, various flood control acts, the Land and Water Conservation Fund Act, etc ;

f. Programs of local government and other public agencies throughout California;

g Programs of private interests throughout California;

4. Analysis and evaluation of all methods for financing outdoor recreation programs, with special emphasis on those means producing a continuing source of revenue, such as user fees, annual permit fees, gasoline taxes, and tide and submerged land revenues;

5. Examination and evaluation of the organization structure for the planning and management of outdoor recreation in California, with special emphasis on the relative roles and responsibilities of those agencies directly and indirectly concerned with recreation, including the Department of Parks and Recreation, Conservation, and Harbors and Watercraft, the State Park Commission, State Recreation Commission, State Small Craft Harbors Commission, etc.

In context with the exploration of these specific matters the committee reviewed the following items:

a. Master plan for the state park system;
b. Master plan for small craft harbors;
c. Master plan for riding, hiking, and bicycle trails;
d. Recreational use of state water facilities;
e. Recreational use of Sacramento-San Joaquin Delta;
f Greater use of public and private lands, and tax policies related to the use of private lands for recreational purposes;
g Impact on local tax rolls of the removal of land for recreational purposes, and the state's role in meeting the economic consequences of such removal;
h. Management of redwood resources, through examination and evaluation of various proposals for commercial and recreational uses of old and young growth redwoods;
i. Airstrips in recreational areas.

Because of the complexity and significance of the management of redwood resources to the economic future of the entire north coast, this matter was reviewed with special intensity by the committee, and a separate report has been prepared

In examining this subject, the committee held a series of regional public hearings throughout California, and received the views of over 200 witnesses with expertise in recreation planning and management from all levels of government and the private sector. In addition to responding to the specific objectives outlined previously, many jurisdictions set forth existing and projected demand, programs, and capability for meeting recreational needs The regional public hearings were held as follows.

San Diego, October 29, 1965
San Francisco, January 27–28, 1966
Arcata, July 13–15, 1966
Fresno, July 21–22, 1966
Los Angeles, September 15–16, 1966

This report, which presents a brief review of the more important dimensions of the overall problem, findings and conclusions, and recommendations, does not include specific proposed legislation Because of the extraordinary complexity of this subject, and its vital importance to the future of California, it was felt that a more basic purpose could be served by outlining the need for a more comprehensive, meaningful policy governing recreation planning and management, and suggesting a series of approaches upon which specific legislation could be based over a period of

time. It is obvious that this problem will not be solved by the passage of one—or even a dozen—bills in any one legislative session, but rather by a continuing awareness of the need for improvement and an accompanying search for ways of achieving it. It is hoped that this report will stand as an exposition of this need, and will serve as the foundation for this continuing effort.

The committee expresses its sincere appreciation to the many individuals and organizations who made such significant contributions to this study. The important conclusions which have been drawn would have been impossible without these dedicated efforts and all who contributed should feel a sense of participation in the achievements which must inevitably result.

THE PROBLEM

Unmet Need

Although outdoor recreation has yet to achieve a priority in public policy which is equivalent to its importance in the public mind or to the recognition accorded other major programs such as water resources development, education, highway construction, and social welfare—to name a few—there has been a strong effort in recent years at the federal and state level to define the extent of unmet need and suggest more orderly processes of meeting it.

While the state's growth did not begin to assume dramatic proportions until after World War II, recognition of what lay ahead is found as early as 1938 in the allocation by the Legislature of tidelands oil revenues to the state park system Although a substantial percentage of these funds—as high as 70 percent in 1943—were so allocated, a lengthy dispute with the federal government froze their use from 1947 to 1954. However, the growing demand for outdoor recreational opportunities led to the development of five-year programs by the State Park Commission in 1953 and 1956, both of which were only partially realized because of the lack of dependable funding.

Recognition of the increasing gap between supply and demand for recreational opportunities, and the lack of an orderly, comprehensive public policy for meeting it, spurred the 1957 Legislature to enactment of the "California Public Outdoor Recreafion Plan Act," which established a broad new recreation policy for California and directed a study committee to prepare "... an inventory of the existing facilities, areas, and opportunities available for outdoor recreation and an inventory and classification of areas, facilities, and resources which potentially may provide outdoor recreation. . . ." The study committee was further directed to prepare ". . . a determination of the nature and an estimate of the need of the people for outdoor recreation opportunities in the foreseeable future . . ." It was also directed to review the responsibilities and authority of various levels of government in the recreation field, and to prepare a program and procedure for developing, administering, and financing the necessary areas and facilities.

This legislation resulted in the 1960 California Public Outdoor Recreation Plan, which, as will be outlined in subsequent pertinent portions of this report, contained a number of major conclusions and recommendations relative to the achievement of a more rational, orderly process for determining and meeting statewide recreational requirements With respect to estimates of need, the 1960 report concluded the following:

> ". . . The demand for outdoor recreation areas and facilities in California is far greater than the present supply. This study shows that, in general, the facilities are overused by more than 30 percent. In addition,there are multitudes who cannot be accommodated at the area of their choice or any comparable area . . ."
>
> ". . . In many of the California cities, minimum outdoor recreation opportunities are not available to their residents. In and around cities, the most critical need is for recreation and open space . . ."
>
> ". . . By 1980, the need for outdoor recreation areas and facilities, in terms of activity days, will be nearly four times as great as in 1958. At the present rate of acquisition and development, the available supply will be pitifully inadequate . . ."
>
> ". . . By 1980, unless the lands and waters that hold recreation potential today are acquired or reserved for recreation as soon as possible, there will be a marked shortage of recreation lands and waters for all uses on a local, regional, and statewide basis . . ."
>
> ". . . By 1980, unless the state immediately sets a high priority on the acquisition or reservation of lands holding scarcity value (ocean beaches and adjacent uplands, lake and stream shores, unique natural, historic, and scenic areas), all such lands will be lost to the public . . ."
>
> ". . . By 1980, unless remedial steps are undertaken at once, there will be an overwhelming deficiency of recreation land and open space in and near population centers . . ."
>
> ". . . It will be necessary for state and federal jurisdictions to increase greatly the quantity of facilities they now supply . . ."
>
> ". . The size, location, population, and natural resources of the counties modify the role they will have to assume if the recreation needs of their residents are to be answered In areas of high population density it may be necessary to go beyond fixed jurisdictional boundaries to provide adequate recreation facilities . . ."
>
> ". . Cities must exercise constant vigilance to see that the recreation lands and facilities they now have are not lost to other uses, they should acquire additional lands as such lands become available; they should take steps to improve the facilities they now have Those cities not now providing the minimum outdoor recreation facilities and areas for their residents should take remedial steps . . ."
>
> ". . Nongovernmental, competitive private enterprise should be encouraged to provide recreation facilities, supplies, and auxiliary services to

the public where they can do so at a reasonable quality, quantity, and price . . "

Although it would seem that such an assessment of basic statewide need, determined and detailed by a broadly based study committee at the direction of the State Legislature, should have formed the basis for the formulation of an aggressive, coordinated, funded program for meeting existing and projected requirements, such was not the case A number of specialized programs—such as those authorized under the Davis-Grunsky Act (which provides funds for the development of recreation facilities at local water projects), the Davis-Dolwig Act (which provides for the development of recreation facilities at reservoir sites included within the State Water Plan), the Small Craft Harbors Revolving Fund (which provides funds for the development of small craft harbors and boat launching ramps), and additional moneys for the Wildlife Conservation Board (which provides funds for fish and wildlife recreation access facilities)—were developed, but adequate recognition and support was not forthcoming for the basic conclusions and recommendations outlined in the 1960 report

The consequences of this lack of recognition and support for the 1960 plan have been manifested in a number of ways, for in addition to a continuation of the traditional—and questionable—economies in providing state funds for acquisition and development, the major 1960 achievement of rather precise estimates of need was wasted when the state did not provide support funds with which to continue the updating process, and lack of the continuing, dependable financing desperately required by local government resulted in a burgeoning crisis at the local level. The inevitable and predictable result of this neglect was a growing clamor for funds, which culminated in the unsuccessful 1963 attempt to pass a state bond issue, and the successful 1964 effort in which the voters approved a $150 million state bond issue for state and local acquisition and development of outdoor recreation facilities. While these funds have provided some emergency relief, they represent only a minimal, one-time contribution to the solution of the overall problem

Although the dimensions of the unmet existing and projected need were clearly set forth in the 1960 plan—and went essentially unheeded—the bipartisan campaign for passage of the 1964 ballot measure was waged in an atmosphere of emergency, and was marked by such statements as the following

Governor Edmund G. Brown

" . . The front cover of this brochure pictures the magnificent Golden Gate headlands of Marin, only a few minutes from downtown San Francisco It comprises 4,000 acres of virgin mountain, rolling hills, flowering meadows, forested canyons, sparkling lakes, clear streams and unspoiled breaches Locked within a military reservation since statehood, this beautiful land has been spared until now from the bulldozer and tract builder. It can become a new state park if Proposition One passes Otherwise it faces the threat of rapid subdivision and commercial development.

"On the inside cover is an aerial view of southwest Los Angeles, again only a few minutes from downtown— a brutal testimony to California's relentless destruction of the natural environment for housing and industry at the expense of open space

"These contrasting areas near our state's two largest cities eloquently express California's crisis in outdoor recreation In our rush to grow and build and compete, we have tended to destroy our heritage

"But keeping California livable for our children and their children is a responsibility we can no longer ignore. That is why the State Legislature has enacted, and I have signed, the State Beach, Park, Recreational and Historical Facilities Bond Act of 1964, which will go before the voters this November as Proposition 1. I can think of nothing before our state at this moment that is more important to California's future Proposition 1 is not only urgent, it is perhaps more urgent than any other program requiring public money.

"In every urban area of California there still are opportunities to shape future growth so that enjoyment of the outdoors is an integral part of living No such opportunity will ever again be afforded us Either we act now to save our outdoor heritage or we sanction, by default, the dissipation of those few remaining undeveloped areas suitable for development as state, regional, county, and city parks The hour is late and the time is short, yet our opportunity matches the scope of the tremendous challenge It is now or never . . "

Former Governor Goodwin J. Knight

". . California today has nearly 18 million residents, and more than 15 million of them are squeezed into our urban areas The urge to get away from such a crowd and into the outdoors generates a tremendous force In California it has produced a recreation explosion that has overrun virtually every outdoor recreation facility in the state

"The most critical need for outdoor recreation is in and around California's great population centers Millions of people overcrowd our city parks every weekend. This is the outdoors They have no means of getting to distant places. But with housing and commercial developments consuming our remaining urban land at soaring prices, few cities can afford needed park developments without state help

"Millions of other Californians pour out of our cities every summer evening and weekend to beaches and county or regional parks Their need is for open space and a chance to touch nature. But almost everywhere they go, overcrowding lessens the enjoyment of being there. Last summer, millions who drove bumper-to-bumper to state beaches in Los Angeles County had to turn back because every possible parking area was full and overflowing Folsom State Recreation Area just out of Sacramento, with 699 picnics units, registered 2.5 million users in 1963.

"While the outdoor recreation need is most acute in California's metropolitan areas, it extends statewide Last year California's state beaches and parks were swamped by 73 million users—more than the combined populations of California, New York, New Jersey, Pennsylvania, Michigan, Illinois, Ohio, and Texas. Hundreds of thousands drove long distances to camp in state parks, only to meet "no vacancy" signs when they got there

"Can recreation needs be eased by developing more facilities in our existing state parks? In some of them, certainly, as funds become available. But overbuilding would destroy the very qualities that make California's state parks so magnificant Let us use and enjoy them, but not develop them out of existence

"If present outdoor recreation facilities can't meet the needs of today's 18 million Californians, what of 20 years from now when the state will have over 30 million residents? And 30 years from now when there will be some 40 million?

"Our decision this November on Proposition 1 will determine the quality of California's outdoor recreation for all time When the land is gone, second guessing tomorrow's need for open space will be futile . . ."

Passage of this bond issue provided $85 million to the state for acquisition and $20 million for minimum

development, $40 million for grants to local agencies, and $5 million for Wildlife Conservation Board projects Apportionment of grants to local government is based upon the application of a complex per capita formula, with the approval of individual projects by the State Recreation Commission subject to appropriation by the Legislature. The requirement that local government adopt a general land use plan to become eligible for these state grants has slowed the application process, but in three years nearly three-fourths of the available funds have been obligated for some 100 individual projects throughout the state, leaving a balance of only $10 million available for further local assistance. Because of the large backlog in needed state projects, apportionment of the $85 million available for state acquisitions was marked by such legislative and administrative bickering over the worth of individual projects that only some $41 million was approved the first year and $35 million the second, leaving a balance of only some $9 million available for further statewide acquisitions.

Although approval of this bond issue provided a short-term source of critically needed funds, the campaign for its passage unfortunately created the impression on the part of the voters that authorization of these funds would solve the need for statewide recreational opportunities into the foreseeable future. However, as was brought out repeatedly and vigorously throughout the state in the hearings of this committee, nothing could be further from the truth. While it is impossible to cite anything approaching the text of the huge volume of testimony presented to the committee over the past year, because of the increasingly critical nature of the unmet existing and projected need for recreational opportunities throughout California—a situation which has developed in spite of persistent and urgent past warnings—following is a sampling of the verbal and written statements submitted to the committee outlining the dimensions of the need in terms of dollars, acres, and facilities. Italics have been added.

Alfred J. Stern, Chairman, California State Park Commission

". . . It is certainly within the bounds of reason to say that there is nearly a *half billion dollars of acquisition needed* to produce the land on which the people of California will have their opportunities for wholesome recreational experience outdoors. This, of necessity, will include active and passive recreation, establishment and enjoyment of scenic and scientific reserves as well as of recreation areas, and must include the acquisition, development, and interpretation of California's long and romantic history. The director has, I believe, already given you a document called 'Accelerated Development Program to 1980 for the California State Park System' This, too, contemplates the expenditure of approximately a *half billion dollars for development* within the presently owned or presently funded state park system Neither of these figures provides for either planning, operation, or management of the system under discussion . . ."

Fred L. Jones, Director, California Department of Parks and Recreation

". . . Three functional elements of the comprehensive recreation plan were prepared since the more general California Public Outdoor Recreation Plan the boating plan, the scenic highway plan, and the recreation policy, several other elements will be forthcoming A major element is a plan for the state park system .

"The boating plan points out the pressing need for additional harbors and boating facilities and the insufficiency of the present development programs of agencies active in the field to meet the demands anticipated for 1975 *To overcome existing deficiencies would cost about $200 million To prevent the potential deficiencies indicated for 1975 would require an expenditure of more than $300 million* The plan envisions that the state will assume a broader role in the field of harbor and facility development This larger role will encompass leadership and coordination, planning and research as well as increased loans and grants for development purposes

"The existing state park system had a usage of 34,000,000 visitor days in 1964, and the projection of this usage is estimated to be 113,000,000 in 1980 . . .

"State Park Commission approved acquisition projects (90 projects) have an estimated cost of $310,000,000. Thirty projects have been funded by the Legislature, leaving about $234,000,000 in projects not funded The Legislature has directed us to study 11 additional projects, which have an estimated cost of about $70,000,000 *So we have about $300,000,000 in good projects, and about $9,00,000,000 left from the $85,000,000 bond act . . .*

"The population of California in 1960 was 15,863,000. The Department of Finance projections indicate there will be 28,137,000 people living in the state in 1980. This 77.4 percent increase represents a continuation of the fantastic rate of growth California has experienced for more than a century. During the 20-year period between 1960 and 1980, the total demand of the people of California for outdoor recreation activities is estimated to increase 103 6 percent. This means that the demand for outdoor recreation is increasing at a rate 1 34 times as great as the population. The activity groups which will have the greatest percent of increase are physically active recreation 122 percent and water sports 126 7 percent . . .

"The major portion of the recreation demand is found within the zero-to-one-hour travel time zone of the places people live. It is here where the major public land deficiency is critical, with special emphasis on lands capable of supporting high density use in an appropriate environment. Over 225,000 acres of such land will be needed by 1980, most of it close in to people's homes Only some 44,000 acres of this type of public recreation land is presently classified for high density recreation use, within the zero-to-one-hour travel time zone . . .

"Statewide recreation facilities existing in 1964 and estimated statewide deficiencies in 1970 and 1980 are as follows:[1]

	Existing in 1964	*Estimated Deficiencies 1970*	*1980*
Camp units	49,600	49,400	69,400
Picnic tables	53,800	58,800	90,900
Miles of horseback riding trails (within four hours' drive of major metropolitan areas)	4,800	1,830	2,350
Miles of hiking trails (within four hours' drive of major metropolitan areas)	4,320	990	1,820
Boat access parking spaces	17,070	43,820	65,007
Marina slips and moorings	20,260	112,290	161,200

. . ."

[1] California Park and Recreation Study, Park and Recreation Information System, Planning Monograph No 2, November 1966, calculation of deficiencies does not include inventory of privately owned and operated recreation facilities, definition of "recreation facilities" does not include assessment of the quality of recreational experience obtained

Hugo Fisher, Administrator of Resources, State of California

". . . I would like to emphasize one or two fundamental points which seem to me to be central to your examination of the entire recreation picture in California The first fact is that government alone, through its direct programs of acquisition and development, cannot hope to meet the increasing demand for recreation opportunities in California. It should be noted that these demands are increasing at a far greater rate than our population growth, which in itself is awe-inspiring Despite the fact state government has expended over $300 million in less than a decade, we continue to have serious recreation deficiencies of all types throughout the state The inescapable conclusion is that we cannot continue to operate in the same manner and still hope to keep pace with demands for recreation Government must seek the most imaginative solutions possible to the provision of recreation . ."

" . The (Sacramento-San Joaquin) Delta's recreational use today amounts to nearly three million visitor-days This is a considerable magnitude and is of even greater significance when you consider this use occurs with nearly total absence of public facilities Even more startling are the projected-use figures of an estimated demand of nearly *200 million visitor-days* by the year 2020 Unbelievable? Perhaps Yet, throughout the state nearly every outdoor recreation facility is overtaxed and the uses received far exceed the original estimates. The Delta will be no exception . "

William F. Fischer, Chief of Planning, Division of Recreation, California Region, U.S Forest Service

". . . From the days when the earliest settlers of the mountains of California sallied forth to hunt or fish for pleasure, the national forests have been used for recreation by ever increasing numbers of people By 1950 the estimated recreation use of the national forests of California was established at over 10,000,000 visitor-days exclusive of just sightseeing and passing through By 1960 this had increased to well over 23,500,000 visitor-days Recreation use in the California region for calendar year 1964 stands at some 25,400,000 visitor-days and there appears to be no letup to the expanding use of the national forests for recreation .

"The results of the National Forest Recreation Survey are the basis of recreation planning for the national forest system The study in California indicated that if population and other trends continued as they had in the past, and have since 1960, recreation demand on the national forests would increase to over 75,000,000 visitor-days by 1976 and 200,000,000 visitor-days by the year 2000 *In short, almost 10 times as much use would be made of the national forests by the year 2000 as was made in 1960* Use statistics since 1960 indicate the trend is right down the projected track

"The study furthermore clearly indicated that while statistically there were sufficient national forest lands of recreation site quality to meet these projections in California, that they were not all in the right places Inevitably shortages do appear and will continue to grow close to population centers, along major transportation routes and in key recreation areas This leads to the conclusion that limited acquisition of key areas now in private ownership is necessary if the public is to be served . "

R. G. Howard, Regional Supervisor of Irrigation, Region Two, U S Bureau of Reclamation

". . To help meet the almost insatiable demands for recreation created by the rapidly expanding population of central California, we are planning extensive recreational facilities in conjunction with the dams, reservoirs and canals we are proposing for construction in and adjacent to the central coastal counties . . ."

James Sears, Chief of Recreation, San Francisco District, U S Army Corps of Engineers

". . It is estimated that recreation use of these projects (channels, levees, shore protection works, and jetties) will have *more than doubled* between 1960 and 1975 from 250,000 visitors to 588,000 . . It is estimated that the total recreation use of existing corps projects amounts to only seven-tenths of 1 percent of the total recreation of the region Recreation use of projects authorized or in the final stages of study could increase this to approximately 6 percent by the year 1980 This latter figure will vary, depending upon nonfederal interests' willingness to assist in the project associated recreation development . . ."

Ross Cunningham, Superintendent of Recreation, City of Los Angeles Recreation and Parks Department

" .The City of Los Angeles encompasses an area of 464 square miles, exceeding in size the entire County of San Mateo or Santa Cruz Its population is over two and three-quarter million at present and growing constantly at a rapid rate The explosive growth of the city over the past two decades has caused a vast array of problems presently faced by all fields of public service In order to provide its citizens a suitable level of recreation service at present and in the future, the City of Los Angeles must provide numerous additional facilities . .

"This department in cooperation with the city planning department maintains an inventory of needed improvements Included in the inventory are enlargements, improvements, and updating of existing facilities, as well as new sites and their development

"Because of the overwhelming problems accompanying the ongoing growth of the city, it is well nigh impossible to keep the inventory up to date However, summarization of this schedule indicates the need for *$299,205,200* to adequately update existing facilities and provide new ones for the future . . . this total is geared to meeting needs through 1980 .

"The urgency of proceeding with a program to meet existing and projected demands for recreation facilities for the people of the City of Los Angeles has been emphasized by a just-completed study by the city planning department. In a detailed review of neighborhood and community recreation facilities it was determined that 154 new sites are needed right now, and that the acquisition of these sites, with necessary (but modest) expansions to match projected population increases to 1980, will require a total of *1,068 new acres of property*

"The financial capability of the City of Los Angeles is not equal to the cost of fully meeting the needs set forth here If it were possible to stabilize population and other factors bearing on such capability for a period of years, it might be possible to bring resources and needs more into balance. But, growth of the city has been so rapid and so continuous that achieving such balance has been utterly impossible, and this growth continues . . ."

Milton Breivogel, Director of Planning, Los Angeles County Regional Planning Commission

". . . Countywide recreation planning in Los Angeles County is exemplified by the Regional Recreation Areas Plan, which was adopted by the board of supervisors in 1959, with revisions adopted in 1965. The plan was prepared by the Regional Planning Commission with the assistance of the County Parks and Recreation Department, the United States Forest Service, interested state agencies, and the cities located in Los Angeles County

"The plan distinguishes between day-use recreation facilities, which are located within present or future urban areas on the basis of population demand standards, and those recreation areas such as historical sites, natural resource reservations and wilderness areas, which exist by fortuitous circumstance.

"For day-use areas the planning standard utilized is six acres of recreation space per 1,000 population Applying this to the county's currently estimated population of 7 million persons indicates a need for 42,000 acres of land available for day-use regional recreation At the present time approximately 28,000 acres are in recreation areas already in use, indicating a deficiency of about 14,000 acres.

"In addition to sites now entirely or predominantly in use there are around 18,500 acres in various preliminary

stages of recreation development. Of this total, approximately 1,500 acres represent the minor developed portions of larger sites, 11,000 acres have been acquired but not developed, and 6,000 acres remain to be acquired

"The Regional Recreation Areas Plan projects needs to 1985 and beyond and proposes a total day use development of 75,000 acres This includes a reserve for future growth beyond the requirements of the anticipated 1985 population of 10 million

"If public agencies are unable to acquire any new day-use areas in addition to those now being developed, there will be a *shortage of 13,500 acres in 1985* Such a shortage would be much more difficult to overcome after 1985 than now because of the pressure of competing private development on a fixed supply of land.

"The resource-oriented recreation areas such as overnight use and wilderness experience areas, natural resource reservations and historic sites and monuments are not adapted to population demand standards These areas exist by reason of natural phenomena or chance rather than because of conscious planning to meet the needs of a given number of people. The responsibility of planning agencies in regard to these areas is to identify and help to preserve them instead of to plan their creation.

"A total of approximately 141,000 acres is shown on the Regional Recreation Areas Plan for non-day-use recreation areas, of which 98,000 acres are within the 700,000 acres of national forest lands within the county There are about 48,000 acres in sites entirely or largely in use of which 44,000 acres are within national forest, 11,000 acres are in developing sites of which 6,000 acres are in the national forest; and 82,000 acres are proposed to be acquired of which 48,000 acres are within the national forest but not yet developed or committed for recreational purposes.

"Los Angeles County also plans local parks for the unincorporated area. In 1948 the board of supervisors adopted a master plan of parks which included a detailed unincorporated area local parks plan

"Since that time a large portion of the unincorporated area has been restudied for local park needs in a series of community recreation and general plans

"The planning standard which is used by Los Angeles County in determining local park needs is one and one-half acres per 1,000 population in neighborhood and community parks and two and one-half acres per 1,000 in school playgrounds For the county's present unincorporated area population of approximately 1 1 million persons the indicated need is 1,650 acres of neighborhood and community parks. With 458 acres now developed in local parks the *current deficiency in operating acreage is 1,200 acres*

"In an effort to provide more local recreation facilities in the face of a critical shortage of financing, the regional planning commission is presently investigating the possibility of implementing the Quimby Act (AB 1150) for local park dedication in new subdivisions . ."

Norman S. Johnson, Director, Department of Parks and Recreation, Los Angeles County

". . . You have heard testimony related to the extensive planning efforts that have been completed or are in the process of being completed by the County of Los Angeles as they relate to the provision of adequate regional recreation areas to service the people in the metropolitan region of Los Angeles County Currently, we must state that our ability to accomplish the acquisition and development of facilities to meet this need is totally related to the availability of funds out of the general fund of Los Angeles County and that *no long-range program for funding can clearly be identified* Maximum uses of the State Bond Act of 1964 and the Federal Open Space Program are being exploited to achieve a measure of accomplishment in strict adherence with the Regional Recreation Areas Plan . . ."

Forest S. Dickason, Director of Planning, and Kenneth Sampson, Director of Parks, Orange County

". . . As an integral part of the regional, state, and national recreational effort, Orange County feels that it is imperative to provide adequate outdoor facilities for people of all ages The Anaheim-Santa Ana-Garden Grove Standard Metropolitan Area, which is in Orange County, is the fastest growing metropolitan area in the nation, and we anticipate and plan for a county population gain of 198 percent by 1980 Translate this into recreational demand, and it means an annual 15,580,000 picnicking visitor-days and 3,029,400 camping visitor-days by 1980 As defined in our Master Plan of Regional Parks, *the deficiency of 3,100 acres today will become 10,000 acres by 1980*

"Realizing the problem in 1960, the county board of supervisors directed work to begin on a comprehensive program to meet these park needs A Master Plan of Regional Parks evolved and was adopted in 1963 and implemented by board policy in 1965.

"The county policy is to offer areas with scenic or passive recreational attractions which follow in the tradition of the two existing regional facilities In effect, the policy further provides that organized recreation programs are the province of the municipalities The county will provide the facility, but will not finance programs, preferring instead to create rather than operate . .

"The inventory shows that we presently have only 77 acre of local park per 1,000 people, and 3 3 acres of publicly provided regional recreation facilities per 1,000 people We are striving for a standard of 4 acres of local park facilities per 1,000 people and 6 acres of regional recreation facilities per 1,000 people Orange County has a current deficiency in local parks of 3,714 acres, and is 3,106 acres deficient in public outdoor regional facilities . . .

"A study of the camping facilities at O'Neill Park shows a 95-percent overuse of these facilities. This park is just one of many recreation areas in the county faced with this problem Doheny Beach State Park, for example, has a much more acute overuse problem than O'Neill Park, with turn-away crowds each day during the summer months In addition to discouraging some people and not satisfying the demands of others, overuse creates many problems It results in unpleasant overcrowding, in deterioration and destruction of the natural and manmade facilities; in undue stress on the water and sanitary systems; and in an increase in maintenance problems

"The Master Plan represents an evaluation of the regional recreation needs of the people of Orange County, together with an analysis of the existing facilities, and an inventory of the physical resources and areas suitable for recreation sites, as well as acquisition and development cost estimates

"The plan is divided into three priority groups Priority Group I (1970) is designed for the 1,500,000 people who will be living in Orange County by that time. Seven regional parks and two aquatic parks are proposed with a total acreage of 2,412 The estimated acquisition and development costs for Priority Group I are $21,260,655

"Priority Group II is designed for the 2,300,000 people who will be living in the county by 1980. Eight regional parks are proposed with a total acreage of 3,113. The estimated acquisition and development costs for Priority Group II are 21,820,000

"Priority Group III is designed for the 2,670,000 people who will be living in the county by 1985 Ten regional parks are proposed with a total acreage of 2,143.

"*The complete regional parks program proposes that a total of 7,668 acres be acquired and developed at an estimated cost of $65,944,555* .

"The cities of Orange County have recognized the need for parks and recreation. Many of them have recently undergone revisions of existing general plans or entered into new recreation studies . . .

"Of the six parks under implementation in the Master Plan, all are funded under either the State Bond Act of 1964, or the Land and Water Conservation Fund Using a comprehensive survey of every grant program and financial resource available, the county embarked upon a program that will probably enable acquisition and development to 1969 or 1970 This is predicated upon the county's tax structure, no bond issue, and a matching fund policy to spread local financial resources as far as possible After

1970, the implementation program will be uncertain due to higher operational and maintenance costs . . .

"If we rely on statistical projections, there will be a total potential recreational demand of 60,328,000 activity days anticipated in park use within a 40-mile perimeter of Orange County by 1980. *The financial investment is far beyond the capability of local government and the property tax base* ."

John J. Collier, Director of Parks and Recreation, City of Anaheim, speaking for the cities of Orange County

" . . Mr Sampson has given you a very graphic picture of what our Orange County has been doing in developing on paper a parks system Our county has been slow in recognizing its role in recreation, but these plans as you see them here are firm and are fully supported by all of us in the cities

"We at the city level have been providing parks and recreation for many years Some of us have been providing regional facilities via some of our city parks for thirty years or more

"We are urgently concerned that the county carries out its responsibility to relieve us of some of this burden. The population explosion has hit us all and the resulting hordes in our parks have aroused every city hall in Orange County to include in its general plan provision for parks Most have been modest because the price of land has skyrocketed to such an extent that to meet national standards with local financial resources was impossible However, we all have parks in actuality, in the planning, and under construction, and acquisition plans for more.

"We have an aggregate total of 122 existing parks and some 185 proposed by 1980 at this time. We need to acquire 1,725 acres and develop 1,848. Although many of our plans seem ambitious by some today, by 1980 or before I am sure all of us will realize that we are still short and more must be added at considerably more expense.

"We estimate that we will need collectively at today's prices *$79,513,000* in order to purchase and develop the lands we now have or are projecting . . ."

Charles E. Porter, City of San Diego

". . . The General Plan of the City of San Diego, presently recommended for adoption by a San Diego General Plan Citizens Committee, states that the City of San Diego must spend an estimated $121 million in park and recreation acquisition and development by the year 1985, if the needs of the growing city populace are to be met.

"The City of San Diego presently owns 101 park and recreational sites, totaling more than 8,000 acres Forty-four of these sites are developed They range in size from Mission Bay Aquatic Park, 5,000 acres, to Balboa Park, 1,200 acres, to neighborhood park sites of less than one acre

"The City of San Diego, in the past 10 years, has expended $13.28 million on park and recreation site development In November 1966, the City of San Diego electorate approved a $24 million park and recreation general obligation bond issue, which will allow the city to expend approximately $4 million per year for the next six years on park and recreation site development If the city could expend this $4 million per year through 1985, the park and recreation need, as outlined in the city general plan, would still be in excess of $45 million Even with the present $24 million general obligation bond issue, however, the *deficiency by 1985 will be in excess of $90 million*, unless new sources of park and recreation site development funds can be developed "

Edward H. Walker, Director, Parks Department, County of Riverside

". . Riverside County is attempting with all of the means presently at its disposal to meet the demand for development of existing and projected recreation facilities. However, the demand is continually increasing, and since the completion of the California Public Outdoor Recreation Plan and the subsequent Southern California Regional Recreation Area Study, *the county has been unable to meet these needs as projected in the studies to the year 1980* . The $915,000 granted to the county under the 1964 State Park Bond Act . . . will satisfy only a small portion of these needs There will still be a large void between that which we are able to do with these funds and what should be done to satisfy the recreation demands in the county . .

"We believe that prior to submitting Proposition 1 of 1964 to the voters of our state, every agency realized that a bond of $150 million would satisfy only minimum needs, and this fact has definitely been proven . . It is now evident that funds allocated to various counties under Proposition 1 have made it possible to meet only a minimum of the overall requirements . . .

"A great number of surveys and studies exist indicating a deficit on a statewide scale of available facilities These deficits represent the demands today and they are certainly not going to decrease in the immediate future Projected population growth plus an anticipated increase in available leisure time must certainly be considered in all future planning The task of meeting the 1980 projection is going to be more than a full-time job for all agencies . . ."

Smith Falconer, Jr., Director, Regional Parks of San Bernardino County

". . During the past year, the Regional Parks Department prepared, and the board of supervisors adopted, a comprehensive Master Plan of Recreation for the entire county which coordinated not only existing and projected regional parks, but also existing and proposed state and federal programs

"The county is now in the process of preparing a financing plan for its initial regional parks development. It is anticipated that approximately two-thirds of the 1970 regional day-use needs will be met in this initial development

"The county looks upon the major camping demands as being a state and federal responsibility It appears as though the combined effort of these agencies, including the Department of Water Resources, in conjunction with Cedar Springs Reservoir, will result in construction of less than one-half the projected demand by 1970.

"As to future demands beyond 1970, the financial capability of the county to meet these projections seems quite uncertain San Bernardino County is faced with the critical problem so common to many counties in the state Within the county are open space resources capable of meeting the demands of the major metropolitan area (approximately two and one-quarter million acres identified for recreation and open space use) However, the major population and subsequent tax base needed to develop these resources is found in neighboring counties to the west *Therefore, the solution to this problem confronting San Bernardino County, as well as most other counties in the state, appears to be either on a regionwide or statewide financial basis* . ."

Honorable LeRoy Jackson, Supervisor, H J Evans, Director, Parks and Recreation Department, County of Kern

" . At present, most of our parks and recreational facilities are being utilized to near capacity Many of our construction projects are being deferred in order to stabilize the present tax rate This, no doubt, will have a bearing on future costs We certainly agree that deferring these projects could mean the costs would be greater in future years . .

Eugene D. Wheeler, Planning Director, County of Ventura

". . . The rapidly growing population of Ventura County, combined with the large population of the Los Angeles Basin, foretells a need for recreational facilities which providers of recreation facilities will find difficult to keep

up with This is especially true in relation to regional parks If the figure of 20 acres per 1,000 population is used for county and state regional parks, the county will need 28,000 acres by 1985, with 6,061 acres presently in regional parks . . .

"These moneys (available for recreation) are limited in *their total amount and unless they are increased* will not be of aid in acquiring the number of recreational facilities necessary . . ."

George H. Adams, Director of Parks, County of Santa Barbara

". . . We have adopted as a guide for our acquisition and development *a figure of one acre of county regional parks* for every 250 persons residing in Santa Barbara County. With this gauge we find that in 1930 we had 240 acres or 0.90 of an acre per 250 residents; in 1950, 346 acres or 0 88 of an acre per 250 residents. Today we have 604 acres, or 0.41 of an acre per 250 residents. Proposed acquisition using county, state, and federal funds within the next 18 months will give us 1,073 acres or 0 91 of an acre per 250 residents

"With the increased demands for park facilities that has occurred in the last 36 years, Santa Barbara County has dropped from 0 90 of an acre per resident to 0 41 of an acre and even if our proposed acquisition program reaches fruition we will still be short of sufficient acreage to meet our needs in 1970.

"In order to meet the standard we have set it will be necessary to increase our acreage by 36 percent between 1970 and 1980...

"The use of state bond money to match federal supplemented by county money is the source of the funds in our present acquisition program. Without the state and federal aid our program would be lagging even more than it does...

"Our belief is that work should be started promptly on another bond issue at the state level. *By the time such money could be made available the present funds will have been spent with only a dent in the problem that faces us all* . . ."

Ned A. Rogoway, Planning Director, San Luis Obispo County

". . . Most knowledgeable people concede that Proposition One failed to remove the enormous deficiencies in the recreation picture. The demands of the people of the State of California are so great and the deficiencies so large that one bond issue could not possibly eliminate the lack of recreational facilities It is our feeling that a continuing program of funding is a much better approach than a single-shot bond issue . . ."

William B. Pond, Park and Recreation Director, County of Sacramento

". . . Statistics concerning increased population, increased leisure, increased personal income, urban expansion, and rising land values are so similar throughout California that no attempt will be made to present them here for Sacramento County. Such current facts and projections for the future are symbolic of much of our rapidly urbanizing state . . .

"In some six years of existence Sacramento County has purchased in the neighborhood of 1,400 acres of land for park use Lesser interests such as leases and licenses have been *negotiated to add substantial additional acreage* However, with the exception of an 18-hole golf course, major development has been deferred We have been attempting to acquire land in the most strategic areas while it was still available in order to satisfy an existing need and to anticipate an expanding need

"After these six years of concentrated acquisition, with only partial development, we find public interest in development and use of these sites in the near future forcing us towards a decision Do we slow down or defer our acquisition program while so much remains to do? This would allow us to spend money for development for the present use and enjoyment of our citizens, but if we do, what lands will be unavailable to use several years from now when we can again implement the acquisition phase?. . ."

Ralph H. Shaw, Director, Parks and Recreation, County of San Mateo

". . In reviewing the amount of park and recreation areas that have been acquired in recent years, reviewing the rate of population growth, and reviewing the rate of increase in land prices, we find that we are falling behind Acquisition and development, especially of state parks, has been woefully slow. This slowness has resulted in making our tax dollars buy only a fraction of what *they could have bought when park projects were put into* the state and local park plans . . .

"*Analysis of future park needs indicates the job of acquisitions and development is so big and so costly that local government cannot finance them all* We need a partnership of the public interests of local, state, federal governments, that will do *more* than can be done under present provisions. The federal government, in recent years, has made a major contribution to state and local governments in the field of park and open space financing, but we believe that still more needs to be done, perhaps by the state and local governments . . ."

Duane Mattison, Park Director, Contra Costa County

"I *think your $150 million bond measure recently passed* has only shown how inadequate $150 million is in answering the (recreation) problems of the state and that you are going to have to consider a possible bond program of a much greater sum . . . We feel that the state should plan an even more accelerated role in the acquisition of lands for park purposes in the metropolitan areas, because this is certainly where the need is a critical thing. *The cost of land as you have heard previously has reached a point where local agencies through their limited financing are only going to be able to do a very limited job* . . ."

Frank W. Bramhall, Director, Parks and Recreation, City of San Jose

". . . One of the reasons we are going to need added help from every agency above us that can possibly help us is the fact that of this bond program of $9,600,000 roughly $5,000,000 is going to go for land And that leaves only about $4,600,000 for development and we do not have any funds for the development of the 20 new areas at all . . .

"After attending so many of the sessions of both the State Park Commission and the Legislature on this problem, and hearing the various areas of the state that are in difficulty, I'm *afraid that $20 million (raised by a 1-cent* summer gas tax) isn't a drop in the bucket to our total state need . . ."

William Penn Mott, Jr., General Manager, East Bay Regional Park District

" . . At the present time the East Bay Regional Park District owns or operates within Alameda and Contra Costa Counties in excess of 20,000 acres of park lands and by 1970 will have an additional 20,000 acres of land under its jurisdiction As the counties grow, additional lands must be acquired if the natural beauty of these two counties is to be preserved and we are to provide for the people living here the open space required

"In 1966, *California's population* will be increased by 600,000 and it is anticipated that this increase will continue through 1967, 1968, 1969, and 1970, yet in 300 years only 13 cities in the United States exceed 600,000 population. Both Alameda and Contra Costa Counties will grow proportionately While real estate ads proclaim prize farmlands now choice homesites, suburban sprawl engulfs one valley after another in Alameda and Contra Costa Counties.

"California's park and open-space problems are acute and can only be solved by men of action, courage and ideas to match her mountains Bits of green here and there, and skimpy, unrelated, elongated areas within the urban scene

are but palliatives to the open-space needs of the masses of humanity that live within our cities, nor do these patches of unkept grass enhance and break up the beauty of the dreary cityscape What is needed to enhance and break up the urban pattern and the suburban sprawl is the establishment of regional parks of sufficient acreage and scope to preserve the natural beauty and character of the landscape surrounding these metropolitan areas, and like giant fingers, project their green open space into the very core of the cities, creating a sense of openness to the city and preserving or recreating the natural beauty of the original environment *Only through this type of large-scale open-space acquisition can the concentration and ugliness of our cities be alleviated and made tolerable. Anything else will not, in my opinion, solve the problem We spend millions on less imaginative schemes only to reflect later on the inadequacy of the solution as thousands of people daily continue to migrate to California . . "*

The foregoing statements, which represent the carefully considered views of the spectrum of professionals in recreation planning and management throughout California, make it clear that by *any* measure, the state is facing a truly overwhelming unmet existing and projected need—in financial terms well in excess of a billion dollars—for outdoor recreational opportunities, especially in and near the rapidly growing metropolitan areas. It is also apparent that while it has been possible to live with the consequences of past failures, exploding demand and rising land costs coupled with chronic starvation budgets and the absence of dependable financing present a critical challenge which simply can no longer be ignored

Seasonal Loading

Although there is indisputable evidence of the need for a more orderly, effective policy governing recreation planning and management in California, examination of the utilization curves for various outdoor recreation facilities throughout the state makes it clear that a flattening of the considerable peaks and valleys in visitation would lead to a more efficient—and productive—use of many facilities. Because the major utilization peaks occur in the summer as the result of long-standing public and private vacation and education policies, improvements in this aspect of outdoor recreation planning and management will require fundamental changes in traditional patterns of living which are essentially beyond the scope of this study to influence. However, the advantages—in terms of reduced maintenance and operating expense of existing facilities, lesser land acquisition costs, etc—resulting from more uniform year-round utilization of recreation facilities are obvious, and represent a potentially fruitful area for further exploration

Inadequate Funding

As was outlined in the section defining the extent of unmet existing and projected need, meaningful concern over the recreation gap is of relatively recent origin, with most resulting studies focusing more on estimating and projecting the demand than on devising methods for meeting it. Among the reasons for this is the probable feeling that once the dimensions of the problem were adequately set forth, it was logical to anticipate major changes in policy and funding of recreation programs.

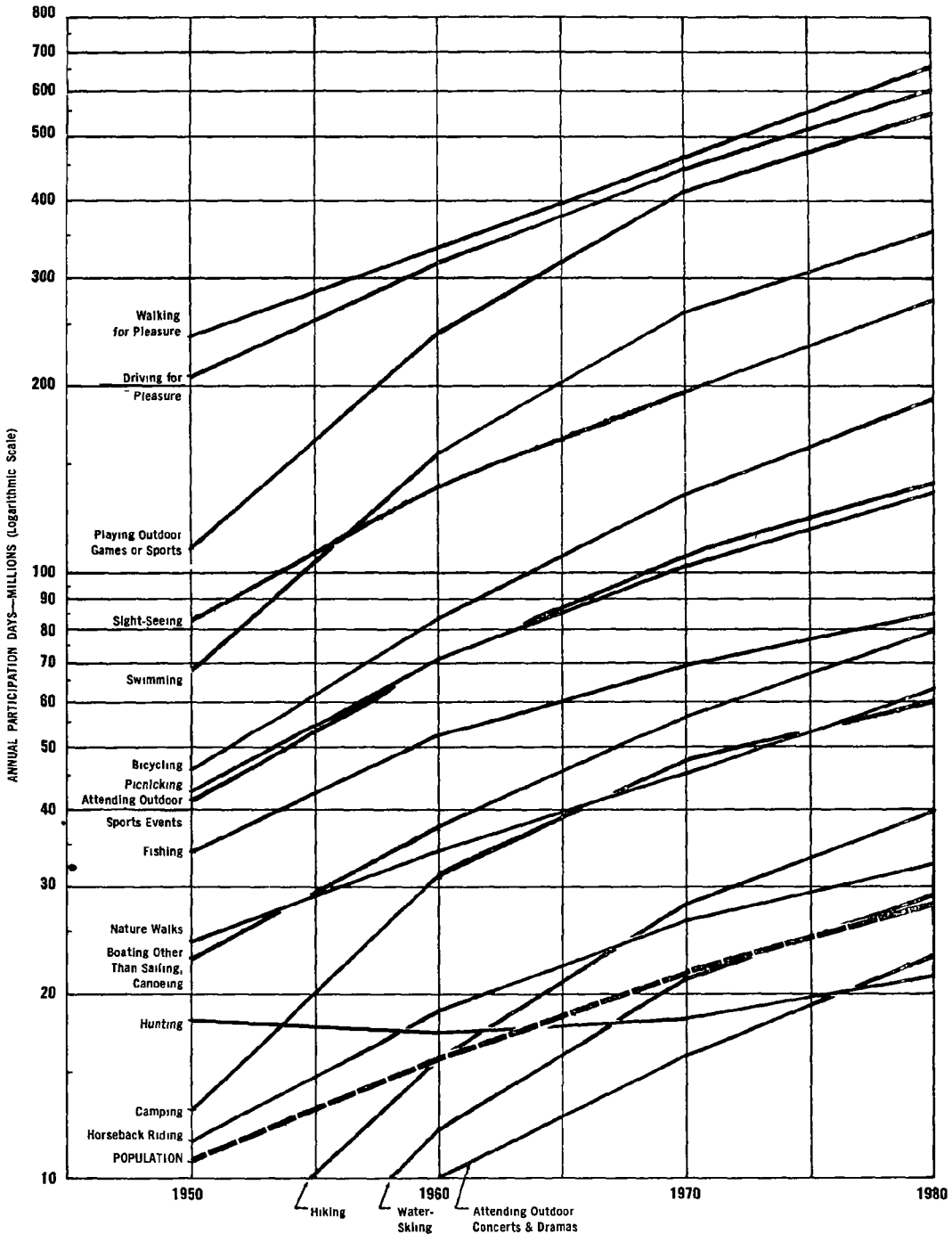
However, emphasizing the degree of need has proven to be insufficient motivation for the creation of an adequate, orderly, dependable program for the financing of recreation in California. In fact, while significant progress has been made in many areas of planning, administering, and coordinating recreation programs among the various levels of government and the private sector, the inadequate, erratic, and undependable methods for financing them have been the major factor contributing to the present crisis.

The federal government recognized the need for a more dependable, orderly process of financing recreation by creation of the Land and Water Conservation Fund in 1965. This fund, which provides financing for planning, acquisition, and development of recreational facilities by federal, state, and local government, receives its revenues from the sale of annual passes to federal recreational facilities, user fees, surplus property sales, and motorboat fuel taxes Because actual revenues have been substantially below estimates, proposals have been advanced recently to earmark other federal revenues for the Land and Water Conservation Fund—including certain of the proceeds from leases and royalties for mining and offshore oil extraction In proposing this action, national recognition was given to "the large and growing gap between the costs of and funds available for conserving and developing outdoor enjoyment areas." It was further pointed out that ". . . the financing problem threatens to put many scheduled projects for long periods in the category of unfulfilled dreams . . ." California was the first state to qualify for these funds, and on a 50-percent matching basis will receive between $4 million and $8 million annually for 25 years. This allocation is also available for apportionment to local projects throughout the state.

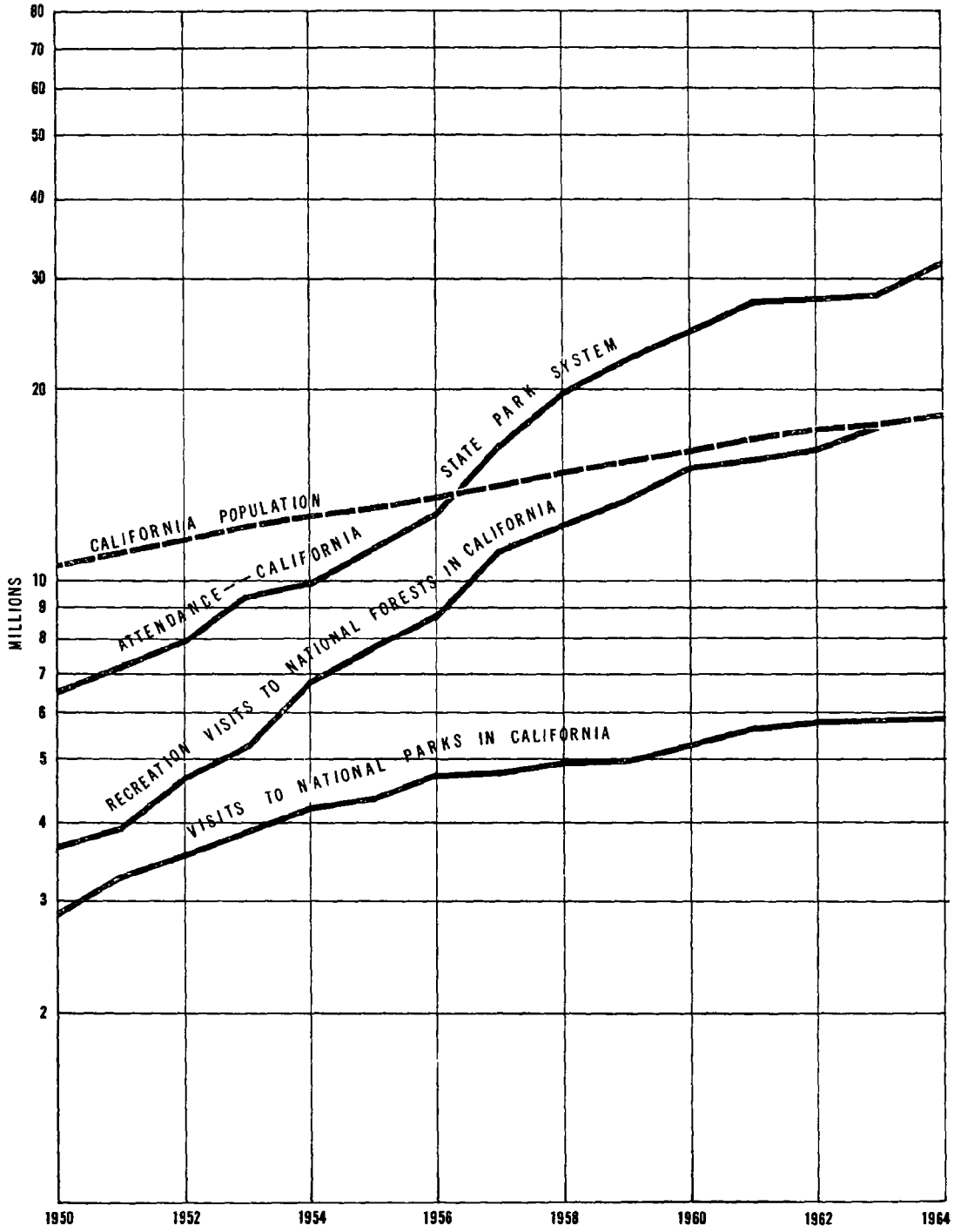
The federal government provides funds to state and local government—generally on a matching fund basis—for other programs related indirectly to recreation. Under these programs, California has received nearly $4 million—on a matching basis—for the acquisition of open space lands in urban areas, and has applications for $2.5 million under review. The Department of Parks and Recreation has also received $66,000 under Section 701 of the Federal Housing Act of 1954 to assist in long-range recreation planning.

With certain exceptions, the state has attempted to finance acquisition and development programs from the General Fund, with periodic augmentation by state bond issue A brief review of the record shows that a 1901 appropriation for $250,000 marked the first legislative recognition of the California state park system—which was to grow into one of the finest collections of resource-oriented recreation facilities in the world. This appropriation, which was made for the acquisition of the Big Basin Redwoods in Santa Cruz County " . . . to be a pleasuring ground for the people . . " was followed in 1921 by authorization for the initial purchase of certain redwood groves in southern Humboldt County Public sentiment favor-

ESTIMATED POTENTIAL DEMAND OF CALIFORNIANS FOR OUTDOOR RECREATION, 1950–1980
Source Stanford Research Institute, 1965

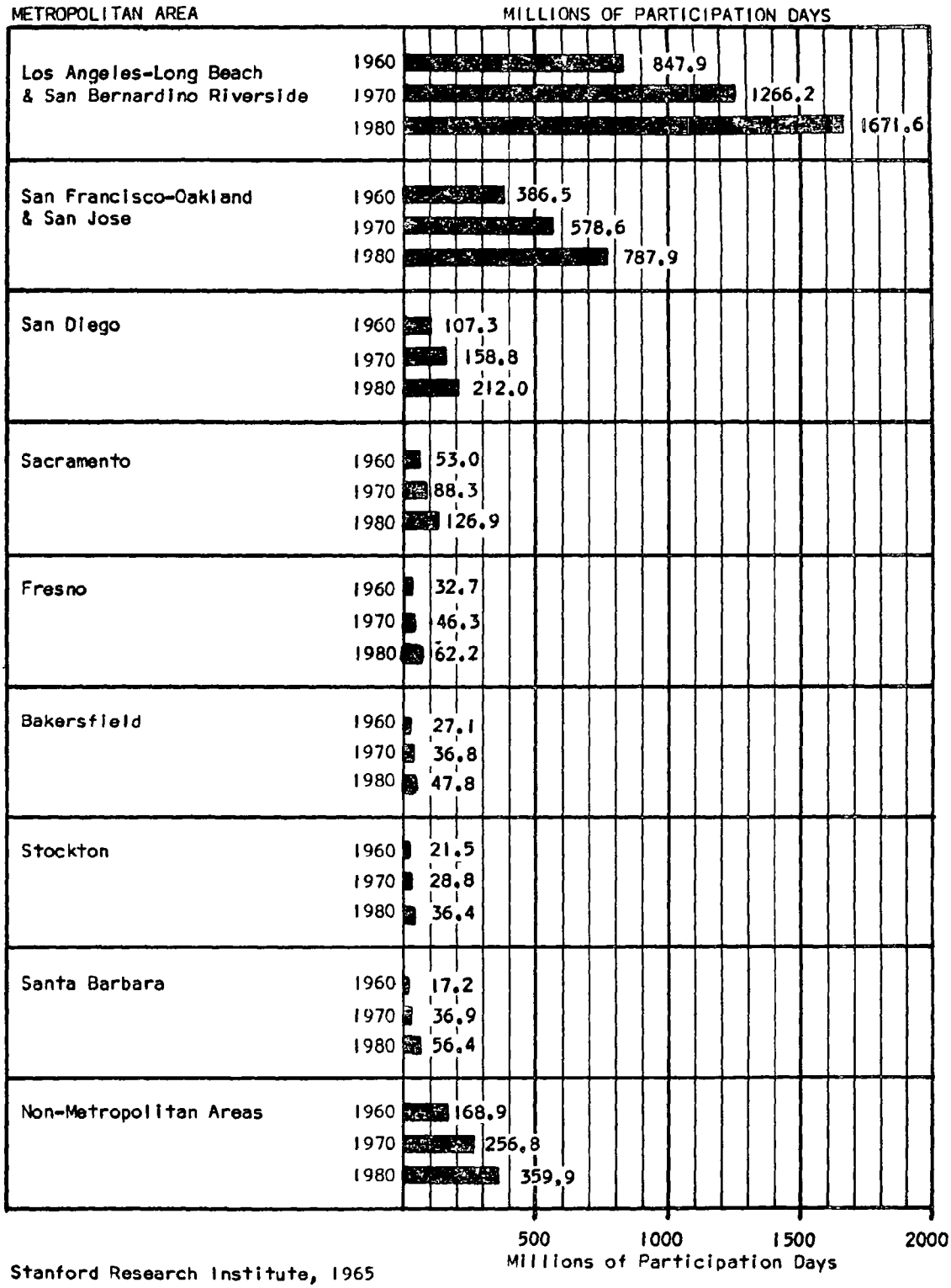


TRENDS IN THE USE OF CALIFORNIA RECREATION AREAS



Source: Stanford Research Institute, 1965.

RELATIVE TOTAL RECREATION DEMANDS
OF THE METROPOLITAN AREAS, 1960-1980



Source: Stanford Research Institute, 1965

ing passage of the first state bond act in 1928 was stimulated by the internationally supported efforts of the Save-the-Redwoods League to set aside some samples of old growth redwoods for the enjoyment of succeeding generations. The proceeds from this $6 million bond issue, which were matched by nongovernmental funds, made possible at a time of low land costs a major park acquisition program of choice beach, mountain, lake, and desert areas.

The next significant action by the Legislature came in 1938 with the earmarking of tidelands oil revenues to the state park system, an allocation which was increased to 70 percent in 1945 In the same year the Legislature also appropriated $15 million for the acquisition of beach and park land on a matching fund basis However, prolonged legal action with the federal government over the tidelands royalties resulted in their impoundage from 1947 to 1956, at which time $110 million was appropriated on a nonmatching fund basis for a five-year support, acquisition, and development program.

With the growing awareness that these efforts supplementing the annual support and capital outlay General Fund expenditures were not keeping pace with the demand for recreational opportunities—especially at the local level—a concerted statewide drive developed for a new state bond issue, which resulted in passage of the $150 million Proposition 1 in 1964 As was previously outlined, the funds authorized under this latest bond act—$105 million for state acquisition and preliminary development, $40 million for local grants, and $5 million for wildlife conservation—have been largely obligated Exhaustion of this last reasonably dependable source for the acquisition and development of recreational facilities once more subjects this vital need to the vagaries and arbitrary economies traditionally exercised in the state and local government budget-making process.

In addition to these sources of funds—which have been devoted essentially to the acquisition and development of recreational facilities—the state receives substantial revenues from fees and concessions (amounting to approximately 50 percent of the cost of *operating* individual units of the state park system, and some 30 percent of the gross *support* expenditures of the system), and through 1964 has realized some $33 5 million in private contributions. Other continuing specialized state programs providing funds for recreation facilities include the Davis-Grunsky Act (local water projects), Davis-Dolwig Act (State Water Project facilities), and Small Craft Harbors Revolving Fund.

Although as the foregoing summary indicates, federal and state government has made relatively effective—albeit sporadic and increasingly inadequate—progress in meeting its respective responsibility to provide recreational opportunities, this has been possible because of the large number of revenue sources and broader tax base available to it. Local government does not enjoy such advantages, and it is at this level where the recreation gap looms the largest. The problem of raising sufficient revenues to finance its responsibility for recreation facilities was stressed over and over again by local recreation managers in the regional hearings of this committee. In addition to emphasizing the need for a continuing, reasonably bureaucratic-free source of funds for assisting local government in meeting its recreation needs, a number of specific suggestions were made concerning potential sources of these revenues. Following are a series of excerpts from these statements bearing on this aspect of the problem.

Ross Cunningham, Superintendent of Recreation, City of Los Angeles Recreation and Parks Department

" In short, Los Angeles is a center of great social change The conditions giving rise to this change reach far beyond the limits of our city, and the financial burden of coping with this great change should be shared beyond this city. Additional state and federal financial assistance, drawn from their broader taxing base, is very essential to meet this burden

"This department of the City of Los Angeles contemplates continuing use of all available local resources for funding needed recreation facilities, to the fullest feasible extent Sources used to date and contemplated for future use are: property tax, bond issues, special assessment districts, special fees, donations and bequests, subventions from other governmental jurisdictions, royalties and bonuses for oil or mineral rights and production, and matching funds from both public and private sources Furthermore, we expect to achieve ever more effective use of such funds by improved master planning, development of capital improvement programs, and careful administration of funds.

"The recreation and parks facilities and services need in Los Angeles far exceeds our financial capacity For the reasons of growth and social change set forth above, *subventions should be made to the City of Los Angeles by the county, state, and federal governments to assist in its meeting present and future recreation needs*

"Such subventions should be made on the basis of social need Sound bases for determining such need have been developed by the Recreation and Youth Services Planning Council of Los Angeles through a study completed in August 1966 This council, after in-depth study of previous work in this field, determined that certain key indices comprise a thoroughly valid guide for assessing recreation need This study is one of the most significant works yet done in the field of recreation

"Certainly it is apparent that the recreation need of some areas of California far exceeds that of others. By application of the guide described above, the areas most critically in need of subventions can be readily determined, and, accordingly, equitable distribution made of such funds.

"*The City of Los Angeles Department of Recreation and Parks earnestly urges this committee to develop a plan of subventions Both state and federal funds are urgently needed to assist in meeting overwhelming local needs . . .*"

Norman S. Johnson, Director, Department of Parks and Recreation, Los Angeles County

Dialogue with Chairman Z'berg and Members of the Committee·

". . . I think we can boil the whole thing down to the single subject that remains . . which is a matter of dollars . . . This room is filled with competent, knowledgeable people who can do all the statistical and staff work that's necessary to identify what our obligations are in the field of parks and recreation *The simple question remains of what we are going to do about it . . .* I think that is the most pertinent question, particularly as it relates to Los Angeles County and other areas of southern California . . .

"Our problem right here in Los Angeles County is that we, figuratively speaking, are doing nothing about it, and if you gentlemen read any of the local papers this morning you saw one single headline and that was the threatened taxpayers' strike. So we're talking about money:

Money, money, money . . . *Los Angeles County is in a position where, for the last three years, figuratively speaking, we have appropriated nothing It's tokens for acquisition and development of parks in one of the most critical areas in the entire state, if not the United States And our problem is just as critical at this given moment. We do not know what to do about it!*

"We likewise believe that there is a conflict of interest in the field of public parks and recreation, and to illustrate this we refer you to your own 1960 California Public Outdoor Recreation Plan which was adopted under a cloud of controversy. But I think we can look back now and say it survived and that some of the recommendations are keys to many of our problems in the State of California, which is governmental organization itself Who does what? As a county we are trying to carry water on both shoulders and the pails are empty. We are trying to do the regional job which we recognize This is what Mr Breivogel spoke so capably about, and we're trying to do this job because we are the county. There are 76 cities in this county There are likewise a million two hundred thousand people in the unincorporated area that you might say there is no one to look after *The net result is that we're trying to do everything and because of the dollar problem we're doing nothing.*

"We cannot be proud of what we are doing in Los Angeles County. The State of California has given us the only tool that we've had in the last several years, and that is the bond act We knocked ourselves out in your support because there was an opportunity that through your efforts we were going to have some residual benefit. We talk about millions of dollars at the federal level to assist the local governments I am sure that you gentlemen, as knowledgeable as you are, are aware that this money is not coming to Los Angeles County for a number of reasons The foremost and most pertinent one is that we haven't got our dollar to match with the land and water program, which you are administering, or the open space programs administered by the federal government. With all these incentives and inducements offered, we do not have the wherewithal to take advantage of them, and it's all related to those headlines you read in this morning's papers. We're building jails, we're building schools; we're building probation camps, we're trying to solve the other problems of metropolitan government and we can idealistically talk and rationalize on all the benefits of this great society, but we end up talking about dollars . "

Chairman Edwin L. Z'berg: "Let me ask you, Mr Johnson, do you think your situation is unique?"

Mr. Johnson: "No, I think it is a problem existing at practically all levels of local government, particularly in the West because we have this problem of population explosion. I do not mean to get into the political arena, but we've tried bond issues; we're continually clobbered Some of us are courageous enough to try it again, but I think we're real bold soldiers walking right down an open field while they're firing at us from all sides . . ."

Assemblyman Alfred E. Alquist: "Do the people of Los Angeles want parks and someone else to pay for them? Your tax rate's no higher than anyone else's; it's not as high as my county . "

Mr. Johnson: " . . The problem existing here that the people are speaking about is that they can't afford to own their homes I don't think they're making the choice of whether they want parks or not They say there is a tolerance factor and their contentions are that if you want to be our elected officials (talking of city councilmen, school board members, or county supervisors) you'd better do something to control the local taxing situation I don't think the people have the choice. Now, we can't do away with jails and probation camps; we've even got laws that say we can't do that. You get to the situation where there's a saturation point *Parks and recreation, to this date, still remains low man on the totem pole . . .*"

Assemblyman Alquist: "Mr. Johnson, everything you said applies to every other county in the state."

Mr. Johnson: "I think that's probably true I think the other counties are making this same petition—that we need assistance in local tax problems, and in this category I'm speaking not only of parks and recreation I do believe that our local politicians are in jeopardy if they promiscuously deal with the tax rate in view of what's going on as you read in the paper It's a real problem Speaking particularly of the federal government, hundreds of millions of dollars have been identified and made available to encourage us to do this very job Do we defy the people? Do we do what we know is right and impose a tax and possibly suffer the consequences in order to match the federal dollar with the local dollar? I say we should I'm not sure whether the people would throw them out of office or not, but I don't run for office and I may not have the same concern they do The net result is that there are no dollars in our budget because of a threatened taxpayers' strike. The situation in Los Angeles County is not the result of the needs of one agency of government, it is a compounding of the levels of government in Los Angeles County that add up to that tax bill I'm not here to criticize school, flood control, sanitation, sewers These are all problems and they're all associated with dollars *However, when they are placed in priority sequence, we (recreation) characteristically end up trying to satisfy ourselves with the dregs at the bottom* .

"I leave with you one figure, gentlemen; Chairman Z'berg has heard this before when we were on a panel together in Sacramento. In Los Angeles County last year our appropriation for parks was $700,000. Do you know what that means? It's one ice cream cone per person. Now, you can't even pretend to do the job with that type of appropriation. The board (of supervisors) acknowledges this. They have adopted the master plan and have appointed a citizens' committee to study and recommend how to achieve the financial means to do our job . Mr. Breivogel spoke of 216 new regional parks that deal with a portion of the identified needs of $225 million. Now, in remembering the hearings that the state was conducting when they were proposing the $150 million bond issue, I think without any question that with respect to the support to the state which came from southern California, and considering our share, you're talking about peanuts The state proposal was $100 million, and I think that as a result of the testimony developed by the committee, you did have the courage to go to $150 million I would say that our problems would be less today if you had gone to $300 million or so, because all we have now is the same job to do over. Yet you did, in all fairness, one of the greatest stimulating jobs for local government that could possibly be done . .

"Your state park system is not adequate today, and we'd like to support the state to do its job. By the same token, if we can get in on the band wagon no differently than we did with Proposition 1, and talk of $300 million or so with the local share of $100 million instead of $40 million, maybe this will assist However, answering Mr. Alquist's question, we have no thought of a free ride; although we don't have our answer in Los Angeles County today, matching funds remain our obligation "

Chairman Z'berg: ". . . According to your figures and statistics you indicate that one of your major problems is the inability to get the necessary funds What do you suggest?

Mr. Johnson: "I wish I knew that answer We have tried charter amendments that were defeated at the polls two years ago Several cities around here have proposed bond issues, and I don't, at this moment, know of any that have passed recently. Other cities are proposing them, and I don't envy them when we look at November's ballot because we're still talking about a bill that somebody's got to pay . . ."

Chairman Z'berg: ". . . I gather that you think that because of the difficulty of raising the funds on a local level, they should be raised with a broader tax base Of course, if you're a city councilman or county supervisor, it's great to have the state raise the taxes and give them

back to you Then of course you can blame the Legislature for the increase in taxes . . . Have you thought about other ways of financing recreation at the local level . . . ?"

Mr. Johnson: ". . We've talked about excise tax. We're talking about override tax . . . We also have a feeling that there is tremendous revenue potential within park operations, and at present—I speak only in Los Angeles County—our department raises in excess of $3 million per year revenue, but it doesn't help us one red cent because it all returns to the General Fund Many agencies have the benefit of funds reverting to the department, and they can commit themselves for additional expansion, development, and maintenance We likewise are proposing that .

But any of these things still give the same problem to our elected officials—someone must pay the bill . . ."

Chairman Z'berg: " From what you've said, I would guess that based on past history they wouldn't react in a way that would probably satisfy you ."

Mr. Johnson: " . No, but I'll be specific the recommendation is going to be for a 10-cent override for 10 years This is a significant amount of money, and I do not believe the taxpayers of Los Angeles County will stand for a 10-cent override, but if it comes down to 7, 6, or 5 cents—or whatever it is—it will be more than we're getting now, and above all, it would acknowledge that there is a park problem in Los Angeles County . . ."

Prepared Statement:

". . . Currently, we must state that our ability to accomplish the acquisition and development of facilities to meet this need is totally related to the availability of funds out of the general fund of Los Angeles County, and that no long-range program for funding can clearly be identified . .

". . . It is our feeling that an equitable method of funding regional facilities must be directly related to the particular function of the facilities involved and the related tax base of the service area itself. Los Angeles County currently has approximately 79 cities ranging in size from a population of approximately 5,000 to a population in excess of 2 5 million; further, a total of over one million persons currently reside in unincorporated areas throughout the county All of these people have the right to expect the availability of a comprehensive system of park and recreation facilities ranging from the neighborhood playground area through state and federal parks. The county recognizes its responsibility in the provision of regional or day-use recreational improvements to service all of the people in the county. We are further sympathetic to the additional problems created by the expanding metropolitan region as it relates to the provision of facilities encompassing at least the five counties in this area . .

" With our existing sources of revenue totally related to the ability of county government to appropriate moneys out of the critical general fund, and the multitude of problems facing county government in the provision of jails, hospitals, welfare, fire control, etc, it is impossible under this system to project a logical and effective accomplished program based on any plan During the last five-year period, we have been fortunate to obtain approximately three million dollars a year for this purpose This amount, however substantial, cannot possibly meet the growing demands and make up for the (existing) deficit in day-use recreational facilities Further, it is completely impractical to establish an ongoing program of facility expansion with the variables incorporated in this particular funding source. It should be pointed out that along with the funding program out of the general fund, the county is taking maximum advantage of state and federal programs as well as usage of other governmental agency lands for recreational development where practical This source of land is rapidly diminishing and our ability to actually produce development to make them usable is extremely limited . . .

". . . It is our firm belief that the major problem facing local government agencies associated with the provision of regional facilities and programs is our inability to establish an aggressive capital projects improvement program We have not witnessed any major problem in the County of Los Angeles or in any other local jurisdictions in the vicinity that prohibits the continued maintenance and operation of existing recreational facilities *The need is clear that special attention must be given to the establishment of a logical program of funding the expansion and development of recreational areas and facilities of all types if we are to meet the growing demands*

" . Any program that would provide adequate funding for this service to the people must be established on the basis of receiving those funds from the area or areas where the service is rendered There are many sources of taxing funds available to practically every government agency from the municipality to the federal government. Unfortunately, most of these methods have been exploited to the maximum to fund the so-called mandatory services of government and their associated supporting functions. It shall not be the intent of this report to identify any magic formula or any method that has not been thought of before *It will suffice to say that it is our feeling that funding should be provided on a continuing basis so that a minimum planned 10-year program of development can be realized and that funding should come from a tax base that is directly related to the service to be rendered through the program of development* Obviously, the most logical source is an identified tax rate for park development purposes. This method is already imposed in numerous municipalities throughout the state It is also necessary in the County of Los Angeles for the purpose of providing regional or day-use facilities of benefit to all residents. It is also our recommendation that all revenue that is accumulated through the use of specialized facilities be deposited for continued acquisition and development of additional facilities.

"We would also like to submit that additional state and federal subsidy programs to local governments should be expanded. These sources should contain specific controls and regulations requiring matching funds from the local areas as well as allow for development of facilities and acquisition of land This method would not only serve as a stimulant to the local agency to assume the responsibility for their functions under the home rule concept, but would continue to emphasize the interest and responsibility of the state and federal government in the provision of opportunities for leisure experiences to all residents of our nation .

" . . The successful passage of the 1964 Bond Act by the state illustrates the effect that progressive leadership on the state level can have on the development of local recreation interests Certainly this particular action on the part of the state has provided the impetus to many agencies that allows for recognition and solution to the problems that face this profession. Continuation of this type of leadership on the part of state officials and their operating departments can most certainly assist the local agency in achieving improvements to the deficit facing our leisure-seeking residents "

Kenneth Sampson, Director of Parks, Orange County, and **John J. Collier,** Director of Parks and Recreation, City of Anaheim, representing the cities of Orange County

Mr. Collier: " . I think you all recognize that Orange County has been noted for trying to do things for itself, and we haven't asked for assistance to any extent except that we feel very definitely the county must have help Several of the cities feel that they will need some moneys from sources outside their communities in the way of subventions, or the like, in order to move forward and complete their plans A majority feel that they can do it themselves, providing the State Legislature would make a change in the percentage of votes necessary to pass a bond issue May I illustrate by the story of bond issues in Orange County—six bond issues in the last six years failed except one All

were well over the 50-percent mark We ask why should we at the local level face a 66⅔ barrier in securing passage of park issues and the state has to have only one over the midmark? Yes, most of us can do it ourselves at the city level if we could have this change

"*If we do not get this relief then most of us will be knocking on the door of the state and the federal government for assistance We will have to have this help in order to carry out the program of park acquisition and development we so badly need*

"*We all recognize that the county is so far behind in its program that without help from the outside certain essential parts of the system will be lost forever* It is logical that our county receive help because of the very nature of and location of our county. Many of its users are and will be outside of our county from all of southern California Our problem is 'extraregional' in scope

"As cities, we will support the county in its financing program from our county resources, but this will not be enough to do the job that needs to be done in the next 14 years Here we need state or federal funds.

"We are concerned in our area with the unorderly manner in which funds from all sources are funneled to the local level. The lack of coordination between all these agencies with available moneys never ceases to amaze us

"We have two suggestions which we feel will correct this local recipient dilemma in which we find ourselves

"First, *federal and state funds, regardless of source and program, should be funneled through one state coordinating body*. Both state and federal officials have encouraged us at the local level to join hands and work together in planning and seeking means by which we can meet our financial requirement. They have urged us to join hands with other counties. We are doing this, and this is as it should be.

"But, we ask of these agencies if this is a sound approach, why are they not doing this interagencywise so we can deal with them through a single entity, rather than a dozen or so separate and distinct agencies serving us in separate ways.

"All of these agencies are generically related. Their basic reason for being is to provide funds to local jurisdictions for recreation facilities It may be a park of regional scope, a marina, a place to fish, or to facilitate recreation, etc. All are serving a common purpose to provide funds to bring into being recreation facilities for all to enjoy. We entreat you to give us one source to turn to

"Second, *we believe that funds should be made available on an orderly basis in order that a local jurisdiction can plan its own local funding. We would like to urge some type of state subvention that can come from continuing sources without the whims of legislation changing its purpose whenever it seems politically opportunistic*

"We would like to see a plan that provides funds on a need basis, rather than political Who you know too often seems to influence decisions on who gets funds

"Our plea is Let us have a plan of subvention that considers needs and is on a long-range basis.

"Our need is for additional money at all levels One of the concerns that we have at the local level is the fact that when funds are allocated we do not have a chance in competing with what the state parks or state agencies may desire. This is especially true in regard to federal funds, and also I think in the division of our state funds

"Each jurisdiction—the cities, the counties, and the state—has a role to play in providing recreation facilities for all our citizens To say that one should have priority over another in regard to available funds is to be shortsighted. Is it more important that a 1,000-acre state park be secured than a 150-acre county park, or a 5-acre neighborhood park?

"If we do not do a job at the local level, then users put greater pressure on the county, and if the county does not do a job, then a greater burden is placed on the state We must provide facilities at all levels To say that one is more critical than another is the voice of the vested interest, not of a concern with the total needs For example, in Orange County we have about four local parks which have carried the brunt of providing regional facilities for some 30 years As our population has increased, we have been having greater congestion in these parks to such a point that our local people are complaining Until the county meets its responsibility more fully, we will continue to have this pressure In turn, if the county does not provide facilities the state feels it. The state then says that we need more state parks to meet the demand, thus we should have more money. This is a false presumption It is county parks we need The pressure of people seeking recreation moves both ways to the state parks and to the cities.

"We are concerned that the utmost be done in order to be fair in proportioning funds to the various jurisdictions, regardless of source, to the state, to the county and in the cities

"*We would like to recommend to your honorable body that the agency which is designated at the state level to administer funds be dissociated from the control of any operating agency and given this responsibility to coordinate all funding, state and federal This is the only way that all levels can move ahead meeting the needs* "

Mr. Sampson: ". . . As indicated in the master plan, future acquisition and development costs for 1970 through 1980 approximate 22 million dollars If inflation adds to land costs, there may be a 5-million-dollar deficiency carried forward from 1969 and 1970

"If we rely on statistical projections, there will be a total potential recreational demand of 60,328,000 activity days anticipated in park use within a 40-mile perimeter of Orange County by 1980 *The financial investment is far beyond the capability of local government and the property tax base* In a county where bond financing requires a two-thirds plurality by the voters, the use of bonds for park purposes is highly improbable Therefore, park and recreation people have become highly competitive under the present grant programs . . ."

Assemblyman Burt M. Henson: ". . . On the reduction of the bond election percentage from 66⅔ to 51, we had a similar problem come up with school bonds when taxpayers' groups complained that school districts scheduled the bond elections at oddball times figuring that would get them passed more easily that way A compromise was reached that lowered the margin to 60 percent provided that the election was held at the same time as a general or primary election Would you support such a compromise proposal—lowering it to 60 percent provided that it is consolidated with some general election?"

Mr. Sampson: "I agree with the criticism that these bond elections should not be held at odd times. I feel that they should be held in conjunction with general elections and certainly a compromise somewhere between the 50 and 66⅔ percentage requirement would be equitable . . ."

Assemblyman Henson: "All right Now on this business of more money, do you have any suggestions about where some more money might be raised? It is always a disagreeable task that the Legislature has to go through—nobody likes to vote for taxes and nobody likes to pay taxes Do you have any ideas?"

Mr. Sampson: "Well, we mentioned user fees in our presentation—we do have some people who say that even picnickers should pay; it costs us about six cents per picnicker in our Orange County facilities But local entities find that user fees, especially for picnicking, are relatively unpopular due to the fact that this is traditionally a 'free' service of government, and I would therefore be reluctant to recommend user fee for this. Concession income is rather limited also and serves as more of an offsetting maintenance revenue However, where special facilities are provided—camping facilities, golf courses, launching ramps, etc—I think that there should be a user fee that is commensurate with that of private enterprise so that there is minimum conflict between the two; this may be a source Of course, the state does charge user fees in many of its parks, and *there might be some justification in a small statewide land and water conservation fund type of program whereby funds would come from various areas throughout the state and then apportioned back to the*

area of origin, similar to what is done with the gasoline tax fund . . ."

Assemblyman Henson: "There isn't going to be enough money, though . . ."

Mr. Sampson: "No, there isn't going to be enough money Rather than see heavier grant programs, the county's hope may lie in state provisions for some form of annual subvention which will be presented by our city colleague here today *Many related financial sources to recreation exist, and it may be the role of state government to establish precedent and policy as to a continuing park financial base Whether the policy might suggest statewide user fees is an item your committee and others might determine*

"An alternative proposition may be a long-range park bond program similar to the 1964 act Frankly, we fail to see what seems to be unjustified criticism of this act The volume of paperwork is approximately one-third of that connected with federal programs The committee is urged, in this respect, to make future programs equitable as based on population, or other tangible criteria . . ."

Assemblyman Henson: "Well, bond interest rates have gone up to about 4¼ percent in some cases, and that's pretty expensive money . ."

Mr. Sampson: " So has everything else including salaries and all other costs; we are in this type of economy it is interesting, for instance, to look at the Orange County recreational beach inventory we now have an annual beach attendance of 18 million—2 5 million at the state beaches, 4 million plus at county beaches, and 11 7 million at the city beaches Where do these people come from? Forty-five percent of them come from Orange County, but 55 percent of them come from the other counties or from out of state . . ."

Assemblyman E. Richard Barnes: "In that regard, I think you stated that there were six local park bond issues and only one passed; can you tell me why the difference? Why didn't the people support the local bonds?"

Mr. Sampson: ". . . Yes, they did support the local bond issues in the percentage they supported the state bond, with the exception of one in 1962 in La Habra that had only 41 6 percent; but the others were supported by over a majority . "

Assemblyman Barnes: "Well, in view of two things—the increasing cost of acquisition of park land and the increasing use of the parks—it seems reasonable to amortize the use of these parks for say 30 years . I am inclined to think that bonds are one of the best sources of acquisition money . . ."

Mr. Sampson: ". . . We had a countywide flood control bond issue on the ballot in the June election and it lost by 43/100 of 1 percent. If one more person in each precinct had voted for it, it would have gotten more than the 66⅔ percent required "

Assemblyman Barnes: " Would your county support your representative in the Assembly to lower this bond rate to 51 percent? "

Mr. Sampson. " The only appraisal I can give you is that when we met with the park directors from the various cities to prepare this testimony, it was their feeling that this could be done But I have no countywide appraisal . . ."

Assemblyman Barnes: "I know there is a strong voter resistance—maybe you can tie it into the so-called tax revolt—that the voter doesn't have much chance to express his resentment, but he does have in this 66⅔ percentage requirement for the approval of bond issues . "

Mr. Sampson: "We were talking about that the other day; this is the one time when a taxpayer can vote as to whether he is going to tax himself or not and his first inclination is to say, 'No, I have enough taxes' "

Assemblyman Henson: "There have been some suggestions such as raising the tax on gasoline 1 cent, perhaps for a period of three months during the summer, and putting it into some kind of recreation development fund Do you support such a plan? . . ."

Mr. Sampson: "Well, we didn't notice it when that was done for the fixing up of all the highways and so on after the flood in northern California. We complained a little bit but once it was on, we didn't notice it, I don't think I don't think there was a soul that realized he was paying that extra cent for a few months . . ."

Assemblyman Henson: "How about an admission tax to professional athletic events? . . ."

Mr. Sampson: "We already have this as far as the parimutuel take is concerned, and we do benefit from it; I don't see that there could be too much resistance to it . ."

Assemblyman Henson: "How about a tax on professional recreational admissions such as Disneyland?"

Mr. Sampson: ". . . We do have local taxes on the admissions to racetracks . . "

Assemblyman Henson: "On this statewide body for distributing these funds, how would you select the members? Would you have them appointed by the Governor, elected, or what?"

Mr. Sampson: "I personally wouldn't think they should be elected I think that decision should be left to the discretion of the Legislature I wouldn't want to venture a suggestion on that ."

Assemblyman Henson: "Well, when the Governor makes appointments there is always criticism that it is a political thing, no matter whom he appoints nor who is Governor. How could that problem be avoided? . . ."

Mr. Sampson: "Well, of course, we live in a political atmosphere in all of these matters, and I cannot be critical of political appointments in any way because what we are trying to give is a philosophy. For instance, you now have a State Park Commission and a State Recreation Commission. The State Park Commission administers the state parks, and the State Recreation Commission has other responsibilities We feel there should be a group, perhaps one of these, but it should be one that is not operating facilities so that they don't have a private ax to grind first when it is actually the statewide representative for the purpose of assisting the whole program—the state program, the county program, the local program, the regional program, and so on "

Fred L. Jones, Director, California State Department of Parks and Recreation

" *The foremost problem confronting any public agency in meeting outdoor recreation needs is the lack of a constant source of financing that is in proportion to the recreation needs that should be met* Only during the past two years, following passage of the 1964 Bond Act have we had the good fortune to have available funds with which to acquire and develop lands Until 1965 the state park system acquisition program was essentially dependent upon gifts from individuals and organizations and upon the State General Fund These sources of financing did not allow us to relate our long-range planning efforts to a spending program So I'm really concerned with the financing problem that will confront the state after the exhaustion of the 1964 bond money—which really amounts to a stopgap in the total need that we have projected Knowing that we cannot depend on federal matching programs to any great degree, *I am hopeful that as the result of your studies the Legislature will provide a concrete plan for financing of a consistent nature that more strongly relates to California's future needs for recreation*—recognizing at the same time our responsibility to come up with more sophisticated evidence on needs and the projection of needs . . .

" . . The financing of outdoor recreation programs in California is a very important topic for discussion and study. It is the very basic building block upon which all programs are built. It takes funds to acquire land and construct facilities to operate and maintain these facilities

"The total annual expenditure for recreation programs in California is not easily or readily obtainable but it is very substantial. A very quick survey of various fiscal documents and estimates indicate that over $300 million will

be spent this year (operating expense and capital investment).

Cities	$120 million
Counties	25 million
School districts	23 million
Special districts	12 million
State	85 million
Federal	50 million
Total	$315 million

"In my testimony before this committee in San Diego, I listed in some detail the many sources of revenues and fundings now being used to support outdoor recreation programs In summary these are.

"1 Land and Water Conservation Fund—federal grants to the states on a 50 percent matching basis California was the first state to establish eligibility and will receive from $4 to $8 million annually

"2 Open Space Grant Program—federal grants to the states and local agencies on a 50 percent matching basis for acquisition of land within urban regions

"3 Planning Assistance—federal grants of up to 66 percent of the cost of planning studies. This source of funds is being used to prepare the State Development Plan

"4. Soil Conservation Districts—federal grants to soil conservation districts for planning and construction under the Watershed Protection and Flood Prevention Act.

"5 General Obligation and Revenue Bonds—bond issues have become fairly common in the recent years to finance capital expenditures for recreation development at both the state and local level

"6. Fees and Concessions—these funds normally are used to support the operation and maintenance cost of various recreation programs. Generally, the state park system returns about 31 percent of its annual cost through this type of revenue A review of current fees and charges is now underway within the Department of Parks and Recreation

"7. Private Contributions—these are in the most part for the acquisition of lands For example, over $33½ million of state park property has been purchased and given to the state

"8. Special Funds.—The small craft harbor program is operated from income derived from boat registrations Grants also are made from the Small Craft Harbors Revolving Fund which is supported from revenues from fuel taxes paid by boaters The fish and wildlife programs are supported by license fees, and revenue from the tide and submerged lands now contribute $5 million annually to offset the cost of recreation land acquisition in connection with the State Water Project Until 1956, tidelands revenue were used to cover expenses of the state park system.

"9. General Fund—this is the most used and consistent source of revenue to support state recreation programs.

"10. Local Taxes—county, municipal and district taxes support the vast majority of local recreation programs

"In your letter you asked for information on conceivable sources of annual funds. We have been unable to complete this work, but we can give you some very preliminary data on six possible sources Please remember that none of these sources has been analyzed to discover the effects, problems, restrictions, or conditions that might be created by its use

"1 Gasoline Tax—this revenue has a constitutional dedication for road purposes only. At $0 01 per gallon this would yield $21 million during the months of June, July and August, and would provide about $50 million on a year-round basis.

"2 Motor Vehicle License Fees—this revenue has a statutory requirement that it be distributed to the cities and counties, where it becomes a part of their revenue to keep local taxes down. An increase of ½ of 1 percent would yield $50 million annually,

"3 Motor Vehicle Registration Fees—this revenue has a statutory dedication for motor vehicle and highway uses, and was recently increased to provide additional Highway Patrol services An increase of $1 per vehicle would yield about $11 million annually.

"4 Motor Vehicle Operator License Fees—this revenue has a statutory dedication for highway purposes and is used to cover the cost of motor vehicle administration An increase of $1 per license would yield $3 million annually

"5 Special Tax on Recreation and Sporting Goods—not now used in California The State of Florida uses this source for recreation revenue A 5 percent tax (on top of the existing 4 percent) would yield between $10–$15 million annually

"6 Cigarette Tax—not now used in California Wisconsin uses $0 01 tax per package to back up bonds used for acquisition California now has a $0 03 tax per package, which goes into the General Fund A tax of $0 01 per package would yield $25 million annually

"This is all the information we have been able to obtain so far We are still working on the problem and will present in writing a more detailed analysis to you in the near future.

"In closing I would like to point out these facts·

"1. State Park Commission approved acquisition projects (90 projects) have an estimated cost of $310 million. Thirty projects have been funded by the Legislature leaving about $234 million in projects not funded The Legislature has directed us to study 11 additional projects, which have an estimated cost of about $70 million *So we have about $300 million in good projects, and about $9 million left from the $85 million bond act*

"2 1966 statewide deficiencies in recreation facilities·

Camp units	47,000
Picnic units	50,400
Boat access, parking spaces	15,000
Hiking trails	Local and regional
Riding trails	Deficiencies . .

" **Jim Pardau** *has discussed with my staff the possible establishment of a fund to assist local jurisdictions to acquire and develop parks, and he has asked if we would comment on how the Department of Parks and Recreation would go about the administration of such a program*

"I would hope that such a fund would be an annual allocation to be distributed on the basis of greatest need and without the necessity for legislative approval of individual project grants. The fund should be established for at least a 10-year period and be available for acquisition and development to cities, counties, and recreation and park districts only Acquisition should be rated over development as a higher order of need, perhaps with two-thirds of the annual allocation devoted to acquisition. Grants should be available for more than just regional parks, since neighborhood park needs are also great and few if any state or federal funds are available for neighborhood and community facilities.

"The actual allocation of funds should be highly related to the deficiencies indicated in California's Recreation and Park Study and the Urban Metropolitan Open Space Study and their updated equivalents in future years Projects located in areas of deficiency that measure up to the criteria established for the program would have a high probability for funding A ceiling should be placed on the amount going to any single project

"I feel that assistance should be provided on a matching basis at 50 percent of related project costs This is similar to the federal Land and Water Conservation Program and the 'Open-Space' Program in this regard

"As to the administration of the program, I believe that the Recreation Commission (for Park and Recreation Commission) should be responsible for the preparation of cri-

teria and the overall review of the program and its effectiveness The actual allocation of the funds could best be accomplished, I believe, through a board or committee comprised of the Chairman of the Recreation Commission, the Directors of Finance and Parks and Recreation, and one member each from the Senate and Assembly The committee setup would reduce considerably the time interval between application and actual funding The lack of popularity and effectiveness of the present state and federal grant programs can be greatly attributed to the time delay in funding of needed projects "

Hugo Fisher, Administrator of Resources, State of California

" I am convinced that we must learn much more about the economics of recreation This is essential first because all public programs must necessarily compete for limited funds And, therefore, there is a pressing need to be able to compare the costs and benefits of the various programs of government I am sure we can all agree that the provision of recreation opportunities is a legitimate function of government, and one which is vitally necessary in our increasingly complex urban society But it is not enough to simply say this—those who have responsibility for recreation programs must provide the economic justification to decisionmakers who are bombarded with equally pressing demands for public funds This is not to say that all decisions regarding recreation can or should be made on a dollars and cents basis—this is patently absurd Nevertheless, I think we can do a much better job of quantifying recreation costs and benefits

"A second reason we must learn more about the economics of recreation is that this knowledge can make a profound difference in the magnitude and type of recreation programs which we mount The thoughtful questions you have raised regarding fee structures, tax policy and costs of acquisition and maintenance are obviously going to depend on careful analysis of the economic consequences of various alternative actions

"As part of our program for the maintenance and refinement of the California Public Outdoor Recreation Plan, we intend to continually analyze the economic implications of the state's recreation programs and activities If I might digress briefly, Mr Chairman, I would like to report on a study which will commence in the very near future Utilizing funding made available from the Land and Water Conservation Fund for recreation planning purposes we propose to undertake a study to develop improved methods for comparing the benefits and costs associated with the provision of outdoor recreation opportunities More specifically, the study will be concerned with measures for improving the evaluation of the direct economic benefits to be derived from various forms of outdoor recreation, as well as those general social and other values which are not now readily translated into economic terms A second purpose of the study will be to examine measures by which the impact of outdoor recreation can be evaluated, both in terms of worth to the individual, to the local communities in which recreation projects are located, and to the state as a whole Finally, the study will analyze the implications of the imposition of various fee structures and special user charges upon the supply of, and demand for, outdoor recreation areas and facilities The study will be carried out by a private consultant selected on the basis of background and expertise in resources and economic evaluation Technical level people from each of the appropriate departments of the Resources Agency will participate in the study, and a strong effort will be made to secure participation of federal recreation agencies in the study, including the Federal Recreation Council It is anticipated that the study will commence in the early fall and will extend over 12 to 16 months. The results of the study should be extremely useful to us in the design and execution of the various recreation programs The study should also provide the information which is necessary to respond adequately to the questions you have directed to us I hope that we will have the opportunity to report to you on this at a later date . .

" . I would like now to comment briefly on the last item in your letter—that of continuous funding for state recreation programs

"Many sources of revenues are used to finance the planning, acquisition of land, and development and operation of facilities for recreation Some of these are federal grants such as the Land and Water Conservation Fund and the Title VII—Open Space programs, general obligation and revenue bonds, fees, charges, and concessions; private contributions, special funds such as the Small Craft Harbors Revolving Fund, the parimutuel fund; and tideland oil revenues, and for local government, the real and personal property taxes

'In the face of enormously expanding demands for recreation, it is obvious that no one single source of financing can provide sufficient funds to finance the state's recreation program The problem is one of bringing to bear all possible sources of funding, and of fully exploiting the recreation potential of other programs, such as our water and highway programs

"In considering the financial support for our recreation programs, I believe we must press for an expanded federal role in recreation in California Almost 50 percent of our land area is in federal ownership and the way in which this land is managed by federal agencies and the extent of recreation development on these lands will have an immeasurable impact on our ability to meet future recreation demands Further, while federal grant programs in the field of recreation have been extremely useful in supplementing state and local funding, the scale of these assistance programs is much too limited as related to California's recreation deficiencies, including those related to out-of-state use

"Our capability to meet recreation demands can be effectively increased to the extent that we can involve the private sector in the recreation business We have described to you earlier our proposed recreation reserve program, which represents a significant effort in this direction We intend to fully explore further programs in this direction

"I am pleased that your committee is examining the funding aspects of our recreation programs—as you are aware it is a fundamental one ."

William Penn Mott, Jr., General Manager, East Bay Regional Park District, Oakland

" . Spurred on by the federal grants program and our own state park bond funds, we have created a current inventory of the park land acquisition needs of California *This inventory clearly indicates the inadequacy of our present financing program* For example, this year $4,800,000 from the Land and Water Conservation Fund has been allocated to California It will take 20 times this amount just to meet current needs *The State Park Bond Fund of $85 000,000 is $200,000,000 short of meeting the 67 requests for funds for state parks*, as presented to the State Park Commission at their meeting in December HHFA has $49,000,000 for matching funds to acquire lands throughout the United States The counties and cities of California alone will receive from the State Park Bond Fund $40,000,000 and if they request matching funds through HHFA they would use all of the money available through HHFA for the entire United States Out of the state park bond funds Alameda County was allocated $1.800,000 Requests presented to the board of supervisors were in excess of $6,000,000 This same pattern existed in practically every metropolitan county throughout California *Obviously the lack of financing is going to bring the current open space and acquisition program to a screeching halt while California's growth is going to continue with unrelenting demands for land*

"Recreation travel, according to the recent park and recreation report put out by the State Park and Recreation Commission, is the most popular recreational activity of the people of this great state Last year, during the months of July, August and September, we purchased approximately two billion gallons of gasoline About 50 percent of this gasoline was purchased for recreation travel, much of it being purchased by people coming to California to enjoy

the state's scenic beauty. A 1-cent tax on the gasoline used by passenger cars in California during the months of June, July and August, when recreation travel in California is at its height, would produce approximately $20,000,000 *To realistically satisfy the park and recreation demands being placed upon California, we need each year funds of this magnitude and it is my recommendation that these funds be used for fish and wildlife enhancement, for the acquisition, development and maintenance of state parks; for the acquisition, development and maintenance of regional and urban parks; and for the development of a scenic highway program that would link the major regional metropolitan areas of California together, not only by parkways but through the development of hiking and riding trails Some of the funds should also be used to develop additional roadside rests and the landscaping of scenic routes A portion of this money should also be used to educate people, particularly within the metropolitan areas, through an intensive interpretive program Unless people understand the out-of-doors and the environment in which they live, they cannot fully appreciate and enjoy it, and we will continue to spend unproductively several millions of dollars annually in paper pickup and replacement of vandalized public property*

"In conclusion, it is my sincere belief that if we are to implement our open space and park and recreation plans we must realistically face the fact that sizeable sums of money must be made available during the next five years. Therefore, I strongly recommend that serious consideration be given to adding a 1-cent tax to gasoline during the months of June, July and August when recreation travel in California is at its height, and that this money be used to finance a massive open space and park program in California

"Furthermore, we should consider providing for the metropolitan centers in California a surrounding green belt of parks and open space that will preserve the natural beauty of the area and for the open space that the millions of people in these urban centers will require. A program less imaginative will not solve the open space requirements created by the expanding population increase in California . . ."

Assemblyman Winfield A. Shoemaker: "Mr Mott. First, I d like to compliment you on an excellent presentation Second, I'm delighted to hear you say again what you did about the gasoline tax during the summer months. I recall that you made this suggestion at the Governor's Conference on Beauty in Los Angeles two weeks ago. And at that time I was pleased to hear this, for it is something I had been working on for some while, and I made that recommendation, I think, a day later. I would like to ask you, in terms of establishing these green belt areas surrounding cities with the fingers of green protruding into the centers, how do we through legislation get into the business of scenic easements?"

Mr. Mott: "Well, it's my opinion from our experience in trying to secure these kind of easements in Alameda and Contra Costa Counties that the concept of getting scenic easements is not applicable to California, with the pressures that we have on our lands. Those people, at least that we've contacted to try to establish scenic easements, have said 'we'll sell you the land but we're not interested in the scenic easement concept' The pressures on the land in California are greater than they are anywhere else in the United States This is brought on not only because of the favorable situation we have here in California, but because foreign investors are coming into California now, and are putting all kinds of pressure on the acquisition of land This is simply because in their countries they cannot buy land because it's either held by the government, or because there is no more land, or it is so terribly expensive In addition, investing in industry or in the banks in their own particular country is a risky situation, and they feel that investing in land here is not a gamble in any sense of the word, so they are coming in here, which is escalating the prices. We see in Alameda and Contra Costa Counties within a week land that we're appraising at $500 an acre go up to $1,500 an acre or to $2,000 an acre. Therefore, in my opinion the concept of scenic easements only in rare cases will be applicable I think if we're going to do the job we almost have to buy that land

'Now with respect to agricultural land, I think that this is a question of tax incentives—of not appraising the land at its highest and best value, but appraising it for agricultural purposes and working out some systems to protect the agricultural land In the open space resource I think the agricultural lands are just as important as park lands I'm sorry to say that from our experience the scenic concept just doesn't seem to work The cost of acquiring that which would be necessary seems almost prohibitive How should this be attacked? I think if we establish other values than monetary values we would say that this is not a costly program

'On the other hand, from a practicable point of view it seems to me that one of the difficulties we have in California is that we don't have more regional park departments surrounding these metropolitan areas It's very difficult for a local department, for instance a city department, to get into this kind of a concept, because it requires cutting across scenic boundaries and county boundary lines to accomplish this objective Mountains and natural areas that you want to acquire don't recognize these artificial boundary lines, so it seems to me that one of the things is to establish these regional concepts in California that has been done in other parts of the country like Detroit, Chicago and other cities The problem here, although this legislation is very effective and one of the best bits of legislation I've ever seen in this area, is that this means local governmental agencies must give up some authority in order to make it possible And I think you understand the practical politics in that particular problem"

Assemblyman Shoemaker. "Do you think that it's necessary to have further legislation to accomplish this end? You say that the existing legislation which provides for the establishment of such things as the regional park district is good, but again you point out the practical political difficulty of having to work with a number of cities and special districts and counties and so forth where each has its own particular ax to grind. It's pretty difficult to work these things out unless there is something more sweeping than the legislation we have now, it would seem to me I wonder what your reaction is"

Mr. Mott: "Well, I'm not sure, except from the question of tax relief, and some policy decision that agricultural land is not to be judged on its highest and best use if it happens to be right next to a residential subdivision. The act under which we operate is very broad and its concepts are excellent. Probably one difficulty in the act is that the basic tax rate is 5 cents per $100 assessed evaluation and it's set at that. The Legislature permitted it to go to 10 cents for a five-year period for land acquisition and development, but for a new district forming with this as the ceiling it is very limiting and restrictive to be able to accomplish very much with the land values as they are now. This may be an area in which there should be some review.

"On the other hand, I think the legislation is broad enough—we have taxing powers, condemnation, police power, fire power, and all the rest, so that except for these political problems of releasing authority and responsibility I think this would work Now I don't know how you'd get around it at some other level. We have in the east bay district 26 cities, 2 county governments, and 6 park and recreation districts with which we are involved in a coordinated propery program We don't conflict with any of them because our program is strictly on a regional concept We don't get involved with the municipal park and recreation programs, or the district park and recreation programs *I think the basic problem is one of where do we get the money to do the job That seems to be the big problem* And as I indicated it doesn't seem right to me that we don't have some funds coming out of this gas tax when the people are coming to California, or people in California are traveling during June, July and August to go to these recreational resources—state, federal, county, or whatever—

and yet no funds are available. This seems to be one way in which to perhaps move the program forward"

Assemblyman Shoemaker: "Do you see any possibility of private enterprise going into the business of providing something similar to some of our parks on a commercial basis, and establishing areas through zoning or something else for this kind of thing?"

Mr. Mott: "I think there'll be some of this take place, but in most cases from my experience in the operation of this type of development, unless it's a very commercialized activity it is not profitable from the standpoint of buying the land, advertising, and all the construction, therefore they are not going to go into it I don't know of any park and recreation program that is a profitable venture from the standpoint of providing recreation for large numbers of people On the other hand, we feel that if we have land, we can invite private investors to come in on certain things such as golf courses, swimming complexes, and things of this sort, and develop these against our plans, designs, and our control This seems to be very effective so that our money can then be used for trails, picnic areas, camping facilities, and things of this sort I think you'll see more of this type of thing, but I don't think we're going to see too much in the way of private capital buying land and investing in what we would think of as a park and recreational development, except in a highly concentrated type of thing—such as ski facilities, sea worlds, and things that do make money But this is not the kind of thing we're talking about.

Assemblyman Shoemaker: "One final question—back on the gas tax This, of course, would require a constitutional amendment because gasoline taxes have to be given to highway purposes now In your talking with other people around the state, have you found particular enthusiasm for this, or what seems to be the response?"

Mr. Mott: "I mentioned that this may require a constitutional amendment Everybody says, well let's do it—how do we get started on this? I think we can build up the support that's necessary I'm willing to start in right now if you're ready to tell me how to go about this I think we'll get tremendous support. I suspect that there will be some people who will object to this, obviously, and I think you and I both know where some of this could come from. I think we've got the support—we've got the climate in this state today because of the Governor's Conference and the President's interest in this, and everybody talking about it I think we've got the climate to do this now and carry it forward to accomplish this adjustment"

Assemblyman Shoemaker: "The response from my district has been very good But we always think down there that Santa Barbara perhaps reacts differently"

Mr. Mott: "Obviously the people who object would not say anything to me I don't think they would to you if they were in favor of it. But my general reaction is that people are accepting this, and wonder why it hasn't been done in the past . . ."

DeWitt Nelson, Director, California State Department of Conservation, former Chairman, California Public Outdoor Recreation Plan Committee

" . The California Public Outdoor Recreation Plan represents a comprehensive inventory of supply and demand for recreation in California The plan, however, was completed in 1960, and the Department of Parks and Recreation was not provided with sufficient funds to adequately maintain it The department is presently engaged in updating the data contained in the plan, however, this effort was only possible through the utilization of federal planning assistance funds, as part of the state development plan program. This effort will be completed in December of this year, and federal funds will not be available on the sustained basis which is required to maintain the inventory data While the information will be very useful in our present recreation programs, it will become rather quickly outdated due to the changing character and rapid growth of the state. Once this has occurred the entire process must begin over again. This is obviously extremely inefficient and provides a poor basis for the magnitude of expenditures which the state is currently investing in recreation facilities In approving the Outdoor Recreation Plan for purposes of state participation in the Land and Water Conservation Fund program, the Federal Bureau of Outdoor Recreation has indicated that systematic updating of the plan must be accomplished as a condition of continued participation in the program

"The Outdoor Recreation Plan furthermore, while setting forth recommendations for state action in several areas, does not, in itself, represent the policy framework required to integrate the entire state recreation program. Recognizing that recreation cuts across jurisdictional and functional lines, the state should nevertheless attempt to indicate generally how much of the current and future demand for recreation in California it is prepared to meet, and what types of recreation facilities it is prepared to provide. Our recreation policy should indicate how we are prepared to cooperate with and assist federal and local government and the private sector in meeting their appropriate responsibilities For example, I mentioned earlier that we really know very little about the contribution of the private sector Yet it is increasingly obvious that public agencies alone cannot meet the total demands for recreation that California population growth and changing style of living are generating State government may choose to adopt any of a number of alternative policies to stimulate private investment in recreation These may include tax relief, adjustment of the public fee structure, attractive interest rates for private developers, and lease-back arrangements

"Additional planning effort is also required if the Outdoor Recreation Plan is to be an effective instrument for the coordination of recreation activity in California As they are completed, planning elements such as the California Boating Plan and the Scenic Highways Plan should be incorporated in summary fashion in the plan. The plan should also clearly set forth the basis for determining priorities of expenditures for recreation, both in terms of geographic areas and in terms of specific types of recreation activity. Along these lines, we need further study of the economic impact of recreation and techniques for measuring this impact Almost any proposed recreation project today can be justified on the basis of demand—the real question is, is the state getting the most for its money? The criterion should be applied to the state's direct recreation programs, as well as to the growing number of programs of loans and grants for recreation purposes.

"Perhaps our paramount need in terms of recreation planning is to determine the implications of population growth for the present programs of state government. I believe we must determine whether or not it will be possible for state government to continue the present level of recreation service in the face of competing demands for funds for education, highways and other state facilities and services *If social and economic trends indicate increased levels of recreation demand which will clearly strain our budget capability, then we must begin to explore new approaches to the provision of recreation opportunities for the people of California.* I have mentioned the private sector as one avenue of exploration in this regard, another is increased use of federal land to meet recreation demands Again, this approach may call for new policy on the part of state government . . "

Charles E. Porter, City of San Diego

". . . Increasing capital outlay requirements for other necessary public facilities, i e , sewers, storm drains, streets, etc , continue to place heavy demands upon the city's financial capability It is doubtful that over the next decade the City of San Diego will be able to invest much more in its parks than it has over the past decade, and even this investment will sorely strain the general fund *New sources of revenue would seem to be the only means by which the City of San Diego will be able to overcome the problem . . .*"

Duane Mattison, Park Director, County of Contra Costa

" Financing recreation programs, both immediate and continuing, is the basic question to be resolved by all levels of government User fees, special taxes on all recreation equipment, gasoline taxes and possibly other sources of revenue should be thoroughly studied and the most feasible methods implemented in order to meet present and future demands We agree with paragraph four, page two of your statement of objectives *Local government will require greater financial assistance from state and federal sources in order to function with some degree of adequacy. A program paralleling the federal, state and local highway methods may be the answer.*

". We don't have any specific program laid out, but *certainly a continuing type of financing as you have asked others, and has been stated here this morning, is going to have to be done.* I was very interested in Mr. Bramhall's suggestion, who sat here just previously, about the possibility of using a gas tax fund to finance a major bond program, because I myself did want to mention that I did feel that your $150,000,000 bond measure recently passed has only shown how inadequate $150 million is in answering the problems of the state, and that you're going to have to consider a possible bond program of a much greater sum Perhaps the gas tax program might help in retiring the bonds . . ."

Mr. Shoemaker: ". . . There are a couple of questions I would like to ask you in regard to some of your remarks pertaining to a summer gas tax and also to a bond issue Do you feel that these necessarily are connected—that we should have a bond issue and a summertime gas tax?"

Mr. Mattison: "Both I just drew an opinion from hearing Mr Bramhall immediately ahead of me. I have felt right along that the state's bond program of $150 million was not large enough I felt that you should have gone for more I also feel that a 1-cent gas tax for park and recreation purposes to be used throughout the State of California only during the summer months, as I had previously heard suggested, would not begin to answer the problem. I think that you're going to have to go much further. This is not the solution. *Your problem is to finance a quality statewide system of parks and recreation at all levels of government, which goes into such sums that a 1-cent gas tax isn't going to be the answer. This is my thinking.*"

Assemblyman Shoemaker: "At the park commission meeting in Santa Barbara I asked them to take a look at the feasibility of a $300 million bond issue with a 1-cent gas tax for the purpose of retirement One of the reasons I made this recommendation was because of the base of information I had that the interest on the money we would be paying off would be less than the rise in price of the land that needs to be acquired during the period, and that the bond issue would be retired with this money. On the basis of the information you have is that a reasonable or an unreasonable approach?"

Mr. Mattison: "Well, Assemblyman Shoemaker, I'm going to say that I concur with you wholeheartedly, only why don't you change that $300 million to at least $500 million? I think that you would find that this would not be an unrealistic figure. I would agree that this was a logical approach"

Assemblyman Shoemaker: "Just one more question Do you think the people in Contra Costa County would be willing to support these two things?"

Mr. Mattison: "Just from the information that you have in terms of demand for recreation, I would have to say from my experience over the past few years that I think we would And I say this because of the fact that we attempted a $7,500,000 local bond measure in 1962, which failed with the state's bond measure. We immediately followed you on the ballot and we went down together. Your state bond measure incidentally drew the same yes percentage support as our local measure did The residents of our county, because of their feeling of concern in this park and recreation field, then took it into their hands to annex the county to the park district because of the 10-cent tax levy which the park district has available to it for another three years following this year They were willing to tax themselves this amount in order to try and achieve some semblance of an adequate park system And I think that at this point in Contra Costa County there is a segment of the population large enough to support any reasonable financing measure for a continuing park acquisition program."

Assemblyman Shoemaker: "One more question You were talking in your testimony about the necessity for more money to go into local government for the purpose of park acquisition and development Should we go for a gasoline tax constitutional amendment? Do you feel that there ought to be some kind of formula established to provide a portion of this fund to the counties?"

Mr. Mattison: "I definitely do I think that is the way to get local support in your program, and certainly what is done in the local level is going to help solve your whole statewide program Whatever you can do to encourage local support is going to be of value to you, and I think this is something that should be done . ."

Ralph H. Shaw, Director, Parks and Recreation, County of San Mateo

". . *Analysis of future park needs indicates the job of acquisition and development is so big and so costly that local government cannot finance them all We need a partnership of the public interests of local, state, federal governments, that will do more than can be done under present provisions* The federal government, in recent years, has made a major contribution to state and local governments in the field of park and open space financing, but we believe that still more needs to be done, perhaps by the state and local governments

"In reviewing the amount of park and recreation areas that have been acquired in recent years, the rate of population growth, and the rate of increase in land prices, we find that we are falling behind Acquisition and development, especially of state parks, has been woefully slow. This slowness has resulted in making our tax dollars buy only a fraction of what they could have bought when park projects were put into the state and local park plans

"For example, we were recently reviewing a proposal made less than 25 years ago in which it was recommended that 400 acres of sand dunes at Ano Nuevo be purchased for $4,000 The state is proposing to buy the same property this year for over a million dollars The same report recommended buying the Pescadero Lagoon for $3,000 Today the state is planning to pay hundreds of thousands of dollars for the same area Eight acres of land at Montaro Beach were priced at $4,800, today the state has virtually given up acquisition of the property because the price has climbed so high

"Gentlemen, we cannot afford to delay any longer, we must have an active, moving, effective program for park acquisition We, in San Mateo County, are doing all we can to fulfill our local responsibilities; *we implore you to make sure that the state program fulfills the state responsibilities*

"Our county, and many of our cities, are active members of the Association of Bay Area Governments. As such, we are cooperating with A B A G. in the preparation of a regional plan One very important section of this regional plan concerns planning for parks and for the preservation of open space.

"In our judgment, it is essential that the State of California participate actively in this regional park planning process, and it is essential that the State of California be prepared to carry out its share of the final recommendations of this regional park plan This may well mean a substantial financial responsibility for the provision of large parks within the metropolitan area We hope all agencies of state government will be prepared to act effectively in helping to carry out the regional plans that we are preparing on a cooperative basis. We must abolish the vestiges of the old 'stratification' we have had in the past be-

tween the various 'levels of government' *State government and local government must be working partners, not just 'upper levels' or 'lower levels' of government to which reports and memoranda are referred Nowhere is this more urgently needed than in providing for the acquisition of parks and in the preservation of our metropolitan open spaces* "

Assemblyman Barnes: "Do you agree, sir, as representative from Contra Costa County that the $150 million bond issue was just a drop in the bucket, and that a 1-cent tax three months in the summer producing $20 million would be totally inadequate to meet the oncoming needs?"

Mr. Shaw: "Yes, I do "

Assemblyman Barnes: "Do you think the people in your county would support some plan if the state projected it as a massive bond issue advertised over a long period of time, paid for by an additional 1-cent gas tax like we have for highways—1 cent committed to the statewide park program?"

Mr. Shaw: "I would say this, that San Mateo County had perhaps the highest or close to the highest response to the State Bond Act that was presented, and the reason that they did this is they have a lot of confidence in what can be done in the way of open space So I feel confident that they would answer this in the affirmative "

Reginald G. Renfree, Director of Recreation and Parks, City of Sacramento

". . We believe that continuing efforts must be made to solve the problems created by the establishment of special districts. While much progress has been made, major problems still remain in the recreation and park field as growth and annexations bring cities and districts into conflict. You will find in most of the testimony presented to your committee from these districts an indication of serious financial problems in their attempt to meet district needs with requests for state funds just for local problems It is understandable with small tax bases, restricted tax ceiling, and insufficient bonding capacities that funds for acquisition and development cannot keep pace with the demands

"*Finally, we heartily support your indication of attempting to develop some assured, continuing basis of funding this recreation and park service at the state level* I would not wish to make any recommendation on the source of such funds at this time, but feel sure that this matter will be of interest and concern to the League of California Cities and possibly some discussion by league staff will occur at your next meeting . . "

William B. Pond, Director, Park and Recreation Department, County of Scramento

" . . A bond issue can alleviate our present situation but bond issues need to be voted upon, passed, sold and serviced—which represents a substantial cost, but not a contribution of new facilities to our park system

"Would it be possible (and practical) for the state to establish a revolving fund which would approximate the repayment time and interest rate of municipal bonds? Such a fund could be administered in much the same way as the present State, Beach, Park Recreational and Historical Facilities Bond Act of 1964, and would be available to local governments upon compliance with the desired requirements Such an approach would offer a continuing, cyclical effect: as money is repaid into the fund it becomes available for second (and subsequent) phase planning—as opposed to a 'one-shot' program ."

"Because of the multiplicity of services demanded by a growing, urbanizing community, the county is faced with developing alternate methods of financing park acquisition and development programs Existing state and federal programs of assistance are being utilized, but *a continuing, adequately funded program is needed at the state level* It is suggested that such a program could consist—at least in part—of long-term, low-interest loans to local governments to finance acquisition and development programs in accordance with approved master plans based on accepted planning criteria ."

George H. Adams, Director of Parks, County of Santa Barbara

". . . Suggestions for orderly funding Santa Barbara County is one of the counties in California which carries an unusually heavy burden in providing park facilities because of our proximity to a large metropolitan area. We are within a three-hour drive of well in excess of 10,000,000 persons and the load on our overnight facilities is unbearable To a much lesser degree we need assistance in financing a program of acquisition and development of day-use parks

"It is logical, because of the influx of out-of-county park users, that outside funds be made available to supplement county funds for acquisition and major development projects

"It would seem in order to meet such needs as those confronting Santa Barbara County that a program of one-third federal, one-third state, and one-third county funds would be a sound program for the most immediate relief

"Our belief is that work should be started promptly on another bond issue at the state level By the time such money could be made available the present funds will have been spent with only a dent in the problem that faces us all

"If I may I'd offer two suggestions regarding a state bond issue: (1) We must carry forward a development program so the voting public can see tangible evidence of progress if we want support for another bond issue Although the 'buy now—develop later' program has great merit we hear constant grumbling about not developing what we have Perhaps we should take a page from the book of the Division of State Highways with signs 'This Park Property for Future Development Made Possible by the State Bond Act of 1964' (2) Don't load us down with red tape to qualify for or spend the funds Granted, there are requirements for spending public funds but they should be kept to a bare minimum

"A long-range program should be worked out by fiscal experts assuring a steady flow of funds into the state park budget

"We are not finding fault with our state highway program when we use it in the following example: safe, beautiful, adequate highways are a must but after driving over such a highway to spend a day or a vacation in a park the family may be turned away or accommodated in a crowded, underdeveloped facility. We are just raising a question: will our citizens be better satisfied with more and better parks they can reach on highways not as beautiful as those now under construction or on the drawing board? Just asking

"Again, fiscal experts must provide the suggested means of obtaining the funds but this does not relieve those of us who are responsible for guiding the park and recreation movement We are responsible to support adequate programs at all levels of government In this instance accomplishments at any one level of government almost invariably relieves a part of the burden at the other levels ."

Ray Bartholemew, Director, Parks and Recreation, County of San Joaquin

" . *Most of the problems of local government with regard to recreation are rooted in inadequate financing: inadequate funds or resources to acquire the necessary property and/or inadequate funds for development.*

"Frequently, if private entrepreneurs can be interested in regional recreation facilities, adequate funds for developing access roads are not available

"It is becoming increasingly apparent that the provision of regional recreation facilities is a regional problem and that the problem should be solved by the region or a higher level of government Providing and maintaining regional recreation facilities should no longer be a burden to be borne by local taxation alone . . "

Eugene D. Wheeler, Planning Director, County of Ventura

". . . It is evident that the financial end of the recreational picture can be a principal element in the acquisition of recreational facilities and that without continued outside financial aid the county will not be able to acquire the necessary lands and develop them into useful recreational entities. *It is especially important that the county be in a position to acquire park sites now rather than later when land prices will be prohibitive* . .

"The state has played an important role in the past within the financial framework of the recreational picture and should continue to do so in the future More specifically, the state can assist local jurisdictions in acquiring lands for future recreational needs by presenting long-term loans at low interest rates With this assistance, the counties and cities can purchase today at lower prices the lands they will need in the future . "

Charles E. Matzen, Chairman, Alameda County Parks Advisory Committee

" . . On December 7, 1965, the Board of Supervisors of Alameda County passed Resolution No 114905, which urges the State of California to establish a formula governing distribution of Land and Water Conservation Act funds between the State of California and local political subdivisions The Federal Bureau of Outdoor Recreation has informed this commission that, of the first 12 states found eligible for funds under the Land and Water Conservation Act program, all 12, including California, indicate they intend to share their funds with local government Ten of the 12 have shared, or indicate they intend to share, such funds upon a formula basis Under funds allocated under the State Park Bond Fund for local jurisdictions, Alameda County was eligible for a total allocation of $1,856,400 Despite a tight time schedule required by this county for submission of applications by local jurisdictions, six applications totaling more than $6 million were received *This experience is cited as an example of the need of our local jurisdictions for outside funds in order to meet recreational demands within this county.* We understand that an advisory committee to the Administrator of the Resources Agency has recommended a 50–50 split of Land and Water Conservation Act funds between state and local agencies. We ask the help of your committee to encourage the State of California to establish a formula for distribution of Land and Water Conservation Act funds . . ."

Edward H. Walker, Director, Parks Department, County of Riverside

" There are two possible approaches that the County of Riverside can follow to strengthen its ability to meet these existing and projected needs. These methods are:

"A county bonding program, or

Supplementing and expanding such a program by additional allocation of funds from the county's current general fund revenues

"However, at this time, neither of these methods of financing appear to be inadequate.

"We feel that the State Legislature should always be considering supplementing county funds for park and recreation purposes *We believe that prior to submitting Proposition 1A of 1964 to the voters of our state, every agency realized that a bond of $150 million would only satisfy minimum needs, and this fact we feel has definitely been proven* I would certanly recommend that when the present state bond funds are completely expended in the year 1971, the Legislature immediately instruct its State Department of Parks and Recreation to prepare a study verifying the continued needs for a supplemental bond program that is so evident today Knowing that we in Riverside County are not eminently qualified to give an exact monetary estimate to satisfy these needs, we still feel the State of California should be thinking of not less than an additional $450 million bond issue to be submitted to the people after 1971

"It is now evident that funds allocated to various counties under Proposition 1A have made it possible to meet only a minimum of the overall requirements . . ."

Smith Falconer, Director, Regional Parks of San Bernardino County

" Determinations should be made as to the yearly amount of funds required to keep abreast of demand on a statewise basis for regional parks If this demand is greater than the Land and Water Conservation Fund plus matching moneys by local agencies, then we recommend that the state set up an additional fund administered and matched in the same manner as the Land and Water Conservation Fund in order to keep up with the yearly demand. In other words, if it is found that the yearly need for regional park acquisition and construction requires $15 million per year statewide and the yearly Land and Water Conservation Fund amounts to $4 million plus $4 million matched by local agencies, the state would supply an additional $3 5 million yearly to be matched by $3 5 million local funds making a total of $15 million . "

B. V. Amyx, Director, Parks and Recreation, County of Santa Clara

" All acquisition and development plans now in process are based on the continuing financial support of both state and federal government agencies. County bond issues have made possible the initial programs of acquisition for park purposes, and will continue to provide some funds for this purpose However, *skyrocketing land cost and expanding recreational needs to service the population boom of this county make necessary the continuance and hopefully the expansion of both state and federal assistance programs in this area of park acquisition and development.*

"As regards the role of the state government in meeting statewide recreational requirements, it would be desirable naturally to see an expansion by the state insofar as providing matching funds for federally approved projects. Past and current activities by the state have done much along these lines, but with anticipated increases in land costs throughout the state in the coming years, the cost of acquiring prime land for recreational purposes will very likely make it unfeasible for local agencies to participate alone Only the availability of state and federal assistance will make possible the acquisition of necessary recreational areas in this state for future generations.

"Studies recently conducted by the state which resulted in the California Public Outdoor Recreation Plan revealed that the greatest public recreational deficiency existed in day-use regional areas and facilities which would serve an area within a radius of 40 miles or one hour's drive. Santa Clara County has been following an aggressive program of acquiring and developing such areas and facilities during the past six years with money derived from two local bond issues which contained $9,567,000 for this purpose

"Point-of-origin studies of the users of these facilities indicate conclusively that Santa Clara County is providing recreational outlets of this type for residents of the entire bay metropolitan population The best opportunity for this type of park unit will be found in the area periphery to the metropolitan core since the open land is more available there at a more reasonable price The jurisdictions responsible for the areas will not, however, generally have the necessary financing capability nor should they have the sole responsibility for providing such facilities Since the two major metropolitan areas of the state now contain in excess of 81 percent of the total population of the state it would appear that continued assistance to the local jurisdictions would be in order . "

Assemblyman Alquist: "In your statement you say 'a program of matching assistance in the metropolitan counties, and a program of direct acquisition and development in those counties surrounding the metropolitan areas, would motivate the boards of supervisors toward a more aggressive program' Have you got anything specific in mind here—perhaps a continuing program financed by the state?"

Mr. Amyx: "Well, specifically I do not, Assemblyman Alquist, but in the some 10 years I have been involved with the program in Santa Clara County, and observing the population growth we have had—a growth of some 60,000 people each year within the county—and observing how the urban development continues to spread, I think we can anticipate this will continue through Santa Clara County into San Benito County and so on In order to have the larger area reserves it appears to me that some program should be adopted so that now on the periphery of the metropolitan area these recreation reserves could be obtained After the area gets to point of development that central Santa Clara County or the Santa Clara Valley has reached, the prices of property become so prohibitive that you can't get it in the quantity it should be obtained"

Assemblyman Alquist: "Have you given any thought as to how the state might finance such a continuing program?"

Mr. Amyx: "No, I haven't"

Assemblyman Alquist: "Do you think that you could convince the people to take gas tax money?"

Mr. Amyx: "This was discussed yesterday, and I do believe that if it were presented properly the people would be receptive to such an idea . . ."

Ned. A. Rogoway, Planning Director, San Luis Obispo County

" . . Most knowledgeable people concede that Proposition 1 failed to remove the enormous deficiencies in the recreation picture The demands of the people of the State of California are so great and the deficiencies so large that one bond issue could not possibly eliminate the lack of recreational facilities. *It is our feeling that a continuing program of funding is a much better approach than a single-shot bond issue* We would recommend that you consider allocating a long-range financing program from the General Fund for the acquisition and development of state parks The department should be able to anticipate their development needs on an annual basis in sufficient amounts to approach the statewide demands for recreation

"In addition, this funding program should provide for subsidy to local government operating tourist-oriented facilities. It would seem that a grant program like those administered by the Wildlife Conservation Board and the Water Resources Agency under the Davis-Grunsky Act are appropriate methods of distributing the funds through local agencies in the state. Funds could be administered by an agency under the Resources Administrator, who would receive bona fide requests for comprehensive parks where it has been demonstrated by the request that it is primarily for tourist patronage A subcommittee of the Legislature organized much like the wildlife board could be delegated the responsibility of approving the projects. Every latitude should be given the jurisdiction to recoup operation and maintenance costs even to the extent of state support as well It would seem to us that it would be a much more reasonable way of administering funds on a statewide basis and would result in more significant accomplishments based upon recreation needs rather than political or local pressures . "

Thomas J. Medeiros, Chairman, Recreation Committee, San Benito County Board of Supervisors

". . We do not feel that San Benito County can afford much from local funds for regional recreation, other than already allocated for our use from the recreation bond money We do hope that the committee, however, is cognizant of the above-mentioned unmet demand on resources and facilities in San Benito County, and that these demands are more important on a statewide or regional basis than they are to the relatively small population of San Benito County We also hope that for the general welfare of all, ways and means will eventually be forthcoming for the carrying out of these plans . ."

Phil Daher, Director of Recreation, City of Inglewood

". . Our situation is critical because Inglewood does not have open spaces, and therefore must rely on the acquisition of old homes to develop our neighborhood park sites However, private developers are acquiring these older homes to build apartment houses at an alarming rate If this continues, we will never have the opportunity to realize this plan

"I am sure that our situation is typical of many, many cities throughout our state. *We do not have the financial capability of meeting not only existing but future demands.* What is so alarming is that we realize we must move ahead now or suffer drastic consequences We realize that we cannot afford to wait—that we must act now. The only question is how do we obtain the funds? The job would not be so difficult if people truly understood the need for cities to prepare themselves for the future as far as recreation is concerned They, in most cases, understand the need for schools and police and fire protection, but not recreation When they see a building burning down, they understand the need for a fire department, and when they see crimes being committed, they understand the need for police protection They understand the need to educate our children, but unfortunately one cannot visibly see the need for recreation and consequently we suffer from lack of support

"Many people including those who have the power to enact programs will never understand until they have felt the pain, until they have witnessed unrelieved boredom, until they are actually hurt and feel the hopelessness of free time without relief

"My department has for three years discussed this plan with many groups and organizations within our community—from service clubs, PTA organizations, the coordinating council and to the man on the street While we educated many people I feel that if our city attempted a $5 million bond issue to complete this plan, it would never pass

"Even though these handicaps exist, we must, for the welfare of the people of our state, conquer the challenge that faces us To accomplish this goal I feel that the state should adjust its thinking, reorganize its policies and place its greatest emphasis at the local level In meeting the statewide recreational problem I can only reemphasize the need to initiate programs at the city level and work up to the state programs If cities are given the opportunity to provide adequately for their citizens, then it makes the job much easier for everyone Everything the state offers is of vital necessity. however, other than beaches, people in the State of California only get a touch of state facilities because it is generally during vacation time when most of our citizens have the opportunity to use them. It is the day-in and day-out needs of our citizens that must be fulfilled if the state truly plans to meet the problems facing our profession

"I recognize that to do something of this magnitude large sums of money are required, and we are talking about money over and above what the state will need to implement its future program However, if you believe in the principle that you can reach more of our state's citizens through city programs, then perhaps some alterations can be made in your allocation of funds

"I do not believe there should be any requirements or criteria set up to qualify cities for state funds I feel it should be strictly based on a community's population A city of ten thousand people needs recreational facilities just as much as city of one hundred thousand A city with no open spaces needs funds and perhaps even more so than does a city with open spaces Citizens should not be denied the opportunity for recreational facilities because their city does not have a general plan Also I feel it wrong to require cities to develop regional facilities Local residents want to feel that facilities developed in their city belong to them

"It is my belief that the state should initiate a program where they provide one or two dollars a year for recreational purposes for each resident of our state, with no strings attached. If this program were established then

requirements placed on cities would not be necessary and all our citizens would truly gain. For instance, a city of twenty thousand would receive twenty or forty thousand dollars a year. This would allow them to establish a development program that would assure their citizens fine recreational facilities For cities of fifty thousand or one hundred thousand or even a million, the money provided would also allow them to do equally as much for their citizens I do believe that the state would be much closer to its residents in the field of recreation if a plan such as this were initiated One or two dollars per resident per year will properly allow us to begin meeting the future recreation demand because we will be able to initiate programs on the local level—where our people live! This is what I feel should be the state's major role in meeting the statewide recreation problem Your secondary role, in my opinion, and one that is extremely important, is to supplement the recreational facilities throughout our state that cities cannot afford There should be more state parks and camping areas as well as small craft harbors In addition, there should be such facilities as golf courses developed and operated by the state I do believe that the state should involve itself in these types of facilities, whenever possible, that will return revenue over and above its cost of operation If present policies prohibit this type of operation, I feel the policies should be altered I see *nothing wrong with the state providing and operating* specialized facilities that our citizens are longing for and being denied because most cities cannot afford the cost of land acquisition and development I also believe that when open land within cities is threatened, the state, by mutual agreement with the city, should move in and acquire the property and retain it for recreational purposes

"I know the program that I have suggested will require considerable funds, and I have asked myself, how can funds of this nature be gained? I do not know for sure, but I have some suggestions. Whether they are politically feasible or not will have to be your decision. I'm sure that anything you do in attempting to increase your funds will require a tremendous selling task I believe that it will be the responsibility of all cities to work together and assist you in this area. Perhaps some of the ideas I have regarding financing are revolutionary and not possible today, but in the future they may be when there's better understanding on the part of our general public and the powers that be

"My suggestions for financing this program are as follows

(1) Increase our sales tax by one-half cent.
(2) Increase the automobile registration fees
(3) Increase the gas tax
(4) Establish an entertainment tax.
(5) Establish a state admission tax on all gambling establishments
(6) Increase the admission fees on state facilities for out-of-staters
(7) Last but not least and certainly one that I would most likely want to see is a state lottery with sufficient funds allocated for recreational purposes

"If possible, I think a thorough study should be made regarding this last suggestion. I do feel that the general public would wholeheartedly support a state lottery In this day and age when all of us are being taxed so heavily, people in my estimation would welcome a vehicle such as a state lottery to gain tax relief . . ."

Honorable LeRoy Jackson, Supervisor; **H. J. Evans,** Director, Parks and Recreation Department, County of Kern

". . . Kern County is at present financing our park and recreation programs out of current taxes Because of increasing taxpayer opposition, as mentioned above, this has necessitated meeting bare essentials We feel that we can continue to finance our local parks under this system, but some other method should be used in regard to general regional parks

"We feel that local parks within a given area can be financed by Kern County or special district taxes However, the big problem is the type of financing that is necessary to acquire additional lands for future local parks. *It is our opinion that some state aid should be made available to finance regional or general parks,* especially when the usage of these parks is much greater from persons living outside of our county, which is quite evident at some Kern County facilities . "

David E. Pierson, Director of Public Works, County of Imperial

" To date we have been able to provide some outdoor recreation facilities for our local citizenry and some units for outside people with the barest of facilities To complete the programs that we would like to see will require many dollars It had been our initial thought that we would ask private enterprise to cause these developments, however, this has not been particularly successful and we are now tending more towards the thought of putting in basic utilities such as domestic water, sewage and electricity and other basic facilities such as camping sites, restrooms, boating ramps and marinas at public expense We would then attempt to secure a concessionaire to operate the unit for us.

"Recreation is the second major industry of our county. The majority of this is potential rather than real. We are catering to an outside populace and need to develop many sites and expand and improve the existing sites to provide their needs.

"*We do not have the funds to provide for these outside people, and feel that some state source of funds should be made available* I would request that the red tape be minimum, as being a small county we have small engineering staffs, and limited facilities to prepare the feasibility reports, etc that are sometime required

"To summarize, when the Colorado River broke its banks over 60 years ago, and created the Salton Sea, the die was cast to establish this as a tremendous wintertime recreation area in the southeastern portion of the state.

"We have planned for this development in all of our areas, the desert, the sandhills, the Colorado River, and the Salton Sea In our own small way, we have done some construction but we need help in the terms of dollars for utilities and other basic facilities Please help us complete these plans A word of caution. if funds are made available, please don't tie strings to it so it is virtually unusable . . ."

J. Michael McCloskey, Conservation Director, the Sierra Club

" . . The State Park Commission's recommendations on allocation of the remainder of the 1964 Park and Recreation Bond Act reinforce our realization of how far short our efforts to acquire needed park land are falling Though some 36 units or additions will be acquired by the $35 million that the bond act made available for state acquisition, *no money remains to acquire some 58 units that* were studied Many of these are most meritorious and stood high on the rating list of the Division of Beaches and Parks Among these that the Sierra Club's chapters have studied are additions to Jedediah Smith Redwoods State Park and Prairie Creek Redwoods State Park, Santa Maria Dunes and Point Sal, Bodega Head, Mt Diablo, Monterey Pines, and Alabama Hills.

"It is essential that these important projects not be forgotten, for they and others constitute major opportunities and unfinished business for the state We hope that this committee will study ways of raising the money needed to complete this essential business Perhaps some federal grant money from the Land and Water Conservation Fund can be used for this purpose, *but it seems clear that additional state money will also be necessary.* We hope that the committee will seriously investigate the possibility of a new 1-cent-per-gallon gas tax in the summer as has been suggested, or perhaps a new bond act

"There is grave disappointment among many of the people who worked hard for the 1964 bond act that there is not enough money to buy some of the key projects with highest ratings Our members, in particular, have labored

to preserve these sights from despoilment They have tried to keep Bodega Head and the Santo Maria Dunes free of power plants and industrial developments, and have succeeded so far But such efforts need the encouragement of state plans to move ahead with acquisition in the near future Citizens cannot be expected to carry the burden of monumental campaigns to preserve such sights in which the state exhibits only intermittent interest "

James D. Sears, Chief, Recreation Section, United States Army Corps of Engineers, San Francisco District

" *It must be recognized that the required nonfederal participation will necessitate substantial financial commitments on the part of local interests if enjoyment of the large recreational potential of corps projects is to be adequately realized by the people of California.* It is conceivable that important recreation values of future projects may be lost due to the difficulty local levels of government may experience in providing the necessary assurances As indicated in the Corps of Engineers statement to this committee for its hearing in San Diego, consideration should be given to an arrangement whereby the State of California could serve as the central 'assuring' agency for the required local participation in such projects and then make secondary cost-sharing arrangements as deemed appropriate with lower levels of government Such procedure would lead to efficient processing of federal project feasibility reports and would place the state in a favorable position to coordinate the recreational aspects with its statewide recreation plan . "

Assemblyman Charles Warren: "You indicated in your statement it was conceivable that important recreation values of future projects may be lost due to the difficulty local levels of government may experience in providing the necessary assurances Now those assurances, I take it, refer both to the nonreservoir projects and to the reservoir projects themselves I take it by that language you are indicating that until this time, at least, the response of local governments to the assistance program envisioned by the Federal Water Project Recreation Act has not been such as to maximize development of the facilities available "

Mr. Sears: "We have had only one official presentation for a letter of intent, and this we obtained from the State of California because of a state park adjacent to our reservoir. There have been no other requests of either the state or the local people at this time for a final letter of intent However, in discussions with the local people—the city and county people—they are very disturbed about where they would obtain the large amounts of money necessary to comply with the letter of intent "

Assemblyman Warren: "Your suggestion was that the state should consider the possibility of giving the needed assurance that the act calls for, and in turn set up the procedures by which it could share with city, county, and other local agencies the financial burdens which the act requires from local and state government "

Mr. Sears "That is correct This was offered as a possibility for providing the needed recreation in the state, since the counties with low population often have a low tax base, and as most of our reservoirs are located in those counties, they would not be able to provide the letter of intent to assume 50 percent of the cost of lands and facilities plus operation and maintenance . . ."

R. G. Howard, Regional Supervisor of Irrigation, United States Bureau of Reclamation

" . During the last session of Congress, the Bureau of Reclamation was given a new tool to use in the development of recreation facilities at bureau reservoirs Recreation was definitely established as one of the functions of reclamation projects by the passage of Public Law 89-72

"This Public Law 89-72 recognizes that the federal government has the responsibility to provide facilities for outdoor recreation and fish and wildlife enhancement at the facilities it creates, and it sets forth the manner in which this responsibility must be met

"It also recognizes the fact that this responsibility should be shared with local interests It provides local people a greater voice in the selection and in the planning of facilities at the outset and gives them a greater role in the administration and the management of the recreation resources

"This new law provides that land may be acquired specifically in recreation facilities constructed under a cost-sharing plan The federal government can now meet half the costs of the land and of the facilities required for recreation and fish and wildlife enhancement, provided local interests will meet the other half of the costs and will operate and maintain the facilities

"The nonfederal share of these costs for recreation facilities and fish and wildlife enhancement can be paid at the outset or they can be repaid with interest With an appropriate showing of feasibility the repayment agreement may limit payments to the amount of the user fees collected

"To take the fullest advantage of this new legislation, it is important that local management agencies be involved as early as possible in the project planning to prevent delays in submission of feasibility reports to Congress

"There are two valid dollar and cents reasons why management and repayment contracts should be executed as soon as practicable first, that the construction of the facilities specifically for recreation uses cannot be started until such agreements are reached, and second, that the cost of the recreational use share of the joint-use facilities —that is, other than specific uses, the dam, and the land for the water area, and that sort of thing—can be made nonreimbursable if the management cost-sharing agreement is executed prior to the time we start construction This legislation will make it possible for us to include in our original planning a long-range recreation program for each reservoir built in the future, and will allow us to participate in the costs of major recreation facilities, rather than forcing us to depend on some other agency to construct the facilities that it can afford, possibly on a hit-and-miss basis

"However, under this new law, if no agency steps forward to share the costs with us and assume management responsibilities we will be limited to building only those facilities required for public health and safety at access points available through existing roads only, or roads that are needed for project operations In addition, power and water users would have to repay costs of the original features that otherwise could be made nonreimbursable

"Let me stress once more the importance of early participation by the management agency In all future feasibility reports submitted to Congress, we must include a letter of intent from a responsible nonfederal public agency if we expect to have our plans for recreation development approved This letter must state the intent of the agency to operate and maintain the reservoir recreation area and to repay with interest its half share of the separable recreation costs . "

As with the element of this report which sets forth in some detail the staggering dimensions of the unmet existing and projected need for outdoor recreational opportunities throughout California, especially in the rapidly growing urban areas, it is equally necessary to extensively document the alarming failure of government—especially at the state and local level—to provide adequate financial resources to meet this demand. While these statements—which are only representative of dozens more presented to the committee by scores of witnesses during its exhaustive two-year study of this problem—may fall on the traditionally deaf ears of public policymakers, in this instance such disregard of the public interest will be in clear defiance of the facts.

Although the customary, short-sighted commitment of public officials to other priorities may well continue to deny recreation its rightful role in the spectrum of human needs, the committee is hopeful that the exposition of failure to date contained in this report will mark the beginning of a new awareness and concern on the part of the public and in time lead to meaningful action by the state. As is the central them of every quotation, meaningful action can only be the establishment of a continuing, reasonably dependable method of funding that will enable the orderly, long-range development and implementation of recreation programs by all levels of government

The Need for Comprehensive State Policy and Program

GENERAL CONSIDERATIONS

The problem definition guiding this legislative study of recreation planning and management in California included among its basic objectives an inventory of existing and projected recreational facilities throughout the state, a determination of the unmet existing and projected demand for these recreational facilities, and an evaluation of the degree to which the policies and programs of all levels of government are meeting this existing and projected demand.

Although its preliminary review suggested a problem of some magnitude, as the scores of witnesses consistently outlined to the committee in its exhaustive series of public hearings throughout California, the recreation gap has now reached serious dimensions, and in the absence of effective action it is destined to become increasingly critical. While inadequate funding is clearly the major contributing factor, the widening gap between promise and performance in providing recreational opportunities has persisted in spite of a substantial effort in recent years by a multitude of agencies at all levels of government, professional recreation associations, and private research organizations to quantify and qualify the demand, and to redefine the policies and programs for meeting it. Although regrettable, the lack of a comprehensive, meaningful public recreation policy and program is perhaps understandable in view of the chaotic and often competing variety of recreation policies and programs scattered among agencies throughout government at all levels

While the attempts to develop a comprehensive state recreation policy can be traced to studies as far back as 1928 by the distinguished Frederick Law Olmstead, two essentially unimplemented actions of the Legislature are the most significant recent efforts

The first was creation by the 1947 Legislature of the State Recreation Commission Under the terms of the legislation the commission was charged with the responsibility of considering ". . . the whole problem of recreation of the people of the State of California as it affects and may affect the welfare of the people and especially the children and youth, and shall formulate, in cooperation with other state agencies, a comprehensive recreational policy for the State of California . . ." This *far-sighted* mandate, which was much broader than that assigned to the State Park Commission—which is charged with establishing ". . . general policies for the guidance of the Director (of the Department of Parks and Recreation) and the Chief of the Division of Beaches and Parks in the administration, protection, and development of the state park system . . ."—has been nullified by the short-sighted, persistent denial of adequate staff by the state to perform this important and fundamental responsibility. The result has been nearly two decades of impotence by the one state agency which ironically possesses the responsibility and authority of initiating a meaningful approach toward solving the burgeoning recreation crisis facing California

The second major legislative action occurred a decade later with creation of the "California Public Outdoor Recreation Plan Committee," which was charged with the responsibility of developing a comprehensive outdoor recreation plan to meet the existing and projected needs of the people The resulting two-part 1960 Public Outdoor Recreation Plan, which has been referred to earlier in this report, attempted for the first time to define the dimensions of unmet need and the objectives of a truly comprehensive state recreation policy to meet it Unfortunate controversy and premature criticism surrounding the plan prevented specific implementation of its wide ranging and excellent recommendations, but it has nevertheless served as perhaps the single most important influence on subsequent studies and policies—including those by the federal government and other states.

Among the most significant of these subsequent actions was the formal 1962 policy adoption by the Governor of many of the major recreation policy objectives recommended in the plan, and two excellent studies—the 1965 California Parks and Recreation Study element of the yet unpublished State Development Plan, and the imaginative and sophisticated statewide Park and Recreation Information System (P A R I S.), with its accompanying regional recreational outlooks These programs—if properly and continuously funded—promise to provide invaluable data concerning total existing and projected statewide supply and demand for a wide spectrum of recreational opportunities Proper utilization of the data within the appropriate policy framework and adequate funding should enable all levels of government and the private sector to initiate orderly, long-term programs to meet existing and projected recreational needs throughout California

Although the development of a comprehensive state recreation policy and an integrated organizational framework for its implementation is immensely complicated by the fact that perhaps no other activity of government involves more agencies and cuts across more functional and jurisdictional lines of responsibility and authority, it is nevertheless clear that the state must begin to move positively and forcefully in this direction The state must determine, for example, how much of the existing and projected de-

mand for recreational opportunities it is prepared to meet, and how this effort will be coordinated and funded among state agencies; what types of recreational facilities it is prepared to provide, and to what extent it will cooperate with the federal and local government and the private sector in meeting their respective responsibilities.

In these determinations the state must be guided by comprehensive, meaningful, and achievable objectives which have the force of law, and it must possess the most effective possible organization structure and integrated, continuously updated planning process.

The range of possible state recreation policy objectives is contained in a number of recent studies and reports, including the 1960 Public Outdoor Recreation Plan, the 1964 Study by the California Park and Recreation Society, the 1965 Study of Resource Policy Directions by the State Resources Agency, and the California Parks and Recreation Study element of the unpublished State Development Plan.

Although the serious diffusion of responsibility and authority for recreation planning and management among state agencies perhaps could be most effectively clarified by reassignment to a single agency, it is obvious that the entrenched nature of these responsibilities makes such realignments politically unrealistic The splintering process was indeed furthered by the recent creation of a separate Department of Harbors and Watercraft, and a separate policymaking Harbors and Watercraft Commission, which were formerly part of the Department of Parks and Recreation However, improvements in the state organization structure and planning programs are possible, and include the creation of a formalized coordinating council of the various state agencies with responsibility and authority in the field of recreation planning and management, the merger and clarification of responsibility and authority of the existing State Park and Recreation Commissions, and the development and adoption of a comprehensive outdoor recreation plan defining the state's role in this field and establishing the framework within which all state agencies will develop and implement their recreation programs.

GREATER USE OF PUBLIC AND PRIVATE LANDS

With every indicator of social and economic trends pointing to a dramatic increase in the demand for recreational opportunities of all kinds, it is obvious that every possible alternative for meeting this demand must be explored in depth High among these alternatives must be the greater utilization of appropriate lands already in public ownership, and encouragement of the private sector to not only provide public recreation access to privately owned lands, but also to invest in private recreation developments on both public and private lands In its examination of these alternatives the committee reviewed the plans and programs of a large number of public and private landowners throughout California

As part of the input to the 1960 California Public Outdoor Recreation Plan it was determined that some one million acres of land throughout the state was potentially suitable for the development of outdoor recreation opportunities, of which ninety percent was in public ownership A subsequent study was made of potential California recreation lands in 1964 by the U S. Bureau of Outdoor Recreation, in cooperation with the State Department of Parks and Recreation. Because no orderly, onsite inspections have yet been made of the public recreation lands tabulated in either of those studies, it must be assumed that these lands constitute a potentially very valuable source of public recreational opportunities, many of which are perhaps usable at minimum cost to the taxpayer Although the greater use of such lands is an attractive possibility and should be explored further, it is also apparent that the same problem of inadequate funding—in this case for development—will persist, that much of the land of highest scenic and recreational value has already been acquired by some public recreation agency or has since been diverted to other uses, and that additional problems exist relative to liability, hazards to the public, and nonpermanent public use—such as is the case with military lands

The greater use of private lands and encouragement of recreational investment by the private sector presents even more complex problems. Among these are the serious competition of relatively low-fee public recreation areas—which often have the most attractive resources; the high cost of land acquisition and development; the difficulty of borrowing private capital to develop recreation enterprises, the frequent limitation in the length of season; the tendency of recreationists to purchase supplies in their areas of origin; and problems of liability, fire, crop, cattle, and timber damage, vandalism, litter, and pollution.

A related matter concerns the impact on local tax rolls of removing private land for the development of public recreation facilities. Although as the committee learned in its examination of this problem—especially with reference to the California north coast—the effects of these withdrawals are often imprecise, with experts testifying on both sides of the issue, it would appear that an exceedingly attractive program could be evolved in certain instances between the state and private landowners which would not only maintain private lands on the local tax rolls, but would provide public recreational access to additional desirable acreages of private land

In spite of the deterrents, a number of major private landowners described excellent existing programs for public recreation on their property to the committee However, without exception these private landowners indicated their willingness to do much more if the state were willing and able to cooperate more closely with them in this effort It is clear that there is opportunity for major improvement in this aspect of state recreation policy

REGIONAL RECREATION PLANNING AND MANAGEMENT

As in many areas of resources and environmental planning and management there are substantial advantages to be realized by a comprehensive, regional approach, and such a principle frequently has sound application in the field of recreation in two specific contexts: (1) the formation of regional or multicounty

park and recreation districts, and (2) the planning and management of a regional recreational resource.

With respect to regional districts, it was suggested to the committee that in some instances, particularly in counties of lower population and greater natural recreation resources, it would be advantageous to broaden the area served and benefit from the resulting economies of scale and broader tax base in managing recreational facilities. The outstanding accomplishments of the East Bay Regional Park District, which was created by special statute within Alameda and Contra Costa Counties, is an excellent illustration of the advantages of such a regional district

Illustration of the second major application of regional recreation planning and management can be found in the Sacramento-San Joaquin Delta. The Delta, which is a recreational resource perhaps without parallel in the United States, lies within four counties and is subject to the development plans of a host of governmental agencies and private landowners. In the effort to coordinate these myriad development plans with the objective of maximizing the immense recreational potential of the area, the Delta Master Recreation Plan was prepared in June 1966 Fulfillment of the plan, which projects the incredible total of 200 million visitor-days in the delta by 2020, will require a number of specific actions by federal, state, and local interests, and therefore represents a major pioneering effort in this complex field.

RIDING AND HIKING TRAILS

During the 1963–65 interim, the committee reviewed the status of the California riding and hiking trail program. In its 1965 Report to the Legislature the committee indicated its concern over the nearly complete failure of the program which was authorized by the 1945 State Legislature Although some trails had been completed under the terms of the program, the limited progress which had been achieved after 20 years of effort made it doubtful that the overall objective of a 3,000-mile statewide loop would ever be realized. The committee further concluded that the basic reason for the failure of the California riding and hiking trail program—although the rapid urbanization of many areas throughout the state was swelling the demand for such trails—was the lack of eminent domain authority which was necessary to ensure the integrity of the trail.

Recognizing the growing need for this type of recreational opportunity, especially in the exploding urban areas throughout California, the committee recommended that the concept of the statewide trail loop be changed to one of providing a series of individual trail loops in and near urban areas where potential routes are still available. Although realizing that it would seldom be required, to ensure the eventual completion of each trail the committee recommended that the power of eminent domain be selectively authorized for each specific trail routing In making these recommendations the committee envisioned legislative authorization of each trail by the approval of legislation containing the specific right-of-way and identification of each parcel of property affected While the committee felt that these safeguards were necessary to protect all interests, almost without exception the dozens of prospective trails throughout California had long been identified—with some actually in use—and in many instances the property owner had already indicated a willingness to donate the right-of-way for public recreational purposes In addition, because most of the trails under consideration by the California Riding and Hiking Trails Advisory Committee and the State Department of Parks and Recreation are in urban areas, the effect on commercial use of the land for cattle grazing, timber production, etc , would be minimal

In furtherance of these recommendations, a number of riding and hiking trail authorization bills were introduced in the 1965 session of the Legislature. These bills, all of which would have established long-identified trails in urban areas of Contra Costa, Napa, Solano, San Mateo, Sacramento, and Placer Counties, were strongly supported by statewide horsemen's, youth, and recreation organizations However, in spite of substantial additional protection to the landowner written into each bill providing for the use of eminent domain for easements only, guaranteed access to water, state erection of fences, the prohibition of firearms, and the assumption of liability by the state for actions originating on trails, several major special interests succeeded in defeating the legislation.

In view of the increasingly critical need for and great public interest in this kind of outdoor recreation opportunity, it is anticipated that the committee effort to establish state riding and hiking trail loops in the vicinity of urban areas throughout California will continue

PARKWAYS

In another of its 1963–65 studies the committee conducted an in-depth evaluation of the impact of accelerating growth and development upon the world-famous scenic resources of the Lake Tahoe Basin. In its 1965 Report to the Legislature the committee concluded that in the absence of an orderly system of land use controls the clarity and purity of lake water would be destroyed by the growth of microscopic algae, and the scenic amenities of surrounding watersheds would be scarred by poorly conceived developments Pursuant to its recommendations, action of the 1965 and 1967 California Legislatures has resulted in the creation of a bistate, regional agency, which, upon the adoption of similar legislation by the State of Nevada and ratification by the Congress, will possess the responsibility and authority for the long-term protection of the scenic values of the Lake Tahoe Basin

A second major conclusion of the committee was that the Lake Tahoe 1980 Plan, which envisioned a parkway along the west shore of Lake Tahoe, appeared to be a well-conceived approach to achieving the necessary long-term balance between the preservation and exploitation of basin resources The committee expressed its concern, however, that the west shore

parkway concept contained in the plan was threatened by the apparent insistence of the California State Division of Highways and State Highways Commission in imposing a four-lane, controlled access freeway along the west shore, which in the committee's view would have destroyed the fragile environmental values still remaining there In view of the fact that testimony at the 1964 committee hearing by the State Highway Engineer and the Chairman of the California Highway Commission appeared to indicate that inadequate statutory authority then existed for the state to construct parkways, the committee recommended in its 1965 Report to the Legislature that " to provide a clear statutory basis for the construction of parkways by the State of California, the statutory authority for the designation, construction, and maintenance of parkways should be enacted ."

Based upon this recommendation, and a similar recommendation of the Senate Committee on Natural Resources derived from other studies, 1965 legislation resulted in the California Parkway Act. This act sets forth a clear definition of a parkway and provides a legislative mandate to the State Department of Parks and Recreation, upon the advice of the Advisory Committee on a Master Plan for Scenic Highways, to develop recommendations to the Legislature concerning " potential parkway routes that might be established by the Legislature as part of the state parkway system ." The legislation outlines detailed criteria for determining the location of potential parkways, and upon their adoption by the Legislature, detailed procedures for their design, construction, and administration.

Pursuant to this legislation, the department is preparing a report on possible parkways and specific alignments for review by the Legislature Although the achievement of a statewide system of parkways will provide a unique recreational opportunity for the people, because the Parkway Act does not provide a means of funding it is likely that progress on this program will be subject to the same financing difficulties traditionally plaguing other recreation programs in California.

SCENIC WATERWAYS

As was noted in the section of this report discussing the need for a comprehensive state recreation policy and program, the subject of recreation probably involves more agencies than any other responsibility of government It has also been pointed out that the immediate demands of growth have tended to relegate recreation to among the lowest levels of priority in the allocation of natural and financial resource The result has been a heavy emphasis on the short-term exploitation of resources and the meeting of immediate needs, with huge public works projects to develop water supplies and to construct thousands of miles of freeway, for example, receiving top priority in the planning and management of natural resources However, with the growing realization that the supply of natural resources is not infinite, and that single-purpose public policies governing their exploitation frequently create more problems than they solve, greater attention is being given to the long-term effects of the use of one resource upon other resources, with special reference to the aesthetic and recreational values increasingly demanded by the public.

In concurrent studies by this committee of forest practices and watershed management, and marine and coastal resources, for example, it was concluded that comprehensive state policies, based upon factual information, must be developed to ensure the long-term, multiple-purpose conservation and development of watershed and marine resources in the total public interest, and legislation is recommended to achieve these objectives.

Such concerns are especially relevant to the long-term management of California's immense number and variety of waterways, most of which are being subjected to the effects of single-purpose public policies from the building of water development, power, irrigation, and flood control projects, the commercial cutting of trees, the construction of highways, and the development of urban complexes. Recognizing the need to identify and preserve free-flowing stretches of California's scenic waterways, as well as to provide for better coordination and consideration of the effects of exploiting associated resources upon the recreational and aesthetic values of all California waterways, in 1966 the Senate adopted a resolution requesting the Resources Agency to develop a coordinated planning effort in the exploitation of California waterways, and to recommend a program for the long-term protection of the recreational values of specific scenic waterways throughout California.

Although this matter was not included as a specific objective of the committee study of recreation planning and management, the development of such a program is clearly of vital importance to the future quality of life in California, and the committee will therefore maintain a continuing interest in it

AIRSTRIPS IN RECREATIONAL AREAS

Among the specific problem areas explored by the committee in its study of recreation planning and management was the matter of providing access to state recreation areas for members of the air-traveling public While such a provision might at first thought be considered of minor importance, representatives of the major general aviation organizations presented a number of compelling arguments in favor of such a program including the following

First, according to 1965 statistics, California leads the nation in the number of general aviation aircraft flying (over 12,000, or 13 6 percent), in the number of active pilots (over 62,000, or 14 5 percent), and is second in the number of airports (626) Growth has been rapid in recent years and is expected to continue at an increasing rate, with a significant portion of the personal flying time being devoted to pleasure

Second, the general public is provided with facilities to state recreation areas for access by both automobile and boat, and it is therefore discriminatory

not to provide a means of access for the private aviator.

Third, minimum standards for airstrips in recreation areas would be entirely satisfactory, and in most instances appropriate locations can be found which will not have an adverse effect upon the recreational values of the area.

Fourth, because these airstrips in recreational areas will frequently be in the more remote areas of California, they can serve also for emergency and firefighting purposes, for which there is a need throughout the state.

Finally, private aviation presently pays much of its own way, and it seems appropriate that some portion of the Airport Assistance Revolving Fund be utilized to establish airstrips in recreation areas

Although the Department of Parks and Recreation expressed opposition to this proposal on the basis that it would adversely affect recreational and aesthetic values of state recreation areas, and would disrupt planned park development programs, it would nevertheless appear that this matter is deserving of further consideration.

FINDINGS AND CONCLUSIONS

As is outlined in the problem definition guiding this committee study of Recreation Planning and Management, because the demand for outdoor recreational opportunities throughout California will be greatly intensified by the increasing leisure, disposable income, and mobility of a rapidly growing population, and the supply of recreational resources will be increasingly reduced by the nonrecreational demands of growth, it is essential that there be a continuing, coordinated, long-range program for determining—and funding—comprehensive, recreational facilities by all levels of government and the private sector.

In the effort to determine the degree to which existing policies and programs are meeting existing and projected needs, the committee conducted an exhaustive, two-year study of this subject, during which it received the carefully considered views of over two hundred witnesses throughout California, most of whom are experts in recreation planning and management in both the public and private sectors. Based upon this study, the committee reached the following conclusions:

1 Although there have been numerous well-documented warnings of impending crisis in recent years, by any measure (acquisition and development cost, deficiencies in various outdoor recreation opportunities, number of recreationist participation days, etc.) California today is facing an overwhelming unmet existing and projected need in a wide range of outdoor recreation opportunities, especially in and near rapidly growing urban areas throughout the state.

2 The primary reason for this growing deficiency is the persistent refusal of public officials at all levels of government to assign sufficient priority to recreation as a legitimate human and social need, which has resulted in a history of starvation budgeting in the funding of recreation programs, and in the periodic "stopgap" proposals providing emergency sources of financing to meet short-term needs

3 While it has so far been possible for the public to live with the consequences of this failure of public policy, increasing competition for other uses of the land is escalating costs to the point where many potential recreation areas will be lost forever, or must be purchased at exorbitant prices in the future

4 In spite of increasing effort in recent years by a host of public and professional recreation interests, the state still lacks a comprehensive recreation policy which (a) provides continuing estimates of demand and supply for the spectrum of recreational opportunities throughout California, (b) a proper definition of the role of the state—and other levels of government and the private sector—in meeting the demand, (c) a continuing, dependable source of financing recreation programs at all levels of government, and (d) a coordinated program and organization structure for the planning and implementation of the myriad recreation programs scattered throughout agencies of state government.

RECOMMENDATIONS

In view of the findings and conclusions documented in this report, which are based upon an intensive two-year examination and analysis of Recreation Planning and Management in California, and the carefully considered statements of over two hundred public and private recreation experts presented to the committee in 11 days of regional hearings throughout the state, the committee recommends that the state assume positive and aggressive leadership in meeting the range of existing and projected outdoor recreation needs of the people throughout California by developing and adopting in law a comprehensive state recreation policy which includes, but is not limited to, the following major elements:

1. A statement of objectives establishing that
   a. Outdoor recreation is essential to the physical and mental health of the people, and to the cultural and economic well-being of the state;
   b. The provision of a variety of accessible, enjoyable outdoor recreation opportunities is an obligation of government of importance equal to that of all other public services and programs;
   c. Recreational uses of the land are of equal importance with all other uses, and wherever possible should be integrated with compatible nonrecreational uses;
   d. The quality of the outdoor recreational experience is a function of total environmental quality, and therefore the protection of environmental and scenic values should be maximized wherever possible to enhance rather than detract from the overall experience afforded to the public;
   e. Maximum consideration should be given to the development of a variety of outdoor recreational opportunities close to the community of usage because of (a) the greater travel safety and additional time available at the recreation area resulting from the shorter trip en route, (b) the benefits accruing to the local economy, (c) the restricted mobility of lower income groups, and (d) the lessened usage of more distant recreation areas and open space;
   f. The providing of the range of recreation opportunities for the public cannot be accomplished by any one level of government, but must be achieved by the development and implementation of a long-range, coordinated, adequately funded program among agencies at all levels of government and the private sector;
   g Equal opportunity in all recreation programs must be assured regardless of race, religion, or national origin;
2. A comprehensive, long-range outdoor recreation plan for meeting the spectrum of existing and projected outdoor recreation needs of the people by federal, state, and local government and private enterprise—including a master plan for the acquisition and maximum development of the state park system, state riding and hiking trails, parkways, bicycle ways, scenic waterways, and facilities for recreational boating—which is based upon a continuously updated and adequately funded program of estimating total demand and supply for the range of outdoor recreation opportunities throughout California;
3. A precise definition of the responsibility of state and local government in meeting the range of outdoor recreation needs throughout the state, including regional recreation areas adjacent to population centers, which considers fully the programs and commitments of the federal government and the potential contributions of private enterprise;
4. A coordinated program and organization structure, including an interagency coordinating council, which will provide the most effective possible continuing integration of the planning and execution of recreation programs by all agencies of state government, the federal and local government, and private enterprise;
5. A merger of the State Park and Recreation Commissions, which clearly defines the respective policymaking and administrative responsibilities and authority of the merged commission and the department, and provides the director with flexibility in departmental organization;
6. A clear assignment of responsibility to the Department of Parks and Recreation for such matters as leadership in the education and training of professional recreation planners and managers, assistance and guidance to educational institutions with curricula in the field of recreation; the development of a central repository of reports, studies, and research in the field of recreation planning and management; and the provision of advisory and technical services to local recreation agencies;
7. A continuing program of adequate funding for recreation programs by state and local

government, which includes a bureaucratic-free system of matching subventions and long-term, low-interest loans to local government, and which is based upon revenues from a combination of sources, including but not limited to, the following:

a. General Fund;
b. User fees and concession charges;
c. Annual statewide recreation area permits;
d Private contributions;
e Federal grants:
f. Special funds, including
   (1) Motor vehicle gasoline tax, either during the summer months or the entire year;
   (2) Boat fuel tax;
   (3) Motor vehicle registration fees;
   (4) Boat registration fees
   (5) Tax on recreation goods and services;
   (6) Horseracing revenues;
   (7) Hunting and fishing license fees;
   (8) Tidelands oil revenues;
   (9) Motor vehicle operator registration fees;
   (10) Tax on cigarettes and beer;
g General obligation bonds, with or without repayment guaranteed by special tax levies;
h. Revenue bonds, guaranteed by user fees;
i. Sale of surplus state property;

8. A program under which the state can assure required local financial and management participation in developing the maximum recreation potential associated with federal public works and reclamation projects;

9. A continuing program of research into the economics and techniques of recreation planning and management, including the
   a. Examination of methods for the continuing, dependable funding of recreation programs by all levels of government, including the degree to which the user is willing and able to support the acquisition, development, and administration of outdoor recreation facilities;
   b. Determination of methods for the leveling out of unequal seasonal loading at outdoor recreation facilities;
   c Benefit cost analysis of alternative types of recreation programs such as those associated with multiple-purpose water development projects, beaches, parks, etc.;
   d. Analysis of various tax structures to determine the ways in which foundations and other donors can be encouraged to support state recreation programs;
   e. Evaluation of recreation activities which are compatible and incompatible on the same unit of land;
   f. Definition of statewide public interest in preserving historic sites, wilderness areas, and the coastline, with recommendations concerning the criteria which should be applied, and an inventory of potential areas which should be included within the existing and projected state park system;

10. An accelerated program for the greater use of private lands throughout California, which will identify the areas suitable for public recreation, and will provide the private landowner with meaningful incentives to open his lands for public recreation, including
   a. Tax relief during the period the land is in public use;
   b The assumption of liability by the state;
   c The protection of cattle, sheep, timber, crops, water, and other private resources from vandalism, fire, litter, and pollution;
   d. The construction of access roads and minimum recreation facilities;
   e. The assignment of state personnel adequate to administer the property;
   f. The offer of concession rights;

11. A positive and aggressive program of encouraging private enterprise, both commercial and nonprofit, to provide outdoor recreation opportunities to the public by identifying areas and facilities attractive to the private entrepreneur, and by guaranteeing the investment of private capital until the enterprise becomes self-sustaining;

12. Where clearly established by independent studies, provisions authorizing compensation to local governmental entities for the net economic consequences of removing private land from the local tax rolls by the state for public recreation purposes;

13. Provisions authorizing the merger of local park and recreation districts where it is demonstrated that larger regional or multicounty districts will permit more efficient operation and more effective programs of meeting local recreation needs;

14. A joint plan between the Department of Parks and Recreation and the Division of Highways for the development of a statewide system of roadside rest stops, historical markers, and wayside educational exhibits and interpretative publications;

15. A statewide system of riding and hiking trail loops concentrated in the vicinity of urban areas, which provides maximum guarantees to the private landowners and authorizes the selective use of the power of eminent domain along the specified routing of the trail;

16. A statewide system of parkways developed, constructed, and maintained under the provisions of the California Parkway Act of 1965, with the additional provision for the funding of design, construction, and maintenance of the roadway from the State Highway Fund, and the design, construction, and maintenance of

the recreation features as an element of the state recreation program;

17. A statewide system of scenic waterways,
18. Where not incompatible with recreation use and values, a statewide system of airstrips in state recreation areas located, designed and constructed so as to not adversely affect park values, and substantially funded *from the Air*port Assistance Revolving Fund;
19. Provisions appropriate to maximize the long-range development and implementation of the multiagency Master Recreation Plan for the Sacramento-San Joaquin Delta.

APPENDIX

Witnesses Appearing Before the Committee or Submitting Statements

Mr Hugo Fisher, Administrator of Resources, State of California
Mr. Fred L Jones, Director, California State Department of Parks and Recreation
Mr Alfred J Stern, Chairman, California State Park Commission
Mrs. Dewey J Forrey, Chairman, California State Recreation Commission
Mr Ralph Montali, Chairman, California Small Craft Harbors Commission
Mr. DeWitt Nelson, Director, California State Department of Conservation, former Chairman, California Public Outdoor Recreation Plan Committee
Mr Francis H Raymond, Chief, California State Division of Forestry
Mr. William E Warne, Director, California State Department of Water Resources
Mr. Ralph Brody, Chairman, California Water Commission
Mr. Walter T Shannon, Director, California State Department of Fish and Game
Mr. Raymond J Nesbit, Executive Officer, California State Wildlife Conservation Board
Mr. Charles Paul, Director, California State Department of Agriculture
Mr John Erreca, Director, California State Department of Public Works
Dr Leslie E Carbert, California State Planning Officer
Mr Clyde P Barnett, Chief, California State Division of Aeronautics
Mr. Stanley Kronick, President, California State Reclamation Board
Mr. L H Halcomb, Jr, Executive Officer, Commission on California State Government Organization and Economy
Dr Robert B Johnson, Director, Johnson Research Associates, Goleta, California
Mr William F Fischer, Chief of Planning, Division of Recreation, California Region, U S Forest Service
Mr. James D Sears, Chief, Recreation Section, San Francisco District, U S Army Corps of Engineers
Mr. George P. Reilly, Chief, Engineering Division, San Francisco District, U S Army Corps of Engineers
Mr. William A. Doyle, Chief, Project Planning Branch, Sacramento District, U S Army Corps of Engineers
Colonel John A B. Dillard, Los Angeles District Engineer, U S Army Corps of Engineers
Mr Reginald G Howard, Regional Supervisor of Irrigation, Region Two, U S. Bureau of Reclamation
Mr Marion Murphy, U S Bureau of Reclamation, Eureka, California
Mr. W. F. Crabtree, Chief, Fresno Field Division, U S Bureau of Reclamation
Mr John R. Morgan, Chief, East San Joaquin Valley Branch, U.S Bureau of Reclamation
Mr. W. R Christensen, Area Engineer, Southern California Development Office, Region Three, U.S Bureau of Reclamation
Mr Leo J. Diederich, Assistant to the Regional Director, U S National Park Service
Mr J A. Penny, State Director, U S Bureau of Land Management
Mr Albert Romeo, Administrator, U S Lower Colorado River Land Use Office, Office of the Secretary, U S. Department of the Interior
Milton Brievogel, Director of Planning, Los Angeles County Regional Planning Commission
Norman S Johnson, Director, Department of Parks and Recreation, County of Los Angeles
William Fredrickson, Jr, General Manager, Recreation and Parks Department, City of Los Angeles
Mr. Kenneth Sampson, Director of Parks, County of Orange
Mr. John Collier, Director of Parks and Recreation, City of Anaheim, representing the 25 cities in the County of Orange
Mr. Charles E. Porter, Legislative Representative, City of San Diego
Mr Alvin Hoskin, Director of Municipal and School Recreation, City of Long Beach
Mr Edward H Walker, Director, Parks Department, County of Riverside
Mr Smith Falconer, Director of Regional Parks, County of San Bernardino
Mr. Eugene D Wheeler, Planning Director, County of Ventura
Mr. George H Adams, Director of Parks, County of Santa Barbara
Mr. Ned A Rogoway, Planning Director, County of San Luis Obispo
Honorable LeRoy Jackson, Supervisor, First District, County of Kern
Mr. Donald Arnett, Director of Recreation and Parks, City of Santa Monica
Mr David E Pierson, Director of Public Works, County of Imperial
Honorable Thomas J Hudson, Member, Board of Supervisors, County of Monterey
Mr Harold A Meserve, Director, Department of Parks and Recreation, County of Fresno
Mr Howard B Holman, Director of Parks and Recreation, City of Fresno and the Fresno City Unified School District, representing the California Park and Recreation Society
Honorable John R. Longley, Chairman, Board of Supervisors, County of Tulare
Mr Earl R Greeno, Director, Recreation and Planning, County of Inyo
Mr John L Rotondo, Director, Parks and Recreation Department, County of Mariposa
Mr Edward A DeDevitt, Superintendent of Recreation, Recreation and Park Department, City and County of San Francisco
Mr William Penn Mott, Jr, General Manager, East Bay Regional Park District
Mr B V Amyx, Director, Parks and Recreation, County of Santa Clara
Mr. Duane Mattison, Park Director, County of Contra Costa
Mr Louis B Muhly, Director of Planning, County of Santa Cruz
Mr Frank W Bramhall, Director, Parks and Recreation Department, City of San Jose
Mr Ralph Shaw, Director, Parks and Recreation, County of San Mateo
Mr. Thomas J Madeiros, San Benito County Recreation Committee
Mr Charles E Matzen, Chairman, Alameda County Parks Advisory Commission
Mr E B Noble, Chairman, Recreation Committee, Calaveras County Planning Commission
Mr Richard M Heikka, Assistant Director, Recreation Planning, County of Placer
Mr William B Pond, Director, Parks and Recreation, County of Sacramento
Mr Reginald G Renfree, Director of Recreation and Parks, City of Sacramento, also representing the League of California Cities
Mr Ray Bartholemew, Director, Parks and Recreation, County of San Joaquin
Honorable Ray Lawyer, Chairman, Board of Supervisors, County of El Dorado
Honorable John Mayfield, Supervisor, County of Mendocino
Honorable Randolph Collier, State Senator, Siskiyou and Del Norte Counties
Honorable Carl Christensen, State Senator, Humboldt County
Honorable William F. Landis, Member, Board of Supervisors, County of Humboldt

Mr. Richard Denbo, Manager, Eureka Chamber of Commerce, representing the City of Eureka and the County of Humboldt
Mr. Merritt Nelson, Director of Recreation, City of Redding
Mr. Ronald Jensen, City Manager, Crescent City
Dr. Kurt Munchheimer, City Councilman, Rio Dell
Mr. David A. Strong, Director of Recreation and Parks, City of Ukiah
Mr. Lesly H. Meyer, Superintendent of Schools, Petaluma, California
Mr. Grant L. Brimhall, Acting City Manager, City of Claremont, also representing the League of California Cities
Mr. James Higginbotham, Director of Parks and Recreation, City of Claremont
Mr. Joseph G. Renaud, Superintendent of Parks and Recreation Department, City of Oceanside
Mr. Bernard B. Carroll, Chairman, Willow Creek Recreation Commission
Mr Richard T Conselmann, Administrator, Fulton-El Camino Recreation and Park District
Mr. E. Lowell Bergman, Administrator, North Highlands Recreation and Park District
Mr. Thomas A. Nolder, California County Supervisors Association
Mr. Warren Schmid, Executive Director, Association of Bay Area Governments
Mr. Charles E. Martin, Executive Director, Lake Tahoe Area Council
Mr. Charles H Vogel, San Mateo County Hiking and Riding Trails Committee
Mr. J. Michael McCloskey, Conservation Director, The Sierra Club
Mr William D. Evers, President, Planning and Conservation League
Mrs. Faye Hove, California Citizens Freeway Association
Mr. Newton B. Drury, Secretary, Save-the-Redwoods League
Mr. Louis B Muhly, President, California Chapter, American Institute of Planners
Mr. T. G. Anderson, Aircraft Owners and Pilots Association
Mr. George L. Collins, President, Conservation Associates
Mr. Raymond E. Pope, American Society of Landscape Architects
Mr Thomas A. Hughes, California Council of Aviation Associations
Mr John Callaghan, Secretary-Manager, California Forest Protective Association
Mr Don Cave, Cochairman, Redwood Park and Recreation Committee
Mr. Deane B. Mather, Private Forest Land Manager, and
Dr. Rudolf W. Becking, Forest Research Consultant
Mr. George L Collins, Vice President, Conservation Associates
Honorable Don H. Clausen, Congressman, First District, California
Mr. Philip T. Farnsworth, Executive Vice President, California Redwood Association
Dr. Richard A. Siegel, Chief, Economic Planning Section, California State Office of Planning
Dr. H. DeWayne Kreager, Consulting Industrial Economist, Seattle, Washington
Mr. John G. Miles, Consulting Forester, Eureka, California
Mr. Newton B Drury, Secretary, Save-the-Redwoods League
Mr. Fred Landenberger, Secretary-Treasurer and Manager, North Coast Timber Association
Mr. Gordon P. Robinson, Consulting Forester; formerly Forester, Southern Pacific Company
Dr. George H. Allen, Fishery Research Consultant, and
Dr. Rudolf W. Becking, Forest Research Consultant
Mr. Ray Hunter, Director of Natural Resources, California Farm Bureau Federation
Mr. James E Whitacre, Recreation Representative, Pacific Gas and Electric Company
Mr. Robert N. Colwell, Chairman, Northern California Section, Society of American Foresters
Mr. Darrell H. Schroeder, Vice President and General Manager, Miller Redwood Company and Rellim Redwood Company, Crescent City
Mr. Henry K. Trobitz, Manager, California Timberlands Division, Simpson Timber Company
Mr. Frank N Blagen, Resident Manager, and Mr Alfred H. Merrill, Chief Forester, Georgia-Pacific Corporation
Mr. Eugene Hofsted, Chief Forester, Arcata Redwood Company
Mr Larry McCollum, Chief Forester, Pacific Lumber Company, Scotia
Mr. Robert Grundman, Chief Forester, Union Lumber Company, Fort Bragg
Mr D W Cooper, Farm Advisor, Humboldt Agricultural Extension Service, University of California
Dr. Everett Watkins, Chairman, Redwood National Park Committee, California Wildlife Federation
Mrs Kay Chaffey, Citizens for a Redwood National Park
Mrs James S. Hughes, Secretary, Federation of Western Outdoor Clubs
Mrs Mary Lou Comstock, Master, Orick Valley Grange No 508
Dr Edward E Sturgeon, Coordinator, Forestry Department, Humboldt State College; Administrative-Technical Representative, McIntire-Stennis Forest Research Program
Mr Irving E Toler, Chief Forester, Lands and Recreation Department, Scott Lumber Company, Burney, California
Mrs. Evelyn Gayman, Conservation Chairman, Desamount Club
Mr. Fred L. Hector, Consultant, Planning and Development, Los Gatos
Mr. Philip C. Smith, Landscape Architect, Sacramento
Mr. Robert Rose, Vallejo Horsemen's Association
Mr Robert E Gray, City and Regional Planner, Packard, Muir, and Train, Inc.
Mr. Richard F Wales, Superintendent of Schools, Southern Humboldt Unified School District
Mr. William J. Barnard, Manager, Sonoma County Airport
Mr C E Plummer, Chief Engineer, Modesto Irrigation District
Mrs Frank W Lee, Eureka, California
Mr. Al Schiavan, Vice President, California Wildlife Federation

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VOLUME 25 REPORT 8

MAN'S EFFECT ON CALIFORNIA WATERSHEDS

A STUDY OF THE MANAGEMENT OF NATURAL RESOURCES WITHIN CALIFORNIA WATERSHEDS

By the

SUBCOMMITTEE ON FOREST PRACTICES AND WATERSHED MANAGEMENT

Charles Warren, *Chairman*

of the

ASSEMBLY COMMITTEE ON NATURAL RESOURCES, PLANNING, AND PUBLIC WORKS CALIFORNIA STATE LEGISLATURE

Edwin L. Z'berg, *Chairman*

PART III 1965–67 COMMITTEE REPORT

O. James Pardau, *Consultant*

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California Legislature

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January 2, 1967

HONORABLE JESSE M. UNRUH
Speaker of the Assembly, and

HONORABLE MEMBERS OF THE ASSEMBLY
State Capitol
Sacramento, California

GENTLEMEN:

The Subcommittee on Forest Practices and Watershed Management of the Assembly Committee on Natural Resources, Planning and Public Works submits herewith its report to the Legislature [1] on 1965–67 studies dealing with the management of natural resources within California watersheds

This extraordinarily complex subject is of vital importance to the future growth, productivity, and natural beauty of the number one state, but for a variety of reasons the effects of man's activities upon the complicated and delicate interrelationships among resources in natural balance within watersheds is often incompletely understood Consequently, the public policies governing the use of watershed resources are frequently inadequate and single-purpose in nature, and their administration can lead to undesirable consequences potentially affecting the environmental quality and economic health of entire regions of the state

For example, as is outlined in greater detail in the report and in the preliminary multidisciplined research program of the Institute of Ecology of the University of California at Davis, the impact of such activities as the building of dams, the construction of roads, logging operations, grazing, mining, and the development of urban complexes and recreational facilities upon such natural resources as soils, water, native vegetation, fish, wildlife, and scenic beauty can profoundly influence the rate and character of soil erosion and production, the sustained productivity of merchantable timber, the yield and quality of fisheries and wildlife reserves, the pollution and yield of water resources, the aesthetic and recreational values of watersheds, and the intensity and frequency of flooding However, in spite of the importance of these considerations to the long-term, balanced management of various watershed resources, each of these exploitative activities generally proceeds independently from the others, with only minimal evaluation given to the relative impact of such exploitation on other resources In fact, the basic objective of the Forest Practice Act—which is the single most important existing public policy influencing total watershed management—is the sustained productivity of timberlands, and the consideration of other natural resources is not required in its administration As was learned by the subcommittee in the preliminary study, there is serious question as to whether even this objective of sustained productivity is being achieved

In view of the extreme complexity and controversial nature of this subject, the subcommittee conducted an in-depth preliminary review of its overall dimensions by means of exhaustive public hearing, field inspection of several north coast watersheds, and independent multidis-

ciplined research by the Institute of Ecology of the University of California at Davis. Based upon this preliminary review, as is detailed in the report your subcommittee concluded that the State of California should undertake a long-term, comprehensive program of cooperative, multidisciplined, scholarly research—based upon simulated computer models accompanied by on-site observations if possible in paired watersheds—of the interaction of variables in the management of natural resources within watersheds, with the objective of developing a comprehensive state policy insuring long-range, balanced watershed management in the total public interest In addition, to ensure the consideration of other natural resources during this period of research and policy formulation, your subcommittee concluded that the objectives of the Forest Practice Act should be broadened and its administration strengthened

As the committee has consistently noted in its other studies of such complex problem areas of resources management as development in the Lake Tahoe Basin, highway and freeway planning, management of the California coastal redwoods, the filling of San Francisco Bay, and the conservation and development of marine and coastal resources, for example—studies which have resulted in significant new programs and continuing modifications of public policy—the increasingly serious conflicts in resources allocation posed by our explosive growth can only be resolved by a more balanced, comprehensive approach toward the management of our remaining natural resources which reflects the total public interest

The committee expresses its appreciation to the many organizations, public officials, and private citizens who contributed so generously and responsibly to this study This complex, too little understood and appreciated problem is clearly of vital importance to the future growth and development of California, and it is hoped that our preliminary review will lead to a long-term program of research and improvement in public policy that will be of continuing benefit to all Californians

Respectfully submitted

Edwin L. Z'berg

EDWIN L Z'BERG, Chairman
CHARLES WARREN, Vice Chairman

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[1] 1967 Committee Reports
Part I Conflict in the Redwoods (Coastal Redwoods Management)
Part II The Recreation Gap (Recreation Planning and Management)
Part III Man's Effect on California Watersheds (Forest Practices and Watershed Management)
Part IV The Last Frontier (Marine and Coastal Resources)
Part V Highway Beautification, Beautification and Maintenance of the Capitol Mall, Highway and Freeway Planning, Regional Planning in the Lake Tahoe Basin, The Filling of San Francisco Bay

SECTION ONE

MAN'S EFFECT ON CALIFORNIA WATERSHEDS

REPORT OF THE

SUBCOMMITTEE ON FOREST PRACTICES AND WATERSHED MANAGEMENT

Charles Warren, *Chairman*
Edwin L. Z'berg
Alfred E. Alquist
E. Richard Barnes
Burt M. Henson

to the

ASSEMBLY COMMITTEE ON NATURAL RESOURCES, PLANNING, AND PUBLIC WORKS

Edwin L. Z'berg, *Chairman*
O. James Pardau, *Consultant*

Text by O. James Pardau

INTRODUCTION

As the major element of its study programs the Assembly Committee on Natural Resources, Planning, and Public Works develops a Definition of the Problem and Statement of Objectives setting forth the significant aspects of the problem area to be reviewed and the most important objectives to be achieved as they can best be ascertained in advance of the study

In view of the complexity and importance of achieving wise, balanced management of natural resources within watersheds to the future quality of life in California, and the significance of the conclusions and recommendations derived by the committee from its preliminary review of this matter, the full text of the Problem Definition and Statement of Objectives outlining its study of watershed management is set forth as follows

"Definition of the Problem

"California is now the most populous and rapidly growing state in the Union, with the 1966 population of over 18 million expected to double by 1990, and triple by 2020 The problems created by this explosive growth are complex and difficult, and pose a special challenge to our ability to develop the kinds of public policies which will ensure the wisest possible allocation of the state's uniquely varied and abundant resources of land, water, natural vegetation, wildlife, and scenic beauty Such public policy objectives, of only limited interest in the past, are receiving increasingly urgent attention at all levels and branches of government, within the private sector, and throughout the public at large This concern is largely the result of a growing recognition that the short-range view has frequently dominated the decision-making process in resources management, with the long-range view receiving inadequate, or lower priority, consideration

"Concomitant with this recognition is a growing understanding of the need to define resources management—and other—problems, and their possible solutions, in a total rather than fragmented context Thus, although the resulting conflicts are frequently sharpened and intensified, specific plans to build freeways, dam streams and rivers, harvest timber, and subdivide choice land, for example, often evoke a healthy dialogue among contending interests, which eventually may result in a wiser decision than otherwise might have been the case However, in spite of these improved attitudes and concepts—which have been achieved largely because the impact of growth has forced a review of alternatives in specific situations—an orderly process for the responsible resolution of these conflicts in the total public interest has yet to be evolved In addition, because some of the more complex problems of resources management are insufficiently understood and inadequately researched, even if the process existed, a responsible decision which balances the concerns of all interests would frequently be all but impossible to achieve

"Within this category, perhaps the most important—and least understood—problem area in California is that of watershed management, which is ironic because of the vital importance this subject bears to the entire economy of the state For when viewed from a comprehensive—rather than a piecemeal—perspective, the impact of man's numerous activities within watersheds, such as dam building, highway construction, logging, grazing, urban and recreation development, mining, etc , can have profound effect on the complex interrelationships among the vegetative, soil, water, wildlife, and scenic resources found within watersheds—effects which can in turn undesirably influence such factors, for example, as (1) the amount and rate of precipitation runoff, thereby contributing to increased flood control problems and potentially greater flood damages, (2) soil erosion as it affects site quality (productive capacity of the land), siltation of streams, and scenic beauty, including adverse effects on water quality and fish and wildlife, and a reduction in the life expectancy of downstream dams, (3) sustained yield capacity and rate of cut in commercial timberlands, including the takeover by brush of potentially valuable areas for long-range commercial and recreational uses, (4) fish and wildlife, which as the result of such activities as water reclamation and flood control projects, urban encroachment, and logging practices can be adversely affected both in the short and long run, and (5) parks and recreation areas, the preservation potential of which can be influenced by the management of upstream watersheds

"Therefore, although it is clear that man carries on a number of major activities within watersheds, each of which has varying effect on the factors influencing total watershed management, established public policy appears to deal with a limited aspect—the maintenance of sustained yield—of only one of these activities—the harvesting of trees While the objective of this one major established public policy —the Forest Practice Act—which is to ensure the sustained productivity of commercial timber, is obviously desirable, and assuming that the administration of the act is attaining this objective, it nevertheless falls short of achieving balanced, comprehensive watershed management—or the multiple use concept which governs the management of national forests

"Because questions have been raised concerning the objectives and administration of the existing Forest Practice Act, as well as the broader need for developing a public policy governing total watershed

management, the Assembly Committee on Natural Resources, Planning, and Public Works will initiate an in-depth review of this subject during the 1965–67 interim, which may include, but is not limited to, the following basic objectives."

"Objectives

"1 Consideration of the objective(s) and administration of the Forest Practice Act, including

"a Analysis of the stated objective(s), intent, and geographic application of the act, and the degree to which these objective(s) are being realized, including all available data establishing the degree to which 'sustained productivity' is, or is not, being achieved;

"b In addition to maintaining 'sustained productivity' of commercial timber, balancing cut against growth, in the administration of the act what other factors (impact of logging practices on fish and wildlife, soil erosion and site quality, siltation, amount and rate of precipitation runoff, park and recreation management, etc) *can* be, *should* be, and *are* taken into consideration and to what degree,

"c Detailed examination of the means by which forest practice rules are promulgated, and the administration of the act and resulting rules, including

(1) The step-by-step process for the approval of rules, plans, alternate plans, permits, petitions for amendments, etc , including the purpose and relative utilization of each, who can apply, what information must be presented to whom, the procedures and criteria upon which the approval or denial of a permit is based, enforcement procedures, and other relevant information,

(2) Examination of the purpose, means of obtaining, criteria for approval or denial, and extent of utilization, of the conversion of timberland to nonforest purposes;

(3) Examination of the organization structure for administration of the Forest Practice Act, including the relative responsibilities, authority, and where appropriate the membership and representation, of the State Board of Forestry, the district forest practice committees, the State Forester, and the Division of Forestry, and the role each plays in the the administration of the act,

(4) Analysis of the relative costs and extent of utilization of cutting and logging practices (selective, shelterwood, and clear cutting; tractor and cable logging), and the relative impact of each, on sustained yield capacity and site quality, soil erosion, siltation, amount and rate of precipitation runoff, fish and wildlife, etc ; and

(5) Enforcement of the act, including the character and frequency of inspections, the kind and volume of violations discovered, and the penalties assessed (termination of permits or other actions) since amendment of the act in 1963,

"d Examination of the relationship, if any, between the geographic extent of logging operations, and the various logging practices employed, and the amount and rate of precipitation runoff, and accompanying soil erosion, siltation, site deterioration, and flood damages, during the north coast floods of 1955, 1960, and 1964, including analysis of the data which is *not*, as well as that which *is*, available; and

"e Review of possible modifications in the objectives and administration of the act, including

(1) The advisability and feasibility of establishing selective rules for timber cutting within districts based upon varying conditions of soil, geology, climate, terrain, and vegetative cover,

(2) The requirements for buffer strips along streams and rivers to protect fish from careless logging operations, and

(3) Broadening of the membership on district forest practice committees to ensure the fullest possible consideration of the total public interest in the administration of forest practices

"2 Comparative analysis of the objectives, efficacy, and administration of the California Forest Practice Act with similar acts in other major timber-producing states, the federal government, and other nations as appropriate,

"3 The interrelationships, based on available reliable data, with analysis of the areas lacking such information, among all of man's activities within watersheds, including water resources development and flood control projects, logging, grazing, highway construction, urban and recreation development, mining, etc , and the relative impact of each on sustained yield capacity and site quality, the amount and rate of precipitation runoff, soil erosion, siltation of streams, and scenic beauty, fish and wildlife; and the long-range preservation potential of parks and recreation areas, and

"4 Examination of the feasibility of and possible approaches toward the establishment of a broad public policy for comprehensive watershed management, including review of such policies in other states or nations, with the objective of resolving conflicts in the development of resources in the total public interest, and achieving optimum, balanced, sustained use of watersheds and their individual resources "

The Subcommittee on Forest Practices and Watershed Management, chaired by Assemblyman Charles

Warren of Los Angeles County, was appointed to begin this assessment of the total impact of man's activities upon the complex balance among natural resources within watersheds, and the necessity, desirability, and feasibility of developing a broad public policy providing for comprehensive watershed management in California

The subcommittee formulated a three-pronged approach to this study. public hearings, field observations, and multidisciplined research by means of independent contract

Because recent research and field observations suggested increasing and potentially serious erosion problems in various north coast watersheds, and the condition of the regional fisheries has been of long-term concern to the State Department of Fish and Game, the subcommittee elected to focus its initial specific inquiries on this area, although in the course of its hearings information was presented which is relevant to watershed conditions throughout California The independent research, which was performed by the Institute of Ecology of the University of California at Davis, consists of a broadly based review of the literature, and the preparation of a number of papers on various dimensions of watershed management by recognized experts in their respective fields

The public hearings of the subcommittee were held at the School of Forestry of the University of California at Berkeley, and attracted a broad spectrum of conflicting views [2] based in many instances upon well documented research data and empirical observations in the field However, the serious and often dramatic conflict in this data—and in the interpretations of and opinions concerning the data—which was presented by many distinguished and experienced scientists, professional foresters and land managers, conservationists, and timber industry representatives, as well as the obvious lack of conclusive facts in many vital areas, is a matter of deep concern to the subcommittee This concern in large measure accounts for the subcommittee's conclusions that (1) the protection and wise utilization of California's remaining watershed resources urgently requires the initiation of long-term, multidisciplined, cooperative research program to develop mutually acceptable facts on all aspects of watershed management, leading to the formulation of public policy ensuring comprehensive watershed management in the total public interest, and in the interim that (2) the objectives and administration of the relevant existing public policies—such as those governing highway construction, forest practices, water resources development, and range management—be broadened and strengthened to ensure the maximum protection of other natural resources in the exploitation of watersheds Such a program is clearly of vital importance to the future growth, productivity, and natural beauty of the number one state

To provide the subcommittee with first-hand observations of various aspects of watershed management, the public hearings were followed by two days of field trips in several watersheds of the California north coast, including drainages of the Garcia River and Salmon Creek in Mendocino County, and Bull Creek and the Eel River in Humboldt County During these field investigations the subcommittee—which was accompanied by representatives of the State Department of Fish and Game and Division of Forestry, a number of private timber companies and associations, conservation organizations, and various academic disciplines—was able to observe and evaluate the effects of a wide variety of natural and man-initiated processes upon watershed resources Included were the effects of roadbuilding, good and bad timber cutting and logging practices—both current and at various past intervals, grazing, and urban and recreational developments, upon fish and wildlife habitat, soil erosion, forest regeneration, flood prevention and control, and the protection and utilization of recreational areas

As the third major element of the study program, the Institute of Ecology of the University of California at Davis conducted a comprehensive review of the literature, and sponsored the preparation of a series of papers by a wide range of authorities in all dimensions of watershed management Included among these papers are such subjects as the geologic implications of sediment discharge records, soils and forest conditions, slope rehabilitation, pesticides, land conversions, grazing lands, wildlife, fisheries and stream damage, prescribed burning, forest policy in other countries and states, reservoirs and lakes, watershed values of vegetation, economic considerations, and systems analysis for resources management Because of the size and scholarly nature of many of these papers, the subcommittee report contains a summary only of research by the Institute of Ecology, with the full text of the individual papers available in limited supply as a separate document

Based upon this comprehensive preliminary review, it is clear that California has much at stake in the proper management of its depleted—but still rich—watershed resources However, it is also evident that such proper management is dependent upon the development of a vast amount of presently unavailable factual data relative to the interaction of variables in watershed resources exploitation, and the eventual formulation of a truly comprehensive watershed management policy which will ensure the full consideration of the impact of using one natural resource upon all other natural resources within watersheds

The continuing effort of the committee will be to achieve this objective

[2] See Appendix for complete listing of witnesses at the public hearings of the subcommittee

THE MANAGEMENT OF NATURAL RESOURCES WITHIN CALIFORNIA WATERSHEDS

Foreword

In the opinion of many observers this review of watershed management is one of the most important, and because of its complex nature one of the least understood and appreciated, studies ever initiated by a legislative committee It is also one of the potentially most controversial, for it involves a cherished tenet of the American system—the use of private property as the landowner desires Although over the years the notion of unrestricted use of the land often has been tempered in the public interest by the institution of various zoning standards and controls, such restraints generally have been limited in scope However, as California's explosive growth continues to place seemingly insatiable demands upon the state's remaining natural resources, increasingly serious conflicts in their allocation are rising accordingly And in the absence of a truly meaningful public policy ensuring the wisest possible decisions in determining these allocations, there can be little doubt as to the negative long-term effect on the economic, social, and aesthetic well-being of California

In its preliminary study, the subcommittee received in public hearing the carefully prepared and documented statements of nearly fifty witnesses, many of whom possess long experience and distinguished credentials in the various dimensions of managing natural resources within watersheds These statements, and the resulting dialogue with the subcommittee members, represent a wide range of frequently diametrically opposed views, and comprise the major portion of the exhaustive 530-page public hearing transcript In addition, the Institute of Ecology reviewed hundreds of scholarly articles and publications, and sponsored the preparation of 19 professional papers on various aspects of watershed management. The full text of the institute report runs to some 437 pages

Because of the breadth and depth of this information which was developed by the subcommittee, and the dangers inherent in generalizing and interpreting too freely in these complex problem areas out of context, this brief summary is limited to an outline of the major elements of the problem, and proposals for short- and long-term improvements in public policy, accompanied by excerpts from some of the more significant testimony received by the subcommittee. Those interested in pursuing this subject in greater depth are encouraged to refer to the full transcript of the subcommittee hearing and the full report of the Institute of Ecology

Comprehensive Watershed Management

The management of natural resources to achieve optimum results is an extraordinarily complex problem because of the immense range of variables interacting to produce outcomes in a given situation In the effort to evaluate the interaction of these variables and outcomes produced on a more rational basis, increasing recognition is being given by researchers to the most logical possible physiographic units—complete drainage basins or watersheds—exhibiting the greatest range of similar conditions Because natural resources undisturbed by man have achieved a certain degree of often subtle stability and balance within given physiographic units, wherever possible it is highly desirable for benchmark purposes to conduct basic research on the outcomes of interacting natural processes on the prevailing resources balance However, because the activities of man have by now touched most corners of the environment, a host of additional variables have usually been introduced into these interacting natural processes, thereby infinitely complicating the search for factual data concerning these processes and their outcomes

It therefore can be seen that the activities of man (e g , the building of roads, the damming of streams, the removal or modification of vegetative cover, the substitution of urban complexes for vegetative cover, etc) are clearly important additional variables in the continuing process of interaction among such natural resources as soils, vegetative cover, water, fish, and wildlife, and can influence—desirably or undesirably—such outcomes as water yield and quality, forest regeneration, the yield of fisheries and wildlife, the erosion of soils, the nature and extent of flooding, aesthetic values, and recreational opportunities

Though such a conclusion is obvious, and is easily demonstrated by the most casual observations in the field, until very recently it has received little or no recognition in most research programs or public policies governing resources planning and management As a result, most activities of man within watersheds are governed by single-purpose public policies—often regulated by the interest groups themselves—with little or no attention being required or given to the effects of a given resource exploitation upon other watershed resources and their long-term balance

Although little agreement can be found in many sections of this report dealing with the effects of man's activities on specific resources, the following excerpts from testimony presented to the subcommittee illustrate the degree of unanimity concerning the need for a comprehensive watershed management policy in California, and a long-term research program to develop reliable data upon which to base its administration

Dialogue between Assemblyman Edwin L. Z'berg and Mr. Hugo Fisher, Administrator, California Resources Agency

ASSEMBLYMAN Z'BERG: " . I gather from what you said that you think the approach the committee is

taking is the correct one, in that some day sooner or later the watershed as a totality ought to be looked at—you would agree with that?"

MR. FISHER: "I agree wholeheartedly, and as a matter of fact I would go much stronger than that I would say that the time for having done this is already past We ought to be well along our road of investigation in this field because we are right on the verge of major water development in this north coastal area, and all these concerns will be involved in it—the apportionment of costs and everything else is involved"

ASSEMBLYMAN Z'BERG: "Right And the reason why we would want to look at it in totality is because what is done in one endeavor has an effect upon all of the other endeavors that go on in a watershed"

MR FISHER "That is correct"

ASSEMBLYMAN Z'BERG "What's done as far as timber practices will affect all the other things you mentioned, what's done as far as building highways, or dams, or whatever it might be, affects all these other kinds of activities " (Transcript, Subcommittee on Forest Practices and Watershed Management, Assembly Committee on Natural Resources, Planning, and Public Works, Berkeley, California August 17, 1966, p 22)

MR. HUGO FISHER, Administrator, California Resources Agency

" We need some real investigation in considerable depth because we are talking not just about the question of timber management, we are talking about grazing practices, we are talking about the conversion of land to building sites, we are talking about the methods of building the dam itself Some of the worst siltation problems we get, insofar as Fish and Game is concerned, is in the construction of highways and dams and public works, not just the question of timber operations In the north coastal area where the soils are unstable, where siltation causes a colloidal suspension, you can have problems which can't be solved for years and years " (Ibid, p 20)

Mr. DeWitt Nelson, Director, California State Department of Conservation

" During California's pioneering days, resources were exploited to meet the market demands of a population which doubled itself every twenty years That growth continues but the pattern of exploitation has been greatly modified What was once largely an agricultural economy is now becoming an industrial economy as well More demands of every kind are being placed on our resources as a whole

"If we are to maintain the desirable way of life, we must look to all of our resources—the manner in which they are developed, managed, protected, and preserved Fundamentally, all wealth comes from the land—the products that are mined and produced from it Historically, we have used and developed our resources as though they were limitless—infinite But they are not Productive land, particularly is finite How each resource is managed in relation to other resources is becoming of paramount importance

"INTERRELATIONSHIPS

"Because of these facts, it is appropriate that your committee and the Legislature take a critical and objective look at the manner in which these land and resource values are being used We must again examine wherein the public interest and private interest responsibilities lie and how the private and public interests may be brought into closer harmony where serious conflicts exist However, may I respectfully urge that all facets of the problem be examined and evaluated for it is easy to be thrown off balance by articulate pressure groups who have simple answers to very complex problems

"Because of our population pressure, we have demands never before visualized, likewise we have competition for resources by industries and citizen groups with opposing points of view We have many conflicts of philosophy and a lack of understanding of how forests and other resources must be managed to keep them continuously productive All of these values must be carefully weighed in your examination This will be no easy task, for in the final analysis we must arrive at an equitable decision which recognizes both the public good and the private need It will require the blending of the theoretical with the practical

"When California had a much smaller population (we reached the 10,000,000 mark in 1949), we handled relatively simple problems one at a time as they developed These related to forest use and management, fire control, water development, recreational use and all the other considerations which involve people's use of the land The needs at that time were, in large part, of a local nature

"Now with 19 000,000 people, with every indication the population will continue to increase it is obvious that their future needs cannot be fulfilled unless those who make the decisions about resource use accept new principles and concepts, new goals to guide them, and new tools to accomplish them

"This is not the first time that these problems have been closely reviewed Southern California citizens and local governments initiated watershed and fire protection studies as far back as the 1880's Many studies and much action has taken place since then Each such study has resulted in better understanding of the problem and resulted in improved programs In the fire protection field, California has the nation's most difficult problems and the most effective protection organization There are, however, many areas that require more effective enforcement and implementation

'LEGISLATIVE ACTION

"Every major step that we have taken in the resources field has been the result of an interim committee study It is my hope that your study may develop equitable and compatible areas of improvement in light of current problems and needs

"Many of our basic resource laws were enacted or improved in 1945 as a result of the 1943–44 California Forestry Study Committee chaired by the Honorable Senator George M Biggar

"Since that time, many of those laws have been amended and new laws enacted which have improved and strengthened their effectiveness Those laws have been effective

"We must recognize, however, that since that time our population, with all its demands and pressures, has increased from less than 8,500,000 to more than 19,000,000 These pressures have not only impacted on state budgets, they have been reflected in the demands and pressures for resource commodities, as well as resource amenities Obviously, this pressure will continue There are new facts on both sides of the ledger—those dealing with population pressures and needs, and those dealing with technological advances in resource management and utilization Compatibility between many of these issues can be developed if we can secure tolerance and understanding between the contestants So, you of the Legislature, we of the administrative arm of the state, the resource owners and operators, and the public at large, are confronted with similar problems in light of 1966 demands

"MANAGEMENT PROBLEMS

"Responsible land and resource operators realize the necessity of developing and managing their lands on a long-term basis Technological developments, resulting in greater commodity yield through better utilization practices, is forcing better resource management to protect huge investments in plants and equipment There are potential tax problems on the horizon that can endanger even this area of improvement On the other hand, such measures as the proposed Senate Constitutional Amendment No 4 (Proposition 3 on the ballot) may possibly alleviate some

of the problems, if it should be approved by the people in November

"We must all remember that it takes a long time (60–120 years) to grow a crop of trees During this growing period, there are many risk factors—fire, insects, disease, wind throw, and taxes To these may be added market conditions, public withdrawals, etc

"A point I wish to make is that the issues before us are not black or white, good or bad, utilization or preservation There are many gray areas Solutions to the problems must recognize the extremes of the spectrum and endeavor to find a workable and equitable area some place near the middle

"The day is here when each interest and each discipline must realize that other interests and other disciplines must be considered This is true in dealing with highways, forests, recreation, wildlife, aesthetics, water development, watershed protection, water quality control, subdivisions, or 'what have you' Therefore, the problems presently confronting landowners, government and the public are many times more complex than ever before

"In the problems under discussion, there are many gray areas, as well as many facts Also, there are many conflicting interests involved, as well as many ownerships Each ownership has its own objectives and plans for the use and management of its lands

"OWNERSHIP RESPONSIBILITY

"One of America's traditions is that a landowner can determine the use of his land as long as it does not impinge on others Most landowners recognize their responsibility This responsibility is now becoming much broader, for what is now done on a piece of land may affect others many miles away or have serious consequences to resources which are not of the owners particular concern or interest Ownership responsibility to the general public is being expanded This adds a new dimension that is being slowly but definitely accepted

"PUBLIC RESPONSIBILITY.

"The general public also has a responsibility to the landowner which the public is accepting even more slowly Here, I refer to vandalism, littering, trespass, carelessness with fire, and liability charges There are new responsibilities on both sides of the issue which both the owners and the public must recognize with due regard for each other

"Over the years, government's role has been to seek ways and means of assisting and guiding the various interests involved in the management, protection, and use of the privately owned natural resources in such a manner as to bring about the maximum long-range values of those resources to society

"Great strides have been made, particularly in these past twenty years, in bringing into better balance the interrelationships between resources and among those whose interests impinge on one another Even greater strides must be made in the forthcoming years " (Ibid, p 31–38)

Dialogue between Assemblyman Z'berg and Mr. Nelson

MR. NELSON: ". . . I would like to mention one thing that Mr. Fisher alluded to. As we look at these problems and move forward, we must know more about the facts of the problems with which we are dealing, and in this regard I have recommended in my statement river basin studies and plans At the present time, the federal government is moving in this direction The state government has had no authority or funds with which to move in this direction so consequently, at the present time, we are delegating to the federal government the design—I think—the design of how we shall manage our resources, and I don't think the State of California should totally delegate this responsibility to the federal government We will present to you in the next year's budget a program in this regard The areas of urgent need have already been identified, particularly in the north coast, which involves the Eel River, the Lahontan Basin, which includes the Lake Tahoe area; and the San Joaquin River Basin. I think there is great need for extending our soil vegetation surveys and more activity in all of these fields, but we cannot approach any of them from a unilateral point of view I think we have approached many of these problems, whether they are water or recreation, totally unilaterally, without considering their infringement on the related resources or how they can all be managed in a harmonious manner "

ASSEMBLYMAN Z'BERG: ". I assume then you would agree with Mr Fisher that what we need is some device, some method of managing the watershed as a totality so that all of these various things that you were talking about would operate in harmony "

MR. NELSON: "That's right And that's no simple problem"

ASSEMBLYMAN Z'BERG: "Right"

MR. NELSON. "Whenever we do anything in the watershed, regardless of what it is, whenever you disturb the soil, you are disturbing something that is going to probably travel down to hurt something else"

ASSEMBLYMAN Z'BERG: "Right"

MR. NELSON "And the problem is to find a reasonableness here so that you can continue the total development and management and use of our resources " (Ibid, p 72-73)

Dialogue between Assemblyman Z'berg and Francis H. Raymond, California State Forester

ASSEMBLYMAN Z'BERG. " Now I would assume that you would agree—or maybe disagree—with Mr Fisher and Mr Nelson that what is done by any one activity within a watershed, be it a highway or a dam or a state park or the cutting of timber, affects other things that go on in the watershed It affects fish and wildlife, it affects soil erosion, floods and everything else that goes on in the watershed Right?

MR. RAYMOND: "Right . " (Ibid, p 141)

Dr. Clyde Wahrhaftig, Associate Professor of Geology (Geomorphology and Petrology), University of California at Berkeley; Mr. Robert Curry, Graduate Student, Geology (Geomorphology), Department of Geology and Geophysics, University of California at Berkeley

" . 1) Research is needed to measure rates of soil erosion in many areas of the Eel and Mad River drainages to determine the source of sediment These areas should include recently logged land (by various logging practices), land logged at various times in the past, and land that is still in a natural condition

"2) More sediment discharge stations are needed in the North Coast Ranges In particular we need sediment discharge data from undisturbed natural watersheds, and sediment discharge data on those streams, such as the Smith, the Gualala, and the Noyo, where the most meaningful comparisons of present-day with geological rates of erosion can be made

"3) In support of recommendation (2) we need to have set aside a number of entire drainage basins in a natural condition, with protective marginal corridors The number of such basins remaining is rapidly dwindling, and if they are not set aside soon, it will soon be impossible to measure natural rates of geologic and biologic processes in these forests

"4) In the meantime, while research is going on, excessive erosion continues and should not be tolerated Enough research has been done in California, Oregon, and the east

to identify bad logging practice and to indicate which logging practices minimize soil erosion. Rules can now be formulated on the basis of such research which could be applied today to the lumber industry of California, and which would greatly reduce soil erosion

"Where the application of such rules works a demonstrable economic hardship on a given operator or landowner, the state or federal government could step in with suitable measures to relieve this economic distress, perhaps in much the same way as the government has relieved the economic distress of farmers, either by making payments for not harvesting lumber in marginal or steep lands, or by suitable subsidies to pay for increased costs " (Ibid., p 155)

Dr. Kenneth L. Bowden, Assistant Professor of Earth Sciences, Northern Illinois University; former specialist in hydrology research, U.S. Forest Service, Pacific Southwest Forest and Range Experiment Station, Berkeley

" What can we do about improving forest management from the viewpoint of watershed management?

"First, recognize the complex nature of the landscape mosaic. Different soils and geology must be evaluated in planning operations Each represents different degrees of susceptibility to landslides and erosion Soil vegetation survey data can pinpoint many potential danger areas of high hazard Over 12,400 square miles of land in northwestern California counties have been mapped More mapping needs to be done and much more use must be made of the maps

"Second, we must put the best of our present knowledge of proper forest management into practice This will cost the timber operator money but the costs of downstream damages would far exceed the initial costs to the logging companies Examples are Dr. Wallis' list of eleven practices in his paper, 'Logging for Water Quality in Northern California' or the techniques discussed by Newhall and Smith in their paper, 'Watershed Management Effects on Basin Development'

"Third, though I am not a lawyer or administrator, I have given considerable thought to the necessary mechanism to effectively enforce good forest practices The present pattern does not appear to be adequate, in my opinion I would like to see an independent board containing representatives of various scientific professions such as soils, geology, and hydrology, and members primarily interested in management such as economists, watershed management specialists, foresters and wildlife managers This board would be responsible for reviewing plans of logging operations before they are begun The board would need a professional staff of inspectors to carry out the enforcement and inspection at a level of financing far higher than the present level used by the California Division of Forestry A performance bond would be posted and forfeited if the plan was not followed This bond would be sufficiently large to pay for any postlogging treatment

"Fourth, research in watershed management is inadequate at the present level of financing Cooperative work between the State of California and the U S Forest Service should be increased " (Ibid, pp 187–188)

Mr. Phillip S. Berry, Attorney-at-Law, representing the Sierra Club and Trout Unlimited

" California's forest watersheds are capable of providing, in abundance, many things we need good quality water, flood control, outdoor recreation and wood products Forest resources are limited, however, and because of their fragile nature should not be abused Most uses of forest watersheds are compatible with each other Thus, outdoor recreation—fishing, camping—and management for water quality and flood control do not conflict On the other hand, those uses which disturb the soil or vegetation—logging, roadbuilding, and conversion to grasslands—potentially conflict with all other uses.

"At present, the state has no comprehensive law to hold in check land use practices which are capable of altering forest watersheds so as to destroy fishery resources, park values and the ability of the watershed to provide good quality water and flood control No law controls where highway departments can put roads, or how they can build them Logging supposedly is regulated by the Forest Practice Act, but, as demonstrated below, the purposes of the act are nowhere near broad enough, and the rules promulgated under its authority lack substance An almost complete failure to enforce the law compounds these basic problems The few statutes intended to protect our fishery resources are not comprehensive With few exceptions, they are not preventive, but merely remedial measures, allowing the Department of Fish and Game nothing more than an opportunity to minimize damage after it has occurred

"What the law needs is an integrated approach which recognizes the interrelatedness of land resources and attempts to regulate their uses for the good of *all* the people

"We need a comprehensive law, a watershed management act, which will govern all land use practice on forested watersheds We need a law that is not written by the offenders or administered so that it has little more effect than traffic laws would have on the average motorist if he saw a policeman on the road just once a year We need a law which serves the broad interests of the public in their once grand and potentially still great resources

"Specifically, we propose that the Legislature enact a law granting broad administrative power to a new commission to draft minimum standards of practice for

1 Logging,
2 Grazing,
3 Roadbuilding, and
4 Other soil and vegetation disturbing land uses

"We propose that the law have the purpose of protecting

1 Recreational resources
   a) Fishing and hunting,
   b) Parks,
   c) Scenic lands.
2 The productivity of forest soils (measured by a standard capable of maintaining site quality with the end that actual maximum sustained yield is achieved)
3 Water quality

"We propose that the minimum standards of practice be written by competent experts in

1 Hydrology,
2 Forestry,
3 Soils science,
4 Park preservation,
5 Fisheries management

and that the standards be given the force of law. We propose that the law be enforced, consistently with the purposes stated above, by the Director of Natural Resources acting through a sufficient body of competent inspectors to make the chance of apprehending offenders a real possibility " (Ibid, p 197–212)

Mr. John Callaghan, Secretary-Treasurer, California Forest Protective Association

" The stated objective of the committee's study of watershed management is to begin an assessment of the total impact of man's activities upon the complicated interrelationships among the vegetative, soil, water, wildlife and scenic resources found within watersheds, and to define the need for and approaches toward the formulation of a broad public policy providing for comprehensive, balanced watershed management (Meeting notice 7/12/66).

"This is, indeed, a complicated problem when we consider the infinite variety of soil, topographic, vegetative

land use and climatic conditions It becomes a truly formidable task when not only competing resource uses but the varying and often opposing management objectives and economic restrictions of private and public property owners in a patchwork of ownership patterns are considered To this must be added an unresolved extent of public values on private land and the lack of specific quantified information on the interaction of different resources on each other in response to various land-use treatments Under these conditions we find the enunciation of an effective, public policy of comprehensive watershed management, except in rather general terms, an apparent impossibility at this time

"In considering the role which private timber ownership (and the Forest Practice Act which regulates private timber harvesting operations) plays in the complex of watershed problems, several things need to be kept in perspective

'1 There are 8,000,000 acres of private commercial timber in California This is less than half of all the timberlands on which timber harvesting takes place or will take place It is only 8 percent of the state, about 13 percent of the principal watershed areas of the state and about 25 percent of the privately owned watershed areas

"2 In any one year only about 1 percent to 1½ percent of the private timberland is subject to harvesting operations This is about 16/100 of 1 percent of the state's principal watersheds and about 3/10 of 1 percent of the privately owned watersheds

"3 Private timber operations though they take place in only a fraction of 1 percent of the state's watershed annually, are the only private land management operations in the watersheds which are subject to detailed state regulations in regard to their impact on watershed characteristics The Forest Practice Rules which regulate timber operations not only contain rules to promote forest perpetuation but have erosion control and other rules which do significantly modify the impact of logging on the functioning of the watershed There are no farming, grazing, fire use, subdivision, road and powerline construction, land clearing, gravel mining or irrigation rules relating to soil and watershed protection, other than the statutes relative to water quality control and fish habitat protection To these laws, timber operations are also subject

"AN APPROACH TO WATERSHED MANAGEMENT POLICY

"Thus, consideration of additional regulation of private timber harvesting in the context of overall watershed management should not be given except within the framework of regulations, if any, proportionately restrictive of all other activities in the watershed This should, of course, include activities of public agencies as well

"Such an approach to a comprehensive watershed management policy must be based on a much more thorough analysis than presently exists of the relative impact of man's various activities on the functioning of the watershed It should include consideration of who pays the cost and who gets the benefits of the regulation and, of course, thorough consideration of whether or not the regulation is really needed for longrun protection of a public value

"The foregoing would require for example, consideration of the impact of public or private dam construction on the cost, in terms of any modified operations for erosion control that may be required (if any are) of upstream or downstream timber of other property owners as a result of reduction caused by the dam in the normal flushing action of winter storms If the impact of water development on fish and game needs to be mitigated, perhaps the impact on other values also needs mitigation

"Certainly any approach to a comprehensive watershed policy would require a much more definitive study of the sources, amounts and impact of soil erosion and sediment production than now exists Erosion is a natural and needed process and man's impact in either retarding or accelerating it needs to be evaluated For example, beach deterioration due to lack of supplies of new sand from streams is already a problem in some areas As the flow of more streams becomes regulated by dams it can become a widespread problem

"Furthermore, as streamflow becomes regulated and flood peak reduced, formerly tolerable amounts of erosion from natural or man-caused sources may cause damage by settling out on fish spawning beds This may or may not be offset by improved habitat due to more and cooler waterflow during the summer and that's why you saw in the pictures that the Fish and Game people showed you of the Trinity River where the regulation has reduced the flushing impact and the sand is piling up in the stream

Dialogue between Assemblyman Z'berg and Mr. Callaghan

ASSEMBLYMAN Z'BERG: "Well, aren't you making the case for watershed management, not just simply lumber control, which is the sort of thing that we've been talking about here today?"

MR. CALLAGHAN: "Absolutely It's a real tough job and I think you'll see that it's going to take a lot of study and research of some of the best brains we have in the country "

"It is interesting to note in this regard that the Department of Fish and Game (in Volume III, Part B, of the California Fish and Wildlife Plan) cites siltation and erosion due to logging as the critical factor limiting fish numbers in most north-coastal streams Yet, a supervising biologist for the department told the State Board of Forestry, in August of 1964, that more fish were produced in most coastal streams than could live through the summer and fall when low streamflows and consequent high water temperatures cause a lack of sufficient depth and volume of cool water habitat to permit many of the fish to survive

"Perhaps it is as interesting to note that in at least one instance (page 387, Vol III, Part B) the recommendations by the department include one for thorough surveys of existing conditions to permit management of the resource by knowledge, not guesswork . . " (Ibid., pp 388–400)

Mr. Gordon W. Dukleth, Northern District Director, California State Department of Water Resources

" The interrelationships among the various natural factors involved in watershed management are not well defined or understood, and furthermore they vary widely with differing individual situations It naturally follows that every watershed is different, and must be dealt with accordingly There is no coherent body of organized and assembled knowledge in this field as yet What we call watershed management draws heavily on the fields of forestry, engineering, and soil science, with liberal sprinklings of geology and mathematics It is largely a research phenomenon, and although much has already been done, additional research is badly needed to isolate the effects of land use on hydrology and to define our relative interest—if any—in these effects It is a tribute to the hard work and dedication of those who have studied this matter in years past that we know as much as we do, and that our approach is as objective as it is

"The Department of Water Resources performs directly no research in watershed management, but helps to support several studies being conducted by the University of California, the U S Forest Service, and the U S Agricultural Research Service In addition, we feel the need for guidelines for applying the principles of watershed management to our daily practice of planning and operating water development projects

"Traditionally, applied watershed management has been frustrated by the lack of control over privately owned watershed lands, and the lack of assurance that prescribed measures would, in fact, be applied and followed up This knotty problem is perhaps the first item that would have to be met in making watershed management a reality The customary rights of private landowners to manage their lands according to their individual interests runs headlong into the heart of the concept of planned basin management for overall watershed management from achieving maximum operational effectiveness in most of the country

"A second major obstacle, as I noted earlier, is the lack of available knowledge to intelligently manage our watersheds for overall optimum benefits Fortunately, should we choose, additional knowledge can be gained with additional investment in research, study, and data collection

"Feasibility of and Approaches to a Broad Public Policy for Watershed Management

"Without detailed study, the feasibility of and possible approaches to the establishment of a broad public policy for comprehensive watershed management can only be estimated However, there are some indications that the problem might be best approached through special districts, encompassing hydrographic boundaries, as fundamental units rather than through customary political divisions This is the procedure followed by the department in preparing its Bulletin 94 series, which covers land and water use by hydrographic units These bulletins, both by their content and method of tabulation, would be of value in planning watershed management

"Special districts formed with hydrographic boundaries for the purpose of expediting water development are typified by the Miami and Muskingum Conservancy Districts in Ohio, and, to some extent, by the Tennessee Valley Authority These patterns might be adjusted to suit California conditions and modern needs The Department of Water Resources feels it should be an active partner in any organization of this kind

"It should be obvious that, because of the many and complex factors involved in watershed management, no single division or department has presently been delegated the overall responsibility of adequately dealing with the phenomenon

"If a workable system of comprehensive watershed management can be developed, we suggest that an ideal drainage to study and possibly use as a 'pilot' watershed might be the watersheds tributary to our proposed Upper Eel River Developments These structures and their appurtenances will eventually represent an investment of hundreds of millions of dollars, while the north coast is, as I have previously noted, an area of high runoff and unstable watershed conditions Besides providing experience in modeling watershed management theory to practice, this step could, as a byproduct, provide valuable protection to these features of California's water development systems and thus enhance and preserve a large public investment We would expect to participate in such a pilot program, and to provide needed engineering data and guidance " (Ibid , pp 506–509)

Mr. Charles A. Connaughton, Regional Forester, U.S. Forest Service

" The Forest Service recognizes a variety of problems concerned with the management of forested watersheds within the national forests These problems include our concern with soil stability and runoff of potential flood waters In one way or another these matters affect most of the people of California because of their impact on water supply for irrigation, industrial and domestic purposes As for forested land not in national forests, we aren't prepared to pass judgment on the factors related to watershed management We are well aware that there may be similarities with national forests and also are aware that very real differences may exist

"The national forests yield or supply water, timber, forage, recreation, and big game and other wildlife—all of which we consider to be renewable resources or services By legislative direction all of these public resources and services are managed under a basic policy of multiple use and sustained yield The objective of this policy is to obtain utilization of renewable resources at a high level of continuous productivity with a minimum of conflict between the various uses and services In addition, the national forests yield nonrenewable minerals

"Under multiple use management, the utilization of all resources is harmonized with watershed management In this respect, I understand this committee is particularly interested in the relationship of current logging practices to such watershed management items as flood control and possible impacts of various practices on fish and wildlife

"Actually, the Forest Service is very much aware of its responsibilities to manage the land so that the soil and water resources are not seriously and permanently damaged This responsibility is emphasized by the fact that the headwaters of most major streams in California are within the national forests Our attention to this area has increased in recent years and our performance has improved as new emphasis has been placed on water values and as new knowledge in land management has been obtained We will expect to continue to increase the level of our performance as the knowledge and methods of the future become available to us

"As for actual management practices, we currently have objectives which will insure that the watershed values will be either improved or at least maintained when timber is harvested To understand the possibilities in this area we are installing a system of test or 'barometer' watersheds to determine new watershed management facts In timber sale and timber access road planning we ascertain if contemplated actions will result in serious damage to soil and stream courses We avoid critical watershed areas where such significant damage seems imminent These areas will not be operated unless methods are developed at some future date which will insure that timber harvesting can be done satisfactorily " (Ibid , pp 358–359)

Dr. John A. Zivnuska, Professor of Forestry; Dean, School of Forestry, University of California at Berkeley

" Finally, I would like to turn directly to the issue of watershed damage—the problems of soil erosion, gully cutting, land slippage, siltation, and streambed damage and blockage My comments will be general, but they will be oriented to the north coast region which is a region of particular concern from this standpoint. Certainly, however, the problems are not restricted to this region

"The soil itself is a major variable in this situation Some soil types are highly resistant to erosion and will withstand a great amount of abuse with little ill effect Other soils are highly erodible and will constitute problem areas even in the absence of any human activity Thus erosion, siltation, and the cutting of stream banks are wholly natural phenomena in the north coast In my early years as a forester engaged in forest inventory work in the Klamath River region, I came across large areas of land slips located 10 to 15 miles from the nearest road or logging activity The famous Rockefeller Grove at Bull Creek Flat originated some 30 feet below the present ground level with 15 layers of sediment, the oldest roughly 1,000 years old, bearing silent witness to the extensive flooding and sedimentation on this spot prior as well as subsequent to the coming of the white man, while the stream itself has obviously cut through the middle of the flat in times past

"For more than 100 years the impacts of our civilization have been superimposed on this variable natural pattern In an earlier period hydraulic mining was a major watershed factor in parts of the region Currently the

primary man-caused factors contributing to the watershed problem include roadbuilding, logging, man-caused fires, grazing, and cultivated agriculture All are important factors contributing to acceleration of the erosion process In most watersheds all these forces are operational and rarely if ever is only one of them present They interact with each other and frequently one is superimposed on another, as instances in which logging is followed by wildfires or by burning as a phase of conversion to grazing

"Determination of the individual contribution or even the relative importance of each of these factors is extremely difficult, if not impossible Statistical analyses can only show association, not causation, and in a multiple variable situation in which the variables are interrelated no unequivocal statement can be made about the degree of association shown for each variable In any case, their relative importance surely varies from area to area

"In some instances other human activities become a major factor A recently publicized example of this, though outside the north coast region, is the effect of recreational subdivisions at Lake Tahoe in contributing sediment to the lake

"None of this absolves logging as a contributing factor to the watershed problem I am well aware of striking examples of watershed damage to which logging has contributed on federal lands, on state lands, and on private lands If the university had more forest land, there would probably be examples of this on university land as well Certainly the university has done extensive damage to the Strawberry Creek watershed of the Berkeley campus without ever getting involved in logging

"My point is simply that the watershed problem must be recognized as involving all the uses of these lands, not simply the one use in which some degree of regulation, however modest, has already been exercised Certainly the problems of our watersheds cannot be solved through the Forest Practice Act, since more than 90 percent of the land area of the state in no way comes under its provisions

"Within the Forest Practice Act the issue of soil erosion is approached in the 'due diligence' terms to which I have referred earlier Such cautionary requirements as the one 'that streambed crossings shall be kept to a minimum' are as worthy as they are ambiguous Incidentally, the famous Columbus Day storm of 1962 provides a striking example of the problem of approaching natural forces through legislation when viewed against the requirement that temporary streambed crossing structures be cleared by December 1 Perhaps the most definite requirement is that for the construction of waterbreaks on skid trails, abandoned logging roads, etc, with gradients of more than 10 percent—and here is must be noted that poorly designed breaks can intensify the erosion problem rather than abate it

"These soil erosion rules can only be described as well intentioned but weak. There is an obvious lack of specific criteria and a high degree of subjectivity in the rules To a substantial degree, however, this may be inherent in what is being attempted Before changes can be made, there is need to face up to the problem of how specific, enforceable criteria can be established To illustrate the point, I would like to turn to a little different aspect of the problem

"After the trees have been felled and bucked into logs, a logging operation is essentially a problem in transportation The logs must be moved to some point for loading on trucks and then are hauled over a system of roads, ranging from temporary logging roads to state highways The regulations concerning soil erosion are strongly oriented to the first stage of this transportation problem, the yarding or skidding operation through which the logs are moved to points for loading on the trucks The roads themselves are touched only briefly, and then usually only if they are temporary in nature For example, the redwood region rules specify that 'tractor roads, tractor skid trails, abandoned logging truck roads, and firebreaks shall be so constructed and left after logging that waterflow thereon shall not at any time create or contribute to excessive erosion of the soils' Roads that are not abandoned are not covered at all in this instance

"Yet in fact the road system is a major element in the logging operation, and it is also a major element in the impact on the watersheds But a road is a road, regardless of the use to which it is put The problem is one of regulating roadbuilding and maintenance It should be considered in this context, not in limited context of logging In fact, the higher the road standards in such features as width of roadbed, maximum grade limits, and minimum curve standards, the more difficult a watershed problem it will be

'The most important single element in the watershed impact of a road is its location The decisions here have a major impact on the erosion and stream effects produced Standards of construction are then involved, including such aspects as treatments of cut and fill slopes, compaction practices, culverts and other drainage provisions, surface treatment, ditches, crowns and outslopes, etc Even such a detail as the handling of the berm in the maintenance of a dirt road can have an appreciable effect on erosion patterns Commonly approaches to bridges and other stream crossings are particularly critical aspects of roads from the standpoint of erosion and stream effects

"If reliance is to be placed on the regulatory approach, then specific, enforceable criteria for the location, construction, and maintenance of roads must be written into law From the watershed standpoint, such criteria must apply to all roads—state highways, county roads, logging roads, farm roads, access roads to recreation areas and homesites, and so on If this can be done for all roads, then a major element in the impact of logging on watersheds will be resolved And if it cannot be done for all roads how can it possibly be done as an element of the forest practice rules?

"I would be the first to say that these comments do not contribute a solution to the adverse effects of logging on watersheds—but I hope they do serve to help define the problem which must be faced

"The exercise of the police power through the regulatory approach is often helpful, but we cannot rely on it to solve all our problems either in our society or in land management In such problems as the impact of roads or of logging practices on watersheds, we are dealing with a highly complex system of interrelated decisions and judgments carried out under constantly varying conditions Under such conditions our ability to develop clearly defined and defensible criteria as to acceptable practices must be expected to limit severely our ability to solve the problem by regulation " (Ibid, pp 338–343)

Dr. Walter C. Lowdermilk, Consultant, Save-the-Redwoods League

" Management of watersheds is now accepted as an essential part of the full and integrated development of drainage basins of rivers Such management is a complex undertaking that involves the application of several sciences and the works of several technologies It is founded on accepted procedures and investigations in ecology, in forestry and in engineering Its aim includes the retardation of storm runoff as a means toward the regulation of freshets and destructive floods, the control of accelerated soil erosion, the reduction of erosional debris, the conservation of rains and snows that fall on the land, the stabilization of stream channels the safeguarding of storage reservoirs, and finally to make the most of interrelated features of a drainage basin in its forests, pastures, orchards and fields and wildlife resources, the control of pollution of its water resources and in the development of recreational uses Such are some of the multiple purposes common to the general development of watersheds in community, state, and national interests

"These benefits are included and are given appropriate values in calculations of *benefit-cost ratios* to determine economic feasibility or priority of any given project Final

justification, however, usually rests on a few major benefits to be counted on

"In the absence of alternatives, approval of a project may be made on the basis of national necessity or public policy

"Experimental studies in recent years on storm runoff and accelerated erosion have supplied a broad factual basis of observed benefits in well managed forests and pasture lands, in soil conservation farming and in upstream control of 'Little Waters' (headwaters) Existing data from these investigations will apply to limited sets of conditions There still remains a need for continued investigations in scientific hydrology, in soil and water conservation, in ecology and in engineering of storm water control and conservation to refine designs for more exacting requirements in developments of watershed management as population pressures on land resources increase

"Nevertheless certain general principles have been established Their application for specific basins must wait for on-the-spot investigations

"A project should provide for appropriate surveys and tests to establish the facts needed for designs and specifications of works, measures and practices in the management of those phases of a given watershed common to vital interests of the people concerned

"Possible influences of forests on flood stages as compared with those of cut-over and burned-over forest lands and of cultivated fields and again all of these as compared with soil and water conservation measures on cultivated lands have been under examination in the past three decades More recent experimentation has clarified this problem in part, but has not yet resolved it for general application

"On the one hand experimentation on small plots and on small watersheds of a few acres has established much higher storm runoff coefficients from burned-over lands and cultivated fields than from well forested land with a good ground cover of forest mulch These results indicate a decisive influence of forests on storm runoff and accelerated erosion But these differences seem to be lost in some degree in the complexities of large watersheds Further investigations, some of which are underway, are needed to clarify this enigma " (Ibid , pp 301-304)

Mr. Fred L. Jones, Director, California State Department of Parks and Recreation

" In discussing the place of watershed management in relation to the State Park System, it is important at the outset to make several distinctions The first has to do with the different purposes and objectives of the various units of the State Park System itself The Public Resources Code provides for classification of the units of the State Park System as either state parks, scenic reserves, scientific reserves, historical units, state beaches, or state recreation areas In these different classes of units, we may be concerned with the enjoyment of scenic beauty, with the maintenance of historical accuracy in the setting of a historic structure or community, with the preservation of scientific values in plant or animal life, or with participation in enjoyable recreational activities in a naturalistic environment Our interest in attitude toward watershed management in and adjoining the State Park System will vary somewhat, then, according to the different purposes of the various units as reflected by this system of classification

"Another necessary distinction has to do with the relation of State Park System lands to the size of watersheds, which very obviously may range all the way from a few acres up to hundreds or even thousands of square miles Our programs and our policies for any given unit of the park system will be directly concerned with small watersheds, either within or immediately adjoining such park areas, because whatever goes on there can be of very great concern to the integrity of park system values On the other hand, in relation to very large watersheds, our interest becomes practically identical with that of any other landowner, public or private, since all are at the mercy of the watershed management practices that go on far upstream from him, and each needs to be assured that his interests are protected and that his safety is guaranteed There can be no clear-cut line of demarcation between the first type of watershed, which is small enough for us to take a direct interest, and a larger watershed which must be beyond our active concern Whether one or the other situation applies will depend on the individual circumstances in any given instance

"Because our objectives include the perpetuation of natural environments and eliminate the disturbances often association with the harvesting of commodities, regulated water supply on downstream lands is nearly always an incidental byproduct of State Park System management

"Before turning to any discussion of individual areas or specific problems of watershed management and its relationship to the State Park System, I would like to comment on some of the subjects that were covered in the latter portion of the announcement of this hearing, I refer particularly to those sections which make reference to the interrelationships between precipitation runoff, soil erosion, site deterioration, flood damage, and the various conditions of soil, climate, terrain, and vegetation within any given watershed

"It is our opinion that all utilization of wildlands should take into account one salient principle namely, that every watershed is, in a manner of speaking, a biological entity, and that whatever is done to the land or the vegetation within that watershed affects the health of the watershed and the interests of those downstream As long as our society operates under criteria that are primarily economic, we are apt to be in trouble from these fundamental interrelationships if they are not observed or taken adequately into account

"We wholeheartedly support the suggestion made in the last paragraph of the notice of this hearing, to the effect that a broad public policy should be established in favor of comprehensive watershed management, with the objective of resolving conflicts in land uses in the total public interest, and of achieving balanced, sustained uses of watershed lands and their individual resources It is our belief that one important way of contributing to this achievement would be to strengthen portions of the Forest Practice Act and the Forest Practice Rules The act is declared in Section 4541 of the Public Resources Code to be for the purpose of conserving and maintaining the productivity of the timberlands of California, in the interests of the economic welfare of the state and the continuance of the forest industry We believe that the act should also include among its purposes the protection and sound management of watersheds for the purposes of stream control, soil conservation, and the protection of downstream values Changes could be made in the Forest Practice Rules themselves, to strengthen them and to reflect the broader purpose of the act

"In the case of a catastrophe such as occurred at Bull Creek in 1955, severe storm conditions combined with poor land management practices to bring about disastrous losses to state park values downstream In our opinion the laws should be modified to make the kind of practices which contributed to that disaster much more difficult to adopt, enforcement of the strengthened rules should be facilitated and made more effective, and an appropriate degree of responsibility should be established for the safety of downstream values We believe that Forest Practice Rules should be designed to protect watersheds and the downstream values, as well as to protect the timber-growing lands and the industry which is dependent thereon " (Ibid , P 297-298)

Mr. Walter T. Shannon, Director, California State Department of Fish and Game

" The clear intent of the Forest Practice Act, and the stated goal of logging industry representatives, is to limit

the Forest Practice Rules to consideration of timber production and harvesting alone In almost all other fields of resource management, the basic concepts have shifted from a single to a multiple use approach We have long advocated broadening of the scope of the Forest Practice Act to protect watershed, streams, and fisheries However, amending the Forest Practice Act may not be the best way to solve these problems

"Some watersheds probably cannot be logged without disastrous erosion This has been recognized elsewhere as, for example, in New Zealand, where such areas are set aside by government as watersheds which may not be logged In California, on the other hand, precipitous, delicately balanced slopes, like the upper Bull Creek watershed you will see on Friday, are being disturbed to harvest a few logs The profit to the operator is negligible compared to the immense cost of stabilizing the watershed afterwards, which the public must bear, if indeed it can be accomplished at all

"The careless operators—anxious for profit and without concern for the land—rarely understand the implications of tearing up steep hillsides with tractors the erosion that wastes forest soils, the gutted and sedimented streams the losses of trout and salmon

"Highway construction became another major problem area after World War II, as freeways invaded the mountains Fortunately, the situation has improved materially in recent years, primarily through federal intervention Instructional Memorandum 21-5-63 of the U S Bureau of Public Roads states, 'The highway agencies must realize that fish and game are a natural resource belonging to all the people of the country and the preservation of their habitat must be taken into consideration along with other values of public interest to arrive at determinations which are economical for all public interests Public roads supports that every effort should be made in the planning, design and construction of highway projects that cause a minimum of disturbance to and reasonable preservation of the nations wildlife and related natural resources' The memorandum goes on to define liaison procedures between highway and conservation agencies for protecting fish and game resources We have set up these coordination procedures, and are making progress in reducing stream damage

"Problems still abound, but that is inevitable during a period of extensive road construction like the present one Fortunately, however, progress is being made and the problems have not proved as insurmountable as in the case of logging

"Dam construction is a third major problem area In cooperation with the Regional Water Quality Control Boards, the U S Forest Service, and other interested agencies, we do what we can to minimize stream sedimentation below the dam site. Sometimes we are not very successful Unusually serious damage has occurred in recent years in a number of locations, including the Silver Fork American River below Icehouse Dam, Pilot Creek below Edson Dam, Middle Fork American River below French Meadows Dam, and Rubicon River below Hell Hole Dam The relatively clean operations by the contractors who built the McCloud River Dam for the Pacific Gas and Electric Company and Iron Gate Dam on the Klamath River for the Pacific Power and Light Company demonstrated that much of this damage was unnecessary

"We have, in cooperation with Regional Water Control Boards, prevented serious damage of this sort by persuading construction agencies to include in their specifications and contracts strong requirements to prevent erosion resulting from roadbuilding, reservoir clearing, borrow areas, spoil disposal, and actual dam construction, all of which have caused serious difficulties on past projects This procedure effectively minimized siltation from the state's Grizzly Dam project in Plumas County and the Yuba County Water Agency project on the Yuba River It is proposed for the Stampede project on the Little Truckee River, a federal project The procedure is for the Regional Water Quality Control Board to agree with the the developer, prior to construction, on the maximum amount of turbidity allowable in the stream below the construction area—usually on the order of 25 turbidity units, about the point where people stop fishing In order to meet this requirement, the constructor places appropriate restrictions in his contracts Recent difficulties on the Placer County Water Agency Project on the Middle Fork of the American River emphasized how critical it is for the contractors to understand the water quality requirements when he bids, in order to include the added costs in his estimates

"As in the case of highway construction, progress is being made with the problems created by large dam construction slowly but surely

"Another kind of problem is still causing difficulties in the Russian River below Lake Mendocino dam (near Ukiah), built several years ago Here, much sediment enters the lake with the winter runoff from a watershed badly damaged in years past by careless logging and road-building Many particles are too fine to settle out, so the lake remains muddy for long periods, causing prolonged releases of muddy water downstream This, in turn, makes it very difficult for anglers to catch steelhead in many miles of the Russian River below the dam even when they are abundant The resulting loss of public recreation, in a big river so close to the San Francisco Bay area is tremendous

"We do not know how to cope with this problem The same thing will almost certainly happen below the dams proposed on the Eel River The Eel watershed is notably unstable to begin with, and it has suffered tremendous damage as well

"Overgrazing on steep lands is another problem area worthy of attention Although we have no systematic documentation, we have become accustomed to seeing erosion gullies on grazing lands, and we wonder if this is in the state's long-term interest It is certainly not good for the streams

"Other agencies are primarily responsible for this problem However, the department has worked with grazing advisory boards, both U S Forest Service and U S Bureau of Land Management, to adjust season of use and animal numbers on federal lands in line with sound practices This has benefited wildlife and livestock interests and reduced erosion on federal lands With private land, on the other hand, we become involved only in a limited way through advisory, extension-type activities

"Research to measure stream and watershed damage caused by all these activities and to determine how long it lasts will help to define the problem more completely Some promising projects are already underway We recently started one to gauge logging damage to streams along the north coast The committee's studies on watershed problems through the Ecological Institute at Davis promises to be very fruitful The new Cooperative Fisheries Unit at Humboldt State College will probably also work on related problems All of this will help in the future

" We do wonder, however, if watershed management responsibilities do not logically belong with an authority having broad responsibility for land and water use, rather than for fish and game per se " (Ibid pp 272–282)

The consensus of this testimony, which represents the carefully considered views of a cross-section of the most experienced and distinguished scientific, commercial, professional, and legal minds in the field of resources management, is that public policy not only can —but must—begin to recognize and take into account complex and subtle regional ecological considerations in allocating the natural resources required to meet growth demands in California In defining the dimensions of this problem, the recurring theme of these statements is that the currrent assortment of individual public policies and programs, each of which is fo-

cused essentially upon the most efficacious exploitation of a given resource or use of the land, must be replaced by a comprehensive policy for the management of all watershed resources in the total public interest, which incorporates a meaningful process for assessing the impact of a given activity upon the prevailing and predicted balance among resources

Although differing in specifics, there is clear agreement upon the extreme difficulties of achieving such an objective These difficulties lie not only in the understandable concern of the landowner who views with alarm any restrictions on the use of his property, but more fundamentally in the serious lack of relevant, conclusive, scientifically-acquired data concerning the interaction of watershed management variables which are acceptable to the range of interests involved

In view of the obvious impossibility of formulating or administering a meaningful policy for total watershed management in the absence of such valid, agreed-upon data, the subcommittee considers it essential that a comprehensive, cooperative research program be initiated to discover the relevant information upon which to base the development of public policy for the long-term, balanced management of all natural resources within California watersheds

Forest Practices and Watershed Management

Foreword

In addition to the broad assessment of the impact of man's activities upon watershed resources outlined in the preceding section and in the report of the Institute of Ecology of the University of California (see Section II), in this preliminary review the subcommittee considered in some depth the relationship of the single most important state policy affecting the use of private land within California watersheds—the Forest Practice Act—to the management of and balance among other watershed resources Although policies governing such other activities as highway construction, water resources development, the preservation of water quality, agriculture, the use of pesticides, flood control, the management of fish and wildlife, soil conservation, recreation, and urban development, for example, obviously have varying impact upon the balance among watershed resources, in view of the very significant influence of forest management policy, and the controversy surrounding some of the programs authorized under the Forest Practice Act, the subcommittee elected to focus its initial detailed inquiries in this area, and combine the results of this preliminary study with other aspects of watershed management in future hearings.

As is outlined in the Problem Definition and Statement of Objectives (see Introduction to Section I), the major concern of the subcommittee in this portion of its review is the evaluation of (1) the purposes and objectives of the Forest Practice Act itself, (2) the degree to which the act is achieving these objectives, (3) the effect of the administration of the act upon other watershed resources and products, and (4) ways in which the act should and/or could be modified

Although the major importance of forest management policy to an evaluation of the approaches for achieving comprehensive watershed management is in itself—if for no other reason than the large and strategically located acreages involved [3]—adequate justification for special attention in a preliminary review of the kind conducted by this subcommittee, the variety of reactions to this evaluation from those familiar with the objectives and administration of the Forest Practice Act is particularly revealing These responses, which range from the highly critical to the highly defensive, are illustrative of the difficulty of moving toward a more balanced watershed management policy, with these reactions emphasizing the narrow purposes of the host of independent, uncoordinated policies governing the exploitative and developmental activities of man within California watersheds With few exceptions each policy has been formulated, and is inflexibly administered, to achieve certain limited objectives regardless of the effects upon other watershed resources When questions or objections relative to the effects of managing one resource are raised by those responsible for managing another resource, the response most often is—and within the narrow purposes of the individual policy probably can only be—to suggest that the objecting party look elsewhere for relief

Objectives of the Forest Practice Act

Though reference is made in the policy statement of the Forest Practice Act to the public interest in the management of forests, timberlands, watersheds, and soil resources of California, the fundamental objective of the act is clearly "the continuous production of forest products" To achieve this policy objective a complex administrative structure has been established which divides the state into four broad districts, within which district forest practice committees formulate forest practice rules and adopt alternate forest management plans for approval by the State Board of Forestry Within the framework of these rules, which emphasize reforestation, the protection of young trees, fire prevention, and pest control, the Division of Forestry issues cutting permits and inspects timber operations for compliance with the rules The members of the district forest practice committees are all representatives of the timber industry, and with the exception of one member representing the general public, the State Board of Forestry consists of representation from the pine-producing industry, the redwood-producing industry, forest land ownership, the range livestock industry, agriculture, and the beneficial use of water

Efficacy of the Forest Practice Act in Achieving Stated Objectives

With the stated purpose of the Forest Practice Act since its enactment in 1945 being the sustained productivity of merchantable timber, it seems reasonable to inquire if after some 20 years this important but limited objective is being achieved. The response

[3] One hundred thirty-four (134) billion board feet of timber on 8 million acres of private forest land (Transcript, Berkeley, p 77)

to this question, as with most inquiries in this complex subject, is indefinite and subject to wide interpretation. Beginning with State Forester Raymond, whose views would persumably be the most authoritative, following are excerpts from testimony at the Berkeley hearing indicating the range of answers received by the committee to this basic question

California State Forester Francis H. Raymond

" *No field survey or research on the degree to* which the act has been effective has been made Certain research projects sponsored by the Division of Forestry, especially those on 'Seed Tree Effectiveness' and 'Forest Growth Prediction' will help in this analysis in the future

"The best survey of trends in timber supply is collected by the National Forest Survey for California Surveys taken in California in 1953 and 1963 showed the following results

Item	*Unit*	*1953*	*1963*
Commercial forest land--	Million acres	17 317	17 391
Sawtimber net volume--	Billion board feet	360	302
Annual sawtimber cut--	Billion board feet	5 731	5 919
Net annual growth-----	Billion board feet	2 939	3 527

"The situation shown above is about what one would expect in a region with relatively stable forest land area, most of the timber volume in old-growth stands (about 80 percent in 1953) and a fairly high timber production rate Under these conditions the sawtimber net volume of growing stock will continue to decline and the growth rate will continue to rise until a balance is reached at some time in the future between growth and cut Desirable intensification of forest survey to provide data at the county level is presently underway

"The forest survey statistic that indicates a dangerous situation is the large amount of nonstocked land in California This area is reported to be 3,754,000 acres in 1963 Several public and private programs of reforestation attack this problem and more intensive survey work to determine the real nature of the nonstocked land is underway " (Transcript, pp 82–83)

Dialogue with Assemblyman Burt M. Henson

ASSEMBLYMAN HENSON: " Mr Raymond. I just want to get some general picture of where we are in lumber production in California Are we getting near or down to where we are likely to be out of supply, are we replanting as much as we are harvesting in acres, just what has been the trend over the last 20 years in this respect? "

MR. RAYMOND. "This is difficult to explain in a very few words "

ASSEMBLYMAN HENSON: " . Quote any figures you know "

MR. RAYMOND. "I can't quote you any figures at the moment, but I can say in a general sense that we have reduced our supply of saw logs—lumber trees—and at the same time increased the volume of trees, cubic foot wise or in total, far over what we had here when we started cutting the trees back in the 40's "

ASSEMBLYMAN HENSON "Why?"

MR. RAYMOND: "Because there are more young trees growing "

ASSEMBLYMAN HENSON: "We are growing more than we are cutting?"

MR. RAYMOND: "We are growing trees. Now the volume isn't there yet in respect to saw logs to lumber ." (Transcript, p 150)

Mr. Gordon P. Robinson, Professional Forester; former Forester, Southern Pacific Company

" The act has failed to bring about sustained yield management of our private forest lands

"California contains about sixteen and one-half million acres of commercial forest land About half of this is national forest having an estimated eventual annual allowable cut and sustained yield capacity of about two billion feet National forest timber sales are currently running about one and one-half billion feet per year The potential capacity of the 8 million acres of private commercial forest land is presumably about the same, but those lands are being cut at a rate of 4 to 5 billion feet per year This has been going on for the last 15 years and is expected to continue for another decade Clearly then the private commercial forest lands of this state are being logged at a rate two or three times their sustained yield capacity This can lead to nothing but a disastrous decline in forest industries with all the economic and social ills that go with it Once forests have been seriously depleted, it is very difficult and expensive to rehabilitate them, and the process requires many years " (Transcript, pp 234–235)

Mr. Henry K. Trobitz, Manager, California Timberlands Division, Simpson Timber Company, Arcata, California

" The Forest Practice Act, now 21 years old, has had ample time to prove its worth I have been a redwood timberland manager for the past 16 years and am well familiar with its administration and results

'We have felt the pressure of it and, in my opinion, it definitely has successfully prevented irresponsible land use by private owners I am convinced that the act has been in the public interest and has accomplished its goals

"Certainly we have not achieved perfection, but we are well on the road to having sustained yield, multiple use commercial forest management that takes into account the complexities of land management and use Simpson is rapidly approaching a point where harvest and growth are in balance " (Transcript, p 246)

Dr. John A. Zivnuska, Dean, School of Forestry, University of California at Berkeley

" The literature of forestry is filled with discussion of the concept of sustained yield, which is generally held to involve condition in which growth and cut over substantial periods of time and substantial areas are essentially in balance In the process of converting an old-growth forest area to such a regulated sustained yield condition growth will necessarily be less than cut Thus the particular ratios requested in this question cannot by themselves give the slightest clue as to whether or not these forests are being managed in such a way as to lead to a sustained yield situation This can be determined only by a detailed analysis of ages, volumes, growth rates, and regeneration of timber under particular assumptions as to the sizes and kinds of timber to be cut in the future

"In any case, the law does not call for promoting sustained yield, which in itself is an ambiguous term, but instead calls for promoting the far more ambiguous 'maximum sustained productivity' The pattern in which timber is cut over time may be highly important to the future of a particular company and to the economic future of the immediate region However, the time distribution of the cut has absolutely nothing to do with the extent to which the productivity of the forest sites is maintained nor to the standards of watershed management which are involved

"In this connection I note that the statement of Objective 1(b) in the Definition of the Problem distributed with the call to the hearing appears to interpret 'sustained productivity' as requiring 'balancing cut against growth'

I believe such an interpretation is unwarranted The far more important point, however, is that any limitation of cutting to current growth levels would be absolutely unsound in the present stage of development of California's forests It would be contrary to all our knowledge of forest management, it would cause major and unnecessary economic distress, and it would greatly reduce the productivity which can be achieved from our forest lands

"In view of the confusion which seems to surround cut-growth ratios, I am attaching a somewhat expanded explanation of this matter as an Appendix to these remarks

"To the extent that the subcommittee is concerned with the level of timber output which can be maintained in the state in the coming years, I would suggest that in directing your question to the major timber operators you are wide of the mark The outlook for future stability of production is very much better on the 23 large private ownerships in the state than it is on the 30,000 small ownerships which, collectively, control as much commercial forest land as do the major operators The small and medium private holdings have been the primary source of the timber cut in the state and correspondingly they are the primary source of the uncertainty and instability which is associated with the future outlook "

APPENDIX

THE QUESTION OF BALANCE BETWEEN CUT AND GROWTH

"Some inventory reduction and some degree of imbalance between cut and growth are to be expected in the present stage of development of the state's forest resources Virgin old-growth forests tend to be characterized by a balance between gross growth and mortality In the process of bringing such forests under management, cut is necessarily greater than growth and inventory reduction occurs

"As a simplified theoretical example of these relationships, if a 6,000-acre old-growth Douglas fir forest were to be brought under management by strict area regulation aimed at future management on a 60-year rotation, 100 acres would be clear-cut and regenerated each year Since the forest would be producing no net growth, the first year's cut would not be offset by any growth and would represent a net reduction in inventory Indeed, there would be no measurable volume or growth expressed in terms of the board-foot volume of trees 12 inches and larger in diameter until after about 30 years and the removal of half of the old-growth inventory Growth would then begin to increase rapidly, but cut would remain above growth until the end of the full 60-year regulatory period

"Obviously, the forest resources of California are not under any such orderly process of conversion to a fully regulated condition Instead, the total situation is chaotic Some extensive public forest areas remain without cutting, other public forests and much of the area in large private holdings are being brought toward a regulated condition, although generally in a much less direct fashion than in the theoretical example above, still other areas are being cut so heavily that prolonged periods without cutting must ensure before further production will be possible, and extensive areas remain largely unstocked and unproductive as the result of past logging and fires

"It is impossible to evaluate the significance of cut-to-growth ratios and similar factors against such a background These factors would have meaning only against fairly detailed information as to the age structure and cutting patterns by ownership classes within each of the regions In the absence of such information, no valid interpretation can be made of these conventional ratios"

"SOURCE Zivnuska, John A, Paul Cox, Adon Poli, and David Pesonen, *The Commercial Forest Resources and Forest Products Industries of California*, Division of Agricultural Sciences, University of California, 1965, p 22"

(Ibid, pp 320–345)

Mr. John Callaghan, Secretary-Manager, California Forest Protective Association

" I will not dwell on this subject for it is being covered by others The act was born in a time when timber shortages were thought to be imminent Better inventories and improved utilization now indicate that such is not the case There will probably be some decrease in production until more second-growth reaches marketable size, but the economic effect of this will be tempered by greater utilization to some extent In any case it is evident that 'the productivity of the timberlands' is being reasonably maintained and the public interest in this resource is being protected " (Transcript, p 391)

Although not a direct part of the subcommittee review, it should be noted that in its study of the management of coastal redwoods resources the full Committee on Natural Resources, Planning, and Public Works received a similar range of inconclusive and often conflicting testimony [4]—a substantial portion of which was presented by experts not participating in this study of watershed management—relative to the long-term prospects for sustained productivity of redwood products in the California north coast region In fact, although vigorously disputed by industry representatives, several independent studies suggest a dramatic decline in the fortunes of the north coast wood products industry, possibly within the next decade, or whenever the remaining old growth redwoods have been cut (See "Conflict in the Redwoods", Part I, 1965–67 Committee Studies, Assembly Committee on Natural Resources, Planning, and Public Works)

Similar points are raised in the Report of the Institute of Ecology of the University of California (See Sections II and III of this report) One particularly disturbing element of the institute report notes that 1965 projections of the U S Forest Service suggest a drop of some 59 percent in the cutting levels on private lands between 1963 and the year 2000

In view of the foregoing the subcommittee can only conclude that although for 20 years the basic purpose of the Forest Practice Act has been to "encourage, promote, and require such development, use, and management of forests and timberlands as will maintain the continuous production of forest products, to the end that adequate supplies of forest products are assured for the needs of the people and industries," there is at present no hard evidence—although there are many opinions—to indicate that this objective is being realized And indeed, if the estimates of some authorities are to be believed, precisely the opposite may well be the case

The seriousness of such a possibility should not be taken lightly. California is exceeded only by Oregon as a timber producer in the United States, and although approximately half of California's commercial timberlands are under the multiple-use, sustained productivity management of the U S Forest Service—which incorporates a substantially different concept from that of the California Forest Practice Act—the effects of a major decline in production from pri-

[4] Representative testimony from "Conflict in the Redwoods," pp 18–19 See next page

vate timberlands clearly would be felt throughout the California economy, and would inevitably produce particularly severe effects in certain regions of the state such as the north coast

Therefore, it is clear that the accumulation of reliable data concerning the sustained productivity prospects of timber resources on private lands must be a major element of the comprehensive watershed research program proposed by the subcommittee

(Representative testimony from "Conflict in the Redwoods")

Deane R. Mather, private land manager, and Dr. Rudolf W. Becking, forest research consultant

" Arthur D Little, Inc, a national research firm, recently completed an economic analysis of Mendocino County Their findings indicated that at Mendocino's present rate of cut, their old growth will be essentially exhausted by 1970 Our findings indicate that at the present rate of cut, Humboldt County will virtually be out of old growth in 1968 Arthur D Little, Inc just a few months ago completed an analysis of Del Norte County's economy At Del Norte's present rate of cut a three-year lifespan for old growth was indicated thus, research from all three counties reveals that the area has but a few short years left before its economy undergoes a drastic transformation and reduction "the U S Department of Agriculture's Pacific Southwest Forest and Range Experiment Station, for the first time, is conducting a detailed timber inventory survey of these three counties Arthur D Little, Inc, has based its timber supply projections for Del Norte upon the preliminary findings of this survey After old growth supplies are exhausted, the area's economy will be primarily based on wood byproducts A small flow of saw logs will continue to be produced from managed independent holdings, and a few of the large industrial owners have sufficient young growth to sustain saw log production, but only at a severely reduced level from former old growth cutting rates

The effects on California's economy resulting from the future loss of the large volumes of wood products generated from this area will be severely felt "

Dr. H. DeWayne Kreager, consulting industrial economist, Seattle, Washington ("Economic Factors Relating to Redwood Park Proposals· an evaluation of the impact of proposed additions to California redwood parks on the economy of Humboldt and Del Norte Counties," January 1966)

" The redwood industry is a permanent industry Present cutting rates are probably still substantially above new growth rates, but there are reputable professional forestry experts who conclude that the rate of cut and the rate of growth are rapidly approaching balance . Data collected from the five major timber producing and processing companies in the area indicate that these companies, source of 75 percent of the commercial logs being provided from private sources, will move into permanent cutting cycles in 20 to 40 years Some will start earlier, but the realization of a sustained yield operation in the redwood industry can be a completely accomplished fact by the year 2000 or shortly thereafter Realization of the status of a full-utilization sustained-yield forest economy requires that the greatest possible maximum of present commercial timberlands be kept in commercial use and managed through the first cycle of cutting old growth, to a combined old growth-new growth at about 20 years, to an almost complete new growth within 40 years Attainment of this objective is the key to the future economic security of the redwood region "

Francis H. Raymond, California Forester; Chief, State Division of Forestry; executive secretary, State Board of Forestry

" Estimating a 'sustained yield' of sawtimber and pulp for a large region with diverse ownerships such as the redwood region is practically an impossible task with present prediction tools Estimating sustained yield for a single property with carefully delineated management objectives is difficult enough In a regional economy, with vast areas of variable site quality and different growth rates many owners with variable objectives and cutting practices and rapid turnover in ownership, a rapidly shifting wood market situation with new relations between plywood, lumber, and pulp, uncertainty as to taxes, long-range protection problems, rapid changes in land use due to recreation and water development plans, et cetera, the situation is well-nigh impossible Regional sustained yield could be estimated, but no two people would agree as to the basic assumptions that would be required for the estimate "These assumptions would include such items as (a) area by site quality of timber included within the region, (b) present stocking and volume of timber and the rate at which old growth would be liquidated and young, fast-growing stands established, (c) the products-mix harvested by various owners now and in the future, depending on market demand for wood because of its influence on rotation or cutting age, (d) growth rates and yield from mixed stands under various silvicultural treatments, (e) estimates of the effect of technological development, new scientific data, more intensive management on the growth and yield of the forest and resulting cutting decisions by owners, and (f) other similarly difficult estimates There are not any statewide surveys designed to produce data on the amount of cutover or logged area The area cut is roughly proportionate to timber production which is measured annually However, no exact relation can be assumed because of variability in the volume of timber produced per acre "

John Gleason Miles, consulting forester ("The Effect of Commercial Operations on the Future of the Coast Redwood Forest," 1963, a report prepared for the U.S. National Park Service)

" The volume of old growth redwood timber on commercial lands, both public and private, will decline to about 2,500 MMbm (million board feet) by the year 2000, and under the selection system (under which about one-third of the present major owners plan to operate) will continue at that level indefinitely The total volume of growing stock (old growth plus second growth) is now 30,981 MMbm This will decline slightly, to a low of 27,771 MMbm in 1983 At that time the ratio of growth to cut will be 1 1 and subsequently will rise somewhat The total volume of growing stock in the year 2013 will be 30,241 MMbm, and in the year 2023, will be 31,137 MMbm "

Dr George H. Allen, fishery research consultant, and Dr. Rudolf W. Becking, forest research consultant ("Some Relationships Between Redwood Parks and the Humboldt County Economy," March 1966)

" Students of the sustained-yield principle have tried to estimate that the growth rate of second growth timber will be in balance with the depletion of timber in 1980 (Miles, 1963) Should growth balance cut by 1980, it would certainly not apply to each ownership acreagewise Perhaps more important is the fact that timber quantity does not ultimately contribute to timber quality (e g Dickinson, 1966) Due to growth characteristics it is a well recognized fact that second growth timber, especially redwood, demands a far lower market price than old growth timber, and that under current economic conditions harvest and thinning operations in 80–100-year-old superlative sec-

ond growth stands are economically unfeasible Besides that, the yield on a per acre basis of a second growth redwood stand of 100 years of age is approximately only 1/10 of that of an acre of virgin timber (100,000 board feet vs 1,000,000 board feet on the average gross yield) It is certainly true that the amount of growth being added each year on young timber is greater than growth added to a mature tree, but the economic value and utility of the young tree is greatly inferior Considering only timber volume, however, sustained yield at present cutting levels would require up to 10 times as much acreage of second-growth timber compared to old growth acreage because any harvestable second-growth timber present now has to be found on those lands cut 80–100 years ago No one has ever indicated where such extensive acreage exists in Humboldt County Evidence of this can be appraised by anyone noting the country around the Redwood Region Conservation Council members' demonstration forests which are in the heart of any such potential In general, even under perfect growing and management conditions, it will take some 80 years to grow a mature timber stand At this very moment no reduction in the accelerated production of timber is evident, and therefore the industry is making it more difficult to bridge any interim period for our local lumber economy The creation of a national redwood park must not be used to divert attention from the fact that a considerable reduction in the local forest economy is about to occur It must be emphasized that for any sustained timber yield at the present level of production we have to look primarily to those areas of limited acreage exploited by the early days of logging Lands that must sustain the current cutting rates and timber yields have to be at least equal in size to the land from which the timber now is being removed However, there is not sufficient acreage available from the old days of cuttings With the increased acreage of bare land forest regeneration becomes problematic and uncertain In 1952 an estimated 183 000 acres of understocked or nonstocked private forest land existed in Humboldt County alone (U S Forest Service, 1952). Dana and Pomeroy (1965) reported on surveys which indicated that nonstocked or understocked redwood-type forest lands amounted to 320,000 acres in the redwood region, or 20 percent of such lands' The imbalance for such a situation is going to have a serious impact on the level of our forest economy regardless of a national park

"Any attempt to predict the level of timber cut in some future period must have data on present cutting rates, existing acreages, and growth rates on the many different sites on which various species grow All such data are now in scarce supply Siegel (1965) used information from Miles and Vaux mainly for his analysis on Humboldt County, which was the best data available for any north coast area From these data Siegel indicated that the cut would drop to around 1 0 billion board feet per year around 1980 This is equivalent to about 0 75 billion board feet of lumber production This would indicate about a 50-percent reduction as compared with the present levels of production Siegel also noted that the greater the degree of excess cutting done now, the lower will be the level of sustained cut which will occur in the transition period

"An even more recent study indicates a virtual depletion of old growth timber in Humboldt County by 1968, if present cutting rates for the county as a whole continues (Mather, Becking, 1965)

"In 1953 (Vaux 1955) indicated privately owned mature timber at 35 6 billion board feet In 1963 the Humboldt County timber cruise showed 13 5 billion board feet of such stands Using public records of lumber, plywood and veneer production, the amount of standing timber volume cut was computed for each year from 1953 to 1963 Subtracting each year's cut from the 1953 volume noted above, a figure was obtained which was only 1 2 percent from the volume reported in 1963 by a timber cruise conducted by the Humboldt County Assessor's office The total rate of cut in 1963 was 2 5 billion board feet Continuing this rate of cut leaves a projected 1 billion board feet of *mature timber* in Humboldt County in 1968' Undoubtedly individual companies will have to slacken their rates of cut to extend such activities a few years longer but the seriousness of the impact from a reduced lumber production is quite apparent "

The Effects of Forest Practice Act Administration Upon Other Watershed Resources

Although there may well be serious questions concerning the degree to which the Forest Practice Act is fulfilling its basic objectives of sustained productivity on private timberlands, such considerations are relatively esoteric in nature, and consequently are of limited interest to the public at large unless failure of the act should affect particular elements of the state's economy

There are, however, certain aspects of the administration of the Forest Practice Act which are of more immediate and direct concern to a substantial and growing portion of the public These considerations, which are inextricably tied to the broader objectives of comprehensive watershed management considered earlier in this report, include the effects of forest practices authorized under the act upon the existing and projected balance among all watershed resources and products such as soils, fish and wildlife, water quality, scenic amenities, and recreational opportunities

In its review of these considerations, the subcommittee once again received a wide range of dramatically conflicting views and opinions However, as has been discussed previously, because of the close interrelationships it is obvious that a given exploitative activity will affect the balance of watershed resources to a greater or lesser extent, and in view of the profound lack of conclusive data relative to the interaction of watershed management variables, the wide range of opinions presented to the subcommittee is not surprising

Nevertheless, as the statements do contain as much hard data as is presently available—and also illustrate the range of prevailing opinion concerning this complex matter—following is a series of excerpts from testimony presented to the subcommittee at the Berkeley hearing, with special reference to the conservation of soils and the preservation of fish habitat

Mr Phillip S Berry, Attorney-at-Law, representing The Sierra Club and Trout Unlimited

" Our present laws fail to control erosion of forest soils and all the attendant problems that erosion causes Obviously, a forest cannot exist without soil But excessive erosion is undesirable for other reasons as well It aggravates flood damage, reduces water quality, makes streams unlivable for fish, and in some instances has destroyed park and other recreational values

"Tragically, the erosion of our forest soils is proceeding at rates which stagger the imagination This is particularly true in the north coast drainages For example, in the 1963 water year, a year of comparatively average rainfall, more than twenty-one million (21,000,000) tons of suspended sediment were eroded from the Eel River Watershed alone, according to U S Department of Interior figures (U S G S 1963) (This figure does not measure the total erosion on that watershed since it does not take

into consideration the bedload of the stream (gravel and boulders) or dissolved materials) Comparative figures for other coastal river systems are equally alarming

"Obviously, some of this erosion would have occurred naturally What is disturbing is the amount by which the present rate of erosion exceeds the natural rate Recent compilations by the Department of Fish and Game show that erosion on the south fork of the Eel amounts to six pounds of soil for every square yard of watershed per year (Inland Fisheries Report 1962) Using similar data and prizewinning statistical methods[5] Dr James Wallis, now on a postdoctoral fellowship at Harvard University, estimates that within three hundred years "the total available supply" of forest soil on that watershed will be completely exhausted, if the present rate of erosion is maintained In his doctoral thesis (praised by Dr Paul Zinke, Professor of Forestry at the University of California) Wallis draws the following conclusions based upon his careful studies

> 'It is apparent that northern California's mountains are eroding at a prodigious rate and that this rate is greatly in excess of the rate of new soil formation It is also apparent that man's current land use practices are producing the bulk of this excessive erosion Foremost of these activities are logging operations and roads ' (Wallis 1965)

Under natural conditions, the rates of soil formation and erosion are about equal (Lowdermilk 1961) Since writing the above dissertation, Wallis has estimated that the rate of erosion on the south fork is now several hundred times greater than the rate of soil formation

"Obviously, the practices which result in accelerated erosion during years of normal rainfall will cause proportionally greater problems when floods occur This is quite evident throughout the north coast Areas disturbed by roadbuilding or logging before the "thousand year" flood of 1964 (which came hard on the heels of the "hundred-year" floood of 1955) can be seen to have suffered much more than areas which were left altogether untouched or were carefully managed A good example is the Bull Creek watershed Parts which were logged before 1964 have many more and larger landslides than do untouched areas a short distance away (Comparison photos demonstrating this are now in the possession of the Forest Protective Association, the lumber industry's lobby, but have not been produced upon request by the Sierra Club)

"Poor logging practices can be blamed for the destruction of park values during floods The twin disasters which befell the Humboldt Redwoods State Park on lower Bull Creek during the floods of 1955 and 1964, have been chronicled in the "Proceedings of a Symposium on Management for Park Preservation" sponsored by the University of California School of Forestry in May of this year at Scotia As the experts there assembled have pointed out, the residual effects of the floods still threaten the superlative redwood grove comprising the heart of the park A "glacier" of rock debris is moving slowly down the creek and if it reaches and passes into the grove it will kill many of the trees. Five hundred (500) one thousand-year-old giants have already been lost through sloughing of the stream banks alone We ask the committee to hold in mind the conclusion reached by the experts who participated in that symposium To preserve the park as it was before the floods, they would not have allowed logging of the type which occurred on the upper watershed (where the slopes are steep and the soil is loose)

"Hydrologists say that suspended sediment can have a tremendous bulking effect on flood-swollen streams The bulking effect has been measured as high as 100 percent (Anderson 1962) Doubtless, the aggravation of erosion caused by poor land use practices had a direct effect upon the height of the 1964 flood because of the bulking effect

"Land use practices which accelerate natural erosion threaten our fishery resources through the deposition of sediments along stream bottoms In addition, the use of heavy equipment in the streams themselves damages the bed, at times leaving the fish without a suitable place to live

"According to experts within the Department of Fish and Game, siltation tends to kill off the natural food supply fish need, cements spawning gravels, thereby smothering fish eggs, and closes up the hiding places for young fish All this prevents effective regeneration of the fishery resource (Department of Fish and Game Report No 63-2 (1962))

"Other Abuses by Loggers Threaten Fishery Resources

"The cutting of streamside vegetation, whether commercial or noncommercial species, changes radically the fish habitat Elimination of protective shade over streams raises water temperatures, killing trout and other game species Logging debris cast into streams decays there, robbing the water of dissolved oxygen which fish need to survive Frequently, the decay also releases toxic substances, such as tannin (Department of Fish and Game Report No 63-2 1962)

'Logging Practice Rules Under the Existing Forest Practice Act Do Not Prevent Erosion

"Recognizing the need for different rules because of varying forest conditions, the Forest Practice Act divides the state into four different forest practice districts and provides for different practice rules in each This division underscores the act's basic premise that varying terrain, soil stability and chemistry, and differences in native vegetation should all be taken into account before writing rules to prevent erosion

"The need for different rules where different conditions are encountered has been acknowledged by almost everyone concerned, except the local practice committees themselves which have written only a single set of rules for each district The Deputy State Forester in charge of the day-to-day administration of the act has stated 'The great variability in California forest types hardly could be adequately regulated by a single set of laws" (Arvola 1962) His superior in overall charge of the act's administration has also remarked "Different forest types require different practices" (Nelson 1962) Dr Zinke has remarked upon the "wide range of variable conditions of soil, vegetation, topography and geology" (Zinke 1965) Henry Anderson of the Pacific Southwest Forest and Range Experiment Station of the Forest Service working in conjunction with Dr Wallis has pointed out that the erosion potential of forest lands can vary by a factor of 100 (Anderson and Wallis 1965) Particular emphasis has been laid on the wide variance in conditions within the redwood region (Rice 1965)

'By writing only a single set of cutting and logging rules for each district, the local committees have completely ignored the need for different rules where different conditions exist The law comes to grief because these rules are minimum regulations[6] (Fritz 1962) (Raymond 1966) Being "minimum" standards of practice, the rules are designed to prevent erosion only where the danger of erosion is at a minimum Indeed, one prominent spokesman for the lumber industry has acknowledged that the cutting and logging rules are 'not designed to achieve optimum forestry in all conditions' (Callaghan 1962)

"Rules designed for the minimum risk are meaningless when applied to easily eroded soils, particularly those on steep slopes On steep slopes rainfall runs off rapidly, its velocity increasing with the square of the slope As the velocity doubles, the cutting power quadruples (Horn 1965) All other things being equal, a steep slope therefore has more tendency to erode (Zinke 1965) When the

[5] Robert Horton Award for 1965 from American Geographical Union

[6] Calif Ad Code, Title 14, Div 2, Ch 2, Sections 911, 921, 931, 941

soil is disturbed, as inevitably it is with tractor logging, the tendency toward erosion is increased still further

"The rules in the Redwood and North Sierra Pine Districts allow tractor logging anywhere, even on slopes of 70 or 80 percent On adjacent national forest lands, tractor logging is not allowed on slopes over 30 percent Little wonder that catastrophic erosion has occurred in the north coast area causing almost all of its streams to run a chocolate brown most of the year

"A specific case in point is what occurred at Bull Creek Clear cutting of the forest (under a loophole in the Forest Practice Act discussed below) using tractor logging on 70 percent slopes resulted in wholesale slippage of the soil The tractors effectively plowed up the ground and rains completed the awful work, carrying the soil into the streams in volumes which stagger the imagination The deposits of sediment and gravel in upper Bull Creek which resulted are estimated in terms of acre-feet! At the site of the old town of Bull Creek there now exists a flood plain of gravel and rock more than thirty feet deep, one-half mile wide and one mile long

"Moreover the blanket sets of logging rules in each of the districts amount to little more than pleasant statements of policy They are chock full of ambiguities and appear to be conceived by minds which really did not intend to regulate practices at all Several of the rules enjoin the operator to exercise "due diligence" but leave the definition of that up to the individual Another rule tells the operator to construct roads, trails and firebreaks so as not to create or contribute to "excessive erosion" The latter is not defined, thus leaving the problem of redressing infractions to eternal argument over the meaning of the term More importantly, that particular rule fails to say where roads and trails can be placed and how many can be placed within a given area Nothing prohibits a logger from in effect making a hillside one large roadway with tractor trails all over it The result is that in many instances no undisturbed ground can be found anywhere the logger has been

"The failure of the local committees and the State Board of Forestry to write sensible, meaningful rules cannot be blamed on any supposed lack of information essential to do the job Basically the variable conditions necessitating different rules are just four (1) topography, in particular the steepness of slope, (2) the climate, in particular the intensity of rainfall, (3) the physical and chemical properties of the soil, (4) the native vegetation

"Basic information with respect to each of these conditions throughout most of the state is available from geological survey maps, the weather bureau, and soil vegetation maps produced by the state and the U S Forest Service cooperating in a program known as the Soil Vegetation Survey Under this program field research is carried on to determine soil and vegetation types and the productive capacity of timberlands throughout the state The information thus obtained and printed on maps is "particularly adaptable to multiple use management of forest and wild land areas" (Zinke 1960) The maps are available to the public for the "purpose of helping manage watersheds" (California Division of Forestry Experiment Station Report 1958)

"If all this information is available, why haven't the local committees done their job? At the outset it should be noted that the Forest Practice Act is clearly the captive of the lumber industry Its representatives occupy all but one position on each of the local committees and on the Board of Forestry No members of the local committees represent the public interest in outdoor recreation water quality or park preservation Thus, the rules are made by the very people who should be governed by them

"Should the fox be watching the chickens? We seriously doubt that the public interest is served by placing the power to write cutting and logging rules in the hands of the lumber industry Repeatedly, deficiencies in the present rules have been called to the attention of the local committees and the Board of Forestry The response has always been negative For example, the need to protect fishery resources has been discussed in numerous forestry meetings during the last 10 years by Alex Calhoun, head of Inland Fisheries for the Department of Fish and Game This capable and enterprising public servant has documented carefully the case against poor logging and in favor of saving our fast-depreciating trout waters He has drafted proposed rules to prevent erosion and to require the maintenance of buffer strips to avoid damage to stream channels, as in other states

"Always, Mr Calhoun's suggestions have been rejected by the loggers who control the law Mr Calhoun and other representatives of the conservation viewpoint have been told repeatedly that the Forest Practice Act is not meant to protect fish and that they should cease their attempts to "prostitute" that law (Schofield 1962) More than four years ago this attitude of the industry was condemned by the Director of Natural Resources DeWitt Nelson, who advised the Board of Forestry

> The rules have not met the issue with respect to stream protection If this problem is not met with reasonable adequacy by the rules and the operations (of loggers) the time will come when at least part of the forest practice rules will be dictated through the Fish and Game Code (Nelson 1962)

"This admonition fell on deaf ears Since then the local committees have refused to do anything whatsoever to protect fish " (Transcript, pp 199–207)

Dr. Clyde Wahrhaftig, Associate Professor of Geology (Geomorphology and Petrology), University of California at Berkeley; Mr. Robert Curry, Graduate Student and Teaching Assistant, Geology (Geomorphology), Department of Geology and Geophysics, University of California at Berkeley

" This statement is prepared in response to a letter from Assemblyman Warren It is directed to the following questions

"(1) What information is available on sediment discharge from drainage basins in the north coast ranges"

"(2) Is the sediment discharge normal, geologically speaking, for this region?

"(3) If the sediment discharge is not normal, what will be the effect on the region of sediment discharge at abnormally high rates

"Our conclusions are that the sediment discharge data that are published in the water-supply papers of the U S Geological Survey indicate a present rate of lowering of the land surface in the entire drainage basin of the Eel River of 3 33 inches per century (computed as solid rock, specific gravity 2 5) or 5 85 inches per century (computed as soil, specific gravity 1 4) Similar figures for the Mad River are 1 25 and 2 30 inches per century These figures are approximately 10 to 20 times the rates of erosion reported for comparable climates in other parts of the world. The figures for the Eel and the Mad are for suspended sediment only, and do not include data for the flood years 1955 and 1964, whereas the worldwide figures include bedload, dissolved solids, and flood data Thus the differences reported here are less than the actual differences

"Geologic analysis of selected areas in the north coast ranges shows that the rate of erosion in this area, measured over time spans of 1,000,000 to 10,000,000 years, is 0 1 inch to 0 6 inch per century The more reliable geologic data give the lower figures These geologic figures are comparable to worldwide rates of erosion and are $\frac{1}{30}$ to $\frac{1}{5}$ the present rate of erosion measured from sediment discharge data

"Studies on the marine terraces of the north coast ranges show that the weathered rock has formed in these terraces at rates of 0 05 inch to 0 1 inch per century, approximately The rate of soil regeneration is thus $\frac{1}{10}$ to $\frac{1}{100}$th the rate of destruction of soil in the north coast ranges

"The measured rates of erosion in the Eel and Mad River drainages are clearly not normal, and are presumably caused by the activities of man We do not know where all this sediment is coming from Part of it is undoubtedly from landslides, but landslides cannot account for all of it Part may be from hillside creep, but geologic, physiographic, and vegetational evidence of creep on a scale to account for this as a long-term process over the entire drainage basin is lacking A significant part must be from accelerated erosion following logging and roadbuilding Since only a part of the basins of these two streams is currently being affected by these activities, the rate of erosion for the parts affected may be many times the average rates reported here

"The implications of these data are that unless this phenomenal rate of erosion is arrested, the bulk of the topsoil (upper 4 feet of weathered rock) in which the Douglas Fir and Redwood are rooted on hillsides will be destroyed over large parts of the Eel and Mad River drainages within a few hundred years These areas may then become barren rocky hillsides Regeneration of the forest under these conditions will be difficult if not impossible in the present climate, and both the forest industry and water storage capability of the region will be seriously impaired

" This is not an idle alarm, for it is precisely what happened to Greece and Persia in the two centuries preceding the birth of Christ and what happened to the coastal mountains of Yugoslavia during the 12th to 17th centuries, when the Venetians were building their navies from the oak and beech forests of Dalmatia Ancient records show that these three regions were once forested Yet southern Iran is now a region of barren rocky mountains, the mountains of Attica are similarly barren and rocky, as are those of the coast of Dalmatia, where the present government of Yugoslavia is trying reforestation If we leave the green hills of California in a similar state, future generations will have little to thank us for

"In conclusion we wish to remind the committee that the geologic investigation reported here is a preliminary attempt to evaluate the sediment yield data, and that we have done no work in the field to find out directly where this sediment is coming from Although we have used rather different methods, our work does tend to confirm the conclusions of Wallis (1965) The sediment-yield figures are so large, and their implications are so alarming, that an immediate research program to determine the sources of the sediment is called for In view of the present knowledge of the effect of logging methods on sediment yield (Ursic, 1965, Fredricksen, 1965, Copeland, 1965, and others) it seems imperative that measures be taken to ensure that logging and roadbuilding in the northern coast range drainages be conducted in such a way as to keep sediment losses to a minimum " Transcript, pp 152–172)

Mr. Walter T. Shannon, Director, California State Department of Fish and Game

". The Department of Fish and Game strongly advocates good watershed management because fish need clean streams Unfortunately, careless heavy earthmoving equipment operations have damaged many California watersheds and streams since World War II

"Turning first to logging, we have some information on the extent and the nature of the problem In 1962, for example, sections of 33 streams, totaling roughly 55 stream miles were damaged, in the locations shown in Figure 1 A report on this study is available

"Your field trip tomorrow will illustrate the nature of the damage, which is of two main types physical destruction of the stream channel and sedimentation of gravels

"Heavy equipment working in or along a streambed causes the most obvious damage Logging roads, skid trails, and landings located in the streambed or on its immediate banks are particularly bad Streamside vegetation is destroyed The streambanks are obliterated Sediments fill pools and smother riffles Essential shelter for trout is gone, so the stream no longer holds many fish Damage in the 55 miles of stream in 1962 fell mainly into this category

"Accelerated erosion from disturbed watersheds intensifies the damage, both in the damaged section and downstream Sediment fills the spaces among the rocks in the riffles, the main food producing area of a stream For example, a square foot of riffle may produce 100 times as many of the aquatic insects a trout eats as a square foot of mud bottoms The sediment also fills in the hiding places trout require to survive, and it smothers the trout eggs in the gravels. Studies have shown a close correlation between the percentage of eggs in a redd which dies, and the amount of sediment present

'In order to define more clearly the extent of damage for the committee, we surveyed four drainages last month the Garcia River, Mendocino County, Redwood Creek, Humboldt County, North Fork of Battle Creek, Shasta County, and the Middle Fork Mokelumne River, Calaveras County Each one represents a reasonable good sample of a big problem area (See Appendix to this Statement)

"A biologist inspected each drainage in its entirety, classifying stream sections into four categories 1) severely damaged, 2) moderately damaged, 3) lightly damaged, and 4) undamaged The methods and criteria used are outlined in the resulting report The results are rather discouraging, particularly on the north coast In the Garcia watershed, which we believe to be fairly typical of the situation in Mendocino and Sonoma Counties, 37 miles were severely damaged, 15 moderately damaged 37 lightly damaged, and 15 miles undamaged Comparable figures for Redwood Creek, north of Eureka, were 64, 4½, 6, and 9½, for Battle Creek, east of Redding, 5, 2½, 46¼, and 32, and for Middle Fork Mokelumne River in the central Sierra, 2 5, 38, and 9 respectively

"Fish population studies this summer in severely damaged and undamaged control sections of Battle Creek, Shasta County, and Forest Creek tributary to Middle Fork Mokelumne River, revealed roughly five times as many pounds of trout per unit area in the undamaged sections Loss of shelter, that is of places where fish of any size will hold in a stream, seems to be a significant cause of the decline in damaged areas

'Fortunately, the picture is not black throughout California The National Forest Service takes good care of its land, emphasizing erosion control and requiring loggers and roadbuilders to follow good practices So do many private landowners They tend to be the larger, more substantial concerns, which look to the future of the wild lands they manage, not only in terms of timber production, but also in terms of watershed, recreation and land values

"Examples which have come to our attention include the Masonite Company, Michigan-California Lumber Company, the Neilson Company, the Southern Pacific Company, and the Pacific Gas and Electric Company There are, of course, others These good logging operations demonstrate that the damage can be largely prevented, given the desire to do so Unfortunately, many other private landowners seem to lack the desire

"The fish in the streams belong to all the people of California The Department of Fish and Game is responsible for protecting them However, we cannot solve problems of land management on other people's property, only the landowner can do this, either voluntarily or under pressure from government Our responsibility nevertheless requires that we identify the damage and request relief, in the public interest

"Most recently, the Forest Rules Committees invited recommendations for changes in the rules from all interested parties We proposed amendments to alleviate stream and watershed damage, developed in consultation with U S Forest Service experts This approach to erosion control requires progressively more careful operations as the erosion hazards increase with steeper slopes, heavier precipitation, and unstable soils

"We recommended a few simple regulations suggested by federal watershed management experts which could prevent much of the damage One proposed amendment would reduce erosion on temporary logging roads and skid trails, by increasing the numbers of waterbreaks, based on slope, to drain water off temporary roads and skid trails

"Another would keep tractors out of the streams, except for necessary crossings Nothing now prevents a logger from using a stream as a skid trail, a temporary logging road, a landing area, or a place to fell trees and to remove their limbs, as long as he leaves clear passage for fish

"A third recommendation was for buffer strips along streams In some instances buffer strips are now being provided Recognizing the financial problem faced by the industry, we recommended a buffer strip requirement which would only require loggers to keep heavy equipment away from the stream as much as possible, to leave nonmerchantable timber, and to pull merchantable timber carefully away from the stream in harvesting it

"Buffer strips not only protect the stream and its banks from damage by heavy equipment; they also reduce subsequent erosion from the hillside above, stabilizing the whole area while it heals Buffer strips are essential, although we recognize that they may involve some serious problems for the industry, by way of taxation and lost timber values

"Finally, we recommended against tractor logging on slopes over 50 percent It causes one of the worst erosion problems We think it should be prohibited, in order to stimulate the industry to develop alternative methods Experiments in southern Oregon with high line in one case and large balloons in another appear to be approaching a satisfactory solution We understand the balloon rig can lift 20,000 pounds These new methods have the tremendous advantage of eliminating all skid trails and nearly all temporary logging roads

"The four rules committees and the State Board of Forestry have not yet acted formally on any of our suggestions There is considerable doubt under the specific language of Section 4542 whether the rules needed to protect the streams can be adopted by the committees

"No discussion of this topic would be complete without brief mention of the laws in the Fish and Game Code related to stream protection Section 5948 states: "No person shall cause any logjam in any stream " Passed in 1957, this law stopped the widespread practice of leaving streams full of debris after logging, to the extent that the Wildlife Conservation Board now has a $500,000 clearance program, utilizing inmate labor Unfortunately, the cure is sometimes worse than the disease, for game wardens have been uaable to prevent many careless loggers from handling the problem by cleaning out the channel with a bulldozer after they are through This complies with the law, but compounds the damage already done by removing any remaining cover for fish from the bed and the banks of the stream Currently the Attorney General is considering civil action against landowners for permitting jams to exist on their property under the public nuisance provisions of Sections 3479 and 3480 of the civil code and our Section 5948, if the owners refuse to correct the situation voluntarily

"Section 5650 can sometimes be used in situations where logging causes stream pollution It states, "It is unlawful to deposit in the waters of this State : (f) any substance deleterious to fish " However, in practice its application is quite limited

"Fish and Game Code Sections 1600, 1601, and 1602 require anyone substantially altering a streambed to notify the Department of Fish and Game in advance We then recommend actions to prevent damage These sections, added to the code in 1961, have proved extremely useful They enabled our field men to spot operations early enough to work informally with cooperative contractors to minimize damage, and to take what limited legal action they can with uncooperative individuals However, it is useful only for informational purposes Our recommendations can be ignored with impunity, unless another law is violated

"Experience with loggers in relation to Sections 1600-2 has run the gamut from failure to notify to full cooperation with the Department Although there have been some benefits, these sections have not and should not be expected to stop the severe stream and watershed damage caused by operators who are unconcerned about it, since compliance is voluntary

"When we requested the changes in the Forest Practice Rules mentioned earlier, industry representatives suggested as an alternative amending the Fish and Game Code to prevent stream damage We believe such regulations are needed in some state code

"In conclusion, my department is greatly heartened by your committee's fresh approach to this challenging problem, which has been so frustrating for our field men, and we are anxious to help in any way we can with the difficult task you have undertaken " (Transcript, pp 272-284)

"APPENDIX TO THE STATEMENT OF THE DEPARTMENT OF FISH AND GAME

"Four stream drainages were surveyed during July 1966 to determine the extent of damage from past logging and other activities The streams are the Garcia River, Mendocino County; Redwood Creek, Humboldt County; North Fork of Battle Creek, Shasta County; and Middle Fork of Mokelumne River, Calaveras County

"A total of 328 miles were surveyed Of this, 108 miles (33%) were severely damaged, 27 miles (8%) were moderately damaged, 127 5 miles (39%) were lightly damaged, and 65 5 miles (20%) were undamaged

"The most severe damage occurred in Redwood Creek and the Garcia River, both in the redwood forests of the Coast Range

"In the North Fork of Battle Creek and in Forest Creek, tributary to the Middle Fork of Mokelumne River, there was five times the poundage of trout per unit area in undamaged control sections as in severely damaged areas

"INTRODUCTION

"The Department of Fish and Game is greatly concerned about the loss of good stream habitat due to poor watershed management practices, which have been causing serious damage for many years Logging, roadbuilding, dam construction, and overgrazing are all involved

"Stream damage in California is not new Testimony given to the Senate Interim Committee on Stream and Beach Erosion (Senator A A Way, Chairman) in 1956 indicated that 925 miles of streams had been damaged or destroyed by early 1955 The estimate by the end of 1956 was over 1,000 miles of streams damaged

"A survey in 1962 indicated 33 streams totaling about 55 miles, were damaged that year (Calhoun, Alex, and Charles Seeley 1962 Logging damage to California streams in 1962 Calif Dept Fish and Game, Inland Fish Admin Rept No 63-2, 15 pp (Mimeo))

"In order to define the present extent of damage in a preliminary way, four streams were surveyed during July 1966 They include the Garcia River, Mendocino County; Redwood Creek, Humboldt County; North Fork of Battle Creek, Shasta County; and Middle Fork of Mokelumne River, Calaveras County

"We believe these streams are reasonably representative in their areas They were surveyed by making observations in and along the stream channels Information concerning each section of each stream was recorded on stream survey forms, and included observations on degree of siltation, amount of shelter, cover, pools, debris and barriers in the stream channel, extent of streamside canopy, numbers of diversions, fishes present and causes of damage From information collected, the various stream sections were classified as follows: severely damaged, moderately damaged, lightly damaged, or undamaged.

"Classification was based on the following criteria:

"Severely damaged:

(a) 75–100 percent of the stream bottom was covered with silt,

(b) streamside canopy and pools were totally eliminated, or

(c) there was a total loss of shelter for fish

"Lightly damaged:

(a) 50 percent or less of the bottom was covered with silt, together with a partial loss of pools or streamside canopy,

(b) shelter was partially removed,

(c) pools were eliminated,

(d) canopy was removed, or

(e) debris was present and abundant in stream channel

"Moderately damaged:

Intermediate between the lightly and severly damaged categories

"ACKNOWLEDGMENTS

"John Thomas surveyed the Garcia River, Richard Hanson supervised the surveys of Redwood Creek and North Fork of Battle Creek, and Eric Gerstung surveyed the Middle Fork of Mokelumne River

"RESULTS

'A total of 328 miles was surveyed Of this, 108 miles were severely damaged, 27 miles were moderately damaged, and 127 5 miles were lightly damaged Only 65 5 miles, 20% of the total, are undamaged at the present time One-third of the total has been severely damaged

"Of the four drainages surveyed, Redwood Creek showed the most severe damage, followed by the Garcia River Significantly, both of these streams are in the redwood region of the Coast Range Steep slopes of highly erodible materials are characteristic of this region

"Most of the damage to the North Fork of Battle Creek and the Middle Fork of Mokelumne River was classed light These streams, in the Cascade Range and the Sierra Nevada respectively, are in areas with gentler slopes and generally less erodible soils than those of the Coast Range

"FISH POPULATION SAMPLING

"Fish populations were sampled in sections of the North Fork of Battle Creek and Forest Creek, tributary to the Middle Fork of Mokelumne River, to determine the numbers and weight of trout in undisturbed and in damaged sections of the streams Results from both streams indicate approximately five times as much trout by weight, in undamaged streams as in severely damaged sections Both streams were sampled with an electro-shocker in 200- or 300-foot sections

"WATER TEMPERATURES

"The effect of removal of the streamside canopy on water temperatures was measured in Forest Creek, Calaveras County Complete removal of shade resulted in undesirable temperatures During the late July-early August period, water temperatures ranged from 70 to 73 degrees F in shaded portions In the unshaded portions, temperatures increased to 75 to 78 degrees F

"Temperatures increased about 0 5 degrees F per mile in shaded portions of the stream, but increased from 1 5 to 2 0 degrees F per mile in the cleared or partially cleared areas

"DISCUSSION

"GARCIA RIVER

"Most of the severely damaged areas in the Garcia River are the result of current operations Sidehill slopes are very steep, and many of them are laced with skid trails and logging roads There has been little effort to keep heavy equipment out of the streambeds, and in numerous instances roads have been constructed in the stream channels, oftentimes moving the stream out of its natural channel

"The Garcia River has runs of silver salmon and steelhead rainbow trout, and some headwater streams contain resident rainbow trout A large portion of the streams that were suitable for spawning and as nursery areas for salmon and steelhead have been severely damaged Suckers now appear to have replaced salmonids as the dominant fish in a large section of the Garcia River This can be attributed directly to deterioration of the stream habitat

"REDWOOD CREEK

"Historically, Redwood Creek supported fair runs of king and silver salmon, steelhead rainbow and coastal cutthroat trout Resident rainbow and cutthroat trout also inhabit upper reaches of the basin King salmon spawn in the main stem of Redwood Creek, whereas the other species mainly spawn in the tributaries

"The main stem of Redwood Creek has undergone extensive change in recent years Large amounts of sand, silt, and gravel have been deposited in the channel, and as a consequence, the streambed has widened and raised Pools are almost nonexistent During low flows, the water is exposed to direct sunlight almost throughout the entire length of stream Streamside vegetation is presently too far from the live stream to be of much benefit The river channel is largely unsuitable as a nursery for young salmon and steelhead in its present condition

"Both manmade and natural conditions have contributed to the deterioration of Redwood Creek Major floods in 1955, 1964, and 1965 washed enormous amounts of material into the main stem, filling pools and widening the channel Logging activities, particularly the construction of roads and skid trails and the removal of vegetative ground cover, have been a major factor contributing to increased erosion and land slippage

"NORTH FORK OF BATTLE CREEK

"Resident trout, both rainbow and brown, are important game fish in the North Fork of Battle Creek drainage The Department of Fish and Game stocks catchable-sized rainbow trout in several streams in the area surveyed to provide recreation to the many anglers who fish here

"Logging has been conducted since the 1800's in the Battle Creek drainage; however because of a number of factors, erosion problems are not as great here as in many other localities Extensive damage does not generally occur due to any particular disturbance, although there was one bad operation along the creek in 1965 Damage due to logging has been localized and relatively minor in this area as a whole

"MIDDLE FORK OF MOKELUMNE RIVER

"Resident rainbow and brown trout are found in this drainage Catchable-sized rainbow trout are also planted in several stream sections All of the streams flowing through lands logged in the last 20 years have been damaged to some degree Most of the damage has been caused by heavy equipment operations within the stream channels, and by removal of the streamside canopy In this drainage, no stream disturbance other than siltation from upstream logging operations was noted on U S Forest Service lands

"CONCLUSIONS

"1 Logging operations are damaging streams throughout much of northern California

2 The most serious damage is being done in the Coast Range

3 Most of the damage results from removal of vegetation along the stream banks and on the hillsides, and heavy equipment operations in the stream channels

4 Excessive erosion fills pools and makes stream habitat less suitable for trout and salmon

5 Removal of the streamside canopy results in increased temperatures that approach the lethal limit for trout

6 Trout populations are reduced significantly in severely damaged streams "

Dialogue between Assemblyman Z'berg and Mr. Robert Jones, Deputy Director, California State Department of Fish and Game

ASSEMBLYMAN Z'BERG: "Your concerns about this, have they been forwarded to the people that run the various districts for the Forest Practices Act?"

MR. JONES "Yes, they have."

ASSEMBLYMAN Z'BERG: "What has been your experience after you have voiced your concern?"

MR JONES "Well, our experience has been that they say under the Forest Practices Act that they can concern themselves only with timber production, and that this consequently is a problem that Fish and Game has " (Transcript, p 285)

Dr. Kenneth L. Bowden, Assistant Professor of Earth Sciences, Northern Illinois University, former specialist in hydrology research, U.S. Forest Service, Pacific Southwest Forest and Range Experiment Station, Berkeley

" Forest practices do greatly influence the quantity quality, and timing of streamflow and sediment yields from watershed units This fact has been established beyond a shadow of any doubt However, our knowledge of the details of these influences is still incomplete and sometimes controversial For example, in my opinion, the removal of forest cover increases flood peaks no matter what the size of the storm Not all of my professional colleagues would agree with this statement and I do not wish to explore this topic further until the results of my five year investigation are complete However, Mr Henry W Anderson's work in western Oregon indicated an increase in the peak discharges of all floods of approximately 100 c f s for every square mile of clear-cut forest or its equivalent

"Hydrologically, every site will behave individually influenced by its particular set of physical characteristics soil, geology, climate, topography, and vegetation This physical setting constrains the hydrologic response from varying land use practices, including logging The variability of sites must be considered in planning logging operations in a complex environmental mosaic Broad regional rules are inadequate as a basis for conservation requirements

"Logging and road construction are instrumental in producing the abnormally high rates of accelerated erosion such as are found along the north coast When I say logging I include poorly planned type conversion from forest to grass This excuse is used to permit clear-cutting without the restraints of the minimal rules of the Forest Practices Act Frequently, this is an open invitation to landslides and erosion as well as a misuse of valuable forest soils

"Dr Wallis, in his dissertation, pinpointed one type of logging, steep grasslands, and fires as chief contributors in accelerating natural erosion rates A frequently missed observation in his thesis is that most logging did not significantly increase sediment rates Increased sedimentation was associated only with logging where the roads and landings were predominantly located in draws or intermittent stream channels Thus about 60 percent of the logging he studied did not contribute sediment and only 40 percent did A word of caution is in order, if a logger insists upon placing landings in draws, he may also design poorer culverts, roads, etc Conversely, ridgetop logging might imply cable logging techniques and better culverts Some of these attributes might not show up on aerial photographs such as Dr Wallis used in his thesis However, ridgetop logging and associated characteristics did not produce measurable increases in sediment

"Draws are not stream channels as defined in the Forest Practice Rules for Redwood Forest District (rule 914 9) They may flow only for about one month out of the year and yet, are the chief contributor to sediment loads

"Landslides are a major source of sediment We know that mass movements of rock and soil debris are common throughout the north coastal mountains even under undisturbed vegetation However, logging increases the numbers and rates of movement of landslides markedly After the 1964–65 flood, one region in southern Oregon was critically studied Conditions were similar to those found in California Seven hundred and twenty-five (725) were classified as to location Of these 22 percent were on undisturbed sites, and 78 percent were associated with road failures (54%) and logging (24%) Remember also that most of the area was undisturbed

"A local example of the increase in sediment yield due to logging is Castle Creek near Donner Summit Logging of a small portion of the headwaters in an above average logging operation, increased sediment yields about 17 times A couple of years later, the experiment was lost as debris carried down from highway construction of the new Interstate Highway over Donner Summit washed out the gauging flume This flume had been in operation for a decade Logging was a minor irritation as far as sediment loads are concerned in comparison to the devastating increase due to highway construction I might add that this flume was destroyed after the Highway Department had constructed a very large debris basin upstream of the flume " (Transcript, pp 185–187)

Dr. Hans Jenny, Professor of Soil Chemistry and Morphology, Department of Soils and Plant Nutrition, University of California at Berkeley

" Changes in soil nitrogen and organic matter under forest practices

"Forest practices are often judged on the basis of their erosion damages Leaving aside the striking cases of soil destruction by roadbuilding and use of heavy logging machinery, it is by no means obvious why the cutting and removing of trees as such should initiate soil instability and erosion

"We have approached this problem from the viewpoint of the forest ecosystem, which considers vegetation, animal life and soil together Especially, we have studied the behavior of the crucial element nitrogen which is needed for plant growth and which is often deficient in California soils

"By harvesting entire trees, digging out all roots and collecting the soil we have assembled a detailed inventory of the nitrogen content of forest ecosystems For instance, for a 120 foot Ponderosa pine in Lake County, the following nitrogen (N) values were obtained

Trunk, branches, needles, bark	263 lbs N/acre
Forest floor (litter on ground)	251 lbs N/acre
Roots	135 lbs N/acre
Mineral soil (to 5 ft depth)	3,200 lbs N/acre
Total	3,849 lbs N/acre

"Clear-cutting following by burning will eliminate from this ecosystem a large portion of the 514 pounds of N/acre contained in the above-ground material Moreover, the soil will be deprived of the annual litter fall (needles, etc) which amounts to about 2500 lbs/A of organic matter in this example Contrary to general opinion, our experiments on burning did not reveal any loss of nitrogen from the mineral soil, even under heavy fires (see Soil Sci Soc Amer Proc 26:200–202, 1962)

"Late in 1965 we visited a forest area east of Camptonville which had been logged and which had burned and was then cleared and now the red clay loam soil lay completely bare Among scattered groups of tall pines still standing, six soil samples were collected on a volume basis to a depth of 8 inches on level areas and on slopes up to 30 percent The average nitrogen content was high, 3,538 pounds per acre The soil had an excellent crumb structure

"This summer, the area was revisited to see how the exposure to winter rains, snow melt waters and intense sunlight had affected the soil Visually no signs of erosion

could be detected, that is, there were no gullies, no washes Seven soil samples were collected in identical manner in bare areas in the vicinity of the standing trees The average nitrogen content was only 2,234 pounds per acre, in other words, a statistically significant loss of nitrogen of over 30 percent was recorded This nitrogen loss was accompanied by a corresponding depletion of soil organic matter as revealed by total carbon analysis

"Noteworthy is the fact that these losses of nitrogen and organic matter were not restricted to slopes, but occurred on nearly level ground as well We conclude that organic matter in the soil must have been oxidized as a result of removal of the protective cover of vegetation Measurements made elsewhere indicate that it takes nature from 1,000 to 2,000 years and more to build up the nitrogen content of the soil to a stationary state as it presumably exists in the unlogged forest that was sampled In a relatively short time period, this valuable reservoir of nitrogen level is expected to decline further, though at a slower rate More information from other areas and over a sequence of years is urgently needed

"Extensive pot test experiments in the greenhouse (Hilgardia 20 1–8, 1950, Soil Sci 1966) indicate that in California forest soils the yield of grains and grasses is proportional to the nitrogen content, and Professor Zinke has demonstrated (Proc 7th Int Congr Soil Sci 1960, Vol 3 411–418) that the site index for Ponderosa pine is correlated with soil nitrogen Accordingly, the nitrogen losses observed have diminished the productive capacity of the forest soil, even in absence of noticeable erosion

'Why didn't we observe distinct signs of erosion" As said, the original forest soil is well granulated and even the bare soil still has a good crumb structure which acts as a soil stabilizer In good soils in general the tiny mineral particles (clays) are held together by large threadlike organic molecules which produce water-stable aggregates When these organic binding substances are being oxidized by microbes, and when fresh supplies of litter fall are lacking, the aggregates will break up and the clay particles will disperse in the runoff water This incipient erosion may at first be invisible at the sites, but sooner or later the clay particles will be detected as muddy creeks and streams

"As is common in agricultural research, modern-type erosion plots should be installed in logged lands to record these dynamic processes and thereby help in the search for efficient watershed management practices " (Transcript pp 223–225)

Mr. Gordon P. Robinson, Professional Forester; former Forester, Southern Pacific Company

" The Forest Practice Act has been in effect for about 20 years, and we can now report decisively that it has been a failure The act has failed to bring about sustained yield management of our private forest lands It has failed to prevent destruction of aesthetic values and the natural habitat of fish and wildlife In many places it has failed to prevent soil erosion and subsequent reduction of the capacity of our wild lands to grow timber and to hold water, and has permitted streambeds to fill with silt, gravel and debris at an abnormal rate, threatening ever increasing damage on downstream flatlands during heavy storms

"While it might be argued that the act was never intended to accomplish all these things, it would be fruitless to debate the point Clearly we must now find ways to promptly and effectively bring about satisfactory management of the state's private timber and other wild lands

"Damage to aesthetic values, and the threat of further flood damage due to silt-filled streambeds, needs no elaboration here I understand these matters will be explained to you during a two-day field trip following this meeting

"The Forest Practice Act has failed to prevent erosion and site deterioration This is particularly true in the north coast area, although many instances of serious permanent damage to soil from careless logging exist throughout the state The productivity of forest soils is dependent upon the top few inches of material immediately beneath the leaf litter on the forest floor If through careless logging this productive layer is bulldozed away in yarding, or if the land is left in such condition that it slowly washes away, the growth capacity of the forest can be very greatly reduced

"A drop from site class 170 to 100 for Douglas fir would not be at all surprising on the seriously eroded timberlands of Humboldt County, for example (The numbers are indices of soil productivity and represent the height of dominant and codominant trees at 100 years of age) This decline would result in a reduction in anticipated yield at 100 years from 124 M ft BM per acre to only 47 M ft BM, a drop in productivity of 60 percent What site deterioration has actually occurred can be readily determined by simple measurements of height and age of second growth Douglas fir and comparing the results with site measured before logging and shown on the state Soil-Vegetation Survey maps with which I am sure you are familiar

'While I am not prepared to dwell on the techniques whereby a satisfactory level of private forest management may be required or induced, it might be helpful to describe some goals you may bear in mind while considering revision or replacement of the Forest Practice Act

"The first goal is to put foresters, rather than businessmen, in charge of the forest

'A more specific goal is to achieve frequent light cuts in our forests instead of heavy cuts or clear cutting Successful management of our California forests requires individual tree selection, removing from 10 to 30 percent of the volume of the virgin forest, or clear cutting in small patches not exceeding five acres in certain forest types or some situations This silviculture has many advantages besides largely preserving the aesthetic values Among the more obvious, it permits the forester to leave adequate seed trees trees in sufficient quantity, properly located and of the right age and condition to best serve their purpose The closed canopy maintained by light cuts tends to maintain the moisture content of leaf litter and debris, thus reducing the damage caused by fires Furthermore, managing the forest in this way provides for a high rate of growth on the land immediately after logging Land which has been heavily logged or clear cut, requires far too long to produce a merchantable crop for inducement to private enterprise, except for pulp, and that only on the most productive land

'A third goal is to require or induce every owner of commercial timberland to limit his cut to the productivity of his land, or to hold his cut below growth where lands have been depleted or are otherwise understocked Owners of large holdings should not be permitted to balance off cut in one area with growth in another, but should be required to match cut to growth in each working circle or local area

"A fourth goal is to preserve the scenic values of the wild lands, particularly along streams roads and trails to preserve trees and shrubs in approximately their natural condition in these places

'Finally, it might be your goal to preserve the soil and its productivity by requiring sufficient advance planning of roads, skid trails and landings, so as to minimize erosion damage and damage to young growth and residual timber

"Perhaps the way to achieve these goals is to require that all logging in California be preceded by a complete plan, that all timber be marked, all roads, landings, and skid trails be laid out, that erosion control measures be planned and the whole proposal inspected and approved by a representative of the State Forester or a qualified professional forester before any logging or even construction in preparation for logging be permitted Inspection during the following logging will naturally also be required

"However you resolve the conflicts that are being exposed in this hearing, it is urged that you call upon specialists in the various relevant academic fields for professional advice I have in mind such people as Kenneth Boe of the Redwood Experimental Forest near Arcata, whose recent study shows that true selective logging in

the redwoods does not cost any more than clear cutting H A Fowells and G H Schubert of the California Forest and Range Experiment Station prepared a remarkable publication in 1956 entitled 'Seed Crops of Forest Trees in the Pine Region of California', which is basic to intelligent marking of timber if satisfactory natural reproduction is to be achieved These and men like them, working with professional foresters who have authority to go with their responsibilities in managing our private commercial forest lands, can do the job

"Some will argue that private enterprise cannot afford to carry the high inventory of timber required for individual tree or group selective management, and that sustained yield management designed to maintain the forest in some semblance of its primeval condition is not financially feasible Some will argue that the measures I propose are too cumbersome and costly for practical business But I wish to testify to the contrary

"From 1949 until early this year I served as forester for one of the major owners of forest land in this state We consistently limited cutting to the estimated sustained yield capacity of the land We never allowed logging along streambanks We consistently marked the timber to be cut laid out skid trails, located landings, planned roads with proper drainage structures We took all the precautions against soil erosion and damage to the land I have referred to in the goals I have suggested and many more not mentioned I want most of all to assure you that with this high type of forestry we always made a good profit in our timber management business "
(Transcript pp 233–238)

Dr. Donald H Gray, Assistant Professor of Civil Engineering, University of California at Berkeley

" I appreciate the invitation to testify before the Assembly Subcommittee on Forest Practices and Watershed Management Unfortunately, I am leaving the Bay Area in August for a faculty post at the University of Michigan, my remarks are confined, therefore, to a brief written statement regarding the possible effect of logging on slope stability

"One of the interesting aspects of landscape evolution is the response which a change in environment elicits in the landscape or terrain Each time the equilibrium of an environment is disturbed certain forces or processes are set in motion which return that environment to a new state of equilibrium A regional uplift of the land, for example, will cause a river to incise its meanders deeper in the earth until the river reaches a new grade Likewise, a steep hillside that is denuded of its forest cover will experience accelerated mass wasting and erosion which in turn flattens or reduces the slope until it is again in equilibrium with the rest of its environment

"The evidence for these tendencies is well known to students of geomorphology, and, in the case of denudation, is quite dramatically illustrated on the western slopes of Mount Tamalpais in Marin County Here the heavily forested slopes are very steep and apparently quite stable, whereas the grass covered slopes in the area are relatively flat and subject to gullying and considerable downslope movement I believe the same lesson applies to the north coast ranges, viz, that uncontrolled cutting and denudation of steep forest slopes can only hasten and intensify erosion and downslope movement with the subsequent threat to the present ecology and watershed uses of the area

"The relation between slope stability and poor logging practices can also be considered from a strictly engineering viewpoint Slope stability studies which include the prediction of slides and slope failures are of direct interest to civil engineers Of course, not all slopes are readily amenable to engineering analysis, but as a general rule the danger of slope failures is heightened by any combination of factors that tend to decrease the strength of a slope mass or increase the stresses acting on it As a civil engineer, I cannot picture any logging practices that would tend to increase slope stability, on the contrary, the construction of poorly designed logging roads and the movement of heavy machinery are some of the factors that would tend to weaken slopes

"In summary, I believe that unchecked logging practices constitute a potential threat to slope stability and, ultimately, to good watershed management and that this is another reason for requiring more stringent controls on logging operations "
(Transcript, p 495)

Mr Charles Connaughton, Regional Forester, United States Forest Service

" The Forest Service recognizes a variety of problems concerned with the management of forested watersheds within the national forests These problems include our concern with soil stability and runoff of potential floodwaters In one way or another these matters affect most of the people of California because of their impact on water supply for irrigation industrial and domestic purposes As for forested land not in national forests, we aren't prepared to pass judgment on the factors related to watershed management We are well aware that there may be similarities with national forests and also that very real differences may exist

"The national forests yield or supply water, timber, forage, recreation, and big game or other wildlife—all of which we consider to be renewable resources or services By legislative direction all of these public resources and services are managed under a basic policy of multiple use and sustained yield The objective of this policy is to obtain utilization of renewable resources at a high level of continuous productivity with a minimum of conflict between the various uses and services In addition, the national forests yield nonrenewable minerals

"Under multiple use management, the utilization of all resources is harmonized with watershed management In this respect, I understand that committee is particularly interested in the relationship of current logging practices to such watershed management items as flood control and possible impact of various practices on fish and wildlife

"Actually, the Forest Service is very much aware of its responsibilities to manage the land so that the soil and water resources are not seriously and permanently damaged This responsibility is emphasized by the fact that the headwaters of most major streams in California are within the national forests Our attention to this area has increased in recent years and our performance has improved as new emphasis has been placed on water values and as new knowledge in land management has been obtained We will expect to increase the level of our performance as the knowledge and methods of the future become available to us

'As for actual management practices, we currently have objectives which will insure that the watershed values will be either improved or at least maintained when timber is harvested To understand the possibilities in this area we are installing a system of test or 'barometer' watersheds to determine new watershed management facts In timber sale and timber access road planning we ascertain if contemplated actions will result in serious damage to soil and stream courses We avoid critical watershed areas where such significant damage seems imminent These areas will not be operated unless methods are developed at some future date which will insure that timber harvesting can be done satisfactorily

"Along this line, we have just completed testing a method, called 'Skyline Logging' This system, if feasible, will permit logging of steep slopes with less soil disturbance than previously

"We do not permit ground skidding across streams We allow no skidding up and down stream courses This minimizes the possibility of logging debris or trash deposition in the streams To maintain natural water temperatures

and protect spawning beds from siltation we maintain a streamside fringe of natural vegetation, including trees This does not preclude the harvest of some mature trees where this practice is physically possible without damaging the stream or destroying desirable remaining vegetation, including streamside brush cover The objective is to leave a strip of riparian vegetation or other growth in place along streamsides to provide shade and to help maintain the stability of streambanks

'On areas immediately adjacent to routes of travel and other areas of significant public use, we have additional protective requirements Here, the maintenance, or enhancement of natural beauty following logging, looms large and necessitates measures above those needed for the protection and perpetuation of the natural stream courses On these areas, only individual trees are selected for cutting This is in contrast to clear cutting which sometimes is the proper method from a strictly silvicultural standpoint If needed, some clear cutting may be necessary for the creation of viewpoints, car parking areas, camp or picnic areas, or to remove timber epidemically attacked by forest pests or killed by fires or floods Where the concentration of public use is the highest, disposal of all logging and construction slash is required Some of these practices which protect natural beauty also serve to protect watersheds

"A transportation system is a prerequisite for both the management and the public use and enjoyment of national forests This system includes permanent roads, temporary roads, and trails Roads, in particular, can have a serious impact on watersheds To minimize this impact, we rely on soil surveys to warn us of unstable soils with the purpose of avoiding such areas when selecting road locations In all cases, we try to locate roads an adequate distance from streams to avoid siltation from the road surface or banks Timber clearings when roads cross streams are kept to a minimum width and precautions are taken to prevent sediment from the construction of these small openings or crossings from reaching the stream During and after construction, fill slopes of roads are treated and seeded to hold the soil in place, as needed All roads built for logging, which are to be retained in the permanent system, are designed and constructed to provide adequate drainage facilities, consisting of rolling dips, side ditches, culverts, and bridges This minimizes erosion and siltation from the road For temporary logging roads obliteration treatment is carried out to hasten the return of the clearing to a forested condition

'On major road crossings of streams, the California Department of Fish and Game is consulted concerning culvert installation to insure adequate and proper structures for the migration of fish On steep slopes where deposition of construction material could endanger a stream, we require that it be hauled away to a safe place of deposit, instead of permitting side-casting with jeopardy to the stream

"Of very real significance is the fact that we construct barriers across all skid trails and temporary roads which will divert accummulated water and disperse it over the soil with minimum erosion We endeavor, of course, to so locate all skid trails, roads, landings, and other necessary soil disturbances so that a minimum adverse impact is made on the watershed By judicious attention to these details of logging, watershed management during and after logging can be greatly improved Where vegetation is destroyed by concentration of work, as is necessary at such places as the log landing, we frequently try to hasten natural restoration of plant cover by planting

"The practices I have outlined briefly are highly desirable to secure the sustained yield-multiple use management of national forest lands in California They have been developed by extended observation, research, and experience They aren't static and constantly we are adjusting and refining to obtain better results Changes will continue to be necessary if we are to make the most out of all the renewable resources on our national forests for America's long-range benefit " (Transcript, p 358–362)

Dialogue between Mr. Connaughton and members of the subcommittee

ASSEMBLYMAN Z'BERG· "I gather, or correct me if I'm wrong, that the things you were just talking about are the same kinds of things that were advocated by the Fish and Game people, and that you presently do, is that right?"

MR. CONNAUGHTON. "They tie in very closely. "

ASSEMBLYMAN ALFRED E. ALQUIST· "Are these written into federal law or are these administrative regulations?"

MR. CONNAUGHTON· "No They're purely administrative regulations The roads are located with the soil and water needs in mind as well as the logging requirements If a road is to be retained after logging is completed, the road is so designed that it has adequate drainage facilities with rolls and dips and side ditches, culverts, and bridges that are necessary for proper drainage For temporary roads, obliteration is carried out as needed On major stream crossings we get together with Fish and Game to be sure that our thinking is together in relation to the requirements and needs in terms of bridges and culverts necessary for the fish requirements of a particular stream in question Following logging, barriers are constructed on skid trails and temporary roads We endeavor to locate these to begin with so that erosion will be a minimum, but nonetheless, they do accumulate a certain amount of runoff which is diverted By judicious attention to postlogging conditions, the scars of logging can be held to an acceptable minimum Where vegetation is destroyed in such places as landings or accumulation of work centers, we do try and revegetate by planting as necessary

ASSEMBLYMAN E. RICHARD BARNES "Do you get this in the contract with the logging people?"

MR. CONNAUGHTON. 'In part, and in part by enforcement Now these, in general, have developed with time These aren't things that we knew overnight, we've been in the process of timber sale work for 60 years and have endeavored to work these methods out in such a way that it would meet overall general acceptance of public land management in terms of public need For the most part we have the firm and strong conviction that lands can and are being used adequately We do hope that as you consider the various problems of forest land management in California, it will be uppermost in your mind that this large block of land, which is so essential to the economy and welfare of the state, can and must be managed in such a way that its utility and various services can be utilized to a maximum, consistent with the conflicts which are bound to occur in certain instances, and ensuring that the land meets requirements not only in terms of utility but in terms of its appearance and beauty Our experience has shown that we can do this We can do this on the public lands, and we have many demonstrations that show that it can be done We are under no illusions, we're not saying that everything we've done has proved to be perfect We've learned much of this the hard way and we've made some mistakes, but we do think that it can work in the long pull "

CHAIRMAN CHARLES WARREN. "Earlier testimony indicated that under your regulations tractor logging on slopes with the grade in excess of 30% was not permitted Was that correct?'

MR. CONNAUGHTON. "This is true in limited areas There are certain areas in which we have no control of tractor logging in relation to percent of slope, and this may change with time But in the north coast area there is this control that has been mentioned of 30 percent, yes"

CHAIRMAN WARREN· "Why is that?"

MR. CONNAUGHTON: "Well it has to do again with the surface of the soil and concentration of runoff as a result of tractor use"

CHAIRMAN WARREN: "What happens if the grades are over 30 percent, if tractors are employed to log?"

MR. CONNAUGHTON: "It's much more difficult in terms of application, in terms of the overall assessment of damage in terms of the watershed Here's what happens roughly Technically speaking, the roads are located quite differently, usually, where tractor logging is involved in contrast to line logging This creates quite a different problem to begin with. Then, when you begin to use the actual skid from the ground the tractor covers the ground itself, whereas a line goes in and picks the logs out and it disturbs the soil far less than it would normally We believe that this works very well We've worked with the operators on the ground and I believe we find, and they're finding too, that our mutual interests are served quite well with this arrangement However, in the Sierra we don't have this limitation " (Transcript, pp 364–367)

Mr. John Callaghan, Secretary-Manager, California Forest Protective Association

" In the problem statement your committee sent to prospective witnesses there is a comment on public policy in relation to the State Forest Practice Act This indicates that the act deals with a limited aspect of watershed management, the harvesting of trees, and fails to achieve balanced, comprehensive watershed management, or 'even the multiple use concept, which governs the management of national forests

"As I have stated, a comprehensive watershed management policy would have to comprehend all activities in the watershed and should not settle on just one As to the application of the 'multiple use' concept to private forest lands it seems obvious that there would be very large differences between multiple use on private land and on public land

"1 Private land *must* be operated to produce income, either tangible or intangible to the owner If the owner is a corporation (and this applies to most individuals too), it must produce a profit over the long run The national forests, and most other public forests, can and generally do operate with much less income than expenditure

"This does not mean that where regulation of private operations is clearly necessary to protect the public health, safety or welfare, such regulations should not be instituted It does suggest that the cause and effect and cost-benefit relationships be clearly established before decisions are made

"For example, hauling excavated road construction dirt away may be practiced in some cases in national forests near streams This may require increasing the size of the road cut three or four times, since the excavated material is not then used as part of the roadbed The extent and duration of damage that may be caused to fish habitat or water quality by side-casting the material and the number and use of the fish affected must be much more thoroughly evaluated before a requirement of a similar practice on private land is established

"2 Public recreation is a required use of most public forest land On private land it may be permitted or not as the owner chooses Forest harvesting operations can be adjusted to enhance recreation if the cost is deemed reasonable for that purpose On private land, if the owner cannot benefit, there would appear to be little reason to require adjustments to benefit public recreation Actually, of course, most private timberlands are used extensively for public recreation because over the long run timber harvesting does not prevent recreation and may enhance it Certainly the scenic beauty of the millions of acres of second-growth stands cannot be denied despite the unsightly appearance of the relatively small area of recently harvested land

"In regard to water quantity and quality there is no evidence that timber harvesting has done anything but increase volume of usable water and little evidence that it creates any substantial long run problems of water quality

"As to game management, it is well known that logging operations improve game habitat In fact better management of the game is needed to prevent serious damage to young second-growth trees

"SOIL EROSION, SILTATION AND THE FOREST PRACTICE ACT

"There have been many wild statements in recent months to the effect that forest soils are eroding so fast that sustained timber growth cannot be maintained Anyone who has driven through the fine second-growth timber along Highway 20 from Nevada City to its junction with Interstate 80 or along any of the other hundreds of miles of beautiful 60- to 80-year-old stands of timber should know better These stands were heavily logged—and often burned —at a time when no one gave any thought to watershed protection or continuous timber production, yet they have produced new growth at a prodigious rate

"Much of the mistaken view stems from a doctoral thesis by James R Wallis, then a graduate student at the University of California, wherein he makes the erroneous assumption that all the suspended sediment in rivers comes from eroding soil disturbed by man's activities and leaves the impression that logging is a principal cause Operating on this erroneous assumption, Wallis states that suspended sediment in the Eel River indicates an erosion rate of 55 5 inches of soil in 1,000 years and that, at this rate, all the soil will be gone in 300 years (See pages 70 and 71 of the original thesis, *A Factor Analysis of Stream Sedimentation in Northern California*)

"For the moment, we will ignore the questionable statistical method wherein 8 of the 23 watersheds allegedly used in the study are really parts of the Eel River and 6 are part of the Klamath thus introducing a weighting element of duplicate consideration

"More basic is the defect that the Eel, Van Duzen and Mad Rivers are in a geologic province wherein much erodable material is not actually soil but rather is pulverized rock readily available for erosion This was explained by Salem Rice geologist for the State Division of Mines and Geology who in a statement to the State Board of Forestry on February 25, 1966, said, 'The principal rivers of the (Northern) Coast Range Province are the Eel, Van Duzen and Mad Most of the Northern Coast Ranges are made up of rock assigned to the Franciscan Formation 90 percent of these rocks are graywacke, made up of grains that range in size from sand to clay Because of high susceptibility to weathering, this rock does not tend to crop out on slopes (In other words it erodes directly—J C) The rocks of the Franciscan Formation were highly folded and sheared The shear zones ranging from a few feet to a few miles in width are features that have dominated the Coast Ranges Shear zones of pulverized rock that resulted when faulting processes occurred over extensive widths These zones are not only easily eroded, but they are highly susceptible to landsliding'

"This thesis as other witnesses will, no doubt, indicate is probably a good step forward in the development of a statistical method of analysis of this complex problem However in Wallis' own words 'the stochastic nature of the problem' (see page 59 of the thesis) and 'the stochastic nature of the statistic should be clearly recognized and evaluated' (see page 44 of the thesis)

"The dictionary indicates that 'stochastic' means 'conjectural'! It is apparent that practical use of Wallis' formulas in land management decisions must await better basic data and probably more research

"I do not mean to imply that we should not give prompt and serious attention to measures to minimize soil erosion in timber harvesting Though a bare soil seedbed is desirable for forest reproduction and 50 percent exposed mineral soil is required in alternate plans approved by the Board of Forestry where artificial seeding is substituted for seed trees . the Forest Practice Act and rules aim to require adequate soil erosion control measures

"These not only protect soil for forest productivity, they also protect streams from excessive erosion from skid trails and roads

"For example, the Redwood District rules require tractor operators to use tractor roads both going to and returning from landings This not only protects young timber but reduces the opportunity of erosion Roads, skid trails and firebreaks are required to be left after logging so that waterflow thereon will not at any time contribute to excessive erosion Water diversions to prevent water from accumulating and developing erosive power are required on skid trails, etc, to accomplish this It may be that the *minimum* standard of a break *at least* every 300 feet on slopes over 10 percent is inadequate, though the requirement that the trails not contribute to excessive erosion should be overriding New language to correct apparent problems is being developed by the committee now and should be ready for the next operating season It should be noted however, that a survey by the Division of Forestry after last winter's floods showed that most waterbreaks functioned well except where intensity of rainfall was well beyond normal expectations

"To further control erosion, and in recognition of the fact that disturbed streambanks and channels invite accelerated erosion, especially in much of this geographic area, the Redwood District has an additional soil erosion rule This rule requires keeping stream crossings to a minimum and keeping skid trails, roads and log landings out of year-round streams where such facilities will cause excessive erosion

"It might seem that trails, etc, should be prohibited entirely in streams and certainly the objective must be to keep out of them However, there are some steep narrow canyons with high-value timber near the stream where it is economically prohibitive, nearly impossible physically and often more damaging to the stream to try to keep the road or trail on the sidehill This is a serious bone of contention between fisheries people and loggers but in view of the cost problems, the generally small number of fish involved, the high value of the resource, the temporary nature of the problem, and the usually small portion of the stream system affected at any one time, complete prohibition of use of streambeds on private land does not seem to be good public policy This problem, like other problems, is being reviewed by the Forest Practice Committee and, as they have in the past, they will probably develop language which will result in even greater protection of streambeds than the high standard now generally found

"Concern over the use of such words as 'minimum' and 'excessive' is often expressed It is true that these are relative matters but the practices to which they apply are extremely difficult to quantify so no better way has yet been found to do it After all, such terms are also often found in statutory law too

"FISH AND FOREST PRACTICES

"Perhaps the most controversial issue we face in forest management is the question of logging vs fish habitat It is my considered opinion that the Fish and Game Department has blown this problem up out of all reasonable perspective In an effort to get improvement I believe they have grossly exaggerated

"It is easy to find 'horror' examples where the logger has a road with the fill in the creek, may have logged up and down the creek, left culverts plugged, etc These are a *very* small minority of cases Most could have been at least ameliorated by advance contact by the department to assure that the logger knew what problems he might cause to fish habitat Often too, prompt law enforcement action under existing laws could have been helpful

"In 1962 the department publicized the alleged destruction of 55 miles of cold water fish streams out of the 18,000 miles they report Examination leads us to believe much of it was *not* seriously damaged We know it is recovering and much of it already has This is three-tenths of 1 percent of the 18,000 miles

"Now the department projects this 55 miles as an annual occurrence, makes no allowance for recovery and suggest in its Fish and Wildlife Plan (pages 724–25, Vol III, Part C) that there will be 900 to 1,000 miles of stream in a seriously damaged condition by 1980

"This projection is based on 33 incidents Only five were reported as having occurred for the past two years at several Forest Practice Committee meetings when the matter was discussed Even making no allowance for recovery this would project to about 150 miles affected by 1980 Allowing for substantial recovery in five years this would be only 50 miles in damaged status at one time That is only 0 25 of 1 percent of the fishery affected at one time If it were several times that it might not be an unreasonable price to pay considering the often limited use of the fishery and the small percentage affected, compared to the value of the resource harvested Note that the department estimates, for example, that only 900 fish per year are harvested from the Garcia, 1,500 from the Gualala, 850 from the Navarro, 7,100 from the stream system of the South Fork of the Eel These are areas of many logging operations and on some, especially the Garcia, there are problems In total however, the problem is small even here and in the rest of the state it is very small indeed

"As the depratment states (pg 723, Vol III, part C) in their plan, 'The overall extent and severity of stream damage by silt pollution resulting from logging cannot be accurately estimated from available information, ' 'More information of a detailed survey nature is needed to bring this difficult problem into sharper perspective'

"In the meantime I believe we should depend on a) improved forest practice rules under the existing act, b) better liaison by the department (under Section 1602 of the Fish and Game Code) with loggers, and c) better (but reasonable) enforcement where there is a clear violation of code sections that prohibit stream blockage or habitat impairment In this regard I cite an incident on Battle Creek in Shasta County where the logger tried to minimize damage after consultation with the department in a difficult situation but was cited into court anyway They lost and should have because not very extensive damage was done

"FLOODS AND FOREST PRACTICE

"Perhaps the silliest bit of propaganda that has hit the press in some time was the wild stories that circulated after the 1965–66 major flood, to the effect that logging was responsible for the high water, for the silt deposits on flood plains and for the destruction of bridges, buildings, etc This is fantastic Governmental official after official—U S Engineers, Forest Service, State Forester, etc—have denied and refuted these allegations but still they persist We know that the small area of recent logging (perhaps 3 to 5% of the watersheds affected) could not possibly have had much impact on flood crests and debris in the streams We also know from knowledgeable observers and from surveys conducted by U S Forest Service and others that most of the floatable debris in the floods was of natural cause (downed trees and branches in the woods, whole trees undercut from streambanks by the flood) and that most of the dirt and gravel came from streambanks, slides in saturated soils under virgin timber, brush and other cover, and slides caused by undercutting of steep slopes by the flooded streams

"FOREST PRACTICE COMMITTEES AND THE BOARD OF FORESTRY

"There is no evidence that there is need to expand the objectives of the Forest Practice Act Therefore there is no need to expand the membership of the committees They are doing and have done a conscientious job The timber harvesting operation is the most regulated activity in the watershed

"As to the members of the committee being representatives of timber owners and operators, why not? They are regulating *forest* practices to insure continuation of the industry The public interest is protected by the State Forester and by the state representative on the committees Who regulates attorneys, doctors, mattress manufacturers, etc?

"The public interest is also protected by the necessity to get rules approved by the Board of Forestry This has people on it knowledgeable in the fields of forestry, water, range and also a representative of the general public They are the outstanding board of this kind in the nation and have long been so recognized

"The California Forest Practice Act is the best in the nation It might be improved as it has been in the past but under it the rules can obtain its objectives and do protect streams and fish to a very high degree " (Transcript, p 388-394)

Mr. Francis H. Raymond, California State Forester

" ECOLOGICAL EFFECT OF LOGGING

"Detailed data on the relative costs and extent of utilization of cutting and logging practices and the relative impact of each on sustained yield capacity and site quality, soil erosion, siltation, amount and rate of precipitation runoff, fish and wildlife are generally lacking *Specific answers are not available* (Italics added)

"Various types of cuttings that would qualify as one of the selective cutting methods are common in California Complete cutting for regeneration of a new crop on private land is limited to those areas included in approved alternate plans for such cutting Complete cutting is a desirable practice for complete rehabilitation of an area, to meet the natural requirements of some tree species, and to promote better tree growth and yield in some cases

"Most logging in California is done with tractors although there is some cable logging done in the north coast region of the state

"Sustained yield of forest products may be achieved under any silvicultural system that provided for recurring crops of timber and the husbanding of young growth

"Many factors influence the choice of logging method Tractor logging is especially desirable for selective cutting systems where damage to trees remaining after logging can be held to a minimum The flexibility of movement from one area to another and economic considerations of volume cut per acre, labor costs, etc, are all involved

"Rapid change in conditions from one area to the next, the difficulty of specifying average conditions for measurement, and the relatively low dollar value of tree product increment per acre have precluded many detailed studies New developments in statistics, systems analysis, and correlation techniques may aid in strengthening observational analysis

"SITE QUALITY

"There is some limited data from Europe on the long-term effect of timber cropping on forest site Such determinations are rare in the United States Site index and site determination is a subject over which there is technical controversy Site index determinations in California are subject to error and the methods of determining site quality are a subject of debate among foresters

"LOGGING AND FLOODS

"The Board of Forestry met in Sacramento on February 26, 1965, to probe the causes of the 1964–65 flood and its effect upon the resources and people of the north coastal area The relationship of logging operations, and the various logging practices employed, and the amount and rate of precipitation runoff and accompanying soil erosion, siltation, site deterioration, and flood damage were examined Resource experts from federal, state, and university sources as well as private research organizations, were called upon to report on land use flood relationships The proceedings of the meeting were reproduced in detail for use of legislators, government administrators, policymakers, and the serious student They became part of the permanent record of the Board of Forestry Authorities on weather, hydrology, geology, vegetative cover, soils, land use, watershed management, and economic interests presented papers and pictures The general conclusion was that this unusual storm was of the type that land use in the upper watershed had no significant effect on the flood

"The Director of Conservation and the Chairman of the Board of Forestry early in 1965, after the December 1964 floods, requested that the Redwood and the Coast Range Pine and Fir Forest Practice Committees study the situation in their districts to observe what happened on the ground, and especially how the forest practice rules performed in this flood situation and to review the rules to see if any modifications were needed Field examinations were made and the matter was discussed in detail by the committees Without question, the cause of the flood was determined to be too much water over an extremely short period of time

"In the redwood district it was determined that proper layout and construction of roads and skid trails can do more to prevent erosion on logging operations than any other thing Where water volume remained below the critical level, proper erosion control was effective Beyond this point, waterflow exceeded the ability of structures to function and they gave way or were ineffective The Coast Range Committee determined that, in their district, areas logged in compliance with the rules did not contribute significantly to the flood

"MODIFICATION OF ACT
"SPECIAL RULES FOR SPECIAL CONDITIONS

"The Legislature recognized the advisability and feasibility of establishing special rules for timber cutting within forest districts based upon varying conditions of soil, geology, climate, terrain, and vegetative cover to some extent by delineating four geographic forest districts

"Forest practice committees in turn have seen the need for further refinements within the forest districts For example, in the South Sierra Pine Forest District, the districts divided into three forest types—East Side Forest Type, West Side Forest Type, and Southern California Forest Type The latter type is defined as "the forest growth in the counties of so hereby declared because of slower growth, adverse silvicultural conditions, low annual rainfall tropical storms, accelerated runoff, desert influence and predominance of pine species" Similarly, some district rules presently refer to old-growth timber, young-growth timber, pure Douglas fir, or lodgepole pine These variations recognize the significance of different types of vegetation or timber

"The main obstacles to specifying special rules based on the variable factors of soil, climate, etc, are the difficulty to write rules that a logger, owner or layman would understand and the difficulty of determining where on the ground a special condition boundary exists The people regulated by the rules are not necessarily soil experts, geologists, meteorologists, or botanists so rules must be written in nontechnical language understandable to the layman Under California's complex physiographic, climatic and vegetative conditions the boundaries of special situations may be impossible to find on the ground

"The soil-vegetation survey demonstration here today illustrates this complexity The many boundaries shown

on the maps may still include phases or somewhat generalized conditions These boundaries cannot be surveyed like property lines and an untrained layman may not be able to determine his position within a unit

"It is far too complex to write rules that fit every timbered property Consequently, the practice has been to develop minimum rules that fit most conditions and rely on the alternate plan or forest management plan for special cases where a deviation from the rules would be preferable or necessary Heavy reliance is also placed on the management, judgment, expertise, and initiative of the owner or operator as is common elsewhere in our free enterprise society as well as in timber management

"BUFFER STRIPS ALONG STREAMS

"Much can be done in logging to minimize damage along streams through advance planning Proposals for buffer strips along streams and rivers to protect fish may or may not meet the objectives of the landowners The streamside area often is the best timber-growing land where the largest trees grow and the maximum return may be possible The chief purpose of the act is to "conserve and maintain the productivity of the timberlands" The purpose of the act can not be realized without harvesting mature trees and promoting better timber growth

"Legally it is questionable whether the district committees can develop rules to protect fish when the law charges them with developing rules to promote timber productivity

"All district forest practice committees are currently reviewing their rules with special attention being given to control of erosion and stream protection as it may be possible to limit damage without seriously interfering with timber production

"Careful logging practices and the layout of roads and stream crossings can enhance timber productivity as well as fish life and water quality Many timber operations within the state follow such practices Practices feasible on public land where cost benefit ratios may be ill defined do not necessarily serve as useful yardsticks on private land

"MEMBERSHIP ON COMMITTEES

"As previously discussed, membership on forest practice committees, and the chain of events in approval of forest practice rules through the Board of Forestry provide for a fairly broad scale representation of the public interest Committee members and board members are prominent citizens and community leaders The State Forester, a professional civil servant, and the Director of Conservation, appointed by the Governor, both represent the public interest

"COMPARISON OF ACT WITH OTHER JURISDICTIONS

"Analysis of the objectives, efficacy, and administration of the California Forest Practice Act with similar acts in other major timber-producing states, the federal government, and other nations has been partially attempted from time to time

'UNITED STATES

"Comparison of California's act with other states is a sizeable task usually accomplished through research projects or master or doctoral theses

"It is generally conceded that California's Forest Practice Act is the best and most demanding of its nature in the United States

"Although frequent comparisons are made between the management of private timberlands and federal timberlands, this should be done with caution Public timberlands such as national forest lands are usually managed under he multiple-use concept for the public benefit Although private timberlands may be managed under multiple use, profit and economic considerations usually require that the various uses provide returns commensurate with the costs of production Public benefits and demands on private lands are received by owners and managers through operation of our market system for goods and services such as lumber, hunting rights, recreation developments, Christmas trees and other products of the forest

"INTERNATIONAL

"The international situation in forestry is quite complex The degree of government control is very variable as might be imagined The range is from complete government ownership and control to nearly complete private ownership and development, depending on various historical, social, and economic systems

"Countless taxing, regulatory, ownership, psychological, economic and physiographic conditions prevail Detailed studies are available for certain practices, certain conditions and certain countries The United Nations publishes world forestry statistics and data

"It is said that the United States has struck a reasonable balance between government control and private enterprise in forestry matters The large amount of federal and other public land is very conservatively managed and provides a backlog of timber supply for national defense and long-term exploitation Certain low-producing lands are also publicly held The public lands are heavily used for activities not easily converted to cash value such as recreation, hunting and fishing and water production For the other part the private lands are responsive to market conditions and provide products and services demanded by the public They are efficiently managed through profit considerations, responsive to wood product demand, flexible in management decisions and productive of taxes for other social benefits " Transcript, p 125–132)

Mr. Henry K. Trobitz, Manager California Timberlands Division, Simpson Timber Company, Arcata, California

" First, I would like to make the point that watershed management is not solely concerned with water yield More correctly watershed management is the proper carrying out of all activities within a drainage basis—timber harvesting, fish and game management, grazing, recreation and water yield In short, it is the concept of multiple use

'It has been erroneously stated (frequently by persons with no qualifications whatsoever) that careless logging has caused excessive erosion in the redwood region This simply is not true

"There are countless examples of watersheds that decades ago (before the Forest Practice Act) were logged bare and severely burned and reburned Today these same watersheds are a picture of fresh tree crops and clear, sparkling streams that yield abundant, potable water

"The point that is so conveniently ignored by critics of the forest industry is that our future existence depends entirely on proper handling of our land now We must have the soil to grow new tree crops and we do have it The thousands of acres in the redwood region growing new forests are testimony to the fact that logging is in no way causing extensive soil erosion

'Not only have we carried on our operations in a manner designed to protect streams, but we have alleviated unsatisfactory conditions where they exist

"For example, in 1959 we spent several thousands of dollars on a stream clearance project on the North Fork of the Mad River on land logged by the previous owner In cooperation with the Department of Fish and Game, we dynamited a natural rock barrier, permitting planting silver salmon in streams, and removed many logjams and attendant debris from many tributaries within our present ownership

"Another point that often is lost sight of in comparing fishing 'then' and 'now' is the tremendous increase in fishing pressure brought about by the population explosion and increased standard of living

"It also should be noted that this year that salmon fishing off the north coast has been the finest by far in recent years Certainly spawning beds must be producing or there would not be the record salmon runs

"In conclusion, I want to impress on you the fact that Simpson intends to be in the tree growing business in the redwood region permanently If the government doesn't gobble up our lands or hamstring us with unwise legislation, our future is indeed bright We are blessed with the finest commercial timber growing land in the world and a better opportunity than any other forest region to convert to a young growth economy without great disruptions

"Private land ownership is in the public interest Proper commercial forest management can and will continue to yield many benefits to all the people, including high quantity and quality water yield, and good fishing "
(Transcript, p 247–249)

Mr. Knox Marshall, California District Forester, Western Wood Products Association

" Fishery Habitat in Commercial Timberlands

"The management of commercial timber on stream areas, especially in steep narrow draws or canyons, without affecting stream channels is virtually impossible Some wind susceptible species such as fir and spruce that cannot stand alone when left in a buffer strip compound the problem Commercial timberland owners must harvest these trees to utilize values and pay out investments If left, streamside trees, like any other living thing eventually dies and falls

"The appearance of these areas immediately following logging is alarming and commonly results in exaggeration of both the severity and duration of effect on fish life

"Concern over this problem in southeastern Alaska salmon streams led to a very detailed research project covering four watersheds, two which have been logged and two which were kept in a virgin state This research conducted by the U S Forest Service, Fishery Research Institute of Seattle, with cooperation from Fish and Wildlife and the State of Alaska, has now been under way for 17 years and results to date show that natural disturbances to spawning gravels, stream channels and fish production equal or exceed the effect of logging, and the logging (without buffer strips) has had no measurable effect on fish life to date, as compared to the virgin watersheds

"Here in California our industry has been deeply concerned with the problem since 1955, when the Fish and Game Department publicly accused the lumber industry on the North Coast of irreparably damaging many miles of fishery habitat An outgrowth of joint field trips and meetings, which I attended between industry, Fish and Game, and State Forestry representatives in 1955 and 1956 was

"1 Amendments and additions to the Fish and Game Code to strengthen Fish and Game authority over activities affecting fishery habitat

"2 Agreement to experiment with logging and stream cleanup on Jackson State Forest in Mendocino County

'3 Subsequent trials of logging and road layouts in harvesting timber on the state forest has shown the great difficulty in governing harvests to avoid effect on streams There have been instances of major damage even with the best laid plans to avoid damage It was also found that creek cleanup was virtually impossible without the use of heavy machinery

"Again in 1962 the Fish and Game Department publicly accused the lumber industry in both the Coast and Sierra regions of destroying fish habitat in harvesting operations

"The California Forest Practice Committee directed me to analyze each of the stream problems photographed or listed in the pine area by the department in 1962 Analysis of each stream problem in the pine area showed

"1 Problems of topography, ownership boundary lines, and the physical problems of timber removal allowed no alternatives that would have significantly alleviated effects on the stream

"2 Exaggerated reports of the severity and duration of damage, some of the streams showed no significant damage after cleanup

"3 Indications of early channel stabilization and reversion to normal stream character in even the substantially altered streams

"Considering the values involved, the period between harvests (60 to 100 years), the Fish and Game Code requirements for removing debris, the early healing of the streambeds and banks following cleanup, the access to the streams provided by timber haul roads, and the long period between timber rotations when vegetation is healthy and growing and there is no disturbance of the stream course, I feel that long-term multiple use values are best provided by existing codes and land management procedures Of course where topography permits harvesting is accomplished with minimum stream disturbance

"I have some slides to show which illustrate many of these points

"In putting this problem in perspective it would be well to remember that we have always had prophets of doom for the fisheries The June issue, 1860, of Hutching's California Magazine carried an article predicting the early disappearance of salmon from our waters It is interesting to note also that a Fish and Game Department biennial report stated that the king and silver salmon and the steelhead trout increased during 1961 and 1962, quote 'King salmon, the most important of these resources, showed most vigorous improvement—spawning stocks virtually filled the Sacramento Valley spawning areas—winter run fish continued a steady increase that has lasted more than 10 years—commercial fishery landings rose to well above average levels—the biennium will be remembered, the director said, as one in which a general improvement occurred in these andromous resources' Ocean salmon sport fishing catches were the best since 1956 These anadromous fish were produced in forest streams during the most active logging period in California history

"WATERSHED, EROSION CONTROL MEASURES

"Erosion control measures, mainly as they affect forest productivity, have been a part of the Forest Practice Rules for some years The effectiveness of these rules is considered from time to time as recently as last May by the California Forest Practice Committee Except for a very few unusual soil types in our timber region the rules have been effective in minimizing erosion The problem areas, even on the fragile soil types, are usually caused by failure or faulty design of road drainage installations not logging per se, and the obvious, dramatic erosion problems are usually the result of fire, flood, or unstable geology with no connection to logging

In the late 1950's I spent two weeks with a consulting highway engineer visiting every national forest in the pine commercial timber zones of California to find the most important erosion problem on each forest, analyze the causes and consider the cures We did not find one single significant erosion problem caused by logging We did, however, see major land slips on unstable soil in a virgin timber area and several serious erosion problems caused by wildfires which completely denuded the soil

"On this subject also it is easy to confuse cause and effect The Eel River, for instance, has carried heavy sediment loads for hundreds of years from natural erosion in unstable soil areas, but because logging has recently reached the upper watersheds, that activity is blamed for the sediment loads

'A railway maintenance engineer for the Northwestern Pacific R R told me their track crosses a slide that has not stopped moving into the Eel River for 40 years or more He said this slide requires constant work to keep the track in place and virtually the only time work stops is when a train goes by

"There is a similar problem area on the east side of Highway 101 near Squaw Rock on the Russian River south of Ukiah The Klamath, Mad, Van Duzen and Eel

Rivers all cut many such areas which bleed substantial sediments into those rivers

"Anyone who has read the journals of the Lewis and Clark expedition in 1804 must have been struck by the narrow escape of a hunting party from a flash flood near the head of the Missouri River The party took refuge from a violent wind in a gully In scrambling out of the gully to escape the sudden flood the party left a railroad compass, rifle and other equipment on a bench in the gully On returning next day to recover their lost equipment the party found about seven feet of tight packed boulders and silt covering the bench they had rested on and they had to abandon the lost equipment

"In considering the effect of logging or forest practice rules on maintenance of productive timber sites it is noteworthy that some of the highest growth rates in second-growth pine that are known are being measured on sample plots in stands cut over near the turn of the century

" The proposal to enlarge the Forest Practice Act to provide regulation of all natural resources was made to the Redwood Rules Committee, to several other commissions meetings and forums, and is a prominent recommendation in the Fish and Game plan

"The committee discussed this Fish and Game Department proposal at length and adopted a positive position on the subject, because future discussion and legislative consideration seems inevitable

"The committee resolved unanimously that we should oppose any move to expand coverage of the act beyond the obligation already prescribed to maintain timber productivity

"The reasons for support of the present act and opposition to expansion follow

"(1) This position has been reaffirmed repeatedly by the California State Board of Forestry

"(2) This position was adopted unanimously by the Board of Managers of CFPA in 1963

"(3) The present Fish and Game Code is adequate for protection of fish and game interests and should be more effective than the Forest Practice Act if properly utilized

"(4) If private industry on private lands must be regulated to enhance other resources, then such regulation should apply to all lands, not just the eight million acres of private commercial timberland It is well known that fish and game values are affected far more by other activities than by timber management, and if state regulation of other resources is deemed necessary it should apply to all the ownership and managements involved

"(5) It was strongly felt that if timber management was subject to state regulation to safeguard all resources involved, the harassment from various conservation interests and subsequent cost increases would have extremely serious effects on the whole forest products industry

"CONCLUSION

"We must recognize that forest based industries are the oldest in the nation with many generations of management experience contributing to present knowledge and techniques The science of forest management is a well developed professional discipline, with nearly 70 years for adaptation to American problems In California we have over 400 professional foresters working on the problems of private wildland management, nearly 10,000 in the nation We think that at this point in time private forest lands are being managed as wisely and intensively as economics will allow Developments in the south and lake states indicate the growth and stability possible when we move fully into a managed second-growth economy, and these developments were attained with a minimum of regulation by the states We think the existing Forest Practice Act is serving its purpose well, and needs no major revision

"It seems to me the important need in the years ahead is a program of conservation education to enable the visiting public to interpret what they see on the commercial forest lands understand the decades of time needed for a timber rotation, the temporary nature of the raw earth and slash immediately following a harvest, the long periods while the crop is growing and the land and streams will be undisturbed, and finally the major importance of protecting this scene from fire and other hazards " (Transcript, p 443–451)

There are perhaps two basic conclusions to be drawn from the wide range of conflicting opinions outlined in the preceding excerpts from testimony presented to the subcommittee First, that there is an urgent, perhaps critical, need to acquire sufficient relevant, conclusive, generally agreed upon data concerning the interaction of watershed management variables as will enable the reasonably accurate prediction of the effects of various human activities and uses of the land upon the balance among natural resources within watersheds And secondly, that while the optimistic response of those who defend the present objectives and administration of the Forest Practice Act against any criticism is understandable—and perhaps would be partly or even wholly substantiated by broadly based, objectively structured research—the implications of the criticisms, many of which are apparently supported by at least the beginnings of an orderly, multidisciplined research effort, are too serious to be ignored In view of this, if only as a precautionary measure until more definitive information is available relative to forest regeneration, soil erosion rates, and the future of California fisheries, for example, it seems clear that the basic state policy governing forest practices on private lands should be broadened and strengthened To ignore by maintenance of the status quo the possibility of major damage to many vital watershed resources would be a serious gamble, especially when a relatively simple elevation in the overall standards of forest practices would go far toward minimizing these possible long-term consequences In this effort it would seem that the reasonable and carefully developed standards of the U S Forest Service could be used as a guide

Because of the difficulty of translating the written and verbal testimony in this complex problem area into actual conditions in the field, upon completion of the public hearings the subcommittee conducted a two-day investigation of various northern California watersheds, including drainages of the Garcia River and Salmon Creek in Mendocino County, and Bull Creek and the Eel River in Humboldt County During this field trip the subcommittee, which was accompanied by representatives of the State Departments of Fish and Game and Forestry, a number of private timber companies and associations, conservation organizations, and various academic disciplines, was able to observe and evaluate the effects of a wide variety of natural and man-initiated processes upon watershed resources Included were the effects of roadbuilding, good and bad timber cutting and logging practices—both current and at various past intervals, grazing, and urban and recreational developments, upon fish and wildlife habitat, soil erosion, forest regeneration, flood prevention and control, and the protection and utilization of recreational areas

Because much of the debris from current logging operations apparently had very recently been cleared from some streams the subcommittee had anticipated visiting, as with many aspects of the problem the effects of this particular activity upon other resources such as soils and fish were inconclusively demonstrated However, the subcommittee was able to examine two areas of extremely poor forest practice, one a current logging operation and the other an area that had been logged some years before and had contributed to subsequent disastrous watershed damage

In the current logging operation, which was on Salmon Creek near Point Arena on the Pacific Ocean in Mendocino County, the subcommittee found a shocking disregard for fish habitat and the prevention of excessive soil erosion Although apparently legal under the rules promulgated by the Redwood District Forest Practice Committee and authorized by the provisions of the Forest Practice Act, Salmon Creek, which had a history as a fine salmon-steelhead spawning stream, was filled with "green slash" (fresh branches from felled trees, which in addition to blocking the passage of fish and the flow of water, putrefies and releases toxics harmful to fish), and was blocked by a "Humboldt Bridge" (logs felled across the stream and covered with dirt to permit the passage of trucks, a practice which interrupts the streamflow, stagnating the water and stopping fish passage) In addition, the trees had been cut on very steep, unstable slopes down to the edge of the stream, a practice which by opening the canopy of shade along the stream warms the water and decreases the oxygen content necessary for fish survival, and by undercutting the already-denuded upper slopes permits the erosion of unstable soils into the stream, thereby reducing site quality and cementing stream gravels with silt, further damaging fish habitat The poor placement and lack of drainage of the access roads also markedly increases the erosion of steep upper slopes

The response of the state forestry officials and representatives of the timber industry to this situation was threefold First, it was stated that this operation—although it was being carried on under contract to one of the larger timber producers in the area—was not typical, and in fact, was a major exception to the practices followed by most of the larger, responsible operators Second, it was suggested that while the area admittedly looked extraordinarily bad at that time, it was only a temporary situation and in a few years the stream would heal itself by natural processes and return as a productive, scenic attraction Finally, although these obviously destructive, temporary practices were not illegal under the Forest Practice Act, they *were* illegal under provisions of the Fish and Game Code, and the violation should be cited accordingly

Representatives of the Department of Fish and Game disagreed with the first two points, indicating that these destructive practices were not an isolated matter, and that while it was true that a severely damaged stream could recover, it would probably require a generation or more, with, however, no guarantee that it would ever function as a productive spawning stream again While agreeing with the third point, and initiating immediate steps to cite the operator under the Fish and Game Code, the department indicated that the process of enforcement is so cumbersome and uncertain, and the penalty (a misdemeanor —$500 fine or 6 months in jail) is so light as to make enforcement largely an empty exercise In addition, Fish and Game requirements would have no control over the streamside cutting, the logging on steep slopes, or the placement and construction of access roads

Although as usual the sharply differing points of view made definite conclusions difficult, the subcommittee was impressed with the opportunity to observe empirically many of the problems which can arise as the result of poor forest practices Perhaps the most disturbing aspect of all was the realization that some operators have so little respect for the land that the minimum safeguards under review are indeed necessary to protect the public interest

The second area of special significance examined by the subcommittee in the field was the upper Bull Creek watershed above Humboldt Redwoods State Park along the Eel River in Humboldt County This area, which was the scene of poor logging practices on steep, unstable slopes in the early and middle 1950's, has been examined in great depth by an array of foresters, hydrologists, soils scientists, geologists, and other specialists in various aspects of watershed management It has been given this special attention in the effort to ascertain the degree to which poor upper watershed management contributed to the serious destruction of superlative old growth redwoods in the downstream Humboldt Redwoods State Park as the result of major floods in 1955 and 1964

Although perhaps more scholarly study has been devoted to this one small watershed than any other in California, it is not yet possible to determine with precision the contribution of logging operations to the total balance of watershed resources However, it is generally agreed that in the light of present experience and knowledge concerning the soils, slope, geology, and forest conditions of the area—coupled with the close proximity to an internationally famed stand of old growth redwoods—a plan to log this upper watershed probably would not be approved were it to be proposed today, or at least the restrictions would be considerably more realistic to minimize the damage to other watershed resources

The Bull Creek problem is an excellent and dramatic illustration of the consequences of approving forest practices unsuited to the requirements of the watershed, as well as the need for and value of more definitive information relative to the interaction of watershed management variables upon other natural resources

Photographs of Subcommittee Field Investigation of the Effects of Current Logging Operations upon Watershed Resources of the California North Coast

With the exception of the last page, all pictures were taken approximately six miles inland from the Pacific Ocean on Salmon Creek, a prime steelhead and spawning stream near Point Arena in Mendocino County Photographs by Dick Schmidt



Logging truck crossing Salmon Creek on so-called "Humboldt Bridge," a structure consisting of logs and earth placed across stream. This practice, which is permissible under the Forest Practice Act, restricts the flow of water and impedes or stops the passage of fish up and down stream. Also in evidence are large quantities of "green slash" (branches and limbs of felled trees), and other logging debris choking the stream course. The decay of such organic debris produces materials toxic to fish life.





Stagnant, debris-filled pools in previously clear-flowing creek downstream from the "Humboldt Bridge." Also in evidence are bulldozer tracks entering Salmon Creek in upper photograph, and the consequences of cutting to the edge of the stream (excessive slope erosion and stream sedimentation, and the raising of water temperature by removal of riparian vegetative cover).









Further illustrations of massive "green slash" deposits in Salmon Creek, and use of the "Humboldt Bridge." Of particular interest in the lower right photograph is the accumulation of loose, fine soil produced by heavy logging of the steep, unstable slopes characterizing California North Coast topography. Heavy winter rains will wash much of this loose soil into the stream, contributing to a decline in the remaining slope site quality as well as increasing water pollution and cementing stream gravels, an outcome versely affecting stream spawning capacity. From the left in the upper picture are subcommittee members E. Richard Barnes (R.—San Diego), M. Henson (D.—Ventura), Edwin L. Z'berg (D.—Sacramento), and Alfre Alquist (D.—San Jose).





Additional examples of the effects of current logging operations upon Salmon Creek described in preceding photographs.



Residual effects of 1964 logging in the upper Bull Creek watershed in Humboldt County. Poor logging practices in this watershed contributed to the heavy damage sustained by downstream Humboldt Redwoods State Park in the 1964 Eel River floods. Inspecting the stream is Dr. Walter Lowdermilk, an international authority in the management of watersh Photograph by Dick Schmidt.

Modification of the Forest Practice Act

In the course of this preliminary review of forest practices and watershed management, a large number of proposals were suggested to improve the effectiveness of the element of public policy exercising the most significant single influence on the overall management of watersheds—the Forest Practice Act The timber industry unanimously opposes any important changes in the act for obvious reasons, although indicating an interest in the development of a comprehensive watershed management policy—and possible participation in the orderly research program upon which it would be based—if all other users of the land are similarly regulated The basic premise, however, of the various proposed modifications in the act is that there is presently enough evidence to warrant the strengthening of public policy governing forest management to ensure the maximum protection of other watershed resources during the period while a comprehensive policy and program is being developed

Although major reorientation of forest management policy most logically should await the formulation of an overall policy for comprehensive watershed management, and the major attention in the interim should therefore be directed to appropriate broadening and strengthening of the objectives and administration of the existing Forest Practice Act, the most trenchant analysis and proposal for a genuine reform in forest management policy was advanced by Dean Zivnuska of the University of California School of Forestry In his analysis, Dean Zivnuska suggests that the approach of the act be shifted from one of means to ends, from an emphasis on the forest practices themselves to the results achieved Under this eminently logical system, which is the basis of many other regulatory programs, the state would not prescribe the practice, but would specify the forest and watershed standards to be met by the landowner and the timber operator For example, a specification of stocking to be obtained would be set forth as a condition of the cutting permit, along with such other factors as erosion control, the protection of fish habitat, the maintenance of aesthetics, etc , and a substantial performance bond would be posted to ensure compliance In the event that these standards are not met in the specified period of time, the bond would forfeit to the state, which would be empowered to expend the proceeds to meet the required specifications Such an approach would provide the landowner and operator with the desired full flexibility in the selection of methods to achieve the specified results, a major advantage not possible under the present policy

However, pending the possible adoption of such a major reorientation in forest management policy, it is apparent that the protection of other watershed resources from the excesses of improper forest practices can be achieved only with a broadening and strengthening of the act itself by the declaration of the public interest in other resources, the prescription of certain additional practices, and an increase in inspections and enforcement of the rules in current operations

Because most of these considerations are discussed elsewhere in the subcommittee report or in the report of the Institute of Ecology, and are summarized in the Conclusions and Recommendations, the final point to be considered in this section concerns the matter of inspections

The following testimony by Mr David Pesonen, a graduate forester, outlines in detail the dimensions of the problem The conclusions have not been challenged by the Division of Forestry, and general acceptance of the need for a more effective inspection program has been indicated by the timber industry

> "What does adequate enforcement mean? Let us consider a typical logging operation subject to compliance with the Forest Practice Rules in the North Coast District If it is a new operation in virgin timber or in land cut over years ago when railroads were used, the job of laying out a road network will begin one or two summers before actual logging begins If it is relogging, the roads will be repaired and possibly realigned In any event before actual logging begins there is substantial activity in the woods on portions of the operation that are subject to forest practice rules dealing with erosion control
>
> "While actual logging is in progress, the operator will be involved in activities covered by rules dealing with seed trees, skidroads, and fire control Logging usually proceeds throughout the dry season—seven or eight months out of the year
>
> In the fall, when the operator is about to shut down for the winter, he will be closing off certain roads, ditching skid trails burning slash, felling snags, and possibly planting All of these activities are subject to regulation under the forest practice rules, and the activities concerned with roads and skid trails are subject to rules aimed at erosion control
>
> "It is generally recognized that the chief contributor to soil erosion in logging operations is the bare ground of skid trails and the cut-and-fill portions of main road networks But to my knowledge the Division of Forestry makes no inspections on logging operations during the phase when road networks are being laid out and constructed In other words, one of the chief causes of forest erosion is not subject to any enforcement at the stage when enforcement could result in corrective practices The enforcement effort begins after logging begins, and it is not realistic to expect that any real changes can be effected when the most expensive part of the operation has already been completed It is like suffering an ugly new building—we just learn to live with it
>
> "It has been estimated by experienced enforcement personnel that an adequate level of compliance with the existing forest practice rules would require at least four inspections per season[7] on each logging operation Yet the average number of inspections over the last few years has been only about 1 4 per operator per season Accurate statistics on the actual level of enforcement currently maintained by the Division of Forestry are difficult to interpret The number of permittees is known, for example, but the number of operations conducted simultaneously by each permittee is not known, it is estimated to be about 25% greater than the number of permittees Another difficulty is that the numerator in the average of 1 4 inspections includes many followups where violations have been noted, as well as an intensive inspection effort when prosecutions are contemplated Thus the figure of 1 4 probably means that many operators are never inspected during any given season

[7] Personal communication, Mr Deane L Bennett, Law Enforcement Coordinator, California Division of Forestry

"Forest Practice Inspections (CDF data)

	Statewide forest practice inspections			Inspections in North Coast District (District 1)	Number of full-time inspectors
	Total	By inspectors	By other CDF personnel		
1960	2,496	--	--	1 137	8
1961	2,410	--	--	1,074	8
1962	2,424	--	--	1,043	8
1963	2,241	979	1,262	1,213	8
1964	1,936	959	977	940	8
1965	1,842	924	918	716	8

"There seems little room for argument that the gross level of inspection effort is far below the minimum necessary for an acceptable level of compliance But an equally important question is the quality of the inspections that are made

"About half the inspections made each year are by CDF personnel other than the professional forest practice inspectors, that is, by fire crew foremen and district rangers who have not been trained for these tasks and who consider them peripheral to their main employment in fire prevention and suppression

"An interesting feature of the above table is the fact that the number of full-time forest practice inspectors has remained constant at eight for the last 6 years, while the total number of inspections has shown a steady decline over the same period There are two equally plausible explanations for this either the quality of inspections is improving steadily and thus each inspection consumes more time, or the level of timber operations has dwindled and the intensity of inspection effort has remained constant

"In a widely circulated article some years ago (Arvola, *Jr of Forestry*, Dec, 1962), Deputy State Forester T F Arvola calculated a "compliance index" for the California Forest Practice Rules based on the number of rules infractions compared to the number of rules complied with on those logging operations which were inspected during 1961 The "compliance index" for that year was 87%, but for the purposes of discovering the level of compliance with rules aimed at erosion control, this figure is little help Many of the rules, for example, are more or less routine forestry practices which would be complied with whether there were a Forest Practice Act or not Thus the number of rules complied with is not a very good indication of the good faith of the operators in attempting to maintain forest productivity

"There are about 30 different kinds of forest practice rules ranging from minimum cutting diameters to safe maintenance of warming fires All of these rules can be classified into three basic categories (1) those dealing with forest regeneration, (2) those dealing with fire prevention, (3) and those dealing with soil stability

"It is difficult to estimate how much attention is paid by forest practice inspectors and other inspectors to each category, but a rough estimate based on field experience has been made by the law enforcement personnel of the Division of Forestry as follows (1) fire prevention—60–70%, (2) forest regeneration—20–30%, and (3) soil stability—about 10

"To sum up the state of enforcement of the Forest Practice Rules, therefore, insofar as they relate to soil erosion, it seems quite fair to say that the Forest Practice Act has received only negligible attention in the field And, whether or not it is adequate legislation cannot be determined because the legislation has not really been tested

"Everyone familiar with legislative strategy knows that a good way to avoid tangling with some controversial subjects is to pass the law and then cut it off at the purse strings This is precisely what has happened with the Forest Practice Act The most recent session of the Legislature is a case in point The Division of Forestry requested an appropriation for the fiscal year 1966–67 of $2 6 million, virtually all of it for fire prevention surveillance and enforcement of fire prevention rules When the Governor submitted the budget for approval, this figure had been cut to $500 thousand The Legislative Analyst, assuming that the Governor had cut away the fat, decided to get down to the bone, and recommended deletion of the whole sum except for $200 thousand earmarked for an intensive experimental fire prevention program in Butte County The final appropriation passed by the Legislature was the Governor's figure of $500 thousand—which may look generous alongside Mr Post's estimates but which is still 80% below the requested figure And it must be remembered that even the requested figure envisioned no increase in the historical level of rules enforcement concerned with erosion control

"The law enforcement coordinator of the Division of Forestry estimates that to achieve a minimum of four inspections per season per operation with adequate attention to all the Forest Practice Rules would require a six-fold increase in the staff of forest practice inspectors In other words, by this index, the standard of enforcement is at only 16% of the estimated minimum for acceptable compliance

"Is there any doubt that this is intolerable? Let us imagine that a law enforcement study was made on the state's highways, or in the community of Watts, and it was found that there was an 87% "compliance index" with the laws Would the Highway Patrol or the Los Angeles Police Department have any difficulty getting an increased appropriation? We hear a good deal these days about "cracking down" on those who fail to respect "law and order" But in the forests of this state the very foundation of the economy is washing away to the sea at an unprecedented rate and the agency charged with controlling this irrevocable waste must beg for funds at every session of Legislature and see its requests slashed to pieces year after year—all for the purpose of enforcing a law which has been on the books for more than 25 years " (Transcript, p 261–24)

FINDINGS AND CONCLUSIONS

California possesses a variety and abundance of natural resources unique in the world, with this fact being perhaps the major element in attracting the huge and continuing population migration to the state In addition to the unusual scenic values of these resources, they have been a major factor in the phenomenal growth of the state's economy, which now exceeds that of all but five *nations* in the world

However, the strains and stresses of rapid growth are producing increasingly serious effects on the state's remaining natural resources, with the demands of this growth frequently resulting in inadequately planned and coordinated programs for the exploitation of particular resources or uses of the land As a consequence there is a growing realization that the single-purpose approach which presently dominates resources planning and management in California does not provide for adequate consideration of the complex and often subtle interrelationships among natural resources in the process of allocating a particular resource to meet a particular need

Because such consideration is of vital importance to the future growth, productivity, and natural beauty of California, the Subcommittee on Forest Practices and Watershed Management of the Assembly Committee on Natural Resources, Planning, and Public Works undertook a preliminary review of the effects of man's various activities within watersheds upon the prevailing balance among natural resources Based upon this review, the subcommittee reached the following conclusions

1 To ensure the long-range, balanced allocation of all natural resources within California watersheds, it is increasingly urgent that the state develop and adopt a policy and program for comprehensive watershed management, which is based upon reliable, scientifically acquired data defining the effects of man's activities on the balance among watershed resources,

2 To discover presently unavailable data relative to the interaction of watershed management variables, the state should undertake a long-term, multidisciplined, coordinated research program, and

3 To ensure the maximum protection of all natural resources within watersheds during the interim period while a comprehensive watershed management policy and program is being developed, the objectives and administration of the relevant existing public policies—including those governing highway construction, forest management, water resources development, range management, and urban and recreation development —should be broadened and strengthened

RECOMMENDATIONS

The subcommittee recommends

. . . With respect to comprehensive watershed management, that

1 The State of California develop and adopt a comprehensive state policy and program for the management of all natural resources within watersheds, that will ensure their long-range, balanced allocation to meet specific demands, and that will provide for the orderly consideration of the impact of all human activities—including but not limited to the building of dams, the construction of highways, logging, grazing, mining, and urban and recreational development, upon watershed resources and products—including but not limited to soils, fish and wildlife, the sustained productivity of merchantable timber, water, scenic amenities, and recreational opportunities, and that

2 Such a comprehensive watershed management policy and program is based upon a long-term, coordinated, multidisciplined research program, which is formulated with the objective of providing necessary and presently unavailable data relative to the interaction of watershed management variables

. . . With respect to forest management, that

1 The purposes, objectives, and administration of the Forest Practice Act be broadened to include consideration of the public interest in other natural resources within watersheds, by

a Expanding the purposes and objectives of the act,

b Broadening the membership on the district forest practice committees and the State Board of Forestry,

c Enabling the State Board of Forestry to initiate action on rules independent of the district committees,

d Requiring the posting of a substantial performance bond prior to the commencement of timber operations,

e Modifying the terms and conditions by which land conversion permits may be granted, and

f Other actions as appropriate,

2 Additional prescriptive practices be specified in the act to protect other natural resources including but not limited to

a The prohibition of stream blockages, the use of streambeds as tractor roads and skid trails, and the deposit of slash in streams,

b The prevention of excessive soil erosion and damage to fish habitat by tightened requirements governing the logging of steep, unstable slopes, the placement, construction, and drainage of access roads, and the retention of buffer strips of nonmerchantable trees along streams, and

c The requirement for advance submission and approval of a cutting plan prior to the commencement of timber operations,

3 The inspection and enforcement of the act be strengthened by increases in field staff sufficient to insure a reasonable level of inspection, and

4 Additional actions be taken, including but not limited to

a The licensing of professional foresters,

b The holding of a conference to establish uniform measures and standard conversion factors, and

c The levy of a severance tax on timber cut to support forest research, and a tax on logging equipment to support a strengthened inspection program

. . . With respect to the effects of other resources management policies and programs on the balance among natural resources within watersheds, that the committee continue with further detailed studies.

APPENDIX

Witnesses Appearing Before the Committee or Submitting Statements

Mr Hugo Fisher, Administrator of Resources, State of California

Mr DeWitt Nelson, Director, California State Department of Conservation

Mr Francis H Raymond, California State Forester, Chief, California State Division of Forestry, Executive Secretary, California State Board of Forestry

Dr Clyde Wahrhaftig, Associate Professor of Geology (Geomorphology and Petrology), University of California at Berkeley, Mr Robert R Curry, Graduate Student and Teaching Assistant, Geology (Geomorphology), Department of Geology and Geophysics, University of California at Berkeley

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Mr Philip S Berry, Attorney at Law, representing the Sierra Club and Trout Unlimited

Dr Hans Jenny, Professor of Soils Chemistry and Morphology, Department of Soils and Plant Nutrition, University of California at Berkeley

Dr Donald H Gray, Assistant Professor of Civil Engineering, University of California at Berkeley

Dr John A Zivnuska, Professor of Forestry, Dean, School of Forestry, University of California at Berkeley

Dr Walter C Lowdermilk, Consultant, Watershed Management, Save-the-Redwoods League

Mr Walter T Shannon, Director, California State Department of Fish and Game

Mr Fred L Jones, Director, California State Department of Parks and Recreation

Mr William E Warne, Director, California State Department of Water Resources

Mr John Callaghan, Secretary-Manager, California Forest Protective Association, representing the majority of the major private timber owners in California

Dr Paul J. Zinke, Associate Professor, School of Forestry, University of California at Berkeley

Mr Henry K Trobitz, Manager, California Timberlands Division, Simpson Timber Company, Arcata, California

Mr David E Pesonen, Graduate Forester, Berkeley, California

Mr. Charles A Connaughton, Regional Forester, United States Forest Service, Region Five, San Francisco, California

Mr John R McGuire, Director, Pacific Southwest Forest and Range Experiment Station, United States Forest Service, Berkeley, California

Mr Gordon P Robinson, Professional Forester, former Forester, Southern Pacific Company

Mr Knox Marshall, California District Forester, Western Wood Products Association

Mr. John Sweeley, Assistant Forestry Manager, Masonite Corporation, Ukiah, California

Mr William Kuphaldt, Chief Forester, American Forest Products Association, Martell, California

Mr Dixon Sanberg, Land and Timber Manager, Kimberly-Clark Corporation, Anderson, California

Mr. Richard L Brown, Chief Forester, Rellim Redwood Company, Crescent City, California

Mr. Eugene A Hofsted, Chief Forester, Arcata Redwood Company, Arcata, California

Mr John Keane, Forester, California Redwood Association

Mr. Charles E Martin, Executive Director, Lake Tahoe Area Council

Mr Edward N Munns, Professional Forester

Mr Ellis Shamp, Associated Sportsmen of California

Mr Albion J Whitney, Corresponding Secretary, Ukiah Rod and Gun Club

Dr Henry M Weber, Conservation Chairman, California Garden Clubs, Inc

Mrs Frank W Lee, Eureka, California

Mr Henry Loretz, California Wildlife Federation

Mrs Kay Chaffey, Eureka, California

Mr Robert H Twiss, Pacific Southwest Forest and Range Experiment Station, United States Forest Service, Berkeley, California

East Bay Municipal Utility District

Mr W D Pine, Eureka, California

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SECTION TWO

MAN'S EFFECT ON CALIFORNIA WATERSHEDS

SUMMARY AND RECOMMENDATIONS

INSTITUTE OF ECOLOGY
UNIVERSITY OF CALIFORNIA
DAVIS, CALIFORNIA

Dr. Charles R. Goldman, *Director*

A Report for the
Subcommittee on Forest Practices and Watershed Management

Charles Warren, *Chairman*
Edwin L. Z'berg
Alfred E. Alquist
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O. James Pardau, *Consultant*

of the

Assembly Committee on
Natural Resources, Planning, and Public Works

Edwin L. Z'berg, *Chairman*
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JANUARY 1967

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The Soil Resource

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Geologic implications of sediment discharge records from the northern coast ranges, California

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The California Division of Forestry was helpful in providing information and figures We are particularly indebted to T Arvola and Walter Bemis

Many individuals representing a variety of organizations contributed to this study by interviews, reviews, or answers to our questionnaire These include P S Berry, Sierra Club; J Callaghan, California Forest Protective Association, Professor E Dahl, Norwegian Agricultural University, R Dasmann, Conservation Foundation, J P Gilligan, University of California Agricultural Extension Service; J O Kieth, U S Fish and Wildlife Service, E J McCabe, Canadian Highway Department, A A McCready, U S F S, retired, G P Robinson, Forester of Southern Pacific Company, retired, and R Teague, University of California Extension Service

In addition to the written contributions from the Institute of Ecology, staff members who assisted in the preparation of this report include K Deming, K C Green, C L Hartman, H. E Jensen, M Major, M M Smith, and J L Vankat

INTRODUCTION

The Institute of Ecology undertook this study of man's effect on California watersheds for the subcommittee on Forest Practices and Watershed Management of the State Assembly Committee on Natural Resources, Planning, and Public Works with full awareness of the enormity of the task Assistance from private industry, governmental agencies, conservation organizations, and individual scientists was sought and received, but the contributions of the last group were most heavily depended upon for this report

Since the scope of this study is so broad, and in many areas incompletely documented, recognized experts were enlisted to prepare individual sections of the report No attempt was made to avoid areas of controversy, and, of course, not all experts were able to respond This, though regrettable, is inevitable when an investigation of this magnitude must be conducted within a six-month period Those who did respond identify in their sections the major problem areas and suggest what they feel to be the best solutions

In this report attention is focused largely on the north coast counties, whose watersheds are steadily becoming more important to the whole state, however, it was considered advisable to include other areas since most watershed problems are common to all regions of the state Such natural resources as soil, vegetation, water, fish, and wildlife are considered in relation to erosion, fire, logging, grazing, agriculture, dam construction, road construction, land conversion, and recreation Brief consideration of economic values and a comparison of forest laws are included Preservation of the scenic beauty of our watersheds was an important consideration throughout the study, but is not dealt with as a separate section

Almost every section of this report was reviewed by one or more authorities, whose anonymity is preserved in accordance with the normal consultative referral system of scientific journals Invariably the reviewers objected to some details, but for the most part they agree with the general conclusions of the individual sections Because many of the details are controversial or based on limited documentation, these criticisms were anticipated, and they were carefully considered in revision of the various sections and in arriving at the conclusions of the summary The recommendations at the end of the summary are based on the written contributions, on library research, interviews with private and governmental authorities, and statements presented at the Assembly committee's public hearings in Berkeley on August 17, 1966

In compiling this report, it was immediately evident that there can be no question that serious problems do exist in the management of the watersheds in California Since the demands of the various interests utilizing the watersheds are not only increasing but also becoming more conflicting it is becoming even more important to consider land from the standpoint of multiple use in attempting to meet these problems

It also became evident as the study proceeded that in certain areas there is inadequate scientific information upon which to base judgments Often in the past generalizations have been made which, although applicable to a particular situation, are completely inappropriate when applied to a whole resource because of the great variations in local conditions of human needs, topography, vegetation and climate Thus, it was concluded that the best solution to the problems of California watersheds lies in gaining sufficient factual information to replace the broad generalizations now applied to land management In establishing a policy it will be necessary to allow flexibility in practice with enforceable responsibility assured by law

With this background, the objectives of this report may be stated to be 1) to inform the Assembly committee of the current status of California's natural resources within the watersheds, including identification of problems arising from land use; 2) to inform the committee how well the current laws intended to protect natural resources in California are working, 3) to compare these laws with those of other states and nations, and suggest how California's laws might be improved; 4) to review the possibilities of arriving at a comprehensive approach to watershed management in California under the multiple land use concept

THE FOREST RESOURCE

Description

Since forests are the primary vegetation cover of California watersheds, practices in their management are of paramount importance As timber acreage declines and the demand for timber increases, losses presently tolerable will become intolerable, and more intensive forest management will be required to maintain adequate cutting levels Although much of California's watershed land is within U S National Forests, where state legislation is not involved in management practices, private holdings on watershed lands, while important in all areas of the state, are most extensive in the north coast counties It is primarily these watersheds, as well as other large private holdings such as are found in the Sierra-Cascade region, which are subject to regulation by state laws

Certainly no topic of this report is charged with more emotion and controversy than the question of the redwood resources in these north coast counties Although the redwood is not the dominant forest type in the north coast counties, the fact that 95 percent of the commercial redwood land is in private ownership means that state laws are of paramount concern To the botanist and conservationist, the redwood, showing remarkable adaptation to the climate of the north coast area, represents a living fossil whose very existence is of no small scientific interest To the forest industry and the individuals whose livelihood depends upon redwood cutting, they are a crop to be harvested as economically as possible and perpetuated where economically feasible As this report is being written, these two groups are in conflict Both state and federal agencies have joined in the controversy, and the final outcome of the distribution of parks and logging activity is uncertain

Although not presenting as dramatic a problem as the redwood forests, the Douglas fir, true fir, ponderosa pine, and mixed conifer forests are extremely important elements of California's natural resources (Muerle and Hornibrook 1965) Harvests of both Douglas fir and ponderosa pine greatly exceed that of redwood, and species other than redwood provide over four-fifths of the timber cut in California Furthermore, these forests will assume still greater importance to California's economy as the proportion of redwood in the annual cut declines and as other species of trees become commercially valuable, especially for pulp products

Management Problems

Maintaining the productivity of vegetation and wildlife, as well as the aesthetic values of the forest, necessitates retaining the soil upon whose basic fertility biological productivity depends, and whose conservation is the key to the future usefullness of our watersheds It is apparent that soil is the least renewable of the renewable resources, since regeneration of soil from parent material is a very slow process Studies of the Eel and Mad Rivers of the north coast, indicate that soil regeneration in these areas currently amounts to only $\frac{1}{10}$ to $\frac{1}{100}$ of the rate of loss by erosion To more precisely quantify these estimates it will be desirable to determine how much natural channel erosion is involved in the sediment loads now carried by these streams

Any discussion of soil erosion must acknowledge the tremendous variation in soil type, topography, and associated vegetation within California watersheds and generalizations must be made with caution Whenever ground is exposed through accidental or intentional removal of vegetation, however, erosion is almost invariably accelerated In assessing man's impact on erosion of California watersheds, natural causes of erosion as well as those that are man made must be kept in mind The "once in a hundred year" storms which have inundated the north coast on occasion move more soil from some sites in a few hours than is transported in many years of normal rainfall (Horn 1966)

As man penetrates the mountains in search of minerals, timber, and recreation, roads that accompany him often represent the greatest source of erodable soil It is generally agreed, for example, that logging roads are more destructive to the hillsides in a given area than are the beds into which the trees are felled, or the skid trails over which the logs are dragged

When the lumber industry was younger, a great deal of log transport was accomplished by small railroads Now extensive networks of roads bring logging trucks into the forests, and wear and tear by the heavy equipment increases the exposure of topsoil Public roads, with their numerous roadcuts and fills, further contribute to the problem and in many areas may represent the main source of erodable material (Dr Schiechtl, in his section of this report, indicates how rapidly exposed slopes can be rehabilitated by revegetation at the same time road construction goes forward) Regardless of land use, however, it is important to recognize that keeping the soil covered is the key to erosion control An important aspect of forest management, therefore, should be to recover the land with vegetation, including the elements of a good timber crop, as rapidly as possible after the forests are cut

Logging engineering from the standpoint of minimizing erosion has received far too little attention from industry and governmental agencies With respect to the long-run economy of the forest, improvements in methods of timber removal can certainly be made to preserve the soil from serious increases in erosion Unfortunately, up to now much of the development of logging methods has been left to tractor companies The erosion situation can become less serious

in the future, as virgin timber cut decreases and young growth cutting increases, making it possible to use lighter, less damaging equipment in the forests However, even at the present there are less destructive methods of harvesting than some of the tractor methods currently employed and particular attention in regulation should be directed to the results achieved rather than the methods employed In regard to improving methods, Norway is currently experimenting with funiculars to lift logs from the forest floor, thus eliminating damaging skid trails and the Swiss are using a "Wyssen" system A modified version called the "skyline version" has been used in Oregon and California Rubber tired vehicles, long booms, and balloons are also being developed which allow logs to be removed from the forest with greatly reduced soil disturbance An acceleration of this developmental research is needed In addition, it has been suggested (McKillop 1967) that foresters themselves should take a more active part in the application of logging techniques and not remain distant from the logging operation until timber removal has been completed and advice on cleanup and regeneration is desired

In the last analysis of the actual process of tree removal from the forest the man on the tractor is usually the final authority His education, attitude, and interest in conservation of the soil and prospective regeneration of the forests can be deciding factors in the maintenance of forest resources Until better timber removal methods are commonly used, training movies, seminars, and field trips for the actual tractor operators are wise investments, and should be promoted to a greater extent by both industry and government

Fire has been both a blessing and a curse to our watersheds and were a fairly common and sometimes important element in the succession of our virgin California forests However, with the loss of virgin forests and the accumulation of fuel on the forest floor, destructive crown fires have become more common Much of the funds available to the State Division of Forestry now go into the urgent task of fire suppression

Control burning permits were initiated in 1945, such burns have been used primarily for brush control in range improvement, but have not been widely used as a tool in forest management, although prescribed burns may serve to reduce forest fuel and thus to decrease wildfire hazards Because brush can be greatly reduced by this practice, controlled burning may be used to open up second growth forests for a more parklike appearance It should be recognized, however, that "undesirable" trees, or even low growing members of the forest plant community, may be of decisive importance in maintaining the productivity of the forest soil For example, in northern coniferous forests of Europe where site deterioration due to podzolization (removal of soil nutrients by acid leaching of soil) is an ever-present threat, such pioneer "weedy" trees as birch and aspen are highly valued because their leaf litter is high in calcium, which neutralizes podzolization Likewise, alder trees might be considered undesirable since in transpiration they remove large amounts of water from a drainage system, however, they contribute to soil fertility by significant nitrogen additions in leaf fall (Goldman 1961)

Where prescribed burning is desirable, particular care must be taken to select the right site at the right time in order to reduce the danger of a controlled burn becoming a destructive wildfire In general, low intensity, controlled fires do not create the erosional hazards that wildfires do, and if wisely applied and carefully regulated can be a helpful management tool (Vlamis Biswell, and Schultz 1955) Their usefulness would be greatly increased by studies of the ecological relationships of the forest floor plant community, as well as additional information regarding any variations in soil properties

Another very important management problem is the inadequate restocking of cutover land with timber species State Forester Raymond (1966), at the Assembly Subcommittee public hearings, emphasized the seriousness of this problem by stating that "the one forest survey statistic that indicates a dangerous situation is the large amount of nonstocked land in California This area is reported to be 3,754,000 acres in 1963 " How much of this nonstocked "commercial timber land" is due to logging and how much is due to other activities is not documented

If we consider the restocking of redwood there is fairly good agreement that regeneration is best on exposed mineral soil, and that it has been maintained on the plains by periodic flooding At the same time, there can be little doubt that present restocking of redwood is not satisfactory Redwoods have regenerated themselves by sprouting in certain circumstances, but have not done so in others, under seemingly identical conditions Where redwood planting has been attempted (few attempts since 1930), there has frequently been poor survival of planting stock In fact, Douglas fir plantations are being substituted in the reforestation of areas once dominated by redwoods This conversion has prompted serious aesthetic criticism by conservationists Some authorities feel that the most serious complicating factor in restocking appears to be the variation in microclimate and soil type found from north to south, east to west, and even from hillside to hillside, within the redwood region

In attempting to examine the entire redwood situation in depth, it has become apparent that additional facts are badly needed The paucity of certain kinds of definitive information is alarming, especially for a renewable resource of such commercial and recreational value. To date, the modest research efforts on redwood ecology have produced more controversy than answers on many questions For example, Roy (1966) contends that redwood is a climax species, while Stone (1966) considers it to be subclimax In their sections of the report, Drs Becking and Biswell emphasize that fire is a necessary element of the redwood environment, while Roy (1966) stresses its destructive nature

There is also general dissatisfaction with the inability to consistently achieve regeneration of species

other than redwoods (Roy, 1953) In fact, there is an overall lack of sufficient silviculture of most California forest species This has made it necessary to base certain forest practice rules on conjecture, or on studies from other areas which may or may not be applicable to California Five years ago Dr Baker (1962, p 499), former Dean of the University of California School of Forestry at Berkeley, referred to the practice of silviculture in California as "primitive" Although some good research has been completed in the intervening years, there is little reason to alter this judgment today In fact, there may be less actual silvicultural effort now than there was in the 1930's This may in part be compensated for by an increase in the general area of forest biolgy, but in the case of almost every type of tree being logged today, cutting has necessarily gone ahead without sufficient knowledge available to make relatively certain of getting good restocking and rapid growth from the new stands Although it is not possible to stop timber operations while research catches up, it is certainly necessary to press on much more vigorously with research on all forest types, taking into account the great variability in California forests At the same time, some foresters that were interviewed feel that there is already a good deal of information on silviculture, which for social and economic reasons (e g lack of conviction by small forest owners that forestry can be profitable) is simply not being applied This is another pertinent problem that deserves attention

Closely related to the problem of restocking our cutover land with desirable timber species is the complex question of balancing growth against cut Currently, more is being cut than is being grown Oswald and Hornibrook (1966) reported that the 1963 cut of sawtimber in California exceeded net growth for the same year by almost 50 percent (3 2 billion board feet) If one desires somewhat less alarming statistics one can convert the board feet to cubic feet But regardless of the units used, at this rate it is obvious that the volume of growing stock of sawtimber will decline until some balance between the two is reached This will only happen when sawtimber is reduced to the point where further cutting is not economical Unfortunately, all projections must be based on growth and cut data which are incomplete, because a really accurate tally of the state's timber resources is simply not available Some statistics of timber production are no longer kept confidential in county tax assessor offices and may prove useful if assembled by some central agency But even with this information there is a pressing need for an intensification of the forest survey Certainly, the state government and the timber industry would benefit from having the best possible statistics on growth and cut in order to plan future activities more accurately

It is obvious from the confusion of available statistics that there is a need for standardization of timber units of measure The confusion and inaccuracy introduced by the use of various units of measure and in tabulating the amount of "over-run" in the lumber tally, points up the need for a universal standard of measure with (standard) conversion factors to express the timber inventory in terms that are consistent, comprehensive, and planned for conversion into the wide range of product estimates required by the forest industries A conference to sort out this problem, which might be convened by the State Board of Forestry, is long overdue

It has been claimed that more intensive forest management can maintain present timber cutting levels in the future despite reduction in timber acreages, however, there are several problems associated with this proposal Most important, such a concept is entirely dependent upon maintaining or improving site qualities for maximum growth rates, yet present methods of timber harvest are certainly not achieving this Also, as Koerber (1967) has pointed out, insect and disease problems are likely to become much more severe if intensive management practices result in even-aged stands of single species, since these stands are much more susceptible to attack and damage Of course, uneven-aged stands of multispecies can be established, so the primary problem in maintaining present cutting levels by intensive forest management is that of maintaining high site quality

In view of these formidable management problems facing the timber industry and the state government, more attention should be given to their solutions Often an ongoing project is one of the most fruitful places in which to make an additional investment The cooperative Soil and Vegetation Survey is an example of a continuing program in which expansion, rapid completion, and interpretation would be of great importance to the state The present procedure of not mapping areas of erosion which are less than 10 acres in size involves regrettable loss of important detail Many serious erosion sites are considerably less than 10 acres in extent, and these localized erosion sites could be lined in on the Soil and Vegetation Survey maps at modest additional expense Once they are definitely located on maps, problem areas would be more obvious, and erosion control would be easier to implement Speeding up completion of the survey and, even more important, supporting research on interpretation to enable full use of the information collected would also benefit a variety of interests For example, the high correlation of biologic production to soil type, as demonstrated in southern forests by Coile (1952), is useful in furnishing site classifications (Storie and Wieslander 1949) This survey is an example of a governmental project in which private industry is benefited

Cooperation between government and industry continues to be an absolute necessity for proper management of California's forest resources One innovation from which both government and the timber industry would benefit would be to require some form of licensing of foresters through the Department of Professional and Vocational Standards This would appear reasonable, since both industry as well as governmental agencies must rely heavily upon the advice of foresters

So much has already been said in this summary about the need for additional silvicultural research, that if it were not for the seriousness of the prob-

lem, it would not be mentioned again Such research, together with advances in logging engineering, are areas where great values in resource conservation may be realized with relatively modest investments In both silviculture and logging engineering, all private and governmental timber interests, as well as many other interests, would benefit greatly from further cooperative research activity A more active participation in and support of research by industry would seem particularly desirable (Wildland Research Planning Committee 1964) A timber tax similar to that of Oregon (a tax of 5 cents per 1000 board ft levied on loggers who cut more than 25,000 board ft /year for the support of forest research), which was suggested by the forest industries of that state, could support such research and also help maintain a closer working arrangement between government, industry, and research units The U S Forest Service, the State Division of Forestry and the Wildlands Research Council which have a history of cooperative effort should be further encouraged to continue to integrate their management and research activities together with the industry

The Forest Practice Act

The central theme of the Forest Practice Act is stated in Section 4542 of the Public Resources Code "The public interest is affected by the management of forests, timberlands, watersheds, and soil resources of the state, and it is the policy of this state to encourage, promote and require such development, use, and management of forests and timberlands as will maintain the continuous production of forest products, to the end that adequate supplies of forest are assured for the needs of the people and industries It is the policy of this state to encourage and assist private ownership in the management and economic development of privately owned timberlands "

The Forest Practice Act, as amended in 1963, is certainly excellent in theory, but in application has not conserved the resource to the satisfaction of many authorities This is evidenced by the report that the cutting level on private lands in California will have dropped from the 1963 cut by 59 percent projected to the year 2000 (U S Forest Service 1965) Although values of this sort may undergo some modification when and if better data are made available, and the year 2000 may represent the lowest point in California timber cutting levels, it is unlikely that the serious trend toward lower cutting figures on private land will be reversed under present practices Chief Forester Raymond has noted in his testimony at Berkeley (1966), "No field survey or research on the degree to which the (Forest Practice) Act has been effective has been made " The estimated 59 percent decrease in cutting level would seem to indicate that Californians are not, in accordance with the principles set forth in the act, "conserving and maintaining the productivity of timberlands in the interest of the economic welfare of the state and the continuance of the forest industry "

Among the objections to the Forest Practice Act is the question of the wisdom of dividing the forest lands of California into four districts for the purpose of rulemaking The variation in topography, soil, and vegetation within even a single district makes it difficult to prescribe specific regulations, such as exactly what angle of slope can or cannot be logged Any increase in prescription legislation would remove the element of flexibility necessary to meet the infinite variability in forest conditions Zivnuska (1966), Dean of the University of California School of Forestry at Berkeley, in addressing a meeting of foresters stated that California should adopt a form of public regulation "consistent with basic forestry principles and the requirements of silviculture in our heterogenous forests " He concluded that California has failed to achieve this by adopting the prescription approach which is "the antithesis of our central concept that silvicultural management requires continuously varying treatments based on the expert judgment of the forester "

Another serious objection to the Forest Practice Act concerns its administration The State Board of Forestry is presently composed of seven members who are in an important position of influence land use practices in California Expansion of membership on this board to include representatives of recreation and conservation would provide a broader view of resources management problems The present policy, which does not allow the State Board of Forestry to initiate, amend, or repeal rules on its own motion, but requires it to defer to the district forest practice committees for such actions should be altered Although the present representation on the district forest practice committees by various types of landowners is certainly desirable, it is equally desirable to have representation from other interests The addition of committee members other than timberland owners, such as professional foresters and local conservationists, would certainly be logical for providing a broader base for forest resource management Requiring the committees to meet on at least an annual basis is desirable, and their effectiveness would be increased if they were provided a modest budget to enable them to keep track of the forest conditions in each district.

A major defect in the Forest Practice Act which has become increasingly apparent during the course of this study is that the degree of responsibility for the condition of logged over land is not clearly fixed, and as a result, enforcement of forest practice rules is extremely difficult It seems reasonable that responsibility for the condition of a natural resource should lie with the land owner who is, in a sense, holding it in trust for future generations This principle is particularly important when the problem of absentee ownership is involved

The provision in the 1963 revision of the Forest Practice Act for civil suit to recover up to $40 per acre for damage to land through malpractice has not been used to any extent The authority of the State Division of Forestry to refuse an operator's permit in cases of violation of forest practice rules is a stronger incentive but has only been applied six times

to date Because the fine is such a low figure and because operator's permits have been so seldom refused, they are not likely to be a strong deterrent to improper forest practices The Norwegian system, as outlined in the report by the secretary of the Norwegian Forest Owners Association, that the forest owner post 12 percent of the value of the timber sale as bond for protection of the forest resource, is certainly much stronger than our Forest Practice Act provisions This bond is attached to the forestland from which the timber comes, and if it is not needed for reforestation measures or improvements it is returned to the landowner If the Norwegian system of posting bond were adopted in California, an owner could require contractual assurance from the operator that agreed upon procedures would be followed Recovery of the bond or a portion thereof would depend upon passing inspections by the Division of Forestry after completion of logging operations Where the owner is also the operator the legal aspects of such an arrangement would be even simpler, but in either case responsibility would be fixed

In addition to requiring the posting of a bond the state might require, as does the federal government, that plans, including proposed roads and skid trails be submitted prior to the commencement of logging operations Sensitive streams could be designated, as in the federal system, and final adjustments in the plans could be negotiated with state foresters Although there are obstacles to requiring prior cutting plans, they do not appear insurmountable, however, the question of course should be considered by a qualified group of forestry experts with the aid of good legal counsel

The widespread misuse of land conversion permits strongly suggests that these should be more rigidly controlled or removed from the Forest Practice Act, and be controlled by special legislation under the open space amendment

According to a tally of affidavits for the 1964–65 period, about 91 percent were to "improve grazing," and 796,053 acres were supposed to be converted from timber production (Raymond 1966) Chief Forester Raymond also reported at the committee hearings in Berkeley that a survey conducted in 1965 "showed that the acreage of timber supposed to be converted was overstated by 112,000 acres About 5 percent of the forest acreage ramaining has never been cut About 16 percent of this area has been fully converted to another use Conversion has been abandoned on 12 percent of the acreage and on the remaining 66 percent of the acreage conversion is incomplete" These figures, and the fact that all trees may be cut in land conversions, certainly lend support to the argument that "conversion" has been used as an excuse for clear cutting The process of permit issuance could be tightened to advantage and a bond requirement for land conversion might help insure that this provision does not continue to be misused A qualified group including legal counsel should decide what state agency could best make decisions on land conversion applications

Regardless of what changes might be made in the Forest Practice Act, they would be meaningless unless inspection and enforcement were greatly strengthened It was obvious from the Assembly subcommittee field inspection in August 1966 that stronger incentives for compliance with even the existing regulations are needed The Division of Forestry at the present time is badly understaffed, with an insufficient number of inspectors to insure compliance with the provisions of the Forest Practice Act With more personnel the division could make more use of its power to refuse to grant operator's permits to logging contractors found to be in violation of tha act Greater appropriations for this function are certainly needed to assure that the division can and does enforce the act The division is further hampered in enforcement by the fact that the small fine for rule violation is hardly worth the cost of collection As previously mentioned, enforcement would be greatly aided if California required the posting of a substantial performance bond in the manner required by Oregon, Washington, the U S Forest Service, and Norway The importance of such strengthening actions is inherent in the fact that the effectiveness of the Forest Practice Act is largely dependent on the state's ability to enforce it

THE GRASSLAND RESOURCE

Description

It is estimated that the potential annual grazing value of the 45 million acres of wildland used for grazing in California is over three times the current grazing value of $45 million This reflects the great potential for improvement that this vegetation type has The other main vegetation types with potential for improvement for grazing use are woodland grass, sagebrush, chapparal, noncommercial timber, and desert Improvement of grasslands for grazing would also beautify the wildlands, improve habitat for game, provide more water for underground storage and downstream flow, and reduce fire hazards, thus improving outdoor recreation potentials

The original grassland vegetation of California was composed primarily of perennial bunchgrasses, together with other perennial grasses, annual and perennial legumes, and various broadleaf plants Early grazing practices did not recognize the benefits of rotation, so continuous grazing was common Unfortunately, this practice resulted in the rapid spread of introduced plant species of lower forage value than the original vegetation and now California grasslands are made up of these grasses

Until fairly recently, the practices of grassland management have been primarily custodial in nature However, with the spread of less desirable vegetation species and the growth of the country's population, the emphasis in grassland management has shifted from maintenance to improvement, with most attempts at improvement involving the replacement of less desirable plants with species that have better forage value and are less inflammable

Management Problems

A problem which has already been discussed in relation to forests, but which is also very important to the grassland resource, is that of land conversions Part of the grassland problem is the loss of land to uses other than grazing, such as recreation, urban expansion, and water storage, however, at the present time a much more important problem is finding the successful means of conversion of lands of other vegetation types to grassland for grazing purposes

A common method of conversion to grazing land, especially in the woodland grass areas, is controlled burning of brush Appropriate precautions must be taken, of course, to avoid wildfires The amount of increase in forage value following this procedure depends on the original brush cover, success in removal of the brush, and soil properties after the burning

Despite the fact that about 89 percent of conversion permits issued from 1955 to 1964 under the Forest Practice Act were for conversion to grazing land, conversion of forest land to grazing land is usually a questionable procedure It is noted that such conversions often result in lower site quality, since mineral nutrients are either bodily removed or oxidized and lost by leaching of the soil In addition, because the annual grasses which are planted for conversion have much shallower root systems than the woody plants of the original vegetation, the soil nutrients are no longer as effectively recycled

Although it is apparent that more research needs to be done on the effect of land conversion on soil properties, it has been shown that use of the Soil and Vegetation Survey can help greatly in predicting success or failure of desired grassland vegetation species in a specific area The species that naturally occur in an area are indicative of what other species will be successful on the same site In addition, knowledge of soil type can provide a guide to the effectiveness of various fertilizers So far, about 60 percent of the land area originally considered for the Soil and Vegetation Survey has been surveyed, and the benefits derivable from the survey indicate that completion on the remaining 40 percent is highly desirable

Another management problem is accelerated soil erosion due to certain grassland management procedures. Brush removal by burning often results in significant increases in erosion in areas of steep topography, as does overgrazing Determinations of the proportion of stream siltation due to such practices, as well as development of management guidelines, are needed for proper management of grassland resources

Grassland management procedures such as control of undesirable vegetation by herbicides and insect control by pesticides all too often cause problems of water pollution and game management in the watershed In general, wildlife benefit from grassland management techniques, but of course they may compete with livestock Nevertheless, as recreation demands increase, deer utilizing grasslands may come to be considered as livestock, since hunting rights are becoming an important source of revenue for many ranchers However, additional research on the interrelationships between livestock and wildlife is needed to allow the maximum benefit to be derived from California's grassland

THE WATER, FISH, AND WILDLIFE RESOURCES

Water

No resource in the state has received more attention than water Its importance is widely recognized, and great sums of state and federal money go into its protection and distribution The management of this vital resource has been given steadily increasing attention and long-range planning can be expected to maintain quantitatively adequate water supply for California There are, however, some warning signs regarding quality These include local pollution of water supplies and some deterioration of water quality in long distance transport

A great many reservoirs have been constructed in California since the end of World War II, and a complex variety of benefits and problems has come with their development The benefits include additional water for irrigation, electric power, recreation, more uniform flow of cold water in the streams below the dams, waterfowl rest areas, and flood control There is also almost always a local economic benefit derived both from construction activities and the increase in recreational use of the area The major problems associated with reservoirs include pollution, loss of winter range for deer, and the blocking of streams which were migration routes and spawning grounds for trout and other anadromous fish

Although the water quality of California lakes and reservoirs is generally good, and many problems can be alleviated by multiple use watershed planning, population in flux continually poses a threat to water quality As man's recreational activities increase around lakes and reservoirs, protection from pollution becomes more critical Waves resulting from motorboat traffic may be so damaging to the steep banks of reservoirs that increases in turbidity of the water often can be correlated with weekend boating and water skiing Another problem covered by this report is that the very slow natural increase in the productivity of a body of water (eutrophication) is often dangerously accelerated by the addition of nutrients supplied from sewage and agricultural runoff Even the best sewage treatment plant does not remove enough nitrogen, phosphorus, and trace elements to prevent undesirable blooms of algae As the margins of Lake Tahoe already testify, accelerated eutrophication in lakes and reservoirs can occur in a very short time unless firm measures are taken to arrest the inflow of fertilizing nutrients from the surrounding land (Goldman and Carter 1965) Such watershed activities as road construction, logging, grazing, and agriculture also may create serious reservoir management problems by causing deterioration of water quality from fertilization, inorganic turbidity, and pollution Finally, if land use above impoundment sites accelerates erosion, high sedimentation rates will continuously reduce reservoir storage capacities

One of the most serious problems associated with aquatic environments is the widespread use of pesticides Improper use of pesticides has resulted in damage to fish and wildlife populations, and is a potential health hazard to human beings This problem is especially important in California, where one-fifth of the pesticides used in the United States are applied, and small quantities of DDT can be found in all waters and virtually all organisms Damage in aquatic environments, especially to waterfowl, is usually caused through gradual accumulation of pesticide residues in food chains Damage in terrestrial environments is often through direct effects on wildlife other than the intended victims Further comprehensive research is needed on the long-term effects of pesticide applications, with particular emphasis on intricate food chain relationships and the more subtle influences on the fecundity of fish and wildlife

Stream management in California is primarily a matter of stream protection Thus, watershed activities, particularly logging and road construction up to and including interstate highways, have long created serious problems The blocking of streams by logs and the siltation of spawning gravels have greatly diminished resident and anadromous fish populations (Fisk, Gerstung, Hanson, and Thomas 1966) Since dam construction continuously reduces the approximately 25,000 miles of spawning streams available for trout and other anadromous fish, preservation of the quality of the remaining streams is essential In view of the problems which are already serious on some watersheds, the use of streambeds as tractor roads and skid trails should be stopped In addition to present problems, the advent of pulp operations on the north coast may provide new and serious stream pollution and, in this case, legislation by prescription appears entirely warranted

The question of riparian vegetation is a difficult one From the standpoint of fish and wildlife, removal of the vegetation along a stream's course is undesirable since shade is important in maintaining the low temperatures necessary for good trout streams, and the roots of trees hold the banks against excessive erosion If water yield alone is considered, trees along streams transpire significant amounts of water, thus reducing the stream's contribution to any reservoirs below In addition, trees beside stream courses may be undercut during flooding in high rainfall areas to form logjams which may further aggravate flood damage Considering the variety of possible situations, it would probably be unwise to establish fixed rules on riparian vegetation In general, the higher up the stream course, the more desirable is the maintenance of vegetation In the lower stretches, where flood threat is greater, the maintenance of riparian vegetation may be less desirable, but the question should be decided on an individual stream basis

Fish

The fishery resource is of course closely related to water quality and distribution The commercial and sports fisheries alike are dependent upon maintenance of suitable environmental conditions Anadromous fish provide an important commercial fishery in California, especially along the north coast More difficult to evaluate, but certainly of very great economic value is the sports fishery

The management of reservoir fisheries is still in a developmental stage In many cases attempts to manage this recreational resource have been rather disappointing The usual pattern is for the new reservoir to provide an excellent sport fishery for the first few years of its existence, followed by a decline due to a reduction in basic fertility as nutrients from the decomposition of vegetation and from leaching of the freshly exposed basin are exhausted This situation is further complicated by the difficulty of maintaining a proper fish population balance with a tendency towards developing large populations of stunted fish At the present time the California Department of Fish and Game is investigating the use of compressed air to better circulate nutrients by breaking down thermal stratification and preventing summer stagnation There is a particular need for additional and more intensive basic research on population dynamics of reservoir fisheries, as well as for detailed studies of food chain relationships

Wildlife

At the present time, there is no reason why man and native wildlife cannot live in reasonable harmony within the watersheds The objectives of good multiple land use should include adequate provisions for wild animals, so that their variety as well as abundance may be maintained

Forests are an important habitat for a great variety of animals, and because of the herbaceous and insectivorous nature, the animals are of equal importance to the forests Since open canopy forests produce more seeds than closed forests, the conditions resulting from logging can be expected to favor species of birds which prefer seeds Likewise, conditions are greatly improved for browsing animals after logging Deer and elk populations increase following burning or cuttings but they eventually level off and decline All seedlings rapidly become less susceptible to deer browse damage with age, thus it is important to encourage timber regeneration immediately after cutting before the deer population has a chance to build up

Since deer browsing may add a decade or two to the time required for second growth to reach harvestable size (Helms 1967), deer control is of considerable importance in California's regenerating forests Studies indicate that a harvest of $\frac{1}{4}$ to $\frac{1}{3}$ of the total deer population per year would be advisable for proper forest management, however, California hunters presently harvest only 6 percent annually This is partially due to the inaccessibility of many of the deer herds in large areas of private land Both hunters and clubs which lease hunting privileges are increasing in number, and will tend to increase the deer harvest However, an optimum management of this animal resource is unlikely until public opposition to the regular harvesting of does is overcome (Longhurst and Howard 1955)

A COMPREHENSIVE APPROACH TO WATERSHED MANAGEMENT

Evidence presented in the various sections of this report indicates that California urgently needs to prepare and implement a long-range plan for multiple use management of the watersheds based on the best scientific information available Since only modern computers are capable of dealing with the multitude of variables involved in comprehensive watershed management, such a plan would require building a computer simulation model applicable to all watersheds To date, simulation models have been used for problem solving in insect control, water resource management, salmon fishery management, and forest management Two elaborate simulators are now available in forest management, one developed in British Columbia to compute effects of thinning on stand growth of Douglas fir (Newnham 1964), the other developed at the Harvard Forest (O'Regan, Arvanitis, and Gould 1965) for cost-benefit analysis of cutting, fire, storm, interest income, taxes, etc What is not yet included in these simulation models, and what authorities such as Dr Watt of the University of California Institute of Ecology at Davis and Dr O'Regan of the U S Forest Service feel can be included are the effects of roadbuilding and timber management strategies They feel that the construction of such an expanded model would take about four years

A simulation model could be developed to include the complex problem of erosion The silt load of a stream may be derived from erosion of its channel, from the shallow layers of the soil affected by surface erosion, and from the deep layers of unweathered rock which may be exposed by landsliding This report suggests research which would provide important quantitative information on sources of the eroded material Dr Wahrhaftig suggests one or two years to complete this work and indicates that it might be done in cooperation with the Division of Water Resources of the U S Geological Survey It should be pointed out that the State Water Plan will go into operation on the Eel River in 1969 This allows only one or two years to gather data on ecological and hydrological factors in this area before reservoir construction begins

Another approach to the soil erosion problem would be to explore the relation between lake sediment accumulation and past logging activities in areas such as Mt Shasta and Lake Tahoe Lakes are certainly reservoirs of history in the sense that they accumulate a sedimentary record By coring these sediments and analyzing the pollen and chemical constituents of the cores, it would be possible to reconstruct the erosional history of the area in question by studying the accumulation rate and quality of sediments This program would take approximately three years to complete

The mineral nutrient cycle of a forest ecosystem is one other aspect which could be included in a computer simulation model Although a great deal is known about the nitrogen cycle in life processes, there is insufficient quantitative data showing how nitrogen is cycled within a terrestrial ecosystem Research on this cycle could be combined with studies of nitrogen cycles in aquatic communities, a subject of great concern to pollution biologists The necessary data could be obtained in about four years, as part of a total watershed study

This is a particularly appropriate time to begin studies of entire watersheds in California which can provide information essential for multiple use management In recognition of the importance of biological productivity to the future of mankind, the International Biological Programme (a worldwide effort similar to the International Geophysical Year) has as its central theme "The Biological Basis of Productivity and Human Welfare " The U S effort in this program has already integrated the terrestrial and freshwater sections In the near future, sites for complete watershed studies will be chosen throughout the United States It would be fortunate if one of these were a California watershed By beginning a watershed program now the state would have an excellent chance of attracting federal support to extend the research necessary for comprehensive watershed management

RECOMMENDATIONS

1 Intensify and complete the mapping phase of the Soil and Vegetation Survey as rapidly as possible, and provide support for a strong research program to develop information on the characteristics of the soil classifications used in mapping which will enable the full use of the map information in improving watershed management Indicated wherever possible areas of erosion regardless of whether or not they are less than 10 acres in extent

2 Increase silvicultural research on all forest species, with particular emphasis on improving regeneration Such studies should include species of trees which are not presently considered particularly valuable commercially

3 Expand research to develop logging techniques which are less destructive of the forest floor and stream fisheries than those currently in use

4 Encourage a tax on timber cut, such as that imposed by other states, to support forest research necessary to help insure the continuance of the timber industry in California

5 Hold a statewide conference to establish uniform standards of measures and standard conversion factors

6 Determine with greater certainty the source of sediment that is being deposited by streams in order to compare the relative contributions of erosion from the land surface of the watershed and that resulting from natural down-cutting of the stream channels

7 Further investigate the positive and negative aspects of controlled burns as a grassland and forest management practice Particular attention should be given to effects on vegetation, soil properties, and wildlife hazards

8 Study the relationship of productivity and fish population dynamics within an entire watershed to obtain badly needed information on multiple land use as a factor affecting the fish production of lakes, streams, and reservoirs

9 Test the feasibility of intensive watershed management for rejuvenation of the steelhead and salmon fishery, which has deteriorated as a result of erosion from poor land use

10. Intensify the study of factors causing the eutrophication (fertilization) of our lakes, reservoirs, and streams

11 Encourage better management of California's overpopulated deer herds through larger annual harvest of both sexes

12 Promote ecological research covering the effect of pesticides on total ecosystems

13 Require the licensing of professional foresters by the Department of Professional and Vocational Standards

14 Consider the following possible revisions and extensions of the objectives of the Forest Practice Act

a) Extend the objectives of the Forest Practice Act to include consideration of the general public welfare

b) Expand the membership of the State Board of Forestry to include representatives of recreation and conservation

c) Permit the State Board of Forestry to initiate, amend, and repeal rules independent of the District Forest Practice Rules Committees

d) Expand the membership of the District Forest Practice Rules Committee to include professional foresters and local conservation interests

e) Require the District Forest Practice Rules Committee to meet at least annually, and increase their effectiveness by assuring an adequate operating budget

f) Require the submission of cutting plans for approval by the Division of Forestry prior to all timber operations

g) Require the posting of a substantial performance bond by the land owner prior to all timber operations

h) Alter the administration of land conversion permits to prevent the continued misuse of this provision of the act

i) Strengthen the inspection and enforcement arm of the State Division of Forestry

j) Prohibit the use of streambeds as tractor roads or skid trails, and prohibit blocking of streams

k) Retain riparian vegetation as a buffer zone along streams except where it may aggravate flood damage or where water is very deficient

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SECTION THREE

MAN'S EFFECT ON CALIFORNIA WATERSHEDS

SOURCE MATERIALS

(Published as a Separate Document)

INSTITUTE OF ECOLOGY
UNIVERSITY OF CALIFORNIA
DAVIS, CALIFORNIA

Dr. Charles R. Goldman, *Director*

A Report for the
Subcommittee on Forest Practices and Watershed Management

Charles Warren, *Chairman*
Edwin L. Z'berg
Alfred E. Alquist
E. Richard Barnes
Burt M. Henson

O. James Pardau, *Consultant*

of the

Assembly Committee on
Natural Resources, Planning, and Public Works
California State Legislature

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JANUARY 1967

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THE LAST FRONTIER

A STUDY OF THE CONSERVATION AND DEVELOPMENT OF THE RESOURCES OF THE MARINE AND COASTAL ENVIRONMENT IN CALIFORNIA

BY THE

SUBCOMMITTEE ON MARINE RESOURCES

Winfield A. Shoemaker, *Chairman*

AND THE

SUBCOMMITTEE ON CONSERVATION

Alfred E. Alquist, *Chairman*

OF THE

ASSEMBLY COMMITTEE ON NATURAL RESOURCES, PLANNING, AND PUBLIC WORKS CALIFORNIA STATE LEGISLATURE

Edwin L. Z'berg, *Chairman*

Part IV 1965–67 Committee Reports

O. James Pardau, *Consultant*

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SECTION I

REPORT OF THE SUBCOMMITTEE ON MARINE RESOURCES

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California Legislature

Assembly Committee on Natural Resources, Planning, and Public Works

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January 2, 1967

HONORABLE JESSE M UNRUH
Speaker of the Assembly

HONORABLE MEMBERS OF THE ASSEMBLY
State Capitol
Sacramento, California

GENTLEMEN:

The Subcommittee on Marine Resources of the Assembly Committee on Natural Resources, Planning, and Public Works submits herewith its report to the Legislature [1] on 1965–67 studies dealing with the conservation and development of the rich and varied natural resources of the marine and coastal environment in California

As our terrestrial resources become progressively depleted by the demands of growth, we must turn increasingly to our last frontier for the resources necessary to maintain, and enhance wherever possible, the unique quality of California life. In this venture, however, we must demonstrate that we have learned from our mistakes by ensuring that the short-term, single-purpose philosophy which presently dominates terrestrial resources management is replaced by a long-range, multiple-purpose policy guaranteeing the conservation and development of our marine and coastal resources in the total public interest.

As the result of its study of this important and complex subject, the subcommittee concludes that there is urgent need for the formulation and adoption of a comprehensive marine resources policy by the state, and in its report recommends passage of the Marine Resources Conservation and Development Act as the first step toward this goal The act creates the California Commission on Marine Resources, which is charged with the responsibility of formulating a long-range master plan—based upon a comprehensive, continuously updated program of research and exploration—for the balanced conservation and development of our proximate ocean resources.

In the view of the committee, the adoption of this approach—which is consistent with that recommended in its numerous other studies of such problem areas as development in the Lake Tahoe Basin, comprehensive watershed management, highway and freeway planning, the filling of San Francisco Bay, and the regional economy of the north coast redwoods—is vital to the responsible and continuing resolution of the increasingly serious conflicts in resources allocation posed by California's explosive growth It is clear that only through such efforts will it be possible to maintain some element of the incomparable productivity and natural beauty of the number one state for the enjoyment of future generations

The committee is grateful to the many distinguished and knowledgeable representatives of the academic community, private industry, and government who presented their views on this complex subject, and it is hoped that our work will contribute to the continuing development of responsible, meaningful public policy in this most important field of natural resources planning and management.

Respectfully submitted,

Edwin L. Z'berg

EDWIN L Z'BERG, *Chairman*
CHARLES WARREN, *Vice Chairman*

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[1] 1965–67 Committee Reports
Part I: Conflict in the Redwoods (Coastal Redwoods Management)
Part II: The Recreation Gap (Recreation Planning and Management)
Part III: Man's Effect on California Watersheds (Forest Practices and Watershed Management)
Part IV. The Last Frontier (Marine and Coastal Resources)
Part V Highway Beautification, Beautification and Maintenance of the Capitol Mall, Highway and Freeway Planning, Regional Planning in the Lake Tahoe Basin, the Filling of San Francisco Bay

INTRODUCTION

California has been endowed with an extraordinary variety and abundance of land, water, wildlife, natural vegetation, mineral, climatic, and scenic resources—a heritage perhaps unequaled by any political entity in the world Whatever the wisdom with which these resources have been and are being utilized, our major attention as a growing state has been focused largely on the exploitation of the resources of the continental land mass

However, with California now the most populous and rapidly growing state in the Union, and as our terrestrial resources are progressively depleted, increasing attention is being given to the resources potential of our last frontier—the ocean This is uniquely a California concern, because among its varied attributes California can rightly be considered a major maritime state, with a 1,200-mile coastline on the world's largest ocean facing the expanding economies of a host of developing overseas nations And with some three-fourths of its rapidly expanding population—perhaps over 25 million people by 1990—living predominantly in large urban communities within one hour's drive of the coast, it is clear that the ocean will exercise an increasingly significant influence on the California way of life

If wisely and responsibly managed, the marine and coastal environment of California provides an unprecedented opportunity to maintain and improve the quality of life in the number one state Not only can we extract a wealth of living and mineral resources, but if carefully planned it can serve as an unmatched source of recreation and pleasure, as a broad highway for commerce and economic growth, as a source of fresh water and power, and to a limited extent as a repository for the wastes of our civilization

Our past efforts to exploit the resources of the sea have been marked by the growth of uncoordinated, piecemeal programs aimed at the use of a particular resource, usually to meet some short-term, single-purpose recreation or commercial objective The most striking illustration of the failure of this approach is the uncoordinated and chaotic exploitation of the potentially rich tide and submerged lands along the California coast, particularly in bays and estuaries such as San Francisco Bay The most dramatic consequence of this shortsighted policy has been the reduction of San Francisco Bay—which is a unique resource in its own right and possesses many values other than mere real estate—by filling from some 568 to less than 325 square miles, a process which continues at an accelerating rate Other increasingly serious problems potentially the result of uncoordinated, piecemeal exploitation of the marine and coastal environment include the erosion of many world-famous beaches, the chaotic use of land in the coastal zone, the pollution of estuaries and bays, the loss of potential recreation areas, the decline of certain fisheries, and the contamination of beaches and destruction of aesthetics by offshore oil operations.

In an age when our eyes are turned to the stars and the exploration of outer space, it is indeed a paradox that so little is known of the environment of the sea which covers nearly two-thirds of the globe And until very recently except on an individual basis little effort has been expended to evaluate the living and mineral resources potential of the ocean, to ascertain its influence on weather and climate, to examine its potential as a source of recreation and fresh water, to study the problems of shoreline planning and population movement, and ascertain its potential contributions to the economic growth of the state through expanded and improved transportation and trade, and the greater utilization of its resources

Recognizing these facts, the Subcommittee on Marine Resources, under the chairmanship of Assemblyman Winfield Shoemaker of Santa Barbara County, was appointed to begin an assessment of the policies and programs bearing on the exploitation of the resources of the marine and coastal environment in California, with the basic goal of formulating a meaningful approach toward the development and adoption of comprehensive state policy in this field.

The creation of this subcommittee was particularly appropriate because its chairman served also as the representative of the State Assembly on the Governor's Advisory Commission on Ocean Resources, which had been appointed in early 1964 to begin a similar review within the executive branch of state government The commission, which was composed of representatives from the academic community, the private sector, and federal, state, and local government, worked closely with the State Office of Planning and the Institute of Marine Resources of the University of California at La Jolla in the preparation by the institute of the landmark document "California and Use of the Ocean " This report, which has been cited as one of the most important studies ever done in the field of marine resources, served as the focus of commission deliberations until it lapsed at the change of administrations in 1966

The Subcommittee on Marine Resources included the following objectives in its study, the major element of which was an exhaustive two-day public hearing in Santa Barbara at which a broad spectrum of the most distinguished marine resources experts in the nation presented testimony relative to

1 The role which the State of California can and should play, in concert with the federal government and other states and nations, in utilizing the resources of the ocean toward the development and strengthening of economic and cultural ties throughout the Pacific Basin community of nations and states;
2 Review of the preliminary report, "California and Use of the Ocean," prepared by the Institute of Marine Resources of the University of California at San Diego (La Jolla), for the State Office of Planning as a study element of the State Development Plan;
3. The present state organization for research and management in marine resources;

4. The organization and technical capabilities of industry and the various levels of government in California for research and development in marine resources;
5. Identification of the most promising areas of economic activity with respect to marine resources, and review of specific short- and long-range proposals for the initiation of programs in marine resources by the State of California;
6. Problems created by the abandonment of assorted debris on the ocean floor as the result of commercial operations, and
7. Review of the Tide and Submerged Lands Study prepared by the State Lands Division for the State Office of Planning.

Based upon this preliminary review, it is clear that the State of California has a vital interest in the formulation and adoption of a comprehensive policy for the long-range, balanced conservation and development of the resources of the marine and coastal environment, and that such a policy must be based upon a coordinated, continuously updated program of research and exploration

This committee will undertake a continuing effort to achieve this objective.

THE CONSERVATION AND DEVELOPMENT OF MARINE RESOURCES

Dimensions of the Challenge

Although California is noted for the unique variety and character of its geography, much of which is seemingly remote from the coastline, the California way of life is profoundly influenced by the sea. The focus of economic and population growth has been concentrated in the coastal plains, with 90 percent of its anticipated 1980 population of some thirty million people expected to live in the coastal counties and metropolitan areas Most of these people are intimately affected by the sea through the direct or indirect production of goods and services related to some aspect of the marine or coastal environment, or the use of its resources for meeting such public needs as recreation, water development, and waste disposal.

Various aspects of the influence of the sea on the quality of California life, and the challenge of using wisely the resources of the marine environment to meet the demands of growth, are found in the following excerpts from testimony presented to the subcommittee·

Dr. Milner B Schaefer, Professor of Oceanography, Scripps Institute of Oceanography . Director, Institute of Marine Resources, University of California at San Diego, Chairman, Governor's Advisory Commission on Ocean Resources

". . I am extremely pleased that this committee is initiating a comprehensive inquiry into the opportunities and problems of California in attaining the optimum utilization of the resources of the sea for the benefit of our rapidly growing population. This is by no means a simple matter, because our lives are intimately related to the sea in multiple ways The ocean determines our climate and weather it is an important source of food and minerals, a potential source of our most critical necessity, water, and a convenient place to get rid of our domestic and industrial wastes It is an outstandingly important source of healthful outdoor recreation, aesthetic and intellectual satisfaction, and rest from the rigors of living in a modern industrial society The ocean provides a broad highway, not only for California, but also for the states to the eastward, for trade and commerce with other lands Although we have some 1,200 miles of shoreline, the ocean-related activities at and on both sides of this interface are so large, multitudinous, and complex, that is is becoming a very crowded place indeed, with respect to the uses of which important decisions are pressing right now, and will become even more urgent as time goes on . " (Transcript, Subcommittee on Marine Resources, Assembly Committee on Natural Resources, Planning, and Public Works, California State Legislature, Santa Barbara California, February 24–25, 1966, Appendix I)

Mr. Harold R. Walt, Deputy Director of Finance, State of California; Member and Governor's Coordinator, Governor's Advisory Commission on Ocean Resources

". . . It is obvious that the sea presents great challenges and great opportunities for advancing the welfare of our people Less obvious, but no less important, is that even the long coastline of California, over 1,200 miles long, is becoming crowded, that, in order for California most beneficially to use the ocean, there must be judicious allocation of the various uses of the coastal zone and the marginal sea We require land and sea space for recreation, for ports, for marine-industrial sites, for production of power and fresh water, for disposal of wastes We must stretch the shoreline, and we must achieve an optimum balance of uses

"Crowding of the land is pushing people of our nation, and other nations, to the sea Our federal government is turning increasing attention to the sea, both for defense and commercial purposes. Over 20 bills related to oceanography are now under consideration in the Congress. One recent event has captured the imagination of the people of the nation, focusing attention on the ocean This is the acquisition by the United States, under the International Convention on the Continental Shelf, of 850,000 square miles of new territory—a quarter of the land area of the nation. This wet real estate is known to contain a store of useful materials, living and nonliving, but only petroleum, gas, sulfur, salt and fish are yet being produced in significant amounts There is a need to explore and survey this new territory and to learn how to deal with it Men are just beginning to learn how to come to grips with it at first hand The Navy's "Man in the Sea" program has made great progress during the last year, through the men living and working for weeks from *Sealab II* on the bottom of the ocean off southern California This will lead soon to men being able to live and work everywhere on the continental shelf

"Despite the importance of the uses of the sea and seabottom along the coast, there are yet wider opportunities California and other western maritime states can be far more than the western edge of the expansion of the United States venturing into the sea As a modern, enlightened and technically advanced society in control of a long reach of coastline, we have the opportunity to benefit from the immense potential of broad development throughout the world ocean, and especially to employ the sea, in concert with other western states and other peoples facing the Pacific Ocean, drawing on all the sea's resources, to develop a Pacific Basin community with great economic and cultural strength

"Although through the activities of GACOR and the State Development Plan program California has pushed forward actively toward the greater use of the resources of the ocean, others have not been idle The federal agen-

cies, as I have noted above, have been active in tooling up for expanded ocean research and development Through the representation of members of the federal government and through the attendance of others as observers, GACOR has been able to take advantage of opportunities to coordinate recommendations for state action with the federal plans. Similarly, our sister States of Oregon, Washington, Alaska, and Hawaii have also a large stake in the development and use of the resources of the sea, and our plans should be formulated so that they not only enhance the welfare of California, but also gain strength through interaction with these other states Observers from the States of Oregon, Washington, Alaska, and Hawaii participated in the last GACOR meeting

"Although there are many fascinating and challenging issues to be raised in connection with our state effort to explore the ocean and its resources, one fact is inescapable our exploration must take place within a broad framework of development studies, studies which have as their ultimate objective the enhancement of social and economic opportunities for Californians . " (Ibid, pp 18–19)

Mr. Walter T. Shannon, Director, California State Department of Fish and Game

" The Fish and Game Commission and the Department of Fish and Game have always had an interest in the use of the ocean's resources, particularly in terms of management through regulations based upon biological research and the collection of statistical data relating to landings, censusing, etc

"Commercial fisheries such as the tuna and sardine, have received considerable attention from the department and cooperating agencies Sport fisheries have benefited from this research and, in addition, programs under various funding have been carried out on fish such as the rockfish, barracuda, and halibut

"Since the war, particularly since the advent of the 'space age' in 1957, interest in 'inner space' has flourished, due in part to allied defense interests and to the spectacular developments in the technology of life support closed systems

"Spectacular as the technology of 'inner space' systems may be, the basic disparity between a world crying for protein and living space, and of a world equally intent upon crowding and polluting the remaining coastal resources which *produce* the protein, has forced us to look more closely at what we are doing, and what we *must* do if these resources are to survive " (Ibid, p 266)

Dr. W. B. Chapman, Director, Division of Resources, Van Camp Sea Food Company Division, Ralston-Purina Company, Member, Governor's Advisory Commission on Ocean Resources, Member, Marine Research Committee, California State Department of Fish and Game, Member, Advisory Council of the Institute of Marine Resources, University of California

" This section of my statement can be summarized as follows

"1 The total, and the per capita, use of fish is increasing in California and the United States (as in the world) at a rate more than the rate of human population increase There seems to be every likelihood that it will continue to do so for the foreseeable future

"2 The landings of fish in California have declined in the past 28 years from 800,000 tons in 1936 to 300,000 tons in 1964 while the use of fish in the state, alone, has increased to twice its 1964 production rate (over 650,000 tons in 1963) Of the kinds of fish to which I am referring (the local pelagic fishes) the catch has declined from 250,000 tons in 1948 to 75,000 tons in 1964

"3 Conservative estimates show that there are sufficient pelagic fish resources available off the immediate coast of California to support fish landings sustainable in perpetuity 30 times the level of those presently being made (or 3,000,000 tons per year)

"These three points seem to me to measure with some precision the dimensions of the state's problem in the living resource end of making useful the marine resources available to its citizens While we have the natural resources to provide on a sustainable level five times the amount of fish the state uses per year we have permitted our fishing industry to decay to the point where it produces from all seas only half what we use Instead of being a major exporter of fish we have become a major importer, and our resources die and go to waste each year like a field of grain of which only a thirtieth is harvested " (Ibid, Appendix III)

Mr. Donald R. Johnson, Regional Director, U S Bureau of Commercial Fisheries, Pacific Southwest Region

" The American fishing industry is under sharp challenge in the rapidly changing world of today Whereas the challenge applies in all our coastal states, it applies especially in California because California has an unusually long coast line and because California has a very valuable fishing industry The local industry faces many challenges if it is to maintain its position of national importance and if it is to develop further and if it is to contribute to the growth of the state's economy

"The California fishing industry is under challenge to maintain its historical right to use the sea in competition with the rising demands of other users (sport fishing, waste disposal, ocean mining, and the like), especially the fishing fleets of other nations, such as Japan and the U S S R whose vessels are spreading throughout the world ocean Our industry is also under challenge to maintain and increase its share of the protein food market in the face of foreign fishery imports and ever stronger competition from dairy products, poultry and meat These are the major challenges.

"If the California fishing industry is to meet the many challenges and if it is to grow, the state and federal governments must, in consort, have enlightened policies and programs which will aid the industry's development. Policy must insure conservation and encourage full utilization of the resources Programs must include research and services to insure that the management of the resources is scientifically sound and that the efficiency of harvesting is continually improved " (Ibid, p 237)

Mr. E. R. Murray-Aaron, Chief, Division of Oil and Gas, California State Department of Conservation

" . Petroleum is perhaps the only mineral resource on the continental shelf about which we now have any considerable amount of data, but there still remains much to be determined Competent authorities have estimated the potential offshore reserves as between three and four billion barrels of oil These estimates are based on the assumption that the California offshore pools are similar to those onshore, that the ratio of productive acreage to total acreage is the same onshore and offshore, and that recoveries per acre-foot will be of the same magnitude

"The state has received to date close to 600 million dollars in revenue from offshore oil and gas operations Of the approximately 1¼ million acres of leasable lands lying offshore in waters less than 300 feet deep, about 8 percent is currently under lease Should the development of California's offshore petroleum resources attain its full potential, the direct financial return to the state will be tremendous Additionally, there will be the impact on the general economy of the state As an example, albeit an outstanding one, the easterly offshore extension of the Wilmington oilfield, development of which commenced last August, should bring a net revenue to the Tidelands Oil Revenue Fund of more than one billion dollars over the next 35 years " (Ibid, Appendix VII)

Dr. Ian Campbell, California State Geologist; Chief, Division of Mines and Geology, California State Department of Conservation

". . The rapid growth of interest and expanding technology in oceanography provide an immediate challenge to the State of California to assess the potential value and accessibility of the marine resources in the ocean and estuarine waters under state jurisdiction The inventory

of resources in the marginal seas and the submerged lands requires the modification and adaptation of known techniques practiced onshore and their projection offshore by direct and indirect means. A master plan for inventorying and exploiting the continental shelf of California is needed Lacking a master plan and the means to carry it out, intensive coordinating efforts must be made—logically within the Resources Agency.

"The investigations by state agencies such as the Division of Mines and Geology, Department of Fish and Game, Department of Water Resources, and universities, and investigations by federal agencies such as the U S. Coast and Geodetic Survey, Geological Survey, Bureau of Mines, U S Navy, Bureau of Commercial Fisheries, and others need lateral coordination with each other and vertical coordination with the National Academy of Sciences and National Oceanographic Records Center

"Apart from coordination, and in order to develop necessary information on California's shelf land topography, the state should undertake or contract for·

"(a) Completely new detailed bathymetry at large scales similar to the state maps,

"(b) A State geodetic survey (perhaps as a unit within an existing agency) to maintain the vertical and horizontal control networks and to enable adequate and comparable horizontal positioning offshore;

"(c) A system of dependable electronic stations for all offshore positioning and required references to the state coordinate system;

"(d) Accurate delineation of the shoreline and off-lying rocks by means of new large-scale aerial photography.

"Subsequently, and in part concurrently as adequate base maps become available, the state should institute geologic investigations, including seismic, magnetic, and gravimetric surveys of areas of interest

"Concurrently, and at very little extra expense, certain ancillary types of information should be developed, for example:

"(a) Complete and comprehensive current surveys of sufficient duration accurately to chart three-dimensional oceanic circulation along the continental shelf at various depths beneath the surface;

"(b) A network of additional accurate tide gages along the coast and marking of the tidal plains along the shore

"Geologic formations and structures extend offshore onto the continental shelf from California's coastal regions, but no adequate geologic mapping of the shelf, even within California's three-mile jurisdiction, is available The economic potential of the mineral resources on the shelf is, except for the petroleum resources, largely an undetermined factor As efforts are advanced to make use of the state's marine resources, much information on the geology and mineral resources will be needed and will be developed by private and government sectors To assure an orderly development and wide dissemination of such information to wherever the 'need to know' exists, any state master plan should include a coordinating and compiling function for the Division of Mines and Geology . . ." (Ibid., pp 130–132)

Dr. William V. Kielhorn, Lockheed Aircraft Corporation, Burbank, California, Member, Governor's Advisory Commission on Ocean Resources

". . . There are two severe problems to be solved The first concerns legal aspects of ocean exploitation This will undoubtedly be discussed by experts in that field The second is that of determining precisely what our resources really are, and of deciding which should be investigated, and in what priority. The problems are interlinked, and could easily become entangled hopelessly unless bold and positive decisions are made We are now well past the stage where technology permits the efficient and coordinated exploration of California waters with the view of establishing basic information prior to exploitation, and to guide formulation of reasonable and equitable rules therefor . . ." (Ibid., p. 195)

Mr. W. C. House, Vice President, Aeroject-General Corporation

" . The great Pacific Ocean lapping at over a thousand miles of our coast brings us many blessings in the form of food, ports and beauty It also brings a climate to a narrow coastline belt which makes a delightful habitat which might otherwise be barren desert But this too is a mixed blessing. The most stable air brought to land by daily onshore winds brings in the cooling air which makes the land habitable but also causes the low altitude temperature inversions that trap pollutants over our heavily inhabited areas It is hardly necessary to describe to this committee the ill effects of this problem

"Before I discuss some suggestions on the matter, I would like to cover another problem area which may be more of an annoyance to the general public than a serious problem However to the aircraft, air transport, and agricultural industries, it can involve unnecessary and costly expenditures of resources

"I refer here to our rather poor ability to predict storm conditions, particularly in the southern California area I do not wish to criticize our weather forecasters as I believe they have insufficient data on which to make their judgments The Chicago area, for example, has weather stations for more than a thousand miles in the crucial directions upon which they can rely Our coastal cities have data only from a few ships which cannot possibly supply the knowledge of the complete picture required for good forecasting

"Technology today permits us to make fantastic measurements in space, temperatures, radiometry, spectroscopic, and even photos of the moon and Mars Is it not reasonable then that we could install an appropriate number of weather buoys offshore to provide us with good weather data? I foresee this data being utilized not only to more accurately predict storm data, and coastal fog conditions, but to indeed predict accurately the temperature inversion altitude and the times when it will provide those severe 'smog' conditions in the coastal zone

"Today we wait until the pollutants reach critical values in certain areas and then call for special measures such as switching to natural gas in industrial plants It would seem that forecasting of this situation, and based on this, corrective measures taken in advance would prevent the critical air pollutant level from being reached. It would permit the industrial concerns affected to better plan their operations with this advance information

"Specifically, it is proposed that the State of California together with the United States Weather Bureau investigate the use of weather buoys off the West Coast of the U S as a means of obtaining better weather forecasting data In addition, that a determination be made of the practicability of forecasting critical temperature inversion situations and a structure of air pollutant laws be devised to be administered and enforced under anticipated critical conditions

"To those who would object to either the cost of obtaining these weather data, or to the controls enforced by such new laws, I would ask you to consider the damage to health, crops and property by indiscriminate pollution . . ." (Ibid., pp. 231–232)

Mr. Fred L. Jones, Director, California State Department of Parks and Recreation

" . The coastal and marine resources of the state represent the single most important recreation resource available to our citizens Approximately three-fourths of our population, some 13 million Californians, reside within one hour's drive of the Pacific shore. It is expected that the population within one hour of the coast will increase to 20 million by 1980

"The state's interest in these important recreation resources is in the ways and means necessary to assure appropriate use and enjoyment of them. In order for this to be accomplished, it will be necessary for the Director of Parks and Recreation, as the public's recreation spokesman at the state level, to actively participate in coastal resources planning programs . . .

"The use of the coastline for future development is becoming an acute and pressing problem Conflicts between commercial and recreational activities are creating important problems The accelerated population growth near the coast is accentuating pollution and waste disposal problems that affect both commerce and recreation The Division of Small Craft Harbors has become involved in these conflicts at such locations as Redondo Beach, Moss Landing, Jenner, San Francisco Bay and Crescent City, and has found that without a state program or policy it is unable to cope with the situations by itself

"In the development of coastal harbors, the preservation of the adjacent beaches becomes an important factor Too many of the early harbor developments have had disastrous effects on adjacent beaches Unfortunately, too little is known about the physical processes that affect the beaches. The state has had to rely heavily upon the Corps of Engineers for assistance rather than attempting to solve its own special problems The corps has placed its emphasis on studying the problems of the East Coast The knowledge gained there does not always apply to the special conditions that exist in California

"The effects of intensified land use throughout the state are not in many instances concentrated upon the land adjacent to the shoreline or the immediate offshore waters Each inland flood control and water conservation project on the rivers draining to the ocean further impedes the free flow of sand which is needed for continued ocean beach nourishment This beach starvation is becoming increasingly critical and methods must be found to assure adequate supplies of sand in the future. Deep water recovery of sand offshore from the coast and possibly from behind structures making up water conservation and flood control projects are logical sources The existing supply of sand must be stabilized and new methods sought to compensate for natural sand flows which have been curtailed

"Problems confronting this department involve the entire interrelated areas of offshore water as well as coastal land use As the state develops and requires additional services and as pressures build, the competition for the use of coastal land is intensified and is daily becoming more and more critical Pressure is continually building for the utilization of existing park lands for other than park purposes. An example of this, and perhaps a basic policy conflict, is the administrative encouragement for the use of atomic energy for power development and a tendency of power companies to look toward park lands as a portion of the land required for exclusion areas as well as the actual placement of some facilities.

"The continued industrialization of lands with high natural and scenic value which are still in prime condition and which would provide outstanding recreation opportunities if included in the park system is critical. Such areas are rapidly vanishing and immediate action is required if they are not to be lost for recreation use in the future.

"Increasing numbers of possible sources of pollution from industrial uses, outfall sewers, storm drains and similar waste discharges, must be carefully controlled to maintain a level of water quality to meet health and safety standards for the welfare of the recreationist as well as coastal wildlife of all sorts

"Landscape values lost through development have made major inroads on shoreline areas and have altered a great majority of existing lagoons and marshlands along the coast. These are important scenic features as well as important habitats Continued development which eliminates or alters these geographic features should be critically examined and carefully evaluated to determine exactly what use is in the greatest public interest and what areas should be preserved

"The continued construction of offshore islands and proposals for bridges, causeways, piers for industrial purposes and similar activities all have a tremendous impact on coastal conditions and lasting damage to seascape values This is of great concern to the Department of Parks and Recreation. All effects may not be bad but all proposals should receive the greatest scrutiny from all angles and should be carefully coordinated and controlled to assure the greatest public gain in all fields of interest with the least damage to natural values.

"The rapid growth of skindiving, intensified subsurface collecting and study indicate a growing need for the implementation and creation of a system of marine reserves where these tidal areas and the life which inhabits them can be protected and study regulated to assure the continued natural existence of this fascinating life zone for observation and pleasure of present and future generations . . ." (Ibid, pp 115–121.)

The foregoing excerpts from testimony presented to the subcommittee, which are representative of the carefully considered statements of many of the nation's foremost experts in the management of marine resources, are indicative of the complex dimensions of the challenge facing the State of California in the conservation and development of its marine and coastal resources Such considerations as land use in the coastal zone, maximizing the conservation and utilization of the living and mineral resources of the sea, the development of trade and transportation, the prevention of pollution and the development of fresh water supplies, and the meeting of burgeoning demand for marine-oriented recreation activities are among the major factors which clearly must be accorded full recognition in the formulation of comprehensive state marine resources policy

The Need for Comprehensive State Policy and Program

Although over the years California has evolved a number of individual policies and programs bearing on various aspects of the management of marine and coastal resources, there is no overall statement of policy objectives or effective organizational structure to coordinate the exploitation of the resources of the marine and coastal environment

Perhaps the best analysis of the need for a comprehensive state marine resources policy and effective implementing programs was presented to the subcommittee by Dr. David S. Potter, Chairman of the Subcommittee on the Organization and Structure of State Government for the Management of Ocean Resources of the Governor's Advisory Commission on Ocean Resources, and Mr Hugo Fisher, Administrator of the California Resources Agency and member of the Governor's Advisory Commission on Ocean Resources, in a dialogue with Chairman Shoemaker and Assemblyman Burt M. Henson

Dr. Potter: ". . . In order to make any agreed-on program effective, it is necessary that the state accept a continuing long-term commitment to an aggressive maritime policy Such a commitment can be demonstrated in a tangible way by such actions as increasing the support of educational institutions in the field, initiating studies and surveys, particularly those oriented toward the master planning requirement, and providing the necessary statistical services which have all been outlined in the report of the Institute of Marine Resources. With such evidence of positive interest on the part of the state, I am sure that the industrial community can be counted on to carry out their part of a program which will lead to California assuming leadership as a maritime state in the commercial sense . . .

". . . In essence, there are four points that I would like to emphasize, and these are: First, that the state establish its long-term goals with respect to the economic and social

benefits that are derivable from the ocean, and then undertake in a long-term and consistent fashion the furthering of these goals The main concern here is that whatever level of economic activity is considered appropriate for the state not be the subject of wide fluctuation from year to year

"Second, industry as a whole—not the individual industries as you will hear testimony on those separately—will continue to be responsive to economic incentives and will pursue all bona fide business opportunities just as they have in the land-oriented fields of endeavor There should be no concern on that part

"Third, I do have some special concern for the small businesses which now exist and which will develop in exploiting the ocean resources The individual fishermen who own their own craft, or small businesses that are just getting started, are examples of my concern These smaller firms often do not have sufficient capital to weather several successive bad years, and it is primarily for this reason that I am urging consistency on the part of the state in the management of the resource so the smaller firms can ride out the storm, consistency here is really the keynote The investigations of your committee will go a long way in providing the long-term policy that I believe the state requires.

"Fourth, insofar as the organization of state government is concerned, I feel that with the relatively few changes suggested by the Subcommittee on State Organization the state apparatus is appropriate to the task that we face. I realize that it is one of the functions of your committee to assess the economic and social values of the ocean for the people of the state I firmly believe that the ocean resources can be exploited to a much greater degree without infringing on the social aspects of the marine environment, and if at the end of your deliberations you agree on this point of view, then I would urge that the first point of business be to establish a state policy which is a long-term commitment and dedication to establishing the State of California as a maritime state, not just as an accident of geography, but in a full commercial sense and commercial reality . . ."

Chairman Shoemaker: "In your prepared statement you mention over and over again the necessity for coordinated effort and a long-range definition of what California's goal for the ocean should be In this you say that the state can contribute a great deal in providing for this climate of growth by removing unnecessary constraints on present maritime activities Which specific constraints do you have in mind?"

Dr. Potter "The initial constraints that I have in mind relate to the fishing industry These, I think, will be covered by Dr Chapman in much better form than I can do, however there are some restraints which I think you should examine initially because that is something that the state can do alone There are a number of items that have to do with becoming a maritime state that involve the federal government and these will take longer It will take a long-term effort on the part of the state to bring pressure on the federal government to change some of these regulations and here I think that what we need is the success that can come from the state by its own efforts and that is why I suggest fishing first "

Chairman Shoemaker: "All right You also mentioned the difficulty of the small fishermen. Are there any suggestions which you would have for state action that would make it more possible for the small fisherman to continue his work in an expanding fashion?"

Dr. Potter: "Yes. There are some, and once again I will defer to Dr. Chapman, except for the following general comment that if California can achieve the status of a real maritime state, then the business community will become aware of the fact that it is a reasonable undertaking, that things having to do with the ocean form good business ventures. At that point you will get risk capital and financing that will make the lot of the fisherman and small business much more satisfactory; and, in fact, perhaps can produce viable industry where it was not otherwise possible I think that there are some specific things with respect to financing the individual fisherman and the vessels and gear that Dr. Chapman can discuss . . ."

Chairman Shoemaker: "Dr Potter, your subcommittee indicated that one of the first obligations of the executive branch was to propose a proper balance of the multiple uses of the ocean You were again talking about the long-range definition of the problem, which implies certainly an imbalance in the ocean right now How can we in the Legislature and how can the executive branch move properly toward a definition of the goal for the state in this field?"

Dr. Potter: "I think that right now—today—there are some minor imbalances that really are not going to cause a great deal of difficulty, at least if I understand the sense of this meeting and the shift in emphasis right now in the competition, for example, between the industrial uses of the sea and the social uses that we all would like to see These competitions are not great and they are not difficult to resolve But I would like to see the state begin this kind of approach now, because 10 to 20 years from now the competitive uses of the ocean are apt to be much more difficult to resolve and you should have a long history, so start with the easy ones which are here today If you wait for 10 years you will be starting in the middle of a great big mess My main concern is that the principle be established now and that it be carried through . . ."

Chairman Shoemaker: "There are some recommendations which your subcommittee made so far as governmental organization is concerned. Your subcommittee report indicated, and I think quite well, that our endeavors in the ocean now are regulated by a great many different state agencies, and there are many agencies that are concerned at even the legislative branch of government The legislation affecting each of these areas such as transportation, oil, fishing, and so forth, are all under different headings and are not coordinated You suggest that there be a coordinating office established within the Resources Agency What did the committee see as the benefit of this, and how could it be pulled together? The first is the easy question!"

Dr. Potter: "There are really two recommendations that revolve around the fact that the activities which pertain to the ocean are split among several of the agencies That is one problem, and for that our recommendation was the interagency council consisting of the heads of the agencies or their designated deputies"

Chairman Shoemaker: "Similar to the federal government?"

Dr. Potter: "Similar, but different in a very important respect. The federal government has had some success with the Interagency Council on Oceanography The lack of success in certain areas, though, has been due to the fact that the individual representatives did not themselves control either the budget or the workings of the organizations they represented, so that at the conclusion of the council meetings it was left to the individual agencies to either back up their representative or not This on several occasions was not done We would like to avoid that organizational mistake as far as the state is concerned and require that the representatives be the agency heads themselves, then when you have reached an agreement it won't come unstuck That's part 1 Part 2: within the Resources Agency we noted that you have a lot of activities going on and if you choose to give an accent to the maritime activities, then one of the best ways is to make someone responsible for it within the Resources Agency, one step beneath the administrator He patently has too large a job and cannot devote sufficient time to matters of the ocean, so there should be a high level administrator whose task it is to supervise the activities with respect to the

ocean The Resources Agency has a special problem not carried out through the other agencies"

Chairman Shoemaker: "In other words, what you suggest is that we attempt to blend two different kinds of administration together At the moment we have subject-matter kind of organization there is transportation here, fisheries here, oil there, and so forth You are suggesting that on top of this that we have rather a geographic kind of division with someone to coordinate these two kinds of approaches '

Dr. Potter: "Yes Clearly, in organizing you can organize this way or that way, horizontally or vertically, and it really doesn't make a great deal of difference But having chosen one scheme, then you have to provide the cross-links the other way A number of us were really quite tempted to get the State of California to have the kind of organizational structure which we would like to see the federal government have It turns out, though, that you simply can't take the format from one and place it on top of the other, it didn't fit that way and this is the best suggestion that we have I think that with these relatively minor modifications, the state government—the administrative government—is adequate to the task "

Chairman Shoemaker: "In other words then, you're not suggesting any major shifts in administrative policy, but merely a tighter coordination through the cross-linking that is necessary if we are going to approach the ocean as a total resource"

Dr. Potter: "Yes I think desire and a statement of policy on the part of the government of the State of California is a good thing, and will do more than any organizational change that one can think of Organization does not replace desire " (Ibid, p 27-33)

Mr. Hugo Fisher. " I want to talk about some things that I think are important in terms of good governmental organization and good administrative management, and because the planners have talked so much about resources, I hope you will also permit a resources man to talk a little bit about planning

"First of all, I think it is necessary to say that unless the people who have operational responsibility are required to look to the future and do their own planning, all the planning in the world done by somebody out of a school of environmental design who knows how to count traffic on city streets will get you no place in terms of managing resources Unless the fish biologist, unless the the geologist, unless the hydrologist, unless the beach erosion control engineer, unless the water pollution control engineer, unless the recreation planner, the park man, unless all these people are involved in taking a look at the programs in ocean resources in which the state has been involved since we became a state, and they are required on a day-to-day basis to look at their own programs and see the relationship of their programs to other resource programs, no planning in the world is going to suffice for a good resources program, whether it be on land, air, or under the water

"There has been a lot of talk about the fact that California is going to develop a program in ocean resources The fact of the matter is that since California became a state it has had some programs in ocean resources, and there are now some 20 or 30 programs that have been statutorily—and some by the Constitution—placed upon the executive branch of government, and have been funded by the Legislature They have not been reviewed very carefully in terms of their relationship one to the other, and in some cases we have even upset the administrative structure in such a manner that it does not provide good coordination, but nonetheless, these things have been there and you people have been funding them for a great many years It occurs to me that attempting to place long-term administrative responsibility in development programs separate and apart from those areas which have the responsibility and the technical competence is a fundamental governmental error What I'm saying is that if the Legislature wants to increase the coordination of our programs that already deal with the ocean resources or wants them to be speeded up, the place to go, the people to talk to are the people who have to do it—the geologists, the fish and game experts, the oil and gas experts, the beach erosion control experts, the seaweed experts, and all the other things of which we have probably as great a collection of talent in state government as you will find any place in the world It doesn't mean that we have all the talent we ought to have, and it doesn't mean we are doing all the things we may be thinking of in the middle of the 1960's that we ought to do, that's why we are meeting here What I'm saying is that if the Legislature decides they want to increase the program in this area, or it wants advice as to what is being done, you've got to go to the departments that are already in the field and have been since 1850

"This is not, as the budget items suggest, the beginning of an oceanography program We have had an oceanography program since we had the forerunner of the Fish and Game Commission and the forerunner of the Division of Mines and Geology We have had that since we became a state We have had a lot of other things that have been added on over the years All of these programs are part of our management of ocean resources. I personally think they are inadequate I personally think that we ought to be spending more time on it, because I think it is an economically sound thing to engage in—the exploration of our resources that lie beyond the shoreline—in the same manner as we have done it on the land It is essentially an extension of those things that we are already engaged in . "

Assemblyman Burt Henson: "Hugo, you have had considerable experience here in the last few years trying to pull together agencies that have perhaps gone their own separate ways for many years and built up their own vested interests—almost a proprietary interest in their own fields In my opinion you have done a remarkable job Now, just how can we coordinate ocean resources here, or do we have it already?"

Mr. Fisher "Well, we have it in part I would point out that in ocean resources we don't have quite the same frame of reference in terms of governmental organization that we have in land resources It is quite obvious that since the state is the owner of most of the lands under the ocean, either in fee or as the trustor to the local government, there is one big gap in the Resources Agency in terms of dealing with the ocean resources. Historically, California has looked at its ownership of lands, both on land and under the sea, in terms of getting rid of them or of exploiting them financially for the state itself The first grants of lands, if I remember correctly, to San Francisco, were for the purpose of having them sold off to finance the construction of the sea wall Then someone got the whole kit and kaboodle for $6,000 or $7,000 in payment for a loan he had made to the City of San Francisco This has been the history of the use of public lands in America—let's get rid of them for a dollar and a half and get them on the tax rolls—this kind of foolishness. California no longer looks at it in that regard, and yet we have administratively dealt with the Division of Lands as if it were a money management question rather than a resource management question The administration's position has not been extensively discussed, but my personal recommendation is that a major element of resource management is the Division of Lands, and it belongs in the family of those departments that deal with the resources of the state This is particularly true when you are dealing with the ocean resources, because we are the landowner and land manager of most of our resources that are under the ocean . . .

"Let me make it clear that the Division of Lands and my departments have been very cooperative with each other over the last several years, but there is a difference between seeing them about a problem in which they have an interest, and sitting around a conference table at agency staff meetings once a week and being forced—on every occasion a matter comes up—to take a look at the respon-

sibilities of each and every other department and agency that is in the resource management business The Division of State Lands is a major resource manager that is not sitting down at the table on that sort of constant basis .

"You raised the question, Burt, about coordination and planning, and whether research that is done by one outfit is made available to another Some two years ago I issued Agency Order Number 10, which says, 'The purpose of this order is to maintain a high degree of coordination in the applied research and study projects of the agency constituents in the planning, execution, and exchange of information therefrom For the purposes of this order, applied research and study projects include such projects for which funds are specifically budgeted, or those for which written plans are prepared, and any other research and study projects which, in the sponsor's judgment, might involve or be of interest to other entities in the Resources Agency Responsibility for coordinating the applied research and study projects of the agency constituents in the planning, execution and exchange of information therefrom is the responsibility of the individual unit which is the sponsor of the study' Ongoing projects are listed on a form, and I've detailed the procedure for it It goes on on to say, 'As subsequent projects reach planning stage, each originating unit has responsibility of sending copies of all such program statements to other units of the agency for their review and comment Units having an interest in the project will formally communicate such interest to the originator, which in turn will take appropriate action to serve that interest This procedure will be a continuing one Interests which cannot be served appropriately, or conflicts which cannot be resolved among agency units, will be called to the attention of the agency administrator by any party having an interest' This is a continuing way of forcing a wide variety of programs that relate one to the other to come to terms with each other

"The Resources Agency is the greatest collection of competing interests that the state has. You think of any one of the resources that we are managing and look at the different things that we are trying to do with these resources, and you see that California has far outstripped any other government in the world in trying to put these in some sort of order by requiring that when you deal with one subject matter you recognize its relationship to all the others

"Let me give you a good example with respect to ocean resources. we set up what is called a powerplant siting committee. We recognize that nuclear powerplants require enormous amounts of cooling water; they all require access to the public's water, so inevitably this means access across the beaches, it means a possible conflict between the production of power, which is a proper resource concern, and with the question of the conservation of fossil fuels. It involves the crossing of the shoreline and resulting impact on aesthetic and recreational opportunities, it means to a certain extent excluding other public uses at a given point along the public shoreline, it means possible conflict with fishing interests, with the game interest, it can be deleterious to the question of harvesting of seaweed and so forth, which is a commercial interest—all of these things are concerned in any such siting. The real question is, how do you bring these things into balance? So we have a team which happens to be headed up by a chemist from the Department of Fish and Game, it includes somebody in Park Management, it includes somebody from the Division of Mines and Geology, it includes somebody from the appropriate Water Quality Control Board; it includes any other interests in the agency at any given point that may be concerned. We've invited all of the producers of public and private power in the state—from SMUD to San Diego Gas and Electric—to come to us when they begin to look at a site along the shoreline. Inevitably, it is going to be beneficial to some public interests and it is going to be damaging to some public interests. We invite them to come and talk to us, let our team go look at the sites, and tell them what the problems are. The result is that we have been able to much better manage the siting of these things—San Onofre being a very good example—where the agency entered into a contract with the department, with the San Diego Gas and Electric, and Southern California Edison, that got public access to the beach, and that kept the beaches from being polluted, which was going to happen under the plan as they had proposed it It actually provided for replenishment of the starved beach by sand, which was not contemplated All of these things came as a result of looking at all of the public's interests—all of these competing interests—and trying to work out a program that would best serve the majority and would least injure those that inevitably would get injured"

Assemblyman Henson: "In other words, we've got a conflict in jurisdiction here—an uncertain jurisdiction as to which state agency has primary responsibility for oceanographic resources The State Division of Lands is under the Department of Finance. I suppose, because that is where the oil money goes . "

Mr. Fisher: "Well, again I want to make it very plain that we have had no conflict with the Division of State Lands They've been very cooperative with us when they have spotted something that they thought we were interested in, or we've spotted something that they were interested in But this has been a haphazard sort of an arrangement, and not subject to this agency order"

Assemblyman Henson: "In other words, this is a fundamental conflict . Is there any kind of mechanism that could be set up that would realistically be expected to perform this function?"

Mr. Fisher: " . It depends on whether the Legislature wants to move from looking at the State Lands Division essentially as a revenue producer to a resource manager Now, this is a matter of balance Up until this point, particularly because of the offshore oil problems we've had off of Long Beach, it had to be looked at principally during this last three or four years as a financial question in terms of the General Fund of the State of California But in the long haul, it's essentially a resource managing agency, and in my view, those things which are essentially resource management functions ought to be collected in the same family of departments so that they become subject to the same sort of coordinating devices on a formal, continuing basis . . .

". . I would, Mr. Shoemaker, like to leave with one final comment. I think that the resources of the ocean are ever more important to the economy and to the welfare of the State of California. I think that we ought to sort out all of the things that we are doing and see if we are doing them well, if we are doing them in proper balance The fish and game question is a very clear example of where we are not doing it, where we have gone at it essentially as sport fishing, funding it out of the sport fishermen's licenses We can't expect the departments, under that sort of funding, to engage in the kind and size of effort that needs to be pursued for commercial fishing until the State of California says that this is a general responsibility of the state, of the General Fund, rather than a question of just sport fishermen paying for it Until we come to that recognition, until we come to the balance between the uses that we are already making of the ocean and pursue the ones that we are making little use of, we've got to look at it program by program—not in some fancy planning effort but in terms of looking at what the specific programs are, how they relate to one another, redress the balance between them, and then put all of those that haven't any management responsibilities in the ocean into a governmental matrix where they are required to coordinate one with the other Unless we do that, we are not going to address ourselves properly to the management of the ocean resources in which we've been engaged since 1850 . . ." (Ibid , pp. 141–154)

To assist in the evaluation of potential elements of a comprehensive state policy and program for the conservation and development of marine resources, the subcommittee prepared an inventory of the major proposals advanced at the hearing of the subcommit-

tee and during the deliberations of the Advisory Commission on Ocean Resources These elements, classified according to the effects of population growth and urbanization; the administration of tide and submerged lands, the conservation and utilization of mineral and living resources, recreation; wastes management, water quality, and pollution control; water and power development, including the use of nuclear energy, transportation and trade in the coastal zone and on the high seas; engineering and technology in the coastal and deep ocean environment; research and education; weather, climate, and oceanographic conditions; and social, legal and economic considerations, are summarized as follows·

The Effects of Population Growth and Urbanization

Based on studies of the cause-effect relationships associated with intrastate population migrations, better forecasts of coastal zone population growth should give a reliable indication of specific coastal areas likely to feel the pressures of urban development.

To determine the potential future demands for coastal property, a review of the development plans of all state and federal agencies, local governments, public utilities, and large private land owners should be initiated by the state.

To help local government with programs of proper development of limited coastal lands, the state should consider means of strengthening local government's bargaining position with private, often nonlocal decisionmakers.

Land Use Policies in the Coastal Zone

A master plan should be developed which contains principles for ensuring the consideration of all potential values in determining land use in the coastal zone by all government agencies and the private sector, including the siting of power plants and utility installations, oil refineries, parks and recreation areas, open space preserves, commercial and urban development.

The Administration of Tide and Submerged Lands

Because of the variety in potential use and great intrinsic value of the tide and submerged land resources in the coastal zone, it is essential that the master plan contain a meaningful process for determination and enforcement by the state of the terms of utilization. In view of the defects in existing state policy governing the administration of tide and submerged lands, the following changes should be considered.

That the existing policy of requiring the intensive development of state granted tide and submerged lands be abandoned in favor of a policy which requires the coordination of such utilization with the needs of adjacent areas on a regional basis, and establishes the process by which this determination can be made;

To facilitate this determination and enforcement process, the State Lands Commission should ensure prior to legislative action the conformance of the proposed utilization of a tidelands grant with comprehensive regional land use plans incorporating the state's interest, and be given the responsibility and authority to enforce the stipulated terms of the grant,

Prior to completion of the inventory and master plan, a mechanism should be established among all affected and interested state agencies to review applications for tidelands grants, with the objective of determining the necessary provisions for protection of the state's interest therein

The Conservation and Utilization of Mineral and Living Resources

Mineral Resources

State and federal laws should be changed to treat offshore mineral claims (excluding petroleum) in a manner similar to the treatment on inland vacant public domain of the United States, so that claims for defined areas might be obtained by right of discovery, and retained by actual substantial performance of development work, in order to stimulate the initial private exploration and development that may be essential for this new kind of mineral resources After industrial potential has been shown, additional areas should be subject to lease under competitive bid

Living Resources

The state should establish policy concerning the conservation and utilization of the living resources of the sea under its jurisdiction and influence which will encourage their maintenance and full utilization for the benefit of all citizens, which will promote the development of local fisheries and of distant-water and overseas fisheries based in California, and which will be in harmony with the international law respecting fishing and conservation of living resources of the high seas.

The present fisheries research and management system and organization should be revised or replaced to make possible the implementation of the foregoing policy

To provide the factual basis for resolving conflicts over the utilization and allocation of use of living marine resources, and to provide a proper scientific basis for conservation management, it is essential that the appropriate statistical and scientific services be developed

Existing laws, regulations, and administrative practices regarding the taking of fish and other organisms for recreation or commercial purposes should be thoroughly reviewed, and those that handicap full use of underused resources should be removed.

Proper and adequate zoning for multiple use of the land along the margin of the sea, making provision for waterfront facilities needed for recreational and commercial uses of the living resources, should be undertaken

Underutilized populations of relatively nonmigratory sportfish should be made accessible for recreational fishing by additional access roads and small craft harbors.

A program of habitat improvement for inshore fisheries should be pursued, including the construction of artificial reefs, abatement of pollution, introduction of "pollutants" in ways to benefit living resources, encouragement of kelp beds, and judicious predator control

In accordance with the Convention of the Living Resources of the High Seas, the state should undertake cooperative accelerated research to establish a sound scientific basis for taking unilateral action in the conservation of threatened living resources on the high seas off the California coast

The United States government should be requested to initiate negotiations with the Soviet Union, Japan, Mexico, and Canada with the objective of agreeing to a multilateral, open-ended, general fisheries convention capable of handling all fishery conservation problems not dealt with under present treaties or arrangements likely to arise in the Pacific among those nations and any nations in the future newly entering the fisheries of common interest.

Existing state and federal programs for the encouragement and assistance of the commercial fishing industry should be modified and expanded

Recognizing that limiting entry may be a desirable form of control of commercial fisheries, the state should study the possibilities of utilizing this technique in California fisheries, including analysis of alternative methods of limiting entry and evaluation of the monetary and nonmonetary benefits and costs of the controls

The state, in cooperation with the academic community and other appropriate agencies, should initiate a program for the acquisition and management of a system of marine nature reserves, which

Emphasizes the establishment of such reserves already proposed on land owned by the state;

Places the highest priority for additional reserves in those bays and estuarine areas that are rapidly being irreversibly modified by man's activities;

Encourages the University of California to continue with its program of establishing and developing "land and water reserves" for scientific study and education, including habitat preservation as a main aim of the system;

Encourages the use of suitable lands in state and other parks as waterfowl refuges and feeding stations

Recreation

The effects of other uses of the shoreline on recreational uses should be determined, to ascertain those uses that are compatible

Available unused—or underused—recreation areas along the coast should be reviewed with the objective of determining those which should be acquired for public use or to which better accessibility could be provided

The role of the private sector should be considered in planning for marine recreation by government.

Some marine environments should be maintained by the state for low density use and should be protected from excessive human interference, and the criteria and means for identifying, acquiring and managing these areas should be determined.

Consideration should be given to the impact of air pollution on the use of and demand for recreational facilities in the coastal and marine environment.

Wastes Management, Water Quality, and Pollution Control

The state should develop and maintain a statewide system for the collection, collation, analysis, retrieval, and publication of data on both waste discharge data and data on receiving water and sediment quality. This system should include and coordinate the activities of all public and private agencies with responsibility and authority in the field of water quality management, and also should serve as a means of coordinating research in waste water disposal, treatment, and reclamation.

Based on adequate field investigation and research, the assignment of beneficial water uses and the establishment of general criteria for the quality of the receiving water should be accomplished immediately for those ocean and estuarine waters located near population centers

The state should routinely prepare a detailed inventory of all waste discharges (municipal, industrial, and agricultural) to the waters of the state, including estuarine and coastal waters This inventory should include accurate data concerning flow rates, waste and pollutant constituent loadings, recirculated flows, and mass rates of emission of principal pollutants on a unit basis

The state should support a substantial program of applied research dealing with specific problem areas of major concern in California, including the effects of waste constituents on the biota of estuarine and coastal waters, the assimilative capacity of estuaries and coastal waters, improved methods of determining the circulation and exchange rates in estuaries, waste water reclamation and methods and economics of removing refractory substances, estimating future amounts and kinds of wastes, the effect of nitrogen and phosphorus and other biostimulants on the primary production of estuaries and coastal waters, and the transmission mechanisms of airborne contaminants for determination of the effects of increased concentrations of these contaminants on marine organisms and man through return to him via marine foods

The state should support programs of research, demonstration, and education in solid wastes management, including the establishment of jurisdictions capable of dealing with this problem on a regional basis, and comprehensive land use planning which includes solid wastes management as one of the factors

Water and Power Development, Including the Use of Nuclear Energy

The economic and balanced management of California water resources to meet future demands throughout the state will require the development of an overall system which integrates all possible sources, including surface and ground waters, reclaimed waste

waters, and desalination of ocean waters. In order that the state may maintain leadership in properly balanced, economical, and timely water resources development, including the judicious use of fresh water from the sea and the development of related marine resources, the following program should be undertaken

Investigation of the proper role and relative costs of desalination units, waste treatment systems, and water reclamation systems utilizing multiple reuse to minimize the cost per cycle of water use, as a part of the overall water supply—waste management—water reuse system

A major program by the state, in cooperation with the federal government, the academic community, and the private sector, of research and development leading toward large-scale seawater desalination, if economically feasible in connection with the production of nuclear power, at locations on or near the sea, and toward the possible recovery of minerals and other ancillary benefits Such a program should include consideration of the basis for selecting plant locations—including offshore sites; the basis for the use of waste heat to enhance, rather than diminish the quality and quantity of the marine resources, such as recreation and fisheries; and methods for more rationally including public opinion concerning the effect on aesthetics and possible radiation hazards in the design, licensing and regulation of nuclear power development projects

Transportation and Trade in the Coastal Zone and on the High Seas

The conjunction of land, sea, and air along the coastal zone of California constitutes a unique "triple interface"—or point of meeting—of the three major components of earth geography In this sense—the proximity of the state to the sea—the marine resource presents a unique challenge and opportunity for comprehensive and orderly planning for the complex movements of human and natural resources within and through this zone To provide for an orderly approach toward this dimension of marine resources management, and the broader goal of maximizing ocean transportation and trade for the benefit of all sectors of society, the state should develop the following programs:

A system for the definition, collection, and analysis of data relating to fluxes within the California land-sea-air interface, with provision for continuous updating,

A delineation and integration of the significant aspects of land-ocean planning with the long-range development plans of appropriate public and private bodies, including an integrated statewide transportation network;

A comprehensive, detailed study of the problems and opportunities involved in modernizing ocean transportation systems, including technological, social, and economic factors such as the effect of federal regulations and policies governing shipping and shipbuilding on the state's maritime industry; the impact of the state tax structure on the competitive position of California's shipyards and shipping companies, determination of the economic relationships among waterborne trade, shipping and shipbuilding, and interaction with the state's economy; prediction of the total effect of large-scale automation on employment in shipbuilding and shipping; the appropriate role of subsidies in maintaining the U S. Merchant Marine as an element of national policy in the occupation and use of the sea; and the effect of making information available on new areas of exploitation, such as undersea mining, in which the shipping and shipbuilding industry might participate;

Guidance to local government in the regulation of ports and harbors to the best advantage of the state in support of a policy of modernizing and increasing the size and scope of coastal maritime transport

Engineering and Technology in the Coastal and Deep Ocean Environments

The Coastal Environment

Because of the projected population increase in the coastal zone and the resulting competition for uses of the coastline, the growing number and magnitude of problems in the coastal environment will require the development of new technologies and comprehensive planning for the most effective, balanced utilization of the coastal zone resources In furtherance of this objective, it will be necessary for the state to develop new policies and programs, including the following

Coordination of research and data compilation efforts in engineering and technology in the coastal environment by government, the academic community, and the private sector to facilitate their incorporation into coastal zone planning and management.

Guidelines for saturation densities in the various parts of the state to provide for more orderly, balanced development and use of the coastal strip and protection of its natural resources,

A number of specific research and data-compilation investigations with respect to

Near shore processes, including wave-induced sand transport mechanisms and their relation to the equilibrium energy profile of the sand bed; wave shoal and break mechanisms; the relation between waves and the currents they generate in the surf zone; the relation between wave power and the longshore transport of sediment; the mechanism which transports sand from the shallow heads of submarine canyons into deeper water offshore, surveillance of incident wave energy along the coastline; a routine survey of natural sand deposits; and routine surveillance of rates of erosion and accretion of existing beaches;

Coastal engineering structures, including the perched beach concept; detached breakwaters with respect to their influence on the littoral transport of sand; offshore islands and the structures to support them; and model studies of engineering systems for increasing the coastline and evaluating the impact of environmental changes upon the total complexion of the area.

The Deep Ocean Environment

Because the proximity of the deep ocean to the California coast is unique among the states and many of the world coasts, California has an unusual opportunity and challenge to take advantage of the growing international interest in exploration and utilization of the deep sea In order to maximize this opportunity for the benefit of the entire state, it will be necessary to develop new policies and programs, including the following:

As an integral part of its development planning responsibilities, the necessary technical and economic studies to maintain objective, strategic, and evaluative planning activities for each category of marine resources, and the coordinated data collection, processing, and storage systems necessary to support both the public and private sectors of the state in the furtherance of marine resources development.

In cooperation with the federal government, the academic community, and the private sector, a survey of the geological characteristics and resource potential of the continental shelf off the California coast, prepared in such a manner as to be available to commercial and industrial interests

Other specialized studies into such matters as the feasibility of offshore and submerged nondefense nuclear installations and contained radioactive waste dumps, and improving offshore petroleum recovery and storage systems

Research and Education

In order to contribute to the solution of immediate, practical problems which are the responsibility of the state, and to advance the state of knowledge in various disciplines to assist in the solution of future problems, the state should conduct and support marine resources research and education programs The formulation and administration of these programs should include consideration of the following factors·

Continued support of fundamental, discipline-oriented research, primarily through the University of California, both on a mission-oriented and voluntary basis.

The development of an administrative framework which will foster cooperative research efforts by institutions seeking to share limited and expensive resources such as specialized laboratories and oceanographic instrumentation, research vessels, libraries, data and computer centers, and professional manpower.

With respect to research conducted by the employees of state agencies, providing greater consideration of research activities and accomplishments in the policies governing recruiting, advancement, and salary levels

Continued support of higher education in the basic disciplines, and interdisciplinary fields of scholarly study, related to marine resources.

Development of educational programs—for both professionals and paraprofessionals—stressing primarily the fundamental sciences and engineering disciplines, and secondarily their application to marine resources problems

Formulation of programs and courses of education designed specifically for refresher and in-service education of marine specialists, engineers, and other professionals

Encouragement of graduate students in the social sciences to undertake studies and research in marine resources problems

Broadening of the scope of precollege general education to incorporate stronger emphasis on and integration of ocean-oriented activities, including related areas such as recreation, planning, economics, etc

Weather, Climate, and Monitoring of Oceanographic Conditions

The state should study the needs and requirements for improved forecasting of weather and oceanographic conditions along the coast of California.

Long-range weather forecasting may be greatly improved by the establishment and operation of the "World Weather Watch" system within the coming decade, and the state should therefore consider how the data from such a system can be used to deal with the problems of weather in the coastal zone and adjacent ocean

Micro-climatic studies including oceanographic observation should be initiated in coastal regions, such as bays, which have immediate potential for development

Flood control should include the continued construction of dams for flood control and irrigation, and improved procedures for advanced storm detection and forecasting

If further large population increases in the coastal zone are contemplated beyond 1980, investigations should be continued relating to the large-scale transfers of water

A classification and mapping program should be initiated to identify unique climate-soil areas of the coastal zone that have no agricultural analogue elsewhere, and utilized in planning in the coastal zone

Social, Legal, Economic Considerations

Social Considerations

The planning process should include the consideration of social factors not readily quantifiable but bearing on the quality of life, and which if ignored will tend to counter the stated objectives of the planning process as they relate to the sought-for way of life These qualitative and social factors should be a

basic element of the public policy governing governmental project formulation and the exercise of regulatory powers.

Legal Considerations

A program for research and studies into legal problems relating to the utilization of marine resources should be initiated and continuously supported

Continuing state participation to the extent and manner appropriate in each instance, should be encouraged in national and international policy making looking to the rational utilization of ocean resources

A document reviewing the law of the sea, fishing jurisdictions, the problems of the territorial sea, and their implications to California fishermen should be prepared for general distribution

Economic Considerations

In order to make possible comparative economic analyses for guiding decisions on priorities in the management of marine resources, there is a pressing need for the collection—on a comprehensive, integrated basis—of adequate basic data on resource uses, including both those uses which can and cannot be expressed in economic terms Among these studies should be those dealing with

The efficient utilization of California's marine resources, and the efficient allocation of public funds for marine programs and projects,

The direct and indirect interrelationship between the development and growth of coastal lands and marine-oriented industries;

The spillover of costs and benefits to adjacent areas from development projects in and around coastal communities, such as the deleterious effects of harbor, dam, and recreational projects not fully considered in the planning stage;

The proper allocation of costs to the various purposes of projects in the multipurpose developments in the coastal zone, using as a guide the analytical tools developed for water resources management;

The contribution of marine resources oriented activities to California's gross economic product,

The use of all ocean resources beyond California's jurisdiction

Other Considerations

As a prerequisite to the state becoming active in marine mineral resources development and utilization, the state should undertake, in financial and administrative cooperation with the private sector, the academic community, and the federal government, a detailed geological and geophysical exploration of the publicly — and where appropriate — the privately owned coastal lands and beaches, tidelands, continental shelf, and continental slope, with particular emphasis on the mapping of exploitable mineral resources. This geological and geophysical exploration should include topographic and subsurface mapping; sampling, drilling, and coring of sediments; sampling and analysis of mineral deposits.

Promising mineral deposits should be sampled at sufficiently close intervals to provide a basis for their economic evaluation

The exploration should exclude petroleum, information on which is already well advanced.

Preliminary to designing and conducting the field program, existing information should be catalogued, charted, and analyzed.

In conducting the field work consideration should be given to obtaining observations of ancillary phenomena which can be gathered conveniently at the same time without serious conflict with the primary objective.

In certain portions of the coastal zone, such as bays and estuaries, irreversible modifications are being made at a rapid rate Pending completion of an inventory and master plan, it is recommended that each proposal for modificaton of the critical areas be reviewed by the state, and irreversible modifications which will preclude other beneficial uses might be held in abeyance

Coastal Lands and Beaches

As a prerequisite for rationally planning the use of the coastal lands of the state, the state should undertake, in financial and administrative cooperation with the private sector, the academic community, and the federal government, a detailed inventory of the coastal lands and beaches of the state including the physical geography, ownership, assessed valuation, date of assessment, tax rate and yield, present zoning and use, planned future use, and legal and institutional restrictions and covenants.

This inventory should be so organized as to provide for rapid retrieval and continuous updating

"Coastal lands" should include all publicly and privately owned lands from the seaward boundary of the tidelands to a boundary of variable distance inland from the beaches and margins of bays—this boundary to be designated upon the advice of consultants using aerial photographs and other data in such a manner that the essential information for coastal planning is obtained at minimum cost

Continental Shelf

After completion of the mapping of the seabed of the continental shelf—a cooperative program which has been initiated by the state and federal government on a base topographic map with the scale of one to a quarter million on the basis of existing data—the map should be kept under continuous review and modified from time to time as new data are acquired, with the final objective of having it express true depth and true configuration to the best permissible precision.

As this map is brought to satisfactory stage, the information it contains should be amplified by suitable aeromagnetic and other surveys on a continuing basis until adequate geophysical information is available, beginning with specific areas selected on the basis of the information noted previously.

Because the United States Navy possesses much valuable bathymetric, geological, geophysical, and other oceanographic data relating to the continental shelf off California which is presently classified when con-

nected with military projects, the Secretary of the Navy should be requested to release as much of this information as possible to assist in the preparation of more accurate maps for exploration and exploitation.

Living Resources

With respect to living resources, the state should develop quantitative information and timely research data concerning.

The recreational uses, including data on total catch and on catch and effort, for the sport fishery,

Local and distant-water catch and effort data for the commercial fisheries;

The population structure, life history, ecology, and population dynamics of the exploited fish and associated populations.

FINDINGS AND CONCLUSIONS

Although its strategically-located coastline on the world's largest ocean with its associated wealth of proximate marine resources have obviously been significant factors in California's phenomenal growth, the past use of these resources has been limited to uncoordinated, single-purpose programs responding to a specific need at a specific time However, progressive decline in the utility of its remaining terrestrial resources resulting from the intensified competition produced by an exploding population clearly requires a major effort to assess the total potential of the resources of the marine and coastal environment, and the development of a comprehensive policy and program to ensure their long-term conservation and development in the total public interest.

Recognizing this fact, the Assembly Subcommittee on Marine Resources conducted a review of existing policies and programs governing the use of marine and coastal resources in California, during which it received the views of a spectrum of the leading experts in this field from the academic community, all levels of government, and private industry Based upon this study, the subcommittee reached the following conclusions.

1. The resources of the marine and coastal environment in California—the overlying air, the water surface, the water mass, the ocean bottom, the sub-bottom geology, and the coastal lands—contain a rich supply of presently untapped wealth

2 The demands of a rapidly growing population present an increasing threat to the balanced, long-term conservation and development of the resources of the marine and coastal environment, which if wisely and responsibility managed can make a major and continuing contribution to the long-term economic and cultural growth of the state.

3 There is at present no coherent, comprehensive body of knowledge relative to the resources of the marine and coastal environment.

4. While there are numerous individual, uncoordinated state and federal programs for the exploitation of various marine and coastal resources, there is at present no comprehensive state policy and program guaranteeing the long-term conservation and development of the resources of the marine and coastal environment in the total public interest

RECOMMENDATIONS

It is recommended that the State of California formulate and adopt in law a comprehensive policy and program for the long-term conservation and development of the resources of the marine and coastal environment which will ensure their wise multiple use in the total public interest and includes, but is not limited to, the following elements

1 A clear statement of short- and long-range objectives, including

a The accelerated and responsible development of the resources of the marine and coastal environment for the benefit of the people of California by the increased utilization of mineral, food, and other living resources of the sea, the improvement of commerce and transportation, and the wise use of coastal, tide, and submerged lands to meet the demands of population growth in the coastal zone. With special reference to the coastline, determination should be made of the priorities of development that are required by the public interest and by the needs of the future population of the state;

b. The expansion of human knowledge of the marine environment;

c The encouragement of investment by private enterprise in the exploration, technological development, marine commerce, and economic utilization of the resources of the marine environment;

d The continuation and improvement of the role of the State of California as a leader in the marine sciences and the development of ocean resources;

e The advancement of education, research, and training in marine sciences;

f The development and improvement of the capabilities, performance, use, and efficiency of vehicles, equipment, and instruments for use in exploration, research, surveys, the recovery of resources, and the transmission of energy in the marine environment,

g The effective utilization of the scientific and engineering resources of the state, with close cooperation among all interested agencies, public and private, in order to avoid unnecessary waste or duplication of effort, facilities, and equipment;

h. The cooperation by the state with other states, the federal government, other nations, and groups of nations and national and international organizations in marine science activities when such cooperation is in the interest of the State of California

2. The means of achieving these objectives, including

a. The organization structure of state government, including creation of the

(1) California Commission on Marine Resources, to bring to bear the talents of the academic, research, development, and marine law communities, both public and private, on the orderly and continuing formulation and adoption of public policy and program for the conservation and development of the resources of the marine and coastal environment;

(2) Interagency Council on Ocean Resources, consisting of the Administrators of the Resources, Health and Welfare, Transportation, and Revenue and Management Agencies, and the Chairman of the State Lands Commission, to coordinate the policies, programs, and studies relating to the management of marine and coastal resources within the jurisdiction of the Resources Agency, with special emphasis on continuing economic studies relating to the conservation and development of marine and coastal resources, and the identification of criteria for the establishment of areas of the marine environment that can be devoted to low density uses; and

(3) Deputy Administrator of the Resources Agency for Marine Resources, to continuously review and coordinate the policies, programs, and studies within the Resources Agency which bear on the conservation and development of the resources of the marine and coastal environment; and

b. The major programs, including

(1) A comprehensive investigation and study of all aspects of the marine sciences and the marine and coastal environment in and proximate to the State of California, including but not limited to all of the following

(a) A review of the known and estimated future needs for natural resources from the marine and coastal environment necessary to maintain an expanding state economy; and with special reference to the coastline, the definition of the public interest in the coastline of California, and the safeguards necessary to protect such public interest,

(b) A survey of all significant existing and planned marine science activities in the State of California, including the research, educational, developmental, and administrative policies, programs, and accomplishments of all departments and

agencies of the state which are engaged in such activities;

(c) A determination of the surveys, applied research programs, and ocean engineering projects required to obtain the needed natural resources from the marine and coastal environment.

(2) The formulation and adoption of a master plan for the balanced, long-term comprehensive conservation and development of the resources of the marine and coastal environment, which establishes the public interest and describes its role therein, and incorporates as specific elements

(a) The effects of population growth and urbanization;
(b) Land use policies in the coastal zone;
(c) The administration of tide and submerged lands;
(d) The conservation and utilization of mineral and living resources;
(e) Recreation;
(f) Wastes management, water quality, and pollution control;
(g) Water and power development, including the use of nuclear energy;
(h) Transportation and trade in the coastal zone and on the high seas;
(i) Engineering and technology in the coastal and deep ocean environments;
(j) Research and education;
(k) Weather, climate, and monitoring of oceanographic conditions;
(*l*) Social, legal, and economic considerations;

and is based on a comprehensive, detailed, and coordinated program—so organized for ease in dissemination, rapid retrieval, and continuous updating—of exploration, inventory, and mapping, of the publicly and privately owned coastal lands and beaches, tidelands, continental shelf, and continental slope, including such factors as

(a) Physical geography and topography;
(b) Ownership;
(c) Assessed valuation;
(d) Date of assessment;
(e) Tax rate and yield;
(f) Present zoning and use;
(g) Planned future use;
(h) Legal and institutional restrictions and covenants;
(i) Geological and geophysical properties, including sampling, drilling, and coring of sediments, and topographic and subsurface mapping;
(j) Distribution of mineral and biological components;
(k) Circulation of overlying waters, and
(*l*) Measurements of environmental properties essential for engineering design;

and with respect to the living resources, quantitative information and timely research concerning

(a) The recreational uses, including data on total catch, and on catch and effort, for the sport fishery;
(b) Local and distant-water catch and effort data for the commercial fisheries;
(c) The population structure, life history, ecology, and population dynamics of the exploited fish and associated populations

Witnesses Appearing Before the Committee or Submitting Statements

Mr Harold R Walt, Deputy Director, California State Department of Finance, Member, Governor's Advisory Commission on Ocean Resources

Dr Milner B Schaefer, Director, Institute of Marine Resources, University of California at San Diego (La Jolla), Chairman, Governor's Advisory Commission on Ocean Resources, Chairman, Marine Resources Planning Committee, Institute of Marine Resources

Dr David S Potter, Defense Research Laboratories, General Motors Corporation, Santa Barbara, California; Chairman, Subcommittee on State Government, Governor's Advisory Commission on Ocean Resources

Dr. Harris B Stewart, Jr., Acting Director, Institute for Oceanography, Environmental Science Services Administration (U S Coast and Geodetic Survey, U S Weather Bureau), U.S Department of Commerce, Rockville, Maryland, Member, Governor's Advisory Commission on Ocean Resources

Dr W M Chapman, Director, Division of Resources, Van Camp Sea Food Company, Long Beach, California, Member, Governor's Advisory Commission on Ocean Resources

Mr Hugo Fisher, Administrator of Resources, State of California, Member, Governor's Advisory Commission on Ocean Resources

Mr Francis J Hortig, Executive Officer, California State Lands Commission, Chief, Division of State Lands, Department of Finance, Member, Governor's Advisory Commission on Ocean Resources

Dr Leslie E Carbert, California State Planning Officer, Member, Governor's Advisory Commission on Ocean Resources

Dr. Francis T Christy, Jr, Resources for the Future, Inc, Washington, D C; Member, Governor's Advisory Commission on Ocean Resources

Dr F Gilman Blake, Manager, Exploration Division, Chevron Research Company, La Habra, California, Chairman, Subcommittee on Program Proposals, Governor's Advisory Commission on Ocean Resources

Dr. William V Kielhorn, Lockheed Aircraft Corporation, Burbank, California; Chairman, Subcommittee on Technological Manpower and Industrial Capability, Governor's Advisory Commission on Ocean Resources

Mr. John E Crawford, Geologist, Oceanographic Office, U S. Bureau of Mines, Tiburon, California; Member, Governor's Advisory Commission on Ocean Resources

Dr. Norman P Miller, University Recreation Coordinator, Office of Student Personnel Services, Cultural and Recreational Affairs, University of California at Los Angeles; Member, Governor's Advisory Commission on Ocean Resources

Mr. William F Burkart, Technical Director, U S Naval Civil Engineering Laboratory, Port Hueneme, California
Colonel John A B. Dillard, District Engineer, Los Angeles District, U S Army Corps of Engineers
Mr. Donald R Johnson, Regional Director, Region 6, Bureau of Commercial Fisheries, U S Fish and Wildlife Service, U S Department of the Interior, Terminal Island, California
Mr Gene A Rusnak, Marine Geologist in charge of West Coast Operations, U S Geological Survey, U S Department of the Interior, Menlo Park, California
Mr Walter T. Shannon, Director, California State Department of Fish and Game
Mr Robert D Calkins, Deputy Director, California State Department of Conservation
Mr. E. R. Murray-Aaron, Chief, Division of Oil and Gas, California State Department of Conservation
Dr Ian Campbell, Chief, Division of Mines and Geology, California State Department of Conservation
Mr Fred L. Jones, Director, California State Department of Parks and Recreation
Mr William E Warne, Director, California State Department of Water Resources
Mr William C House, Vice President, Preliminary Design, Aerojet-General Corporation, El Monte, California
Mr Frederick Eissler, Conservation Chairman, Los Padres Chapter, Sierra Club
Mr Kenneth B Butler, Commercial Fisherman
Mr. G Ray Arnett, Director-at-Large, California Wildlife Federation, Bakersfield, California

Additional Sources of Information

Transcript of Proceedings, Public Hearing of the Subcommittee on Marine Resources, Winfield A Shoemaker, Chairman, of the Assembly Committee on Natural Resources, Planning, and Public Works, California State Legislature, Edwin L Z'berg, Chairman, Santa Barbara, California, February 24–25, 1966 (451 p)

California and Use of the Ocean, A Planning Study of Marine Resources, Prepared for the California State Office of Planning, by the Institute of Marine Resources, University of California, San Diego (La Jolla), October 1965

Proceedings, Meetings One Through Six, Governor's Advisory Commission on Ocean Resources, January, 1965 through December 1966

California and the World Ocean, Conference Proceedings, January 31–February 1, 1964, Los Angeles, California

A Study of Resources Policy Directions in California, California Resources Agency, December 1965

SECTION II

REPORT OF THE SUBCOMMITTEE ON CONSERVATION

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January 2, 1967

HONORABLE JESSE M. UNRUH
Speaker of the Assembly, and

HONORABLE MEMBERS OF THE ASSEMBLY
State Capitol
Sacramento, California

Gentlemen

The Subcommittee on Conservation of the Assembly Committee on Natural Resources, Planning, and Public Works submits herewith its report to the Legislature [1] on 1965–67 studies dealing with the complex and increasingly serious problem of beach erosion along the California coast.

Although changes in coastline configuration are generally the result of continuous, naturally occurring geologic processes, there is increasing evidence that the various activities of man both along the shoreline and in the upstream drainage basins are contributing to new and potentially disastrous problems in the long-term maintenance of many world-famed California beaches While the consequences of these activities are presently being ameliorated to some extent by ambitious and costly beach erosion control programs—which in many instances actually involve the trucking of sand from inland areas to replenish disappearing beaches—it is apparent that the more fundamental solution lies in the development of a long-range program to predict and minimize the impact of man's activities upon the prevailing balance among watershed resources

If our beaches are to be maintained in the long run, it will be necessary to include safeguards in the *planning* of upstream dams and flood control projects, and shoreline breakwaters, that will permit the passage, transportation, and deposition of sands and gravels which otherwise would be retained behind dam structures (thereby reducing life expectancy), or would starve existing beaches by deposition within breakwater-created lagoons In addition, based upon subcommittee review of a particularly serious and unresolved erosion problem at Capitola in Santa Cruz County, it is clear that public policy must provide a better mechanism for meeting unforeseen emergencies.

This problem is yet another illustration of the increasingly serious conflict in resources allocation resulting from California's explosive growth, which as the committee has recommended in its numerous other studies can only be solved by the formulation of more responsible, comprehensive public policies ensuring the balanced, long-range planning and management of natural resources in the total public interest.

The committee expresses its appreciation to those who contributed to this study. It is hoped that this effort will assist in the development of policy ensuring the long-term maintenance of California's famous beaches

Respectfully submitted,

Edwin L. Z'berg

EDWIN L. Z'BERG, Chairman
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[1] 1967 Committee Reports
Part I Conflict in the Redwoods (Coastal Redwoods Resources)
Part II The Recreation Gap (Recreation Planning and Management)
Part III Man's Effect on California Watersheds (Forest Practices and Watershed Management)
Part IV The Last Frontier (Marine and Coastal Resources)
Part V Highway Beautification, Beautification and Maintenance of the Capitol Mall, Highway and Freeway Planning, Regional Planning in the Lake Tahoe Basin, The Filling of San Francisco Bay

BEACH EROSION, PROTECTION, AND RECLAMATION

California has one of the longest and most scenically varied coastlines in the United States, and it makes a rich contribution to the recreational and economic life of the state. However, this great natural resource—particularly its world-famed beaches—is being threatened in many places by unusual and increasing erosion, a process which if unchecked can have a potentially disastrous impact on the long-term recreational, commercial, and aesthetic values of the coast.

Although the erosion of shorelines is part of a continuing geologic process, prior to the large-scale changes in resources balance which are the result of such activities of man as the construction of dams, breakwaters, and urban complexes, eroding beaches normally were replenished cyclically by sediments derived from upstream watersheds draining into the ocean As is being increasingly understood, however, the numerous man-made modifications of the sedimentation, transportation, and deposition patterns of beach sands and gravels—coupled with a prolonged drought period in southern California, and the continuing loss of sediment to deep offshore canyons—has upset the natural beach replenishment cycle and the prevailing balance of shoreline stability. It has even been suggested by one authority that if the erosion of California beaches continues at its present rate within a century most of them will be gone completely.

While the starvation of beaches resulting from the blockage of upstream sediments by dams or the cementing of stream channels basically can be resolved only with long-term improvements in planning and construction techniques which will ensure the minimum interruption of the downstream transportation and sediment, the erosion of existing beaches caused by modifications of the shoreline such as groins, breakwaters, and jetties can be ameliorated by various replenishment schemes As the erosion of certain beaches reaches the critical stage, emergency control projects are undertaken, usually by the U S Army Corps of Engineers. These emergency projects, which frequently become permanent in nature, most commonly involve the actual trucking in of replenishment sand from inland areas, or the construction of various shoreline structures such as groins and sand by-pass plants However, because of the complex nature of the forces governing beach deposits, the control projects may themselves lead to even more complicated problems by depriving presently uneroded neighboring beaches of replenishment sands.

It became clear to the subcommittee during its study of this problem that because the strength of the underlying economic and political forces precludes any major change in the inexorable process of coastline development and modification, much of which is authorized and financed by the federal government, efforts to reduce and correct beach erosion should be concentrated on improving the planning procedures and requirements before the project is given initial authorization, and the emergency measures which can be taken in the event of unanticipated erosion.

In its study of this problem, the subcommittee intensively reviewed a serious, long-standing, and as yet unresolved case of beach and cliff erosion at Capitola, California, in Santa Cruz County immediately below the City of Santa Cruz The problem is of particular significance to the state because the erosion has affected much of Capitola Beach State Park

According to the City of Capitola, significant degradation of the beach was first noticeable in the fall of 1964, which was a year after construction of a small craft harbor jetty some four miles up the coast at the City of Santa Cruz In subsequent years the loss of sand from all beaches downcoast from the jetty increased progressively, leading to the extreme erosion and actual undercutting of sea walls which was viewed by the subcommittee in January 1966 Based upon independent coastal engineering studies, it is the contention of the city that the interruption of replenishment sands from San Lorenzo Creek by construction of the jetty is the primary cause of the destruction of the beach The loss of the beach is of course producing serious consequences for the economy of the city and adversely affecting the residential areas along the coast

The Corps of Engineers, which constructed the jetty, and the state, through its Departments of Parks and Recreation and Water Resources, indicate that the influence of the Santa Cruz jetty is not that clear-cut, and in addition to short-term remedial measures, propose that additional studies be undertaken to determine the total cause and most effective long-term control program.

Therefore, although the city presented a compelling case for the construction of the Santa Cruz jetty as the principal cause of its beach loss, the inconclusive nature of other expert testimony precluded a final judgment on this question by the subcommittee

However, the more fundamental questions highlighted by the unfortunate Capitola problem are (1) the methods by which the consequences of proposed shoreline modifications can be predicted and ameliorated in advance of project authorization, and (2) the methods by which unanticipated problems can be quickly and effectively resolved. The long-term and continuing uncertainty as to the causes of the Capitola beach loss and the wrangling over corrective action strongly suggest that the existing policies and procedures are substantially deficient in protecting this aspect of the public interest in the California coastline.

RECOMMENDATIONS

It is recommended that

1. State policy be modified to require comprehensive review and approval by the state of all proposed projects on tide and submerged lands subject to state authority, including evaluation of all the effects of shoreline modifications, and the incorporation of adequate safeguards to protect the public interest prior to final authorization of the project
2. State policy be modified to establish a working fund for the purpose of providing immediate relief, regardless of property ownership, to coastal areas where it is determined that continued and substantial loss is occurring, but not of such dimensions as to be considered a "disaster area," with the following provisos:
   a. As a condition of providing such relief, require that those ocean front properties which are privately owned be subject to easements or rights of way to allow for the construction and maintenance of permanent preventive works;
   b. Funds thus expended shall be considered as the state's contribution in any subsequent cooperative erosion control project wherein the state would normally have participated,
   c. Control of the project shall be maintained by requiring that a local agency accept the responsibility for the design, construction, and maintenance of the erosion control improvements.
3. A comprehensive, coordinated research program be initiated to determine with precision the contribution of man's activities to the erosion of the California coast, and the most effective long-term methods of ameliorating these effects, with respect to both modifications of the shoreline and the transportation of sediment from inland watersheds.

Witnesses Appearing Before the Committee or Submitting Statements

Mr. J. Raymond Abicht, Administrative Officer, City of Capitola

Mr. Warren M. Harrison, Director of Public Works, County of Santa Cruz

Mr. Stanley Lynn, Chairman, East Cliff Shoreline Protective Association, County of Santa Cruz

Lt Colonel Robert H Allan, District Engineer, U S. Army Corps of Engineers, San Francisco District

Mr Reginald C Price, Deputy Director, California State Department of Water Resources

Mr Charles A DeTurk, Chief, California State Division of Beaches and Parks

Mr Fred L Paxton, City Administrator, City of Half Moon Bay

Additional Sources of Information

Transcript of Proceedings, Public Hearing of the Subcommittee on Conservation, Alfred E. Alquist, Chairman, of the Assembly Committee on Natural Resources, Planning, and Public Works, California State Legislature, Edwin L Z'berg, Chairman, Capitola, California, January 21, 1966 (215 p.)

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