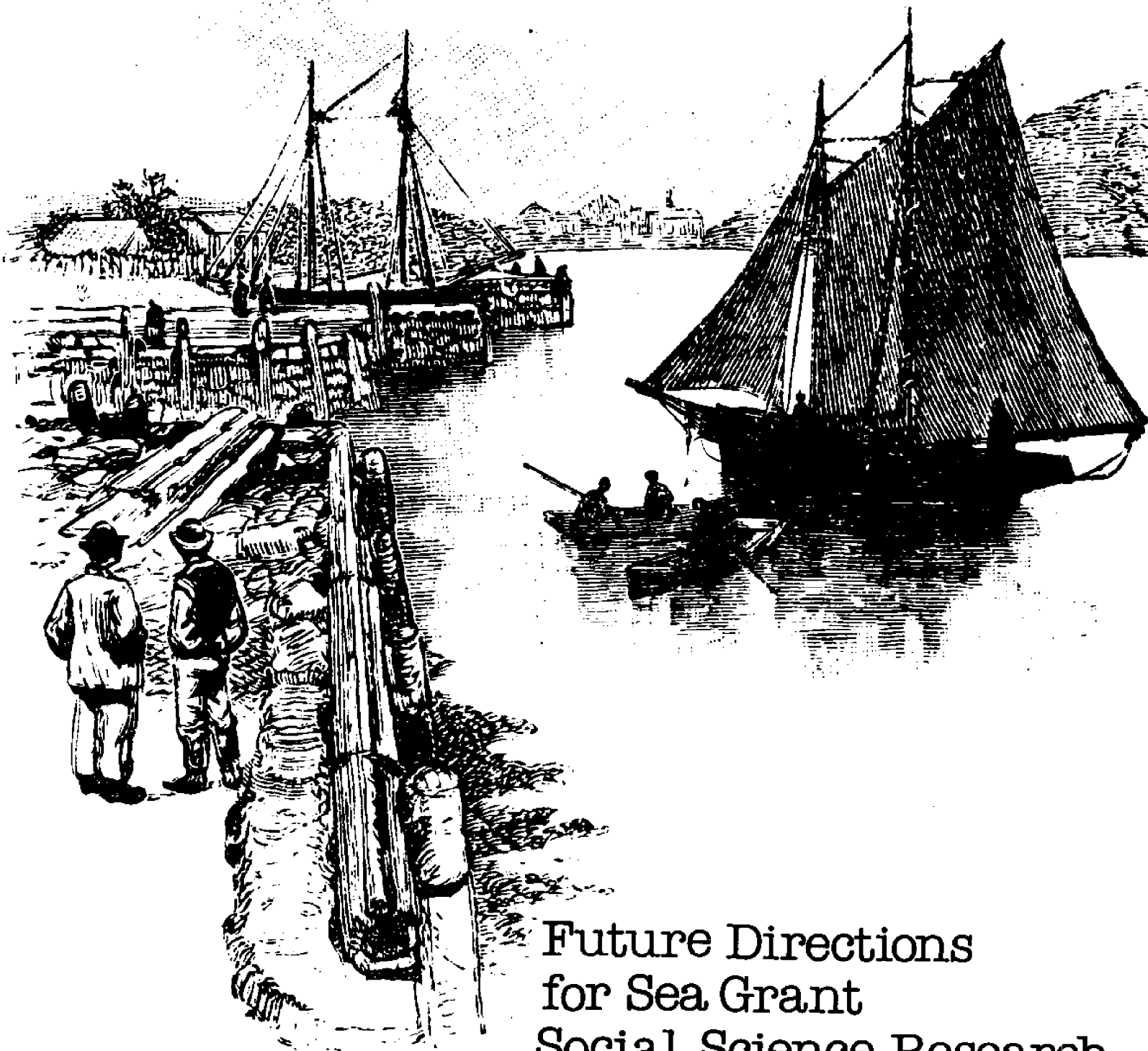


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Future Directions
for Sea Grant
Social Science Research

Future Directions for Sea Grant Social Science Research

Report from a workshop held at
Texas A&M University, College Station, Texas
September 15-17, 1981

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On September 15-17, 1981, 35 social scientists from universities and state and federal agencies met at Texas A&M University to explore the future direction of social science research in the Sea Grant program. The workshop was in response to a recommendation by the Sea Grant Association's Committee on Research that such a session be held to define, plan and develop the overall direction that social science might take in the national program.¹

The modest support for marine-related social science research by the National Oceanic and Atmospheric Administration's National Sea Grant Office has sharpened understanding of a fairly narrow range of topics, particularly the social and economic aspects of fisheries, coastal zone management and coastal and ocean law. This research has demonstrated the importance of the social, economic and political dimensions of marine resource issues. Because the knowledge and policy problems of the next decade are likely to be quite different than those of Sea Grant's formative years, it became desirable to explore these issues and to identify those areas social scientists see as particularly important to the nation's development and use of its marine resources.

The workshop, jointly sponsored by the Texas A&M Sea Grant College Program and the Sea Grant Association, was modeled after an earlier session on ocean and coastal law and policy. As in the earlier meeting, this workshop sought to establish a framework for Sea Grant research, education and advisory services in marine policy and marine-related social research.² The Sea Grant community and individual researchers were invited, and a general announcement appeared in the Nautilus Press publications Ocean Science News and Coastal Zone Management.

The goal was to identify new directions in established fields as well as new areas that are likely to increase in importance in the near future. Participants also were asked to consider research management questions, such as the links between social science research and advisory services, and the role of marine-related social science research in the planning activities of federal agencies like the National Oceanic and Atmospheric Administration. The idea was to provide a general framework for social science research in Sea Grant; problems, issues or conditions relating to specific disciplines were not addressed.

To sharpen the context for the participants, Martin Belsky, Assistant Administrator, Office of Policy and Planning, National Oceanic and Atmospheric

¹Michael K. Orbach and Lauriston R. King, The Social Sciences in the Sea Grant Program. Report to the Sea Grant Association by the Committee on Research, October 24, 1979.

²Strategy for the 1980's in Ocean and Coastal Law and Policy. Developed at the Workshop on Ocean and Coastal Law and Policy, Sheraton-Fredericksburg Conference Center (November 5-7, 1980) National Sea Grant Office, Washington, D.C.

Administration, and Norman Wulf, Director, Office of Marine Science and Technological Affairs, Bureau of Oceans and International Environmental and Scientific Affairs, Department of State, shared their ideas about the kinds of domestic and international issues likely to be important to United States' marine interests in the 1980's.

Following their comments, participants met for a full day in one of four working groups: Maritime Industry, Technology and Commerce; Fisheries Development; Marine Policy and Political Institutions; and Social Change in Coastal Communities. Rapporteurs summarized the groups' observations and recommendations in a general session the following morning. Working group statements provided the basis for an initial draft report that was distributed among participants and others who had expressed interest in the session but were unable to attend. These workshop statements and reviewer comments served as the basis for this report.

Lauriston R. King

*College Station, Texas
February 15, 1982*

SEA GRANT AND SOCIAL SCIENCE

The intellectual and legislative history of the Sea Grant idea clearly shows that the social as well as the natural sciences were to provide the knowledge required for prudent and orderly development of the nation's marine resources. This emphasis on the need for a wide variety of skills and disciplines for successful ocean development and management was reflected in the 1966 enabling legislation. The law specifically defined "development of marine resources" as

scientific endeavors relating to the marine environment, including but not limited to, the field oriented toward the development, conservation, or economic utilization of the physical, chemical, geological, and biological resources of the marine environment; the fields of marine commerce and marine engineering; the fields relating to exploration or research in, the recovery of natural resources from, and the transmission of energy in, the marine environment; the fields of oceanography and oceanology; and the fields with respect to the study of the economic, legal, medical, or sociological problems arising out of the management, use, development, recovery, and control of the natural resources of the marine environment...³

Subsequent amendments further expanded this multidisciplinary perspective, as reflected in the 1976 changes to the enabling legislation. Here,

the term field related to ocean and coastal resources means any discipline or field (including

³P.L. 89-688, October 15, 1966. Emphasis added.

marine science [and the physical, natural, and biological sciences, and engineering included therein], marine technology, education, economics, sociology, communications, planning, law, international affairs, and public administration) which is concerned with or likely to improve the understanding, assessment, development, utilization, or conservation of ocean and coastal resources.⁴

In an additional qualifying statement, the Act clarified that the term "includes" was to be read as if the phrase "but is not limited to" were also stated.

Throughout Sea Grant's 15-year history, social science research has received about 10 percent of the research budget. Based on project, funding and publication data from 1974-1978, it appears that social research was essentially level-funded. Despite the lack of growth, some areas (economics in particular) fared quite well, both in terms of the amount of support and in the number of projects funded. The sharpest decline is evident in those projects relating to coastal zone law and management, probably because of the decreased need once the Coastal Zone Management Act of 1972 was well established. In contrast, however, the dollar level of support for general social and political studies more than doubled during this period, although with inflation the number of projects remained about the same.⁵

Since 1974 Sea Grant social science funding has increased at the same pace as that of other areas and has remained at

⁴P.L. 94-461, October 8, 1976. Emphasis added.

⁵Orbach and King. The Social Sciences in the Sea Grant Program, pp. 4-14.

roughly 3.5 percent of the total budget. Although the number of projects increased from 46 in 1980 to 55 in 1981, the average cost of a social science study fell from \$46,317 to \$32,487, with the average federal share of that support decreasing from \$23,577 in 1980 to \$19,574 in 1981. Fisheries studies continued to dominate with 20 projects (37 percent) dealing directly with fishing issues. General public policy and planning projects also continued to form a substantial (24 percent) part of these projects.

Harvard political scientist James Q. Wilson states succinctly that "...social science is nothing more than the application of systematic common sense to human questions." For Sea Grant these questions address the ties that bind man's behavior and institutions to the sea. No program dedicated to the development, use and management of ocean resources can ignore these questions.

Although it has only been within the past 15 years that social scientists have turned their attention to the oceans, they have demonstrated that they have important contributions to make. First, through careful description and analysis they have been able to pull together scattered bits of information and develop patterns that provide new insights and understanding. Examples include studies of changing commercial and recreational uses of Narragansett Bay, the New York Bight and Puget Sound; descriptions of fishermen, their work and their communities throughout the coastal United States; and identi-

fication of the economic contributions of commercial and recreational fishermen. These kinds of historical and descriptive studies provide a context for thinking about current and future marine problems and opportunities by linking these with past activities, charting the nature of changing demands on the oceans, and providing reliable information on shifting patterns of use and participation.

One of the most important examples of this kind of descriptive study has been the first effort to determine the contribution of the oceans to the national economy.⁶ For the first time it became possible to document where the oceans fit in the nation's economic structure. Specifically, the study showed that on the basis of the 1972 data the ocean sector contributed \$30.6 billion to the economy. Comparative figures for other sectors include agriculture (\$35.4 billion, including fisheries), mining (\$18.9 billion), construction (\$58.0 billion), transportation (\$46.2 billion) and communications (\$29.4 billion).⁷

Second, social science methods are especially useful in determining whether or not policies work as intended. There is a strong tradition within the social sciences for careful problem definition, attention to detail and systematic analysis. This approach is well-suited to evaluating performance and

⁶ The pioneering work is by Giulio Pontecorvo, Maurice Wilkinson, Ronald Anderson and Michael Holdowsky, "Contribution of the Ocean Sector to the United States Economy," Science, Vol. 208 (30 May 1980), 1000-1006.

⁷ Ibid., p. 1006.

recommending changes and improvements. Sea Grant studies have sought to improve marine resource management by analyzing the coastal planning process in California and Washington, the performance of California coastal commissions, and proposals to reorganize federal marine resource management agencies. Important work in progress involves the organization, behavior and performance of the regional fisheries management councils to implement the Magnuson Fisheries Conservation and Management Act.

Third, social research provides new ideas. Competition between ideas is fundamental in a democratic society. The American Enterprise Institute expresses it well. "Policy makers themselves rarely originate the concepts underlying the laws by which we are governed. They choose among practical options to formulate legislation, governmental directives, regulations and programs. If there is no testing of ideas by competition, public policy decisions may undermine rather than bolster the foundations of a free society." Thoughtful, prudent decisions are far more likely when analysis of the issues is free from demands for rapid action. Careful problem definition, data collection and rigorous analysis offer a far better basis for making policy than does reliance on speculation, guesswork and gut reaction. In an area as complex and unexplored as ocean resource development, the generation of new ideas and alternatives based on rigorous thought and analysis has demonstrated its value in issues as diverse as alternatives for the law of the sea negotiations and various fisheries management schemes.

Finally, the opportunity for social scientists to study ocean problems also nurtures groups of specialists with detailed knowledge of ocean affairs. They themselves become important sources of advice, counsel and guidance for decisionmakers. Sea Grant researchers, for example, have played important roles in providing advice on issues ranging from the law of the sea, coastal management, alternative fisheries management schemes to marine transportation and water safety.

Although the social sciences promise to improve the effective development, use and management of marine resources, drastic funding cuts compel persuasive arguments about the contribution proposed projects will make to the Sea Grant mission. Criteria for evaluating these contributions must be devised and refined. Each working group described its criteria in slightly different ways, but there was enough basic agreement that the criteria can be consolidated into a few key points. A proposed project should:

1. Demonstrate the likelihood that the research will contribute to the understanding, development, use and management of the marine environment and its resources.
2. Obtain general agreement among ocean specialists that the research addresses a problem of demonstrated importance to the nation's marine interests, and that the knowledge generated by the research will be valuable to those involved in making

marine resource policy and decisions.⁸

3. Clearly demonstrate that a proposed research problem requires the particular skills and perspectives of the social and managerial sciences, is of high scientific quality and integrity, and is compatible with the mission of the institution where it is housed.
4. Provide links with local, state, national or international levels of government, and promise to clarify and improve the performance and capabilities of the organizations in their efforts to develop and manage marine resources.

With these criteria in mind, participants identified four major categories of research needs: Topics fundamental to all studies of human and social behavior; key topics in marine resource development; detailed studies of specific marine

⁸The following assessments of marine-related research needs should be considered along with this report.

Strategy for the 1980's in Ocean and Coastal Law and Policy. Developed at the Workshop on Ocean and Coastal Law and Policy, Sheraton-Fredericksburg Conference Center, November 5-7, 1980. National Sea Grant Office, National Oceanic and Atmospheric Administration, Washington, D.C., February 1981.

Robert L. Friedheim and Robert E. Bowen. "Assessing the State of the Art in National Ocean Policy Studies," Ocean Development and International Law Vol. 7, No. 3-4 (1979), 179-220.

Lauriston R. King. "The International Decade of Ocean Exploration Program in Marine Science Affairs," MTS Journal Vol. 11, No. 5-6 (1977), 10-15.

Susan B. Peterson (ed.) Report of the Workshop on Extended Jurisdiction, May 10-11, 1976. Woods Hole Oceanographic Institution, August 1976.

industries and activities; and major problems associated with coastal development.⁹

BASIC THEMES

Values, decisionmaking and communication are particularly interesting to social scientists because each is a fundamental feature of individual and social behavior. The extent to which these basic aspects of behavior are understood in terms of the marine environment will help provide a basis for sound and realistic decisions.

Values

Social, cultural, aesthetic and political values, and their historical evolution, must be identified and analyzed to understand the expectations and goals of those individuals and groups involved in marine activities. Values also involve conflicts between contending interests; historical ethnographic, economic and political studies related to regulation, subsidies, technology transfer; development of living marine resources; and the emergence of new opportunities, such as marine recreation.

Decisionmaking

Social science studies involve individual and organizational decisionmaking; theories and behavior of the firm; decisionmaking processes and outcomes in public and private

⁹ Although participants were assigned to one of four working groups (Maritime Industry, Technology and Commerce; Fisheries Development; Marine Policy and Political Institutions; and Social Change in Coastal Communities), there was enough overlap in their reports to justify consolidation of their recommendations.

organizations; the propensity of industry to adopt innovations; and testing of new analytical tools.

Information and Communication

Studies in this area include efforts to compare and contrast effective and ineffective communication among and within firms, government agencies and different levels of government; the role of scientific information in decisionmaking; the transfer of information from specialized to general audiences (a topic of particular relevance to improving the performance of the marine advisory service); application of studies of how people learn and the barriers to innovation to marine topics; and the impact of new means of information storage, transfer and exchange on small businesses and local coastal governments.

KEY TOPICS IN MARINE RESOURCE DEVELOPMENT

Several topics deserve specific attention from the marine research community because they are common to nearly all aspects of ocean resource development. These include accurate data on the contribution of the ocean sector to the national economy and on population change, manpower, labor and employment, the social organization of work, education and training, government regulation of maritime industries (including tariffs and subsidies) and management and marketing.

Contribution to National Economy

The absence of a solid, consistent and current data base from which to measure and assess the contributions of the oceans

to the national economy severely impedes informed national decisionmaking.¹⁰ There should be research to define and estimate the ocean sector's contribution to the nation's productivity; to establish methods that will enable these measures to be incorporated into the National Income Accounting System; and to provide accurate, reliable economic information in a timely fashion.

Trends in Coastal Population

The availability of 1980 census data provides a timely opportunity to examine trends in coastal populations and the implications of these changes for coastal regions. Possible research includes analysis of the effects of these trends on management of conflicting uses of coastal regions, such as beach access; the anticipated supply and demand for recreational facilities, energy, fresh water supplies and transportation; policies for coping with waste disposal; changing ethnic composition; changing land use along the urban shoreline; changing patterns of labor needs and employment opportunities; and the ways in which these changing growth patterns affect the lifestyles and employment opportunities of different social and economic groups.

¹⁰ See Pontecorvo, et.al., "Contribution of the Ocean Sector to the United States Economy," Science Vol. 208 (30 May 1980), pp. 1000-1006. This study used 1972 data. No work has been done on this problem since this study, although the apparent growth in offshore activities, particularly in oil and gas, have probably increased the ocean's contribution to the national economy substantially.

Labor and Employment

Continued growth of the marine economy depends on the availability of skilled manpower. Specific concerns include the ways in which marine industries differ in their employment needs and practices from land-based activities, and the effects these have on workers; the adaptation to the physical and psychological stresses associated with offshore work, and the implications for safety; the factors involved in making individual and family employment decisions; migration; labor economics; unionization; community services; occupational safety and health; local social and economic effects of changing patterns in the fisheries; impacts of laws and regulations on the effective and efficient use of labor; educational and training requirements for specific marine industries; and the impact of technological change on the work force.

Role of Government

Marine industries are subjected to a wide range of national and international regulations, ranging from concerns for economy and worker safety to broad legal regimes affecting whole industries such as fishing and transportation. The impact of these regulations, and the links between national and international regulation, will have a profound effect on the efficient use of marine resources. For example, tax structures can provide incentives for investment, while domestic laws and regulations can hamper a U.S. industry's competitive advantage in international commerce. This network of laws and regulations should

be studied in order to understand their effects on the economic environment better, and to recommend whatever changes might be required to enable marine industries to compete effectively and efficiently.

Management and Marketing

There is a need for research that reflects managerial interests in increasing performance and efficiency. Examples include cross-cultural surveys; market structure analysis; conduct and performance studies; tastes and preferences; patterns of international trade; and historical and political studies of trends in government involvement in the promotion or regulation of key maritime industries such as fishing and shipping.

Technology Transfer

As technological changes occur, rigorous studies can provide the basis for policy on how and under what conditions this technology might be shared with other firms or governments. These policies can have a major impact on the use of marine resources.

DEVELOPMENT ACTIVITIES OF SPECIFIC CONCERN

In a general sense, the social sciences can contribute to improved understanding and performance of coastal commerce and industry by defining, describing and analyzing the role of the private sector in coastal state economies. The range of topics includes the composition and contribution of marine-related

industries to the state, regional and national economy; problems of government-industry relations affecting coastal development; impacts of changing energy production and resource use patterns on the coastal economy and the capability of the offshore industry to anticipate these changes; impact of technological change in waterborne commerce; and issues relating to port and harbor maintenance and development, such as alternative placement of uncontaminated dredged materials. Several industries and activities warrant special consideration.

Fisheries¹¹

There are numerous opportunities for research in this area; just a few possible topics include:

- o analysis of the economic feasibility of development of new uses for living marine resources
- o comparative socioeconomic studies on species, location and technological innovation
- o relationship between fisheries management and development (analysis of institutional frameworks for development and management, comparative studies of management institutions in other natural resource areas, use of multilevel planning models, response to regulation)
- o fisheries management in the United States (rigorous

¹¹ Drawing on a long history of social and economic analysis on the fishing industry by Sea Grant researchers, the fisheries working group was able to define and set priorities on research needs in sufficient detail for the report to be included as Appendix I.

evaluation of the management structure created by the 1976 Fishery Conservation and Management Act, including the effectiveness of the management procedures, economic costs and benefits associated with the Act, impact of the management plans on the resources, alternatives from no management to more detailed regulation)

- o social, economic and political impacts of allocation to foreign fleets (analysis of criteria for making allocations to foreign fleets, economic and political effects on foreign and domestic fisheries industries, policy analyses of options to existing approaches)

Ports

The political and economic environment of America's seaports will undergo significant changes in the next several years. Shifts in the mix of imports and exports are imminent for many ports, particularly in the area of liquid petroleum imports and coal exports. Should new waterway user fees be levied and federal support of channel and harbor dredging be reduced, port authorities and other affected public bodies will have to explore new options to ensure stable or expanding bases of operation. Recent developments in cargo handling and multimodal transportation are posing major challenges for all sizes and various ages of port facilities. An additional question concerns the appropriate role of the federal government in port planning. These and other changes in the political and economic environ-

ment of ports will present political and administrative problems of nationwide significance.

Tourism and Recreation

Potential studies in this area include economic development of urban and rural areas; impact of specific activities such as recreational fishing, or retirement communities and their relationship to other potentially conflicting industries; the identification of competitors for the same coastal facilities; identification of the limits to growth of coastal recreation and tourism; and development of criteria for judging whether or not tourism and recreation are "good" for a community.

Industrial and Military Development

The often abrupt changes imposed on coastal communities by locating or removing large institutions such as industries or military bases require careful assessment of the effects of these changes. Understanding the physical and psychological effects of these changes is fundamental to lessening their most damaging consequences.

PROBLEMS IN COASTAL MANAGEMENT

Some of the most important areas of research for social scientists are those associated with development of coastal marine areas and their resources. These include maintaining the environmental quality of coastal waters; determining the effects of social change on coastal communities, particularly those associated with natural hazards and energy development;

and, more generally, analyzing the performance of federal, state and local governments in managing marine resource development.

Social Change in Coastal Communities

The prospects for continued change along the coast make understanding of the forces of change an important aspect in dealing with positive and negative effects. Participants felt that energy development and natural hazards deserve special consideration.

Energy development. Conflict between energy needs, environmental preservation and other coastal industries is evident throughout the United States. Research should focus on coastal areas that are used as staging areas for offshore exploration and production. Analysis of other coastal users, community reactions, the impact of local services and other associated impacts should serve as a model for what might be expected in other coastal areas subject to similar types of development. Suggestions for minimizing conflicts and investigating the most undesirable effects of change might, for example, involve linking various user groups such as the energy industry with tourism, recreation and fishing interests.

Natural hazards. Social science research can contribute to improved protection of life and property in the face of such natural hazards as hurricanes through awareness programs, evacuation planning, disaster recovery programs and adaptation to hazards. Research into minimizing housing construction in high risk areas also belongs in this category and promises to be a

constructive link between Sea Grant research and such marine industries as land developers, construction companies and insurance firms.

Environmental Quality

Many environmental issues are related to community life, culture, population growth and industrial development. Analysis of the social impact of changes in environmental quality is an area where collaboration between social and natural scientists is not only desirable, but necessary. Too often, chemical and biological data about environmental changes are isolated from their effects on human concerns and activities. Specific problems include those associated with sludge and dredge material dumping; hazardous and toxic waste disposal; thermal pollution; port and vessel sources of oil pollution; interrelated institutional and technical aspects of pollution management needs in the coastal and near shore areas; analysis of local, state and federal assessment and enforcement capabilities; and improved use of technical information in public policymaking.

Marine Policy and Political Institutions

Many of the law and policy issues deserving research attention have been identified in Strategy for the 1980's in Ocean and Coastal Law and Policy. Two areas are of particular interest, however, first, the role of state and local governments in marine resource management; and second, the ability of the federal government to perform its responsibilities in marine policy. The roles and capabilities of the different

levels of government and the techniques available for responding to management and development problems in coastal states need to be more sharply defined. These include local government's role in guiding coastal development and protecting coastal resources; the ability of state and local governments to deal with technical problems of environmental protection; problems of beach access; the relationship between interest groups, such as local property owners' associations, and local governments in managing coastal resources; the capacity of state and local governments to implement marine-related legislation; and the technical and political skills and resources required to deal with long-term planning issues of coastal management. Other research needs call for analyzing changes in intergovernmental relations and agency responsibilities as a result of changing budget patterns; analyzing the performance and effectiveness of government agencies and institutions involved in marine affairs; comparative studies of marine policy and institutions; analysis and evaluation of conflict-resolution mechanisms and performance in cases of multiple use conflict; and critical studies of biological and economic modeling and efforts to combine these in the same measurement system.

CONCLUSIONS

The major ocean activities of the 1970's--law of the sea, fisheries development and coastal zone management--exerted a powerful influence on Sea Grant social science interests. One result was the description, analysis and clarification of a

fairly narrow range of concerns, including marine economics (primarily fisheries), coastal management and ocean and coastal law. More important than the individual contributions, however, has been the growing recognition by the ocean community that social, political and economic aspects of marine affairs are just as important in achieving the nation's goals as improved understanding of natural marine systems.

The general framework emerging from this workshop departs from the research concerns of the 1970's both in scope and in specific concerns. The recommendations emphasize topics directly relating to commercial and industrial aspects of marine resource development. They also call for increased attention to the political and institutional aspects of marine resource management, as well as to the nature of government-industry relationships, particularly those involving such incentive manipulators as tariffs, subsidies and regulation.

To ensure that research in marine-related social sciences will be useful beyond particular academic disciplines, Sea Grant programs should sponsor timely workshops on topics of current interest and concern. These would involve researchers, members of coastal communities, coastal businessmen and government officials. As in the natural sciences, the goals of these sessions would be to disseminate new knowledge and interpretations in a timely fashion, provide information to prospective users and interested non-specialists, and solicit information useful for designing future research programs. New ways to

disseminate anticipated findings from social science research also should be explored, such as the use of educational modules or newsletters.

Appendix I

Report of the Fisheries Development Working Group

We engaged in a three-step process to define the areas of social science research and application that are most relevant to fisheries development and available within the context of the Sea Grant program.

First, we developed a set of seven general focus areas for social science research relevant to fishery development. These areas are listed on Attachment A.

Second, for each area, we listed (not necessarily in any order) the research modes that could be used to address fishery development in that subject area. This list is neither exhaustive nor exclusive for a given subject area. "Cost/benefit analysis," for example, appears under several subject areas.

Third, in order to generate some feel for the priorities the group (which was generally evenly divided into sociologists/anthropologists, economists and administrators) might assign to each element, each participant in the group assigned each element two ratings on a scale of one to ten, with ten being the most positive rating. One rating was based on the absolute importance of the particular element for fishery development. The sum of the individual ratings for each element appears in column A on Attachment A. The second rating sum, in column B, was based on the potential or appropriateness for the item to be addressed by Sea Grant researchers. "Economic feasibility analysis," for example, is universally important but in many instances may be more appropriately performed by line agencies or consulting firms.

To obtain the total score for each subject area, each participant's scores on all items in that area were averaged, and all participants' averages for that subject area added together. These are the numbers that appear in the parentheses following each subject heading. These numbers yield a very general idea of the priority of each area based on both importance and potential within Sea Grant.

Because this averaging process obscures important individual highscoring items, the combined ratings for each element were recorded in column B. Those with a score of more than 100 (asterisked) were felt to be important regardless of the score of the entire subject area. Thus, both important subject areas and individual elements were highlighted.

It is important to note that low ranking of subject areas or individual elements in this exercise does not mean that those items are unimportant either intrinsically or for marine studies; simply that they are generally less significant at the present time for applied social research on fisheries development.

There are three other items that arose during discussion

of subject areas that do not appear on Attachment A: "The Role of Sea Grant" vis-a-vis other granting institutions, line agencies and user groups; "Education"; and "Data and Information Systems." These items did not seem appropriate to our list, although the working group felt they were important areas deserving consideration.

With respect to the availability of existing data or information on these elements, the group felt enough work is needed in all areas so that existing data or information was not a factor in the ranking of the elements.

Fisheries Development Workgroup Ratings of
Research Areas and Approaches

Subject Area	Ranking	
	A ₂	B ₃
I. New uses of Marine Resources (107)		
A. Cost/benefit analysis	49/49	(98)
B. Comparative socio-economic studies	46/56	(102)*
C. Socio-political factors of administration	55/55	(110)*
D. Economic Feasibility analysis	62/56	(118)*
II. Values (82)		
A. Attitude surveys	47/48	(95)
B. Historical Studies	42/40	(82)
C. Ethnography	37/41	(78)
D. Welfare Economics	29/31	(60)
E. Ethnoichthyology	30/39	(69)
III. Distribution of Benefits and Multiple Use Conflicts (99)		
A. Cost/benefit	49/52	(101)*
B. Socio-political analyses	60/49	(109)*
C. Perceptions and belief systems of users, administrators, and scientists	46/51	(97)
D. Recreation/leisure studies	49/50	(99)
E. Network analysis	41/42	(83)
IV. Decision-Making (101)		
A. Studies of decision-making under uncertainty	52/50	(102)*
B. Theory of the firm	42/56	(98)
C. Studies of institutional framework	55/50	(105)*
D. Innovation studies	59/59	(118)*
V. Labor and Employment (77)		
A. Individual and family decision-making studies	43/46	(89)
B. Migration	48/41	(89)
C. Labor economics	39/34	(73)
D. Unionization	36/31	(67)
E. Community services	35/30	(65)
F. Occupational safety and health	39/35	(74)
G. Local soci-economic impacts	50/50	(100)*

Subject Area	Ranking	
	A ₂	B ₃
VI. Market Analysis (102)		
A. Cross cultural surveys	44/45	(89)
B. Structure, conduct and performance studies	57/54	(111)*
C. Tastes and preferences	55/58	(113)*
D. International trade	63/59	(122)*
E. Market surveys	57/50	(107)*
F. Historical/political studies	52/46	(98)
VII. Relationship between fisheries Management and development (105)		
A. Institutional frameworks	59/54	(113)*
B. Studies of response to regulation	64/67	(131)*
C. Multi-level planning models	53/52	(105)*
D. Traditional resource management systems	46/45	(91)

Michael K. Orbach, Chairman

Wade Griffin
John Nichols
Melissa Pitts

Robert Lee Maril
James Acheson
Willis H. Clark

¹ Figures in () are the sum of the individual participants' average rating for all elements in each subject area.

* Research approaches of particular individual importance

² Sum of individual participant ratings on a scale from 1 to 10 based on the absolute importance of the element for fishery development.

³ Sum of individual participant ratings on a scale of 1 to 10 based on the potential or the appropriateness for the item to be addressed by Sea Grant researchers.

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