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A Report for
the Secretary of Commerce

The National Sea Grant Program:
A REVIEW

by the
National
Advisory
Committee on
Oceans and
Atmosphere

November 3, 1976

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FOREWORD

The National Advisory Committee on Oceans and Atmosphere, in addition to its responsibility for advising the President and the Congress with respect to the Nation's marine and atmospheric activities, is charged by statute (P.L. 92–125, as amended) to "advise the Secretary of Commerce with respect to the carrying out of the purposes of the National Oceanic and Atmospheric Administration."

In this report to the Secretary, NACOA summarizes its evaluation of the National Sea Grant Program, an element of NOAA, and presents its recommendations for that program's future.

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Summary

Sea Grant provides a means for utilizing the combined expertise in a variety of fields which resides in the colleges and universities, the research institutions, and the marine-related businesses and industries of the United States to develop educational programs, conduct research, and provide advisory services needed to further the development, regulation, and protection of marine resources and the marine environment. It is a matching fund program which received, during fiscal year 1976, $23.1 million in Federal funds, and an additional $15.3 million from the States and other non-Federal sources.[1] Sea Grant is designed to be particularly responsive to the immediate practical needs of industry and government in a host of subjects encompassing science, engineering, business, economics, law, recreation, and others.

A year-long inquiry has led NACOA to conclude that Sea Grant plays an important role in the national effort to develop and conserve our marine resources. Its ability to draw on the pool of talent in our universities and other research institutions, and its close contacts with users and potential users of marine information and technology, enable it to complement the activities of the numerous other Federal agencies and programs also concerned with marine resource development. Its most significant contributions have stemmed from its sensitivity to regional and local perceptions of issues which, while collectively important to the Nation, may be individually too small or too new to have attracted attention at the Federal level.

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[1] In addition, Sea Grant received $1.5 million in the form of "pass-through" funds transferred from other NOAA components and other Federal agencies for specific tasks on behalf of those agencies.

We find that Sea Grant, as it has developed during its first 10 years, has been responsive to its legislative charter, and has contributed significantly to the Nation's marine effort. We foresee a continuing need for the kind of service it provides. We strongly recommend that the program be continued.

At the same time, we have identified ways in which we believe Sea Grant could be improved and its ability to contribute to the overall national interest enhanced. Our specific recommendations are:

- The Administrator of NOAA should take steps to clarify the goals and role of Sea Grant in relation to NOAA's overall mission and its other programs, and in the broader context of the overall national effort in marine resource development, utilization, and protection.
- The Administrator of NOAA and the Director of the Office of Sea Grant should make greater use of the Sea Grant Advisory Panel for advice on broad policy issues. The Panel should include specialists in a broader range of fields than at present, and there should be regular turnover in Panel membership.
- The Administrator of NOAA should take further steps to develop and implement appropriate procedures for coordination between Sea Grant and other related activities within NOAA and in other agencies.
- The Office of Sea Grant should clarify its guidelines to better assist participating institutions in establishing priorities.
- The Office of Sea Grant should continue its efforts to expedite the proposal review process, which is time-consuming and administratively burdensome.
- In considering proposals for Sea Grant research intended to lead to commercial application, economic feasibility and expected benefits should be taken into account from the start, along with technical feasibility.
- While Sea Grant is not the appropriate program to take on major engineering tasks, the Office of Sea Grant should ensure that adequate engineering is incorporated into Sea Grant research projects as appropriate, and participating institutions should do more to foster the introduction of marine-oriented projects into undergraduate and graduate engineering courses.
- Periodically, perhaps once every 2 years or so, NOAA should issue a detailed report describing Sea Grant and assessing its contribution to national goals in marine resource development.
- Sea Grant's Federal funding, which is presently inadequate for the task assigned to the program, should be increased to a minimum of $40 million per year within the next few years. This should be

in addition to increases necessary to keep pace with inflation and to undertake special projects initiated at the Federal level.

- The Sea Grant Act should be amended to permit other agencies to transfer funds to Sea Grant to support activities which they require and which the Sea Grant system is suited to provide, or to provide a separate appropriation for the purpose of supporting activities initiated at the Federal level, in response to national and international needs. Such funding should be provided free of the matching requirement.
- The Sea Grant Act should be amended to permit Federal funds to be used to pay for a limited amount of ship time.

Part I. Introduction

The Sea Grant Program was created in 1966 by the National Sea Grant College and Program Act (P.L. 89–688), which authorized the establishment and operation of Sea Grant Colleges and programs of education, training, research, and advisory services related to the development of marine resources. The program was assigned by the Act to the National Science Foundation, and the first grants were made by the Foundation in FY 1968. Sea Grant was transferred to NOAA when that agency was created by Presidential reorganization in 1970.

Sea Grant is now nearly 10 years old. During its early years, the program grew steadily, both in budget and in number of participating institutions. In FY 1968, the Sea Grant budget totaled $8.1 million, made up of $5.0 million in Federal funds and $3.1 million in matching funds. Nine institutions had multiproject programs, and these accounted for 64% of the total budget. By FY 1973, the budget had grown to $20.0 million in Federal funds and $12.0 million in matching funds, and the number of institutions with multiproject grants had grown to 25 and accounted for about 90% of the total program cost.

Since that time the number of institutions with multiproject programs has remained virtually constant, and the Federal funding level, pass-through funds aside, reached only $23.1 million in FY 1976, an erosion in Federal support since FY 1973 when inflation is taken into account.

Sea Grant presently supports some type of activity in 28 States, the District of Columbia, the Trust Territories, American Samoa, and Guam, involving more than 3500 people. Seventeen institutions or combinations of institutions are full participants, in the sense of carrying out the entire scope of activities intended by the Act. Eight other institutions have smaller multiproject programs, and a great many more participate in a subsidiary manner such as involvement in a single project.

The faltering support in recent years has been accompanied by a number of questions about Sea Grant raised in various quarters. Some have raised questions about policies, practices, and effectiveness at the various levels of management within the program itself. Others have noted that the Federal ocean program overall has both grown and diversified greatly in the decade since Sea Grant was first established, and have questioned whether Sea Grant has found its proper place within this changing context.

The persistence of these questions over several years led NACOA to undertake an examination of Sea Grant in depth. This detailed examination was carried out by a 10-member panel of NACOA whose activities are summarized in Appendix 1; the evaluation and recommendations are those of NACOA as a whole. NACOA did not examine in detail the scientific quality per se of Sea Grant's projects and programs, although this aspect was taken into consideration. Rather, we emphasized the statutory responsibilities of Sea Grant, its role in national and regional marine activities, its impact on marine-oriented education and research, its impact on private industry and government, and its mode of operation.

We have already reported our major findings to the Congress in connection with recent Sea Grant authorization and oversight hearings, which were held while this detailed report was in preparation.[2] We have also summarized our study as a chapter in our 5th Annual Report to the President and the Congress, dated June 30, 1976. We present here a more extended discussion of the basis for our findings and recommendations than was appropriate for these other purposes.

On October 8, 1976, while this report was in the final stages of preparation, the President signed into law the Sea Grant Program Improvement Act of 1976 (P.L. 94–461). This Act makes significant changes in the Sea Grant Program, many of which address aspects of the program which were of concern to NACOA and toward which our recommendations are directed. We will, during the coming year, follow with interest Sea Grant developments in response to our recommendations, and to this new legislation.

[2] NACOA Chairman William J. Hargis, Jr. and Panel Chairman William C. Ackermann testified at Sea Grant hearings held by the Subcommittee on Oceanography of the House Committee on Merchant Marine and Fisheries on March 3, 1976, and on June 17, 1976.

Part II. Sea Grant-Past and Present

The Setting in 1966

The term "Sea Grant" was coined by Athelstan Spilhaus who, as chairman of the National Academy of Sciences Committee on Oceanography in the early 1960's, noted that marine science had made great strides in recent years and suggested that what was needed next was a new mechanism for using this marine science to tackle the practical problems of ocean engineering and fisheries. He felt that the diminishing role of the United States in world fishing could be reversed by combining university research with American technological know-how to move forward briskly in automating the fishing industry and outfishing other nations on a competitive basis. Taking the Land Grant college system established by the Morrill Act of 1862, with its agricultural experiment stations and extension services, as a model, Spilhaus asked, in a keynote address to the American Fisheries Society in September 1963, "Why, to promote the relationship between academic, State, Federal and industrial institutions in fisheries, do we not do what wise men had done for the better cultivation of land a century ago? Why not have 'Sea Grant colleges?' " [3]

This proposal caught the imagination of others and led first to a national conference on "The Concept of a Sea Grant University," held in Newport, Rhode Island, in October 1965, and finally to passage of the National Sea Grant College and Program Act (P.L. 89-688), which was steered through the Congress under the leadership of Senator Claiborne

[3] For an account of the origins of Sea Grant, see "Land is Just an Island" by Athelstan Spilhaus, EOS, American Geophysical Union, Vol. 53, No. 5, May 1972, pp. 572-578.

Pell of Rhode Island and Congressman Paul Rogers of Florida, and was signed into law on October 15, 1966.

In reporting this legislation to the floor, committees in both Houses emphasized the role Sea Grant Colleges would play in overcoming our Nation's competitive disadvantage in the exploitation of marine resources. The Senate report[4] stated:

> "Much progress has been made in recent years toward a national program in the oceanologic or marine sciences. But this progress has not been converted into practical application for the general welfare of the Nation. One reason has been the failure to focus national attention on the need for marine technology.
>
> ". . . there are many ocean-related ventures in which this Nation is performing poorly. Our merchant marine does not compete well with other commercial fleets of the world. Our fishing industry has slipped from second to fifth place in a decade. . . .
>
> "If these sagging industries do not catch up, what chance will America have in marine industries of the future, such as: mining of marine minerals, drilling for oil, extracting dissolved substances, aquaculture, desalinization, underwater equipment, vehicles, and bases of all kinds? . . .
>
> "So action is needed to strengthen the marine sciences and industries. To do this will require many more people skilled in various disciplines of oceanology. The sea grant college program will train them in the higher educational system. . . .
>
> "The program need not be limited to degree-granting institutions. It should include the resources of staffs, ships, and shore laboratories of such excellent private institutions as the Woods Hole Oceanographic Institution; also the in-house laboratories of Federal agencies. All of these can contribute to education and training in the marine sciences and the fields of their application.
>
> "Colleges will be the primary base for these programs, but any institution, agency, or industry, public or private, with a sound proposal is qualified to receive support either directly . . . or through a cooperative arrangement with an institution of higher education. Maximum use of existing facilities and personnel may thus be achieved."

The House report[5] concluded that:

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[4] Senate Report No. 1307, 89th Congress, 2nd Session, Committee on Labor and Public Welfare, June 24, 1966.

[5] House of Representatives Report No. 1795, 89th Congress, 2nd Session, Committee on Merchant Marine and Fisheries, August 1, 1966.

"Great progress toward an effective long-range program in the marine sciences in recent years was marked by the enactment . . . of the Marine Resources and Engineering Development Act of 1966. But there is a great deal that needs to be done to implement the policy and objectives declared by the Congress in that act. . . ."

and quoted from a statement prepared by the National Committee for a Sea Grant College, which was formed among those attending the Rhode Island meeting:

"A sea-grant college would be an institution of higher education devoted to increasing our Nation's development of the world's marine resources through activities in the areas of education, research, and public service. A sea-grant college would specialize in the application of science and technology to the sea, as in underwater prospecting, mining, food resources development, marine pharmacology and medicine, pollution control, shipping and navigation, forecasting weather and climate, and recreational uses. It would relate such application to the underlying natural sciences which underlie social sciences as they are affected by, and in turn affect, the occupation and exploitation of the sea. Thus a sea-grant college would bring to bear the wide variety of intellectual resources, usually associated with a university on the development of marine resources. We are not suggesting the establishment of new schools, colleges, or universities, but rather the development of this capability in State and private institutions already deeply involved in the study of marine sciences.

"The potential contributions of education, research and public service are many. It is not expected that any single sea-grant college would develop all of these possibilities, or that all sea-grant colleges would develop in an identical manner."

The Sea Grant Act

The National Sea Grant College and Program Act of 1966 (P.L. 89-688) converted the above-stated assessment into a statutory responsibility to provide "Federal support toward the establishment, development, and operation of programs by Sea Grant Colleges and Federal support of other Sea Grant programs designed to achieve the gainful use of marine resources" and assigned this responsibility to the National Science Foundation.[6]

The program created by the Act was to be a tripartite endeavor of education, research (with emphasis on applied research) and advisory

[6] A legislative history of Sea Grant is presented in Appendix 2, and the Act, with amendments through 1973, is reproduced in Appendix 3.

services covering a broad array of scientific, engineering, medical, social, legal and commercial fields relating to the practical use of the marine environment, carried out in institutions of higher learning or other "suitable institutes, laboratories, and public or private agencies."

The Act limited Federal support for any participating institution to two-thirds of the total cost of its program, and specified that Federal funds could not be applied to the purchase or rental of land or the rental, purchase, construction or repair of buildings, docks, or vessels. The Act further called for maximum participation by Sea Grant Colleges and other suitable public and private institutions throughout the Nation, and charged the Foundation to support programs in such a manner as to supplement and not duplicate or overlap any existing and related government activities.

Upon the creation of the National Oceanic and Atmospheric Administration by Presidential Reorganization Plan No. 4 in July 1970, the National Sea Grant Program was transferred from the National Science Foundation to the new agency, and in 1973 the Sea Grant Act was amended to reflect this change, and also to authorize a nonmatching grant for a study of international marine technology transfer; to exempt non-self-propelled habitats, buoys, and other similar devices used in research from the prohibition against using Federal funds to pay for ship time; to permit up to 1% of the Sea Grant budget to be allocated without matching funds for activities requested by the Secretary of Commerce; to specify that an institution becomes a Sea Grant College only upon formal designation as such by the Secretary; and to make other technical corrections in the Act. The Sea Grant Act, as amended through 1973, governed the Sea Grant Program which NACOA examined (See Appendix 3).

While this report was in the final stages of preparation, the Congress passed the Sea Grant Program Improvement Act of 1976 (P.L. 94-461) which was signed into law on October 8, 1976. This Act rewrites the Sea Grant Act in entirely new language, and makes a number of significant changes in the program. These include:

- Provision for designation by the Secretary of Commerce of Sea Grant Regional Consortia in addition to Sea Grant Colleges.
- Establishment of a Sea Grant Fellowship program.
- Elimination of the prohibition against using Federal funds to pay for ship time.
- Statutory establishment of a Sea Grant Review Panel to replace the present Sea Grant Advisory Panel, with somewhat broader responsibilities than has the present Panel.
- Specifying in detail certain administrative and managerial details of the Sea Grant Program, such as qualifications and duties of the

Director, duties, membership, and procedures of the Sea Grant Review Panel, etc.

- Provision for submission of an annual report by the Secretary of Commerce to the Congress and the President reviewing the activities of and the outlook for the Sea Grant Program, and containing independent evaluations by the Office of Management and Budget and the Office of Science and Technology Policy.
- Extension of the basic Sea Grant Program for one additional year at an authorized level of $50 million.
- Authorization, for a 1-year trial period, of $5 million for nonmatching grants to meet specific national needs, and $3 million for nonmatching grants to enhance the marine research capabilities of developing nations and to promote the international exchange of marine resource information.

These provisions address many of the same issues addressed by NACOA in Part III of this report.

Program Organization and Management

The National Sea Grant Program is directed and guided by a central staff in NOAA's Office of Sea Grant which provides overall management, general program guidance and coordination, and regular and continuing review of the programs. This Office is responsible for identification of priorities, evaluation of program performance and productivity, and integration of Sea Grant activities with those of other Federal agencies. It also identifies Sea Grant capabilities for addressing problems of national scope. Local and statewide programs are managed within the participating institutions, guided by local advisory groups, and reviewed for technical merit at the local level as well as through review mechanisms at the national office. This system of dual program review is intended to assure program and project responsiveness to identified needs in the light of local and national priorities.

For advice on proposals and on program management generally, the Office of Sea Grant utilizes a Sea Grant Advisory Panel. This Panel, whose members are appointed by the Secretary of Commerce, provides guidance and suggestions in three areas--institutional proposals for funding, management of the national program, and broad policy with regard to the program. Panelists are selected from non-Federal sources, and an attempt is made to maintain a balance between academic and industrial panelists, with a leavening of State agency experience and a mix of disciplines and specialties. The Panel's charter is reproduced in Appendix 5 and a list of current Panel members is given in Appendix 6.

Panel members participate in site visits and program reviews, and thus gain familiarity with institutional programs and projects. The Panel

as a whole meets twice annually to review the Sea Grant Program, to make specific recommendations concerning those programs subjected to site review during the period since the last meeting, and to recommend to the Secretary of Commerce institutions which merit designation as Sea Grant Colleges.

Responsibility for directing and managing the program within each participating institution rests with the Sea Grant Director, who, while an employee of the institution, is accountable to the Federal Sea Grant Office for organization and conduct of the State Sea Grant program, and also to the institution which employs him for managing an effective program while maintaining harmony and cooperation among the various participants. The Director is also responsible for seeking the needed matching funds, which may come from a variety of sources including the university system, industry, State agencies, and direct appropriations from the State legislature.

The Sea Grant Directors from all the participating institutions meet several times a year in an informal council with Federal Sea Grant staff for exchange of ideas, discussion of issues of importance to the institutions, and consideration of future plans.

The annual proposal review cycle in an individual institution starts with a call for proposals by the local Sea Grant Director. Proposals may be unsolicited, or may be responsive to needs brought to the attention of the Director and his staff by extension agents, State agencies, industry, and advisory committees, or arising from workshops and conferences. These proposals are reviewed by an internal screening committee, usually composed of representatives of the various departments and colleges, possibly augmented by outside reviewers, including State agency and industry experts. This internal screening results in an institutional proposal that is consistent with State priorities and funding realities and is of reasonably high quality.

In the Office of Sea Grant, the institution's proposal is screened and portions of it are sent to outside specialists for review. In addition, a site visit is scheduled at which the proposal is explained by the proposers in person and a dialogue between proposers and reviewers is carried on.

The site visit team is usually composed of two members of the national Sea Grant Advisory Panel, two members of the Sea Grant Office staff, a representative of the National Marine Fisheries Service if living resources are involved, as they usually are, and representatives from other NOAA components, other Federal agencies, State agencies, and industry, selected for their expertise bearing on certain portions of the proposal.

Normally, a site visit lasts 2 days. At its conclusion, the team meets in executive session to discuss the proposal item by item. Finally, the site visit team's recommendations, and the reasoning behind them, are

discussed with the institution's Sea Grant Director. A summary of the site visit team's recommendations is then presented to the Sea Grant Advisory Panel which makes a recommendation to the Office of Sea Grant. On the basis of this information, the Office enters into negotiations with the institution's Director on specific elements of the proposal, after which a funding decision is made.

This entire review process takes about a year. It covers not only the technical validity of the proposed projects, but the grantee's management of the entire Sea Grant effort, and assessments of the institution's previous work under Sea Grant.

Development of the Program

The Office of Sea Grant has taken as one of its prime objectives the development of a network of Sea Grant institutions which would ultimately consist of Sea Grant Colleges in most of the coastal and Great Lakes States, plus a variety of additional programs at institutions which are not Sea Grant Colleges—either because they are not institutions of higher education, or because their marine resource related activities are not sufficiently extensive, or because they have not yet developed to the point of achieving Sea Grant College status. To accomplish this, a hierarchy of Sea Grant activities has evolved, ranging from *individual projects* to *coherent projects, institutional programs* and finally, *Sea Grant College programs.*

Individual projects are single projects having a clearly delineated self-contained objective. They may be budgeted at anywhere from a few tens of thousands of dollars to several hundreds of thousands of dollars per year, but are funded as separate entities and not as part of any tightly integrated institutional program. Individual projects represent a minor portion of the overall national program.

The other three types of activity are all multiproject institutional programs. A *coherent project* is a collection of interrelated projects under the management of a single institution or consortium, directed at one or a few resource management goals, usually not sufficiently comprehensive to reflect more than a portion of the needs in its region, or not involving all three aspects of education, research, and advisory services. Coherent projects are typically funded at several hundred thousand dollars per year of Federal funds, plus appropriate matching funds.

A program which encompasses the three areas of education, research and advisory services, and which covers a wide range of marine resource related fields, is usually awarded *institutional status*, and typically receives between half a million and one million Federal dollars per year. After a program has had institutional status for 3 years, it is eligible for designation as a *Sea Grant College*; this designation is made by the Secre-

tary of Commerce on the recommendation of the Sea Grant Advisory Panel.[7] Thus a Sea Grant College is intended to be an institution having a well-developed program of education, research, and advisory services encompassing a substantial number of scientific, social, commercial and other aspects of marine resource development, and responding, by itself or through affiliated institutions, to requirements for resource management information within the region it serves. Sea Grant Colleges typically receive between 1 and 2 million dollars per year in Federal funds.

For the most part, this hierarchy of status has been thought of as related to growth. A participating institution might first develop its Sea Grant Program as a coherent project, and as interest developed among the faculty, within the State government, and in the State's commercial and industrial marine community, the program could evolve into institutional status and finally to designation as a Sea Grant College. It has been recognized that some programs, for valid reasons, might find it inappropriate to grow beyond a certain size and might never grow to more than coherent project or institutional status. Nevertheless, the prestige of designation as a Sea Grant College represents the ideal which is held up before participants in the National Sea Grant Program.

The Act, however, says nothing about what special perquisites go with designation as a Sea Grant College. There is no commitment on the part of the Federal Government to continued support at a certain funding level, nor is there any guarantee that the Sea Grant Colleges will necessarily be funded at a higher level than other Sea Grant programs. There is certainly no analogy with the Land Grant colleges which, on being so designated, actually received grants of land, which in many instances provided substantial sources of revenue which were used to support the growth of the university's programs. Sea Grant College status appears to bring with it simply the prestige of recognition as a major center of excellence embodying the spirit of Sea Grant—a broad array of programs in education, research, and advisory services directed toward improved utilization of marine resources.

Sea Grant Colleges, institutional programs, and even coherent projects are often not confined to a single university or campus, but are cooperative efforts involving a number of institutions. The University of California Sea Grant College, for example, encompasses 10 campuses as well as one of the world's leading oceanographic institutions, and cooperative programs with State universities from a different administrative system, State agen-

[7] The 1973 amendments to the Sea Grant Act specify that a Sea Grant College is an institution of higher learning "which has major programs devoted to increasing our Nation's utilization of the world's marine resources *and which is so designated by the Secretary,*" the portion in italics being new.

cies, and private industry. In other instances, the program is essentially confined to a single institution. A list of Sea Grant's current institutional programs is given in Appendix 7.

The funding history of the National Sea Grant Program, from the first grants in FY 1968 through FY 1976, is shown in Table 1. In FY 1968, there were three coherent projects and six institutional programs in nine States, and a total budget of $5.0 million in Federal funding and $3.1 million in matching funds. In FY 1976 there were 10 coherent projects, six institutional programs, and 10 Sea Grant Colleges, in 23 States and Guam, with a Federal appropriation of $23.1 million, $1.5 million in "pass-through" funds, and $15.3 million in matching funds from non-Federal sources. The long-range goal, according to the National Sea Grant Office, has been and still is for a total of 20 to 25 Sea Grant Colleges, with a limited number of additional special projects, covering the marine and coastal resource management activities of all the coastal and Great Lakes States, budgeted at approximately $55 million in Federal funding (in 1975 dollars).

Program Content

A prime characteristic which has been sought for Sea Grant is a focus on specific, clearly identified problems and opportunities of direct interest to an industrial, commercial or governmental entity which is willing to share in the costs and effort needed to arrive at a practicable solution. As a consequence, Sea Grant has tended to develop primarily in response to marine resource problems identified at the local or regional level. Because of their applicability to other regions of the Nation as well, many such problems, and their solutions, can be identified as being national in character.

Education and training in Sea Grant is intended to provide professionals and technicians with the skills necessary to participate in national, State, and regional marine programs directed toward resource development and environmental protection. This involves the development and improvement of college and graduate level courses and curricula in the various professional fields, and the training of technical personnel through vocational programs designed to provide the specific manpower skills needed by industry and government.

Research in Sea Grant is aimed at acquiring new understanding of the marine environment which bears on the development and utilization of resources and the protection of the environment. It is classed for budgetary purposes in four main categories:

- Marine resources development: research concerning the resources themselves, to assist and accelerate the development of new marine

Table 1. History of the National Sea Grant Program from 1968 to 1976, in terms of budget and number of participating institutional programs and projects. Budget shown in millions of dollars rounded to the nearest tenth. This Table does not reflect changes in institutional status since June 30, 1976.

Fiscal Year	Amounts in Millions of Dollars								
	1968	1969	1970	1971	1972	1973	1974	1975	1976
Congressional appropriation	5.0	6.0	10.0	13.5	17.7	21.2	19.8	24.3	23.1
Portion of appropriation made available to Sea Grant *	5.0	6.0	9.0	13.5	17.7	19.5	19.8	22.7	23.1
Funds transferred from other NOAA programs and other Federal agencies	0	0	0	0	0	0.5	0.2	0.2	1.5
Total Federal Funding	5.0	6.0	9.0	13.5	17.7	20.0	20.0	22.9	24.6
Total Matching Funds Reported	3.1	3.7	5.1	8.5	9.7	12.0	12.9	14.9	15.3
Total Funding (Federal plus Matching)	8.1	9.7	14.1	22.0	27.4	32.0	32.9	37.8	39.9
Federal grants, requiring matching funds, awarded to:									
Sea Grant Colleges	0	0	0	0	5.6	8.2	8.1	10.7	12.2
Institutional Programs	2.6	4.3	5.6	6.9	7.7	7.0	5.5	5.9	5.3
Coherent Projects	0.6	0.9	0.8	2.4	1.3	1.8	3.5	3.4	4.4
Individual Projects	1.8	0.8	2.6	3.2	1.7	1.4	1.7	1.7	1.3
Total	5.0	6.0	9.0	12.5	16.3	18.5	18.8	21.7	23.3
Federal grants not requiring matching funds	0	0	0	0	0	0	0.1	0.2	0.2
Amendments to prior grants	0	0	0	0.3	0.9	0.9	0.2	0	0
Operation of Office of Sea Grant **	—	—	—	0.6	0.4	0.6	0.8	0.9	1.1
Number of:									
Sea Grant Colleges	0	0	0	0	4	6	7	8	10
Institutional Programs	6	7	7	7	8	9	9	9	6
Coherent Projects	3	5	3	9	8	10	10	9	10
Individual Projects	24	16	35	41	27	19	26	29	26

* Where this amount is less than the actual appropriation, it is a result of Presidential deferral, OMB impoundment, or agency reprogramming, as follows:

FY 1970—$1.0 million reprogrammed by NSF
FY 1973—$1.7 million impounded by OMB
FY 1975—$1.0 million deferred by the President, and
$0.6 million reprogrammed by NOAA

** During fiscal years 1968—1970, when Sea Grant was in NSF, operation of the Office of Sea Grant was part of a general NSF administrative fund and was not budgeted separately. When Sea Grant was transferred to NOAA in FY 1971, a special assessment was made for administrative services. From FY 1972 on, the figures listed above represent actual obligations incurred for operating the office.

business and industry, and to aid in improving the productivity of existing marine business and industry.

- Marine technology: research directed toward assisting industry and government to develop more efficient equipment and techniques, exploring and evaluating new methodologies for use of the sea and of marine products, upgrading the economic position of existing marine business and industry through improved technology, and providing a technological base for new marine business and industry.
- Marine environment: research to provide useful information to coastal zone and resource managers on the consequences of natural events and human activities in the marine environment, and to develop means for alleviating environmental degradation and preserving the environment.
- Socioeconomic and legal studies: analysis and dissemination of information on laws, regulations, public opinion, markets, costs, efficiency, management, and organization, which will be of use to marine businesses, public agencies, and the general public, in responding to existing and new programs and institutions dealing with marine resources.

From the outset, marine resource development, particularly with regard to aquaculture and other living resources, has received the greatest emphasis and the major share of the funds. Next has come the marine environment, with the bulk of the funds going to coastal zone studies. Third has been marine technology, with funds going primarily to ocean engineering and resource recovery and utilization. Least emphasis has been on socioeconomic and legal studies.

The primary aim of Sea Grant's *advisory services* is to provide information, ideas, and skills to people, businesses, governments, and other institutions to promote the effective use of the marine environment and its resources. Advisory services play a dual role, also serving to identify for Sea Grant program managers problems on which research or other effort is needed, and where priorities should be placed. The advisory agent is in a good position to know what needs are currently unfilled, and what results are unutilized, and plays an important role in keeping Sea Grant a useful and used program. Advisory services are one of the major factors making Sea Grant more than just another research grant program; they make it a service program.

Advisory services account for some 25% of Sea Grant's budget, and indeed the Sea Grant network is the major provider of marine advisory services in our Nation today. Similar activities are performed in some States by the cooperative extension services, with funds provided on a matching basis by the U.S. Department of Agriculture, and also by some State agencies in connection with research supported under P.L. 88–309, the Commercial Fisheries Research and Development Act of 1964, a match-

ing fund program administered by the National Marine Fisheries Service. Some related services are provided by other elements of NOAA; however, these are primarily data services and broadly targeted information dissemination programs, quite different in nature from the services Sea Grant provides. When other elements of NOAA find a need to provide the Sea Grant type of service, they are encouraged to use a mechanism now being developed [8] whereby Sea Grant's advisory services can cooperate in filling this need.

A graphical summary of Sea Grant's funding history, including budget trends in the major areas of activity, is shown in Figures 1–3.

The specific nature of what Sea Grant does is illustrated by a sampling of some of its activities in four areas of national concern—food, minerals, transportation, and the coastal zone.

Food from the sea: Sea Grant has supported efforts to make fishing more efficient. It has contributed to the development of new, more effective nets for use in the North Atlantic, new traps for several finfish and shellfish fisheries, new hydraulic power systems on small boats, new vessel propulsion systems, and new trawl line hookup techniques.

Harvesting efficiency can also be improved through increased knowledge of fish habits. Sea Grant studies have correlated tuna and salmon movements with ocean thermal fronts, and thermal front information has been supplied to fishing fleets to reduce search time. Weather cycles have been correlated with crab spawning and subsequent harvestable stocks, and crab fishermen are using this knowledge to plan fishing efforts for future years.

Sea Grant has supported economic analyses which have guided investment and operational decisions of fishermen. Much of this information is transmitted to the industry through organized business management advisory programs. Sea Grant has also contributed to the increased utilization of seafood byproducts and of underutilized species, resulting in increased economic activity for harvesters and processors, reduced processing and marketing costs, new seafood products, and improved quality for consumers.

Domestic seafood production from aquaculture, mariculture, fish farming and ocean ranching is increasing. Advisory services to private aquacultural interests, and increased training of aquaculture scientists, have contributed to the establishment of new commercial enterprises. Applied research in aquaculture includes major projects at several universities aimed at developing systems for growing clams, oysters, salmon, and

[8] This mechanism is called the NOAA Marine Advisory Service and is managed within the Office of Sea Grant.

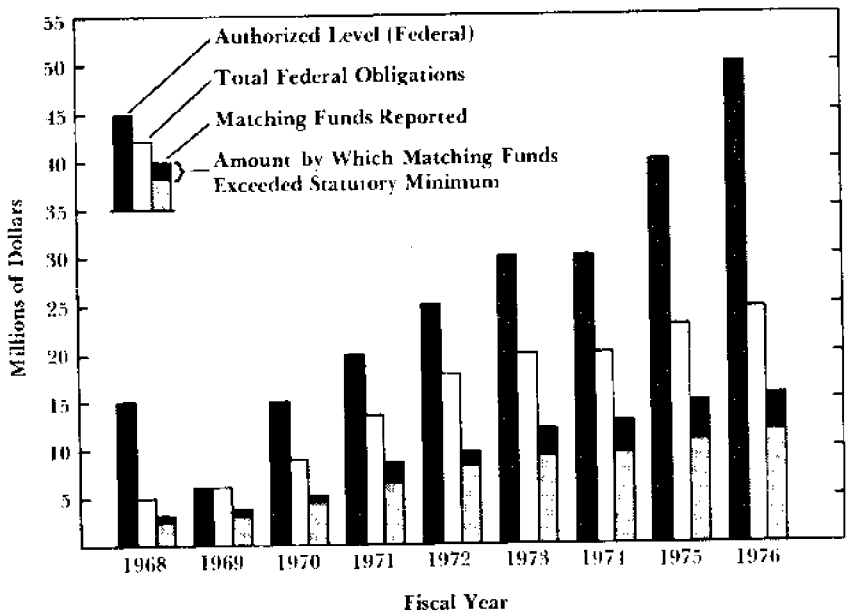

Figure 1. Sea Grant funding history from 1968 through 1976. The upper (black) portion of the bar representing matching funds indicates the extent to which those funds exceeded the statutory minimum.

bait worms. Closely associated with this aquaculture work are a number of projects designed to develop procedures and vaccines for treating and preventing bacterial, fungal, and parasitic diseases of marine animals.

Sea Grant programs contribute to local, State and Federal fishery management efforts through increased scientific knowledge, new fishery data, economic, social and legal analyses, training of resource management specialists, and liaison between industry and management agencies. Sea Grant is involved in resource assessments of squid, clams, lobsters, oysters, abalone and many commercially harvestable finfish. These studies will provide comprehensive data to State management agencies and some are providing in-depth scientific information on particular species. In addition, considerable emphasis has been given to assessing the potential impact on the fishing industry of proposed limited entry legislation by the States, and of the international adoption of a 200-mile economic zone.

In many of these areas, the bulk of the Federal effort is being carried by the National Marine Fisheries Service, with Sea Grant serving to contribute the expertise and resources of universities and other similar institutions when needed and appropriate.

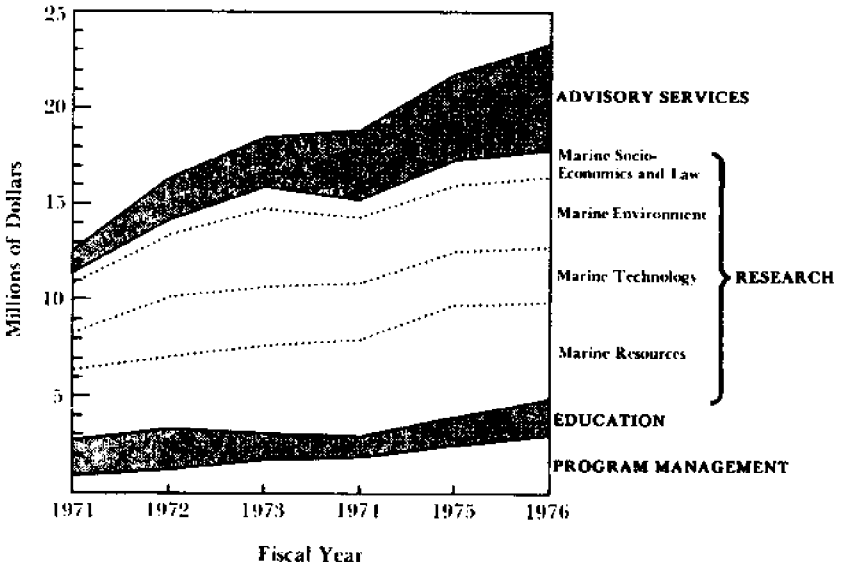

Figure 2. Federal funding for major Sea Grant budget categories from 1971 (when Sea Grant became part of NOAA) through 1976. Comparable data for the period from 1968 through 1970, when Sea Grant was in NSF, are not available. Note that "Program Management" refers to management within the participating institutions, not operation of the Office of Sea Grant.

Offshore and coastal minerals: Sea Grant has supported research on new and improved technology for exploitation of marine minerals. Efforts have been directed toward identification and location of potentially exploitable mineral resources of all types, design and siting of offshore structures, studies of socioeconomic, legal, and environmental effects associated with offshore exploration and development and with marine mining, policy issues associated with offshore exploration and development, and policy issues associated with leasing in "frontier" areas of the Outer Continental Shelf (OCS). The information generated by these studies has been provided to State and local management agencies, Federal agencies, and the Congress.

Sea Grant has also played a role in the establishment of commercial diver training programs and in the development of training programs for technicians in the petroleum industry. Sea Grant is contributing to the development of advanced "man in the sea" technology at institutions where a competence in diving physiology and underwater engineering is available.

Ocean and Great Lakes transportation: Limitations of existing ports and harbors have been examined, and research has been directed toward more economical and effective means of harbor improvement. Floating

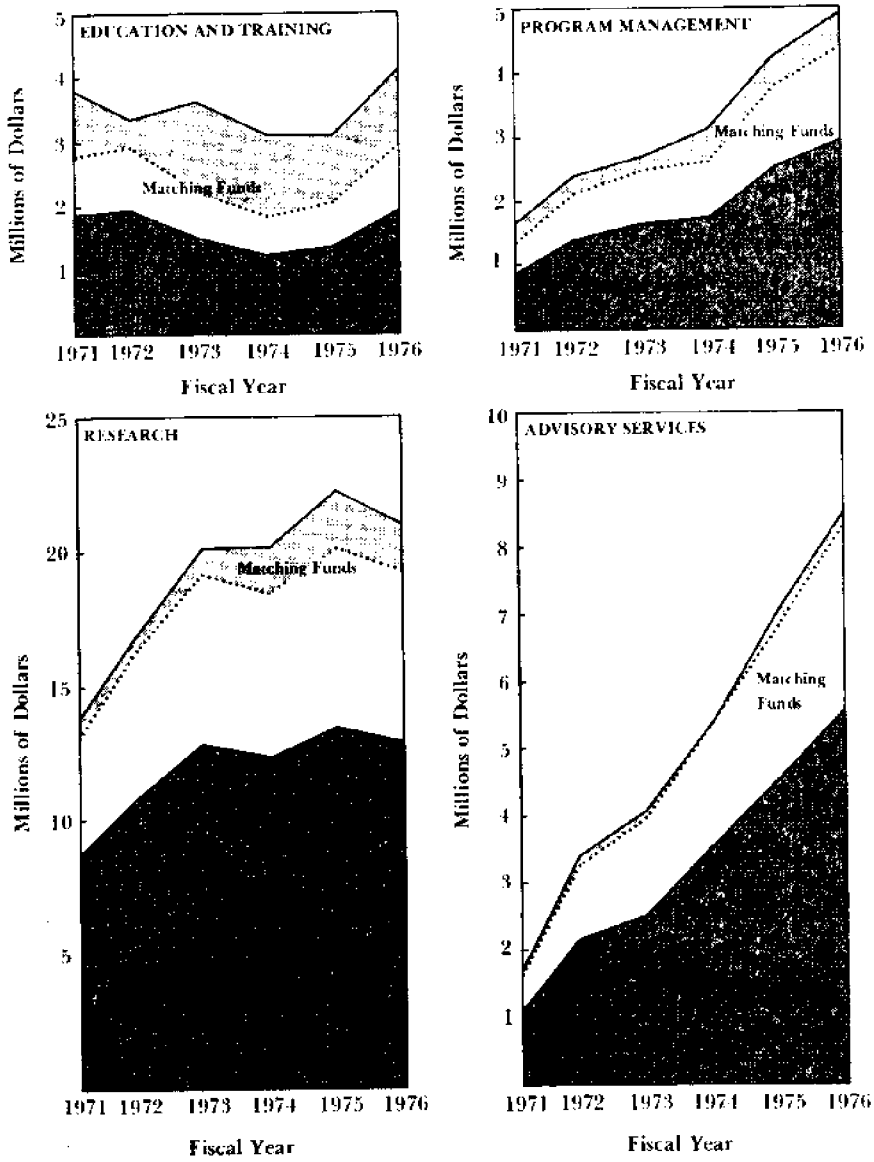

Figure 3. Federal and matching funds for Sea Grant education, research, advisory services, and program management from 1971 (when Sea Grant became part of NOAA) through 1976. Comparable data for the period from 1968 through 1970, when Sea Grant was in NSF, are not available. "Program Management" refers to management within the participating institutions, not operation of the Office of Sea Grant. Lightly shaded areas indicate the extent to which matching funds exceeded the statutory minimum. Note that research funds are plotted on a different scale from the other three activities.

breakwaters have been developed and tested, and several of these systems are now in full use, at lower cost than traditional breakwaters. Disposal of harbor and river dredge spoil has been another research topic.

The economic and environmental impact of traditional and new modes of transport have been studied, and results are used by ports in planning, and by other agencies in regulating the industry. Sea Grant is also supporting the training of technicians to serve the marine transportation industry.

The coastal zone: State legislatures and executive agencies frequently turn to Sea Grant institutions for assistance in technical matters relating to coastal zone management, including environmental inventories, coastal zone boundary definition, development of management models and information retrieval systems, policy formulation, and the development of environmental models treating the effects of multiple uses of coastal, offshore, and Great Lakes environments. In several States, Sea Grant institutions have been formally designated as State Coastal Zone Laboratories.

Topics treated in recent studies include: social and economic impacts of offshore oil production in New England; the status and uses of Oregon's estuaries; management and development of Marina Del Rey in Los Angeles; primary physical impacts of offshore petroleum development; Alaskan ecosystems affected by oil production and transportation; and techniques for using marsh grass to stabilize dredge spoil. Considerable effort has also gone into analyzing the many existing Federal and State laws and local ordinances under which marine businesses must operate.

Studies on beach and dune stabilization techniques, erosion and deposition processes, and beach nourishment have led to new methods for reducing damage due to shoreline erosion. A study of the effects of the insecticide Mirex upon Appalachicola Bay was expanded into an extensive investigation of the Bay environment, and led to a $4 million purchase of wetlands by the State of Florida to insure protection of the Bay's resources. In Wisconsin, scientists have been measuring the occurrences and impact of PCB's (polychlorinated biphenyls) on the Great Lakes. They have found that fish can contain up to 1,000,000 times the PCB concentration of surrounding waters, and that diets containing PCB's induce serious skin conditions, and in some cases death, in monkeys. Such studies have served to define the serious nature of environmental problems essentially unrecognized only a few years ago.

In all four of these areas, Sea Grant's role has often been to supplement and enhance existing programs, or to call attention to the need for new ones, rather than to undertake an isolated major effort entirely on its own.

Part III. Findings and Recommendations

NACOA's Approach and Overall Assessment

In conducting this review, NACOA did not undertake a quantitative or rigorously analytical assessment of the economic and social "worth" of Sea Grant. Indeed, the Committee felt that in many ways such an assessment, even if feasible, would not be appropriate or meaningful. While some Sea Grant projects appear to lend themselves to quantitative assessment, many, especially among the education and advisory service activities, do not. Even in the many instances where Sea Grant support was followed by establishment of new businesses or new product lines whose profitability, employment level, and tax inputs to the Federal treasury can be quantified over a period of time, separating out the Sea Grant contribution from other contributing factors would be very difficult. It would be still more difficult to determine whether the same funds could have been more beneficially used in other ways.

Instead, the Committee's approach was to visit institutions and to consult with individuals in education and industry, in government and labor, in and out of Sea Grant, and thus to acquire a broad familiarity with the content of the program and with the views, criticisms, and assessments of those who fund it, those who are actual or potential users of it, and those who have no active part in it. The Committee then applied its own collective experience and expertise to form qualitative judgments upon which the findings and recommendations presented here are based. This approach led us to conclude that Sea Grant, though relatively small in size and budget, has exerted a large, beneficial influence on the Nation's marine resource development effort, and has the potential for a greater influence in the future. This stems largely from a number of special, and even some unique, features.

The majority of Federal agencies and programs have missions directed toward specific resources or single purposes such as fisheries, offshore oil and gas, or coastal zone management. In contrast, Sea Grant is organized to call upon experts in many fields in universities and research institutions, and to some extent in industry, and to apply this multidisciplinary expertise to a variety of problems which may not be receiving adequate attention, in a way not generally possible for the traditional Federal agencies involved in resource development and management.

Research projects of low cost, aimed at prompt and practical results, are a characteristic feature of Sea Grant. Working with local (and usually small) businesses, and State and local regulatory agencies, Sea Grant can help expedite the transformation of research and engineering results to practical and economic use. Short term, early, and practical payoff responsive to such needs is a primary contribution of Sea Grant to the overall national marine research and development program.

Sea Grant advisory services, like agricultural extension services, have come to play an important and expanding role in translating marine research and technology into language understandable to the public and the business community.

Expanded national responsibility in the coastal and marine areas during recent years has led to an increased need for trained workers in marine industries, skilled managers and regulators at local, regional, and national levels, and marine educators. Again Sea Grant has been in a unique position to identify, encourage, and support the development of programs of education and training to meet these needs.

Sea Grant is not simply another research program. In intertwining education, research, and advisory services, it is in effect a service program, identifying needs, selecting appropriate modes of response, conducting research and training, and drawing on its own results and those of other programs to provide users with the knowledge and the skilled personnel they need. It is not simply a science program; it encompasses the disciplines of business, law, economics, government, and management, and draws on experts in all these fields to meet the needs of marine agencies.

Sea Grant is a matching fund program. The States and other sponsors who contribute at least one-third (and in some cases more than one-half) of the funds are important participants, and have an influence on the nature of the programs undertaken at the participating institutions. This helps to ensure that institutional programs are responsive to clearly identified problems and opportunities of direct concern to an industrial, commercial, or governmental entity which is willing to share in the costs and effort needed to arrive at a practicable solution. Sea Grant thus encourages local initiative in addressing problems which, while their specific manifestations

may be local or regional in character, are collectively of importance to the Nation as a whole.

Finally, in addition to providing the various levels of government and industry with a means of drawing on universities and other non-Federal institutions, Sea Grant has served as a vehicle by which such institutions can effectively provide public service functions which are within their capabilities but for which the usual organization of a university is not well suited. Many administrators in universities and other institutions have recognized this, and have welcomed the opportunity to participate in Sea Grant, even though the administrative burden of doing so is sometimes great.

Looking toward the future, we see that with the growth of a nationwide effort in coastal zone management, and with the assertion of jurisdiction over the resources within a 200-mile economic resources zone off our shores, the United States has assumed new responsibility for management of extensive fishery and mineral resources. To carry out this obligation, we will need to increase our knowledge of these resources, and to exert greater effort directed toward their assessment, management, utilization, and protection. New techniques and new skilled personnel will be required.

The specific problems and needs of marine resource development differ from region to region. Moreover, much private marine industry is in the form of small businesses such as individual fishing boats, fishing fleets, seafood processors, boatyards, marinas, etc., and much of the marine regulatory responsibility is a State function. This makes it natural for a major portion of the effort in fostering new investment, developing new markets, stimulating new industry, and assisting governmental and regulatory activities, to be carried on at the regional, State and local level. Sea Grant has been responsive to this situation, uniquely so, and we foresee the need and the program's influence increasing. In addition, we found that there are broader national and even international needs which could benefit from the expertise which Sea Grant is able to mobilize, and we believe a means should be provided by which the Sea Grant resource could be drawn upon for purposes deemed of high priority at the Federal level.

In the course of our review, we encountered some differences of opinion among those who are involved with Sea Grant, both at the Federal level and in the participating institutions, as to just what Sea Grant's role and purpose should be. The National Sea Grant College and Program Act of 1966 is so broadly worded that one can find in it justification for nearly anything that might be considered desirable for Sea Grant to do. Some clarification of Sea Grant's role would be helpful in eliminating many of the misunderstandings that now exist.

We also found several ways in which the management of Sea Grant could be improved, and in which the program's responsiveness to high priority national needs could be increased.

In addition, we found that virtually level funding for the past 4 years has made it difficult for Sea Grant to continue to be effective in providing the services for which it has already demonstrated competence and value. Continued inflation during this period has meant an actual shrinkage in program effort, at a time when marine resources have been taking on increasing importance, and when Sea Grant's institutional programs, which do not yet serve every coastal State, are still evolving.

Our recommendations address the three areas of *policy, management,* and *funding.*

Our recommendations on *policy* are addressed primarily to the Administrator of NOAA, and concern clarification of the goals and role of Sea Grant, the setting of priorities, the role of the Sea Grant Advisory Panel, and coordination with other Federal activities.

Our recommendations on *management* are addressed primarily to the Director of the Office of Sea Grant, and concern relations between that Office and the participating institutions, the proposal review process, and other aspects of operating the program.

Our recommendations on *funding* are addressed in part to the Office of Sea Grant, to NOAA, and to the Department of Commerce, but more importantly, to the Office of Management and Budget and to the Oversight and Appropriations Committees in the Congress, and concern the provision of adequate funds to permit the Sea Grant Program to fulfill its mission.

Recommendations Concerning Policy

- *The Administrator of NOAA should take steps to clarify the goals and role of Sea Grant in relation to NOAA's overall mission and its other programs, and in the broader context of the overall national effort in marine resource development, utilization, and protection.*

Such clarification should be directed toward participants in Sea Grant, toward the Office of Management and Budget, and toward the Congress. Among the points to be clarified are:

—The goals, priorities, and specific nature of Sea Grant's contribution to the Nation's marine effort.

—Sea Grant's capabilities and role in meeting local, regional, national and international needs.

—The relationship of Sea Grant to other related programs within NOAA, especially the National Marine Fisheries Service and the Office of Coastal Zone Management.

—The relationship of Sea Grant to programs in other Federal agencies.

Clarification of these matters will show the position of the agency responsible for the Sea Grant program, and will ensure that when the program is discussed, evaluated, or criticized, this is done in light of what its parent agency sees its role as being.

We have, in this report, identified what we believe are the essential characteristics which determine the role Sea Grant can and should play in the Nation's marine resource effort.[9] What remains to be done is to relate these to specific goals and objectives, and to the specific missions and programs of other Federal activities, both within and outside of NOAA. It is important that Sea Grant not be looked at in isolation, but in conjunction with other Federal programs. It is important that Sea Grant be judged not as an activity in its own right, but as a means by which the Federal Government may draw on universities and other research institutions to accomplish national purposes.

- *The Administrator of NOAA and the Director of the Office of Sea Grant should make greater use of the Sea Grant Advisory Panel for advice on broad policy issues. The Panel should include specialists in a broader range of fields than at present, and there should be a regular turnover in Panel membership.*

Among such issues we include definition of the program's overall goals and capabilities, the extent to which it should and does address national, regional and local needs, etc., and provision of such guidance should be the Panel's prime responsibility. The Panel's mode of operation should be changed to better enable it to fulfill this function, by including among its members experts in such fields as advisory services, communications and publications, and education at all levels, and by providing for more systematic and frequent turnover of Panel membership.

It is particularly important that the Sea Grant Advisory Panel not become so involved in management of the program that it becomes unable to view the program with a suitably critical eye, as it must if it is to give the Administrator of NOAA and the Director of the Office of Sea Grant the broad unbiased guidance we believe they need. This does not imply that Panel members should not participate in site visits to the institutions. These are useful activities which benefit the Panel members, who acquire a familiarity with and understanding of the institutional programs, and also the institutions, which benefit from the Panel member's perceptions of their activities. What we are suggesting is a shift in the Panel's primary responsibility. During the early years of Sea Grant, the Panel played a needed role in developing guidelines and reviewing institutional programs.

[9] See especially the discussion on pp. 23-25.

Now much of this responsibility should be assumed by the program managers in the Office of Sea Grant, and the Panel should turn its attention to longer term and broader issues. In addition, it would be helpful for the Panel to receive regular infusions of "new blood" with new points of view. We suggest the possibility of Panel members serving for terms of 3 or 4 years, with the option of reappointment.

- *The Administrator of NOAA should take further steps to develop and implement appropriate procedures for coordination between Sea Grant and other related activities within NOAA and in other agencies.*

Numerous other Federal activities touch on Sea Grant in one way or another. Among these are the National Marine Fisheries Service, the Office of Coastal Zone Management, and the Environmental Research Laboratories within NOAA, the Bureau of Land Management and the Geological Survey in the Department of the Interior, the International Decade of Ocean Exploration and the Oceanography Research Section within the National Science Foundation, the ocean science program of the Navy, activities related to the marine environment carried out by the Army Corps of Engineers and the Environmental Protection Agency, and others.

While effective cooperation between Sea Grant and other programs often takes place at the working level, it is unsystematic and occasionally erratic. The development of appropriate procedures for coordination with NMFS and OCZM has progressed too slowly. Formal coordination mechanisms are not needed in all cases, but it is important that the Administrator of NOAA assure himself that procedures are available, and are used, wherever coordination is called for. Some steps toward better coordination have already been taken. Efforts toward further progress should continue.

Recommendations Concerning Management

- *The Office of Sea Grant should clarify its guidelines to better assist participating institutions in establishing priorities.*

We encountered concern about the guidance given to participating institutions by the Office of Sea Grant to assist them in establishing priorities and in determining what is, and what is not, suitable for Sea Grant support. Several institutions feel they have received "changing signals" from one year to the next, or from one year's site visit team to another. They report that they have expended considerable effort to develop the sort of proposal they were told was wanted, only to be criticized later for misplaced priorities.

A certain amount of misunderstanding about priorities and purpose may simply reflect the different viewpoints of the Office of Sea Grant,

the participating institutions, and those who participate in site visits. Another contributing factor may be the existence of different viewpoints at the Federal level as to just what Sea Grant's goals and role should be, and we recommended above that the Administrator of NOAA take steps to clarify this issue. Still another factor may be the leveling off of funds in recent years. Nevertheless, the Office of Sea Grant should make every effort to achieve straightforward and clear communications between the program managers in the national office and those in the participating institutions.

- *The Office of Sea Grant should continue its efforts to expedite the proposal review process, which is time consuming and administratively burdensome.*

The Sea Grant proposal review procedure is time consuming and places a heavy administrative burden on the participating institutions. Initial submission of proposals to the institution's Sea Grant Director takes place about a year before the proposed grant date. Proposals are reviewed, within the university and by advisory bodies, in terms of their appropriateness for Sea Grant and in terms of their technical quality. Matching funds must be sought. The entire institutional proposal is submitted to the Office of Sea Grant where it is sent out for mail peer review, then examined by a site visit team, discussed by the Sea Grant Advisory Panel, and subjected to negotiations between the Office and the institution, before the grant is finally made.

To a certain extent this lengthy process has arisen from the basic nature of Sea Grant. An institution's program encompasses not only a wide range of academic disciplines, scientific and nonscientific, but also the nonresearch areas represented by education, training, and advisory service activities. Because of the difficulty of judging complex multidisciplinary projects, the various stages of review which now take place may well be essential if the program is to maintain its high quality. However, the time-consuming review process should not hamper the institution's ability to respond quickly to newly identified needs. The present flexibility provided to the institution's Sea Grant Director in the form of a discretionary fund which may be used for addressing short term problems and developing new projects, subject to guidelines and review by the Office of Sea Grant, provides a partial remedy.

There are a number of ways in which it may be possible to ease the administrative burden and the time required for the review process. One way is to operate in a 2-year cycle. This can be done by subjecting an institutional program to complete review once every 2 years, and looking only at proposals for new projects in the intervening year, or by reviewing half the proposal one year and half the next.

Quite apart from the work and time required for the review process, we are concerned that reviews are not always carried out in the most effective way. The initial screening is carried out within the university, yet, especially at a small university, it may not be possible to find qualified peer reviewers for some of the more unusual projects. As a result, a proposed project may survive a considerable portion of the review process before anyone notices that it fails to take into account recent and ongoing related work which is not yet widely known. When a proposal reaches the Office of Sea Grant, it is sent out for mail review, yet often these reviews are not received before the site visit, with the result that this expert judgment is not available to the site visit team (although these reviews are considered by the program managers in the Office of Sea Grant, who make the final funding decisions). The site visit team, typically consisting of 10 or 12 individuals, cannot possibly be competent in all of the disciplines and fields represented in the proposal; as a consequence project leaders in certain scientific areas, or in advisory services, or in education, may feel that their projects have not been properly judged by qualified experts. And indeed, advisory services, education at other than the university level, and small industries which are potential users of Sea Grant products, as well as certain academic disciplines, appear to be insufficiently represented on site visit teams and on the Sea Grant Advisory Panel. We recognize that a site visit team large enough to encompass all relevant fields of expertise would be too large to accomplish its purpose. Nevertheless, the present situation could be improved.

In addition, the procedure adopted for review of all Sea Grant proposals is essentially that which the scientific community is accustomed to in reviewing proposals for research. Thus, all proposals are sent out for mail peer review, are discussed before a site visit team, etc., and even in advisory service and educational projects, the project leader is described as a "principal investigator," rather than "principal educator" or "project leader." These are matters of form and are probably not too serious, except insofar as they contribute to the view in some quarters that Sea Grant is "just another research program," a view which we believe does Sea Grant a disservice. If Sea Grant is indeed a tripartite program of research, education, and advisory services, the proposal review process should be designed to evaluate each of these aspects in the manner best suited to its particular nature and purpose.

It might be possible, especially once an institution has developed a program of considerable breadth, for its research, education and advisory components to be evaluated separately by appropriate specialists, in addition to a comprehensive review that looks specifically into how well these components are coordinated with each other and integrated with identified needs.

Expediting and improving the proposal review process is not a simple task. The Office of Sea Grant is aware of the problem, and has been trying to resolve it. We urge continued efforts in this direction.

- *In considering proposals for research intended to lead to commercial application, economic feasibility and expected benefits should be taken into account from the start, along with technical feasibility.*

Those Sea Grant research projects which are undertaken with commercial applications in mind should be subjected to economic as well as technical assessment. If there is no reason to hope such a research project will lead to an economically useful application, Sea Grant should not support it. We recommend, therefore, that judgments about Sea Grant research proposals of this nature be closely linked to assessments of expected economic impact.

Many nonscientific factors must be considered in assessing whether research is likely to lead to practical application. Engineering feasibility on a commercial scale is one. Cost is another. An operation may be scientifically and technically manageable, but may simply cost too much to survive in the open market. Economic success depends on a number of factors, including capital costs, operating costs, and costs of processing, storage, transportation, packaging, and distribution. It is important, once some indications are available of the *technical* feasibility of an operation, to assess its *economic* feasibility as well, and the Office of Sea Grant should devise a specific procedure to ensure that such assessments are made, are continually updated, and are incorporated into decisions concerning project continuation. A project undertaken in the hope of developing an economically viable commercial process should be dropped just as quickly for economic infeasibility as it would be for technical infeasibility.

- *While Sea Grant is not the appropriate program to take on major engineering tasks, the Office of Sea Grant should ensure that adequate engineering is incorporated into Sea Grant research projects as appropriate, and participating institutions should do more to foster the introduction of marine-oriented projects into undergraduate and graduate engineering courses.*

Ocean engineering was one of the subjects which the founders of Sea Grant hoped would be a prime element of the program. Ocean engineering can mean many things. Fundamentally, it is simply engineering carried on in the ocean environment. The engineering principles are the the same as in engineering on land. But engineering techniques which work well on land cannot simply be transferred into the ocean. The oceans affect materials used in engineering in a way that most engineers are unfamiliar with. Structures in the ocean are subject to forces which are strange to the land engineer. The conduct of engineering activities in the ocean on a large scale is relatively new, and there is not an established

body of standards and procedures. Consequently, the engineer working in the ocean faces a different set of working conditions than he is accustomed to. It is not the engineering that is different, it is the environment. But to develop a pool of engineers and techniques capable of dealing with this environment is not a simple matter. It requires considerable research in engineering methods, studies leading to the establishment of standards, and acquisition of specialized information about the environment.

NACOA addressed this issue in a report to the Secretary of Commerce published in 1974.[10] In that report, we indicated that to put ocean engineering on the footing that is needed is a major proposition, and we estimated that the steps we felt should be taken might cost in the neighborhood of $25 million per year. Such an effort is clearly beyond the capabilities of Sea Grant at its present funding level. Moreover, much of the effort called for is not the sort of work best done by universities. What then is the appropriate role for Sea Grant in ocean engineering?

Engineering is, above all else, the art of producing the technological means for getting things done. Many Sea Grant projects must incorporate some degree of engineering if they are to work. An aquaculture project may require deterioration-resistant devices for suspending strings of shellfish in water for lengthy periods of time. Shoreline stabilization projects may require measurements of stresses and strains within embankments or new structures. Research in fishing technology may involve studies of the durability of nets made from different materials, and of their resistance to tearing when encountering snags on the bottom. Biologists, marine ecologists, and fisheries experts often do not have sufficient appreciation of engineering knowledge and engineering methods to take these things into account in an appropriate way. Engineering realities should be incorporated into Sea Grant projects from the start, more so than is being done now. In addition, Sea Grant institutions should take on engineering research tasks within their capabilities which are needed for specific industrial or governmental applications. Although there may be exceptions, generally we expect these will be small projects that can be tackled by one or two investigators on a small budget. Sea Grant should also do more to foster the introduction of marine-oriented projects into undergraduate and graduate engineering courses. By doing all of these things, Sea Grant will gradually develop a pool of engineers accustomed to working on marine projects.

- *Periodically, perhaps once every 2 years or so, NOAA should issue a detailed report describing Sea Grant and assessing its contribution to national goals in marine resource development.*

[10] "Engineering in the Ocean," a report to the Secretary of Commerce by the National Advisory Committee on Oceans and Atmosphere, November 1974.

In conducting our review, we found to our surprise a dearth of official documents, published by NOAA, describing the goals, plans, program content, accomplishments, and effectiveness of the National Sea Grant Program.[11] We think such reports, issued periodically, would be helpful—to Sea Grant institutions, to the Congress, and to OMB. We are reluctant to suggest a rigid requirement for an annual report, but periodic issuance of a report of this sort would be welcomed and useful.

Recommendations Concerning Funding

- *Sea Grant's Federal funding, which is presently inadequate for the task assigned to the program, should be increased to a minimum of $40 million per year within the next few years. This should be in addition to increases necessary to keep pace with inflation and to undertake special projects initiated at the Federal level.*

During its first 4 years, the Federal appropriation for Sea Grant grew from $5.0 million in FY 1968 to $17.7 million in FY 1972, at an average rate of increase of about 38% per year. Over the next 4 years, the appropriation increased from $17.7 million to $23.1 million, at an average increase of 8% per year.[12]

The Federal funding history of Sea Grant is shown in Table 2. Although too much should not be read into such a simplified rendition of the budget "negotiation" and approval process, omitting as it does the many discussions that take place before action at each stage, it appears that when Sea Grant was in NSF (FY 1967 through FY 1971), the Foundation tended, after the first 2 years, to reduce the program's budget request by 30–40% before passing it on to OMB: OMB passed these requests on unchanged, and the Congress appropriated what OMB requested (except in FY 1970 when the appropriation greatly exceeded the request). Since

[11] A NOAA publication entitled "The National Sea Grant Program—Program Description and Suggestions for Preparing Proposals" was issued in May 1972. This is a 44-page document, of which the first 13 pages describe the structure of the program (with no mention of what it has accomplished) while the remaining 31 pages are devoted to instructions for preparing proposals. The Sea Grant Office has prepared several reports describing various aspects of the program, but none of these have been given any official status. In addition, very brief accounts of Sea Grant have appeared in some of the annual reports which the President submits to the Congress as mandated by the Marine Resources and Engineering Development Act of 1966. During the period 1967–1971 these reports were prepared by the National Council on Marine Resources and Engineering Development under the title "Marine Science Affairs." Since 1971 they have been prepared by the Interagency Committee on Marine Science and Engineering under the title "The Federal Ocean Program."

[12] The increase in total funding (i.e., Federal plus matching) very closely paralleled the increase in Federal funding.

Table 2. Federal funding history of Sea Grant, indicating various stages of the budget process. Amounts are in millions of dollars.

Fiscal Year	Authorization	Request to NSF/DOC*	Request to OMB	Request to Congress	Congressional Appropriation	Total Federal Obligations**	Matching Funds Reported	Total Funding (Federal plus Matching)
1967	5.0	. . .	1.0	1.0	. . .	. . .	. . .	. . .
1968	15.0	5.0	5.0	5.0	5.0	5.0	3.1	8.1
1969	6.0	9.0	6.0	6.0	6.0	6.0	3.7	9.7
1970	15.0	10.0	6.0	6.0	10.0	9.0	5.1	14.1
1971	20.0	18.0	13.5	13.5	13.5	13.5	8.5	22.0
1972	25.0	28.1	22.0	15.2	17.7	17.7	9.7	27.4
1973	30.0	30.0	30.0	21.2	21.2	20.0	12.0	32.0
1974	30.0	30.0	28.3	19.8	19.8	20.0	12.9	32.9
1975	40.0	24.9	24.3	24.3	24.3	22.9	14.9	37.8
1976	50.0	31.5	25.7	21.1	23.1	24.6	15.3	39.9

* FY 1967–1971: Sea Grant in National Science Foundation at the time of budget approval.
FY 1972–1976: Sea Grant in Department of Commerce (NOAA).

** Obligations may differ from appropriations as a result of deferral by the President, impoundment by OMB, agency reprogramming, and transfer of funds to Sea Grant from other agencies.

Sea Grant has been in NOAA (from FY 1972 onward), the Department of Commerce has approved NOAA's budget requests for Sea Grant once and imposed cuts of up to 20% the remainder of the time; OMB has typically imposed cuts of 20% to 30%, except for one year when it passed on the Department request unchanged, and Congress has typically appropriated an amount equal to or slightly greater than what OMB has requested.

A comparison with budget trends in other ocean programs over this period suggests that Sea Grant was treated by the Executive Branch like other research grant programs, rather than as a service program making direct and beneficial contributions to the Nation's overall marine resource development effort. We believe this funding policy, whether de facto or explicit, was inappropriate.

Another view we encountered which has led to adverse evaluation of Sea Grant in some quarters stems from the belief held by some that Sea Grant has the potential for solving all of the Nation's marine resource problems. It is easy to see how the broad language of the Sea Grant Act, the enthusiasm of many Sea Grant participants and managers, and the diverse content of the program may have given rise to this. However, it has led to a situation in which Sea Grant is often perceived as promising to be all things to all people, a promise which cannot be fulfilled, and which can only lead to disappointment on the part of many that Sea Grant has not done what they expected of it. NACOA, on the other hand, takes a more modest view of Sea Grant and the part it should play in the national effort toward marine resource development, utilization, and protection.

We believe that the program which Sea Grant has developed thus far has been useful and shows significant promise of continuing to be so in the future. While it is not essential that the program resume the rapid growth of its first few years, those institutional programs that have been fully developed should be maintained, and those that are still in the process of development should be enabled to build their programs to a point which reflects their capabilities to meet demonstrated needs. We recognize the validity of the forces pushing for a tight budget, but we believe it is shortsighted, in this time of great pressure for marine resource development, to cut short a program which has demonstrated a marked potential for contributing substantially to this goal.

In seeking funds, it would be helpful if NOAA were to identify the overall Federal effort in marine resource development, and within this framework, indicate its own goals and objectives for addressing portions of this effort, and the way in which Sea Grant can serve as a means for achieving progress toward these goals. Sea Grant should at all times be

thought of as a vehicle by which these ends can be achieved, not as an end in itself.

The Office of Sea Grant has viewed one of its major functions as fostering the growth of a network of institutional programs to meet identified marine resource needs. It does not see the network as being complete. Therefore, it has viewed the nearly level funding over the past 4 years (during a time of high inflation) with some concern.

We believe that the Office of Sea Grant, in making its plans for the future, should concentrate on identifying the most important unmet needs around the Nation, including the need for additional Sea Grant institutions, and on developing whatever programs seem most appropriate for meeting these needs. In the early days of Sea Grant, establishing an institutional network took top priority because without such a network the program could not begin to play its intended role. The time has now come to give less priority to institutional structure, and more to meeting specific needs.

We also caution against assuming that as time goes on, appropriations will necessarily more closely approach authorizations. This is not to suggest that Sea Grant ought not to request those funds for which it can demonstrate a convincing need. But faced with the realities of different opinions in the Legislative and Executive Branches considering the need for, and the importance of, the program, Sea Grant's budget requests should be based on demonstrated needs and potential, and not simply geared to the authorized funding levels.

Having said all this, we offer our conviction that the program should be funded sufficiently to permit the institutions already participating to develop their programs to a point which reflects their capabilities for meeting demonstrated local needs for which matching funds are available. The needs are there; the capabilities are there. We estimate that this will require an increase in Federal appropriations from the present $23 million to a minimum of about $40 million over the next few years. This should be apart from the increases needed to keep pace with inflation, and from additional funds for special projects initiated at the Federal level. We believe that Sea Grant can and should make an excellent case for seeking such funds, but that this case must rest on specific and important needs which Sea Grant can meet, and not on the general principle of enabling the program to grow.

- *The Sea Grant Act should be amended to permit other agencies to transfer funds to Sea Grant to support activities which they require and which the Sea Grant system is suited to provide, or to provide a separate appropriation for the purpose of supporting activities initiated at the Federal level, in response to national and international needs. Such funding should be provided free of the matching requirement.*

We do not believe it is practical or appropriate to ask Sea Grant, as a matching fund program, to take on national projects which do not offer promise of immediate benefits to those who provide the match. Additionally, we do not believe it would be in the national interest for Sea Grant's responsiveness to locally and regionally identified needs to be diminished by diverting existing funds to such federally identified purposes. We therefore suggest, where national and international programs are to be undertaken in response to Federal initiatives, that specially earmarked funds be provided free of the matching requirement, either in the form of a separate authorization for this purpose, or in the form of a provision permitting other Federal agencies to transfer funds to Sea Grant for activities to meet their needs, free of matching.

Whichever way it is accomplished, such unmatched funds should not be allowed to dominate the basic nature of Sea Grant. We recommend that additional appropriations for these purposes be limited to a small fraction of the total Sea Grant budget,[10] and that acceptance of funds transferred from other Federal agencies be subject to the discretion of the Secretary of Commerce.

- *The Sea Grant Act should be amended to permit Federal funds to be used to pay for a limited amount of ship time.*

The absolute prohibition against this use of Federal funds has been a handicap. However, to avoid overwhelming the small Sea Grant budget for purposes of ship support, we urge that such payments not be automatic, but be allowed in special circumstances at the discretion of the Administrator of NOAA.

Concluding Remarks

Our inquiry has led us to conclude that Sea Grant plays a unique and valuable role in the Federal effort directed toward marine resource development, characterized by its ability to draw on the talent and expertise in a wide variety of fields found primarily in the Nation's universities and research institutions, and by its ability to direct this talent toward the solution of practical problems faced by industry and government in their efforts to develop and regulate the use of marine resources. Other programs address problems recognized at the Federal level; Sea Grant addresses primarily problems identified at local and regional levels which, while they may be small individually, have a pronounced collective influ-

[10] The 1973 amendments to the Sea Grant Act gave the Office of Sea Grant the authority to spend 1% of its budget in this manner. This is not sufficient. Unmatched funding for national programs should, however, not exceed an amount somewhere between 10% and 30% of the overall Sea Grant budget.

ence on the extent to which the Nation benefits economically from its marine resources.

Sea Grant's threefold program, consisting of education, research, and advisory services, the wide geographic distribution of participating institutions, and its matching fund aspect, combine to give it a service orientation responsive to diverse needs and opportunities of immediate practical importance to government and industry.

In its first decade, Sea Grant has demonstrated its potential for contributing significantly to our Nation's marine resource effort. There have been problems, and we have suggested steps which should be taken to alleviate these. There is no doubt in our minds that incorporating our universities and research institutions into this effort is an important, and even an essential step, if we are to achieve our goals. We believe Sea Grant is an appropriate way to do this, and we look forward to its greater successes in the future.

Appendix 1.

CHRONOLOGY OF THE NACOA PANEL'S ACTIVITIES

July 15, 1975	Meeting of the full Panel
September 5, 1975	Meeting of the full Panel together with the Council of Sea Grant Directors
September 16–17, 1975	Meeting of the full Panel (including discussion with Athelstan Spilhaus)
September 29–October 1, 1975	Participation by NACOA staff in University of North Carolina Sea Grant site visit
October 8–10, 1975	Participation by NACOA staff in University of Washington Sea Grant site visit
October 14–16, 1975	Participation by NACOA staff in University of Maine and University of New Hampshire Sea Grant site visit
October 20, 1975	Meeting of the full Panel with staff of the Office of Sea Grant
October 22, 1975	Meeting of the full Panel together with the Sea Grant Advisory Panel
October 24–25, 1975	Visit by NACOA staff to Sea Grant Communicators Workshop
October 27, 1975	Visit by NACOA staff to Sea Grant program at Dauphin Island Sea Laboratory, Alabama
October 27–30, 1975	Representatives of NACOA Panel and staff attended the annual meeting of the Sea Grant Association
November 19–20, 1975	Visit by members of Panel and staff to Sea Grant programs at the University of California and the University of Southern California
November 24, 1975	Visit by members of Panel and staff to Sea Grant program at the University of Wisconsin

December 2–4, 1975	Visit by NACOA staff to the Sea Grant program at Texas A&M University
December 5, 1975	Visit by members of Panel and staff to Sea Grant program at the University of Rhode Island
December 16–17, 1975	Meeting of the full Panel (including discussion with representatives of the Office of Management and Budget, NOAA, Texas A&M University, the Executive Committee of the Sea Grant Association and Office of Sea Grant staff)
December 18, 1975	Meeting of the full Panel with staff of the Senate National Ocean Policy Study
January 12, 1976	Meeting of the full Panel
February 23, 1976	Panel Chairman Ackermann presented progress report to NACOA at its February meeting
March 3, 1976	NACOA Chairman Hargis and Panel Chairman Ackermann presented testimony at House hearings on Sea Grant
March 3, 1976	Discussion by members of Panel and staff with representatives of the Office of Management and Budget
April 13, 1976	Meeting of the full Panel
June 17, 1976	NACOA Chairman Hargis and Panel Chairman Ackermann presented testimony at House hearings on Sea Grant
July 21, 1976	Draft report distributed to Panel
August 27, 1976	Revised draft report distributed to all NACOA members
September 14, 1976	Draft report discussed, revised, and approved by NACOA

Appendix 2.
LEGISLATIVE HISTORY OF SEA GRANT

A concise summary of legislative and executive actions affecting the statutory basis of the Sea Grant Program is presented in Table 3. These actions are discussed briefly in this Appendix.

The Marine Resources and Engineering Development Act

The Sea Grant College and Program Act of 1966 (P.L. 89–688) is a relatively brief, rather broadly drawn law. It is itself an amendment constituting Title II of the Marine Resources and Engineering Development Act of 1966 (P.L. 89–454), passed only a few months earlier, which enunciated a new national policy "to develop, encourage, and maintain a coordinated, comprehensive, and long-range national program in marine science for the benefit of mankind to assist in protection of health and property, enhancement of commerce, transportation, and national security, rehabilitation of our commercial fisheries, and increased utilization of these and other resources." That Act identified eight specific objectives: accelerated development of marine resources; expansion of knowledge of the marine environment; encouragement of private investment enterprise; preservation of the U.S. role as a leader in marine science and resource development; advancement of marine education and training; development and improvement of equipment for use in marine resource exploration and recovery; effective utilization of all of the Nation's science and engineering resources; and international cooperation.

The Act gave responsibility for pursuit of these objectives to the President, established a temporary National Council on Marine Resources and Engineering Development chaired by the Vice President (often called the Marine Sciences Council) to provide him with advice and assistance, and created a special Commission on Marine Science, Engineering and Resources (which became known as the Stratton Commission after its chairman, Julius A. Stratton), to recommend an overall plan for a national ocean program. The Commission was to present its report within 18 months and then disband; the Council was to expire 4 months after submission of the Commission report. As it transpired, the Commission

Table 3. Congressional and Presidential Actions Affecting the Statutory Basis of Sea Grant

DATE	ACTION	KEY PROVISIONS	REFERENCES
June 17, 1966	P.L. 89–454, "Marine Resources and Engineering Development Act of 1966."	(i) Stated national policy on marine science. (ii) Fixed responsibility with the President for developing and implementing a marine science program. (iii) Established temporary National Council on Marine Resources and Engineering Development (Marine Sciences Council) to advise and assist the President. (iv) Established temporary Commission on Marine Science, Engineering and Resources (Stratton Commission) to make recommendations concerning a national marine science program.	BILL: S. 944 HOUSE REPORTS: No. 1025 (Comm. on Merchant Marine & Fisheries). No. 1538 (Comm. of Conference). SENATE REPORT: No. 528 (Comm. on Commerce). CONGRESSIONAL RECORD: Vol. 111 (1965): Aug. 5: S. 944 passed Senate, Sep. 20: S. 944 passed House, amended. Vol. 112 (1966): May 25: House agreed to conference report. June 2: Senate agreed to conference report.
October 15, 1966	P.L. 89–688, "National Sea Grant College and Program Act of 1966."	(i) Directed NSF to administer a program of education, research, and advisory services necessary for marine resource development, through matching grants to universities and other suitable institutions. (ii) Authorized $5 million for FY 1969, $15 million for FY 1968.	BILLS: H.R. 16559, S. 2439 HOUSE REPORTS: No. 1795 (Comm. on Merchant Marine & Fisheries). No. 2156 (Comm. of Conference). SENATE REPORT: No. 1307 accompanying S. 2439 (Comm. on Labor & Public Welfare). CONGRESSIONAL RECORD: Vol. 112 (1966): Sep. 13: H.R. 16559 passed House. Sep. 14: H.R. 16559 passed Senate, amended, in lieu of S. 2439. Sep. 30: Senate agreed to conference report Oct. 4: House agreed to conference report.

August 11, 1968	P.L. 90–477	Reauthorized Sea Grant Program at $6 million for FY 1969, $15 million for FY 1970.	BILL: H.R. 13781 HOUSE REPORTS: No. 1221 (Comm. on Merchant Marine & Fisheries). No. 1837 (Comm. of Conference). SENATE REPORTS: No. 1381 (Comm. on Commerce). No. 1439 (Comm. on Labor & Public Welfare). CONGRESSIONAL RECORD: Vol. 114 (1968): Apr. 1: H.R. 13781 passed House. July 20: H.R. 13781 passed Senate, amended. Aug. 1: Senate adopted conference report. Aug. 2: House adopted conference report.
July 23, 1970	P.L. 91–349	Reauthorized Sea Grant Program at $20 million for FY 1971, $25 million for FY 1972, and $30 million for FY 1973.	BILLS: H.R. 11766, S. 2293 HOUSE REPORT: No. 91–1191 (Comm. on Merchant Marine & Fisheries). SENATE REPORT: No. 91–1007 accompanying S. 2293 (Comm. on Commerce). CONGRESSIONAL RECORD: Vol. 116 (1970): July 6: H.R. 11766 passed House. July 10: H.R. 11766 passed Senate, amended, in lieu of S. 2293. July 15: House concurred in Senate amendment.
October 3, 1970	Presidential Reorganization Plan No. 4 of 1970.	Created NOAA; transferred Sea Grant from NSF to NOAA.	CONGRESSIONAL RECORD: Vol. 116 (1970): July 9: Transmitted to the House and the Senate.

Table 3. Congressional and Presidential Actions Affecting the Statutory Basis of Sea Grant—Continued

DATE	ACTION	KEY PROVISIONS	REFERENCES
July 10, 1973	P.L. 93–73	(i) Reauthorized Sea Grant Program at $30 million for FY 1974, $40 million for FY 1975, and $50 million for FY 1976. (ii) Authorized a $200,000 non-matching grant for a study of international marine technology transfer. (iii) Excluded buoys and other sensing platforms from the prohibition against using Federal funds to pay for vessels. (iv) Authorized expenditure of up to 1% of the Sea Grant budget free of matching. (v) Authorized Secretary of Commerce to designate Sea Grant Colleges. (vi) Made technical changes in the Sea Grant Act to reflect transfer of the program from NSF to NOAA and demise of the Marine Council.	BILL: H.R. 5452 HOUSE REPORT: No. 93–138 (Comm. on Merchant Marine & Fisheries). SENATE REPORT: No. 93–271 (Comm. on Labor & Public Welfare and Comm. on Commerce). CONGRESSIONAL RECORD: Vol. 119 (1973): May 8: H.R. 5452 passed House. June 28: H.R. 5452 passed Senate, amended. June 30: House concurred in Senate amendment.
October 8, 1976	P.L. 94–461, "Sea Grant Program Improvement Act of 1976."	(i) Rewrote Sea Grant Act in entirely new language. (ii) Reauthorized Sea Grant Program at $50 million for FY 1977. (iii) Provided separate authorizations, free of matching, for projects to meet national needs ($5 million) and international needs ($3 million) for FY 1977.	BILLS: H.R. 13035, S. 3165 HOUSE REPORTS: No. 94–1048 (Comm. on Merchant Marine & Fisheries). No. 94–1556 (Comm. of Conference) SENATE REPORT: No. 94–848 (Comm. on Labor & Public Welfare and Comm. on Commerce).

(iv) Provided for Sea Grant Regional Consortia as well as Sea Grant Colleges.
(v) Established a Sea Grant Fellowship program.
(vi) Established by statute a Sea Grant Review Panel.
(vii) Removed the prohibition against using Federal funds to pay for ship time.
(viii) Provided for an annual report to the Congress and the President, including independent evaluations by OMB and OSTP.

CONGRESSIONAL RECORD:
Vol. 122 (1976):
May 3: H.R. 13035 passed House.
June 14: H.R. 13035 passed Senate, amended in lieu of S. 3165.
Sep. 17: Senate adopted conference report.
Sep. 23: House adopted conference report.

delivered its report in January 1969, and the Council, after several extensions of its life, finally passed out of existence in April 1971.

The Sea Grant Act

It was in this climate that Sea Grant was created. Rhode Island's Senator Claiborne Pell had, in 1965, introduced in the Senate proposals for National Sea Grant Colleges and for "a program of education aimed at making maximum use of our Country's marine resources."[14] However, action on the Sea Grant legislation was not taken until 1966 when the Senate passed S. 2439, introduced by Senator Pell, which amended the National Science Foundation Act of 1950 to provide for Foundation support for "the establishment, development, and operation of sea grant programs of education, research, and advisory services which are directed toward progress in the various fields related to the development of marine resources," and the House passed H.R. 16559, introduced by Congressman Paul Rogers of Florida, which was similar in content but took the form of an amendment to the Marine Resources and Engineering Development Act of 1966. These two measures differed primarily in the nature of the institutions envisaged as participants, in the provision for an advisory body to guide the new program, and in the funds authorized. A compromise was reached by the Conference Committee following a middle course with respect to participating institutions, specifying that the Marine Sciences Council would provide advice and guidance to NSF and annual reports to the Congress with respect to Sea Grant, and authorizing $5 million for the program's first year and $15 million for its second year, leaving open the amount to be authorized in subsequent years. The conferees felt that "this legislation embodies a program of long-range promise and need, and . . . that it was desirable to indicate that funds would be made available beyond the 2-year period originally contemplated. . . ."[15]

As finally passed, the Sea Grant Act called upon the National Science Foundation to administer a program for the establishment and operation of Sea Grant Colleges and programs of education and research in the various fields related to the development of marine resources. Specifically, the Foundation was to:

(1) initiate and support programs at sea grant colleges and other suitable institutes; laboratories, and public or private agencies for

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[14] "The National Sea Grant College and Program Act of 1965." Senator Claiborne Pell. Proceedings of the National Conference: The Concept of a Sea Grant University. University of Rhode Island, Newport, October 28–29, 1965, pp. 13–17.

[15] House Report No. 2156, p. 7. (Citations refer to House and Senate reports listed in Table 3.)

the education of participants in the various fields relating to the development of marine resources;

(2) initiate and support necessary research programs in the various fields relating to the development of marine resources, with preference given to research aimed at practices, techniques, and design of equipment applicable to the development of marine resources; and

(3) encourage and develop programs consisting of instruction, practical demonstrations, publications, and otherwise, by sea grant colleges and other suitable institutes, laboratories, and public or private agencies through marine advisory programs with the object of imparting useful information to persons currently employed or interested in the various fields related to the development of marine resources, the scientific community, and the general public.

"Development of marine resources" was defined very broadly to encompass

"scientific endeavors relating to the marine environment, including, but not limited to, the fields 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."

A "sea grant college" was defined as

"any suitable public or private institution of higher education supported pursuant to the purpose of this title which has major programs devoted to increasing our Nation's utilization of the world's marine resources,"

and a "sea grant program" was defined as

"any activities of education or research related to the development of marine resources supported by the Foundation by contracts with or grants to institutions of higher education either initiating, or developing existing, programs in fields related to the purposes of this title; any activities of education or research related to the development of marine resources supported by the Foundation by contracts with or grants to suitable institutes, laboratories, and public or private agencies; and any programs of advisory services oriented toward imparting information in fields related to the development of marine resources supported by the Foundation by contracts with or grants to suitable

institutes, laboratories, and public or private agencies."

The Act limited Federal support for any participating institution to two-thirds of the total cost of its program, and specified that Federal funds could not be applied to the purchase or rental of land or the rental, purchase, construction or repair of buildings, docks, or vessels. The Act further called for maximum participation by Sea Grant Colleges and other suitable public and private institutions throughout the Nation, and charged the Foundation to support programs in such a manner as to supplement and not duplicate or overlap any existing and related government activities, and to consult with all other interested Federal departments and agencies, specifically including the U.S. Office of Education on all educational matters.

The Practical Emphasis of Sea Grant

The House, Senate, and Conference reports on the Sea Grant legislation emphasize the need for a program of practical impact. The Senate report, in setting forth the purpose of Sea Grant, notes that while "Much progress has been made in recent years toward a national program in . . . marine sciences . . . this progress has not been converted into practical application for the general welfare of the Nation."[16]

Education and training are described in terms such as "the intent to guide education toward practical application of marine knowledge," [17] and "the importance of this entire program lies in emphasis upon the training of technicians as much if not more than students in the baccalaureate or graduate level." [18]

Where research is concerned, it seems evident that the Congress intended "applied research," although this term did not find its way directly into the Act. The House and Senate reports speak specifically of applied research, and the Senate report identifies NSF as the appropriate organization to administer the program "despite its traditional emphasis on basic research . . ." and also because its work with Mohole "has shown its ability to administer an activity in the applied research field." [19]

The advisory service programs authorized as the third aspect of Sea Grant received less attention. The House report simply states that the program will "encourage and develop advisory programs with the object of disseminating useful information to industry, the scientific community,

[16] Senate Report No. 1307, p. 2.
[17] Ibid.
[18] House Report No. 1795, p. 2.
[19] Senate Report No. 1307, p. 3.

and the general public."[20] The Senate report speaks of "marine advisory programs which will carry useful information from the individuals or groups conducting sea grant programs to the potential users of that information—that is, the individuals employed in marine resource-related industries or activities—and will carry the problems and questions of the users back to the centers of sea grant programs."[21] There is no evidence of any particular significance to use of the phrase "initiating and supporting" with respect to education and research, while providing for "encouraging and developing" advisory programs.

Eligible Institutions

There was considerable variety in the nature of the institutions through which both Houses intended the Sea Grant Act to be implemented.

The House bill spoke of contracts with and grants to "suitable public or private institutions of higher education, institutes, and laboratories," whereas the Senate language was much broader, encompassing "public or private agencies, public or private institutions of higher education, museums, foundations, industries, laboratories, corporations, organizations, or groups of individuals." The Senate report specifically states "The program need not be limited to degree granting institutions. It should include the resources of staffs, ships and shore laboratories of such excellent private institutions as the Woods Hole Oceanographic Institution; also the in-house laboratories of Federal agencies."[22]

The House report, while indicating an intention to focus primarily on institutions of higher education, goes on to state its intent that ". . . the Foundation will exercise broad discretion in construing the terms 'suitable public or private institutions of higher education, institutes, and laboratories' so that in proper circumstances such institutions as technical schools, community colleges and junior colleges will not be barred from eligibility . . . ."[23] The House committee specifically rejected a suggestion that eligibility be restricted to institutions meeting the requirements of the National Defense Education Act of 1958, as amended, which would have meant that only institutions requiring a secondary education graduation certificate for admission could be included.

The Conference report adopted the House language with the addition of the phrase "and public or private agencies" which, it was agreed, would provide NSF with the necessary flexibility.

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[20] House Report No. 1795, p. 2.
[21] Senate Report No. 1307, p. 4.
[22] Senate Report No. 1307, pp. 2–3.
[23] House Report No. 1795, p. 2.

National vs. Regional or Local Orientation

The Act itself did not specify the nature of the projects to be undertaken under Sea Grant funding. The House report sets a "national" tone to the program by speaking of ". . . establishment of a program of sea grant colleges and education, training, and research in the fields of marine science, engineering, and related disciplines as a means of achieving the earliest possible institution of significant national activities related to the development of marine resources. . . ."[24] The Senate report states that "The institutions (receiving sea grants) will create programs based on their own ability to operate them"[25] and this, together with the matching fund provision, seems to imply that Sea Grant programs would take different forms and have different objectives, in the various participating institutions. As the program got underway, the Marine Sciences Council and NSF agreed, in an early policy decision, "that the sea grant program should be largely oriented to national purposes, such as those dealing with food from the sea, ocean-related environmental forecasting, Continental Shelf exploration, and multiple use of the seacoast. . . ."[26]

They also agreed on criteria for judging institutional proposals, which included the following:

> "Institutions conducting Sea Grant College programs will be responsible for serving as regional centers for strengthening the marine resources utilization program. Each institution requesting support . . . will be expected to have examined thoroughly the needs and capabilities of its region. It must also consider national needs and services relating to the marine aspects of transportation, fisheries, mining, and other economic endeavors. Institutional programs will be expected to provide advisory services to regional economic and governmental interests as may be appropriate."[27]

Further Definition of the Program

After several years' experience administering the program, NSF developed further guidelines which were endorsed by the Marine Sciences Council in November 1969. These guidelines emphasized the following features of Sea Grant:

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[24] House Report No. 1795, p. 1.

[25] Senate Report No. 1307, p. 1.

[26] "Marine Science Affairs—A Year of Transition." The First Report of the President to the Congress on Marine Resources and Engineering Development. National Council on Marine Resources and Engineering Development, February 1967, p. 58.

[27] Ibid. p. 62.

- a multidisciplinary approach;
- cooperative endeavors involving business and industry, other educational and research institutions, and Federal, State and local agencies;
- participation by consortia of institutions within a geographical region, including consortia involving both universities and industry;
- emphasis, in the area of education and training, on development of new courses and curricula, especially in ocean engineering, in marine affairs programs for social scientists, lawyers, and business administrators, and in technician training programs, but not in the basic natural or social sciences, and not for instruction once the program is fully developed;
- support of basic research, including research in the social sciences, when it is needed for solution of a well-defined and pressing problem, and where early application of results seem likely.

The guidelines also indicated that high priority would be given to activities in areas of national priority as established by the Marine Sciences Council, and low priority to research projects in areas where adequate financing from other sources already existed. "Open-ended" studies were not to be eligible for funding. Publications, seminars, conferences, extension services, audio-visual presentations, and other forms of information dissemination were specifically included as legitimate advisory service activities. Cooperative projects between U.S. institutions and those in neighboring countries were eligible for support. And all other factors being equal, funding preference was to be given to ongoing programs rather than new programs.[28]

Amendments to the Act—1968 to 1973

In 1968, the Sea Grant Act was amended to authorize continuation of the program at a funding level of $6 million for fiscal year 1969 and $15 million for fiscal year 1970. This represented a compromise between the House and the Senate. The House bill, H.R. 13781, had, on the basis of the small amounts which Sea Grant had thus far spent ($4 million had thus far been appropriated for FY 1968, and indications were that little more than half that would actually be spent), authorized $6 million for FY 1969 and $8 million for FY 1970. The Senate increased this to $15 million for each of the 2 years, and criticized NSF for apparent lack of

[28] "Marine Science Affairs--Selecting Priority Programs," Annual Report of the President to the Congress on Marine Resources and Engineering Development. National Council on Marine Resources and Engineering Development, April 1970, pp. 99–100.

enthusiasm for the program. The report of the Senate Committee on Labor and Public Welfare states:

> "The Committee discussed the National Science Foundation's apparent lack of wholehearted support for the sea grant program. What is of even greater concern is the fact that the National Science Foundation did not request more than a third of the funds authorized for fiscal year 1968. Indeed, the National Science Foundation seems to have so little concern for this program that they did not even show this function as a line item in its budget . . . . The Committee noted this seeming lack of commitment by the National Science Foundation with concern and instructs that agency to reconsider its attitude toward the administration of the (Sea Grant Program). . . ."[29]

In 1970, the Act was again amended to provide authorizations of $20 million for FY 1971, $25 million for FY 1972, and $30 million for FY 1973.

Also, in 1970 the President, in Reorganization Plan No. 4, created the National Oceanic and Atmospheric Administration within the Department of Commerce, and transferred the Sea Grant Program from NSF to the new agency.

In 1973, the Sea Grant Act was amended to reauthorize the program at funding levels of $30 million for FY 1974, $40 million for FY 1975, and $50 million for FY 1976; to provide $200,000 in nonmatching funds for a study of international marine technology transfer; to exclude non-self-propelled habitats, buoys, and other similar devices used for research purposes from the prohibition against using Federal funds for purchase, rental, construction or repair of buildings, docks or vessels; to permit up to 1% of the Sea Grant budget to be allocated without matching funds for activities requested by the Secretary of Commerce; to specify that an institution becomes a Sea Grant College only upon formal designation as such by the Secretary; and to make a number of technical corrections in the Act reflecting transfer of the program from NSF to NOAA and demise of the Marine Council which had expired in 1971. The Act with all amendments up to and including these in 1973 is reproduced in Appendix 3.

The Sea Grant Program Improvement Act of 1976

In 1976 more extensive changes were enacted which rewrote the Sea Grant Act in entirely new language, continued the basic authorization at $50 million for one additional year, and provided, for a 1-year trial period, additional separate authorizations of $5 million for nonmatching

[29] Senate Report No. 1439, pp. 2–3.

grants to meet specific national needs, and $3 million for nonmatching grants to enhance the marine science and technology capabilities of developing nations and to encourage international sharing and exchange of marine resource information. In addition, the 1976 Act

- provided for designation by the Secretary of Commerce of Sea Grant Regional Consortia in addition to Sea Grant Colleges;
- established a Sea Grant Fellowship program;
- eliminated the prohibition against using Federal funds to pay for ship time;
- established a Sea Grant Review Panel to replace the present Sea Grant Advisory Panel, with somewhat broader responsibilities than has the present Panel;
- specified in detail certain administrative and managerial details of the Sea Grant Program, such as qualifications and duties of the Director, duties, membership, and procedures of the Sea Grant Review Panel, etc.; and
- provided for submission of an annual report to the Congress and the President, with independent assessments by the Office of Management and Budget and the Office of Science and Technology Policy.

This Act represented a compromise between the different approaches of the House and the Senate. The House bill, H.R. 13035, extended the program for one additional year, eliminated the prohibition against using Federal funds to pay for ship time, and added new sections authorizing nonmatching grants to support education and training of foreign nationals, to provide advice to foreign nations concerning marine resource development, and to support activities of national scope.

The Senate bill, S. 3165, was more far-reaching. The first of its two Titles completely rewrote the Sea Grant Act in entirely new language; and extended the program for 3 additional years; the second dealt with broader issues involving NOAA's mission in marine resources, science, and technology and its internal organization for that purpose.

The Conference compromised by accepting almost all the provisions in Title I of the Senate bill (with some modification to meet the concerns of the House), but following the House bill in limiting the authorization to one fiscal year, during which both Houses intended to continue their reviews of the program. Most of the provisions of Title II of the Senate bill were rejected.

The Conference report made it clear that further expansion of the Sea Grant institutional network was desired, and that the persistent level funding in recent years was a matter of some concern:

> "The Congress has noted with dismay the worsening financial condition of the national sea grant program. Essentially level funding over

the past half decade has not only drastically reduced the program's buying power, but has prevented the program from progressing as rapidly as was originally envisioned toward one of its most important goals: the formation of a strong coastal and Great Lakes network of centers of excellence in marine research, education, training, and advisory services.

"In light of the changes made in this legislation, the conferees would now encourage the program's managers to give serious consideration to the possibilities of slow and careful augmentation of the network, so long as this action seems justified according to the guidelines and criteria called for by the conference substitute and in keeping with responsible program management and the funds available to the program." [30]

The full text of the 1976 Act is reproduced in Appendix 4.

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[30] House Report No. 94–1556.

Appendix 3.

THE SEA GRANT ACT (WITH AMENDMENTS THROUGH 1973)

National Sea Grant Colleges [31]

33 U.S.C. 1121–1124

§ 1121. Congressional declaration of purpose.

The Congress hereby finds and declares—

(a) that marine resources, including animal and vegetable life and mineral wealth, constitute a far-reaching and largely untapped asset of immense potential significance to the United States; and

(b) that it is in the national interest of the United States to develop the skilled manpower, including scientists, engineers, and technicians, and the facilities and equipment necessary for the exploitation of these resources; and

(c) that aquaculture, as with agriculture on land, and the gainful use of marine resources can substantially benefit the United States, and ultimately the people of the world, by providing greater economic opportunities, including expanded employment and commerce; the enjoyment and use of our marine resources; new sources of food; and new means for the development of marine resources; and

(d) that Federal support toward the establishment, development, and operation of programs by sea grant colleges and Federal support of other sea grant programs designed to achieve the gainful use of marine resources, offer the best means of promoting programs toward the goals set forth in clauses (a), (b), (c), and should be undertaken by the Federal Government; and

(e) that in view of the importance of achieving the earliest possible institution of significant national activities related to the development of marine resources, it is the purpose of this subchapter to provide for the establishment of a program of sea grant colleges and education, training,

[31] This text has been reproduced from "A Compilation of Federal Laws Relating to Conservation and Development of Our Nation's Fish and Wildlife Resources, Environmental Quality and Oceanography," Committee on Merchant Marine and Fisheries, U.S. House of Representatives, Committee Print, January 1975.

and research in the fields of marine science, engineering, and related disciplines.

(Pub. L. 89–454, title II, § 202, as added Pub. L. 89–688, § 1, Oct. 15, 1966, 80 Stat. 998.)

§ 1122. Administration by Secretary of Commerce; authorization of appropriations.

(a) The provisions of this subchapter shall be administered by the Secretary of Commerce (hereafter in this subchapter referred to as the "Secretary").

(b)(1) For the purpose of carrying out this subchapter, there is authorized to be appropriated to the Secretary for the fiscal year ending June 30, 1967, not to exceed the sum of $5,000,000, for the fiscal year ending June 30, 1968, not to exceed the sum of $15,000,000, for the fiscal year ending June 30, 1969, not to exceed the sum of $6,000,000, for the fiscal year ending June 30 1970, not to exceed the sum of $15,000,000, for fiscal year ending June 30, 1971, not to exceed the sum of $20,000,000, for the fiscal year ending June 30, 1972, not to exceed the sum of $25-000,000, for the fiscal year ending June 30, 1973, not to exceed the sum of $30,000,000, for the fiscal year ending June 30, 1974, not to exceed the sum of $30,000,000, for the fiscal year ending June 30, 1975, not to exceed the sum of $40,000,000, for the fiscal year ending June 30, 1976, not to exceed the sum of $50,000,000, and for each subsequent fiscal year only such sums as the Congress may hereafter specifically authorize by law.

(2) Amounts appropriated under this subchapter are authorized to remain available until expended.

(As amended Pub. L. 93–73, § 1(1), (5), July 10, 1973, 87 Stat. 170.)

AMENDMENTS

1973—Subsec. (a). Pub. L. 93–73, § 1(5), substituted "Secretary of Commerce" and "Secretary" for "National Science Foundation" and "Foundation".

Subsec. (b)(1). Pub. L. 93–73, § 1(1), (5), authorized appropriations of $30,000,000; $40,000,000; and $50,000,000 for fiscal years ending June 30, 1974, 1975, and 1976, and substituted "Secretary" for "Foundation".

§ 1123. Marine resource development programs.

(a) Cooperation of agencies with Secretary of Commerce.

In carrying out the provisions of this subchapter the Secretary shall consult with those experts engaged in pursuits in the various fields related to the development of marine resources and with all departments and agencies of the Federal Government (including the United States Office of Education in all matters relating to education) interested in, or affected by, activities in any such fields.

(b) Development programs; research; publication of useful information.

The Secretary shall exercise his authority under this subchapter by—

(1) initiating and supporting programs at sea grant colleges and other suitable institutes, laboratories, and public or private agencies for the education of participants in the various fields relating to the development of marine resources.

(2) initiating and supporting necessary research programs in the various fields relating to the development of marine resources, with preference given to research aimed at practices, techniques, and design of equipment applicable to the development of marine resources; and

(3) encouraging and developing programs consisting of instruction, practical demonstrations, publications, and otherwise, by sea grant colleges and other suitable institutes, laboratories, and public or private agencies through marine advisory programs with the object of imparting useful information to persons currently employed or interested in the various fields related to the development of marine resources, the scientific community, and the general public.

(c) Grants and contracts to carry out programs.

Programs to carry out the purposes of this subchapter shall be accomplished through contracts with, or grants to, suitable public or private institutions of higher education, institutes, laboratories, and public or private agencies which are engaged in, or concerned with, activities in the various fields related to the development of marine resources, for the establishment and operation by them of such programs.

(d) Limitation on Federal contribution ratio to total program cost; prohibition against use of program funds to purchase or rent land or repair buildings, docks or vessels.

(1) The total amount of payments under any grant to or contract with any participant in any program to be carried out by such participant under this subchapter shall not exceed 66⅔ per centum of the total cost of such program. The Secretary may grant total payments that exceed such per centum with respect to those programs or portions of programs requested by the Secretary on his own initiative, upon his determination that the requirement for payments of 33⅓ per centum of the cost thereof by the participant would be inequitable relative to the benefits which the participant would receive therefrom. The total amount of payments to be made by the Federal Government under all programs and portions of programs as to which the Secretary shall in any fiscal year exercise his authority under the preceding sentence to reduce or eliminate matching payments by the participant shall not exceed 1 per centum of the funds appropriated under this subchapter for such fiscal year. For purposes of computing the amount of the total cost of any such program furnished by any participant, the Secretary shall include in such computation an amount equal to the reasonable value of any buildings, facilities, equipment, sup-

plies, or services provided by such participant with respect to such program (but not the cost or value of land or of Federal contributions).

(2) No portion of any payment by the Secretary to any participant in any program to be carried out under this subchapter shall be applied to the purchase or rental of any land or the rental, purchase, construction, preservation, or repair of any building, dock, or vessel: *Provided,* That the prohibitions of this paragraph shall not apply to non-self-propelled habitats, buoys, platforms, or other similar devices or structures, used principally for research purposes.

(3) The total amount of payments in any fiscal year by the Secretary to participants within any State shall not exceed 15 per centum of the total amount appropriated to the Secretary for the purposes of this subchapter for such fiscal year.

(e) Allocation of funds to achieve maximum participation by sea grant colleges and agencies throughout the country.

In allocating funds appropriated in any fiscal year for the purposes of this subchapter the Secretary shall endeavor to achieve maximum participation by sea grant colleges and other suitable institutes, laboratories, and public or private agencies throughout the United States, consistent with the purposes of this subchapter.

(f) Duplication and overlapping of Federal programs.

In carrying out his functions under this subchapter, the Secretary shall attempt to support programs in such a manner as to supplement and not duplicate or overlap any existing and related Government activities.

(g) Powers and authority of Secretary of Commerce.

Except as otherwise provided in this subchapter, the Secretary, in carrying out his functions under this subchapter, has the same powers and authority as has the National Science Foundation under the National Science Foundation Act of 1950, as amended, to carry out its functions under that Act.

(h) Use of personnel, services, and facilities of other Federal agencies or instrumentalities.

The head of each department, agency, or instrumentality of the Federal Government is authorized, upon request of the Secretary, to make available to the Secretary from time to time, on a reimbursable basis, such personnel, services, and facilities as may be necessary to assist the Secretary in carrying out his functions under this subchapter.

(i) Definitions.

For the purposes of this subchapter—

(1) the term "development of marine resources" means scientific endeavors relating to the marine environment, including, but not limited to, the fields 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;

(2) the term "marine environment" means the oceans; the Continental Shelf of the United States; the Great Lakes; the seabed and subsoil of the submarine areas adjacent to the coasts of the United States to the depth of two hundred meters, or beyond that limit, to where the depths of the superjacent waters admit of the exploitation of the natural resources of the area; the seabed and subsoil of similar submarine areas adjacent to the coasts of islands which comprise United States territory; and the natural resources thereof;

(3) the term "sea grant college" means any suitable public or private institution of higher education supported pursuant to the purposes of this subchapter which has major programs devoted to increasing our Nation's utilization of the world's marine resources and which is so designated by the Secretary; and

(4) the term "sea grant program" means (A) any activities of education or research related to the development of marine resources supported by the Secretary by contracts with or grants to institutions of higher education either initiating, or developing existing, programs in fields related to the purposes of this subchapter, (B) any activities of education or research related to the development of marine resources supported by the Secretary by contracts with or grants to suitable institutes, laboratories, and public or private agencies, and (C) any programs of advisory services oriented toward imparting information in fields related to the development of marine resources supported by the Secretary by contracts with or grants to suitable institutes, laboratories, and public or private agencies.
(As amended Pub L. 93–73, § 1 (2)–(7), July 10, 1973, 87 Stat. 170.)

AMENDMENTS

1973—Subsec. (a). Pub. L. 93–73, § 1(2), (5), deleted item (1 designation for provision respecting consultation with experts and Federal agencies, deleted item (2) provision for seeking advice and counsel from the National Council on Marine Resources and Engineering Development, and substituted "Secretary" for "Foundation".

Subsec. (b). Pub. L. 93–73, § 1(5), substituted "Secretary" for "Foundation" and "his authority" for "its authority".

Subsec. (d)(1). Pub. L. 93–73, § 1(3), (5), authorized Federal contributions exceeding percentage limitation to programs limited to one percent of appropriations for the fiscal year when reducing or eliminating matching payments by a participant when Secretary determines it would be inequitable relevant to the benefits derived by

the participant from the program to require the participant to make a one-third payment of the cost, and substituted "Secretary" for "Foundation" in last sentence.

Subsec. (d)(2). Pub. L. 93–73 § 1(4), (5), made the prohibitions of the paragraph inapplicable to non-self-propelled habitats, buoys, platforms, or other similar devices or structures, used principally for research purposes and substituted "Secretary" for "foundation".

Subsec. (d)(3). Pub. L. 93–73, § 1(5), substituted "Secretary" for "Foundation".

Subsec. (e). Pub. L. 93–73, § 1(5), substituted "Secretary" for "Foundation".

Subsec. (f). Pub. L. 93–73, § 1(5), substituted "Secretary" for "Foundation" "his functions" for "its functions".

Subsec. (g). Pub. L. 93–73, § 1(6), substituted provisions for exercise of powers and authority under this subchapter by the Secretary rather than the Foundation under the powers and authority of the National Science Foundation Act of 1950, as amended.

Subsec. (h). Pub. L. 93–73, § 1(5), substituted "Secretary" for "Foundation" and "his functions" for "its functions".

Subsec. (i)(3). Pub. L. 93–73, § 1(7), inserted after "marine resources" the words "and which is so designated by the Secretary".

Subsec. (i)(4). Pub. L. 93–73, § 1(5), substituted "Secretary" for "Foundation" in cls. (A)–(C).

§ 1124. Study of international marine technology transfer; contact authority; report to President and Congress; authorization of appropriations.

(a) The Secretary of Commerce is authorized and directed to undertake, through the National Sea Grant College Program, a study of the means of sharing, through cooperative programs with other nations, the results of marine research useful in the exploration, development, conservation, and management of marine resources.

(b) In carrying out the study required by subsection (a) of this section, the Secretary is authorized, without regard for paragraphs (1) and (3) of section 1123(d) of this title, to enter into contracts with, and make grants to, institutions, agencies, and organizations described in section 1123(c) of this title.

(c) The Secretary shall submit to the President and to the Congress the results and findings of such study, including specific recommendations, not later than September 30, 1974.

(d) For the purpose of carrying out this section there is authorized to be appropriated not to exceed the sum of $200,000. (As amended Pub. L. 93–73, § 1 (8), July 10, 1973, 87 Stat. 170.)

AMENDMENTS

1973—Pub. L. 93–73 substituted provisions for study of international marine technology transfer for prior respecting advisory functions of National Council on Marine Resources and Development.

Appendix 4.
THE SEA GRANT PROGRAM IMPROVEMENT ACT OF 1976

Public Law 94-461
94th Congress

An Act

To improve the national sea grant program and for other purposes.

Oct. 8, 1976
[H.R. 13035]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Sea Grant Program Improvement Act of 1976".

Sea Grant Program Improvement Act of 1976. 33 USC 1121 note.

SEC. 2. AMENDMENT TO THE NATIONAL SEA GRANT COLLEGE AND PROGRAM ACT OF 1966.

Title II of the Marine Resources and Engineering Development Act of 1966 (33 U.S.C. 1101 et seq.) is amended to read as follows:

National Sea Grant Program Act. 33 USC 1121 note.

"TITLE II—NATIONAL SEA GRANT PROGRAM

"SEC. 201. SHORT TITLE.

"This title may be cited as the 'National Sea Grant Program Act'.

33 USC 1121.

"SEC. 202. DECLARATION OF POLICY.

"(a) FINDINGS.—The Congress finds and declares the following:

"(1) The vitality of the Nation and the quality of life of its citizens depend increasingly on the understanding, assessment, development, utilization, and conservation of ocean and coastal resources. These resources supply food, energy, and minerals and contribute to human health, the quality of the environment, national security, and the enhancement of commerce.

"(2) The understanding, assessment, development, utilization, and conservation of such resources require a broad commitment and an intense involvement on the part of the Federal Government in continuing partnership with State and local governments, private industry, universities, organizations, and individuals concerned with or affected by ocean and coastal resources.

"(3) The National Oceanic and Atmospheric Administration, through the national sea grant program, offers the most suitable locus and means for such commitment and involvement through the promotion of activities that will result in greater such understanding, assessment, development, utilization, and conservation. Continued and increased Federal support of the establishment, development, and operation of programs and projects by sea grant colleges, sea grant regional consortia, institutions of higher education, institutes, laboratories, and other appropriate public and

private entities is the most cost-effective way to promote such activities.

"(b) OBJECTIVE.—The objective of this title is to increase the understanding, assessment, development, utilization, and conservation of the Nation's ocean and coastal resources by providing assistance to promote a strong educational base, responsive research and training activities, and broad and prompt dissemination of knowledge and techniques.

"(c) PURPOSE.—It is the purpose of the Congress to achieve the objective of this title by extending and strengthening the national sea grant program, initially established in 1966, to promote research, education, training, and advisory service activities in fields related to ocean and coastal resources.

33 USC 1122.

"SEC. 203. DEFINITIONS.

"As used in this title—

"(1) The term 'Administration' means the National Oceanic and Atmospheric Administration.

"(2) The term 'Administrator' means the Administrator of the National Oceanic and Atmospheric Administration.

"(3) The term 'Director' means the Director of the national sea grant program, appointed pursuant to section 204(b).

"(4) The term 'field related to ocean and coastal resources' means any discipline or field (including 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.

"(5) The term 'includes' and variants thereof should be read as if the phrase 'but is not limited to' were also set forth.

"(6) The term 'marine environment' means the coastal zone, as defined in section 304(1) of the Coastal Zone Management Act of 1972 (16 U.S.C. 1453(1)); the seabed, subsoil, and waters of the territorial sea of the United States; the waters of any zone over which the United States asserts exclusive fishery management authority; the waters of the high seas; and the seabed and subsoil of and beyond the outer Continental Shelf.

"(7) The term 'ocean and coastal resource' means any resource (whether living, nonliving, manmade, tangible, intangible, actual, or potential) which is located in, derived from, or traceable to, the marine environment. Such term includes the habitat of any such living resource, the coastal space, the ecosystems, the nutrient-rich areas, and the other components of the marine environment which contribute to or provide (or which are capable of contributing to or providing) recreational, scenic, esthetic, biological, habitational, commercial, economic, or conservation values. Living resources include natural and cultured plant life, fish, shellfish, marine mammals, and wildlife. Nonliving resources include energy sources, minerals, and chemical substances.

"(8) The term 'panel' means the sea grant review panel established under section 209.

"(9) The term 'person' means any individual; any public or

private corporation, partnership, or other association or entity (including any sea grant college, sea grant regional consortium, institution of higher education, institute, or laboratory); or any State, political subdivision of a State, or agency or officer thereof.

"(10) The term 'sea grant college' means any public or private institution of higher education which is designated as such by the Secretary under section 207.

"(11) The term 'sea grant program' means any program which—

"(A) is administered by any sea grant college, sea grant regional consortium, institution of higher education, institute, laboratory, or State or local agency; and

"(B) includes two or more projects involving one or more of the following activities in fields related to ocean and coastal resources:

"(i) research,

"(ii) education,

"(iii) training, or

"(iv) advisory services.

"(12) The term 'sea grant regional consortium' means any association or other alliance which is designated as such by the Secretary under section 207.

"(13) The term 'Secretary' means the Secretary of Commerce.

"(14) The term 'State' means any State of the United States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Commonwealth of the Mariana Islands, or any other territory or possession of the United States.

"SEC. 204. NATIONAL SEA GRANT PROGRAM. 33 USC 1123.

"(a) IN GENERAL.—The Secretary shall maintain, within the Administration, a program to be known as the national sea grant program. The national sea grant program shall consist of the financial assistance and other activities provided for in this title. The Secretary shall establish long-range planning guidelines and priorities for, and adequately evaluate, this program. Planning guidelines and priorities.

"(b) DIRECTOR.—(1) The Secretary shall appoint a Director of the national sea grant program who shall be a qualified individual who has—

"(A) knowledge or expertise in fields related to ocean and coastal resources; and

"(B) appropriate administrative experience.

"(2) The Director shall be appointed and compensated, without regard to the provisions of title 5, United States Code, governing appointments in the competitive service, at a rate not in excess of the maximum rate for GS-18 of the General Schedule under section 5332 of such title. 5 USC 3301 *et seq.* 5 USC 5332 note.

"(c) DUTIES.—The Director shall administer the national sea grant program subject to the supervision of the Secretary and the Administrator. In addition to any other duty prescribed by law or assigned by the Secretary, the Director shall—

"(1) apply the long-range planning guidelines and the priorities established by the Secretary under subsection (a);

"(2) advise the Administrator with respect to the expertise and capabilities which are available within or through the national sea

grant program, and provide (as directed by the Administrator) those which are or could be of use to other offices and activities within the Administration;

"(3) evaluate activities conducted under grants and contracts awarded pursuant to sections 205 and 206 to assure that the objective set forth in section 202(b) is implemented;

"(4) encourage other Federal departments, agencies, and instrumentalities to use and take advantage of the expertise and capabilities which are available through the national sea grant program, on a cooperative or other basis;

"(5) advise the Secretary on the designation of sea grant colleges and sea grant regional consortia and, in appropriate cases, if any, on the termination or suspension of any such designation; and

"(6) encourage the formation and growth of sea grant programs.

"(d) POWERS.—To carry out the provisions of this title, the Secretary may—

"(1) appoint, assign the duties, transfer, and fix the compensation of such personnel as may be necessary, in accordance with the civil service laws; except that five positions may be established without regard to the provisions of title 5, United States Code, governing appointments in the competitive service, but the pay rates for such positions may not exceed the maximum rate for GS-18 of the General Schedule under section 5332 of such title;

5 USC 3301 *et seq.*

5 USC 5332 note.

"(2) make appointments with respect to temporary and intermittent services to the same extent as is authorized by section 3109 of title 5, United States Code;

Publication.

"(3) publish or arrange for the publication of, and otherwise disseminate, in cooperation with other services, offices, and programs in the Administration, any information of research, educational, training, and other value in fields related to ocean and coastal resources and with respect to ocean and coastal resources, without regard to section 501 of title 44, United States Code;

"(4) enter into contracts, cooperative agreements, and other transactions without regard to section 3709 of the Revised Statutes of the United States (41 U.S.C. 5);

"(5) accept donations and voluntary and uncompensated services, notwithstanding section 3679 of the Revised Statutes of the United States (31 U.S.C. 665(b)); and

Rules and regulations.

"(6) issue such rules and regulations as may be necessary and appropriate.

33 USC 1124.

"SEC. 205. CONTRACTS AND GRANTS.

"(a) IN GENERAL.—The Secretary may make grants and enter into contracts under this subsection to assist any sea grant program or project if the Secretary finds that such program or project will—

"(1) implement the objective set forth in section 202(b); and

"(2) be responsive to the needs or problems of individual States or regions.

The total amount paid pursuant to any such grant or contract may equal 66⅔ percent, or any lesser percent, of the total cost of the sea grant program or project involved.

"(b) SPECIAL GRANTS.—The Secretary may make special grants under this subsection to implement the objective set forth in section 202(b). The amount of any such grant may equal 100 percent, or any lesser percent, of the total cost of the project involved. No grant may be made under this subsection unless the Secretary finds that—

"(1) no reasonable means is available through which the applicant can meet the matching requirement for a grant under subsection (a);

"(2) the probable benefit of such project outweighs the public interest in such matching requirement; and

"(3) the same or equivalent benefit cannot be obtained through the award of a contract or grant under subsection (a) or section 206.

The total amount which may be provided for grants under this subsection during any fiscal year shall not exceed an amount equal to 1 percent of the total funds appropriated for such year pursuant to section 212.

"(c) ELIGIBILITY AND PROCEDURE.—Any person may apply to the Secretary for a grant or contract under this section. Application shall be made in such form and manner, and with such content and other submissions, as the Secretary shall by regulation prescribe. The Secretary shall act upon each such application within 6 months after the date on which all required information is received. Application.

"(d) TERMS AND CONDITIONS.—(1) Any grant made, or contract entered into, under this section shall be subject to the limitations and provisions set forth in paragraphs (2), (3), and (4) and to such other terms, conditions, and requirements as the Secretary deems necessary or appropriate.

"(2) No payment under any grant or contract under this section may be applied to—

"(A) the purchase or rental of any land; or

"(B) the purchase, rental, construction, preservation, or repair of any building, dock, or vessel;

except that payment under any such grant or contract may, if approved by the Secretary, be applied to the purchase, rental, construction, preservation, or repair of non-self-propelled habitats, buoys, platforms, and other similar devices or structures, or to the rental of any research vessel which is used in direct support of activities under any sea grant program or project.

"(3) The total amount which may be obligated for payment pursuant to grants made to, and contracts entered into with, persons under this section within any one State in any fiscal year shall not exceed an amount equal to 15 percent of the total funds appropriated for such year pursuant to section 212.

"(4) Any person who receives or utilizes any proceeds of any grant or contract under this section shall keep such records as the Secretary shall by regulation prescribe as being necessary and appropriate to facilitate effective audit and evaluation, including records which fully disclose the amount and disposition by such recipient of such proceeds, the total cost of the program or project in connection with which such proceeds were used, and the amount, if any, of such cost which was provided through other sources. Such records shall be maintained for 3 years after the completion of such a program or project. The Secre- Record retention. Regulation. Audit.

tary and the Comptroller General of the United States, or any of their duly authorized representatives, shall have access, for the purpose of audit and evaluation, to any books, documents, papers, and records of receipts which, in the opinion of the Secretary or of the Comptroller General, may be related or pertinent to such grants and contracts.

33 USC 1125.

"SEC. 206. NATIONAL PROJECTS.

Grants and contracts.

"(a) IN GENERAL.—The Secretary shall identify specific national needs and problems with respect to ocean and coastal resources. The Secretary may make grants or enter into contracts under this section with respect to such needs or problems. The amount of any such grant or contract may equal 100 percent, or any lesser percent, of the total cost of the project involved.

Application.

"(b) ELIGIBILITY AND PROCEDURE.—Any person may apply to the Secretary for a grant or contract under this section. In addition, the Secretary may invite applications with respect to specific national needs or problems identified under subsection (a). Application shall be made in such form and manner, and with such content and other submissions, as the Secretary shall by regulation prescribe. The Secretary shall act upon each such application within 6 months after the date on which all required information is received. Any grant made, or contract entered into, under this section shall be subject to the limitations and provisions set forth in section 205(d) (2) and (4) and to such other terms, conditions, and requirements as the Secretary deems necessary or appropriate.

"(c) AUTHORIZATION FOR APPROPRIATIONS.—There is authorized to be appropriated for purposes of carrying out this section not to exceed $5,000,000 for the fiscal year ending September 30, 1977. Such sums as may be appropriated pursuant to this subsection shall remain available until expended. The amounts obligated to be expended for the purposes set forth in subsection (a) shall not, in any fiscal year, exceed an amount equal to 10 percent of the sums appropriated for such year pursuant to section 212.

33 USC 1126.

"SEC. 207. SEA GRANT COLLEGES AND SEA GRANT REGIONAL CONSORTIA.

"(a) DESIGNATION.—(1) The Secretary may designate—

"(A) any institution of higher education as a sea grant college; and

"(B) any association or other alliance of two or more persons (other than individuals) as a sea grant regional consortium.

"(2) No institution of higher education may be designated as a sea grant college unless the Secretary finds that such institution—

"(A) is maintaining a balanced program of research, education, training, and advisory services in fields related to ocean and coastal resources and has received financial assistance under section 205 of this title or under section 204(c) of the National Sea Grant College and Program Act of 1966;

33 USC 1124, 1123.

"(B) will act in accordance with such guidelines as are prescribed under subsection (b)(2); and

"(C) meets such other qualifications as the Secretary deems necessary or appropriate.

33 USC 1121 note.

The designation of any institution as a sea grant college under the authority of such Act of 1966 shall, if such designation is in effect on the day before the date of the enactment of the Sea Grant Program

Improvement Act of 1976, be considered to be a designation made under paragraph (1) so long as such institution complies with subparagraphs (B) and (C). *Ante*, p. 1961.

"(3) No association or other alliance of two or more persons may be designated as a sea grant regional consortium unless the Secretary finds that such association or alliance—

"(A) is established for the purpose of sharing expertise, research, educational facilities, or training facilities, and other capabilities in order to facilitate research, education, training, and advisory services, in any field related to ocean and coastal resources;

"(B) will encourage and follow a regional approach to solving problems or meeting needs relating to ocean and coastal resources, in cooperation with appropriate sea grant colleges, sea grant programs, and other persons in the region;

"(C) will act in accordance with such guidelines as are prescribed under subsection (b)(2); and

"(D) meets such other qualifications as the Secretary deems necessary or appropriate.

"(b) REGULATIONS.—The Secretary shall by regulation prescribe—

"(1) the qualifications required to be met under paragraphs (2)(C) and (3)(D) of subsection (a); and

"(2) guidelines relating to the activities and responsibilities of sea grant colleges and sea grant regional consortia.

"(c) SUSPENSION OR TERMINATION OF DESIGNATION.—The Secretary may, for cause and after an opportunity for hearing, suspend or terminate any designation under subsection (a). Hearing.

"SEC. 208. SEA GRANT FELLOWSHIPS. 33 USC 1127.

"(a) IN GENERAL.—The Secretary shall support a sea grant fellowship program to provide educational and training assistance to qualified individuals at the undergraduate and graduate levels of education in fields related to ocean and coastal resources. Such fellowships shall be awarded pursuant to guidelines established by the Secretary. Sea grant fellowships may only be awarded by sea grant colleges, sea grant regional consortia, institutions of higher education, and professional associations and institutes. Guidelines.

"(b) LIMITATION ON TOTAL FELLOWSHIP GRANTS.—The total amount which may be provided for grants under the sea grant fellowship program during any fiscal year shall not exceed an amount equal to 5 percent of the total funds appropriated for such year pursuant to section 212.

"SEC. 209. SEA GRANT REVIEW PANEL. 33 USC 1128.

"(a) ESTABLISHMENT.—There shall be established an independent committee to be known as the sea grant review panel. The panel shall, on the 60th day after the date of the enactment of the Sea Grant Program Improvement Act of 1976, supersede the sea grant advisory panel in existence before such date of enactment. *Ante*, p. 1961.

"(b) DUTIES.—The panel shall take such steps as may be necessary to review, and shall advise the Secretary, the Administrator, and the Director with respect to—

"(1) applications or proposals for, and performance under, grants and contracts awarded under sections 205 and 206;

"(2) the sea grant fellowship program;

"(3) the designation and operation of sea grant colleges and sea grant regional consortia, and the operation of sea grant programs;

"(4) the formulation and application of the planning guidelines and priorities under section 204 (a) and (c)(1); and

"(5) such other matters as the Secretary refers to the panel for review and advice.

The Secretary shall make available to the panel such information, personnel, and administrative services and assistance as it may reasonably require to carry out its duties.

"(c) MEMBERSHIP, TERMS, AND POWERS.—(1) The panel shall consist of 15 voting members who shall be appointed by the Secretary. The Director shall serve as a nonvoting member of the panel. Not less than five of the voting members of the panel shall be individuals who, by reason of knowledge, experience, or training, are especially qualified in one or more of the disciplines and fields included in marine science. The other voting members shall be individuals who, by reason of knowledge, experience, or training, are especially qualified in, or representative of, education, extension services, State government, industry, economics, planning, or any other activity which is appropriate to, and important for, any effort to enhance the understanding, assessment, development, utilization, or conservation of ocean and coastal resources. No individual is eligible to be a voting member of the panel if the individual is (A) the director of a sea grant college, sea grant regional consortium, or sea grant program; (B) an applicant for, or beneficiary (as determined by the Secretary) of, any grant or contract under section 205 or 206; or (C) a full-time officer or employee of the United States.

"(2) The term of office of a voting member of the panel shall be 3 years, except that of the original appointees, five shall be appointed for a term of 1 year, five shall be appointed for a term of 2 years, and five shall be appointed for a term of 3 years.

"(3) Any individual appointed to fill a vacancy occurring before the expiration of the term for which his or her predecessor was appointed shall be appointed only for the remainder of such term.

No individual may be appointed as a voting member after serving one full term as such a member. A voting member may serve after the date of the expiration of the term of office for which appointed until his or her successor has taken office, or until 90 days after such date, whichever is earlier.

Chairman, Vice Chairman.

"(4) The panel shall select one voting member to serve as the Chairman and another voting member to serve as the Vice Chairman. The Vice Chairman shall act as Chairman in the absence or incapacity of the Chairman.

Compensation. 5 USC 5332 note.

"(5) Voting members of the panel shall—

"(A) receive compensation at the daily rate for GS-18 of the General Schedule under section 5332 of title 5, United States Code, when actually engaged in the performance of duties for such panel; and

"(B) be reimbursed for actual and reasonable expenses incurred in the performance of such duties.

"(6) The panel shall meet on a biannual basis and, at any other time, at the call of the Chairman or upon the request of a majority of

the voting members or of the Director.

"(7) The panel may exercise such powers as are reasonably necessary in order to carry out its duties under subsection (b).

33 USC 1129.

"SEC. 210. INTERAGENCY COOPERATION.

"Each department, agency, or other instrumentality of the Federal Government which is engaged in or concerned with, or which has authority over, matters relating to ocean and coastal resources—

"(1) may, upon a written request from the Secretary, make available, on a reimbursable basis or otherwise any personnel (with their consent and without prejudice to their position and rating), service, or facility which the Secretary deems necessary to carry out any provision of this title;

"(2) shall, upon a written request from the Secretary, furnish any available data or other information which the Secretary deems necessary to carry out any provision of this title; and

"(3) shall cooperate with the Administration and duly authorized officials thereof.

33 USC 1130.

"SEC. 211. ANNUAL REPORT AND EVALUATION.

Submittal to Congress and President.

"(a) ANNUAL REPORT.—The Secretary shall submit to the Congress and the President, not later than February 15 of each year, a report on the activities of, and the outlook for, the national sea grant program.

"(b) EVALUATION.—The Director of the Office of Management and Budget and the Director of the Office of Science and Technology Policy, in the Executive Office of the President, shall have the opportunity to review each report prepared pursuant to subsection (a). Such Directors may submit, for inclusion in such report, comments and recommendations and an independent evaluation of the national sea grant program. Such material shall be transmitted to the Secretary not later than February 1 of each year, and the Secretary shall cause it to be published as a separate section in the annual report submitted pursuant to subsection (a).

33 USC 1131.

"SEC. 212. AUTHORIZATION FOR APPROPRIATIONS.

"There is authorized to be appropriated for purposes of carrying out the provisions of this title (other than section 206) not to exceed $50,000,000 for the fiscal year ending September 30, 1977. Such sums as may be appropriated under this section shall remain available until expended.".

33 USC 1124a.

SEC. 3. INTERNATIONAL COOPERATION ASSISTANCE.

(a) IN GENERAL.—The Secretary of Commerce (hereafter in this section referred to as the "Secretary") may enter into contracts and make grants under this section to—

(1) enhance the research and development capability of developing foreign nations with respect to ocean and coastal resources, as such term is defined in section 203 of the National Sea Grant Program Act; and

(2) promote the international exchange of information and data with respect to the assessment, development, utilization, and conservation of such resources.

(b) ELIGIBILITY AND PROCEDURE.—Any sea grant college and sea grant regional consortium (as defined in section 203 of the National Sea Grant Program Act) and any institution of higher education,

laboratory, or institute (if such institution, laboratory, or institute is located within any State (as defined in such section 203)) may apply for and receive financial assistance under this section. Each grant or contract under this section shall be made pursuant to such requirements as the Secretary shall, after consultation with the Secretary of State, by regulation prescribe. Application shall be made in such form, and with such content and other submissions, as may be so required. Before approving any application for a grant or contract under this section, the Secretary shall consult with the Secretary of State. Any grant made, or contract entered into, under this section shall be subject to the limitations and provisions set forth in section 205(d) (2) and (4) of the National Sea Grant Program Act and to such other terms, conditions, and requirements as the Secretary deems necessary or appropriate.

Regulation.

Consultation.

(c) AUTHORIZATION FOR APPROPRIATIONS.—There is authorized to be appropriated for purposes of carrying out this section not to exceed $3,000,000 for the fiscal year ending September 30, 1977. Such sums as may be appropriated under this section shall remain available until expended.

SEC. 4. CONFORMING AND MISCELLANEOUS PROVISIONS.

(a) Section 5314 of title 5, United States Code, is amended by adding at the end thereof the following new paragraph:

"(65) Administrator, National Oceanic and Atmospheric Administration.".

(b) Section 5315 of title 5, United States Code, is amended by adding at the end thereof the following new paragraphs:

"(109) Deputy Administrator, National Oceanic and Atmospheric Administration.

"(110) Associate Administrator, National Oceanic and Atmospheric Administration.".

(c)(1) Section 2(d) of Reorganization Plan Numbered 4 of 1970 (84 Stat. 2090) is amended by striking out "Level V" and "(5 U.S.C. 5316)" and inserting in lieu thereof "Level IV" and "(5 U.S.C. 5315)", respectively.

5 USC app. II; 15 USC 1511 note.

(2) The individual serving as the Associate Administrator of the National Oceanic and Atmospheric Administration (pursuant to section 2(d) of Reorganization Plan Numbered 4 of 1970) on the date of the enactment of this Act shall continue as the Associate Administrator, notwithstanding the provisions of paragraph (1).

5 USC app. II.

Approved October 8, 1976.

LEGISLATIVE HISTORY:

HOUSE REPORTS No. 94-1048 (Comm. on Merchant Marine and Fisheries) and No. 94-1556 (Comm. of Conference).

SENATE REPORTS No. 94-848 accompanying S. 3165 (Committees on Labor and Public Welfare and Commerce).

CONGRESSIONAL RECORD, Vol. 122 (1976):

May 3, considered and passed House.

June 14, considered and passed Senate, amended, in lieu of S. 3165.

Sept. 17, Senate agreed to conference report.

Sept. 23, House agreed to conference report.

WEEKLY COMPILATION OF PRESIDENTIAL DOCUMENTS, Vol. 12, No. 42:

Oct. 10, Presidential statement.

Appendix 5. CHARTER OF THE SEA GRANT ADVISORY PANEL

Establishment:

The Sea Grant Advisory Panel (the "Panel") was established under the authority of the National Science Foundation in 1967. The Panel was transferred to the Secretary of Commerce by operation of Reorganization Plan No. 4 of 1970. Initially chartered under the Federal Advisory Committee Act of 1973, the committee is hereby rechartered under the same Act, with the Office of Management and Budget concurrence.

Objectives and Duties:

1. The Panel advises the Secretary on broad policy with respect to the establishment and operation of a national network of Sea Grant Colleges and Programs as provided for in Public Law 89–688 (80 Stat. 998) October 15, 1966, as amended.
2. The Panel reviews and advises on: (1) institutional programs and major individual project proposals for support under the National Sea Grant College and Program Act of 1966, as amended; and (2) plans and policies governing execution of the National Sea Grant Program.
3. The Panel functions solely as an advisory body.

Members and Chairman:

1. The Panel consists of at least 10 but not more than 20 members, appointed by the Secretary of Commerce, with a balanced representation of interests, including those from industry and the academic community. Members shall be appointed for up to 3 years and will serve at the discretion of the Secretary contingent upon continuation of the Panel.
2. The Chairman shall be elected by the members.

Administrative Provisions:

1. The Panel reports to the Secretary of Commerce through the Director of the National Sea Grant Program and the Administrator, National Oceanic and Atmospheric Administration (NOAA).
2. The Panel generally meets twice a year, although special meetings may be called as deemed necessary.

3. The Office of Sea Grant, NOAA, provides support services for the Panel.
4. The annual cost of operating the Panel is estimated at $45,000 and less than 1.0 man-years of staff support.

Duration:

As provided by 5 U.S.C. App. I (Supp. II, 1972) effective January 5, 1973, the Panel shall terminate on January 5, 1977, unless it is earlier terminated or renewed by proper authority by appropriate action.

May 10, 1973
(Date)

Signed: /s/
Guy W. Chamberlin, Jr.
Acting Assistant Secretary
for Administration

Appendix 6. MEMBERS OF THE SEA GRANT ADVISORY PANEL

Sanford S. Atwood, *Chairman*
President
Emory University
Atlanta, Georgia

Werner A. Baum
Chancellor
University of Wisconsin
Milwaukee, Wisconsin

George S. Benton
Vice President
Homewood Divisions
Johns Hopkins University
Baltimore, Maryland

Lynton K. Caldwell
Department of Political Science
Indiana University
Bloomington, Indiana

Jacob J. Dykstra
President
Point Judith Fishermen's
Cooperative Assoc., Inc.
Narragansett, Rhode Island

Phillip Eisenberg
Chairman of the
Executive Committee
Hydronautics, Inc.
Washington, D.C.

Robert Ellis
Assistant to the President
Rensselaer Polytechnic Institute of
Connecticut, Inc.
Hartford, Connecticut

J. Osborn Fuller
Acting Dean, College of the Arts
Ohio State University
Columbus, Ohio

LeVan Griffis
Vice Provost
Southern Methodist University
Dallas, Texas

Joseph E. Henderson
Seattle, Washington

Otto Klima
Vice President
and General Manager
Re-Entry & Environmental
Systems Division
General Electric Company
Philadelphia, Pennsylvania

Bernard Le Mehaute
Vice President
Tetra-Tech, Inc.
Pasadena, California

Alton Lennon
Wilmington, North Carolina

Harold E. Lokken, Manager
Fishing Vessels Owners
Association, Inc.
Seattle, Washington

John A. Mehos
Vice President
Liberty Fish and Oyster Co.
Galveston, Texas

Lyle S. St. Amant
Assistant Director
Louisiana Wildlife and
Fisheries Commission
New Orleans, Louisiana

H. Burr Steinbach
President
The Ocean Institute
Waimanalo, Hawaii

James H. Wakelin, Jr.
Washington, D.C.

M. Harvey Weil
Kleberg, Mobley, Lockett
& Weil
Corpus Christi, Texas

Members Emeriti

Douglas L. Brooks
Executive Director
National Advisory Committee
on Oceans and Atmosphere
Washington, D.C.

Roy D. Gaul
Office of Naval Research
Arlington, Virginia

David S. Potter
Vice President
Environmental Activities Staff
General Motors Technical Center
Warren, Michigan

Athelstan F. Spilhaus
Special Assistant to the
Administrator
National Oceanic and
Atmospheric Administration
Washington, D.C.

Appendix 7.
SEA GRANT COLLEGES, INSTITUTIONAL PROGRAMS, AND COHERENT PROJECTS

Atlantic Coast

Maine New Hampshire	University of Maine—University of New Hampshire (institutional program)
Massachusetts	Massachusetts Institute of Technology (institutional program) Woods Hole Oceanographic Institution (coherent project)
Rhode Island	University of Rhode Island (Sea Grant College)
Connecticut	NONE
New York	State University of New York—Cornell University (Sea Grant College)
New Jersey	New Jersey Marine Science Consortium (coherent project)
Delaware	University of Delaware (Sea Grant College)
Maryland	NONE
Virginia	Virginia Institute of Marine Science (coherent project)
North Carolina	University of North Carolina (Sea Grant College)
South Carolina	South Carolina Sea Grant Program (coherent project)
Georgia	University of Georgia (institutional program)
Florida	State University System of Florida (Sea Grant College) University of Miami (coherent project)

Gulf Coast

Florida	(See listing under Atlantic coast)
Alabama Mississippi	Mississippi-Alabama Sea Grant Consortium (coherent project)

Louisiana	Louisiana State University (institutional program)
Texas	Texas A&M University (Sea Grant College)

Pacific Coast

California	University of California (Sea Grant College)
	University of Southern California (institutional program)
Oregon	Oregon State University (Sea Grant College)
Washington	University of Washington (Sea Grant College)
Alaska	University of Alaska (institutional program)
Hawaii	University of Hawaii (Sea Grant College)
Guam	University of Guam (coherent project)

Great Lakes

New York	(See listing under Atlantic Coast)
Pennsylvania	NONE
Ohio	NONE
Michigan	University of Michigan (coherent project)
Indiana	NONE
Illinois	NONE
Wisconsin	University of Wisconsin (Sea Grant College)
Minnesota	NONE

*U.S. GOVERNMENT PRINTING OFFICE:1977 240-848/92 1-3