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TYPE: ACTION DOCUMENT NUMBER: 9201732
ORIGINATOR: 02 STATUS I DIRECTORATE STATUS

FROM: D'ELIA, Christopher S.: SEA GRANT ASSOCIATION

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 05/12/92

SUBJECT: HE IS WRITING TO GAIN THE PRESIDENT'S SUPPORT FOR
THE SEA GRANT MARINE BIOTECHNOLOGY ASSOCIATION.

DIRECTORATE STAFF
ASSIGNED: LIFE SCIENCES ASSIGNED:

ACTION STAFF
REQUIRED: AS NECESSARY ACTION:

SENDER'S DUE DATE:
OSTP DUE DATE: 05/29/92 STAFF DUE DATE
DATE COMPLETED: DATE COMPLETED/DEPT:

COPIES TO: D. Allan Bromley
ENVIRONMENT

WHITE HOUSE TRACKING #: CONTACT PERSON:
REMARKS: PHONE: EXT:

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CENTRAL FILES:

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SEA GRANT ASSOCIATION 1991-1992

MARYLAND SEA GRANT COLLEGE PROGRAM
1123 Taliaferro Hall
University of Maryland
College Park, Maryland 20742

RECEIVED
92 MAY 14 AM 10:07
Telephone: (301) 405-6371
Fax: (301) 314-9581
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May 12, 1992

PRESIDENT
Christopher F. D'Elia
University of Maryland

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University of California

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Texas A & M University

Dr. D. Allan Bromley
Science Advisor
Executive Office of the President
Office of Science and Technology Policy
Old Executive Office Building #358
Washington, DC 20500

Dear Dr. Bromley:

I am writing to call your attention to Sea Grant's Marine Biotechnology Initiative, about which I have enclosed information herein. Although Sea Grant was not identified as a component in the President's FY93 Biotechnology Initiative, we in the Sea Grant network feel that our program has much to offer the nation in advancing research, education and technology transfer in marine biotechnology. We are told that NOAA, which did not include Sea Grant in its FY93 Biotechnology FCCSET request, is considering a request in the FY94 budget — a development we find very encouraging.

We would greatly appreciate the President's full support of Sea Grant and this initiative in the FY94 budget, and we hope that we can contribute to the Administration's commendable effort to sustain our nation's leadership in this important field.

I would be glad to provide you with additional information as necessary.

Sincerely,



Christopher F. D'Elia
President

enclosure

SEA GRANT ASSOCIATION
FEDERAL RELATIONS COMMITTEE
Margaret Davidson, Chair • c/o South Carolina Sea Grant Consortium
287 Meeting Street • Charleston, SC 29401
803 727-2078; 803 727-2080 (fax)

For Immediate Release

March 9, 1992

SEA GRANT MARINE BIOTECHNOLOGY INITIATIVE
FACT SHEET

- No element of science and technology surpasses biotechnology in its potential to transform the lives of people around the world. The President's Fiscal Year 1993 budget recognizes this and reaffirms the Administration's commitment to maintain the U.S. lead and competitiveness in biotechnology. Moreover, there is strong bipartisan recognition in Congress of the opportunities biotechnology provides for the future economic viability of the U.S.
- Marine organisms exhibit extraordinary diversity and uniqueness and thereby constitute enormous biological resources. Through biotechnology, these resources offer tremendous potential for addressing fundamental human needs for food, medicine, natural products, and environmental protection and restoration. To exploit this potential, the research community, government agencies, and the private sector must meet a challenge to collaborate more effectively. The President's Fiscal Year 1993 request to Congress identifies opportunities in marine biotechnology, but not enough funding is directed to government institutions structured to meet this challenge.
- The National Sea Grant College Program is a major outreach arm of America's ocean agency — NOAA — and serves as its principal connection between academic research, marine industries, and the public. The Sea Grant model is a state-federal partnership conceived to integrate research, educational and outreach activities and commissioned to foster technology transfer. The Sea Grant network has grown to encompass over 200 universities throughout the nation, and seeks to include more academic and research partners in the future.
- Sea Grant proposes a powerful initiative in marine biotechnology, coordinated through NOAA's Sea Grant College Program. The initiative will focus on all relevant aspects of this exciting field: research, human resources, outreach, economic potential and public policy.
- In addition to providing for education, training and outreach activities, the initiative will address research priorities in the following areas: (1) molecular genetics, (2) bio-organic chemistry and pharmacology, (3) immunobiology and pathology, (4) endocrinology and developmental and reproductive biology, (5) environmental and evolutionary biology, (6) aquaculture, (7) seafood safety and human health, (8) environmental remediation, (9) biofilms and corrosion, (10) biomaterials and bioprocessing, (11) policy and public responsibility, and (12) economics of biotechnology.
- The Marine Biotechnology Initiative will be open to researchers throughout the nation; it will select the best scientific proposals by peer review; it will be administered cooperatively by the federal/state Sea Grant network; and it will be guided by an Advisory Panel of outstanding research and social scientists who will incorporate and build upon the elements included in President's Biotechnology Research Initiative.

-END-

STATEMENT BY

DR. CHRISTOPHER F. D'ELIA

PRESIDENT
SEA GRANT ASSOCIATION

AND

DIRECTOR
MARYLAND SEA GRANT COLLEGE PROGRAM
1123 TALIAFERRO HALL
UMCP
COLLEGE PARK, MD 20742

ON

SEA GRANT APPROPRIATIONS

BEFORE THE

SUBCOMMITTEE ON COMMERCE, JUSTICE, STATE,
THE JUDICIARY, AND RELATED AGENCIES

OF THE

COMMITTEE ON APPROPRIATIONS

U.S. HOUSE OF REPRESENTATIVES

APRIL 2, 1992

ON BEHALF OF

THE SEA GRANT ASSOCIATION

AND

THE BOARD ON OCEANS AND ATMOSPHERE
OF THE
NATIONAL ASSOCIATION OF STATE UNIVERSITIES
AND
LAND GRANT COLLEGES

Mr. Chairman, members of the Subcommittee, my name is Chris D'Elia. I am the President of the Sea Grant Association, the Director of the Maryland Sea Grant College Program, and a member of the Board on Oceans and Atmosphere of the National Association of State Universities and Land Grant Colleges.

I appreciate the opportunity to present testimony about Sea Grant's role in enabling NOAA to fulfill its mission and mandates. I am testifying on behalf of the Board on Oceans and Atmosphere of the National Association of State Universities and Land Grant Colleges (NASULGC) and the Sea Grant Association (SGA).

The Board on Oceans and Atmosphere represents more than 140 major marine research and education institutions in the United States; each is committed to the understanding, conservation, and development of the nation's ocean and coastal resources. The Sea Grant Association consists of 40 colleges, universities, research centers, industries and consortia, all dedicated to enhancing the nation's ability to develop, use and manage our coastal and marine resources. NASULGC is composed of 149 colleges and universities which enroll about 3 million students and grant a majority of the nation's graduate degrees. These two organizations, along with the Council on Ocean Affairs, represent nearly the entire civilian capacity of our country for coastal, Great Lakes and marine research, education, outreach and technology transfer.

I thank the Chairman and this Subcommittee for your continuing support of the National Sea Grant College Program. You maintained faith in us over a long and difficult decade, and we are looking forward to working with you during the 1990s. In FY 93 the Administration budget submittal for NOAA includes a request for a Sea Grant appropriation of \$25 million, a level that is \$16.1 million below the FY 91 core program appropriation. This cut in funding would devastate our marine advisory services. We urge you to continue your strong support of NOAA and of Sea Grant through the core program and the special appropriations which together totaled \$43.9 million in FY 92.

THE SEA GRANT NETWORK'S REQUEST

Core Funding

The fiscal year 1992 appropriation was \$43.9 million. The Sea Grant community requests a FY 93 appropriation of \$47.2 million for the Core Program. This request is based upon the FY 92 appropriations with a small adjustment to the Sea Grant base to accommodate inflation and limited growth consistent with other Federal science agencies. Not only have Sea Grant's Federal resources not kept pace with those of other Federal science-

oriented programs (such as NSF), they have not even kept pace with those of other research programs within NOAA (see accompanying table and figure). Thus while the NOAA budget has outpaced inflation, the Sea Grant budget has lost over 30% of its FY 80 purchasing power due to inflation.

The present request for a modest increase on a percent basis, which is a small increase in actual amount, would enable the Sea Grant community to strengthen its national and regional efforts to enhance environmental management, address public health and safety issues, and assist industry with the transfer of new scientific and technological developments and the creation of economic opportunities.

The Sea Grant Marine Biotechnology Initiative

We also ask for an additional appropriation of \$10 million to begin our Marine Biotechnology Initiative to help get this nation moving with this important endeavor in research, outreach and education. We are poised to begin this work immediately. If the funds we made available to us today, Sea Grant could respond rapidly *and with accountability*.

The Sea Grant network already has in place an effective managerial infrastructure with a strong track record that is clearly capable of directing such a major national initiative. Moreover, as the only program in the marine sector with experience in outreach programs targeted towards the transfer of marine science and technology and the improvement of education in aquatic sciences, we are ready now to see that our discoveries are translated into practical applications at the earliest possible opportunity.

THE NOAA REQUEST AND MARINE ADVISORY SERVICES

The NOAA budget request includes \$25 million for Sea Grant. It assumes a \$16.1 million cut directed at Sea Grant's outreach efforts. A budget cut of that magnitude would eviscerate our communications, education and Marine Advisory Service efforts — efforts that are the major means by which we respond quickly to priority needs and transfer scientific achievements to the private sector.

THE MARINE ADVISORY SERVICES ACTIVITY IS ONE OF THE GLORIES OF NOAA AND THE SEA GRANT PROGRAM. IT TRANSFERS SCIENCE TO USERS, GOVERNMENT, INDUSTRY AND THE PUBLIC, AND IT TRANSLATES THE NEEDS AND CONCERNS OF USERS BACK TO THE SCIENTISTS. SEA GRANT MARINE ADVISORY SERVICES IS THE PRINCIPAL REASON WHY SEA GRANT IS THE ONLY MARINE SCIENCE PROGRAM IN THE COUNTRY THAT IS USER-ORIENTED.

The main problem with Sea Grant Advisory Services is that it has been starved for funds for more than ten years and thus is not being used to maximum advantage in addressing regional and national needs.

The magnitude of a \$16.1 million cut in Sea Grant is such that virtually all advisory service, communications and public education activities would be eliminated. In addition, the impact on state and local matching support for Sea Grant activities would be considerable.

Using another comparison, a cut of this magnitude is equivalent to the current cost of (a) all of the Pacific and Great Lakes Programs combined; or, (b) all of the Atlantic Coast programs from Maine to North Carolina; or, (c) all of the mid-Atlantic, Southeast and Gulf programs, including Puerto Rico; or, (d) all of Sea Grant's fisheries, aquaculture and estuarine research. In other words, a cut of that magnitude will heavily cripple Sea Grant's continuing capacity to respond to national needs on marine resources and the environment. We will also lose the capabilities and relationships that have been so carefully built over the past 25 years.

We have built effective networks and trust. Developing networks, forging credibility, training agents and specialists, accumulating an information base, and ferreting out the conduits of information exchange and outreach are long-term tasks. The efficacy of Sea Grant's Marine Advisory Service is the result of a long-term investment and the enlightened vision of the architects of the original Sea Grant act. But, the most important point of our long-term investment is the trust that our coastal constituency places in Sea Grant. To this constituency, Sea Grant is the primary (in many case the only) source of information to help improve economic return and competitiveness, while also encouraging conservation and wise use of natural resources through environmental education.

WHY SEA GRANT, WHY NOW?

Recent legislation, such as the upcoming reauthorization of the Clean Water Act, has placed our estuaries and coastal areas in the limelight. Legislators, environmental managers, the media and the general public have been made increasingly aware of the existence of coastal ecosystems. They have come to realize the importance of coastal environments and the potential harm that may come to these systems as a result of short-sighted or inadequate management.

This heightened environmental awareness coincides with the maturation of many subdisciplines and multi-disciplinary efforts within the environmental sciences that Sea Grant has nurtured. For instance, computer technology and enhanced modeling capabilities have now made it possible to describe estuarine dynamics with some realism. New instruments and

facilities, and a better understanding of the time frames of coastal processes have opened the door for major advances in understanding in coastal science. The utilization of the expertise represented by NOAA and Sea Grant researchers permits maximum exploitation of such opportunities.

These strengths should be immediately utilized because:

- The U.S. has a serious concern over its competitive relationship with other countries, especially regarding the trade deficit. Seafood products are the third largest trade deficit account, surpassed only by petroleum and automobiles. Research can improve our ability to manage coastal resources, to engage in aquaculture, and to improve our economic return on fisheries resources.
- Our scientists are on the cutting edge of scientific discovery and application. They have a firm grasp of modern technology that can be applied to a better understanding of coastal processes. Failure to exploit this advantage now could mean a loss of opportunity to other interests and demands.
- The highest levels of technical sophistication are now available to coastal and estuarine applications. This technology and capability can be used to enhance scientific inquiry and produce scientific advances similar to those now occurring in deep ocean work.
- Sea Grant programs, which serve as an effective network of 300 colleges and universities throughout the nation, are uniquely positioned to enhance the vital partnership between Federal, regional and state agencies by generating new, relevant information fundamental to better management of aquatic resources.
- Sea Grant is NOAA's and the U.S. Department of Commerce's primary link to the university scientific community. It recruits and trains the nation's future marine scientists and engineers. It also has a Congressional mandate to transfer technology from research labs into the private sector.
- Technology transfer and policy transfer are the important goals which we must continuously strive to achieve.

We, the Sea Grant community, are delivering on the taxpayers' investment in us on a daily basis; moreover, we are poised to continue doing so, to expand, and to initiate high-priority, interdisciplinary and multi-institutional research and advisory programs that address critical coastal issues and bring greater economic vitality to our important coastal areas.

Coastal and ocean science is important to our "environmental security." We must understand our environment sufficiently to make useful and wise decisions regarding its exploitation by society. We must have sufficient understanding to plan for changing environmental conditions, both regionally and globally.

HOW SEA GRANT WORKS

The Congress is well aware of public concern over marine environmental quality and over estuarine and coastal habitat and resource productivity. There is also broad public concern over the intensifying pace of change along the coastline in many areas, while other coastal locations face continued economic decline. These concerns need to be addressed in tandem, for they are vitally linked. Sea Grant has a long track record in dealing with similar issues and is uniquely suited for the effort that is needed.

Sea Grant Communicates: More than any other program available today Sea Grant serves as an effective interactive network of scientists, educators, and advisory professionals "connecting" people with the proper agencies, programs, scientists and information sources and markets. Science is complex — no institution does a better job of communicating science to the general public than Sea Grant.

Sea Grant is a Partnership: Via the coupling built into the original authorization, Sea Grant effectively solves national problems at the regional and local levels through a network of programs located in every coastal and Great Lakes state and U.S. Territories.

Sea Grant is Needed: Now, more than ever before, a program like Sea Grant is crucial to those who live and work near our coasts. If Sea Grant had not been invented 25 years ago, we would have to invent it now. Times are hard and people look to Sea Grant as the most effective government program to help them.

Sea Grant is Cost-Effective: The Sea Grant network evaluated its effectiveness five years ago by estimating identifiable economic returns and cost-savings resulting from Sea Grant-sponsored activities. At that time, we provided a more than \$842 million annual return as compared to a \$39 million one-year appropriation.

Sea Grant is Unique: Sea Grant is the only marine and coastal program in the United States that programmatically combines research and outreach to bring unbiased information to the coastal public. Sea Grant serves as NOAA's main connection to the nation's universities.

- Sea Grant is a national network which can bring resources from across the country to bear on marine problems;
- Sea Grant is highly effective in regional research and outreach planning and coordination;
- Sea Grant's Marine Advisory Services component is critical to its success and is perhaps its most unique feature.

Time and again, Sea Grant has proven its ability to respond to national needs concerning marine resources and the environment with a broad-based program that combines quality science with education and outreach strategies. SEA GRANT IS THE ONLY NATIONAL MARINE SCIENCE PROGRAM THAT ADDRESSES PUBLIC AS WELL AS SCIENTIFIC CONCERNS AND THAT HAS A TOTAL RESEARCH, EDUCATION, TECHNOLOGY TRANSFER AND ADVISORY SERVICE "GRASSROOTS" APPROACH TO PROBLEM SOLVING. Thus, Sea Grant continues to experience broad-based support from the public and the Congress.

SEA GRANT AND OTHER NOAA PROGRAMS

The programs of the National Oceanic and Atmospheric Administration (NOAA) lie at the heart of this nation's ability to detect and anticipate significant environmental changes. These sorts of changes affect the health and safety of our citizens, ensure effective stewardship of ocean and coastal resources, and enhance our economic competitiveness in world markets. Sea Grant is pleased to be a partner with NOAA and wishes to lend its voice in support of key NOAA programs under consideration by your Subcommittee.

We recognize that the FY 1992 appropriations level may not provide adequate resources to maintain current service levels in all programs. We are also cognizant of the limitations of funding for FY 93. We encourage you not only to continue your stalwart support for the National Sea Grant College Program, the National Coastal Resources Institute, and the Coastal Zone Management Program, but we also ask you to recognize the importance of NOAA's responsibility in the Global Change Research Program and the potentials of the Coastal Ocean Science Program.

Through the Climate and Global Change Program, NOAA must fulfill two critical responsibilities in this national effort: (1) contribute unique agency assets and expertise to fill critical gaps in scientific understanding; and (2) serve as the Federal focal point for the routine synthesis of research results into regular predictions and scientific assessments of climate change. As an example, *the improved understanding of the Pacific El Niño events provide predictive capabilities important to the agricultural community in the heartland of our country which needs better climate information to anticipate the vagaries of the weather.* The Climate and Global Change Program helps

to bring about such understanding: the Regional Climate Centers (located in the National Weather Service) ensure that applied climate services and products are made available to constituents.

We would recommend that the Committee address the critically underfunded Climate and Global Change Program, and we join NOAA in recommending support for that Program as a high priority. Sea Grant is anxious, through its outreach efforts, to help NOAA disseminate important findings to users and to provide feedback to assist NOAA in establishing priorities for its efforts.

SEA GRANT NETWORK ADDRESSES NATIONAL NEEDS

We have always based our appropriations request on our ability to respond to public needs, and each year we have reported to your Subcommittee on our achievements. As you are aware, the annual economic benefits to the nation from this program are leveraged over TWENTY TIMES the annual appropriation, and this does not begin to include the numerous other indirect environmental, technological, and educational benefits we have provided.

Over the years, the Sea Grant Association has provided the Subcommittee with numerous examples of Sea Grant's economic contributions. This year, I want to provide another example that illustrates Sea Grant's contributions:

As I mentioned above, after petroleum products and automobiles, seafood products constitute the third largest category of our trade deficit. Americans have an insatiable appetite for shrimp, for example — unfortunately, 75% of what they eat is imported, and this has a negative impact on the balance of payments. Since domestic wild stocks are fully exploited, the only alternative for increasing the domestic supply of shrimp is through aquaculture. To do this efficiently, we must learn how to induce shrimp to breed in captive conditions and manage each stage of their complicated life cycle. The reproductive aspects of shrimp, as is the case for many commercially valuable marine organisms, are far more complicated than of poultry, etc.

Sea Grant developed a coordinated research plan, including research strategies, cooperative investigations and data sharing, with the underlying goal of increasing the efficiency of research efforts. The results of that national workshop were recently published by Elsevier Press as *The Frontiers of Shrimp Research*. Collaborations now regularly occur between the scientists in Hawaii, California, Louisiana, South Carolina, and Texas. They share research space, animal collections, and data with one another. In addition to research, Sea Grant continues to interact with business and industry through its Marine Advisory Service. Active shrimp farming is now underway in several states: Hawaii, Texas, and South Carolina.

I might mention that this growth of the shrimp aquaculture industry has also provided a new market outlet for midwestern grain farmers whose agricultural products are a primary component of commercial shrimp feed. Another profitable market outlet for midwestern grain has the commercial feed ration required for cultured hybrid bass. These animals have been the focus of a coordinated effort begun originally in South and North Carolina. The ability to control their reproductive cycle and induce spawning has been a significant breakthrough supported by nearly a decade of Sea Grant funding. The market potential for these animals is already well established because of consumer familiarity with striped bass. And demonstration farm ponds, established in South Carolina, North Carolina using NCRI monies, and Maryland using USDA monies, have showed their profitability. There are even successful hybrid bass farmers in Kentucky.

THE SEA GRANT INITIATIVE IN MARINE BIOTECHNOLOGY

As I stated above, Sea Grant is requesting additional funding from Congress for a Marine Biotechnology Initiative. We are not simply jumping on a national bandwagon in developing this initiative — indeed, Sea Grant was among the first research programs in the nation to recognize the potential of biotechnology. Below I substantiate this assertion.

In 1983, the Sea Grant network first proposed to develop an initiative in marine biotechnology. In 1985, California Sea Grant Director Dr. James J. Sullivan testified before the House Merchant Marine and Fisheries Committee about the need to channel more resources through the Sea Grant network for marine biotechnology. Other Sea Grant directors have also gone on public record about this since the early 1980's. Unfortunately, our requests for more resources went unanswered and opportunities have been lost. Nonetheless, even in the face of declining base funding — funding which as I mentioned above has seen in the last decade a roughly 30% decline in purchasing power due to inflation — many of us Sea Grant Directors have chosen to allocate some of our scarce resources to support research in this important area.

Now, nearly a decade has passed since we first called for accelerated funding in this important area of technology — an area in which the U.S. holds a slim lead, but one that is shrinking alarmingly. This has great ramifications to U.S. competitiveness and economic self-interest. This year, the Administration has proposed a Federal initiative in biotechnology through the FCCSET process. While well intentioned and eminently worthy of full support by the Congress, this initiative falls woefully short of what is needed to maintain U.S. competitiveness in biotechnology. Although the Administration's initiative gives some attention given to the subarea of marine biotechnology, the request to Congress misses the mark by at least a factor of ten.

AND AGAIN, THE SEA GRANT NETWORK, WHICH HAS LEAD THIS NATION'S EFFORTS IN RESEARCH ON THE PRACTICAL APPLICATIONS OF MARINE BIOTECHNOLOGY, HAS BEEN OMITTED ALTOGETHER.

Mr. Chairman and members of the Subcommittee, our network is not sitting back and "crying in its beer." The issue is too important for our future and for our nation's future to do that — we are dealing with fundamental problems of COMPETITIVENESS, of ECONOMIC GROWTH, of JOBS, and of LEADERSHIP IN THE WORLD. Accordingly, the network has, on its own, marshaled the advice of prominent scientists around the country and produced a bold initiative on marine biotechnology. I have distributed copies of a pamphlet describing this initiative to the Subcommittee.

We need your support now for us to begin even a modest attempt to put our plans into action. We will need the support of the Administration and the Congress next year, to further develop our initiative and to begin to yield its potential.

What Have We Accomplished So Far?

As I said, we have not been idle in marine biotechnology in the last decade even though we have been extremely resource-limited. We are justifiably proud of how much we have done with so little. Let me give you just a few examples of our progress. Sea Grant researchers have:

- Used chitosan, a product extracted from shellfish waste, to treat wheat seeds to reduce fungal infestation, with resultant increases in germination and ultimate yield (up to 10%).
- Developed a rapid enzyme-linked immunosorbant assay (ELISA) for *Vibrio cholerae* in oysters. A commercial firm has adapted this technology to produce a small hand-held kit for detection of contaminated seafood; millions of these kits will be sent to South America to help combat the cholera epidemic there.
- Developed an inexpensive biochemical "dip-stick" monoclonal antibody assay for ciguatoxin, a toxin that is often fatal to humans who consume affected finfish in most tropical areas. This test kit is being produced commercially in Hawaii.
- Conducted basic studies of fish gene expression that have shown that carp contain many genes similar to those of mice. This has led to the use of fertilized transgenic fish eggs as a substitute for transgenic mouse embryos in genetic studies, with considerable savings in cost and handling effort.

- Used a test plant employing naturally occurring bacteria which degrade phenols and demonstrated a 99% drop in the concentration of chlorinated phenols in a bioreactor system. These procedures were tested successfully by the Environmental Protection Agency at a Superfund site, and two firms have contracted to use these procedures in commercial applications.
- Developed vaccines against two major diseases of salmon, IPN and IHN virus. This research sets the stage for commercial development of improved vaccines to increase survival in cultured trout and salmon.
- Developed a triploid oyster that makes possible a year-round rather than seasonal oyster production — this achievement has contributed greatly to the revival of the West Coast oyster industry.
- Developed technologies for delivering growth hormones and gonadotropin-releasing hormone (GnRH) to fish in culture, either through micro-encapsulation or through implants, that have made it possible to induce spawning in captive stocks.
- Cloned growth hormone and growth promoting factor genes of some commercially important fish has led to production of rapidly growing stocks. Injections of growth hormone biosynthesized by bacteria containing this gene increase the growth rate of trout, while transgenic carp and catfish containing copies of this gene grow up to 50% faster than controls.

IMAGINE WHAT WE COULD DO, IF WE HAD MORE FUNDING. . .

What We Want to Do

Our initiative focuses on three main areas in marine biotechnology:

- Molecular Frontiers in the Ocean Sciences
- Applications of Marine Biotechnology
- Marine Biotechnology and Society

Within these areas we will cover a wide spectrum of activities ranging from fundamental research on the functioning of our environment to applied research to improve aquaculture and seafood quality. We will educate future scientists and technicians. We will communicate our results to the public and help it cope with the complex ethical, legal, economic and social issues attendant to technology. And we will help the private sector develop commercial applications of our research.

We fully expect that a national commitment to research and development in marine biotechnology will also help us respond to critical needs of society, such as:

- Open new avenues for monitoring health and treating disease
- Provide innovative techniques to restore and protect aquatic ecosystems
- Increase the food supply through aquaculture
- Enhance seafood safety and quality
- Develop new types and sources of industrial materials and processes
- Expand knowledge of biological and geochemical processes in the world

Considering that the Federal sector in the United States has provided less the \$50 million annually for research and development in marine biotechnology, while in Japan the figure for *marine biotechnology alone* is between \$900 million and \$1 billion, can we expect to remain competitive internationally if we do not make even modest increases in our investments in research and development? Where else in government can such an investment be better made than in Sea Grant?

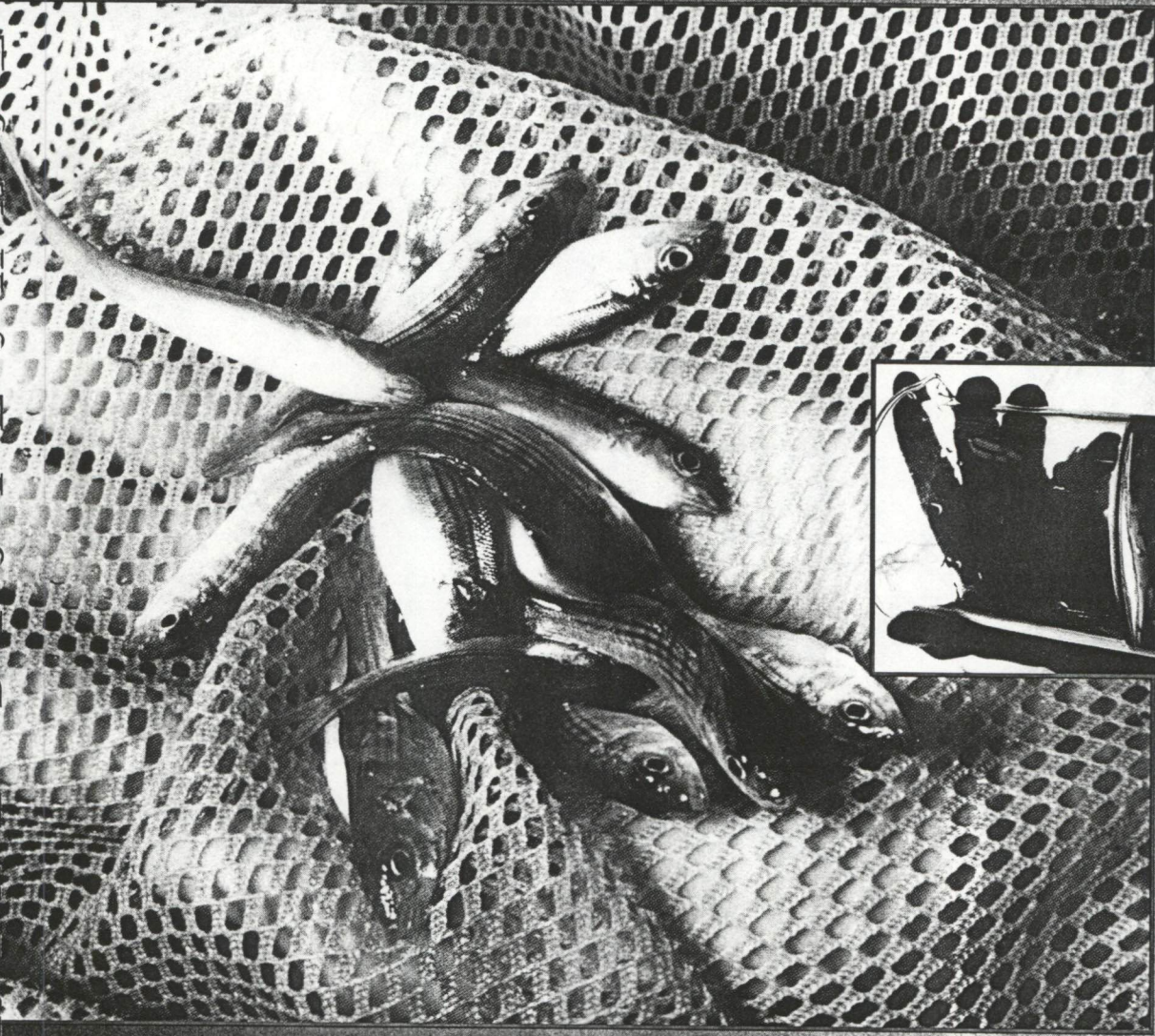
SUMMARY

Mr. Chairman and members of the Subcommittee, I am pleased to have had this opportunity to talk to you today about Sea Grant, about its needs, and about its prospects to help restore this nation's technology base and competitiveness. We hope that you are able to respond positively to our request for a FY 93 appropriation of \$47.2 million for the Core Program and for the full restoration of our Marine Advisory Services, and for \$10 million for our Marine Biotechnology Initiative. As always, we stand ready to serve the Congress, the Administration, and the American people.

I will be pleased to answer your questions.

A SEA GRANT INITIATIVE

MARINE BIOTECHNOLOGY



Competing in the 21st Century

"Document Control"

TYPE: ACTION

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STATUS I

DOCUMENT NUMBER: 9201540

DIRECTORATE STATUS

FROM: VEST, Charles M.: MIT

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 04/23/92

SUBJECT: HE IS WRITING TO ASK DR. BROMLEY TO ENSURE THAT THE
TASK FORCE GIVES SERIOUS ATTENTION TO INDIRECT COST
ISSUES DISCUSSED IN THEIR PREVIOUS MEETING.

DIRECTORATE

ASSIGNED: LIFE SCIENCES

STAFF

ASSIGNED:

ACTION

REQUIRED: AS NECESSARY

STAFF

ACTION:

SENDER'S DUE DATE:

OSTP DUE DATE: 05/13/92

STAFF DUE DATE

DATE COMPLETED:

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CHARLES M. VEST, PRESIDENT
ROOM 3-208
77 MASSACHUSETTS AVENUE
CAMBRIDGE, MASSACHUSETTS 02139-4307
617-253-0148

April 23, 1992

The Honorable D. Allan Bromley
Assistant to the President for Science and Technology
358 Old Executive Office Building
Washington, DC 20506

Dear Allan:

Thank you for taking time from your busy schedule to meet with Tom Everhart and me last week. Your comments and those of D. A. Henderson were candid and helpful, especially with respect to the various indirect cost issues and the matter of graduate student research assistant tuition. Despite the political concerns of the moment, I continue to believe that the revisions of A-21 should be based on sound policy objectives to maintain and enhance the nation's excellence in higher education and research. It is my opinion that the tuition option, which we discussed with you, fits within that framework and will head off an otherwise inevitable decline in the number of engineering and science Ph.D.'s graduating from some of our finest universities. I would greatly appreciate it you and D. A. would help to ensure that the task force gives serious attention to this issue and its ramifications.

I also appreciated your comments about LIGO; we have begun following up on your recommendations. Both the science and technology of LIGO are extremely exciting in my view, and I hope that the nation can see fit to undertake this work.

I am very sorry that I was out of town on April 22 and unable to attend your lecture. My colleagues and I are grateful that you traveled to Cambridge to present it.

With best wishes,

Sincerely yours,

Charles M. Vest

cc: Thomas E. Everhart
D. A. Henderson

"Document Control"

TYPE: ACTION

DOCUMENT NUMBER: 9202520

ORIGINATOR: 02

STATUS I

DIRECTORATE STATUS

FROM: PRESS, Frank: NATIONAL ACADEMY OF SCIENCES

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 07/07/92

SUBJECT: HE IS WRITING REGARDING THE POSSIBILITY OF AN
EXECUTIVE ORDER BEING ISSUED CONCERNING RISK
ASSESSMENT.

DIRECTORATE

STAFF

ASSIGNED: LIFE SCIENCES

ASSIGNED:

ACTION

STAFF

REQUIRED: FOR DAB'S SIGNATURE

ACTION:

SENDER'S DUE DATE:

OSTP DUE DATE: 08/04/92

STAFF DUE DATE

DATE COMPLETED:

DATE COMPLETED/DEPT:

COPIES TO: D. Allan Bromley

WHITE HOUSE TRACKING #:

CONTACT PERSON:

REMARKS:

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OSTP RECEIVED: 07/21/92

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FILE: P-LIFE SCIENCES-RISK ASSESSMENT

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MAIL ROOM

OFFICE OF THE PRESIDENT

July 7, 1992

The Honorable D. Allan Bromley
Assistant to the President
for Science and Technology
Office of Science and Technology Policy
Old Executive Office Building Room 358
17th and Pennsylvania Avenue, N.W.
Washington, D.C. 20506

Dear Allan:

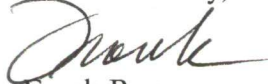
I understand that consideration is being given to issuing an executive order on risk assessment and risk management. This is, as you know, a difficult and controversial subject.

As you and others consider whether the President should take any action in this area now, I wanted to be sure you were aware that the National Research Council is currently conducting a far-reaching study of risk assessment. As required by the 1990 Clean Air Act Amendments, the NRC has established a study committee (known as the Committee on Risk Assessment of Hazardous Air Pollutants (CAPRA)) to review EPA's methods and policies in areas ranging from emissions estimation to exposure assessment to carcinogen identification and potency estimation. I expect that the Committee will make a number of important recommendations responsive to current criticisms of the risk assessment methods and policies now practiced by EPA and other agencies.

The Clean Air Act contains a novel provision requiring EPA to respond in detail to the report's recommendations in the Federal Register. In addition, the results of the report will be provided (as indicated in the Act) to the newly created Risk Assessment and Management Commission. The Committee's report is expected to be completed in 1993, well before the residual risk provisions of the Act come into place.

The NRC and our CAPRA committee stand ready to help you and others involved in this issue in any way we can.

Yours sincerely,


Frank Press
President

DS/FP