CALIFORNIA STATE UNIVERSITY AND COLLEGES

MARINE SCIENCES WORKSHOP

MAY 10 – 11, 1973

MARINE SCIENCES WORKSHOP

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PREFACE

The California State University and Colleges system Marine Sciences Workshop held in San Diego on May 10-11, 1973, was the first attempt since 1969 to take stock of programs and activities within the system. CSUC campuses have been operating these programs under a moratorium resulting from a report submitted to the Coordinating Council for Higher Education by Andreas B. Rechnitzer (Marine Sciences in California Institutions of Higher Education, 1969). The open discussion of concerns and interests that occurred at this Workshop revealed a number of common problems.

The reports which follow are an attempt to summarize the essence and substance of the thinking which emerged during the Workshop. Detailed minutes of the meetings are available from the Bureau of Marine Sciences, San Diego State University.

One of the two major recommendations resulting from the Plenary Session has already been implemented: planning is underway by the Office of the Chancellor which will formalize and standardize diving safety programs throughout the State University and Colleges system. Next in importance is the need to convene an Ocean Studies Advisory Committee to address a number of organizational issues in an orderly manner. The goal of this committee would be to develop a strong, broadly based, well planned and executed Marine Sciences program for the State University and Colleges system. Rational planning and allocation of resources are necessary to ensure California's continued leadership in this important field.

Glenn A. Flittner

Report of Session I
Opening Session

President Golding was represented by Dr. Ernest B. O'Byrne, who stressed the need for the scientific, rather than the political community, to establish and order priorities for programs in the marine sciences.

Since Dr. Edward Wenk, the guest speaker, had cancelled, Dr. Glenn A. Flittner elected to provide the keynote theme for the Workshop. The text of his remarks can be found in Appendix II.

In response, Dr. Riese urged support of the recommendations in the Brittan report*, which reflects collective thinking of educators.

Since the Rechnitzer report was made public, Sea Grant funds for education have been cut from 27 percent to less than 6 percent of the total budget. Although Sea Grant is a major source of external funding, we cannot rely on this agency to support marine sciences education or capital outlay for laboratory construction and research vessels. For this reason, it was urged that State funding restrictions which had been placed on Moss Landing Marine Laboratories be removed.

There are 26 separate federal programs in NOAA, AEC, NASA and others which are concerned with marine sciences. It was suggested that an effort be made to bring these programs together "under one umbrella."

There is presently less need for graduates in the marine sciences, however, enrollment has remained at the same level for the past four to five years. In addition, it is important to note that industry is hiring graduates with broad-based educations rather than narrow specializations.

Facilities could be shared throughout the CSUC system. Such efforts should, however, be originated by faculty rather than dictated by administrative authorities.

* Martin R. Brittan. Marine Resources for California Higher Education: Phase 2. Council Report 72-2. Coordinating Council for Higher Education. April 1972.

Report of Session II

Marine Sciences Programs at the State University and Colleges

Rapporteur: Iraj Noorany

The session was held from 10:00 a.m. to 12:00 noon on May 20, 1973. Dean Albert W. Johnson presided as the Moderator. The panelists were:

Richard Ridenhour..... Humboldt State University
Thomas W. Thompson ..... Moss Landing Marine Laboratories
Lloyd H. Lamouria..... California Polytechnic State University, San Luis Obispo
Murray D. Dailey Southern California Ocean Studies Consortium
Glenn A. Flittner ..... San Diego State University

Dr. Ridenhour reviewed the history of the development in marine studies at Humboldt State University. He said the program began with the offering of a Bachelor's degree in wildlife management in 1946. This program presently has an enrollment of 628 undergraduate and 107 graduate students. Master's degrees are offered in wildlife and fisheries, and a Bachelor's degree is available in oceanography. Students in biology may specialize in marine biology in both Bachelor's and Master's programs. In other disciplines, such as business administration, economics, engineering, and geography, there are faculty members interested in marine studies.

Facilities available at Humboldt include a wildlife building, chemistry and biology laboratories, a circulating seawater system and a fish hatchery. There is also a marine laboratory in Trinidad, approximately 20 miles north of the campus, used by the biology, fisheries, and oceanography departments. Plans are underway for two teaching laboratories and eight graduate research laboratories. The facilities in Trinidad include a limited number of small boats, outboard motors, and sampling devices. It is also possible to charter a vessel to support instructional field work and occasionally for research. The current annual budget for ship operations is about $55,000. In addition, the California Cooperative Fishery Unit is located on the campus.

The research programs at Humboldt currently include: the Sea Grant Program ($130,000 federal support); California Cooperative Fishery Unit ($40,000 federal support, plus $13,000 California Department of Fish and Game support); NSF supported projects; as well as a project supported by the Pacific Gas and Electric Company.

Dr. Thompson described the program at the Moss Landing Marine Laboratories and reviewed some of its history. MLML was established in 1965 by a consortium of five state institutions (Fresno, Hayward, Sacramento, San Francisco and San Jose) which was joined by Stanislaus in 1972. Policies are set by a governing board composed of faculty and administrative members of all participating institutions. Their goal is to provide upper division undergraduate and graduate instruction in marine sciences as well as research opportunities for the students who are interested in marine studies. Perhaps the most significant asset at MLML is its location near the natural habitats of Elkhorn Slough, Moss Landing Harbor, and the Monterey Submarine Canyon. The physical plant is an old cannery building with only modest facilities. There is running seawater in the building. Vessels consist of a small number of eight- to fourteen-foot boats. In addition, lease time is available on commercial boats.

Instructional programs are provided in marine biology, geology and geophysics, as well as physical and chemical oceanography, with the intent of training generalists with specialized backgrounds in marine sciences. The student population has grown from 20 in 1966 to a present level of 100 to 120. Approximately one-third of the graduating students transfer to other institutions to pursue their work toward obtaining a Ph.D., one-third go into teaching, and one-third go to work for industry or management agencies.

Problems at Moss Landing Marine Laboratories include overcrowding of laboratory space and other facilities, unsuitable vessels and diving gear, and insufficient use of state funds. There are gaps in faculty expertise in physical and chemical oceanography and fisheries biology. These problems can only be solved when the funding picture becomes clearer. Maintenance of the facilities has been a problem. The very nature of the consortium operation makes solving of these problems somewhat more difficult, although there is a considerable degree of cooperation and good will among the consortium members. At present, funding for Moss Landing operations appears as a line item in the San Jose campus budget. San Jose State is the repository for Moss Landing funds, but equipment purchased with those funds belongs to the consortium. Future plans include a new building, additions to the staff, and arrangements for using an adequate vessel. This would permit an increase in the number of students to 300-400, the maximum number projected for the near future.

The 1973-74 research programs at Moss Landing Marine Laboratories include the following items:

Sea Grant proposed federal support	$ 95,000
other support	$120,000
Army Corps of Engineers	$ 4,000
California Department of Fish and Game	$ 6,000
Kaiser Refractories	$ 20,000
Environmental Protection Agency	$ 50,000
	($150,000 over 3 years)
International Shellfish, Inc.	$ 1,200

The research grants are under the general administration of San Jose State University Foundation, but a large portion of the overhead is returned to the Laboratories.

Dr. Lamouria described the marine studies programs at California Polytechnic State University, San Luis Obispo. He gave a history of the institution's pioneering efforts in the biological sciences and in marine engineering. Marine biology studies, including marine resources, fisheries biology, aquaculture, fresh water fisheries, and fresh water ecology, are concentrated in the biology department, with eight faculty members involved. The engineering program began two years ago to study offshore farming and the engineering aspects of fisheries and the marine food industry. Emphasis is placed on commercial production of marine organisms. This program is available as an interdisciplinary concentration area, including courses in maricultural engineering, surveying and topography, ocean engineering, and corrosion studies. Areas of interest include water quality, enclosures, production mechanics (handling, planting, feeding), and predator control. A new facility is being developed in Paso Robles for growing catfish. The marine studies program has been able to acquire many good items of equipment from federal surplus. The present facilities include a closed-loop system for circulation of seawater.

Dr. Dailey gave a brief history of the Southern California Ocean Studies Consortium, which consists of five member institutions at Long Beach, Dominguez Hills, Fullerton, Northridge, and Cal Poly-Pomona. The faculty members interested in marine studies on these campuses number about 70. The goal of this consortium is to develop programs in physical oceanography, marine biology, chemical oceanography, mariculture, ocean engineering, marine geology, geography, and management oriented toward providing opportunities for practical marine experience for students, as well as studies which will be useful in solving the existing problems in the southern California coastal zone. The ocean engineering program at California State University, Long Beach, is the only degree program in this field in the California State University and Colleges system. The consortium owns and operates the research vessel *NAUTILUS*. There are also two other small boats. The consortium hopes to be able to obtain state support for funding the operations of their programs and to improve the scientific instrumentation of the *NAUTILUS*. Additional funds may be obtained by chartering the *NAUTILUS*, although there is some question about the advisability of setting rates for private industry.

Dr. Flittner described the marine studies programs at San Diego State University. Degrees are offered in fundamental fields, supplemented by advanced marine-related course work and practical oceanographic experience which allow students to specialize. Ocean-oriented courses and Bachelor's and Master's degree programs are available in departments of biological sciences, chemistry, civil and mechanical engineering, geography, geology, microbiology, physical sciences, and physics. The Master's degree with emphasis on marine problems may be earned in these departments and in the School of Business Administration. The Ph.D. degree is offered in chemistry, ecology, and genetics jointly with the University of California. The Bureau of Marine Sciences was established in 1970 to coordinate interdisciplinary marine studies on the campus.

Responsibility for instruction remains within the traditional departments. There are more than 40 faculty members in these departments who are directly involved in the marine studies program.

Marine-related courses and research are conducted primarily at the campus, located 10 miles from the coast. All participating departments have well-equipped classroom, laboratory, and shop facilities, including standard physical and biological oceanographic equipment, laboratories for the analysis of seawater and sediment characteristics, radioisotope and computer facilities, constant temperature rooms, and a closed-system experimental aquarium building. Library holdings are well-represented in the marine sciences. Boat docking facilities are maintained by the SDSU Aquatic Center in Mission Bay, where several 16- to 23-foot craft are available for coastal sampling operations. The use of larger oceanographic vessels and other specialized facilities are arranged in cooperation with the Scripps Institution of Oceanography. There are no plans to acquire a large research vessel for the program due to this working relationship with the Scripps Institution and because of high capital investment and operational costs.

At present, the University has no general shoreside marine laboratory of its own, although a specialized laboratory for studies of aquaculture and thermal effects was recently established at Carlsbad, California, in cooperation with the San Diego Gas and Electric Company. The Scripps Institution provides space in its experimental aquarium and other specialized facilities on a space-available basis. There is a critical need to develop a shoreside laboratory for the SDSU marine studies program.

The 1972-73 research support budget at SDSU was:

NOAA-Sea Grant	$198,000
NSF	$ 37,500
State Regional Water Quality Control Board	$ 1,000
Private contributions	$ 2,000

These figures do not include the required matching funds contributed by the San Diego State University Foundation.

Report of Session III
Sciences Education in the State University and Colleges

Rapporteur: James H. Mathewson

The session was held from 1:00 p.m. to 5:00 p.m. on May 10, 1973. Dr. Russell Riese, Coordinator, California Commission on Higher Education, presided as Moderator. The panelists were:

John J. Baird ..... Office of the Chancellor
Richard Ridenhour ..... Humboldt State University
Donald Bright ..... California State University Long Beach
E. A. Keen ..... San Diego State University
Richard F. Ford ..... San Diego State University
Peter J. Fischer ..... California State University, Northridge
Martin Brittan ..... California State University, Sacramento
Lloyd H. Lamouria ..... California Polytechnic State University, San Luis Obispo
Joel Gustafson ..... San Francisco State University

Presentations and discussions at this session made it clear that there is no integrated, statewide program in ocean studies in the California State University and Colleges system. Nevertheless, a large commitment for ocean-oriented education exists in the system, with a great diversity of program styles and philosophies, geographically dispersed and well-located to take advantage of the special regional characteristics of particular sections of California coastal waters. Significant efforts at local and regional cooperative use of facilities exists, most notably at Moss Landing and Long Beach.

The role of the State University and Colleges system in ocean-oriented education was discussed by geographical area.

Northern California:

Humboldt State University finds it difficult to be involved in a consortium due to the great distances between campuses. Their nearest neighbor is a community college 83 miles south of the Oregon border; the nearest CSUC campus is Sonoma State College. Their program is presently job-oriented (basic oceanography, fisheries, advisory services). There is a need for more basic programs.

Sonoma State College offers a marine sciences program which is conducted in part in cooperation with the University of California marine station at Bodega Bay. They have experienced no decline in enrollments and currently have four faculty with interests in ocean studies.

San Francisco Bay/Delta Complex:

CSU, Sacramento is located in the interior and has the problem of access to the coast. Their largest boat is an inboard-outboard cruiser utilized in the delta. Although CSU, Sacramento is a member of the Moss Landing consortium, it is often easier to take field trips to coastal locations and laboratories closer to the main campus. Dr. Brittan expressed the opinion that all interior institutions should join a consortium effort in order to develop a working relationship with institutions that have marine laboratories.

San Francisco State University has recently completed an eight-story building, but the hoped-for staff to support this facility has not materialized. Despite the lack of adequate faculty and support staff, they have a viable program, especially in marine biology. Only three of the fifteen specialized courses offered overlap with those at Moss Landing Marine Laboratories, of which SFSU is a member. Three of their nine faculty members are associated with MLML.

Monterey/Morro Bay Upwelling Zone:

Moss Landing Marine Laboratories offer course and field work in marine biology and geology, physical and chemical oceanography, and geophysics only to juniors, seniors, and graduate students at consortium campuses. Classes and labs are scheduled in blocks of one day per week to accommodate commuters. There are two types of students who take advantage of the program: those who take only a single course; and those who remain at Moss Landing, obtain a Master's degree and then either continue toward obtaining a Ph.D. elsewhere or enter a career in marine sciences. Enrollment, originally 20 in 1966, has risen to the present level of 100-120. A maximum enrollment of 300-400 will be possible with increased support.

Cal Poly, San Luis Obispo, is close to the marine environment. Specialization in agricultural engineering has been an institutional tradition, and this has been extended to aquaculture.

Los Angeles Bight:

The Southern California Ocean Studies Consortium has a pool of 75 faculty across all disciplines in 6 state institutions. Dr. Bright of CSU, Fullerton, expressed the need to plan programs now so that when funds for expansion become available, they can be put to immediate use.

San Diego County Coast:

San Diego State University is fortunate in being able to cooperate actively with the Scripps Institution of Oceanography, as well as with other CSUC campuses. Scripps concentrates primarily on deep ocean studies in their Ph.D. program, while SDSU's undergraduate and Master's programs emphasize problems of the coastal zone. Specific degree programs offered at SDSU are described in the report of the previous session. There is faculty resistance to offering a special graduate degree in marine sciences at SDSU. Instead, emphasis is placed on sound education and training in basic disciplines, with the opportunity for students to specialize in marine studies through advanced course work and thesis research. There is need for a regional coastal research and instruction center in San Diego County, plus additional centers between Los Angeles and San

Francisco and in the northern part of the state, as a function of the CSUC system. These centers could serve as data repositories to which all graduate students and faculty within the entire system could have access.

The need for additional statewide educational coordination lies not only in the area of curriculum development, but also in establishing common goals and priorities in the use of extremely limited state and federal funds by existing programs. Oceanographic education must grow in quality to meet ever-changing and expanding requirements and opportunities, such as the present need for coastal zone specialists. An integrated core program should be offered in basic fields. Additional, specialized concentrations can then be developed on individual campuses within a region, utilizing common support facilities. Students would be able to take courses on more than one campus and it should be possible to transfer courses as well as students within the marine studies framework. Thus, duplication can be avoided and cooperation advanced. However, the number and size of our programs cannot grow significantly in the face of the long-term limitations on capital and operating funds. Our resources must first be allocated to support program improvement, rather than program expansion.

Savings can be achieved by cooperative use of facilities not only within the system, but between educational segments, such as the use of laboratories operated by private universities at Dillon Beach and Catalina Island, and participation in the University of California Sea Grant Program. Laboratories and ships operated by the Scripps Institution and the federal government are being used cooperatively for education and research, and this should be encouraged. Finally, arrangements with private industry, partially supported by Sea Grant, can provide new avenues for meeting our needs

The failure of federal and state governments to develop or implement comprehensive, long range, integrated ocean or coastal policies, either by default or political vagaries, and the stagnation in science funding in general has placed special strains on the marine-oriented academic community. The Rechnitzer report was originally intended to force statewide planning and to prevent unrealistic program development. During the moratorium on program development, funds that might have gone to marine sciences have gone elsewhere, and planning has occurred only on a regional or local level. Although Sea Grant is ostensibly a source for "seed money" to initiate programs, the state will not assume financial responsibility for federally funded projects. Our discussion returned repeatedly to various aspects of these basic constraints and ways to live within them.

Immediate support by the State University and Colleges system is needed to correct severe deficiencies in equipment and facilities at several institutions with major programs now in successful operation. Inequities in support allocations have been so severe that in some instances dangerous conditions may exist in instructional situations. Diving, boat operations, and laboratory exercises cannot be conducted with inadequate and unsafe equipment, boats, and buildings. Federal, state, and local regulations on diving safety, boat operations, fire regulations, animal holding, and general student safety cannot be violated or seriously compromised. The importance of safety at sea and along shores exposed to the open ocean should be stressed to our administrators; no

compromise can be made with accepted standards for these kinds of operations. The conditions in need of most urgent correction exist at institutions that are most successfully meeting instructional responsibilities in marine sciences — Humboldt, Moss Landing, San Diego, and Long Beach — but also exist elsewhere in the system. These institutions have substantial commitments to marine programs; therefore, corrective action must take precedence over substantial investments in new programs at other institutions. Equipment and facilities, once purchased, must be maintained and replaced. Support and maintenance personnel and budgets adequate to the needs of existing and effective programs must have first priority.

At the present time, a wide variety of regional and local cooperative arrangements exist for the use of facilities, ships, and coastal study areas, but no overall statewide mechanism exists for coordinating efforts to obtain support and maintain cooperation. The termination of COAP and CMC activities and the establishment of the Coastal Commission has jeopardized the implementation of some plans of importance to the State University and Colleges system faculty both as educators and as environmental scientists.

Recommendation Number 11 of the Brittan report on "Marine Resources for California Higher Education" remains to be implemented. We need mechanisms for facilitating joint use of vessels, facilities, and study areas so that unnecessary competition can be avoided and new avenues for federal and state funding can be created. We need to identify the actual extent of oceanographic funding disbursed in various budgets, and rationally allocate resources. We need a common Sea Grant outlook, if not a common governance program or statewide contract.

A forum is needed to bring to the Coastal Commission, the Department of Fish and Game, and other agencies the expertise and information we possess to meet coastal problems and to provide an avenue for the community to communicate with academics for advisory or consulting services.

We need a common State University system policy on educational priorities in the marine sciences. The university presidents, the Chancellor's Office, the Legislature, and CCHE need to be informed of the special needs and problems of all the regions of the state and of the State University and Colleges system as a whole.

Dinner Session

The Evolution of Coastal Zone Policy in California

Guest Speaker: Robert B. Krueger

Mr. Robert Krueger, Chairman of the Governor's Advisory Commission on Marine and Coastal Resources, spoke on problems of the California coastal zone, the coastal zone initiative (Proposition 20), and related legislation. The text of his address is given in Appendix III.

Report of Session IV

Marine Science Program Operating Costs and Requirements

Rapporteur: Richard F. Ford

The session was held from 8:20 a.m. to 12:00 noon on Friday, May 11, 1973. Dr. Donald Bright, Chairman, Department of Biology, California State University, Long Beach, presided as Moderator. The panelists were:

Peter J. Fischer ..... California State University, Northridge
Robert J. Hurley ..... Moss Landing Marine Laboratories
Darwin Mayfield Southern California Ocean Studies Consortium
George Crandell ..... Humboldt State University
Iraj Noorany ..... San Diego State University
Lloyd Lamouria ..... California Polytechnic State University, San Luis Obispo
Glenn A. Flittner ..... San Diego State University

Vessel Operations and Requirements

All of the campuses or consortia have developed "fleets" of small work boats for nearshore or estuarine studies, and consider these essential in their programs. Because of the limited number of such boats and their extremely heavy use, annual maintenance and replacement costs are quite high, representing as much as 10 percent of the total boat investment each year for some institutions. This problem is compounded by the fact that there is too little support for maintenance staff in most cases. There was general agreement among the participants that most of the problems associated with supporting small craft can be alleviated by having a well-qualified technical staff and a systematic maintenance program.

All of the consortia and separate institutions with major marine sciences programs have arranged for access to larger oceanographic research vessels. The feeling of some participants was that it is desirable for these institutions to acquire more adequate vessels which they would operate themselves. There was general agreement that such vessels must be able to accommodate at least 25 students and scientific staff and provide reasonable flexibility for a wide variety of oceanographic operations. This requires that they have both hydrographic and trawling winches, open deck space, and adequately equipped dry and wet laboratories.

Each of the major programs has used a somewhat different approach in arranging for access to larger vessels, and a variety of vessel types have been used. To a large extent this reflects regional differences and problems encountered. Some programs have been successful in maintaining their own vessels, while most have elected to lease ship time or, in some cases, to obtain it on a cost-free, "as available" basis.

The advantages and disadvantages of these approaches were discussed and there seemed to be general agreement that each should be encouraged. There was also general agreement that sharing of available ship time, both among consortium members and with institutions such as the Scripps Institution of Oceanography and USC, should be strongly encouraged for economic reasons.

Liability and insurance problems in small- and large-vessel operations were discussed. There appears to be a need to explore these problems further and to develop a systemwide policy.

Shoreside Facilities: Docks, Shops, Laboratories, Marine Resources Reserves

Only two programs, those of Humboldt State University and Moss Landing Marine Laboratories consortium, now have general marine laboratories of their own. Several other programs, including those of San Diego State University and the Southern California Ocean Studies Consortium, plan to develop such shoreside laboratories as funds become available. It was suggested that laboratories operated by consortia represent the most efficient and economical approach, but that there also is strong justification for separate laboratories at geographically isolated campuses, such as Humboldt State University and San Diego State University, which have strong marine programs.

The need to have adequate boat docking, storage, and shop facilities associated with marine laboratories was emphasized.

All of the existing programs share one obvious problem in common, the lack of adequate funds either for capital costs or for day-to-day operation. It was pointed out that most of the money for developing such laboratories must come from local, federal, or private sources, as state funds are not available at the present time. It was generally agreed that realistic planning for laboratory development should continue and that other sources of capital funds be sought.

Marine resources reserves were discussed, primarily with reference to the ideas presented in the Brittan report ("Marine Resources for California Higher Education"). The group expressed strong support for these ideas and agreed that steps should be taken to implement them on a statewide basis.

Marine Sciences Equipment

At the suggestion of Panel Moderator Donald Bright, discussion of this topic was limited to the problems of diving programs and equipment, as most other critical equipment problems had been considered in earlier sessions of the workshop.

Formal and relatively well-organized diving programs related to marine sciences exist at some institutions, such as San Diego State University and Moss Landing Marine Laboratories, while more informal ones, usually residing in physical education departments, exist on other campuses. Many serious problems encountered in maintaining equipment and in coordinating diver certification and safety were discussed. Even representatives of the better-organized programs reported that they suffer seriously from lack of adequate funding and staff support. There was agreement that a very serious problem exists in this area.

The group strongly supported the recommendation that a systemwide plan for standardizing diver certification, equipment safety, and diving procedures be developed as soon as possible. Dr. Baird will set up a mandate to all campuses to accomplish this, based on recommendations from campuses with active diving programs. The group also strongly supported the recommendation that adequate funds be provided by the state to support campus diving programs. Unless these funds are forthcoming, no amount of systemwide formalization will guarantee safe diving programs.

Sea and Shore Support Staff Requirements

Most of the institutions with major marine sciences programs reported difficulties associated with inadequate staff support, at least in some areas. The major support staff categories identified as essential to marine sciences programs were secretarial staff, shop technicians with appropriate specialties, marine superintendent, diving officer and diving equipment technician, and custodial staff.

There was general agreement that most marine sciences programs could rely primarily on staff support from the main campus. However, at laboratories such as Moss Landing, which are isolated from the main campuses of the participating institutions, a separate, resident group of staff members is required. Difficulties in applying "shared" or returned overhead funds to this problem were discussed.

Collecting and Study Permits for Living Marine Resources

New regulations and policies concerning State of California scientific collecting permits were discussed, particularly with regard to intertidal collecting. There was general agreement that the intent of these new regulations and policies is good and merits strong support of the academic community. On the other hand, some of the regulations make field work for both teaching and research more difficult. This was illustrated by some of the specific problems recently encountered in research programs at San Diego State University.

There was general agreement that, in cooperation with the California Fish and Game Wildlife Protection Branch, we should develop a systemwide policy governing the use of collecting permits in teaching and research. It was further suggested that this might incorporate some kind of local review process in which the justification for use of collecting permits by individual instructors and researchers could be evaluated.

Final Discussion

In the course of summarizing the dialogue of the previous day and a half, debate occurred on two major issues. The summary of programs was accepted as presented. The diversity of regional approaches was obvious, as was the extent to which marine sciences programs had progressed.

Dr. Ford's summary exposed the first critical issue: the need to develop a systemwide diving program to standardize diver certification, equipment, and diving safety procedures. Dr. Thompson recommended that the Chancellor's Office appoint an Advisory Committee on Scientific and Research Diving to serve on an *ad hoc* basis. The purpose of the Committee would be to develop minimum statewide standards for the selection, training, and certification of scientific diving personnel, and to establish minimum statewide standards for safety, selection, operation, and maintenance of scientific diving equipment.

The recommendation was broadened to recognize equivalent needs in the instructional area, and it was proposed that this committee be charged to establish uniform diving safety standards for scientific research and instructional programs in the entire State University and Colleges system. Dr. Baird agreed to take action on the question.

The second issue developed in the course of the summary by Dr. Mathewson. Disagreement over how to proceed in developing marine programs on an integrated, statewide basis, utilizing limited state and federal funds, and setting priorities, led to the recommendation from the floor that a statewide committee be established. This committee would be charged with the responsibility to:

1. Define the marine sciences and marine studies areas
2. Identify marine programs and special areas of emphasis currently underway in the system
3. Identify regional centers of expertise and interest
4. Identify budgetary and capital improvement resources presently committed to operating programs, and to
5. Develop a systemwide policy on education and research priorities in the marine sciences, followed by a plan to allocate resources rationally.

Discussion ensued on the structure of the committee, as well as the title. Consent was given to the name Ocean Studies Advisory Committee (OSAC) having the following composition of eight members:

1 member from Humboldt State University;
2 members from the San Francisco Bay/Delta complex;
2 members from the Monterey/Morro Bay area;
2 members from the Southern California Ocean Studies Consortium; and
1 member from San Diego State University.

John Baird recommended that two members should also serve *ex officio* from the Chancellor's Office, one from Academic Planning, and the other to be determined later. Unanimous consent was given to the above structure, with the understanding that the Academic Planning Division, Office of the Chancellor, would invite suggestions for names of participants to the committee.

THE MEETING WAS ADJOURNED AT 3:00 P.M., FRIDAY, MAY 11, 1973.

Appendix I

Agenda

AGENDA

MARINE SCIENCES WORKSHOP – May 10-11, 1973

PROGRAMS: PROGRESS: AND –– PROBLEMS

THURSDAY
May 10, 1973

REGISTRATION
8:30 a.m. Sheraton Airport-Inn Hotel
San Diego, Harbor Island (Barcelona Room)

I. OPENING SESSION
9:15 a.m. to 10:00 a.m.

A. Introductory Remarks and Welcome:

Dr. Ernest B. O'Byrne
Vice President for Administration
California State University, San Diego

B. Theme Speaker:

Dr. Glenn A. Flittner
Director, Bureau of Marine Sciences
California State University, San Diego

II. MARINE SCIENCES PROGRAMS AT THE STATE UNIVERSITY AND COLLEGES:
10:00 a.m. to 12:00:

Panel Moderator: *Albert W. Johnson*

Panel Members: *Richard Ridenhour*
Thomas Thompson
Lloyd H. Lamouria
Murray D. Dailey
Glenn A. Flittner

Rapporteur: *Iraj Noorany*

A. California State University, Humboldt
B. Moss Landing Marine Laboratories
C. California Polytechnic State University, San Luis Obispo
D. Los Angeles/Long Beach Consortium
E. California State University, San Diego
F. Future Plans for Each Institution/Group
G. Discussion/Questions/Comments from Floor

BREAK FOR LUNCH
12:10 p.m. – Madrid Room

III. MARINE SCIENCES EDUCATION IN THE STATE UNIVERSITY AND COLLEGES
1:30 p.m. to 5:00 p.m.:

Panel Moderator: *Russell Riese*

Panel Members:

John J. Baird
Richard Ridenhour
Donald Bright
E. A. Keen
Robert Arnal
Richard F. Ford
Peter J. Fischer
Martin Brittan
Lloyd H. Lamouria
Joel Gustafson

Rapporteur: *James H. Mathewson*

A. Role of the State University and Colleges System in Ocean-Oriented Education in California

1. Major Geographic Areas of Interest and Program Emphasis

   a. Northern California Coast
   b. San Francisco Bay/Delta Complex
   c. Monterey/Morro Bay Upwelling Zone
   d. Los Angeles Bight
   e. San Diego County Coast

B. Role of Research in Enhancing Marine Science Education Programs in the State University and Colleges

C. Need for an Integrated Statewide Program

D. Interrelations with the University Communities

1. University of California, Institute of Marine Resources
   Dr. George G. Shor, Jr., Sea Grant Program Manager
   Scripps Institution of Oceanography

2. University of Southern California
   Dr. Richard Tibby, Director
   Catalina Marine Science Center

DINNER SESSION
6:30–7:30 p.m. . . . . No Host Cocktail Hour
Dinner at 7:30 p.m.

GUEST SPEAKER
Mr. Robert B. Krueger
Chairman, Governor's Advisory Commission
on Marine and Coastal Resources

FRIDAY
May 11, 1973

IV. MARINE SCIENCE PROGRAM OPERATING COSTS AND REQUIREMENTS
8:30 a.m. to 12:00:

Panel Moderator: *Donald Bright*

Panel Members: *Peter J. Fischer*, *Robert J. Hurley*, *Darwin Mayfield*, *George Crandell*, *Iraj Noorany*, *Lloyd H. Lamouria*, *Glenn A. Flittner*

Rapporteur: *Richard F. Ford*

A. Vessel Operations and Requirements

B. Shoreside Facilities: Docks, Shops, Laboratories, Marine Resources Reserves

C. Marine Sciencês Equipment

D. Sea and Shore Support Staff Requirements

E. Collecting and Study Permits for Living Marine Resources

BREAK FOR LUNCH
12:10 p.m. – Madrid Room

V. PLENARY SESSION AND SUMMARY REPORT
1:30 p.m.

Section II Report
Section III Report
Section IV Report

Discussion and Ratification/Modification of Report

VI. ADJOURN
3:00 p.m. – Friday, May 11, 1973.

Appendix II

Marine Sciences in the California State University and Colleges System: Where We Stand Today

by

Dr. G. A. Flittner

MARINE SCIENCES IN THE CALIFORNIA STATE UNIVERSITY AND COLLEGES SYSTEM: WHERE WE STAND TODAY

by

Dr. Glenn A. Flittner
Director Bureau of Marine Sciences
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In December, 1969, Dr. Andreas B. Rechnitzer submitted a report to the Coordinating Council for Higher Education on Marine Sciences in California Institutions of Higher Education. In the report were a number of recommendations and findings that are the basis for our meeting here in San Diego today. In the three and one-half years since the issuance of this report, what has happened? What changes in international, national, state and local oceanographic program emphasis have taken place? What are the job opportunities in the marine sciences today? And what marine science programs should the State University and Colleges system be advocating in today's changing world? Lastly, how should our system's programs be integrated with those of the University of California and other private Universities?

Background

The Coordinating Council Report had its origins in events dating back to 1967. On October 27, 1967, the California Governor's Advisory Commission on Marine and Coastal Resources recommended that California make a significant commitment to the National Sea Grant College Program Act of October, 1966. Subsequently, the Sea Grant Program Director reported to the Commission that he had received 77 proposals or letters of intent to file proposals under the National Marine Resources Engineering and Development Act (MREDA) from California institutions of higher learning.

On November 23, 1968, the California Advisory Commission on Marine and Coastal Resources (CMC) made a number of recommendations that set the stage for the study directed by Dr. Rechnitzer. The study took one year to complete, and a comprehensive report of 195 pages (including appended documents) was issued in which 18 recommendations and findings were noted. I will read each one of Dr. Rechnitzer's recommendations to you, and offer my comments as to where I believe we stand today.

Recommendation 1

The Coordinating Council and the private and public segments of California higher education should monitor the budget of the National Oceanographic Program. In the event Congress and the President determine that research and development in the marine sciences must take place at an accelerated rate, there will be a corresponding increase in the need for marine science professionals and paraprofessionals.

Comment: The Coordinating Council, and public and private segments of California higher education have monitored the budget of the National Oceanographic Program with concern. There has been no strong acceleration of education, research and development in the marine sciences; instead, there has occurred a leveling off of demand and a sharp reduction in old-line ocean research support (e.g., Office of Naval Research) which has not been offset by a corresponding growth in new programs such as Sea Grant and the Coastal Zone Management Acts. Some old-line agencies (e.g., National Marine Fisheries Service) are today furloughing people for the second time in the past three years, terminating a steady pattern of growth within these agencies since before 1950.

Recommendation 2

Consideration of additional marine science programs at any California institution of higher education should be postponed until after the close of the 1971-72 academic year. Beginning in 1972-73, the Council staff should re-examine the demand for professional graduates, as indicated by the NOP budget, and determine if future demand can be met through an expansion of existing programs or if new programs will be required. When the need for additional programs has been demonstrated, attention should be given to maintaining the present geographical balance among the six regions identified on the map in Chapter II, and cooperation among the institutions within each region should be encouraged.

Comment: Programs in the marine sciences have not grown appreciably; the "moratorium" effectively thwarted integrated planning on a statewide basis. Institutions with incipient programs suffered from a lack of strong administrative support. Despite these handicaps, some developments have occurred within the six geographic regions recognized in the report, and a nucleus of strong interest remains.

Recommendation 3

For orderly growth in marine science education in California, State fiscal support should be sufficient to permit an annual enrollment increase in marine science programs paralleling the increase in the NOP budget. The trend established through the 1960's indicates a need for enrollments in marine sciences to increase approximately 20 percent per year.

Comment: State fiscal support has not been directed to marine science education *per se*. Institutions have either reallocated existing resources or have sought extramural support. Zero growth has prevailed.

Recommendation 4

It is recommended that the current, strong emphasis in marine science programs on fundamental, broad-based training in a basic science be maintained, and that tendencies in the direction of establishing specialized training in this field at the undergraduate level be shunned.

Comment: Specialized marine sciences programs have not proliferated. Many institutions at the Community College level have terminated undergraduate marine technical training curricula.

Recommendation 5

The Coordinating Council should evaluate proposals by California institutions for institutional grants and for project grants that propose the development of new programs. Further, the Coordinating Council should advise the Sea Grant Office of plans regarding marine science education in California.

Comment: The Coordinating Council has not evaluated proposals for institutional grants and projects. The Office of Sea Grant Programs has dealt with a number of institutions in California, either separately or collectively via the proposal review and approval process.

Recommendation 6

To assist the Office of Sea Grant, NSF, the Coordinating Council should designate prior to January 1, 1970 one or more institutions in California as leading candidates for selection as Sea Grant Colleges. The Scripps Institution of Oceanography of the University of California at San Diego is well-qualified for Sea Grant College status. The University of Southern California also has excellent qualifications and deserves equal consideration by the Coordinating Council for endorsement as a Sea Grant College.

Comment: No Sea Grant Colleges have been designated in California. The two leading contenders for such titles are the University of Calfornia and the University of Southern California.

Recommendation 7

It is recommended that the governing boards take appropriate measures to assure that each institution achieves a favorable instructional-cost index. A policy of joint use of expensive shore and sea-going facilities should be adopted among and within the several segments of California higher education.

Comment: Joint use of expensive shore and seagoing facilities has occurred on a regional basis. The degree of formality and level of cooperation varies substantially between institutions within the State University and Colleges system, as well as with the University of California and the University of Southern California.

Recommendation 8

The program in Naval Architecture at UC-Berkeley is evaluated to be important to California's ocean economy and the nation. It is recommended that the Naval Architecture program at Berkeley not only be continued but that the Regents lend added support by whatever means become available.

Recommendation 9

The limitation of enrollment imposed on the graduate Ocean Engineering program at UC-Berkeley should be modified. The program should be allowed to expand to approximately double its current productivity.

Recommendation 10

It is recommended that the Scripps Institution of Oceanography re-examine its role in oceanographic education with a view toward increasing student enrollment within its budgetary support.

Comment: The Naval Architecture program at UC-Berkeley continues. The Ocean Engineering program continues on a limited basis. Enrollment levels at Scripps Institution remain about the same.

Recommendation 11

It is recommended that the State Colleges clarify the definition of the program in Earth and Space Sciences at California State College, Dominguez Hills. The proposed expansion of the program into the field of marine science should be deferred.

Comment: California State College, Dominguez Hills has entered into the Southern California Ocean Studies Consortium.

Recommendation 12

The restrictions previously imposed by the Coordinating Council on research and capital costs relating to the Moss Landing Marine Laboratories should be removed.

Comment: Moss Landing Marine Laboratories continue to pursue an active marine sciences program. The Laboratories have participated in the Sea Grant Program with quasi-institutional funding since 1969. A request for capital outlay funding was submitted in the Spring of 1971, but was rejected on the basis of economic restraints then being implemented by the Office of the Governor.

Recommendation 13

The institutional requests for tide and submerged lands presented in this report represent **single** *interests of institutions of higher education. The staff of the Coordinating Council should act to coordinate these plans resulting in a coordinated plan of need for tidelands by institutions of higher education in California.*

Comment: The Coordinating Council has identified tidal and submerged lands requested by California institutions of higher education. Their report was presented to the Governor's Advisory Commission on Marine and Coastal Resources for inclusion in the Coastal Ocean Area Plan in April, 1972.

Recommendation 14

The Coordinating Council should transmit a copy of this report to the Interagency Council on Ocean Resources, calling attention to the material in Chapter VI and **Appendix S**, *where institutional requests for tide and submerged lands are summarized. These areas should be included in the development of the Comprehensive Ocean Area Plan. It is recognized that these institutional requests represent the single-interest plans of individual campuses of institutions of higher education. The COAP will reveal areas where joint-use agreements may be feasible and desirable, permitting multiple use of a limited resource. Ownership and authority over such tidelands should remain with the State Lands Commission.*

Comment: The California Coastal Ocean Area Plan has been completed and submitted to the Governor. Passage of Proposition 20, the Coastal Zone Initiative, in November 1972 has created confusion as to the jurisdictional authority of the California Advisory Commission on Marine and Coastal Resources and the new California Coastal Commission. The latter Commission has a more restricted area of responsibility than the former. Notably, areas of prime concern to us have been omitted in this new legislation.

Recommendation 15

It is also recommended that the Coordinating Council endorse the recommendation of the California Advisory Commission on Marine and Coastal Resources that the institutions of higher education in California become directly involved in a coordinated program of environmental surveys, living-resource inventories, and user requirements.

Comment: Institutions of higher education are involved variously in environmental surveys, living-resource inventories, and evaluation of user requirements. Little statewide coordination is evident; furthermore, inadequate state or federal monies are available to support such studies. Some monies that are available come from private industry and are directed to private consultants and organizations selling private services not always in the public interest.

Recommendation 16

Until such time as a management information system is implemented the Council staff through annual educational surveys should monitor the growth in the numbers of graduates of marine science programs in order to determine whether the projected manpower requirements of California are being met.

Comment: No current information on projected California manpower requirements is available. No management information system has been established to secure such information.

Recommendation 17

Institutions with programs in the marine sciences should provide adequate counseling services for their students, particularly in regard to career selection, planning of transfer programs, and opportunities for professional and paraprofessional marine science employment.

Comment: Marine sciences counseling varies between institutions. Career selection program, planning and placement activities still prevail at the individual faculty level.

Recommendation 18

Institutions with marine science programs should give attention to strengthening the placement services available to students in this field. Placement offices should develop career and employment information that is based on current, realistic assessments of opportunities in marine science and should make this information available to counselors and marine science students. Administrators should establish stronger relationships with prospective employers in industry and government and, where appropriate, make independent assessments of present and future manpower requirments in order to provide improved programs of counseling, training, and placement.

Comment: Placement offices suffer from a dearth of current employment information. Most federal materials are out of date; many federal announcements have been cancelled. Few State of California opportunities exist; those that do are for generalists in the environmental specialist category. Industrial opportunities are limited.

OUR CHALLENGE

I have recited the above litany of failures, lapses and infrequent successes to point out the need for our workshop, if for no other reason but to document the effects of three and one-half years of postponement. In spite of these setbacks, a number of institutions within the State University and Colleges system have succeeded in building viable, competent programs. In particular, fiscal and political exigencies have brought about a degree of inter-institutional cooperation which was not envisioned during the 1966–68 interval. Some of these examples will emerge during our sessions.

Failure of the Executive Branch of our Federal government to address the challenges set forth in the landmark Stratton Commission documents in early 1969 has set the stage for disappointment, confusion and frustration on a scale never before witnessed by the marine sciences community. Partial reorganization of the Federal Government agency structure has contributed to this confusion. Because of the failure to formulate a National Ocean Policy to guide all agencies having vested interests in the oceans, the result has been internecine bureaucratic competition over roles, programs, people and scarce dollars. One consequence is the failure of Federal agencies to deal responsibly with the financial support needs of academia so that they may carry out the farsighted intent of Rechnitzer's Recommendation 15. For example, The California Coastal Commission and its regional components today are forced to "decide" critical zoning and land use issues without the essential baseline data on which to make intelligent judgements. One expects that it would be in both the state and national interests to obtain these data, but such rational expectations are not fully recognized today.

The decision to place the national Sea Grant Program within the new National Oceanic and Atmospheric Administration (NOAA) also has created dismay and confusion. Placement of a contract-oriented extramural research and development program within a major line governmental agency with a large staff of classified Civil Service personnel has altered the future of Sea Grant significantly. The tendency to promote in-house work within NOAA contravenes the intent of the Sea Grant Act of 1966; the Administrator of the NOAA agency has been presented with a conflict of interest situation, which if it is not resolved soon, may lead to the failure of the Sea Grant program. Further, the independent actions of the Office of the Management and Budget (OMB) have thwarted the support given Sea Grant by the Administrator of NOAA: he is effectively prevented from spending the funds authorized by the Congress for the program. So, at a time when the innovative Sea Grant program should be showing strong growth and better coordination within the coastal states, severe budget cuts have threatened the very survival of the program. Worst of all, the dashing of high expectations on the shoals of confusion and expediency threatens to lose permanently the interest and vital support of the academic education and research community. This we cannot afford to do. It is time that we discuss our expectations and problems in a free and open forum. The synthesis of our common goals and needs into an integrated statewide program will be but one step in setting our nation's ship back on course. It is time to show leadership and purpose; I am certain that the group assembled here today is up to that task.

Appendix III

The Evolution of Coastal Zone Policy in California

by

Robert B. Krueger

The Evolution of Coastal Zone Policy in California

By Robert B. Krueger*

The California experience should prove to be a useful precedent for coastal zone planning elsewhere, both domestically and internationally. In California we have a geographically unique land and coastal zone stretching over 1,000 miles from the Oregon border with its cool and moist climate to the arid lands of southern California. There are also wide variants in demographic and economic factors. Northern California is sparsely populated and has a high degree of dependence on fishery and forest producers. This region is typical of the northwestern states and is quite comparable to the non-urbanized portions of the northeastern United States. Southern California, by way of contrast, is highly urbanized with a heavy concentration of residential, highway, industry, and other "people uses" on the coast.

Half of the population in California, some 10 million people, is located in its three most southern counties with over a third located in Los Angeles County. In southern California there are also extensive offshore oil and gas deposits in urbanized areas (such as the Santa Barbara Channel, in both state and federal lands) and problems of user interaction accompany them.

The state as a whole has a highly mobile population that is socially and environmentally aware. It has well-developed and generally well-funded political institutions at the state and local levels. There are political action groups, such as the Sierra Club and the Coastal Alliance, vigorously representing a number of disparate views regarding coastal zone policy. California has highly developed coastal research facilities, notably the University of California with its Scripps Institution of Oceanography, and the University of Southern California. Further, it has had a variety of coastal zone management proposals under consideration for a number of years and recently completed a Comprehensive Ocean Area Plan (COAP) outlining a number of planning concepts for the entirety of the California coastline. It lastly has an on-going experiment in regional government for the coast, the San Francisco Bay Conservation and Development Commission (B.C.D.C.).

For these and other reasons California's experience in coastal zone planning may provide useful precedent elsewhere. A review of California's history reveals the past and present existence of a coastal zone management system existing in the interlocking web of federal, state and local laws and regulations, court decisions and administrative actions. The system is not an ideal one but it exists and it affords an

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interesting contrast to the formal new legislative systems proposed for the California coastline.

The Past

Recently, there have been many comments regarding the devastating effect of California's "uncoordinated, piecemeal development. . . leading to the permanent loss of irreplaceable coastal zone resources" (A.B. 200 §27002). Notwithstanding, however, it is quite clear that California's *de facto* coastal management system in some respects has operated quite well. Early oil development on the coastline, for example, was in most respects a short-term use of the resource which has now been largely phased out, permitting the land to be used for other now more socially desirable services.

In its early days, California, as have many of the coastal states, in effect delegated to units of local government both regulatory powers over privately-owned coastal lands and proprietary powers over tide and submerged lands vested in the state by virtue of its sovereignty.

The development of coastal lands, then, was largely a matter of local concern with emphasis understandably being placed on development for the most commercial purpose both to provide a higher tax basis and a direct rate of return from the local government's own tide and submerged lands. It is well worth noting in this regard, however, that the state, too, until very recently appears to have assumed that commercial and, to a lesser extent recreational, uses of coastal land were of first priority.

It is clear that both the state and units of local government in administrating tide and submerged lands were subject to the so-called "tidelands trust" requiring that such lands be used for purposes compatible with fishery, navigation and commerce (*People* v. *California Fish Co.*, 166 Cal. 576). It has also been clear from an early date that lands patented into private ownership as tidelands were subject to an easement for the trust purposes with the state having the power to take all or any part of the lands conveyed for fishery, navigation or commerce without the payment of any compensation, except for the value of improvements. (*Id.* at 589-98). This power, however, was used very sparingly.

In the past, undoubtedly one of the major elements of management in California's coastal zone was the regulatory powers of the federal government over navigable waters under the Commerce Clause of the U. S. Constitution. The key act in this area is the Rivers and Harbors Act of 1899 which prohibits the construction of dams, dikes, and other improvements in navigable waters of the United States without the approval of the Secretary of Army (33 U.S.C. §403). For many years the U. S. Army Corps of Engineers, acting for the Secretary of the Army, regarded its responsibilities under this act as largely navigational in nature and granted or denied permits depending upon their effect on navigation. The filling of any "navigable waters of the

United States," whether located over or on state or privately-owned lands has, therefore, since this early date required a permit from the U. S. Army Corps of Engineers.

It is noteworthy that California, as well as all other coastal states, has the power to regulate navigable waters within their boundaries, subject and subordinate only to that of the federal government, but this appears to have been overlooked even in recent years as a tool for coastal zone management.

Since 1937 the State Lands Commission has had exclusive jurisdiction over all ungranted tide and submerged lands of the state for all purposes, as well as residual trust responsibility with respect to lands granted into private ownership or to units of local government (Pub. Res. C. §6301, *et seq.*). The Commission further acts as a representative of the state for purposes of any actions involving title to or boundaries of tide and submerged lands as to which the state is a necessary party (Pub. Res. C. §6308). The practical effect is that the State Lands Commission through its staff, the State Lands Division, and its attorneys, the Public Lands Section of the Office of the Attorney General, are necessary parties to any arrangement that will involve a final resolution to title problems affecting tide and submerged lands.

In the past, then, California's coastal management system was incomplete and essentially locally dominated. With respect to the environment, however, it should be emphasized that it has not been a disastrous one judged in terms of the time frame in which it operated. In certain respects, such as the offshore mineral leasing regulations, California's system has been and remains perhaps the most environmentally oriented in the world.

The Present

A coastal management system for California has been established through a composite of federal, state and local laws and ordinances, judicial and administrative decisions, and popular interest that have brought about the following results:

1. *High-rise and high-density developments on the coastline have been substantially prevented;*
2. *Developments which would bring about an irreversible change in sloughs, estuaries, marshes and other unique coastal areas have been substantially prevented;*
3. *The development of coastal lands having potential value for recreational use has been delayed or substantially prevented;*
4. *The establishment of access rights from the nearest public street to the coast through private property has been encouraged;*
5. *The use by the public of tide and submerged lands, whether granted into private ownership or otherwise, has been encouraged; and*
6. *The right of individual members of the public to raise their*

rights in judicial proceedings has been established and encouraged.

In addition to a *de facto* coastal management system having these attributes, California has also taken decisive steps toward the establishment of an institutionalized, comprehensive, statewide system of management.

One of the major influences has been the federal National Environmental Policy Act of 1969 requiring all agencies of the federal government to include in "every recommendation or report on proposals for legislation and other major federal actions significantly affecting the quality of the human environment" an environmental impact statement considering all adverse effects and possible alternatives (83 Stat. 852). This act immediately was a major curb on the powers of the U. S. Army Corps of Engineers to issue permits for coastal development. It further should be noted that the Corps of Engineers had itself issued rules and guidelines instructing its officers to take into account in considering applications for such permits all public interests, including aesthetic, ecological and environmental considerations. Its authority, in fact, had been judicially upheld in this regard by a 5th Circuit Court of Appeals decision in 1970 (*Zabel* v. *Tabb,* 430 F. 2d 199).

The federal Environmental Policy Act of 1969 was the basis for the lawsuits which halted construction of the Trans-Alaska pipeline and the recent oil and gas leasing in the Gulf Coast which were brought by the Sierra Club and others. The fact that any environmental impact statement involving the development of an environmentally sensitive area will predictably be attacked as inadequately stating the adverse environmental effects has discouraged the use of design features in coastal projects that would require a permit from the Corps of Engineers. It may also have led some landowners to undertake the filling or changing of water-affected coastal lands without obtaining Corps' approval on the calculated risk basis that the lands would be found not to be navigable. This risk is a substantial one, however, in view of the trend of recent cases in finding waters of the United States to be navigable even when surrounded by private property. In a recent case where unauthorized filling was conducted the filler was required to restore the property to its last natural condition.

In 1970 California also adopted an Environmental Quality Act requiring environmental impact statements by all state agencies as to projects they proposed to carry out which could have a "significant effect on the environment" (Pub. Res. C. §21000, *et seq.*). The same year the Government Code was amended so as to require the general plans of units of local government to contain a conservation element "for the conservation, development and utilization of natural resources" and an "open space" element. The State's Environmental Quality Act requires that all cities and counties with an officially adopted conservation element (required to be adopted by July 1, 1972) shall make a finding that any project they intend to carry out is in accordance with the element. All other units of local government are required to make

an environmental impact statement and submit it to the appropriate unit of local government (Pub. Res. C. §21151).

The existence of these provisions has understandably made both state agencies and units of local government very cautious in approving of coastal land projects, which concern has been reflected in administrative decisions of local planning agencies and in certain cases by local ordinance. Additionally, many California coastal communities have formed the citizens' advisory councils for environmental matters, the typical input from which is negative with respect to coastal development.

The Attorney General has also formed an Environmental Task Force composed of citizens' advisory groups from various parts of the state and an Environmental Unit in his office to undertake proceedings on environmental issues. The thrust of this program is one of protection, typically maintaining wherever practicable existing open areas. This approach was legislatively encouraged in 1971 by the adoption of the Environmental Bill of Rights (C.C.P. §389.6, 641.2) authorizing the Attorney General to intervene in any judicial proceeding in which facts are alleged "concerning pollution or adverse environmental effects which could affect the public generally" and authorizing him to maintain an action for equitable relief "against any person for the protection of the natural resources of the state from pollution, impairment, or destruction."

The existence or promise of regional planning authorities have also had the effect of reducing development of privately-owned lands. In 1965 the California Legislature created the San Francisco Bay Conservation and Development Commission (B.C.D.C.), a regional planning authority for San Francisco Bay. In effect, the statutory scheme for B.C.D.C. is one of a dual permit (both from the apposite unit of local government and B.C.D.C.) and essentially an independent, "top-down" approach in planning which minimizes the position of local government. The history of B.C.D.C. shows a uniform policy against the filling of San Francisco Bay and this regulatory power has been upheld by the California Supreme Court as being nonconfiscatory.

In 1970 a statute was enacted creating the Ventura/Los Angeles Study Commission (Pub. Res. C. §22000 *et seq.*) and instructed it to make a detailed study of "all factors that may significantly affect or cause irreversible modifications of the present and future status" of a large area of northwestern Los Angeles County and southwestern Ventura County. Essentially, all planning factors were to be considered in the study, but the following were among those specifically mentioned: "Beaches, estuaries, lagoons, coastal bluffs, springs, creeks, lakes, fish, wildlife, and natural plant life of the zone and the effects of development thereon." While this was technically purely a study commission, its existence and public pressures brought about substantially a *de facto* moratorium on new developments in this area. In March of 1972 the Commission filed its final report to the Governor and the Legislature recommending the extension of the Commission for two additional years to prepare a comprehensive plan for the area and requesting permit powers of a type similar to those given to B.C.D.C.

Whether or not the Commission's recommendations are enacted into law, the existence of the Commission and its impact on units of local government affected has helped generate strong sentiment against increased development.

The courts have also contributed to our management system in California. In 1970 the California Supreme Court in *Gion* v. *City of Santa Cruz* and *Dietz* v. *King* held, in effect, that when members of the public have used coastal lands as a means of ingress and egress to the ocean and beach for a period of more than five years with the knowledge of the landowner and without asking or receiving permission to do so, the public will be deemed to have acquired the rights so to do by implied dedication. (*Gion* v. *City of Santa Cruz*, 2 Cal. 3d 29, 43.) Contrary to an earlier rule of law, the court refused to "presume that owners of property today knowingly permit the general public to use their land and grant a license to the public to do so." (*Id.* at 41.) It appeared that various "No Trespassing" signs had been posted at various times but they had been torn down by the members of the public or trespassers in question. The court noted that this occasional effort might be enough where isolated traverses occur but would not be "expected to hold a continuous influx of beach users to an attractive seashore property." (*Id.*) The court cited in support of its decision the public policy evident by various California Constitution and code provisions encouraging access to navigable waters.

The case, of course, discouraged coastal landowners from permitting any use by the members of their properties and brought about a great deal of new fencing and the posting of properties.

In 1971 the Legislature enacted Section 1009 of the Civil Code which noted the adverse impact that the *Gion-Dietz* rule of law had on private property rights and provided that after its effective date no use of property by the public would confer a vested right to continue to make use permanently in the absence of an express written irrevocable offer of dedication which had been accepted by the public body to which the offer was made. An exception was made with respect to property within 1,000 yards inland of the mean high tide line of the Pacific Ocean and harbors, estuaries, and bays and inlets thereof.

The *Gion-Dietz* case involved litigants of the areas in question purporting to represent the public and this right of representation was approved. This was confirmed in *Marks* v. *Whitney* (6 Cal. 3d 251, 259), a 1971 case involving the extent and nature of the tidelands trust in privately-owned lands. There the California Supreme Court held that individual members of the public could exercise trust powers so as to enter on privately-owned tidelands:

> "to fish, hunt, bathe, swim, to use for boating and general recreation purposes the navigable waters of the state, and to use the bottom of the navigable waters for anchoring, standing, or other purposes." (*Id.* at 259).

The court also expanded the traditional view of the purposes for which tideland property could be taken without the payment of compensation to include ecological objectives:

> "The public uses to which tidelands are subject are sufficiently flexible to encompass changing public needs. In administering the trust the state is not burdened with an outmoded classification favoring one mode of utilization over another. There is a growing public recognition that one of the most important public uses of the tidelands—a use encompassed within the tidelands trust—is the preservation of those lands in their natural state, so that they may serve as ecological units for scientific study, as open space, and as environments which provide food and habitat for birds and marine life, and which favorably affect the scenery and climate of the area. It is not necessary to here define precisely all the public uses which encumber tidelands." (*Id.* at 259–260)

While the decision dealt with unfilled tidelands that were subject to the ebb and flow of the tides, the statements made in the decision were not so restricted and the case massively increased the impediments of title which the holders under state tidelands patents traditionally have. This is significant because such patents were the source of title to a large portion of the privately-owned California coastline. The case suggests that any improvements made by the owner of granted tidelands are made at his peril unless the improvements were approved as being consistent with the tideland trust. Again we see a diminution of the property rights of the coastal landowner and a correlative expansion of the public interest in the coastal zone.

In California we have had the concept of a comprehensive coastal zone management system under study and development for a considerable period of time. In 1965 Governor Brown appointed the Governor's Advisory Commission on Ocean Resources which made a number of significant recommendations regarding the requisite elements of a comprehensive coastal plan. The Marine Resources and Conservation Act of 1967 created a successor to this Commission, the California Advisory Commission on Marine and Coastal Resources (CMC), which was entrusted with a number of advisory responsibilities regarding California's coastal zone, including the important assignment of reviewing the California Comprehensive Ocean Area Plan (COAP), making recommendations with respect thereto and recommending the "organization structure . . . which can most effectively carry out its provisions" (Gov. C. §8800, *et seq.*). The Act imposed upon the Governor the duty to prepare the COAP as a "comprehensive, coordinated state plan for the orderly, long-range conservation and development of marine and coastal resources" to meet the following key objective:

> "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."

The COAP is now complete and was delivered to the California Legislature on May 26. The COAP is not a plan, as such, but is a useful compendium of information and management concepts and policies. It is interesting in that one of the key concepts is that of economic dependency—if a use is not dependent on the coast to a substantial degree, it should be located elsewhere. The result is that brussels sprouts and artichokes are favored and residential uses are disfavored for the coastal zone.

Proposition 20 — The California Coastal Zone Conservation Act of 1972

After three years of frustrated effort by a number of disparate interest groups, including responsible representatives of local government, The California Advisory Commission on Marine and Coastal Resources and environmentalist groups, to enact a comprehensive management system for California's coastline, the electorate adopted Proposition 20 in the November 1972 general election. The array of bills which had been considered by the California Legislature but which had largely been blocked in the Senate had varied from those which gave very substantial recognition to the traditional role of local government in the planning process to those which virtually ignored this function on the theory that local government had failed to properly regulate the coastline in the past. Proposition 20, the product of the Sierra Club and other "environmentalist" or non-user groups, was the most restrictive of any of the measures proposed both in terms of interim regulatory procedures and conditions and in terms of the future plan that it predictably will create. I personally did not favor the adoption of Proposition 20 because of a conviction that it gave too little recognition to the need for thoughtful development in California's coastal zone and the role of local government in the planning process. I also felt that structurally the regulatory system did create, and the plan that it will create, will result in too little flexibility, and will be instinctively negative on necessary reconfigurations on California's coast. I largely felt that, despite its beneficial purposes and the good intentions of many of its proponents, it tested and perhaps passed the acceptable extreme of the initiative process in view of its highly technical and complex provisions. On the positive side, Proposition 20 did offer a much-needed mechanism to establish state policy and to coordinate development within units of local government.

Regardless of its pros or cons, however, Proposition 20 is a fact, having been passed by a vote of 55–45%. It became effective on November 8, the day

following election, and the regulatory system became effective on February 1, 1973. Even before the election, and certainly after it, its impact was massive. Lending institutions largely withdrew from making loans in areas which could fall within the permit area to be established during the interim regulatory period extending until 90 days after the adjournment of the 1976 Legislature. Further, even developers with funding were uncertain as to their rights to construct with due regard to the novel nature of the regulatory scheme and the fact that the Act suggested that April 1, 1972 might be the cut-off date for purposes of "vesting."

Basically, the Act creates a State Commission and six regional commissions which are charged with developing a comprehensive state plan covering a coastal zone extending from the seaward limit of the state jurisdiction inland to the highest elevation of the nearest coastal range, except that in Los Angeles, Orange and San Diego Counties the zone is limited to such elevation or five miles from the line of high tide, whichever is shorter. The plan requires the consideration of all environmental, ecological, aesthetic and human values, but is totally devoid of any reference or consideration to economic interests. It would therefore appear to be predictable that the plan which will evolve will tend to minimize private uses and values in the coastal zone and maximize public interests, rights, and amenities. Whether it would do so in the context of providing for the payment to coastal landowners of compensation for rights impaired or taken pursuant to the plan is conjectural—at least insofar as full value is concerned, as the same was considered prior to the adoption of the Act. The history of the initiative and recent developments generally in California would indicate that the concept of public regulation would be used to the maximum extent permissible to effect the reconfiguration of property rights that is desired.

The plan is to be delivered by the State Commission to the Governor and California Legislature at the beginning of the 1976 Legislature. In the interim there is a permit procedure provided for that basically requires all projects or activities of any kind, including lot splits and the removal of major vegetation, within an area 1,000 yards landward from the high tide line of the Pacific Ocean, to be approved by the regional commissions. Where the project involves an estuary, a public beach area, access to a public beach area, an impingement of the line of sight to the sea or open water, the vote must be by a two-thirds majority of the Board. (Section 27401.) In addition, all permits must be conditioned to provide access to public beaches "to the extent possible by appropriate dedication" and otherwise comprehensively protect public interests, values, and amenities.

The commissions appointed under Proposition 20 are of a diverse character, with strong representation by "environmentalists" and representatives of local government as well as a substantial segment which appears to have no particular interest or background in the coastal zone environment or its planning. The notable fact is that the commissions are totally devoid of persons from the private sector such as planners, architects, lawyers and even scientists who have had any background in connection

with development or economic uses of the coast. The reason for this is quite apparent, in view of the extreme conflict of interest sections of the Act which virtually prevent a practicing professional having an interest in the coastal zone from serving on a commission.

Whether due to the character of the commissions or their composition, the organizational work of many of them, such as the South Coast Commission, covering Los Angeles and Orange Counties, has been very slow and laborious. Further, this work was delayed by the issuance of regulations by the State Commission and direction from the Attorney General as to the treatment to be given to projects in various stages of completion. Recently, the California Attorney General issued a series of opinions in which basically the position was taken that projects for which building permits had been obtained before November 8, 1972, and under which substantial work had been completed by said date, were to be treated as exempt from Proposition 20. In implementation of this advice, the State Commission issued regulations providing for the "exemption" of such projects under somewhat summary procedures. Unfortunately, many of the requests for exemption have created for the developer as many factual and legal issues as the requests for permits themselves. Thus, out of some thirty claims for exemption granted to date by the South Coast Regional Commission, seven are on appeal to the State Commission. It should be noted that any "aggrieved" person may make an appeal to the State Commission from a regional commission's finding, and further, may commence a variety of litigation to either review the decision of the State Commission, or to enforce, generally, violations of the Act.

It is too soon to tell whether the interim regulatory system of Proposition 20 will work or whether it will fail. If it fails, it could have a disastrous effect on the economy of the more populous counties and result in very distinct impingements upon the property rights of coastal landowners. Insofar as the planning process of Proposition 20 is concerned, there is even greater question. The interim permit work of the commissions and their organization has to date completely preempted their kind and it may well be that summary procedures for decision making will have to be adopted if the important planning function is to be performed. The Plan was, after all, the stated reason for the being of the entire Act.

It is also becoming very clear that the Act will require greater funds, staffing, and efforts than any of its sponsors thought necessary.

As a proponent of intelligent coastal zone planning in California for a number of years, I hope that my original misgivings regarding Proposition 20 were unfounded. As a lawyer with some experience in this area, I have seen yet no reason that they will be.

Thank you.

Robert B. Krueger

Appendix IV

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MARINE SCIENCES WORKSHOP May 10-11, 1973

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