PLANS PORTS & PRODUCTIVITY

PROCEEDINGS SEA GRANT 77

10TH NATIONAL
SEA GRANT ASSOCIATION
CONFERENCE

NOVEMBER 16-20, 1977
NEW ORLEANS

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CONTENTS

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WELCOME TO THE 10TH NATIONAL SEA GRANT ASSOCIATION CONFERENCE

The Association is called to order with opening remarks by the president, Dr. Hugh L. Popenoe. The president is introduced by the conference host, Dr. Jack R. Van Lopik.

Dr. Van Lopik: *On behalf of LSU and the Louisiana Sea Grant Program I would like to welcome you to New Orleans. We are pleased to have you in Louisiana and hope you will enjoy and benefit from the 10th national Sea Grant Association meeting. We certainly learned a lot from organizing this meeting. For example, we learned that it is more difficult to deal with the U.S. Postal Service than with NOAA and that negotiating for meeting arrangements is more nerve racking than a site visit. Again, welcome to New Orleans, and with that I would like to introduce the President of the Sea Grant Association, Dr. Hugh L. Popenoe, director of the State University System Sea Grant Program, University of Florida, Gainesville.*

Dr. Popenoe: Thank you. On behalf of the Sea Grant Association I would like to welcome you to our New Orleans meeting. I think many of you will agree with me that the Louisiana contingent has done a very good job in selecting a place for the conference and providing us with a very good program. We are glad to see such a wide mix of interests here at our meeting.

As many of you know, the purpose of the Sea Grant Association is not just to serve institutions involved in Sea Grant business, but to serve the Sea Grant concept by

combining research, advisory service, and education in coastal zone and marine issues. I think this is one of the concepts we need to continue pushing in the Association. Because of our title, many people think we are more institutionally oriented than in reality. On the other hand, those of us closely associated with the Association would like to see it an open forum where the people who are interested in making more effective use of marine resources and the coastal zone come together to discuss their problems and opportunities.

I think the title of this year's program really embodies the Sea Grant Association concept: Plans, Ports, and Productivity. Here in New Orleans we will be addressing some of the nation's port needs. On the other hand, Plans, Ports, and Productivity is one way to look at Sea Grant in terms of developing plans and ports, and of departure; and we will have, this morning, a critical self-analysis of our productivity. I think that the topics have been very well selected.

We will open with some news about where Sea Grant fits into the grand scheme of things in Washington, what we might be doing right, what we might be doing better. We will have an interesting first look at a critical analysis of just how good a job Sea Grant is doing. In the afternoon we will be moving into council sessions. We expect that one outgrowth of the council meetings will be to give us some idea of where we should head in the future.

The next plenary session will be on ports, which is most appropriate here in New Orleans. More council activities are scheduled for the afternoon, and finally, on Saturday morning, for the Sea Grant Association delegates and anyone else who cares to attend, we will have our business meeting.

We have had a very active year. At the business meeting we will be re-doing some of the Articles of Organization and also taking a look at our institutional affiliations with federal organizations, and I think we will be setting the stage very well for the future.

The concept of the Sea Grant Association embraces more than just Sea Grant institutions. We are getting involved in several other activities. Many of you know about the international activities in Title XII, which encompasses Sea Grant-type efforts in fisheries and aquaculture. In the future, there will be funds coming through the Foreign Assistance Act to support international activities. This should expand our horizons somewhat from a strictly domestic program into more of an international program. Many of you may also be aware that the new Sea Grant Act does call for an international component, albeit a modest one.

We hope that you enjoy the sessions of the conference. We are very pleased to see you all here. The Louisiana membership certainly gets high marks--they did a good job--and the New England states are already organizing next year's meeting in New Hampshire. Without further ado, then, I will turn the program back to Dean Van Lopik to introduce the morning sessions.

Dr. Van Lopik: *Biographical sketches of all the speakers were included in the program, so I won't have many comments on their backgrounds this morning. But I would like to mention one thing about Dr. Ostenso. Recently, he has been referring to himself as "the new kid on the block," which reminds me of the little boy who went to the doctor and was vaccinated. When the doctor started to bandage the sore arm, telling him it was necessary so the neighborhood children wouldn't hit it, the kid says, "Put it on the other arm, Doc. You don't know the kids on my block." I think Ned Ostenso probably feels that way after several months as Director of the National Sea Grant Program.*

SPECIAL ADDRESSES

CHARTING A NEW COURSE

Ned A. Ostenso*

I would like to start with greetings from Dick Frank, the new administrator of NOAA. He couldn't make it here today and asked me to extend his greetings and best wishes, and to explain that he must put his attention where the crises are--and not where the problems aren't. The fact that he is not here is tacit testimony of the high regard and confidence he has in the Sea Grant Program.

As was pointed out in my introduction, I keep referring to myself as the new kid on the block. Next week is going to be my tenth-month anniversary. I guess I can't afford the luxury of hiding behind that shield anymore. I do want to make this point so that you will be acutely aware, as I am, of the perspective from which my following comments are made.

Incidentally, it was Jack Van Lopik who picked the title of my talk--it's kind of heady--*Charting a New Course*. He gave up in frustration of my trying to come up with a title. And I told him that the title had nothing to do with what I was going to talk about anyway!

If I were to pick a title now, I don't think it would be anything as heady as Charting a New Course. I think it would be titled, *My Perception of the Navigation Hazards Ahead*. I want to emphasize that this is a perception,

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*Director, National Sea Grant Program

and I hope if you perceive otherwise you will let me know.

My ten months on the job have been a raucous, wonderful, frustrating, egalitarian, enlightening experience. But probably the one thing that is most frustrating to me is that, because the Sea Grant Program is an egalitarian program in every sense of the word, the manager's job, or rather the steward's job, *my* job, is not a limited exchange with two ends; its a ring. And I never know where I am in the ring.

For instance, I'm sure when I get back home I'm going to get a lot of flack from the people who fancy they are my boss, and who will probably say something to me because I had that draft of the International Projects guidelines typed and distributed to you before they have cleared through NOAA channels.

On the other hand, I'm getting flack down here, because the guidelines are in draft form without having had adequate input from the Sea Grant Directors. Moreover, the people who are our friends on the Hill--and I mean that word 'friends'--have a reasonable expectation that, as drafters of the legislation, they ought to have a part in drafting the guidelines.

So where do you start in this process? Well, you just keep going around and around the loop and hope that something spins out eventually.

The other problem I have is that as W. C. Fields once advised an aspiring vaudevillian, "Never follow an animal act." That's what I'm doing. Bob Abel had the cunning of a crow, the speed of a swallow, the stamina of an albatross, wisdom of an owl, the laugh of a loon, and the head of an eagle. And I don't mean a golden eagle, either. I think this is why B. J. Copeland keeps referring to him as an odd bird.

It's a wondrous heritage I picked up. And the navigational buoys that I'm trying to perceive unfortunately aren't anchored, but drifting around.

What I would like to talk about are my perceptions of the heritage of the past, the future and the evidence I have from my view of the future, so you will know the data base that I'm working from, the essential ingredients for getting where I perceive we ought to go, and the real threats that are ahead of us. So, if you will bear with me I will take these one at a time.

The Heritage of the Past

The essential truisms of the Sea Grant concept that I think are invariant with time are, first of all, that the whole concept behind Sea Grant is to make use of the intellectual talent and the institutional infrastructure that exists in academia. We hope to take advantage of the infrastructure and talent of the universities to address problems as appropriate to their capabilities. The principle that a partnership exists between the federal government and academia in Sea Grant is a philosophy not enjoyed by many other government grant programs. There is an essential difference between what we do in Sea Grant and normal federal government/university relationships. The usual government interface with academia involves the agency seeking an individual relationship. The funding agency deals directly with the investigator. Over the long range, this has had what I think are some threatening effects on academic institutions--as sort of holistic, intellectual enterprises. Different people answer to different funding agencies against different ground rules. Loyalties become associated with the sponsor versus the department or institution.

By contrast, the Sea Grant Program is an agency-to-institution relationship. An essential element of the partnership is that a great deal of management is vested in the institution. This offers the opportunity to bring the universities back together as an intellectual unit. And I think this is an essential element of the Sea Grant Program.

Another important ingredient of the program that should be invariant with time is to identify a need or an opportunity at the source. I want to emphasize that

the essential strength of the Sea Grant Program is that the people in the hustings identify what the needs are, what the opportunities are. They identify protocol for meeting these needs and/or opportunities. As a result, Sea Grant is looked upon as a sound taxpayer investment. The taxpayers, in most cases, get much more out of Sea Grant than they put into it.

My View of the Future

Going from that heritage and looking to the future, I can see a sort of evolutionary process as we go from the first decade of conceptual development and capability development into implementation. And that is a transition from the Sea Grant Program's being a kind of cottage industry approach to problem solving to more of a nationally coherent attack on problem solving. What do I mean by cottage industry? Government agencies are organized--and appropriately so--along goal missions. They are established to produce food, to provide transportation, to meet the essential goals of the nation. Most of the federal agencies do a reasonable job meeting these goals. Most of them do a pretty crummy job at research; and they don't do a very good job of laying the foundation for the future. They do a splendid job of meeting the needs of the day, of facing up to programming, and of coming to grips with clearly identified existing problems.

By the same token, universities are prepared to do research. They are organized along disciplinary lines, not goal-oriented lines. The departments are in physics, geology, chemistry, and so forth, and whenever a university establishes a goal-oriented structure, it usually doesn't do very well.

I risk erring and overgeneralizing now, and I recognize this. But one way, as I look back at Sea Grant--and I'm not about to argue with success--is that the individual Sea Grant programs have been relatively autonomous. This has put the burden on the researcher to be a goal setter. Instead of saying, "You know, I'm going to do what I do best," which is microbiology, or organic chemistry, or

marine geology, or whatever it is, they have to cast what they want to do in terms of some definable goal. And then their progress in the Sea Grant milieu of things is measured in terms of meeting this goal instead of toward producing the thing that they have trained all of their lives to produce. Furthermore, the goal orientation is frequently alien to the reward structure of the institution of which they are members.

How can we change this? I think one way we can approach it is to put less of the burden of goal setting on the individual investigator and to make the Sea Grant network collectively more of a goalie, if you will, to make a terrible pun, leaving the individual Sea Grant investigator, agent, communicator, or whatever to do that which best contributes to this goal. This is not directing the program from Washington. It's getting the input from the Sea Grant network, deciding collectively what we ought to have for relatively long-term goals, then deciding what fits in, what the essential ingredients are, and then assembling the researchers, the advisors, and the rest of the structure to get on with it.

The analogy I like to use is what has happened in the last year in the K-12 educational program of Sea Grant. I think this is the thing that would be very attractive to be emulated in other areas. The Sea Grant advisors, researchers, practitioners, and pre-college educationists have gotten together; they have the communication network. They have met, and each understands what the other is doing. They have a scope of broader-term goals. They are meeting again in about six months. The initiative from the Office of Sea Grant was just to get people together. They are starting to get together now for the second time by sending out a letter that said, "What do you want to do? What do you want to do when you get together next time? What should we look to in the future?"

I think this is the challenge that we have to face: Instead of making the Sea Grant Program a hegemony of 800 discrete tasks, we should take these tasks and facilitate coordination among the researchers. Out of this coordination I think will come--through the collegial process--direction and identification for the program.

Now having said that, my next rubric is the evidence for why I feel the way I do. And I've got five pieces of evidence.

What is the legislative involvement of the Sea Grant Program? If any of you are grousing about legislative meddling, bear in mind that the Sea Grant Program, a child of the legislative branch, exists because of legislative financing. We have the enthusiastic support of Congress. We have its confidence--and a necessary consequence of having anyone's support and confidence is that they look to you for help. This is something for which we should feel honored, something to which we should be responsive.

Let me give you just one case in point--the case of the Sea Grant International Program. Wise heads realized that a new de facto consequence of the Law of the Sea negotiations, even if a treaty is not consummated or ratified, will be a consent regime for research within the 200-mile limit.

In fact, more than 40 nations unilaterally already have gone to a consent regime. The national government, if I can use that word, realizes that an essential ingredient for consent, the minimum ingredient, is going to be the right to participate in research and have access to the scientific data accumulated from that research. An essential ingredient for that to happen is to have a *capacity* to participate in the research and know what the data mean. Therefore, it was concluded that it is in the national interest to develop marine capabilities in less developed coastal countries. They looked around the federal structure, and they said "What institutional arrangement in-being is best able to fulfill this national need?" The answer, of course, was "Sea Grant." And that's why the Congress turned to us. And this is just one example.

A second piece of evidence I have is that Sea Grant has gained more respect in the federal structure--thanks primarily to you--as an agency fully capable of dealing with national needs. When the people of the executive

and legislative branches got together at meetings and discussed national goals, national problems, and needs, it used to be that there would be an excruciating litany of a whole list of agencies, and then, afterwards, they would say, "Oh yes, then there's Sea Grant." But that's changed. Now when people in Washington are discussing national needs and problems, Sea Grant is one of the first agencies to be discussed as a potential contributor to the these goals. Again, the price of success may be high!

Thirdly is the frustration I perceive of outsiders--people in mission elements of NOAA, other agencies, or in the greater outside world--of trying to interface with the Sea Grant Program at the national level. Our office is structured along institutional lines, and people don't come to us with questions of what's going on in Massachusetts or Mississippi or Alabama. The question they ask is, "What's going on in marine erosion, shrimp aquaculture, or whatever." A case in point occurred a month or so ago with a call from the Office of Science and Technology Policy of the White House with very specific questions. "What's going on in the Sea Grant Program in a particular aspect of marine extracts?" I didn't have a ready answer. That does not build confidence in us. I couldn't say, "Hey, we've got here a program director of marine biomedicinals and marine extracts, I'll plug you in with him. He monitors the entirety of the Sea Grant effort that goes on in this area. But, not only that, he also tries to stay abreast of what goes on in the nation, and the world, in this area. Most importantly, he knows what is not being done and ought to be done." So, we do have a terrible impedance mismatch in trying to accommodate ourselves to the outside world.

Fourthly and fifthly, pieces of data I have are a dissatisfaction of the Sea Grant investigators with themselves and with the Office of Sea Grant in Washington. And I'm not going to dwell on that because it is going to be developed in the next talk by Drs. Palmer and Shannon.

So this is the evidence I see; you may see other evidence. You may disagree with what I see, and I welcome your comments.

The Essential Ingredients of Getting to Where I Think We Ought to Be

One ingredient is that by whatever process is required, we have got to get the best talent associated with the Sea Grant Program. Structurally, the fact that management is vested in the institution, that there are no institutional barriers between disciplines, and that there are no artificial barriers to the researcher trying to translate his discovery into application are encouraging. With these criteria, the Sea Grant Program should attract the best minds in the universities.

A second essential ingredient for success, I believe, is within the National Office of Sea Grant. Again, I use the K-12 educational program as a case in point.

Now, finally, let me talk about the threats. One, a natural trend--an inevitable trend--of trying to coordinate programs, is that this will be carried from the extreme of having the coordinating mechanism dictate policy. So, when I say, "What's needed is a central focus of coordination," I mean *just* coordination, and that should not be confused with program management. To be an effective coordinator, one has to have mechanisms to make sure that they are, indeed, coordinating and not directing. I think we have those institutional mechanisms through the Council of Sea Grant Directors, through the Sea Grant Association, and through the daily contact we have with the directors and investigators and all the other participants in the Sea Grant Program. So, I don't think it's so much of a problem, as it is a potential threat.

The other threat we face is trying to become everything to everybody; no one can. The mandate of our legislation is so broad that it essentially tells us to try to do all things for all people. We can't. We have got to scope what we can do, what we are in the best position to do; to try to do that well and admit that we are not trying to do everything. Again, as I mentioned before, I think one bounding condition of the Sea Grant Program is an element of intellectuality. The purpose of the Sea Grant

Program is to marshall existing talent to solve the difficult problems.

My definition of good research versus applied research is, "most good research is phenomenologic understanding," to understand the phenomena, to parameterize the problem so that you have the right ratio of unknowns to the equations, to proceed a step at a time along a protocol of achievement.

It's not the process that distinguishes basic from applied research, but unfortunately "basic" and "applied" research are frequently used synonomously with "quality" and "lack of quality" research. I just don't buy that at all. To me the distinction is, "Do you know why you want to understand the phenomenon? Do you think that understanding the microbial process is relevant to marine fouling, for instance." Then it's applied research. If you want to study an enzyme or process simply because it is a question that has presented itself, and it is worthy of understanding, and you are not sure why, then it calls for basic research and outside the pale of the Sea Grant Program.

The other bounding condition for the Sea Grant Program is the essentiality of being tied to the state or region. Accordingly, I think that any state or confederation of states or regions has a finite carrying capacity for Sea Grant Programs. In fact, this year we are getting a first budget increase of seven out of the Office of Management and Budget, and I think the sole reason for this is that we've convinced that office that the Sea Grant Program is not an endless pit down which one throws federal dollars; it is a bounded program.

These are perceptions from my vantage point. Looking to the past is rewarding, looking to the future is exciting.

Thank you.

NATIONAL SEA GRANT PROGRAM—A PRELIMINARY REPORT OF PERCEPTIONS IN THE ACADEMIC COMMUNITY

David D. Palmer and W. Wayne Shannon*

We are pleased to have this opportunity to share with the Sea Grant community our preliminary analysis of academic marine scientists' perceptions of the National Sea Grant Program.[1] Sea Grant is now a bit more than a decade old. In that brief period it has become a major component of a complex system of relationships in the marine sciences that has been evolving between the federal government and the university since World War II. Although Sea Grant is only one of more than a dozen programs that we are studying in our comprehensive investigation of the federal funding system for academic marine science, we believe it merits very special attention. While federal agency involvement with the oceans has undergone impressive expansion in the last few years, *relatively few agencies have developed more than a marginal or peripheral relationship to the academic marine science community.*

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*David D. Palmer is assistant professor of Management and Administrative Sciences and W. Wayne Shannon is associate professor of Political Science, University of Connecticut.

1. Throughout this paper we intend "marine science" to be very broadly defined to include such areas as ocean engineering, resources development, and management and marine affairs.

We view Sea Grant along with the ocean programs of the National Science Foundation and the Office of Naval Research as the central existing linkages between the federal government and the great reservoir of talent that lies in the university. While each of these programs differs in one or more important ways from any other (and, indeed, a complex division of labor has evolved inside NSF in the form of the Oceanography Section, IDOE, the Office for Oceanographic Facilities and Support, etc.), together, these programs constitute the essential support structures of the platform on which university ocean research and education now stand. Here lies the great bulk of federal funding. Here, by far the greatest degree of contact takes place, mainly under the mechanism of the "grant" with its special and well understood connotation of freedom and self-definition on the part of university faculty and professional research personnel.[2]

Sea Grant, as we see it, is a unique component of the federal government-university relationship in the ocean sciences. If knowledge is to be applied to the solution of practical problems, its function is critical; its emphasis on *application* in research, education, and extension gives it a very special role. To what extent does the academic marine science community support this role? To what extent do they think it has been successfully implemented? How do they view the quality of Sea Grant research? What do they see as problematic or praiseworthy in their contacts with Sea Grant management? These are some of the questions that we would like to analyze in a very preliminary fashion today.

As we shall see, the academic community's assessment of Sea Grant is not in some ways as positive as Sea Grant might like it to be. We would serve no useful purpose by attempting to obscure that fact. Our purpose here is a constructive one. We are conducting a careful study,

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2. While ONR has employed "contracts," we think they have been very "grantlike." We have much evidence that they are perceived in this manner in the academic community and that contracts let by some other agencies are not.

designed to bring the best information available to those in the federal agencies *and* the universities who have interest in understanding and improving the federal funding system for academic marine science. It seems most important to us that the Sea Grant community has an accurate assessment of academic marine scientists' perceptions of the Sea Grant program. These perceptions as well as those of Sea Grant's other constituencies are surely relevant to the subject of discussion here today--whether or not there is reason to chart a somewhat corrected course for the agency at mid-passage. If a "new course is to be charted," we offer some possible bearings that the navigators may wish to take into account.

Before we turn to our analysis of the academic community's perceptions of the Sea Grant program we need to say a few words about our larger study. In addition to conducting dozens of lengthy interviews with federal agency and program administrators, we are studying the marine programs in fifty-two selected universities and colleges throughout the country. In each case we visit the institution, interview laboratory and program directors, most Sea Grant Directors, and collect extensive grant and contract financial data. We are also employing a mailed questionnaire to survey recent graduates of the programs to obtain information on their subsequent employment and their retrospective assessment of the quality of their education.

The last component of this comprehensive study--a mailed questionnaire to faculty, professional research personnel, and administrators of academic marine programs and laboratories at the fifty-two universities and colleges in our sample--is the basis of our presentation today. Briefly, we should like to explain the methodology we employed. Administrators of the academic marine programs (often Sea Grant Directors) provided names of all professionals involved in marine education and research at their institutions--a total of more than 2,100 people. We mailed questionnaires to more than 1,800 randomly selected individuals. In due course 325 of these individuals informed us that they were only peripherally involved in marine-related teaching or research. Of the approximately

1,475 other individuals nearly 800 responded, yielding a response rate of 54 percent.

We believe that our achieved sample is representative of the marine science community in the broad range of institutions that we are studying. It is composed of approximately one quarter who hold laboratory, program, or academic administrative positions; one half who are faculty members; and one quarter who are professional research personnel. With respect to primary fields of research, biology comprises 30 percent; chemistry, 10 percent; geology and geophysics, 20 percent; physical oceanography, 17 percent. The remaining 23 percent include mainly those in ocean engineering, fisheries, and social science.

The data displayed in Table 1 show the percentage of people within our sample, broken down by their research fields, who have received support from four major federal marine programs. Overall, Sea Grant, ONR, and NSF's Oceanography Section have provided funding for approximately 30 percent of the individuals, while IDOE provided support for approximately 20 percent. These data do not, of course, indicate the dollar amounts of the support, nor do they distinguish people who received only one award from people who received several.

There are, as we would suspect, great variations among the patterns of funding for persons in the various marine-related disciplines. Substantial numbers of biologists received funding from Sea Grant or the Oceanography Section. Approximately 30 percent of the chemists have had awards from Sea Grant, IDOE, or ONR, and half have had support from the Oceanography Section. Support for the geologists, geophysicists, and physical oceanographers tends to be concentrated outside of Sea Grant, but even there, one in six have received funding under the program. Sea Grant's distinctive role is illustrated clearly by the high proportion of the "other" discipline group with Sea Grant sponsorship. Among these four major federal programs, Sea Grant provides the principal support for the marine-related research conducted by academics in ocean engineering, fisheries, and the social sciences.

Table 1. Proportions of adacemic marine scientists by field, reporting support by four major funding programs in the past five years (data in percentage).

Primary Field of Research	Sea Grant	IDOE	ONR	Oceanography, NSF	N
Biology	33	9	14	25	226
Chemistry	27	29	33	49	73
Geology and Geophysics	14	39	44	61	144
Physical Oceanography	18	34	59	40	121
Other*	44	8	27	10	169
Total	29	21	32	33	733

*Other consists primarily of ocean engineering, fisheries and social sciences.

We turn now to our analysis of the academic marine science community's perceptions of the National Sea Grant Program. Four questions in our survey allow us to approach directly the attitudes of marine faculty, administrators, and professional research personnel toward Sea Grant's goals, performance, and perceived relevance to their own research interests. The data in Table 2 bear on these concerns. Do academic marine scientists support the basic thrust of the Sea Grant concept--application of knowledge to the solution of practical problems through cooperation among universities, the business community, and public officials? Do they think that Sea Grant has successfully implemented this concept? Do they see their own research interests and goals as closely related to those of the Sea Grant Program? These would seem to be centrally important questions for the National Sea Grant Program.

Table 2. Attitudes of academic marine scientists toward Sea Grant goals, performance, and relevance to personal research interests.*

Sea Grant Issues	Percent Agree	Percent Disagree	N
Goal of Sea Grant is highly worthwhile			
No contact	80	20	214
Proposal(s) not funded	73	27	137
Received funding	86	14	208
New Institutional capability			
No contact	53	47	197
Proposal(s) not funded	48	52	136
Received funding	64	36	205
Success in applying knowledge to practical problems			
No contact	39	61	180
Proposal(s) not funded	35	65	133
Received funding	51	49	203
Personal difficulty relating to Sea Grant programs			
No contact	84	16	250
Proposal(s) not funded	58	42	139
Received funding	44	56	205

*Those reporting ad hoc or panel review activity but no funding have been eliminated from this analysis. This number is small.

Our most direct approach to the question of support for the Sea Grant concept is the item, "Sea Grant's goal of promoting contact between marine scientists, social scientists, business men, and public officials is highly worthwhile." The response to the statement is unusually clear. There is very strong support for the Sea Grant concept within the university marine community. As Table 2 demonstrates, there is little variation in support of the Sea Grant concept by degree of contact with the program. Although the highest level of support (86 percent agreeing with the statement) is manifested by

those who have enjoyed Sea Grant funding in the past five years, those with no contact and those who submitted proposals but received no funding are also highly supportive (79 percent and 73 percent agreeing with the statement). Given all that has been written about the "pure science" or ivory tower orientation of both scientists in general and marine scientists specifically, we are struck by the strong endorsement our respondents give to the Sea Grant concept.

When we move, however, to the two questions bearing directly on the respondents' perceptions of how well the Sea Grant goal has been implemented, the picture becomes more complicated. Sea Grant, unlike most other federal ocean programs, seeks to create a new institutional capability in the university that goes well beyond the more usual support of projects of individual faculty and research personnel. How well has this come off in the eyes of the university marine community? The reviews are mixed. In answer to our statement, "Sea Grant has created a new kind of institutional capability that is highly valuable," only those who have had Sea Grant funding can be said to give a very favorable response (64 percent agreeing). Among those with no Sea Grant contact and those unsuccessful in securing funding, the result is practically an even split; a bit fewer than half of the first group and a bit more than half of the second doubt that any valuable new institutional capability has resulted from the Sea Grant effort.

When we ask for an assessment of Sea Grant's success, generally, in "applying marine science knowledge to the solution of practical problems," the response pattern alters toward yet greater skepticism. Here, even Sea Grant fundees are almost evenly divided between agreement and disagreement with the statement that Sea Grant's performance has been "very successful." The majority of those in the other two groups disagree with the statement by large margins (61 percent and 65 percent).

Our inquiry into the perceived fit between individuals' research interests and goals and Sea Grant programs yields a most interesting and largely unanticipated

response pattern. Nearly two-thirds of our respondents state that they have difficulty relating their research interests and goals to Sea Grant programs. On this question, not surprisingly, there is significant variation of attitudes among persons with different degrees of Sea Grant involvement. Among those reporting no contact there is very little perceived congruence of research interests and Sea Grant programs; fully 84 percent of this group agree with the statement. A clear majority (58 percent) of those with contact but no funding also agree. While the Sea Grant fundees are much more inclined to see a good fit between their research interests and goals and Sea Grant programs, *it is nevertheless striking that nearly half (44 percent) of those with Sea Grant funding report difficulty relating their own research interests and goals to Sea Grant programs.*

In general, we think these data merit the close attention of the National Sea Grant office and the Sea Grant Directors. Although the university marine community overwhelmingly approves of the Sea Grant idea, it seems to us to be saying that it doubts that the concept has been successfully implemented to date and that it has more than a little difficulty relating its own interests to Sea Grant programs. This latter finding is all the more interesting in light of other questions in our study relating to the interest of our respondents in "basic" and "applied" or "policy-oriented" research. Although many academic marine scientists may be considered unable to relate easily to Sea Grant because they are "basic" or "purist" in their approach, it seems to us important to note that 65 percent of the entire group described themselves as having "applied" concerns. Some 26 percent described themselves as having "policy-oriented" concerns. While there is no doubt in our mind that there is a strong "basic science" mind set among many in the academic marine science community, that mind set cannot account totally for the difficulty in relating to Sea Grant programs that so many express.

Next we would like to analyze what we conceptualize as the "professional reputation" of Sea Grant as a research

sponsor. The first element of this is simply the judgment of individual faculty members and professional researchers in the university on how satisfactory they think they would find a working relationship with an agency, *were they to have one.* In a sense we think it is also a judgment about who they and others would like to work for if they had a choice. In order to get at this we asked individuals to rate all federal ocean research sponsors on a scale from "highly satisfactory" to "highly unsatisfactory" on the basis of how "you think academic marine scientists find their working relationships (grant or contract) with each." Here, to give Sea Grant's reputation some meaning, we need a basis for comparison. We have chosen in this analysis to limit comparison to three other major *grant* programs among the federal marine agencies--IDOE, the Office of Naval Research,[3] and NSF's Oceanography Section. We are mindful that each of these programs is unique in certain respects. In many ways they are dissimilar. Some may think it unfair to compare Sea Grant to the other programs at all, because, unlike them, it is more than "just a research support program." We do not think this is a valid argument. Sea Grant's major instrument for marine "technology transfer" is university research. The best advisory network in the world would be of little use if it were based on inadequate marine science and technology. Research is the foundation on which Sea Grant rests. Its reputation as a research sponsor is of primary importance.

Our data, reported in Table 3, we think, should merit attention throughout the Sea Grant network. Comparatively, Sea Grant's reputation as a satisfactory research sponsor is by far the lowest of the four major grant programs. The table reveals a consistent pattern of responses across the groups representing various degrees of contact with each of the programs. Oceanography/NSF comes off best, followed by ONR, IDOE, and Sea Grant. Just why this is so is the stuff of a much more lengthy analysis than we can perform here. We

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3. Principally, "Code 480." Please see footnote 2.

Table 3. Attitudes of the academic marine scientists toward working relationships with four funding programs.*

Funding Programs	Percent Highly Satisfactory	Percent Generally Satisfactory	Percent Unsatis-factory	N
Sea Grant				
No contact	13	57	31	128
Proposal(s) not funded	8	37	55	132
Received funding	21	43	37	207
IDOE				
No contact	23	64	13	168
Proposal(s) not funded	22	44	35	78
Received funding	37	44	19	156
ONR				
No contact	21	68	10	164
Proposal(s) not funded	19	60	21	100
Received funding	42	50	9	234
Oceanography, NSF				
No contact	32	58	11	124
Proposal(s) not funded	31	51	18	96
Received funding	51	45	4	244

*Those reporting ad hoc or panel review activity but no funding have been eliminated from this analysis. Their numbers are small. Those claiming insufficient knowledge to answer the question are also excluded.

believe many things are involved--among them the preference of some faculty and university researchers for "basic" over "applied" research, strong disciplinary orientations; and dislike of management and administrative "hassle." Additional data below and much to come in the future from our survey and personal interviews throughout the universities and labs in our study provide some interesting leads to the reservations many in the university community hold about Sea Grant as a sponsor of their research. We would note here only that these data would seem to merit thought in the national office and

all the Sea Grant institutions. The proportion of funded individuals who regard Sea Grant as an unsatisfactory research sponsor is nine times as high as in Oceanography/ NSF; four times as high as in ONR; nearly twice as high as in IDOE. More than a third of Sea Grant fundees rate Sea Grant as a generally or highly unsatisfactory research sponsor. Those without contact do approximately the same. Of those with contact but no funding a whopping 55 percent give Sea Grant a poor mark.

A second facet of what we are conceptualizing as Sea Grant's reputation as a research sponsor is the judgment our respondents make about the "overall quality" of the marine scientific work it has funded. In the course of our study we asked our sample to rate the quality of work funded by all federal agencies with significant marine programs. Here, as above, we limit the present analysis to a comparison of Sea Grant, IDOE, ONR, and Oceanography/ NSF. Because it may be thought that our choice of wording--"academic marine science work"--does not fit very well many types of projects that Sea Grant has sponsored, e.g., ocean engineering, applied science, and technology, we wish to make clear that we explicitly stated in our questionnaire that "marine sciences should be interpreted in a broad sense to include, for example, marine affairs, and resources development and management." We asked, in other words, for a judgment of overall quality of the many and varied types of marine-related research that federal agencies have sponsored in the university. Judgments of respondents are reported in Table 4.

The responses are highly patterned in somewhat the same manner as in the data on "working relationship" above. The academic marine community thinks the work of highest quality is performed under the sponsorship of Oceanography/ NSF. ONR and IDOE are a close second and third. For whatever reason, and again we caution that we are only reporting a preliminary analysis that needs greatly to be deepened in the coming months, Sea Grant's research output seems to be perceived in a much less approving manner. Majorities of our respondents in each category

Table 4. Attitudes of academic marine scientists toward the quality of scientific work funded by four funding programs.*

Funding Programs	Percent Excellent Quality	Percent Generally High Quality	Percent Mediocre	Substandard/ "Not Science At All"	N
Sea Grant					
No contact	3	29	45	23	185
Proposal(s) not funded	2	27	40	31	137
Received funding	5	39	37	20	204
IDOE					
No contact	22	57	19	3	216
Proposal(s) not funded	23	54	19	5	80
Received funding	26	56	16	3	155
ONR					
No contact	17	67	15	2	198
Proposal(s) not funded	21	60	19	1	102
Received funding	35	55	8	2	237
Oceanography, NSF					
No contact	27	65	6	3	161
Proposal(s) not funded	34	55	11	0	93
Received funding	45	53	2	0	246

*Those reporting ad hoc or panel review activity but no funding have been eliminated from this analysis. Their numbers are small. Those claiming insufficient knowledge to answer the question are also excluded.

of involvement--even those who have been funded by Sea Grant in the last five years--rate Sea Grant research as "mediocre," "substandard," or "not science at all." When we look at the "quality of overall work" that is judged to be of "excellent" and "generally high" quality for all of the federal agencies in our study (with no control applied for degree of contact with the agency), Sea Grant ranks eleventh from the top, followed in rank order by the Coast Guard, EPA, the Army Corps of Engineers, and the Bureau of Land Management. Whether these data

indicate a problem for Sea Grant, we leave for the moment to the Sea Grant community. At any rate we believe it is useful for the community to know how Sea Grant's research effort is judged in the academic marine science community.

Another area of interest is the negative and positive experiences that university marine faculty and professional researchers have had with the various agencies sponsoring this research. We listed six potential problems and five positive experiences they may have had and asked them to identify the agencies responsible for each. Here the analysis is limited to persons actually having contact with each agency.

The problems our respondents experienced with Sea Grant, IDOE, ONR, and Oceanography/NSF are reported in Table 5. By and large the picture here is not one of great discontent. For all that has been written about the complex and extended nature of the Sea Grant proposal review system, we might expect to find much more complaint than is apparent about "excessive delay" and "obtrusive regulations." Sea Grant does not seem to be criticized by many in our sample on these grounds. Nor is there much concern with "discriminatory treatment." It would appear that there is a relatively high number of Sea Grant fundees (22 percent) who claim they have had grants awarded with "clearly inadequate" funding to carry out the work they proposed. It also appears that a relatively high percentage of those who have submitted unsuccessful proposals as well as those that have led to funding (29 percent and 25 percent) feel they have had to deal with program officers "insufficiently competent" in their specialties to properly assess their proposals. On this ground fairly high percentages of ONR and IDOE fundees also see a problem. As is to be expected, a good percentage of those whose proposals were rejected by all of the agencies report the agency "not interested in the sort of research I wish to conduct." It may be of some concern to Sea Grant, however, that nearly a quarter of its fundees in the past five years report a lack of program interest in their research. Here, we also think it fair to note that Sea Grant's range of potentially

fundable research is much broader than that of the other agencies examined. It may be inherent in the operation of such a broad program that many faculty and researchers come to feel that there is not as much Sea Grant interest as there ought to be in their special areas of interest.

Table 5. Problems reported by academic marine scientists who had contact with four funding programs (data in percentage).

Problems	Sea Grant	IDOE	ONR	Oceanography, NSF
Experienced excessive delays in decisions				
Proposal(s) not funded	8	17	9	4
Received funding	13	12	6	9
Subjected to obtrusive regulations				
Proposal(s) not funded	10	4	3	1
Received funding	11	8	6	2
Subjected to discriminatory treatment				
Proposal(s) not funded	11	13	7	3
Received funding	10	3	4	2
Grant(s) awarded with *clearly* inadequate funding				
Received funding	22	7	9	13
Encountered program officers insufficiently competent in my speciality				
Proposal(s) not funded	29	18	17	12
Received funding	25	16	19	6
Agency not interested in the research I wish to conduct				
Proposal(s) not funded	35	17	32	24
Received funding	22	7	14	5

Turning to compliments rather than complaints makes things look somewhat less favorable for Sea Grant management. These data are summarized in Table 6. Especially among those with funding, relatively fewer respondents view Sea Grant as very prompt in reviewing proposals and arriving at funding decisions. While all agency fundees are more likely to see program managers with whom they deal as more competent than those whose proposals have been declined, relatively fewer Sea Grant fundees see the program managers they deal with as "very competent in my specialty." Again, the broad nature of Sea Grant's program may be at the root of this relative

Table 6. Compliments reported by academic marine scientists who had contact with four funding programs (data in percentage).

Compliments	Sea Grant	IDOE	ONR	Oceanography, NSF
Experienced prompt processing				
Proposal(s) not funded	15	17	17	28
Received funding	23	33	48	53
Encountered program officers very competent in my speciality				
Proposal(s) not funded	7	20	16	20
Received funding	19	30	43	55
Agency very interested in the research I wish to conduct				
Proposal(s) not funded	11	18	13	18
Received funding	28	38	52	56
Agency farsighted in recognizing important research problems				
Proposal(s) not funded	6	11	4	8
Received funding	11	21	23	26
Agency flexible in altering course of research underway				
Received funding	21	32	41	52

paucity of praise for managers' competence. It also strikes us as interesting that relatively fewer of the Sea Grant fundees think the Sea Grant management has been "creative and farsighted" in recognizing important research problems and flexible with respect to facilitating changes in the direction of projects "when it makes good scientific sense." In general, our respondents seem to be saying that the "working conditions" under Sea Grant sponsorship are not as rewarding as those under the other three major programs. As several of our questions bear on values that are known to be highly cherished by academicians--competence in specialized areas of knowledge, freedom in defining research problems, creativity in terms of judging what problems are the important ones "down the road," and flexibility in the conduct of research--we think these data are highly suggestive as factors related to the general esteem in which Sea Grant and other federal research sponsors are held by the academic community. As we deepen our analysis in the coming months we will pay close attention to this area.

Summary and Conclusions

Our preliminary analysis of the academic marine science community's perceptions of the National Sea Grant Program leads us to several tentative conclusions that we believe may be of use to the National Office and the Sea Grant programs throughout the universities as they work jointly to perfect the implementation of the Sea Grant concept. Although we will continue in the coming months to analyze our data on Sea Grant--in the larger context of federal support for academic marine science, generally--in search of more refined answers to the questions we have raised, we think our tentative conclusions can serve as a useful basis of discussion in the Sea Grant network.

We would summarize our conclusions as follows:

1) There is widespread support in the academic community for Sea Grant's goal of seeking solutions to practical problems through partnership between the federal government, the university, businessmen and public officials.

2) Contact with Sea Grant is widespread, if somewhat uneven, throughout the heterogeneous fields of academic marine science. Sea Grant constitutes the principal support structure for academic activity in the areas of ocean engineering, fisheries, and social science.

3) There is some doubt that the Sea Grant concept has been successfully implemented to date. Many in the community are unsure that a "valuable new institutional capability" has been created. More doubt that the Sea Grant effort to apply marine science knowledge to the solution of practical problems has been successful.

4) The "professional reputation" of Sea Grant as a program in which academic marine scientists like to work is less solidly based than it might be. Even many Sea Grant fundees report difficulty in relating their own research goals to those of Sea Grant.

5) Sea Grant's "professional reputation" as a sponsor of high quality marine science work in the university is much lower than those of three other major agencies--the Oceanography Section/NSF, ONR, and IDOE.

6) The positive ratings for "working conditions" in Sea Grant are substantially lower than those of the same three agencies.

As Sea Grant continues to chart its course, we believe these findings can provide bearings that should be taken into account.

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DOES SEA GRANT SHOW THE WAY FOR OTHER FEDERAL RESEARCH AND DEVELOPMENT PROGRAMS?

Charles A. Mosher*

It is a delight to be here, not only because of my long-time, very stimulating relationship with Ned Ostenso, and not only because I have had a long-time paternalistic sort of prejudiced view of the Sea Grant Program--I am an enthusiast--but, particularly, Bob [Abel], because I'm on a program where you are about to be honored. I didn't know that when I came, and this adds to my joy in being here, despite some of the background you were just giving us at the table. He was telling us about his early criminal record!

Perhaps I should begin by trying to explain the origins and peculiar nature of my remarks today. Actually these comments were scribbled last Monday morning at Williamsburg, and they report a cocktail conversation from the evening before. I'll get into that a little later.

When I was asked to come and speak here, I hadn't the slightest notion of what I should talk about. And when Ron Becker called me long distance to ask the title of my remarks, I had just been reading an editorial column in *Science*, the AAAS magazine, for May 27, 1977, entitled "Intergovernmental Science and Technology." It happens that this editorial was written by Frank Press (and Frank

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*Committee on Science and Technology, U.S. House of Representatives

Busby, governor of Georgia) and, of course, anything that Frank Press says these days in the areas of science and technology is of unusual importance because he is the science advisor to President Carter.

(Just as an aside, our committee is working almost daily with the new Office of Science and Technology Policy at the White House [OSTP], and Frank Press and his group. I must say, if there ever was a group that is overwhelmed with every sort of important matter, it is that office. The President, in his campaign, unfortunately promised to cut back on the White House staff, as you know; and he immediately cut back Frank's staff from 32 to 22 professionals. Although they tell me he actually has 60 full-time equivalents working there--he begs, borrows, and steals people from other agencies--but he is the center of science and technology policy of the government at this point. Is that staffing sufficient? I doubt it.)

In his *Science* editorial, Press emphasized the need for a better R&D partnership "between the federal government and state and local entities." The local impact, the actual results of the growing level of federally supported R&D "often seem disappointing," and he raised the question whether past programs have been too one-sided, the one-way transfer of federal support and federal technology (as examples, the spin-offs from the space program just sort of handed down to local entities, or the supplying of federally selected science advisory to governors and mayors, etc.). He suggested these are disappointing because they have contained too little concern for or understanding of the actual user needs at the state and local levels.

Dr. Press, in that editorial, said, "Clearly, new stimuli and new approaches are needed." His recommended remedy was, "more of a two-way flow" between Washington and the local areas, "An increased state and local involvement in the initiating/planning/shaping of R&D agencies is needed." Local officials "have far better ideas of the problems and needs of their communities," than do Washington officials, he said.

Well, at the time Ron Becker asked me for a title for my remarks, I had just been reading that, so I suggested to him this title, which he did not print in the program, so he was probably scared of it. And so the title that I proposed for these remarks was, "Does Sea Grant Show the Way for Other Federal R&D Programs?"

Last Sunday evening I was participating in the Brookings Seminar at Williamsburg, a seminar for federal government science, research, and management people from many different agencies. During the cocktail hour I posed that very question--in what way does Sea Grant show the way to other federal R&D management to other agencies? I was a little bit surprised at the very quick negative response from that group. They were inclined to say "definitely not." They didn't see Sea Grant as showing the way. But we must have talked about it for half an hour and as the discussion developed--triggered by that question--these science management types very definitely seemed to come around to at least a partly affirmative response.

My comments from now on are largely to report the gist of that cocktail hour conversation.

One of the participants quickly made the point that Sea Grant means what he called a 'bottom up' program. (You might say, a comment appropriate to the cocktail hour!) Sea Grant, that group generally agreed, does represent, perhaps better than anywhere else in the government, a system where initiatives bubble up from the field, from the local user levels, rather than being handed down from Washington.

In other words, it's 'bottom up' in contrast to 'top down' management of R&D.

I think there was a lot of recognition that much of this bubbling up of ideas and recognition of needs comes from the university campuses. Several expressed the view that throughout our federal government there *is* too much centralized direction of research, too much top down management.

Of course, it's axiomatic that practically all government policy decisions, before they can mean much--before they can be "operable"--to use a phrase from a couple of administrations back--must be translated into dollars, into funding levels/authorizations/appropriations/approved grants.

The suggestion came out of the group that, because of that principle perhaps more than anything else, what gives Sea Grant its individuality, its *character*, is the fact that Sea Grant projects, thus far, *require* matching funds. Thus, in order for Sea Grant's decisions to become operable, there must be a major input from state and local officials, from the university levels, especially, and that's a crucial part of the genius, I think, of Sea Grant; and it was generally recognized in that group.

That matching fund requirement *perforce* means a large emphasis on local identification of research needs and local shaping of research projects.

I would like to believe, I *will* believe--unless proven wrong--that it is this emphasis--this bubbling up/ bottoming up of project proposals--that produces a lot of truly innovative as well as practical, reality-related R&D, therefore more immediately productive and useful R&D under Sea Grant's aegis.

Now I just used that word "innovative," hoping that it does apply to a lot of Sea Grant encouraged projects. It seems to me axiomatic that good research usually assumes--usually requires--a considerable amount of risk-taking. Research, as I see it, should be adventurous, it should be imaginative, it should be frontier stuff, and several of my cocktail hour friends, science management-types, talked quite a bit about their assumption that bottom up management of research--Sea Grant style projects--risk willing research--more so than is common in the top-down style management setting. Now I hope that's true in your own experience. I say thank goodness for it.

In various public discussions recently, I have been

calling the 1970s 'a time of timidity' in our national policy decisions making. Everywhere you look in government today you see evidence of unusual timidity. Everywhere the potential for bold, imaginative action, including original research, seems to be discouraged by many factors: new boundaries, new fears, new warnings, more "no noes" are everywhere, an atmosphere that breeds timidity. And I believe that is a major cause of the American public's present confusion, dissention, frustration, and therefore a major cause of the congressional indecision, because the Congress always rather directly mirrors the public moods.

The famous Mansfield Amendment (no matter how well-intentioned and even needed) perhaps produced a lot of timidity, circumscribing a lot of potentially useful research. It discouraged or prohibited adventurous, risk-taking research. Its emphasis on relevance seemed almost to require that before a research effort could be approved and funded, the nature of the results must be foreordained. Is that really research?

OMB's attitudes also, too often, breed timidity. The whole general attitude of the several administrations ever since Sea Grant was created, under the influence of OMB, has been to resist any expanding of the Sea Grant program.

Similar resistance, often, in the congressional appropriations committees--although recently we think there has been some hope there--has bred timidity.

Senator Proxmire's so-called "Golden Fleece" awards have the effect, I think, of frightening and frustrating and putting a chill on original science. What Proxmire is doing, I think, too often is demagoging.

There is a historically profound, persistent strain in the American people--the "Yahoo" effect that Proxmire encourages and incites--the old know-nothing skepticism, suspicion, and fear of intellectual effort, of new ideas, new ways, and resistance to the adventurous pursuit of new knowledge, a so-called common-man suspicion of

academics, scientists, sophisticates, and expertise in general.

That persistent strain, which I think is very alive today, more organized and more sophisticated in its methods--essentially a "book-burning" attitude--that does have a very chilling effect, and it does have an impact on Congress. That strain in our people is forever contending with what I hope is a stronger strain--to risk, to compete, to invent, to pioneer, to progress.

And it seems to be that the Sea Grant way is designed to make the most of that latter strain. Sea Grant really is designed to encourage and use the positive, creative capabilities and energies of the American people.

Sea Grant, as I wish it, will forever invite and fund a lot of unexpected, daring, innovative R&D. It should have that type of stimulating, provocative influence on every major university campus and in every community where it is present. I would like to think that Sea Grant on any campus is a nucleus of effort that radiates out throughout the whole community. It should offer incentives and rewards for R&D efforts that originate close to the people, close to the problems, down where life is real.

More often than not, I would like to believe, by the time an ocean problem is recognized at the Washington level--or an estuarine or coastal zone problem--by the time these are recognized by the White House or the Congress as needing some R&D attention--more often than not Sea Grant people out in the field will already have identified that problem and will be working hard and effectively at it, anticipating--often perhaps will already have found the solution.

Now one of the questions raised during that cocktail hour discussion was: How do you insulate government workers, including science and technology managers in the several agencies? How can we protect them from bursts of congressional wrath, or just from the fear of such potential wrath, the "chill" from such anxiety? They

argued that that sort of anxiety--the fear of doing something which calls adverse attention to oneself, attention from Congress or from the media, it's that type of anxiety perhaps more than anything else that makes management at the top too timid, which discourages and limits innovation.

Does the Sea Grant system avoid that sort of deadening, chill effect more than other programs do? I hope so.

Doesn't Sea Grant, for the very reason that its innovations originate down so close to the actual needs--really originate from those needs--does that not to some extent exempt it from the timidity which too quickly infects many a Washington official whose finger is likely to be to the wind, trying to guess which policies or projects will be acceptable to OMB/to the White House/the Congress/Jack Anderson/Ralph Nader/to the increasing number of citizen action groups/or to the older special interest groups?

There are a lot of don't-rock-the-boat style of managers in Washington, who much prefer their top down management, but I see great advantages in the bottom up Sea Grant way.

I'm sure, on many university campuses there are similar examples of timidity, of top down management in the university hierarchy itself, fear of controversy and criticism. But I suggest no university thrives or grows great or strong by timidity, and I suggest one influence of Sea Grant on any campus should be to encourage the university to fulfill the historic, basic mission of all universities to be daring in the search for new knowledge (as well as the search for old knowledge) and in the transmission of knowledge, and better understanding.

No university begins to do its real job unless it is a breeding place for daring, dangerous, innovative ideas, and the search for new understanding. And that's one thing that Sea Grant should be on every campus.

This past year I was privileged to participate in several

site visits. I must say I was very impressed and pleased with the rigor of those reviews, the insistence on improving quality, on improving the validity and integrity of the research programs, impressed with Sea Grant's search for excellence.

But I can also see some small danger in that rigor, that insistence, the danger of intimidating from above, of seeming to threaten, the danger that such oversight might seem to invite proposals largely designed to please the site review team at the Washington level. In other words, the danger that the review team, site visits, frequent oversight, may in themselves become top down management, too easily discouraging bottom up innovation.

I hope all of us do recognize that danger and will avoid it.

I think it is very important in Sea Grant to allow for, to tolerate a considerable degree of error. Also, let's remember that really good R&D results often require time. I think it is important that Sea Grant management be patient, allowing time for persistence, persevering, the willingness to fund at a stable level for extended periods of time, resisting demands for quick results.

In fact, I think one of the most serious problems throughout the whole R&D establishment of the government is this annual authorization and appropriation cycle. One of the major needs of federal R&D policy today is more stable funding, a greater assurance of long-run support. I think a major change for the better that could happen in Congress would be at least to go to two-year authorizations and two-year appropriations in these areas. I don't guess that will happen very soon, I wish it could be more than two years, but, of course, Congress itself lasts only two years and no congress can bind the next congress, so that is a problem. But this seems to me to be one of the major difficulties, the short run versus the long run aspects of R&D funding.

In fact, in the whole complex, difficult area of poor communication and lack of understanding between the

political community and the community of science and engineering, one of the major factors is the demand of the political community for quick results, quick answers, quick advice, in contrast to the essential nature of the methodologies of science and engineering which tend to be slow and careful. Political demands are impatient. Science demands patience.

One other concern I have, among my second thoughts, is whether Sea Grant is wise to step into the thickets of national R&D and/or international R&D. Now, that may sound as though *I* am being too timid. Perhaps so. But it does seem to me that by getting into national or international projects, that implies a much greater degree of top down decision making from Washington, thus moving away from the close, healthy stimulations of responding to actual *water roots* needs.

Also, I do wonder how valid (or how difficult) will be efforts to identify national needs, to distinguish those from local needs which Sea Grant already is addressing? I suspect that when a national need for oceans R&D is selected, it may often prove to be one which already is being addressed by local initiative on some alert Sea Grant campus.

To what extent will these national need efforts--free from the matching funds requirement--tend to discourage the real Sea Grant idea, as we have known it--and the pride we take in it--its famed multiplier effect, whereby Sea Grant can well boast that it produces more solid results per federal buck spent, more than other grant programs, for the very reason of the local matching fund requirement?

Again, I am only raising the question. I am not at all sure of the answer.

Finally, I tip my hat to the Sea Grant advisory services program, even though I have some doubts about that title, "Advisory Services." It seems to me there could be a better label for it; it doesn't adequately tell the full role. But this effort to transfer the products of Sea

Grant R&D, to translate and inform, to test these products by getting them into immediate, practical use, that seems to be an imperative part of Sea Grant's genius, and especially so as it is a two-way street: the emphasis on getting quick, effective, practical feedback from prospective users, to prove to the R&D people where they may be going wrong, or to prove where they may be right, that extension effort, to inform the users--and learn from the users--that seems to be the very essence of bottom up research management, the very essence of Sea Grant.

Can Sea Grant thus show the way for other federal R&D programs? My own tentative answer is YES. In these many ways, it is setting an important, enviable example. Sea Grant is not the only way--there are other good ways to produce good research, but I am convinced the Congress, the nation, can well afford to continue and to expand Sea Grant, and to learn from its evolving experience.

Cong. John B. Breaux's entertaining informal remarks at the Sea Grant Association banquet on the evening of November 18, 1977, were lost in a malfunctioning tape recorder.

LOUISIANA'S SUPERPORT—A PROJECT IN THE PUBLIC INTEREST

William B. Read*

Ladies and Gentlemen, at the outset I would like to thank you for the honor of being asked to address your group and for your kind hospitality. I'm particularly pleased to be talking to the Sea Grant Association today, as your subject includes ports: problems, and opportunities.

I am very happy and somewhat proud to be able to report that the Louisiana Offshore Oil Port Project--"LOOP" or the "Superport" as it is more commonly called--is poised to move from the drawing boards into reality. With acceptance of the federal and state licenses on August 1 of this year, LOOP can now proceed with construction.

This will culminate almost five years of planning, hearings, and preparation. It is very gratifying to me to see the many tons of paper that marked our existence being replaced by steel and pipe. As an engineer, I am going to feel much more comfortable building a real live offshore oil port than I felt building a paper mountain.

My speech to you today can be divided into three parts. First, I'm going to define for you the need for our project. Second, I am going to give you an idea of how our project will operate, which will also give you some

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*President, LOOP, INC.

idea as to the magnitude of the work faced by our staff and our various contractors. Third and last, I will take this opportunity to tell you briefly about our environmental monitoring program that is just getting underway.

The basis for the Louisiana Offshore Oil Port project is firmly rooted in our nation's perplexing and complicated "energy crisis."

It is increasingly apparent to the petroleum professional and layman alike that--notwithstanding fuel conservation practices, emphasis on domestic exploration, and development of alternate fuel sources--the level of petroleum imports into the United States is likely to increase. Projections of national energy demand and supply through the year 2010 indicate that, even under assumptions of increased energy efficiency and optimistic growth of alternative energy supplies, the demand for petroleum will continue to exceed the nation's capability for production. Recent projections indicate that domestic petroleum production will provide only 50 percent of the needed supply.

Faced with continued and rising crude oil import requirements, the logistics and economics of transporting large volumes of imported crude oil take on great significance.

Experience worldwide has shown that supertankers (very large crude carriers, or VLCCs) can significantly reduce transportation costs and, in addition, solve basic logistical and environmental problems.

The United States does not have ports deep enough to accommodate supertankers. This inability to handle VLCCs currently transporting the bulk of the world's oil excludes the U.S. from achieving the economy of scale enjoyed by other oil importing countries. Deepwater ports are needed at strategic locations near major coastal refining areas to permit the direct movement of petroleum from U.S. tanker terminals to refineries in a manner that will minimize environmental risks and transportation costs.

On February 1, 1972, a study team was organized and

staffed by seven American oil companies for the purpose of determining the most feasible and economic method to transport large volumes of imported crude oil to existing south Louisiana and Midcontinent refineries. In June 1972, the study team published the results of their investigations, finding an offshore deepwater port, technically and economically feasible.

As a result, LOOP, INC., was incorporated in October of that year to design, finance, construct, and operate a common-carrier deepwater port in Gulf of Mexico waters, offshore Louisiana.

The deepwater port or "superport" concept is not new worldwide, only in the United States. Various types of deepwater port facilities, specifically designed to load or unload supertankers, are in operation in most of the industrial nations of the world and in the various oil exporting areas.

The purpose of deepwater ports is simple. If you can't bring the ship to the port, bring the port to the ship. Or, in the case of the LOOP project, we are actually bringing the pipeline to the ship, as you will see.

The proposed Louisiana Offshore Oil Port will consist of a marine terminal for mooring and unloading tankers; large diameter buried pipelines connecting the marine terminal to an onshore terminal; and the onshore terminal itself, for storage of crude oil underground in cavities leached out of salt in a naturally occurring salt dome. In addition, there will be a pipeline system from the onshore terminal to a point near the St. James, Louisiana, terminal of CAPLINE, thus connecting LOOP facilities with refineries throughout the midwest.

The marine terminal will be approximately 18 miles offshore Louisiana, almost directly south of New Orleans in 105 to 115 feet water depth, a site chosen from among six along the coast representing the best economic/ environmental alternative.

The marine terminal will be be constructed in phases. The

first phase will consist of three vessel moorings and submarine lines, a control platform, a pumping platform, and one pipeline to shore. Additional moorings with their submarine lines and more pipelines to shore will be installed later to meet increased throughput requirement.

Vessel moorings will be a type of Single Point Mooring (SPM) known as the Single Anchor Leg Mooring (SALM), designed to handle vessels up to 700,000 deadweight tons (DWT) moored in seas up to 15 foot significant wave height. The principal components of the SALM are: (1) The buoy, anchored to the seabed; (2) the mooring lines, connecting the tanker to the buoy; and (3) flexible hose systems, transporting crude oil from the tanker manifold to the submarine pipeline on the seabed.

The floating buoy, consisting of a cylindrical hull divided into individual chambers, several of which are filled with polyurethane foam to provide positive buoyancy, is attached to the base with a chain and swivel assembly. The base is anchored to the seabed with ballast and piling to withstand vessel mooring loads. The flexible hose system, consisting of two parallel strings of 24-inch diameter floating hose, is connected to a rotating swivel on the base which permits the vessel to weathervane around the buoy during unloading. Block valves and check valves are installed between the SPM and the submarine pipeline.

The pipelines connecting each SPM to the pumping platform will be 56 inches in diameter and approximately 8000 feet long. Pipelines between the pumping platform and the shoreline booster station will be 48 inches in diameter and about 21 miles long.

Because of the length of pipelines between the vessel moorings and shore, crude oil delivered by the ship's pumps will not have sufficient pressure to reach the onshore storage terminal at economical rates without assistance. Pumping equipment will be installed on the pumping platform to boost pressure and match each ship's offloading rate up to a maximum of approximately 100,000 barrels per hour through each 48-inch pipeline to shore.

The pumping platform will have two deck levels each measuring 215 feet by 204 feet. An elevation of 61 feet between mean sea level and the bottom of the lower deck will provide necessary clearance for maximum storm waves. It will be designed to withstand the 100-year storm, which in this area calls for 70 foot waves and 166 mph wind.

The control platform will measure approximately 70 feet by 70 feet at each of three deck levels. The lower deck will contain work shops, storage areas, and emergency equipment. The second and third levels will consist of a prepackaged building, housing a control room and associated offices and living quarters. The roof of the top deck will serve as a heliport.

At the marine terminal, aids to navigation will define prescribed routes of travel for vessels arriving or departing, and will mark obstructions in the area. Aids will consist of a traffic separation fairway marked by lighted buoys, a radar surveillance system, a rotating lighted beacon, fog signals, and radar reflectors.

One new feature of the project is the proposal for underground storage. The Clovelly Salt Dome Storage Terminal will store crude oil underground in cavities leached out of salt in a naturally occurring salt dome.

The terminal will comprise 14 cavities with a total capacity of 56 million barrels of crude oil, and the necessary support facilities to accommodate a throughput of 3.4 million barrels per day. Also included is a 25 million barrel brine storage reservoir, facilities for fire protection, an operations center housing the terminal office and controls, and facilities to measure crude oil from vessels and crude oil being delivered to various pipelines.

The salt dome storage facility will be of the brine displacement type, in which crude oil pumped into a cavity will displace brine into a storage reservoir on the surface. Conversely, brine from the reservoir, when piped to the bottom of the cavity, will displace the crude oil for deliveries from the cavities.

Leaching of cavities will be performed by injecting fresh water from the surrounding marsh and canals into the bottom of the cavity at a rate that will allow the water to dissolve the salt as it travels upward; the resulting brine will be removed from the top of the cavity. A pipeline system will be installed to transport the brine containing the salt leached out during construction of the underground storage cavities for disposal in the Gulf of Mexico.

The LOCAP system will be installed to transport crude oil from the Clovelly Dome Storage Terminal to a point near the CAPLINE Terminal on the Mississippi River. The system will consist of a large diameter pipeline approximately 53 miles in length.

One more thing about this project: You will need a guide to find what we have done. Everything will be underground or far enough offshore that you would have a hard time finding it.

The LOOP project, viewed by transportation experts of our various shareholder companies, is an integral part of a revolution in crude oil transportation. But we have come to find over the five years we have been planning this project that, viewed through different eyes, it represents significantly different things.

To the engineer it has been a most challenging confrontation between the "state of the art" and the demands of the physical environment in which the facility is to be located. A prime example of the very positive results of this confrontation is the development of the salt dome storage concept as it applies to this project.

To the environmentalist, the LOOP project has come to mean a significant improvement over what might have been had we continued to handle our crude oil import requirements in the traditional way. The positive environmental elements of offshore deepwater ports--although not recognized when the first of such projects was proposed--have fostered considerable support in national and local environmental communities.

To the governmental planner, deepwater ports and their projected economic and social impacts have created first confusion, and more recently, innovation in approaching the tangle of regulations, authorizations, and legal questions spawned by projects of this magnitude.

To the people who live in the area of the LOOP facility, the project is viewed as a catalyst to economic development, surpassed only by the impact of the production of crude oil in the area.

All these views are correct, and each is an integral part of the success of our project to date. The most critical stage in project development has been completed, and that is the lengthy licensing process I referred to earlier.

With license in hand, it will take approximately 30 months to complete the first phase of this project. Thus this project will be operational sometime in 1980.

Capital investment requirements for the entire 3.4 mbpd project include approximately $320 million for the offshore facility; $430 million for the onshore facility; the LOCAP pipeline connecting system construction will require an additional $90 million and they have expanded that to an additional $100 million on top of that; therefore we are looking at the total projected capital expenditure--nearly a billion dollars.

Once completed, the LOOP project will provide this nation with an economically and environmentally preferable method for handling crude oil and, in fact, it will move us into the modern era of ocean transportation currently being used to the advantage of our economic competitors.

Much of the success of the LOOP, INC., project to date can be traced back to the very real cooperation that has existed between the private sector--represented by our company, our shareholders, and the many interested and involved private companies throughout the state--and the various government agencies on the state, local, and federal level who share the responsibility for the long, complicated licensing procedure.

When we first began planning our project, it became very clear that the Louisiana "Superport" could play an important role in the future of the state. It could become a catalyst for new industries and jobs sorely needed in Louisiana. The state of Louisiana, under the direction of Governor Edwin Edwards, moved in concert with LOOP, INC., by establishing the state agency known as the Offshore Terminal Authority, to protect the state's environment, and to insure the greatest possible economic benefit from our project at the least possible cost.

We have pledged over the past five years, in many speeches and public presentations, to be "good corporate citizens" of Louisiana, recognizing the important role we play in the future of the local community throughout the state.

In this spirit, LOOP, INC., has entered into a contract with the Louisiana Wildlife and Fisheries Department to conduct a detailed environmental monitoring program. The program includes periodic reexamination of the physical, chemical, and biological factors investigated during the baseline surveys, which were contained in the license applications. Intensive monitoring will commence prior to project construction and will continue through the construction period.

During project operations, the monitoring will be on a continuous basis to insure coverage of seasonal variations, to focus on determining the extent of contaminants and effects in the ambient environment through pathways of biological uptake. We are currently conducting bioassay studies to determine more precisely the potential effects on marine life and habitats of the construction phase discharge of brine. Of particular interest is the effect of any salinity changes at the brine disposal site. The final location of the brine diffuser will be based on the combined knowledge of local benthic faunal diversity and abundance and the anticipated sensitivity of indigenous organisms.

By implementing this monitoring program, we hope to show that the environmental damage to the local area is being minimized. It is a tangible program that evolves out of

our pledge of good corporate citizenship, one that we believe is responsive to the needs of both the local community and the goals of the state of Louisiana.

The Louisiana Offshore Oil Port project has been and will continue to be an exciting and most gratifying project with which to be involved.

We have been innovators from the very first day. Construction and operation of a facility of the magnitude of the Louisiana "Superport" has demanded innovative thought and responses by everyone involved.

The federal enabling legislation and the licensing procedure it outlines is a first in the history of the nation. It works--perhaps more slowly and complicated than we would like--but it does work.

The state of Louisiana has responded to the environmental and economic challenges posed by our project with innovative legislation of its own, establishing a state agency with broad powers whose efforts have been characterized thus far by fairness and cooperation.

The local community in which the project will be located has responded to the social and economic challenges of our project with cooperation and a continuing desire to learn. LOOP, INC., is responding to its special responsibilities with all the understanding and vigor it can muster.

I would like to close by thanking you for your attention and your interest in our project. We hope that as the time draws closer to the realization of a dream five years in the dreaming, that all can benefit from a vital project clearly in the public interest. I am looking forward to working with you all in the future. Thank you again for your attention.

PORTS: PROBLEMS AND OPPORTUNITIES

PROBLEMS OF THE PORT OF WILMINGTON, WILMINGTON, DELAWARE

Donal J. Alfieri*

The part of 'Ports: Problems and Opportunities' I want to talk with you about is the 'problems.' Ours are the same as those of Portage, New Orleans, Los Angeles, and San Pedro, and more so, because we don't have the cash to deal with them. Our most significant problem is dredging.

The Port of Wilmington, Del., is located some 60 miles from the entrance of the Delaware Bay at the junction of the Delaware and Christina rivers.

The terminal is composed of a tanker berth and 3,700 linear feet of marginal wharf with 300 acres of backup area. The entire complex is essentially reclaimed wetlands. The port has excellent access to the inland transportation network, both rail and highway. The principal cargoes handled are general--frozen and chilled perishables, steel products, basic ores, automobiles--import and export, and petroleum products in bulk, which include low sulfur fuel for the area power plant.

The Delaware River Channel and approaches are maintained at 40 feet. The Christina River alongside the terminal is maintained at 35 feet.

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*Director, Port of Wilmington, Wilmington, Delaware

We differ from most port organizations in that the city has full operational responsibility for the terminal. We actually unload and load barges, trucks, rail cars, everything short of removing the cargoes from ocean carriers. This also includes the maintenance dredging of the berths.

This year we experienced an extremely high siltation rate, so much so that we are in danger of losing a good portion of our trade. The realization of this problem prompted a declaration of an emergency situation by the mayor and a call to the Corps of Engineers and our congressional delegation. We prepared an economic impact statement to amplify our problem with some impressive economic conclusions.

The current "low water" levels at the Port of Wilmington have been causing and are projected to cause increasingly severe port traffic constraints and subsequent revenue and general economic losses. The most recent dredging operation of the harbor area, completed in early March 1977, was followed by a 12-foot accumulation of silt only six months later, bringing the 35-foot required depth up to the present 23-foot depth. The subsequent turning away of several deep-drawing vessels and the related requirement of lightering other vessels may, indeed, have a catastrophic effect on the Port of Wilmington and on the Wilmington area economy. The specific impacts under the several alternative dredging options available are all serious, but the impact may be minimized with a dredging operation at the earliest possible opportunity.

As the following discussion of negative economic impacts will show, the timing of the dredging was most important. The earliest possible starting date--and this was contingent on a negotiated contract--was November 15 with a removal of the major obstruction by December 15. The second operations alternative, in this context, involves, in turn, a starting date of January 1 with sufficient silting removal to be completed by the end of that month to allow deep draft vessel traffic.

Both the negative area economic impact suffered to date

as a result of the current low water situation at the Port of Wilmington and the projected impact up to and beyond the earliest possible completion date of December 15 warranted a performance of the necessary dredging operation at the earliest possible time. The area benefits of completing this dredging operation 45 days in advance of the regularly scheduled January 31 date are of significant magnitudes.

Actual Negative Area Economic Impact to Date

The total negative area economic impact felt to date as a result of the increasingly restricted vessel access to the Port of Wilmington, since the most recent dredging of the access channel, has amounted to a loss of over $590,000 to the local economy. This impact includes a direct economic loss of almost $230,000 with the total figure reached with the application of a general multiplier (2.58). Specific job losses have already amounted to 11 full-time longshoreman positions. In turn, direct port revenue losses have reached approximately $27,800, while lightering charges to shippers using the Wilmington facility, as a result of the current draft problem, now total $118,200 and remain a possible obligation of the Port of Wilmington under its various contractual commitments. In general terms, the loss of commodity value flow has amounted to more than $1,776,000 to date.

Projected Area Negative Economic Impacts Under the Various Dredging Alternatives

Completion of the major dredging operation by December 15 will result in a further negative area economic impact, beyond that suffered to date, of almost $9,963,800. And, beyond that completion date, a further negative area economic impact of more than $4,036,000 would be incurred with a completion date of January 31. The total area economic loss, as a result of a dredging operation completed at the end of January, would amount to almost $14,592,000.

In terms of job loss, the continued restriction of port traffic will result in a loss of 48 full-time longshoreman positions. In other words, the longer port operations remain restricted, the longer 48 longshoremen will remain unemployed. Even with a work completion date of December 15, these 48 longshoremen will remain unemployed for an additional six-week period. This impact calculation involves only longshoreman positions and does not touch on other direct employment and subsequent indirect employment losses.

The degree of port revenue loss is also substantially different under the alternative completion date; a total of $403,500 will have been lost to the Port of Wilmington as a result of the access problem. With a January 31 completion date, this figure will increase to almost $629,000, reflecting a difference of more than $225,000. Both the actual and potential losses of revenue to the Port of Wilmington are of special significance as the facility, although owned by the City of Wilmington, must maintain at least a break-even revenue/expense position, including the payment of debt service on its outstanding bond financing obligations. As the 1978 fiscal operating budget for the Port of Wilmington currently projects a surplus of $297,200, including a debt service obligation of almost $1,324,000, the effect of a revenue loss of $629,000 may very likely result in a deficit operation for the Port of Wilmington in fiscal year 1978 and the subsequent subsidization of both port operations and debt service by the city's tax payers. Both the appearance and the actuality of this situation may raise many very real operational and development impediments to the continued improvement of the facility. The potential legal obligation of the port to pay its shippers' lightering costs, possibly amounting to $565,200, would make this deficit status even more untenable.

Again, in general terms, the distinction between commodity value losses is impressive. Commodity value losses to December 15 will amount to more than $135,925,000, while such losses will increase, by January 31, to $196,400,000.

Other Related Negative Area Economic Impacts

Although not included in the economic impacts noted above, the restriction on vessel access to the Port of Wilmington and the related lightering requirements may lead to other severe problems. The delivery of oil for purposes of both electrical generation and heating has been and will be increasingly restricted under this current situation. The impact of this problem may be seen in both potentially higher utility rates and in the actual scarcity of these respective utility resources. The Delmarva Power and Light Co. has estimated that its monthly lightering charges may soon amount to more than $75,000 and that the fuel adjustment charge under their rate structure may subsequently have to be raised. Comparable lightering expenses for fuel oil distributors may also lead to the rise of fuel costs for home heating oil.

Potential Negative "General Business" Impact

The potential negative "general business" impact, although not strictly quantifiable, may be more severe and of a longer term than those impacts calculated above. The competitive nature of the port facilities in this region and the "grapevine" communications of the shipping business have already led to media references to Wilmington's "low water" situation and to a loss of port business even when not prompted by *actual* draft problems. The potential of a 15- to 17-foot access depth during the months of December and January, with a January 31 completion of obstruction dredging, may cause irreparable harm to the currently high reputation of the Port of Wilmington. We see the distinction between a December 15 and January 30 completion of the required work as most imperative in this specific context.

In summary, we see significant economic value in performing the obstruction dredging at the earliest possible time. Again, completion of this work by December 15, rather than by January 30, will prevent more than $4,036,000 in negative area economic impact, will return 48 longshoremen to full-time positions six weeks earlier, will avoid the loss of more than $225,000 in direct port revenues, will assure

the commodity delivery of almost $60,480,000, and will minimize the further non-quantifiable negative impacts on the Port of Wilmington.

Solutions

With the available national wetlands diminishing, and with existing and ensuing legislation necessarily protecting them, how do we accommodate the maintenance of deepwater ports? The Delaware Valley runs out of spoil area in 25 years. Baltimore and New York are encountering problems now. Obviously, we cannot continue to deplete wetlands. One possible long-term solution that on the surface appears to kill several birds with a single stone was proposed by the representative of a coal company intent on constructing a deepwater loading facility in our area. When confronted with dredging considerations, he immediately dovetailed with his strip mining problems and proposed that we return the topsoil whence it came. Trucks and rail cars are bringing coal in and, for the most part, returning empty. The energy administration picked up on it and is studying the situation in the hopes that the economics will allow the operation.

Our immediate problem is now resolved: the Corps of Engineers moved up the project and the dredge will be on site next week. The continuing problem is where we are to put an annual one million yards of dredge spoils. Our current spoil areas will arrive at maximum utilization in 1984.

We are in the process of starting the permit/impact study for a future spoil area adjacent to the terminal, which would buy us an additional 15 to 20 years. By the year 2000, we hope we will have been able to raise sufficient funds to construct a marginal wharf on the Delaware River where the dredging requirements will be vastly reduced, as it is a scouring bank. Needless to say, a city of 80,000 will require assistance with the various studies required by these activities.

PROBLEMS AND OPPORTUNITIES OF PORT DEVELOPMENT

Fred B. Crawford*

Today in the port industry, there is good news and bad news. The good news is that business is growing steadily and is in a healthy position because our foreign trade is up and our energy imports are up. The bad news is that ports are being frustrated in creating the necessary port facilities to accommodate this increase in foreign trade.

Today there is a growing public awareness about the environment and the need for preservation of existing pristine areas and for the control and/or elimination of sources of pollution. However, these concerns have been taken up by a few well-intentioned, highly vocal, but, apparently, ill-informed individuals. These concerns have been distorted to the point that a plethora of new legislation and regulation has come into being that has constrained, nay, virtually halted the orderly development of existing ports.

Now I would like to briefly reacquaint you with the role and functions of the ports, the necessity of continuing development to meet the continually changing demands of waterborne commerce, environmental concerns, and the opportunities facing the port industry.

In the maritime industry, a port is an interface or interchange link between marine and land transport systems

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*General Manager of the Port of Los Angeles, California

accommodating the massive and continuous flow of foreign and domestic waterborne commerce in various forms and generally carried by specialized and capital intensive vessels.

A port may be thought of as the neck of a funnel. Marine shipping lanes come from all directions and are focused through a narrow land-based transit point, which is the gateway to a broad rail and roadway system.

Port development, whether it involves new facilities or expansion and modification of existing facilities, is in response to the compelling demands and pressures for accommodation of these cargo-carrying vehicles whether they be waterborne or land borne. These demands and pressures for change are created by these carriers who are in turn responding to shippers and consignees and the representatives of the buyers and sellers engaged in foreign and domestic trade. Ports *do not* and *cannot* create or control these forces, but must respond to them positively, as a necessary link in the transportation system, as well as, and in order to maintain the level of cargo activity necessary to achieve revenues to support port operations and financial commitments. Neither the state nor the federal government can create or control these demands and pressures. Ports have been and are still adapting and developing to accomodate changes in foreign and domestic waterborne cargo movements that have been revolutionary to say the least. Ship types are changing in size, speed, and draft and are specializing by adapting to specific new cargo forms and handling technologies.

These specialized capital-intensive ships require ports to provide specialized capital-intensive facilities to permit fast turn-around time. These vessels require deeper and wider channels and that means dredging activity. Further, larger cargo storage and handling areas require new land, either through the reclamation of existing land by the removal of non-functional or obsolete facilities, or by the acquisition of new land adjacent to the port district, or by the formation of new land from fill material obtained by dredging. We recognize that environmental concerns and constraints alone make the creation of new ports no longer possible. Therefore, it

is imperative that the existing ports be allowed to continue to develop or redevelop within their present boundaries.

These changes on the marine side of the port interface have in turn placed demands for change on the land transport systems to accommodate the new methods of cargo flow. The ports must also adapt and develop to meet these changed land transport demands. On top of these changes, the ports must also respond to expansion demands created by changes in supply and demand between various origin and destination areas in the U.S. and throughout the world.

The Panama Canal affects the Gulf of Mexico area and the western and eastern seaboard. Consider for a moment the large quantity of cargo moving through that canal, and--whether we agree with the changes made by our federal government--there will undoubtedly be some changes in the operation of the canal. That change will increase the cost. Whenever costs change in the transportation system cargo seeks an alternative route. Those cargoes could well land in ports such as Los Angeles, move by rail to another part of the country such as New Orleans, then get back on a ship and go somewhere else. These things are happening, they are happening rapidly, and we are working to accommodate these particular moves. Two years ago this was not something we were considering as a substantial impact on our port. It is becoming a fact that we can't predict exactly what we will need to do in the foreseeable future. Current events have a large effect on port operations.

√ Older facilities may be underutilized because the ships and cargo forms they were designed to serve have almost disappeared and the facilities may require extensive modifications in order to accommodate new marine transport demands. The operating and investment costs for the majority of shipping companies are so great that many of them must struggle to maintain themselves above marginal levels. Thus, they cannot and will not pay for inefficient facilities, and the port that does not replace such facilities will lose business to one that

can, which would have an adverse economic impact on the economic areas dependent on the port.

The other current event affecting ports in this country is the change in energy requirements. Not too many years ago Los Angeles was a petroleum exporting center. We exported petroleum products--we have 15 petroleum terminals--now we are a major petroleum importing center. And we must reverse the flow, construct new facilities to handle much larger quantities of oil.

On the eastern seaboard coal moved by water to a great extent. We see now because of changing prices of petroleum products throughout the world a building market for coal in other parts of the world. The U.S. may very soon become a coal-exporting nation, and as such, ports will have to accommodate to meet that need. These changes are coming up rapidly because of the national situation with balance of payments and the demand for energy throughout the world.

The consumers and producers who depend on the port, as well as the general public, will take the losses we talked about earlier.

In the preparation of the California Coastal Act of 1976 (Sec. 30701), the legislature recognized the importance of the state's ports to the economic well-being of the state and the nation by declaring:

> The ports of the state of California constitute one of the state's primary economic and coastal resources and are an essential element of the national maritime industry.
>
> Existing ports shall be encouraged to modernize and construct necessary facilities within their boundaries in order to minimize or eliminate the necessity for future dredging and filling to create new ports in new areas of the state.

The ports of California support directly and indirectly over a million jobs. We handle 155 million tons of waterborne commerce annually with an estimated value of

more than $47 billion. Foreign and domestic waterborne commerce business is growing. New and amended trade agreements with Russia, Mainland China, Formosa, and Japan, as well as a rapidly expanding Middle East trade to oil rich nations in that area, are sources for this increase.

Pressures exerted by consumers, importers-exporters, and manufacturers to keep the cost of transporting goods, commodities, and energy reasonable have created the need for larger vessels, improved cargo handling methods, and capital intensive facilities. The port industry must also respond by dredging deeper channels for the larger vessels, by constructing new facilities to accommodate the new cargo handling technologies and by being able to respond to port users needs quickly.

Additional ports are neither the answer nor the issue. The real issue is the ability of the nation's various port authorities to be able to develop existing ports. The natural and economic environments in the coastal zone are not mutually exclusive but are, in actuality, inseparable. Man's environment, which contributes to his welfare and the quality of his life, is a blended combination of the economic and natural environments. Man's first demand on his environment is for his livelihood, to satisfy his basic needs, and his second is for his pleasure.

Of California's 1,100 mile coastline, the major ports occupy less than 2 percent of this area. California's existing ports, if allowed to respond to the needs of port users by developing new facilities and backlands, are sufficient to avoid the necessity of creating new ports. Some environmentalists view ports as potential areas to be developed into pristine coastal tidelands. This can't be allowed to happen.

The port areas lying within the coastal zone are dedicated by law in California to the economic environment of commerce, navigation, and fisheries; and as such, they cannot be equated to the larger pristine areas of the coastal zone, nor should they be constrained by the policies and regulations primarily based on the needed

protection, preservation, and restoration of the natural environment in such other coastal areas. Within the port areas, the satisfaction of the economic needs and demands obviously far outweigh the impact on the relatively small port-occupied areas of the total state coastal marine environment.

The value of the ports as economic resources, compared to their value as natural environmental resources to the public welfare, can be easily measured by considering the following supposition. Suppose that all of the coastal zone areas lying within the boundaries of existing ports were to suddenly disappear, where would the greatest loss to the public welfare occur? Would it be in the loss of biological productivity on land and in coastal waters and the wetlands, or would it be in the loss of the economic productivity of those areas? The answer is obvious: The relative loss of the natural environment would be infinitesimal compared to the catastrophic economic loss. This is an exaggerated example, but the relativity it illustrates is valid and critically important to the public welfare when ports, as coastal resources, are evaluated.

If I've given you the impression that I am or the port industry is anti-environment, I'll correct that thought. We aren't. Quite to the contrary, the Port of Los Angeles with the aid of various governmental agencies and concerned citizens began in 1945 a program to clean up the polluted waters of the harbor. Today, more than 100 different kinds of fish thrive in these once polluted waters. Clean water is responsible for the return of the *Limnoria* and barnacles that are now posing a problem to port activity. The *Limnoria* bore into timber piles under piers and wharves, thus weakening the structures. A remedy to the problem is to wrap each pile with a plastic sheet. The pile wrap program, which should be complete in 1978, will have cost the port approximately $5 million.

In 1972, the Port of Los Angeles was America's first port to create an environmental management office. The efforts of this office, in cooperation with private citizens and other agencies, has established a protection program for the California least tern. The port's tern population

represents 4 to 6 percent of the total known population.

This year, five acres of kelp were planted as a mitigation for the development of additional container ship docking area and increased backland. However, the ultimate development of the Port of Los Angeles requires that a significant number of projects be programmed over the next 15 to 20 years. Mitigation within the port area for each project will become increasingly more difficult to achieve because there is a limited amount of land and water area available for mitigation projects.

There must be an understanding on behalf of environmentalists, regulatory and enforcement agencies, and port authorities that the primary function of the port industry is economic. These highly restricted and specialized marine areas called ports should not be considered as biological breeding grounds or targets for the development of new and "pristine" coastal water areas. Each port authority should work closely with environmentalists, concerned citizens, private industries, and governmental agencies to develop a reasonable, practicable environmental plan for that port.

The legislature in California has been influenced by a very vocal minority and has enacted far too many bills that place the port industry in the position of defending the need for development at each level in the permit process. Through the multi-agency permit process at the state and federal level, the port industry is considered guilty and must be proven and reproven innocent at each step.

According to a recent report of the American Association of Port Authorities, it now takes at least 18 months for the approval of waterfront development permits. Our experience says that this is a conservative figure.

The number of agencies and permits required is staggering. For instance, the proposed Sohio Project in Long Beach will ultimately require more than 200 permits.

We must bring reason into the picture. The number of agencies involved in the permit process must be reduced.

The processing time for permit applications must be reduced. Ports must be allowed to respond quickly to the needs of their customers and users. Ports must be allowed to develop and to keep pace with modern technology. A balance between environmental concerns and economic concerns must be achieved. These are either our primary problems or our primary opportunities for improvement.

PROTECTING THE ENVIRONMENT AND FULFILLING THE NEEDS FOR WATERBORNE TRANSPORTATION— CAN AN ACCEPTABLE BALANCE OBTAIN?

Jack P. Fitzgerald*

As the title for my presentation suggests, I am about to address a controversial subject. Put simply, it can be stated that a very considerable conflict has developed over the past several years. That conflict stems from an increasing awareness of and the requirement to protect our environment, on the one hand, and the unabated demand for additional facilities to serve the needs of a waterborne commerce, on the other hand. Perhaps it is not readily evident that these two factors do indeed represent a conflict. It is certainly evident to those of us who have the practical everyday experience of toiling to provide the terminal facilities needed to accommodate waterborne commerce. While under optimum circumstances relatively extended time periods are entailed in designing and constructing all but some temporary-use facilities, the current additional dimension of environmental or ecological considerations have increased the required time periods very substantially; even more to the point, the need to comply with a myriad of legal and regulatory provisions in the environmental area alone tend to move construction schedules from the probable completion date to the unpredictable. It follows that unpredictable time tables for construction projects aiming to meet a need as of a certain date are a conflict.

To this conflict reality, we must add the economic implications. For now, let us merely realize two interrelated economic factors. One is the cost of delay; it really has two components: (1) the cost of capital

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*Port Director and Chief Executive Officer, Indiana Port Commission

invested in non-productive enterprise as is the case when you spend money for feasibility and design studies or for property acquisitions and then you sit and wait to obtain the required construction permits; (2) inflation-induced increase in construction costs. Here the simple reality is that what you built last year costs less than what you build this year or next. The second basic economic factor is the cost of compliance with environmental restrictions. In this category are the environmental impact studies or EISs as they have become known, and such construction and related costs as are specifically required to mitigate or avoid adverse environmental impacts.

I shall revert to these matters in some depth, but first I want to give you some information that places my discussion in context with some of the salient aspects that make the conflict far more serious than it seems to be in the minds of policy makers and implementors.

The Indiana Port Commission

In Indiana we have a state commission responsible for the development and administration of public port facilities. Actually, our mandate is broader than these words imply. We interpret the meaning of the term 'port' to include intermodal transport facilities along with such related facilities as transfer sheds and warehouses, even industrial park-type properties for manufacturing and service activities which require proximity to these intermodal transport facilities.

Unlike our neighboring states, we have not been in the port business for very long. Perhaps this relative newness, dating back only to the mid-1960s, is the principal reason for our statewide authority. This is a relatively novel concept that is not embodied in the enabling legislations and the policies of such veteran port business states as New York and California.

Our first port, The Port of Indiana/Burns Waterway Harbor, on the south shore of Lake Michigan, about 30 miles east of Chicago, was built as a tripartite partnership between our state, the federal government, and two large steel

companies, Bethlehem and National Steel. The latter two needed a protected port for their exclusive use; the state had recognized the need for public facilities to accommodate what then was judged to be a latent demand for intermodal transportation services by numerous shippers and consignees who could not afford to create their own port terminals; and the federal government recognized the existence of these needs by declaring this port as an essential federal waterway. The investment in Burns Harbor in public funds alone to date is about $27 million, not including the steel companies' investments in their exclusive-use terminal facilities.

During its 10-year existence, total traffic at the port has grown from 875,000 in 1967 to more than 5.5 million tons in 1976; during 1975, total traffic was almost 6.1 million tons. These figures include the steel companies' traffic, primarily iron ore and limestone, of almost 5 million tons in 1976. Burns Harbor did not open as a public port until 1972; since then we have experienced a consistent and quite dynamic growth of traffic at our public port terminals. Last year we passed the half-million ton mark, and during the current year we expect to top the 900,000 ton mark.

Throughout this period we have continued to build and expand our public use facilities consisting of docks, transfer sheds, open storage, industrial properties, and a complex infrastructure of rail trackage, roads, and utility services including the most modern sewage disposal plant for ship and shore generated wastes.

At the other end of our geographic spectrum is the Ohio River where we now have our first public port, Southwind Maritime Centre, just east of the city of Mt. Vernon and about 15 miles west of Evansville. This newest of the public Ohio River ports opened for business in the middle of last year with a single general purpose dock. We are still in the midst of our basic construction program for Southwind and hope to bring it to completion by the second half of next year. At that time, we also expect to complete there the first terminal we are constructing for the exclusive use of a tenant, a 350,000 bushel grain elevator and transfer terminal, while another tenant in

our 600 acre industrial park has already completed the construction of a liquid and solid bulk fertilizer terminal.

It is appropriate for me to emphasize here that we applied for our Southwind construction permit in 1971 and received it that year. That was before current regulations respecting environmental assessments and impact statements became applicable. I cannot help but wonder whether--had current regulations been applicable then--we would have as much as moved the first yard of dirt at this time. Contrast this with the fact that thousands of tons of fertilizer materials and bulk grains have already moved over our rather limited operational facilities. The fact that these thousands of tons of traffic moved via Southwind and continue to be accommodated there is living proof not only for our projection that an urgent need for that port existed but also for the economic benefit inherent in it. We can all accept as a foregone conclusion that our port users are such users because of the economic benefits derived from such use; that point, which in our way of thinking--even though we are a public agency--is fundamental to any investment decision we make, I believe requires no further amplification.

About our second Ohio River port, regrettably, we cannot speak with comparable satisfaction and pride of accomplishment. Our needs and feasibility studies conducted in 1970-71 indicated that we should build at Jeffersonville, across the river from Louisville, Ky. Six years later and in spite of expenditures of more than $750,000, we haven't turned the first spade of dirt. In fact, we don't even know whether we ever will. What we are lacking is a construction permit for which we applied to the Army Corps of Engineers years ago. Since then, we have engaged in archeology and Indian history, marine biology, and submarine bottom structure science; we have studied environmental, sociological, and economic impacts. We have reduced enough data to paper to fill a couple of yards of shelving; we have appeared in public hearings and in more conferences than we would have ever believed to be possible. We have retained the best scientific, technical, and legal talents money can buy. We even thought we had produced the most comprehensive impact

statement imaginable, only to find that there's always something more some interested party would like to know more about. We keep being asked: is there not some other site you could choose or another design which would not affect the Indian mounds or the fish spawning grounds?

Now, we aren't suggesting that these questions should not be asked. But what we are saying is that there ought to be a limit to the study and evaluation of alternatives, especially when, as is the case with our proposed port, the adverse impacts as determined by independent experts and concurred with by the Corps are not only minor, or even insignificant, but the positive impacts are projected to be very substantial.

What we have not been able to accomplish, and we don't know of anyone else in a similar situation who has, is to obtain an authoritative and incontestable resolution of when do the positive factors offset or exceed the negative ones. Put differently, we might ask: *Which sets of factors do we accept as representing a positive balance and which constitute a negative balance?* To this, my theme question, I shall return in just a few moments. For now, let us remember that what got us here was a determination made over six years ago that told our public agency, straight and simple, there's a need for a new port now, a need represented by hundreds of thousands of tons of traffic then moving by landborne transportation, or over inadequate and inefficient and uneconomical river port terminals or not at all. That need to date has not been met, and as stated before, we can no longer say whether it ever will be in the future.

Growth of Inland Waterways Traffic

We have, before, made the point that our two operating ports have filled and continue to fill a need; we are equally convinced that our third port, had it come into existence when expected, would also have met an existing need for intermodal transfer of a variety of commodities and a demand for waterways adjacent to industrial sites. These revelations are not surprising. Traffic transported on the inland waterways, and construction of waterside plants, have grown at a steady rate and for good reasons.

Having spared you so far from a lot of statistics, I will bring things into better focus, by citing just a few figures. On the inland waterways, excluding the Great Lakes, 1975 traffic was 582 million tons; compare this with 457 million tons 10 years earlier and 384 million in 1956. In the 20-year interval, the volume of commodities transported over parts of our 9,000 miles of commercially navigable inland waterways has grown by 50 percent. We might parenthetically note that the average distance of haul also increased significantly. Just over the past 10 years the average distance for each ton has increased from 323 miles to 418 miles, a 30 percent increase. Back in 1956 the average distance was only 285 miles. There are, of course, many reasons for this impressive growth. Principally, they are economic. Let it suffice to recall to you that a gallon of fuel, the cost of which has almost doubled in the last 4 to 5 years, moves a ton of freight by barge 1.7 times as far as by rail and about 6.12 times as far as by truck. Thus, in terms of fuel economy and conservation, nobody needs any additional incentives to make maximum possible use of low cost, efficient barge transportation.

The barge industry has impressively met the demand for capacity growth. In the six years for which data are presently available, cargo capacity of non-self-propelled vessels has increased from 24.6 million net tons to 35.6 million, almost 45 percent. For that same period, the number of towboats and tugs has changed by a total of ten; but their total horsepower has increased from under 4 million and an average of 935 hp per vessel to almost 5.6 million and 1,317 hp per vessel. These figures, in and of themselves, are another measure of this mode's efficiency and progressiveness.

To conclude this part of the number rattling, let me note that in 1976 alone a total of 388 new plants or expansions were announced along the nation's 25,543 miles of navigable waters. These plants represent an estimated capital investment of $6 billion, with a forecast employment of 46,120 jobs; if you do the arithmetic, you'll find that represents an average investment of $130,000 per job. Surely, nobody in their right mind

would commit to such capital intensive job generation if it were not based on sound economics. So, here again we demonstrate the need for the waterways as a principal transportation artery, a need that cannot be met with insufficient terminal, dock, wharf, and related capacity. And here, I should emphasize that only 36 of the 388 new facilities announced in 1976 were terminals, docks, and wharves.

Environmental Protection and Coastal Zone Management

It would not be difficult to spend the time remaining for my brief presentation by just reciting the rules and regulations for permits required for activities in navigable and ocean waters. A paper issued by the American Association of Port Authorities in April of last year, cites some 18 sections of federal statutes alone; that number still excludes a good many, prominently the Coastal Zone Management Act of 1972. The latter, as you all perhaps are keenly aware, aims at well-conceived plans for our coastal zones to serve our social, economic, political, and national historic and esthetic values. Just as it is applicable to the Clean Air Act or the National Environmental Policy Act, the Coastal Zone Management Act demands a trapeze performance which, in my considered judgment and to the best of my knowledge, we have not yet achieved. Of course, I refer to the balancing, that delicate balance between economic development and conservation practices.

The Coastal Zone Act of 1972 has created a unique cooperative partnership between the federal and state governments; the federal burden is mainly in financial support, guidance, and coordination; state and local governments are responsible for the development and preparation of coastal zone management plans. Those who framed this Act thought that ports were an important consideration. In at least two places they directed that ports and port authorities be given adequate consideration and opportunity for participation.

In this vein, the Federal Maritime Administration confirmed just last month that the plans it reviewed have

all placed existing ports among the highest priorities of permissible uses and thus recognized the economic significance of ports as enterprises serving major import, export, and domestic waterborne commerce needs. However, these views are often tempered by experiences such as we have had the dubious distinction to achieve. Of course, I refer to policies whose objectives are aimed at restricting creation of new ports, reducing construction and expansion of new marine terminals in existing ports, and avoiding what we believe is unavoidable environmental damage by curtailing port development, generally, including a tight control over any waterside port development involving filling or dredging.

Let me now return to some of the economic issues I have briefly touched on at the beginning of this talk. Let me inject an additional economic factor to the two named before. These, you will recall, were ostensibly the additional costs inherent in the most elaborate studies any public or private enterprise has hitherto been compelled to undertake, and the additional inflation-induced costs of delay. That third factor is that the port business, contrary to popular belief, is a highly competitive business. Though we firmly believe that in our state demand for port capacity and services considerably exceeds the available supply, this does not mean that our existing ports, and for that matter any but a small number of uniquely situated ports, must not work hard to attract their logical share of available traffic. Unless we are more efficient, offer greater economy and better service than our close neighbors on the Lake, we know we would not have any traffic except for that which is truly captive to our port.

Now, in a competitive environment in which the funds available for development, construction, and operations are extremely restricted, any cost add-on automatically becomes a serious, often an insurmountable burden for the sponsor. That, in turn, may well mean that a facility, which would have been started in 1972 and completed two or three years later, and that is not even begun in 1977, will never be built. If that sounds unduly pessimistic, consider, if you will, the figures I already quoted and those I will now add.

In our Jeffersonville situation we invested about $750,000. Of this, almost all, or let's say $650,000, relates exclusively to environmental studies and directly related activities. I haven't mentioned the sum we have expended for property acquisition; it is more than a million. So we have close to $2 million invested for several years with no return whatever from that investment. At an imputed interest rate of 8 percent, our loss in cost of money alone exceeds $250,000. When we compare that with the Port of Baltimore's experience of a few years ago, perhaps we should feel that we aren't all that bad off. Those Maryland Port Administrators found themselves in the embarrassing position of having virtually completed a $23 million expansion to their container terminal only to find that the necessary approval for the disposal of dredged material was being held up. Utilization of this costly project was delayed for nearly a year at an opportunity cost of something in the order of between $40 million and $50 million. I should note that Maryland's studies, with which most experts concur, found that each ton of general cargo passing through the Port of Baltimore left over $30 in the local economy. It is ironic that the disposal permit was eventually obtained in a way that had little relation to sound planning of the coastal zone or protection of the environment. I would not be greatly surprised if our permit for the construction of Clark Maritime Centre at Jeffersonville, Ind., will also eventually issue in a similar manner.

Whether the issuance of that permit at some future date will be of any value is a question we cannot even answer now. What we do know is that project costs have meanwhile doubled and that is without the additional costs we would incur for the construction of an embayment that is supposed to protect some fish spawning grounds nobody even knew existed until we began to search for the mysteries of subterranean life.

As money doesn't grow on trees, we have only that which we can obtain from our legislature's appropriations and that which we earn over and above our operating costs; we cannot be certain, in fact we seriously doubt, that the sums we would eventually need would also be available.

So, here we come full cycle. We are back to asking again the question: Can a balance between economic and environmental demands obtain? If my discussion gives you the impression that we advocate the total disregard of environmental and ecological concerns, let me assure you it is not the case. Developers such as our agency are not despoilers. We believe we are realistic. Our planning and programs are designed for the betterment of our citizens; they aim at meeting social and economic needs that, due to their capital intensity and a host of other causes, fall in the lap of the public agency rather than the private sector. In view of the economic impact of our ports on the state and regional economies, we must take a somewhat pragmatic approach. By the same token, the futility of port development that would despoil the shores of Lake Michigan or the Ohio River is as obvious to us as it is to the most ardent conservationist. To cite the words of Maryland Port Administrator Joseph L. Stanton: "A bustling port abutting on a dead sea is no more appealing than a pristine bay surrounded by poverty-stricken citizens who cannot afford to enjoy its beauties."

In conclusion, the urgency to achieve some sensible balance can hardly be overemphasized. There is no point in repeating the possibility, if not the probability, that Indiana, and for that matter, the rapidly growing Louisville SMSA and areas beyond it, may be deprived indefinitely of a vital socio-economic asset. This, we feel, cannot but inhibit the affected citizen's quality of life. In a broader sense, lack of new ports and related construction where they are needed will eventually affect the foremost trading nation in the world. The decentralized and competitive port system enjoyed by the United States is of the strongest national concern in terms of international relationships. Nationally, it is deeply interwoven with the manner in which we have progressed in terms of population distribution, inland transportation systems, and delivered costs of goods and services. In short, ports are an essential force of the national economy as well as our international trade. As such, it is critically important that we accord them the most thoughtful and intensive consideration our collective minds are capable of.

That is where you have your work cut out. As Dean Jack Van Lopik, your program chairman, suggested in his letter to me inviting me to participate in this 10th Annual Meeting, it would be appropriate to cite port-related issues that can be addressed through resources of universities and the National Sea Grant Program. I hope to have placed one such issue in your laps. It may be neither novel nor soluble. But from personal experience and deepest personal conviction, I can assure you that unless you already have found that elusive sensible balance, it is badly wanted.

LOUISIANA PORTS IN THE COASTAL ZONE

Edward S. Reed*

In April 1976 the American Association of Port Authorities prepared a lengthy paper on public seaport considerations related to coastal zone planning. Five criteria were cited that may be used as planning and evaluating tools in coastal zone management. These are the criteria:

- The state plan should identify its public port districts and their boundaries and should further identify the legislatively constituted responsibilities of the respective port agencies.

- The state plan should contain an authoritative assessment of future problems affecting that portion of the nation's ocean commerce that may require the services of the state's port districts. This is really a hard problem for long-range planning.

- The state plan should contain port agency assessments of coastal areas needed for future port development and expansion to serve the estimated traffic flows and evaluate the extent to which increased traffic can be accommodated within the spatial requirements of existing port districts.

- Nothing in the state plan should inhibit port

*Executive Port Director and General Manager, Board of Commissioners of the Port of New Orleans

development within the established port areas, including dredging and filling and the making of land for marine terminal sites.

- To the extent that property is under control of the port agencies, the plan should identify such property as being dedicated to the port expansion.

- The state plan should include, on an alternative use or multiple use basis, options for various future port developments as determined by potential for deepwater access and inland transportation interface.

I think the last criterion, in many ways, is most important; plans of all types--especially those that must meet federal criteria or be compatible with federal programs--often seem to be unaware of or to disregard the fact that ours is a free society, and that to a major extent our economy is subject to the market place and the ingenuity of the innovative and free entrepreneur. With ports especially, our marketplace is the world, and no plan--even if based on the most sophisticated criteria currently available--will produce the support for port growth needed to meet changing international maritime requirements, unless such a plan contains a generous factor for alternatives. The ability to change directions, innovate, to zig and to zag with the changes in the world maritime industry, both from the standpoint of equipment and the fluctuating areas of world trade is most important.

In Louisiana our ports have exercised great interest in coastal zone management--obviously. Inputs from the Louisiana deepwater ports to the Louisiana Coastal Commission were provided through the Uses and Function Subcommittee of January 1977. This input was provided by representatives of the ports of Baton Rouge, Lake Charles, and New Orleans, which constitute our three deepwater ports. In addition, there was input from several of the shallow draft ports in the state of Louisiana. You should realize that unlike many states, our coastal zone may penetrate very deeply into the state, depending on actions of our legislature.

The January 1977 presentation covered (1) the economic impact of Louisiana's deepwater ports; (2) their powers, duties, and jurisdiction; (3) lands and water resource requirements for ports; (4) port development projects under the jurisdiction of other agencies, well outside port authority control; (5) interagency coordination and cooperation within the state; (6) permits for construction and operation of navigation and port facilities; (7) federal leadership in land and water resource planning; and (8) a study or discussion of the Maritime Administration (MARAD) and National Oceanic and Atmospheric Administration (NOAA) Understanding.

Three items in the presentation that I would like to expand on are economic impact, land and water resources requirements as they relate to future port development, and the MARAD/NOAA Understanding.

Economic Impacts of the Deepwater Ports

One dollar out of every $5.00 of Gross State Product can be attributed to the impact of foreign trade handled by Louisiana's three deepwater ports. In 1976 this foreign trade was in excess of $20 billion. The Port of New Orleans had a study made of its own economic impact. This port's activities directly generated more than 72,000 jobs with a payroll of nearly $700 million a year. It is estimated that the impact of the port generates state and local taxes in excess of $44 million a year. So, any consideration of coastal zone management and its impact on ports must look beyond the port itself to impacts on the whole economy and the whole job structure of the area.

Land and Water Resource Requirements For Future Development of Louisiana's Deepwater Ports

At the present time, space occupied by public port facilities at the Port of New Orleans includes some 335 acres of cargo terminals and about 59,600 linear feet or about 11.3 miles of berthing space for ships. By the

year 2000 it is projected that the general cargo handled at this port will more than double in tonnage, while dry bulk cargo will increase more than tenfold. Estimated additional land and waterfront areas that will be required by the port over this period of time include 400 to 600 acres of land and 20,000 linear feet of waterfront. Thus the future port development will require a much larger land to waterfront ratio than past port development. Modern port facilities such as the container terminals have a land waterfront ratio seven to ten times greater than the conventional breakbulk general cargo facilities. The same is true for bulk terminals and roll on/roll off terminals.

For this reason it is anticipated that a large percentage of future port expansion here in the Port of New Orleans will occur at tidewater areas of the port, with diminishing use of the older facilities on the Mississippi River. Several factors from a purely port-planning standpoint indicate this. One, of course, is the fact that we own over a thousand acres in the tidewater area already. Second, as one can see from this building [the New Orleans Hilton] there is great pressure on the Mississippi waterfront and the port from the city. Beyond that, this part of the Mississippi River is subject to seasonal rise and fall of some eighteen feet, whereas our tidewater area fluctuates only about one and one-half feet; this makes quite a difference in both cargo handling and the design of water facilities.

The close relationship of the port and industry is recognized as being mutually beneficial by all ports universally. Among other reasons, industries are generally drawn to the port locations where they are shipping or receiving commodities in large quantities.

Characteristically, ports are situated on large, several-hundred-acre tracts of land with extensive buffer zones separating them from urban areas. The Mississippi River corridor from Baton Rouge to the Gulf provides a good example of this type of development. Land resources along this corridor in Louisiana, available for future industrial development, can be measured in the thousands

of acres. I think Louisiana has a unique situation here because along the corridor from Baton Rouge to the mouth of the River--except in the vicinity of New Orleans--there is very little build up of residential areas; thus you don't have any problem of interface between residential and semicommercial communities.

NOAA/MARAD Understanding

The NOAA/MARAD memorandum of understanding provides that the growth of strategic commercial ports is to be included in coastal management programs. Locally, the Mid-America Port Study, sponsored by the Maritime Administration and the seventeen mid-America states, will provide growth and economic input to coastal zone planning. MARAD has also been a bit concerned about the ability of U.S. ports to respond in times of national defense. The coastal management program should contain contingency plans that allow them to be flexible and responsive not only to the commercial sector but also to national defense needs. As this meeting is concerned with port problems and opportunities, I would like to give you some indication of what we believe to be universal port problems and then concentrate on main development problems and opportunities for our port in New Orleans.

Port Problems. In 1977 the AAPA published a priority list of port industry problems. These included permit delays, land-use policy problems, mandated costs, money problems, port and waterway policy problems on the local, state, and national levels, federal inconsistency in policies as they relate to the whole maritime industry, federal regulations, deteriorating rail services, and, at least in the Gulf, the Panama Canal situation. There is one other item that the list does not include--I'm not sure that any of us will do anything about it, but it is a problem we all suffer from on the Gulf and Atlantic coasts today--and that is labor-management relations (we still have a strike going on).

Now, permit delays, caused by bureaucratic red tape, make it very difficult to construct needed facilities within time and money budgets. However, we in Louisiana have not been constrained as other ports have.

Land-use policy becomes a problem of the ports where there is intense competition for shoreline space, when priorities are not clearly defined, or when land must be acquired through protracted litigation prior to the commencement of construction. Mandated costs are the cause of the financial crunch felt by many ports. Federally mandated standards of marine terminal construction for pollution control, for environmental protection, for dredging, for worker safety, for cargo security, and for pest control are responsible for a reduction of dollars available for construction of new revenue-producing facilities. And be well aware, none of these programs--no matter how worthy in the abstract--increases productivity or reduces transportation costs to the public at large. In fact, the very opposite is true, and in the final analysis it is the public, everyone of us, who must pay for these programs. Money has always been a problem of ports--their profits are very slim. Now, of course port financing will be extremely difficult. Advances in technology have created a need for capital intensive marine terminals. At the same time inflation has increased, competition for municipal and state funds have combined to reduce capital available for construction of marine terminals. Therefore it is extremely important that in the coastal zone, coastal planning be coordinated with port facilities in a manner that will tend to reduce or hold the line and not unnecessarily increase construction costs. That will definitely be beneficial for ports and the public at large.

An example of this change we're talking about is evident in the new LASH transportation technology we see coming into the port.

Port of New Orleans Development and Management. For many years the Port of New Orleans has been an oceangoing general cargo assembly and distribution center. The New Orleans waterfront is characterized by an abundance of contiguous riverfront wharves, transit sheds, and warehouses. The port is far more than just a place for ocean transportation, cargo removal and distribution, with rail, truck, and river barge providing domestic transportation links. Now, however, inland ports such as

Memphis, Greenville, and Tulsa, can act as collection and distribution centers for oceangoing cargo, as they are able to construct facilities to load and unload LASH barges. There is no longer a need to move all cargo overland for further handling at deepwater ports. The cargo can be moved by water in specialized LASH barges or by highway containers, bypassing a large percentage of the deepwater ports' labor force. However, this does not mean that the deepwater port does not need the facilities. It does. But it does completely change to some degree the economic impact of ports. Port requirements are rapidly changing; they are requiring capital intensive facilities, with large water or land marshalling areas--marshalling areas are often overlooked. But we handle not only LASH and Seabee type vessels that have a number of their own barges, but also, domestic barges. This reach of river from Baton Rouge to the mouth of the river has nine grain elevators that handle 42 percent of all grain exported in the United States, and 95 percent of that grain comes down the river by river barge. So we have a situation at the peak of the grain harvest, where we can have 2,000 to 3,000 river barges in this reach of river. We have to provide for this; we have to provide space, fleeting and marshalling areas on the river for this large number of barges. This must be well considered.

Locally, our land development problems and opportunities--they go hand in hand--are primarily caused not by coastal zone planning but by the interface of the city and the waterfront. The waterfront development problem at this port is closely related to opportunities for the future that require changed spatial arrangements. Movement by conventional major port elements to off-river tidewater areas will allow development of the riverfront. The attraction of the Mississippi River and the varied and colorful activities on the river in New Orleans are constantly of interest to city government for public recreational and tourist development, and private developers for commercial complexes.

For many years riverfront wharfs and transit sheds have effectively blocked visual and physical access to the river. One of the first steps that our Port Authority

undertook was the removal of the Dumaine Street Wharf in front of Jackson Square. This was made possible by the reconstruction to modern standards of the Governor Nicholls Street Wharf immediately downstream.

The removal of the Dumaine Street Wharf provided a clear opening through which historic Jackson Square and the St. Louis Cathedral could be seen from the river and likewise the river could be seen from the historic Pontalba Apartments. I stress that the river may be seen from the historic Pontalba Apartments. We had people in court arguing that they were unable to see the river from the apartments and they wanted us to remove a great number of additional wharfs. This was untrue and unnecessary.

At flood stage the river is eight to twelve feet higher than your head if you stand in Jackson Square. Believe me, if you can see it you are going to feel it there.

The city has taken advantage of the removal of the wharfs in this area to provide the Moon Walk and restuarant facilities in the renovated French Quarter, which gives the public direct access to the river and its view. The removal of these older wharfs did have an adverse effect on port operations. When these wharfs were removed, an intensively used port roadway passing through the wharfs and bypassing the French Quarter's congested streets was severed. Port traffic on Decatur Street is not desirable, but this street is the only one that links port facilities above and below the French Quarter. This is causing a very dramatic problem.

Right now there is a study of a roadway that will be on the river side of the flood wall; it has been recommended that such a roadway could divert heavy traffic away from the newly constructed French Market area.

Another case is the redevelopment of the Poydras Street Wharf. This wharf and its expanded plaza at the foot of Canal Street was used primarily for the importation of cotton and coffee. Through the cooperative efforts of private developers, the City of New Orleans, the Orleans Levee Board, our Port Authority, and the railroads, we were able to reach an agreement that permits the railroads

to continue to transit the area, permits private interests to start construction of a major complex including a 1200 room hotel, condominiums, offices, and parking garages--the International River Center--and, through agreement with the Port Authority, the use of the wharf to provide a needed modern passenger terminal for the accommodation of cruise ships. Through the intensive efforts of the port and the Louisiana Tourist Commission several cruise vessels are now providing service to Mexico from this complex.

A similar development on Canal Street in the area bounded by the Decatur and Bienville streets wharf is currently under design by private interests. This complex has similar goals, and the Port Authority is actively cooperating with all the various interests to determine how this development can be accommodated without the removal of firms using this port facility, which last year handled more than a quarter-million tons of cargo. But you can see how rapidly this type of change can come about, and that's why, in any coastal zone planning, I would say allow flexibility, because it is very hard to see and predict over the long-range basis the needs and wants of the public or the agencies of the federal government.

In summary, one of the major problems and major concerns, in my opinion, of a good coastal zone program will be to equitably balance the economic needs of existing and future ports--taking into full consideration the fact that a port is undoubtedly the major economic factor in this area, providing jobs, economic stimulus, and a needed service to the nation as a whole--against the esthetic and environmental needs and desires of a segment of our community. Further, the uses of waterfront coastal areas for tourism and other commercial activities as they relate to an active port must be fully considered. Environmental considerations or objectives are of great importance for the long-range safety and development of our area and the nation as a whole. Over-emphasis on the environmental or esthetic aspects of our coastal zones can well place man on the endangered species list.

AWARDS

DR. ROBERT B. ABEL
1977 SEA GRANT ASSOCIATION AWARD RECIPIENT

Dr. Robert B. Abel, director of the National Sea Grant Program from its inception in 1967 until March 1977, is the recipient of the 1977 Sea Grant Association Award. On leaving the National Sea Grant Program Dr. Abel became Assistant Vice-President for Academic Affairs, Director of the Center for Marine Resources, and Professor of Marine Resources Management at Texas A&M University.

Dr. Abel's career 1950 to 1967 eminently qualified him to be distinguished as first director of the National Sea Grant Program.

In 1950, Dr. Abel assumed direction of the Oceanographic Survey Section at the Navy Hydrographic (now Oceanographic) Office where he acted as Chief Scientist of the Navy's Oceanographic Survey Group. From 1955 through 1960 he was assistant to the Director of the Hydrographic Office, acting as Coordinator of Undersea Warfare Programs.

In 1961, Dr. Abel joined the Office of Naval Research as Assistant Research Coordinator for Earth Sciences. His principal occupation, starting in 1961, however, was as Executive Secretary of the Interagency Committee on Oceanography, which was created by the President's Science Advisor under the chairmanship of the Assistant Secretary of the Navy. From 1961 almost until reorganization of the Committee in 1967, Dr. Abel executed the Committee's responsibility of coordinating more than 20 federal agencies' programs in oceanography and allied sciences. During this time, the National Oceanographic Program grew from a $35,000,000 investment by the federal government to an annual budget of over $300,000,000. National awareness spread from a relatively isolated marine science community to state governments, school systems at all levels, and from a few dozen to two thousand industries.

When Congress created the National Council for Marine Resources and Engineering Development at the Cabinet level, Dr. Abel became assistant to Dr. Edward Wenk, Jr., Executive Secretary of the Council; the Council was chaired by the Vice-President of the United States. Dr. Abel served the Council until creation of the National Sea Grant Program in February 1967, at which time he assumed direction of the Program within the National Science Foundation.

Dr. Abel is a chemist, engineer, and political scientist. He has published more than forty articles, most of which deal with the development of ocean resources and education in marine sciences and technology. He has lectured widely on marine affairs and law of the sea. Dr. Abel has chaired many committees and working groups at both local and national levels. Internationally, he has led the U.S. Delegation to UNESCO Working Group on Education and the Intergovernmental Oceanographic Commission.

THE SEA GRANT ASSOCIATION
STUDENT RESEARCH AWARDS

The SGA Graduate Student Research Awards are made to recognize outstanding contributions of graduate students in applied marine research. The $100 awards are sponsored by the National Ocean Industries Association, Mr. Charles Matthews, President. The Sea Grant Association also provides complimentary annual conference registration for award recipients.

The SGA Graduate Student Research Awards committee, chaired by Dr. Robert B. Abel, chose three abstracts from some seventy submitted by Sea Grant program Directors:

"Imprinting to chemical cues: the basis for homing in salmon," by Allan T. Scholz, University of Wisconsin Laboratory of Limnology;

"Renatured chitin fibrils, films, and filaments," by C. J. Brine, University of Delaware College of Marine Studies;

"Disposal of shellfish waste on agricultural land," by Robert E. Costa, Jr., Oregon State University Department of Soil Science.

Awards were presented at a luncheon 18 November 1977, at the National Sea Grant Association Conference, New Orleans, La.

IMPRINTING TO CHEMICAL CUES: THE BASIS FOR HOMING IN SALMON

Allan T. Scholz
Ph.D. Zoology
Major professor: Dr. Arthur D. Hasler
Department of Zoology
University of Wisconsin

The olfactory hypothesis for salmon homing states: (1) before juvenile salmon migrate to the sea they become imprinted to the distinctive odor of their home stream, and (2) this information serves as a homing cue for adult salmon migrating through the home-stream network to the home tributary. To test this hypothesis, we marked 18-month old hatchery-raised coho salmon (*Oncorhynchus kisutch*) smolts with fin clips and exposed them for one month to morpholine or phenethyl alcohol (PEA) as a substitute for a natural home-stream odor. A third group was left unexposed. All three groups were released in Lake Michigan midway between two test streams that were located 9.4 km apart. This experiment was conducted in 1973 and repeated in 1974. During the spawning migration 19 months later in 1974 and again in 1975, morpholine and PEA were metered into separate test streams. Both test streams were monitored for marked fish by creel census, gill-netting, and electrofishing. Seventeen other streams were also surveyed in order to determine if a significant number of imprinted fish were straying into nonscented streams. We hypothesized that if salmon use imprinted olfactory cues for homing, then fish exposed to morpholine would return to the stream scented with morpholine and fish exposed to PEA would locate the stream scented with PEA. Unexposed fish served as controls to determine if fish would return to the streams independently of chemical cues. The results from both experiments show that 95 percent of the recoveries of fish exposed to morpholine were in the stream scented with morpholine and 90 percent of the recoveries of fish exposed to PEA were in the stream scented with PEA. By contrast, large numbers of control fish were captured at other locations. We conclude that morpholine- and PEA-exposed fish became imprinted to the

chemicals and used them to return respectively to streams treated with those substances. As this study was conducted in the field, it provides direct evidence that coho salmon use an olfactory imprinting mechanism for homing.

Prior to this study we conducted experiments from 1971 to 1973. In four experiments with coho salmon, three with rainbow trout, and one with brown trout, significantly larger numbers of fish imprinted to morpholine returned to a morpholine-scented stream than did untreated fish. A control experiment was conducted when morpholine was not added to the stream during the spawning migration--morpholine and control fish returned in equal low numbers.

Behavioral experiments conducted from 1971-1973 show that morpholine-exposed fish tracked with ultrasonic transmitters stopped in an area scented with morpholine (20 tracks) and passed through the same area when morpholine was not present (14 tracks). In addition, morpholine-exposed fish did not stop when the area was scented with other chemicals (9 tracks) and nonimprinted fish did not stop when morpholine was present in the area (13 tracks). Electrophysiological studies were also conducted. Salmon were restrained in an operating box and presented with a variety of water samples. Signals from an electrode inserted into the olfactory bulb were recorded on a polygraph and measured. A total of 50 morpholine-exposed and 40 control fish were tested. A significant difference was found in the amplitude of the EEG response to morpholine between morpholine-exposed and control salmon.

Our findings have direct practical applications for salvaging endangered stocks of salmon as well as interest from a purely scientific viewpoint. The technique of artificially imprinting salmon to a synthetic chemical is now being used for managing salmon by the departments of natural resources in the states of Wisconsin, Michigan, New York, Idaho, California, Oregon, and Washington. The National Marine Fisheries Service Biological Laboratory in Seattle, Washington, is also testing the method and trying to apply it for regulating Columbia River salmon. Fisheries biologists in Canada, England, Scotland, Sweden,

and Japan are also now artificially imprinting different species of salmon.

Acceptance of Award

Dr. Robert A. Ragotzkie, Director
Sea Grant College Program
University of Wisconsin

I am pleased to accept this award on behalf of Al Scholz. Al's paper represents the culmination of nearly 30 years of research by Professor Arthur D. Hasler and his students on homing and orientation of fish. I think that it is fitting to acknowledge this lifelong work, which was supported for many years by the Office of Naval Research, then by the National Science Foundation, and finally by Sea Grant. Under Sea Grant sponsorship, Al Scholz was able to bring this research to full application in the creation of an innovative and efficient technique for salmon management.

I am delighted that the Sea Grant Association in making these awards is recognizing the vital contributions of graduate students--not just the winners, but all the students who do most of the work--to the goals of the Sea Grant Program. It is these students who will, sooner than we think, be carrying out Sea Grant goals in academic posts, in government, and in industry.

In accepting this award, I think that it is especially appropriate to recognize the long-term effort required to produce really significant results. Too often we are entranced by the prospect of a quick fix to a marine problem. These quick fixes rarely succeed in the long run. When they do succeed, it is usually because they grew out of a long and well-run research effort. It is essential that Sea Grant recognize this and accept the responsibility of supporting high quality, long-term research efforts. It will be these programs that produce both lasting results and our best students.

I know that if Al Scholz were here he would want to acknowledge personally Professor Hasler, Ross Horrall, and

the many students who worked together over the years to make his work possible. On behalf of all of them, I thank you very much.

RENATURED CHITIN FIBRILS, FILMS, AND FILAMENTS

Charles J. Brine
Ph.D. Chemical Oceanography
Major professor: Dr. Paul R. Austin
College of Marine Studies
University of Delaware

Chitin, the structural support material of the exoskeleton of crustaceans, is a potentially valuable marine resource obtainable as a by-product from seafood operations. A resurgence of interest in chitin has been stimulated by Sea Grant marine resource development studies and recognition of the important though little understood role of chitin in accelerating wound healing and alleviating inflammations of the skin and its potential utility as a renewable marine resource.

Research resulted in the development of better techniques for the solution, purification, and renaturation of chitin, an intractable celluloselike material, difficult to dissolve for purification except in strong acid or special salt solutions. New solvents for chitin were found that minimize degradation and permit its solution, filtration, and reprecipitation as crystalline (renatured) fibrillar material. Two particularly effective media are trichloracetic acid/methylene chloride with and without chloral hydrate, which form very viscous 5 percent chitin solutions. By precipitation with aqueous alkali or with acetone, fibrils visible to the naked eye were obtained. Unsupported films and filaments were cast or extruded from these solvents by precipitation with acetone; their crystallinity was found to be fully equivalent to natural chitin.

Scanning electron microscopy was used to compare surface structural features. Natural crab chitin flakes displayed a well-ordered structure when viewed perpendicular to the

surface. The renatured films, while not as highly ordered, showed rudiments of the same structure. Renatured fibrils appear to have a morphology similar to natural fibrillar material with a high degree of order and bundles of still smaller fibrils constituting apparent individual fibrils.

Polarizing microscopy was employed to identify and compare crystallinity in the natural and renatured chitin. Birefringence, an indication of preferred crystalline structure, was observed for both the natural and renatured chitins. Spherulitic crystallinity, characteristic of polymers such as polyethylene and cellulose, was observed in both samples. Similar results with films indicate a significant degree of molecular organization. In X-ray studies, visual similarity of patterns was evident for natural chitin and for renatured fibrils and films. Further confirmation was obtained by determining d-spacing of the prominent Debye rings from each. The experimental values are in close agreement.

Chitin films and filaments can be further oriented by cold drawing to more than twice their original length, which induces fiber orientation and an increase in tensile strength equal to or surpassing that of natural chitin filaments. The physical, structural, and analytical data confirm the existence of the desirable crystalline oriented chitin structure in these renatured products.

With the principle established that chitin can be renatured, even into highly oriented forms, the need appears for a superior solvent system to avoid chitin degradation, provide more concentrated solutions, avoid solvent retention in the filaments and films, and facilitate wet or dry spinning, or casting of such structures. Studies in this direction have already produced new, nondegradative (nonacid) solvents. considering the modest potential supply of chitin (50-100 million pounds per year in the U.S.) and the high cost of initial manufacture of both chitin and the proposed filaments and films, applications have been hypothesized that involve high value-in-use, such as surgical sutures and other hospital supplies. There are only a handlful of commercial fibers oriented by cold drawing; with the leads

developed in this study, perhaps in time chitin can be added to that list. This research has resulted in U.S. Patent 4,029,727, "Chitin Films and Fibers," which has been licensed by G. D. Searle and Co., Ltd., for the purpose of development of commercial hospital sutures from chitin.

Acceptance of Award

Dr. William S. Gaither, Dean
College of Marine Studies
University of Delaware
Director
Delaware Sea Grant College Program

Thank you. I am pleased to accept this award for Charlie Brine, one of Delaware's more talented, and colorful, graduate students. The research this award recognizes has several worthwhile features, which came about because of the unique problem-focused program that Sea Grant encourages.

First, this area of research at Delaware was started by Dr. Paul Austin, a retired Du Pont Company research director and now an adjunct professor of chemistry in the College of Marine Studies. It was undertaken as a Sea Grant project in 1972 because of a very mundane and practical problem, how to increase the value of crab waste from a local processing plant?

The problem was attacked at the basic levels of (1) the chemistry to isolate chitin in pure form and (2) the chemistry of processes to create useful products, such as biodegradable food wrapping films and filaments for surgical sutures, as well as additives such as nicotine-free tobacco extenders and aids to the digestibility of whey and other surplus milk products. Here we must acknowledge the help given Delaware by other Sea Grant-sponsored researchers at the University of Washington and MIT.

Second, several commercially valuable patents have resulted from this research. The University of Delaware

has applied for extended rights through established federal procedures, and the patents have been assigned to the University with both Dr. Austin and Charlie Brine as inventors. In addition, early information about these patents was shared with several nationally known companies, which executed confidentiality agreements with the University. Sufficient commercial interest developed in one of these companies that it contributed matching funds to the Sea Grant project to carry the research forward at an accelerated pace. Another company paid for the rights to the commercialization of certain of these inventions.

This leads to the third important feature of this research that, under University patent policy, fees received from patents go first to pay the cost of filing for patents, including searches, and second, are shared with the individual inventors. As a result, Charlie Brine, in addition to the award he is receiving here today, also received a check for over $600 a few months ago.

As Delaware's Sea Grant Director and Dean of the College in which Charlie is enrolled as a doctoral candidate, I am particularly pleased with the scope of this research experience provided through the Sea Grant program. On behalf of Charlie Brine, I want to thank the selection committee and the National Ocean Industries Association for this award.

DISPOSAL OF SHELLFISH WASTE ON AGRICULTURAL LAND

Robert E. Costa, Jr.
M.S. Soil Science
Major professor: Dr. E. Hugh Gardner
Department of Soil Science
Oregon State University

The Federal Water Pollution Control Act Amendments of 1972 prohibit the discharge of seafood processing solid wastes into navigable waters after July 1, 1977. Oregon shrimp and crab processors must use other methods of disposal for the 15 to 30 million pounds of solid waste generated annually. The application of shrimp and crab wastes to

nearby agricultural land can consume the wastes generated at major processing ports. The objectives of this research were to determine the best ways to handle and apply the wastes, the effects of waste applications on plant and soil chemical composition, and the value of the wastes compared with conventional fertilizer materials.

As they came from the processing plant, shrimp and crab solid wastes contained 1.3 to 1.6 percent nitrogen (N), 0.47 to 0.54 percent phosphorus (P), other nutrients, 7 to 14 percent lime ($CaCO_3$) equivalent, and 64 to 78 percent water. A greenhouse experiment determined the effects of (1) grinding the wastes, (2) surface vs. incorporated waste applications, and (3) waste applications vs. inorganic N applied at equivalent N rates (56, 168, and 336 kg N/ha) with applications of P, sulfur (S) and $CaCO_3$ supplied with the inorganic N only. The fertilizer materials were applied on two coastal soils, and two pasture crops were grown. Forage yields and the P concentration in "Potomac" orchardgrass (*Dactylis glomerata* L.) were significantly higher with incorporated waste applications than with surface waste applications. Application method did not affect the P concentration in New Zealand white clover (*Trifolium repens* L.). From personal observation of waste applications on coastal pastures, it was assumed that the difference in crop response to application methods would be less under field conditions than was measured in the greenhouse. Grinding crab waste significantly increased forage yields when the waste was surface applied, but not when it was incorporated with the soil. Unground shrimp waste gave significantly higher forage yields than ground shrimp waste. No significant difference occurred in the forage yields, the N uptake by orchardgrass, or the P concentrations in orchardgrass and white clover among applications of shrimp waste, crab waste, and inorganic nutrients with lime. Applications of shrimp and crab wastes increased white clover yields over the control by a factor of more than 3.5 on Knappa silt loam (pH 4.9-5.0) but did not measurably increase the soil pH. Increasing application rates of shrimp and crab wastes to Knappa and Nehalem silt loams significantly increased the extractable soil P and calcium (Ca), and significantly decreased the

extractable soil potassium (K) after 28 weeks of orchardgrass growth. No consistent effect on soil pH was measured.

In a second greenhouse experiment, N rates of 165 and 330 kg/ha and P rates of 61 and 122 kg/ha were supplied by shrimp waste and by inorganic sources to a limed coastal soil in a 2 x 2 x 2 complete factorial arrangement. Applications of shrimp waste resulted in significantly higher orchardgrass yields and P uptake than applications of the inorganic nutrients. However, no significant difference occurred in the N uptake.

In an irrigated coastal pasture, fresh shrimp waste was applied at 6,726, 17,936, and 35,872 kg/ha and ammonium phosphate (16-20-0 15 S) was applied at 224 and 448 kg/ha, and a stand of orchardgrass was established. Forage yields were higher with shrimp waste than with ammonium phosphate. Shrimp waste applications beyond 17,936 kg/ha did not further increase the forage yield or P uptake. Shrimp waste applications increased the extractable soil P, sulfate, soluble salts, and nitrate, but resulted in a depletion of soil K at the end of the growing season.

At major Oregon processing ports, most shrimp and crab processing wastes are now applied on agricultural land.

Shrimp and crab processing wastes are effective sources of N and P for crop plants and should be applied at rates necessary to supply the recommended rates of N. Use of the wastes will result in depletion of soil K by crop plants. Potassium fertilizer should be applied to supplement waste applications on soils with low levels of available K.

Waste applications in excess of 18,000 to 22,000 kg/ha are not recommended because applied N is not used efficiently and nitrate contamination of groundwater can occur with high application rates.

Work with coastal farmers was an important aspect of the project. Prior to the July 1, 1977, deadline, a few growers applied the processing wastes to their fields and

demonstrated the feasibility of utilizing the wastes in commercial farming operations. No special equipment was required to handle the wastes. Chemical analyses of soil samples from farmers' fields showed marked improvements in soil nutrients as a result of waste applications.

Acceptance of Award

Kenneth S. Hilderbrand, Jr.
Assistant Director for Advisory Services
Head, Marine Advisory Program
OSU Sea Grant College Program

Thank you very much for the opportunity to accept this award for Bob. If he were here he probably wouldn't make a speech, because he's a modest sort of guy. But he's not here, so I will make a speech.

I'd like to say this about his project on the utilization of shellfish waste as a fertilizer. Not only was it an outstanding bit of research, but it's helping to solve a serious problem we've had on the Oregon coast for years. It's a project that exemplifies the value of Sea Grant's coordinated training, research, and advisory services.

This project was identified by OSU Marine Advisory Program staff, who went to the Department of Soil Science for help. With Sea Grant research funding, department faculty attracted a student to the project--a student they identified as the best one they'd seen for a long, long time. In fact, Hugh Gardner, our Extension Soil Specialist, said he was very surprised that Bob Costa took the project on. Students of soil science have no trouble getting support.

But something about this project attracted Bob. The department was right--he was an outstanding student. The quality of this project shows it.

However, this project's bottom line tickles me the most. In the process of conducting this study, Bob decided that he liked the coast, and competed successfully for a job as an Agricultural/4H Extension Agent in Clatsop County--one

of our major coastal counties. We now have an ocean-oriented Ag/4H agent in Clatsop County, where it also happens that our Sea Grant Marine Extension Agent is County Extension Chairman. Bob's job may be with agriculture and 4H, but you can bet that the ocean will not be neglected in Bob's plans.

Without Sea Grant, it wouldn't have happened.

Thank you.

MINUTES OF THE BUSINESS MEETING

THE SEA GRANT ASSOCIATION
ANNUAL BUSINESS MEETING
MINUTES

November 19, 1977
New Orleans, La.

1. Agenda attached (Appendix A).

2. Attendance (Institution and delegate):

City University of New York (G. Posner)
Florida Institute of Technology (N. O'Hara)
Gulf Coast Research Laboratory (H. Howse)
Harbor Branch Foundation (R. Jones)
Heed University (W. McNichols)
Louisiana State University (J. Van Lopik)
Massachusetts Institute of Technology (D. Horn)
Michigan State University (N. Kevern)
Mississippi-Alabama Sea Grant Consortium (J. Jones)
Mississippi State University (R. Benton)
N. Y. S. College of Agriculture, Cornell Univ. (B. Wilkins)
Oregon State University (W. Wick)
State University of New York (J. Judd)
Texas A & M University (W. Nowlin)
University of Alaska (D. Rosenberg)
University of Delaware (W. Gaither)
University of Florida (H. Popenoe)
University of Hawaii (R. Pfund)
University of Houston (A. Lawrence)
University of Maine (R. Dearborn)
University of Miami (A. Volker)
University of Michigan (A. Beeton)
University of Minnesota (L. Smith)
University of New Hampshire (R. Corell)
University of Rhode Island (N. Rorholm)
University of Washington (R. E. Harris)
University of Wisconsin System (R. Ragotzkie)
Virginia Institute of Marine Science (M. P. Lynch).

3. Tenth annual meeting called to order at 9:05 A.M. by President Hugh L. Popenoe.

4. Minutes from the 1976 annual meeting were accepted unanimously.

5. Treasurer's report (Appendix B). Treasurer John Judd presented a report for the period January-October 1977 with a forecast to the end of the year. The Association will have a balance of nearly $6,000 at that time.

6. President's report. Dr. Popenoe noted that it had been a good year for the Sea Grant Association. It was active in Washington, D.C., through testimony before Congress and the efforts of the Washington Representative. There was a lot of credit to be shared by all the groups and individuals involved in the activity connected with the increased appropriation for federal Sea Grant. SGA enjoyed stronger ties with land grant. SGA's councils were more active as more continuity was sought for their work. Newsletter coverage was expanded to include council updates. The issue of industry membership was addressed during the year. The four new members added are University of Houston, University of Puerto Rico, Florida Institute of Technology, and Harbor Branch Foundation. Noting that all four were from the Southern U.S., Dr. Popenoe reflected that the new SGA president being from the Pacific coast and the next annual meeting scheduled for New England, new members from those parts of the country might be expected in 1978. SGA was in good financial shape in 1977. It was streamlining its articles of organization. Finally, the contributions of the executive committee and other officers were recognized (membership list is Appendix C).

7. Washington Representative's report. Mr. Dan McGillicuddy reviewed his activities over the past year (Appendix D). In introducing Mr. McGillicuddy, Dr. Popenoe noted how important the Washington Representative had been in educating and serving SGA and in strengthening the Association's ties with Congress, and that Mr. McGillicuddy served the Association well at an important time.

8. Report of the Joint Committee on Marine Resources (of the National Association of State Universities and Land Grant Colleges and the Sea Grant Association). Presented by Dr. Robert Ragotzkie, chairman (Appendix E). The Committee had just met on November 14, with the recommendation agreed upon by Land Grant. *A motion to receive the recommendation* of the Joint Committee was *unanimously passed.*

9. Report of the committee on Association goals and industry participation. Presented by Mr. Dean Horn (Appendix F).

10. Amendments to the articles of organization. Dr. Popenoe introduced Mr. Donald Rosenberg to lead the discussion by noting that the Articles were too detailed and that the proposed amendments were not intended to change the way SGA operates. *The motion to change the SGA Articles of Organization (Appendix G) was approved unanimously.*

11. Noting that the bylaws would be "cleaned up" in the coming year, Dr. Popenoe again asked Mr. Rosenberg to lead the discussion. He moved that the 90-day notice of bylaw amendments be changed to one hour (Appendix H). This was amended to 30 days. *The amended motion passed.*

12. Executive Committee report. As follow-up to the Joint Committee report Dr. Robert Corell moved the initiation of the study recommended (Appendix E), and further that action be taken regarding representation in Washington, D.C. (see Appendix I). After discussion of concerns for a changing national situation, including the National Office of Sea

Grant, SGA liaison with Congress, and possible land-grant affiliation, the *motion was approved.*

13. Resolutions. Four resolutions were introduced by Dr. Niels Rorholm and were *passed:*

a. 77-1. On the coordination of state and regional programs (Appendix J). *Unanimous.*

b. 77-2. On National Projects of Sea Grant (Appendix K). *Unanimous.*

c. 77-3. "That we express our appreciation for the excellent work of Jack Van Lopik and his co-workers in arranging and hosting the annual meetings." *By acclamation.*

d. 77-4. "That the Association join the Executive Committee in thanking our immediate past president, Hugh Popenoe, for his energetic leadership over the past year."

14. Election. The following officers for 1977-78 were elected unanimously:

President-elect: Bruce T. Wilkins, Cornell University;
Executive Committee: Donald H. Rosenberg, University of Alaska;
Alfred M. Beeton, University of Michigan.

15. Reports of the Sea Grant Association councils:

Communications

Presented by Mr. Thomas Leahy

a. Communications Research. The Communication Council directed one of its sessions to the matter of Communication Research--the diffusion of information.

Three speakers were invited: Dr. Jan Robbins, head of the Department of English Language and Literature, UNI, who discussed in general terms the theory of information diffusion as it has evolved over the years; Dr. Alvin Bertrand, Boyd Professor of Rural Sociology at LSU, who discussed further the conceptual framework of communication research; and Dr. Jim Lloyd, Assistant Professor in the faculty of Communication Arts at the University of West Florida, who is currently completing a research project on diffusion of Sea Grant information in the West Florida area.

Very briefly, the points that emerged from these discussions were that while a lot can be done with mass communications, they do not have as great an impact in terms of modifying behavior patterns as is generally believed. They are most effective if reinforced by interpersonal communication as past research has demonstrated.

Example: A marine advisory agent, well known in an area, respected, enjoying credibility among his constituents, can be very effective. What this indicates is that communications strategy is an important tool for Sea Grant communicators, who cannot rely on instruction only but on research.

The results of Lloyd's research will be made available to Sea Grant communicators when completed. Also there are plans to publish proceedings of the session on research, which will also be distributed to Sea Grant communicators.

b. SGA Newsletter. In August 1977, the Executive Committee voted to limit distribution of the newsletter to 25 copies per member. All copies over this amount would be paid for at cost to be determined by the issuing institution.

As the newsletter is the only means used to disseminate information to interested parties, it is about the only way most of us hear about SGA activities. The communicators feel that adequate copies should be made available to member institutions (need may vary widely).

Therefore, the Communications Council respectfully requests that the the Executive Committee re-examine this matter and, if possible, reconsider the restriction that was placed on newsletter distribution.

Education

Presented by Dr. James Schweitzer

The Marine Education Council sponsored the following sessions at the annual meeting:

a. The Relationship of Marine Education to Advisory Services. Chaired by Robert Shephard, the panelists were Prentice Stout, Bill Wick, and James P. Schweitzer.

b. The National View of Marine Education. Chaired by E. Ray Pariser, panelists Logan Sallada and Ned Ostenso discussed the recently executed Interagency Agreement on Marine Education. Following an exchange of views, the individuals present agreed:

(1) to recommend to the Executive Committee of the Association that they urge the Director of the National Sea Grant Association to appoint an education specialist with a strong background in K-12 public education.

(2) to form a subcommittee, consisting of Prentice Stout and Ray Pariser, to explore ways in which marine educators could utilize the services of the USOE National Diffusion Center.

(3) to form a subcommittee, yet to be named, to identify non-NOAA funding sources for marine education.

c. An Introduction to Marine Education. The latest edition of this document was presented by its author, Harold L. Goodwin. After considerable discussion, the members present voted in favor of requesting the Association president to appoint a committee to formulate an implementation plan for this document.

Ocean Policy

Presented by Dr. Joseph Bockrath

a. The initial session of the Ocean Policy Council devoted its attention to the subject of ports, particularly controls on port growth and the permitting process. Robert Goodwin from the University of Washington and Frank Craig from the LSU Sea Grant Program reported on port studies undertaken at their respective institutions and suggested methods by which the permitting process might be made more expeditious and environmental mitigation built in at an early stage.

Discussion in the council revolved around the fact that the two studies, while similar in purpose, adopted significantly different research approaches and utilized personnel of dissimilar backgrounds. Considerable discussion ensued on the advantages and disadvantages of multi-investigator, high intensity projects of short duration as a means of combating problems caused by investigators moving from one institution to another.

b. Pursuant to a suggestion by Dr. Hugh Popenoe, president of the Sea Grant Association, the second session of the ocean policy council was devoted to the problems of international ocean research, and the International Sea Grant Program in particular. Mr. Mike Wascom, congressional liaison for Sea Grant in Washington, offered a presentation on the congressional history of the International Sea Grant Program and its possible legislative future. Mr. William Young, from the staff of Sen. Claiborne Pell, offered a similar presentation with emphasis on the question of whether the International Sea Grant Program was intended only for the benefit of the underdeveloped countries or whether a two-way exchange with developed nations such as Japan was the congressional intent. A State Department representative also made suggestions on this point and also on the State Department's role in proposal evaluation. Mr. Thomas Murray, the Sea Grant official in charge of the International Sea Grant Program, discussed the programmatic features of International Sea Grant, the types of proposals received, and the nature of the review process to which they are being subjected.

Representatives from the University of Rhode Island, LSU, University of New Hampshire, University of Florida, and University of Delaware each reported on the nature of the International Sea Grant Proposals emanating from their institutions. The University of Rhode Island also reported on the variety of other international research and advisory activities undertaken by that institution.

The recommendations of the Ocean Policy Council on the subject of International Sea Grant will await the publication of final regulations on the administration of the International Sea Grant Program.

Research

Presented by Dr. Will Schroeder

a. The Research Council and the Marine Advisory Council held a joint program session. The question, "What interactions would I like to see happen between our own program's researchers and advisory professionals?" was posed to three invited panelists for their views. Their comments were followed by an open floor discussion.

b. Dr. W. Wayne Shannon, co-author of the tenth SGA meeting's presentation "The National Sea Grant Program: A Preliminary View of Perceptions in the Academic Marine Science Community," met with the council to discuss in more detail several aspects of the Palmer-Shannon Survey.

c. As a result of discussions carried on at the Research Council business meeting the following recommendations were prepared and are hereby formally submitted to the Executive Committee:

(1) That the chartered activities of the Research Council shall include but not be limited to the following:

(a) to serve as a forum for two-way communication on research matters between the Office of Sea Grant and the members of the Association;

(b) to consider ongoing and planned Sea Grant research programs and policy to the Association as appropriate; and

(c) to disseminate information regarding ongoing and planned Sea Grant research to the Association members.

(2) That the Research Council be chaired by co-chairpersons, each serving two years on an alternate year replacement cycle. The Council's recommendations for chairpersons are:

Dr. W. W. Schroeder for a one-year term; and
Dr. A. L. Lawrence for a two-year term.

(3) That the Sea Grant Association request the Office of Sea Grant to assign an official representative to the Research Council.

(4) That the 1977-78 annual tasks for the Council be identified as follows:

(a) discuss the Office of Sea Grant's policy relating to research; and

(b) consider ways and means of evaluating the quality of Sea Grant supported research.

(5) The 1978 annual meeting program for the Research Council be structured as follows:

SESSION I: An open forum on the subject "Research Problems Within Sea Grant; Causes and Cures." The format being selected keynote statements by invited panelists followed by an open floor discussion.

SESSION II: Business meeting.

SESSION III: A continuation of the joint meetings with the Marine Advisory Council.

Marine Advisory Council

Presented by Mr. Robert Harris

a. SEA GRANT RESEARCH AND ADVISORY PROGRAM INTERACTIONS
Combined Session of the Research and Marine Advisory Councils

Panelists: Stephen Brown, Sea Grant Extension Specialist
State University of New York at Potsdam

Hugh L. Popenoe, Director, State University Sea Grant Program, University of Florida

William W. Schroeder, Research, Dauphin Island Sea Lab, University of Alabama

Moderator: Wallace Klussmann, Marine Project Leader,
Texas A & M University

Summary

Involvement and interaction between research and advisory personnel should be encouraged with strong policy statements. The responsibility for effective coordination is equal between research and advisory components. Each must be willing to devote time and effort to achieving the desired goal--being certain that mission oriented research is on target and that it will be meaningful and useful to the clientele.

Panelist Popenoe pointed out that effective coordination is aided by administrative policy that requests that advisory personnel be "co-investigators" on certain research projects.

Panelist Brown stressed the importance of industry involvement before, during, and after a research effort. Industry involvement provides for meaningful inputs into objectives, current priorities, and research reporting. Such involvement means a

ready and waiting audience that can and will use the data and information generated. He also emphasized that if you ask industry leaders for their input, you must be prepared to adhere to their advice and counsel.

b. THE NEXT GENERATION OF MARINE ADVISORY SERVICES - Part I
Second and Third Sessions of the Marine Advisory Council

(AIRLIE HOUSE 1977 REVISITED)

Speaker: Robert J. Shephard, Program Manager, NMAS, Office of Sea Grant, NOAA

Panelists: Joseph N. Busby, Dean Emeritus, Extension System, University of Florida; National Sea Grant Review Panel

Walter J. Gray, Director, URI Marine Advisory Service, University of Rhode Island

Robert A. Ragotzkie, Sea Grant College Program Director, University of Wisconsin

Question: What do the national marine advisory service results of the Airlie House meeting look like, now that three and one-half months have passed?

c. THE NEXT GENERATION OF MARINE ADVISORY SERVICES - Part II

Panelists: Dale Baker, Director, Marine Advisory Service Program, University of Minnesota

Marion L. Clarke, Marine Advisory Program Coordinator, University of Florida

B. J. Copeland, Director, North Carolina Sea Grant Program, North Carolina State University

B. Dan Kamp, Head of Education and Advisory Services, Texas A & M University

Question: What are the essential working relationships necessary to effectively interface the Sea Grant advisory services network with other NOAA marine advisory activities?

Moderator: Robert E. Harris, Manager, Marine Advisory Program, University of Washington

Background

For several years NOAA administrators have sought ways to better integrate the knowledge available in the other NOAA

major program elements (MPEs), with the marine advisory services developed in the Sea Grant program. The Sea Grant and its marine advisory services, and its financial support (two-thirds federal, one-third non-federal), are appreciably different from the roles and the funding of the other NOAA components. Progress in involving the other NOAA components in marine advisory services, particularly from the viewpoint of a NOAA administrator, has been slow.

Summary

The two sessions sought to develop constructive suggestions concerning further interfacing of the Sea Grant advisory services network with other NOAA marine advisory activities. There is a very important resource base in the NOAA MPEs. It is important to bring the MPEs and the Sea Grant marine advisory service network closer together for the benefit of marine resource user constituencies.

But the only reasonable consensus of the two meetings on a practical approach to doing this summarizes as (1) we already have a national marine advisory service network in operation, (2) we are already working with the MPEs at the local level, and (3) we should continue working "from the bottom up" to encourage and develop additional interactions. The scenario for this starts with local user needs. Marine advisory services should seek out and encourage the use of other NOAA MPEs as information sources in meeting local needs, operating with them much as we do with our other information sources. As the information demands on an individual MPE build to the point of impacting that MPE's priorities, that MPE then shifts or seeks additional resources to meet those needs, just as individual Sea Grant programs do.

In the first session our speaker, Shephard, stated the objectives of the NOAA Marine Advisory Service (NMAS) Day at the 1977 Airlie House as finding out the NOAA perception of NMAS, and exposing field personnel to NOAA agencies. The NOAA agency representatives had a forum for portraying their roles, activities, and capabilities. Possibly the most significant contribution of the day was the extent that NOAA and Sea Grant field personnel were already involved in cooperative interaction. The day also demonstrated that both top level commitment and field awareness are important.

After Airlie House there was a restructuring of the NMAS Steering Committee; it now has nine MPE representatives plus a member of the National Sea Grant Review Panel, three Sea Grant directors, and six marine advisory service program leaders. Shephard sees the Steering Committee as becoming a focal point for generating interaction at the national level. The MPE representatives have difficulty understanding how the advisory or extension concept relates to their operations, but the

entire Steering Committee is being called upon to identify projects in addition to developing a systematic and definite course of action (as opposed to what appears to be sporadic and isolated efforts that are now ongoing).

Panelist Busby emphasized that there was much better understanding of how the Sea Grant network and the MPEs might work together at Airlie House 1977 over Airlie House 1976, that Bruce Wilkins' paper (see Appendix L) on what Sea Grant is and is not was an excellent contribution to that end, and that we should all work toward MPEs contacting Sea Grant and vice versa at the regional and local level.

Panelist Gray emphasized that NOAA has been undergoing reorganization at key levels since Airlie House. He also pointed out that the previous NOAA administrator had chosen not to implement the 1972 NMAS directive, that local programs set up to build "from the bottom up" would have a great deal of difficulty being able to agree to plans made at the national level for marine advisory work either at that time or now, and that what we should do is develop further cooperative projects within our states; the network as a whole is already working on a national basis. Panelist Kamp added that like Walt Gray, he feels we are fighting a problem that does not really exist. We have a national marine advisory service, and the other NOAA MPEs are sources of information. Our people can go ahead and do the job--we all have to cope with the situation of too much business--and we have the same kind of problems with any other information source we use; many sources have a low priority for providing information services to customers.

Panelist Ragotzkie observed that there is a distrust of federal government, and that the Sea Grant program offers a marvelous opportunity for NOAA to reach the public. There are resources and capabilities in NOAA, but the public does not feel it has access to them. Thus the game is to put Sea Grant's opportunity for NOAA to reach the public together with the resources and capabilities in NOAA. He added that Sea Grant directors by and large support the idea of marine advisory services, and they do allocate the resources available to them to assist in doing this.

In the second session panelist Baker led off the consideration of essential working relationships from the starting points (1) that the Sea Grant advisory network exists, and (2) that "other NOAA marine advisory activities" refer to the extension needs of the MPEs outside of Sea Grant. MPEs must understand the capabilities of the Sea Grant extension program and the ways the program can, and can not, assist them--and local Sea Grant extension programs must comprehend the extension needs that MPEs have and calculate capabilities to deliver cooperative programs. MPEs and Sea Grant extension programs must also agree to cooperatively carry out needed extension efforts.

Baker suggested that NOAA MPEs and Sea Grant programs meet together regularly, on a regional or statewide basis depending upon needs; they must get to know each other, appreciate each other's responsibilities, and develop communications and working relationships. Baker saw NMAS in the role of seeing that NOAA MPEs at the Washington level perceive these efforts as an important part of their responsibility, and that their perception is passed on to NOAA MPE components in the field.

Panelist Clarke agreed, and also felt that if all the elements of the NOAA Marine Advisory Service as set forth in the NOAA directors' manual had been made available there would be a potentially workable structure. Clarke also agreed with an earlier Bruce Wilkins' comment to the effect that most needs will not be met unless the priority within NOAA or the individual MPE is sufficiently high to generate additional resources to do the work.

Panelist Kamp pointed out that Sea Grant was patterned after Land Grant, that after sixty years Cooperative Extension is serving other parts of the U.S. Department of Agriculture, but that this is up to the local level--some Cooperative Extension programs do this, and others do not. He emphasized that what gets the job done is looking at how we might work together at the local level; you have to come up with a plan and proposal based upon what goes on now, and then just put it into effect.

Panelist Copeland stressed seeking a framework for doing the job. We are already doing the job at the local level, but it never gets seen as a whole at the top level. He emphasized individual Sea Grant programs developing work plans including tasks--identify the problem, how to approach it, who is involved, and the expected results. Copeland saw national coordination of tasks in the national network as the result of local planning, regional planning, national planning, and finally a reporting against tasks. National Sea Grant could then tell NOAA MPEs what the problems and tasks are including the cost estimates, get top level input as to available resources, and finally complete the loop by feeding back results. That way we could convince the necessary people concerning effectiveness and get dollars to the field organizations, instead of just doing something and then finding a user. Copeland felt that the Office of Sea Grant is the connector and that he could see the beginnings of a mechanism.

The specifics from the panelists evoked appreciable audience discussion. However, the only real agreement on the direction to go from here was that stated near the beginning of this summary--broadly, build the additional advisory services from the bottom up, and add the necessary resources as the MPE components see the demand for advisory information services build up to the point of modifying priorities.

d. IMPROVING INTER-PROGRAM MAP COMMUNICATIONS
Fourth Session of the Marine Advisory Council

Leader: Bruce T. Wilkins, Program Leader, New York Sea Grant Advisory Services, Cornell University

Participants: John K. Hutchinson, Coordinator, New England Marine Advisory Service, University of New Hampshire

Stephen Brown, Sea Grant Extension Specialist, University of New York at Potsdam

Kathi Jensen, Information Coordinator, University of Delaware

Summary

This session dealt with improving inter-program MAP communications, and a variety of ideas were put forth by those present on means for better communications. Those suggestions receiving support of three or more of those present are listed in descending order of choice, six choosing the first potential listed.

(1) Computer retrieval of program emphasis, to be carried out by the National office--Greg Hedden to follow up on this.

(2) Specialized Conference Calls and other effective use of telephone on a regular basis--Ken Hutchinson and Bob Goodwin to follow up on this.

(3) Distribution of Intent to Publish Notice, meetings scheduled and publications--Marion Clarke, Dale Baker, and Ron Dearborn to follow up.

(4) National Sea Grant Office summarize and distribute reports from programs on a regular basis.

(5) National or Regional Meetings for exchange of information.

(6) Talent Sharing

(7) Exchange of Proposals and Annual Reports.

In the discussion several topics were identified as important to follow through on although they might not properly fit the above list. These include:

(1) establishing an awards program for Advisory Service field staff and perhaps other Advisory Service staff, the first awards to be presented at the 1978 Sea Grant Association Meeting.

(2) recommending that the Office of Sea Grant designate three other Advisory staff as having "special relationship" with an institution's Advisory Service to assist in national links to that program.

(3) recommending that we commit ourselves to reading institutional programs, summarizing these, and distributing to other staff in our programs.

The motion to receive all the reports for Executive Committee action was *passed* unanimously.

16. Incoming SGA President William Wick presented a forecast budget (Appendix M) and then appointed the following:

a. Committees (chairperson denoted by asterisk)

(1) Nominating: Hugh Popenoe*

(2) Student Awards: Gerald Posner,* Dorothy Bjur, James Schweitzer

(3) Publications: Bronwyn Hurd,* Thomas Leahy

(4) Joint Committee on Marine Resources: Robert Ragotzkie, Frederick Hutchinson, Hugh Popenoe

(5) Program: Robert Correll,* Charles Mosher (honorary chairman), Donald Squires, Frederick Hutchinson, Dean Horn, Donald Rosenberg, Ted Ford or Ron Becker, and David Ross

b. Councils (chairperson only)

(1) Communications: B. Hurd, T. Leahy

(2) Advisory Services: Wallace Klussman, plus one other person

(3) Education: G. Posner, plus one other

(4) Ocean Policy and Marine Resources Development: J. Bockrath

(5) Research: to be designated

17. Future meetings

1978: Eleventh Annual Meeting, New Hampshire, October 9-12

1979: Suggested sites: Great Lakes or Pacific coast. Invitations may be tendered to the Executive Committee.

18. Meeting adjourned 11:45 A.M.

William Seaman, Jr.
November 23, 1977

Appendix A

Agenda

1. Seat delegates
2. Roll call
3. Minutes of 1976 meeting
4. Treasurer's report
5. President's report
6. Washington representative's report
7. Joint Committee report
8. Goals and Industry Participation Committee report
9. Amendments
10. Executive Committee report
11. Council reports
    a. Communications
    b. Advisory
    c. Education
    d. Ocean Policy
    e. Research
12. Resolutions
13. Election
14. Meeting turned over to incoming president
15. Forecast budget, 1977-78
16. Committee appointments
17. Council appointments
18. Next meeting

Appendix B

Treasurer's Report

January 1, 1977 to October 31, 1977

Balance: January 1, 1977			$ 8,644.18
Income - Membership Dues:	21 @ $500 =	10,500.00	
	19 @ $300 =	5,700.00	
Sales of Proceedings '76		25.00	
Return from '75 Ann. Mtg.		476.29	
Return from '76 Ann. Mtg.		2,417.11	
Interest on Savings		271.63	19,390.03
Total			28,034.21
Expenditures:			(18,151.73)
Balance October 31, 1977			
Checking:	$1,109.08		
Savings:	8,772.65		9,882.48
Anticipated Expenditures to December 31, 1977			(3,951.00)
Anticipated Balance as of December 31, 1977			$ 5,931.48

Expenditures

January 1, 1977 - October 31, 1977

	Estimated	Actual
Professional Services (Washington Office)	$ 9,500	$ 9,500.00
Other Washington expenses	1,500	1,127.23
Annual Conference	3,000	3,000.00
Sea Grant Award	500	500.00
Newsletter	1,000	565.69
Miscellaneous expenses	800	9.31
Mailing	500	479.02
Printing and reproduction	800	695.88
Marine Council and Special Projects	2,000	0.00
Travel	00	2,274.60
Total	$19,600	$18,151.73

Anticipated Expenditures

to December 31, 1977

Professional Services (Washington Office) (3 months @ $720/month)	$2,376
Other Washington expenses	750
Travel (to annual meeting)	650
Newsletter	125
Mailing	50
Total	$3,951

Appendix C

SEA GRANT ASSOCIATION MEMBERSHIP

(Name of Delegate in Parentheses)

Charles County Community College (T. Poe)
City University of New York (G. Posner)
Colorado State University (N. Evans)
Florida Institute of Technology (N. O'Hara)
Gulf Coast Research Laboratory (H. Howse)
Harbor Branch Foundation (R. Jones)
Heed University (W. McNichols)
Louisiana State University (J. Van Lopik)
Massachusetts Institute of Technology (D. Horn)
Michigan State University (N. Kevern)
Mississippi-Alabama Sea Grant Consortium (J. Jones)
Mississippi State University (J. McKee)
N. Y. S. College of Agriculture, Cornell Univ. (B. Wilkins)
Nicholls State University (J. Green)
Oregon State University (W. Wick)
Roger Williams College (W. Mershon)
State University of New York (J. Judd)
Texas A & M University (W. Nowlin)
University of Alaska (D. Rosenberg)
University of Delaware (W. Gaither)
University of Florida (H. Popenoe)
University of Georgia (E. Chin)
University of Hawaii (J. Davidson)
University of Houston (A. Lawrence)
University of Maine (R. Dearborn)
University of Maryland (R. Colwell)
University of Miami (E. Man)
University of Michigan (A. Beeton)
University of Mississippi (D. Walsh)
University of New Hampshire (R. Corell)

University of North Carolina (B. Copeland)
University of Puerto Rico (A. Ortiz)
University of Rhode Island (N. Rorholm)
University of South Alabama (H. Phillips)
University of South Carolina (J. Vernberg)
University of Southern Mississippi (G. Pessoney)
University of Washington (S. Murphy)
University of Wisconsin System (R. Ragotzkie)
Virginia Institute of Marine Science (W. Hargis)
Washington State University (J. Davidson)

Appendix D

Annual Report of Dan McGillicuddy

Washington Representative

Introduction

From the standpoint of Sea Grant and many other programs, 1977 was a most unusual year. The early months were a time for reorganization of government. The first session of the 95th Congress commenced on January 4, 1977. Committees of Congress had to be reconstituted.

In mid-January, President Carter was inaugurated. Immediately, he began nominating his selectees for departments and agencies. Nominations were referred to the Senate for advice and consent. The latter was given in a majority of instances. The overall reorganization of the Executive Branch of government started shortly after the inauguration.

At the height of the restructuring of both the Executive and Legislative branches of government, the federal budget prepared by President Ford's staff was submitted to Congress. Later, the budget was to be reviewed by the staff of the new administration and changed slightly. But these changes did not alter Sea Grant. It continued to be level funded. The times in Washington were indeed hectic.

Background

The Congressional Budget act requires that the committees of Congress having jurisdiction over federal operations must submit their initial authorization and appropriations estimates for the new fiscal year by May 15th. This deadline was self-imposed by the Congress under the Budget legislation. To meet this target date, it was not surprising to have the appropriations committees schedule hearings in March and April, to prepare the fiscal year 1978 budget. What was surprising was that the committees of Congress were reorganized and ready to initiate their study in that time frame.

The Legislative Process For 1978

The fiscal year 1978 budget for the National Oceanic and Atmospheric Administration submitted to Congress in January 1977, was $801.4 million, which represented a net increase of $68.8 million (7 percent) for NOAA. Sea Grant was level funded at $27.8 million--a mere $100,000 increase!

The Committees of Congress scheduled to review the 1978 Sea Grant program included:

1. The Subcommittee on Oceanography (Chairman John Breaux) of the House Committee on Merchant Marine and Fisheries.

2. The Subcommittee on State, Justice, Commerce and the Judiciary (Chairman John Breaux) of the House Appropriations Committee.

3. The Senate Committee on Commerce, Science and Transportation (Chairman Warren Magnuson).

4. The Subcommittee on Education, Arts and the Humanities (Chairman Claiborne Pell) of the Senate Committee on Human Resources.

5. The Subcommittee on State, Justice, Commerce, the Judiciary, (Chairman Ernest F. Hollings) of the Senate Committee on Appropriations.

Sea Grant Authorization Legislation

Congressman John Murphy (N.Y.), Chairman of the House Committee on Merchant Marine and Fisheries, together with Congressman John Breaux (La.) introduced HR-4301 on March 2, 1977, a bill to authorize appropriations for the National Sea Grant Program Act during fiscal year 1978.

When the House Oceanography Subcommittee commenced its hearings on March 8, 1977, Chairman Breaux announced that the principle problem confronting Sea Grant was funding, or more precisely, the lack of funding. "I am concerned that neither of the two new programs to promote National and International projects have been funded...I continue to be exasperated by OMB's lack of support for the Sea Grant Program. I hope we can thoroughly examine this problem now."

As the hearing progressed, Chairman Breaux suggested that the Subcommittee members seriously consider "lobbying" the members of the House Appropriations Subcommittee for support of the Sea Grant Program. He suggested that it was a useless exercise for the Oceanography Subcommittee to continue to authorize more than $5 million each year for Sea Grant--only to have the Appropriations Committee approve considerably less.

With the same level of funding and additional Sea Grant colleges being added, Chairman Breaux wondered "if perhaps we are demanding goals of the universities which don't correspond to financial realities. Should we continue to add Sea Grant colleges or should we instead direct all support to the existing centers of research and education?"

He stated that he would like to see more emphasis given to encouraging regional consortia rather than having a Sea Grant college in every state.

The witnesses at the March 8 hearings included:

Dr. Robert N. White, Dr. Ned Ostenso, Mr. Arthur G. Alexio, Professor Herbert Holloman (MIT), Professor James Utterback (MIT), Dr. William C. Ackerman, NACOA Advisory Committee, and Ambassador

Rozanne Ridgeway, Assistant Secretary for Oceans and Fisheries Affairs, Department of State.

Public Law 95-58

On March 31, 1977, the House Subcommittee on Oceanography marked up HR-4301, the Sea Grant Authorization Bill. This legislation was adopted by the House Merchant Marine and Fisheries Committee on May 11, 1977. It passed the U.S. House of Representatives on May 16, and was referred to the Senate for further action.

HR-4301 passed the U.S. Senate on May 23, 1977, with an amendment--a two-year extension of Sea Grant authority.

When the House objected to the Senate amendment at the conference meeting, the Senate receded and dropped the two-year authority. HR-4301 was signed by the President on June 29, 1977. Sea Grant had new authorization and it is designated as P.L. 95-58.

Sea Grant Appropriations Bill

HR-7556--the 1978 Appropriations Act for State, Justice, Commerce, the Judiciary and related agencies was included in the budget submitted by the Ford Administration on January 16, 1977. The Carter budget was submitted on February 22. Sea Grant continued at $27.8 million.

Congressman John Breaux Testimony

Congressman John Breaux on April 5, 1977, appeared before the Appropriations Subcommittee at his request and reported that funding has been a major problem for Sea Grant since its inception. Although there was an authorization level of more than $58 million for fiscal year 1977, only $27.7 million had been appropriated. Congressman John Breaux reported on the two new projects added in 1977. He recommended independent funding so as not to detract from the basic program, i.e., national need ($5 million) and international need ($3 million). He urged full funding for the basic program and the two new features for a total of $58 million.

Dr. Hugh Popenoe Testimony

Responding to the Subcommittee's invitation, Dr. Popenoe, as President of the Sea Grant Association, reported that the program needed at least $35 million for fiscal year 1978 to compensate for recent attrition of the dollar. In addition, $5 million will be needed to carry out the National and International Programs. He pointed out that the strong commitment from the states attest to the credible and positive role Sea Grant has earned nationally. It has an enviable reputation as an "early warning system" with an "in and out capability." Without a large investment many universities can provide short term help to resolve

immediate problems of the national government. Chairman John Slack thanked Dr. Popenoe for a most informative report concerning Sea Grant.

HR-7556 was adopted by the House Appropriations on June 2, and passed the House on June 13, 1977. Sea Grant had received a $3 million increase.

This Appropriation act was sent to the Senate and referred to the Appropriations Subcommittee on June 14. There was a one day hearing and the act was reported out on June 21 with an additional $3 million added for Sea Grant. The Senate passed HR-7556 on June 24. Because of the differences between the House and the Senate, a conference committee was formed and they agreed on $31,767,000 for the Sea Grant Program. Of the $4 million provided above the budget request, $2 million was to be allocated to the basic program and $2 million to national projects, Sea Grant fellowships, and International Cooperations Assistance. The Congress had again come to the rescue of Sea Grant (P.L. 95-86).

Summary Report - Sea Grant Program Oversight Hearings, October 1977

The Oceanography Subcommittee, Congressman John Breaux, Chairman, met October 14, 1977, and a summary report will be set forth in the November 1977 newsletter. The Subcommittee identified its area of interest as:

1. suggestions for improving the Sea Grant activities;

2. assessment of the Sea Grant Act with particular emphasis on the National, International, and Fellowship programs, and

3. the effect of reduced Sea Grant funding.

It is anticipated that these areas will continue to be of Subcommittee interest when hearings commence early in 1978.

Visit to Sea Grant Activities

As we meet in New Orleans, Congressman John Breaux has completed a one day visit to the University of Rhode Island. Preliminary reports indicate that he was most impressed with the projects underway and the services being performed.

Congressional staff members have visited the University of Delaware. All have expressed great enthusiasm for the Sea Grant projects underway there.

One additional congressional staff trip to the University of Delaware is planned before December 31st.

Summary

The $4 million increase in appropriations this year is directly attributable to the letters sent by Sea Grant Directors in June, at the suggestion of the Washington Representative.

Other than the somewhat negative attitude that has existed at OMB over the years, we know of no group or individual that is critical of Sea Grant. Those who have examined the program are most enthusiastic. Included are congressional members and congressional staffs. We must continue to advise them of our achievements.

The Executive Committee of the Association should study the problems associated with a single year extension in authorization and suggest methods for adopting a two year program.

It is recommended that Sea Grant members of the Association continue sending informative letters to members of Congress. They appreciate the courtesy and need to have the benefit of your thoughts.

Finally, it should be recalled that the Department of Commerce is presently undergoing a reorganization, which undoubtedly will impact on NOAA and Sea Grant. As an example, there is pending legislation that would authorize executive level staffing and supergrades at NOAA. If approved, the cost associated with these positions must be added to the NOAA budget.

Your Washington Representative would be remiss if he did not remind the Association that higher funding is included annually in each federal department's budget. The competition for the federal dollars is keen. It behooves each member of the Association to keep their Congressional contacts advised of the achievements of Sea Grant. This is a must!

This annual report is respectfully submitted by

Dan McGillicuddy
Washington Representative
The Sea Grant Association

Appendix E

Report of the Joint Committee on Marine Resources

The Joint Committee on Marine Resources (National Association of State Universities and Land Grant Colleges and the Sea Grant Association) finds that there is much to be gained from increased cooperative efforts by the Associations represented herein; and, to further this cooperative spirit, the Committee recommends that:

1. An arrangement be undertaken whereby Washington office staff of the NASULGC provide greater service in the area of marine resources to members of both Associations;

2. The Sea Grant Association, without any loss of its separate identity, share in the costs associated with this arrangement; and,

3. The Joint Committee on Marine Resources develop a mechanism for accomplishing these recommendations with final approval of both organizations.

Submitted to the Executive Committee of the National Association of State Universities and Land Grant Colleges and the Executive Committee of the Sea Grant Association, November 1977.

Robert A. Ragotzkie, Chairman
Joint Committee on Marine Resources

Appendix F

Report of Sea Grant Association Committee on

Association Goals and Industry Participation

At the 1976 Annual Meeting, Amendment 76-01 concerning the admission of industrial members to the Association was tabled. However, a motion was approved that the President appoint a committee to examine the goals and objectives of the Association with specific instructions to examine how the admission of industrial members would alter the present goals and purpose of the Association." (From *The Decade Ahead*, Proceedings, 9th Annual Sea Grant Association Conference.)

To carry out this action, the Association President appointed a committee of Dean Horn (MIT), chairman; William Gaither (Univ. Delaware); Robert Ragotzkie (Univ. Wisconsin); and Niels Rorholm (Univ. Rhode Island).

The Committee has met formally once. The work of the Committee has been accomplished by two round-robin exchanges of correspondence plus several informal discussions and telephone conversations. An interim report of this Committee was presented to and reviewed by the Executive Committee of the Association at their 3 August 1977 meeting in Washington, D.C.

This Committee reviewed the Articles of Organization, the Bylaws of the Sea Grant Association, and the Sea Grant Association's descriptive brochure, accepting the latter as a semi-official publication of the Association. In these the Committee finds the following:

A. In the Articles of Organization of the Sea Grant Association, 1975, Article II *Purposes*, reads as follows:

"The purposes of the Association shall be:

1. To further the optimal development, use, and conservation of marine and coastal resources (including those of the Great Lakes), and to encourage increased accomplishments and initiatives in related areas.

2. To increase the effectiveness of *member institutions* in their work on marine and coastal resources (including those of the Great Lakes).

3. To stimulate cooperation and unity of effort among members."

B. The Bylaws of the Sea Grant Association (based on the draft voted on at the 1975 Annual Meeting) do *not* define any "goals, objectives or purpose" for the Association.

C. The Sea Grant Association flier describes, under the heading *What The Association Does*, that "The Association's goals are to further the development, use, and conservation of marine and coastal resources, and to encourage increased accomplishments and initiatives in related areas; to increase the effectiveness of *member institutions* in their work on marine and coastal resources; and to stimulate cooperation and unity of effort among members" (italics added).

The Committee finds that, by strict interpretation, the words in the *Purposes* of the Articles of Organization could apply to any group, agency, industry, entity or organization that is interested in the "sea grant concept." The word "institution" does imply "educational institution" to some, but there is no clear or precise definition provided in the Articles.

The Committee further finds that the activities of the Association delineated in the Association brochure are accepted interpretations of the intent or objectives of the basic *Purposes*.

The Committee concludes, therefore, that broadening of the interpretation or intent to include the participation of and services to industries interested in Sea Grant is an option that the members can elect without violating the Association Articles.

The Committee was not charged to make any recommendations relative to action on Amendment 76-01 and declines to do so. It is, however, fair to report that the concensus of the Committee and of the Association delegates with whom this issue has been discussed is that the original intent of the word "institution" as modified in Article III, *Membership* of the Articles of Organization, meant as printed "degree-granting institutions." The pending Amendment, 76-01, is therefore the correct action if the Association wishes to change the intent of Article III.

Respectfully submitted, to the President and Delegates of the Sea Grant Association at Annual Meeting in New Orleans, Louisiana, 19 November 1977.

Dean A. Horn, Chairman
Committee on Sea Grant Association
Goals and Industry Participation

Appendix G

Motion to Change SGA Articles of Organization

November 19, 1977

I move pursuant to the provisions of ARTICLE X the deletion of Articles III, IV, V, VI, VII and VIII of the Articles of Organization of the Sea Grant Association as revised November 10, 1976, and move the adoption of Articles III, IV, V, VI, VII, VIII and IX dated August 15, 1977, as mailed to each Association member and to change Article IX to Article X, Article X to Article XI and Article XI to Article XII and these three changes become effective immediately following the close of this annual meeting.

Moved by: D. H. Rosenberg

Appendix H

Motion to Change 90-Day Notice of Bylaw Amendment to One Hour (*amended to 30 days*)

November 19, 1977

I move that Article VIII of the Bylaws of the Sea Grant Association dated November 10, 1976, be modified to read as follows: These bylaws may be amended at any duly constituted business meeting of the Association by a two-thirds vote of the regular member delegates present. Notice of proposal amendments shall be posted at least one (1) hour [*amended to 30 days*] prior to the meeting at a location designated by the President of the Association. Copies of the notice shall be made available to all delegates prior to the start of the meeting. Such notice shall include the exact wording of the proposed amendment and shall include the name(s) and address(es) of the proponent(s).

Moved by: D. H. Rosenberg

Appendix I

Motion to Act on Study by Joint Committee
on Marine Resources
November 19, 1977

In behalf of the Sea Grant Association Executive Committee, I move that the study recommended by the Joint Committee on Marine Resources (between SGA and NASULGC) be initiated, and that the SGA delegates empower the Association Executive Committee to evaluate and take appropriate actions with respect to the Association's representation in Washington, D.C. The Executive Committee shall, in taking such actions, consider the results of the Joint Committee study, continuing the services of a Washington representative, and/or other mechanisms that represent the best interest of the Association in Washington, D.C. The actions of the Executive Committee shall be reported to the Association at the 1978 annual meeting.

Moved by: R. W. Corell

Appendix J

Resolution 77-1

In view of the ability of state and regional Sea Grant programs to identify and help solve problems felt by commercial as well as private users of the nation's coastal areas; and considering the strong public support employed by Sea Grant programs in our areas where they have been well developed; and in view of the matching fund and cooperative nature of these Sea Grant programs--the Sea Grant Association urges the Office of Sea Grant, NOAA, Department of Commerce, to show great care, and to consult extensively with the national Sea Grant community, in proceeding with additional coordination of state and regional programs.

Niels Rorholm

Distribution: Secretary, U.S. Department of Commerce
Administrator, National Oceanic and Atmospheric Administration
Director, Office of Sea Grant

Appendix K

Resolution 77-2

The Sea Grant Association finds that the National Projects Program as described in the Sea Grant Program Improvement Act of 1976, as amended (33 USC 1125[a]), is not consistent in spirit with the Sea Grant concept and we recommend that the Office of Sea Grant, the National Oceanic and Atmospheric Administration, the Department of Commerce, and Congress proceed with great care in the implementation of this program.

Niels Rorholm

Distribution: Secretary, U.S. Department of Commerce
Administrator, National Oceanic and Atmospheric Administration
Director, Office of Sea Grant
Appropriate members of congress as determined by the chairman

Appendix L

Sea Grant Advisory Service and Other NOAA Agencies*

We hope to achieve two things in the next 45 minutes. First, to have NOAA Main Line Components understand how Sea Grant's Advisory Service can and cannot help in their efforts to have their work used by others. Secondly, we'd hope the Sea Grant Directors and Advisory Service Leaders might visualize new ways they might aid the Main Line Components in their work.

To do this, first I'll discuss some principles that underlie Sea Grant's Advisory efforts. Walter Gray of Rhode Island and Ken Hilderbrand of Oregon will then illustrate how two NOAA agencies and Sea Grant have cooperatively helped audiences get and use information they needed.

What are some things to keep in mind when planning to work with Sea Grant Advisory Services around the country? First, that they vary widely in size, scope, and maturity. Some may have only two or three people, others may have ten or fifteen in the field. So not all will be able to respond in the same way to the needs of audiences within their state, or to agencies that may wish to reach those audiences.

Second, Advisory Services' basic concern is to help their audience solve problems. We manage no land or fish, enforce or administer no law, so our concerns are typically audience oriented.

Third, Advisory Services primarily focus on state and local concerns. Significant portions of our funding are from non-federal sources and that, together with our audience-orientation, make Sea Grant less responsive to federal directives than many NOAA agencies. This at times can be frustrating. I'm sure the Sea Grant Washington staff sometimes feel they are trying to push a string.

Fourth, we basically help audiences solve their problems through education. But it's not education that you might think of with credit classes, lecturing, and so on. Advisory Service education tends to be informal, out-of-school, dealing with people in their local communities or place of work. But we are educators and being university affiliated educators does put major constraints on the ways in which we are willing to interact with other groups.

Non-advocacy is one such constraint. Few Advisory Services would feel comfortable in saying people should adopt a coastal zone management

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*Reprint of presentation at Airlie House 1977 by Dr. Bruce Wilkins, New York State College of Agriculture, Cornell University, Ithaca, N.Y., Sea Grant Association President-Elect.

plan. That's not education. Most would feel it appropriate to point out why planning the management and development of the coast is important and of value. But Advisory Service workers would judge their success by whether people reach a well-considered decision, not whether that decision was favorable towards a particular plan or indeed any plan.

Another possible constraint to interaction with other agencies--our credibility as educators requires our programs be based on fact. The more successful Advisory Service Programs hold to that. Thus if the President, whether it be of our university or of the United States, views a particular belief as desirable, a good Advisory Service specialist would look for the facts upon which that view is based. We'd hope to share the supporting, but also the conflicting facts, with an affected audience. This can cause problems with agencies, if they are locked into a particular view and believe that view is right, even though the supporting facts may be somewhat scanty.

Another point you might wish to keep in mind, Advisory Services do not view themselves as a one-way street. Our role is not solely or even primarily to provide audiences information researchers or agencies feel should be of importance to them. Rather our role is twofold, to draw information from wherever it is to help the audience and, secondly, to provide feedback to researchers or agencies on needs the audience has that those agencies or researchers may not have recognized. Thus for the strongest interaction, research and management decisions of the NOAA Main Line Components would necessarily reflect concerns of audiences that may be partly fed back by Advisory Service staff.

A final caveat that may be useful--Advisory Services, like your agency, never have sufficient resources to do all of the important tasks they should undertake. So most needs will not be met unless the priority within NOAA or your agency is sufficiently high to generate additional resources to do the work.

Let's see then if we can anticipate responses when trying to work through a cooperative effort.

For starters, let's use a non-NOAA group; let's assume the Internal Revenue Service says they feel fishermen aren't reporting landings accurately and they want to know who the best fishermen are. Would Advisory Service staff likely know the answer? Yes. Would they feel it appropriate to answer the question? No. Why not? Not aiding in problem-solving of the agency.

Supposing IRS says fishermen need to learn how to report income better for they aren't taking advantage of the tax credit laws available to them. Would Advisory Service feel it appropriate to aid in that task? Yes, it's an audience need, although we must sometimes distinguish between a 'felt' and an 'unfelt' need. Note, too, field staff might know most fishermen now use tax accountants and education might best flow through them.

Supposing the Weather Service says communities are not well prepared for hurricane evacuation and the Advisory Service should assist communities to become prepared. Would Advisory Service respond? Check the basic premise--that communities are not well prepared. In New York we did and judged they were in fact well prepared.

Supposing the Great Lakes Environmental Research Lab staff says people need to use their information and ask Advisory Service to carry out a program to help users gain the information available.

They might well encounter a question--who says it's useful? That would be rather impolite but don't be surprised if Advisory Service staff are cautious, trying to discern:

1. What really is the problem? Is it a problem that education of the audience would help resolve?

2. How committed is the agency to in fact solving the problem with all its ramifications?

3. Is the agency committed to respond to feedback?

Here then are eight points to keep in mind when trying to carry out programs. Advisory Services:

1. vary in size and scope;

2. are audience-focused, not agency-focused;

3. have a local orientation;

4. view themselves as educators, not information specialists;

5. will not advocate a position but rather that the individual choose between alternatives;

6. will wish to insure facts are present to carry out the educational program;

7. will want assurance agencies will listen to the audience concern and make appropriate adjustments;

8. don't have enough money to do all the important tasks.

Minutes

Appendix M

Forecast Budget Summary

1978

(Fiscal Year: Jan. 1 - Dec. 31)

Washington representation	$11,000
Annual Conference expense	4,000
Sea Grant Award	500
Student Awards	500
Marine Councils	2,000
Newsletter	1,000
Mailings and Publications	1,700
Printing and Reproduction	900
Travel and Other	1,000
Total	$22,600

LIST OF PARTICIPANTS

Abel, Robert B.
Center for Marine Studies
Texas A&M University
College Station, TX 77843

Baker, Dale
109 Washburn Hall
University of Minnesota, Duluth
Duluth, MN 55812

Becker, Ronald E.
Center for Wetland Resources
Louisiana State University
Baton Rouge, LA 70803

Beeton, Alfred M.
Michigan Sea Grant Program
University of Michigan
IST Building, Room 4103
2200 Bonisteel Blvd.
Ann Arbor, MI 48109

Beitel, Leland R.
10526 Edgemont
Adelphi, MD 20783

Bender, Norman K.
3200 Symons Hall
University of Maryland
College Park, MD 20742

Benton, Richard D.
P. O. Drawer EE
Mississippi State, MS 39762

Biggs, Robert B.
College of Marine Studies
University of Delaware
Newark, DE 19711

Bish, Robert L.
Institute for Urban Studies
University of Maryland
College Park, MD 20742

Bjur, Dorothy M.
339 South Mills
Claremont, CA 91711

Bockrath, Joseph
Law Center
Louisiana State University
Baton Rouge, LA 70803

Bonsall, Susan
Rt. 2, Box 484
Califon, NJ 07830

Bray, Pansy G.
107 Chenault
Hoquiam, WA 98550

Brown, Kevan
Mississippi-Alabama Sea
Grant Consortium
P. O. Drawer AG
Ocean Springs, MS 39564

Brown, Stephen D.
607 Raymond Hall
SUCP
Potsdam, NY 13676

Bunting, Robert
Center for Marine Resources
Texas A&M University
College Station, TX 77843

Busby, Joe N.
Rt. 3, Box 18
Gainesville, FL 32601

Callaghan, Sara S.
Marine Advisory Service
University of Rhode Island
Narragansett, RI 02882

Clarke, Marion L.
120 N/Z
University of Florida
Gainesville, FL 32611

Colunga, Laura
Center for Marine Resources
Texas A&M University
College Station, TX 77843

Colwell, Rita R.
Department of Microbiology
University of Maryland
College Park, MD 20742

Cook, David W.
Gulf Coast Research Laboratory
Ocean Springs, MS 39564

Copeland, B. J.
1037 Studivant Drive
Cary, NC 27511

Corell, Robert W.
Marine Program Office
Kingsbury Hall
University of New Hampshire
Durham, NH 03824

Ortiz-Corps, Edgardo
Colegio Universitario Humacao
Box 428
Humacao, PR 00661

Covey, Steven L.
Sea Grant Program
Corvallis, OR 97331

Craig, Frank
Law Center
Louisiana State University
Baton Rouge, LA 70803

Criddle, Dixie
P. O. Box 125
University, MS 38677

Davidson, Jack R.
Sea Grant Program
2540 Maile Way, Spalding 255
University of Hawaii
Honolulu, HI 96822

Dearborn, R. K.
Sea Grant Program
University of Maine
Orono, ME 04473

DeHaan, Ruth E.
Department of State
OES/OFA/MST, Room 5212
Washington, D.C. 20520

Dice, Eugene F.
815 Virginia
East Lansing, MI 48823

Dowdy, Vernon K.
2266 East Contour Drive
Baton Rouge, LA 70809

Drummond, Kenneth H.
Center for Wetland Resources
Louisiana State University
Baton Rouge, LA 70803

DuPaul, William
Virginia Institute of
Marine Sciences
Gloucester Point, VA 23062

Duxbury, Alyn C.
Division of Marine Resources
University of Washington
Seattle, WA 98195

Echols, Louis
1800 University Avenue
Madison, WI 53716

Edel, Betty
National Sea Grant Depository
University of Rhode Island
Narragansett, RI 02882

Participants

Eklund, Louise
University of New Hampshire
Marine Advisory Program
Durham, NH 03824

Elliot, James C.
700 7th Street SW
Washington, D.C. 20024

Emerick, John C.
MESA/ERL/NOAA
Boulder, CO 80302

Fehring, William K.
P. O. Box 2192
Tampa, FL 33601

Fisher, Leo J.
NOAA/NMFS
3300 Whitehaven St. NW
Washington, D.C. 20235

Florio, Donna
Marine Resources Center
P. O. Box 12559
Charleston, S.C. 29412

Ford, Theodore B.
Center for Wetland Resources
Louisiana State University
Baton Rouge, LA 70803

Gaither, William S.
College of Marine Studies
University of Delaware
Newark, DE 19711

Gardner, Richard R.
OCZM/NOAA
3300 Whitehaven St. NW
Washington, D.C. 20235

Giles, Don
Marine Science Center
Oregon State University
Newport, OR 97365

Goodwin, Harold L.
Oceanic Institute
University of Delaware
Bethesda, MD 20034

Goodwin, Libby
6212 Verne Street
Bethesda, MD 20034

Goodwin, Robert F.
Coastal Resources Program
71731 University Way NE
Seattle, WA 98115

Gray, Walter J.
University of Rhode Island
Kingston, RI 02881

Greer, Ann
Virginia Institute of
Marine Sciences
Gloucester Point, VA 23062

Grigalunas, Thomas A.
39 Paul Avenue
Wakefield, RI 02879

Hadley, Raymond S.
Sea Grant Program
University of Alaska
Fairbanks, AK 99701

Harding, Elizabeth T.
142 Beacon Street
Boston, MA 02116

Harris, R. E.
Division of Marine Resources
University of Washington
3716 Brooklyn NE H6-30
Seattle, WA 98105

Hartney, D. Patrick
USC Sea Grant Program
SSW 308, University Park
Los Angeles, CA 90007

Hecker, Stanley
Mississippi-Alabama Sea
Grant Consortium
P. O. Drawer AG
Ocean Springs, MS 39564

Hedden, Gregory D.
1815 University Avenue
Madison, WI 53706

Helz, George R.
Department of Chemistry
University of Maryland
College Park, MD 20742

Hilderbrand, Ken
Marine Science Center
Oregon State University
Newport OR 97365

Hooper, William
Law Center
University of Mississippi
University, MS 38677

Holtkamp, Dorothy
Center for Marine Resources
Texas A&M University
College Station, TX 77843

Holliman, Mary
"Virginia Marine Times"
Virginia Institute of
Marine Sciences
Blacksburg, VA 24061

Hollin, Dewayne
Texas A&M University
12605 East Freeway, Suite 302
Houston, TX 77015

Horn, Dean A.
Sea Grant Program
Rt. 1-211
Massachusetts Institute of
Technology
Cambridge, MA 02139

Horvitz, Joanne F.
G-LMI U.S. Coast Guard
400 7th Street SW
Washington, D.C. 20590

Hunt, Gary
Room 0120
University of Maryland
College Park, MD 20742

Hurd, S. Bronwyn
Sea Grant Communications
418 AdS Oregon State University
Corvallis, OR 97331

Hutchinson, John K.
NEMAS
New England Center
Durham, NH 03824

Jensen, Kathi
College of Marine Studies
University of Delaware
Newark, DE 19711

Johnson, Roger C.
1431 Chartres Street
New Orleans, LA 70116

Jones, Dianne
Mississippi-Alabama Sea
Grant Consortium
P. O. Drawer AG
Ocean Springs, MS 39564

Jones, James I.
Mississippi-Alabama Sea
Grant Consortium
P. O. Drawer AG
Ocean Springs, MS 39564

Jones, Robert C.
Rt. 1, Box 196
Harbor Branch Foundation
Ft. Pierce, FL 33450

Judd, John H.
New York Sea Grant Institute
99 Washington Avenue
Albany, NY 12246

Kamp, B. Dan
Texas A&M University
College Station, TX 77843

Kantrowitz, Bruce M.
Sea Grant Program
State University of New York
99 Washington Avenue
Albany, NY 12246

Kevern, Niles R.
Dept. of Fisheries and
Wildlife
Michigan State University
East Lansing, MI 48824

Klussman, Wallace
110 Nagle Hall
Texas A&M University
College Station, TX 77843

Kuzenski, Sally T.
Center for Wetland Resources
Louisiana State University
Baton Rouge, LA 70803

Lanier, Jim
Virginia Institute of
Marine Sciences
Gloucester Point, VA 23062

Lawrence, Addison Lee
11011 Renwick
Houston, TX 77096

Leahy, Thomas M.
G022 McCarty Hall
University of Florida
Gainesville, FL 32611

Lee, Richard S.
P. O. Box 1447
Department of Fisheries
Juneau, AK 99802

Leopold, Lawrence C.
100 West Water St.
Wilmington, CA 90744

Lin, Leslie
Michigan Sea Grant Program
2200 Bonisteel Blvd.
Ann Arbor, MI 48109

Lynch, Maurice P.
Virginia Institute of
Marine Sciences
Gloucester Point, VA 23062

McGillicuddy, Dan
1730 Rhode Island Avenue NW
Washington, D.C. 20036

McIlwain, J. Baron
P. O. Drawer AG
Ocean Springs, MS 39564

McKinnon, Lawrence W.
7 Pine Street
Malden, MA 02148

McLaughlin, Barbara F.
NOAA
6010 Executive Blvd.
Rockville, MD 20852

McMahon, John J.
Marine Option Program
University of Hawaii
Honolulu, HI 96822

McNichols, Walter J.
Heed University
Box 311
Hollywood, FL 33022

Martin, J. Allen
708 E. 30th Street
Bryan, TX 77801

Melteff, Brenda
Alaska Sea Grant Program
University of Alaska
Fairbanks, AK 99701

Merrell, William J.
Center for Marine Resources
Texas A&M University
College Station, TX 77843

Miller, Bruce A.
Marine Advisory Programs
University of New Hampshire
Kingsbury Hall
Durham, NH 03824

Miller, Charles L.
Office of Sea Grant
NOAA
3300 Whitehaven Street NW
Washington, D.C. 20035

Miloy, Leatha
Center for Marine Resources
Texas A&M University
College Station, TX 77840

Moncla, Beverly K.
Center for Marine Resources
Texas A&M University
College Station, TX 77843

Montoya, Rick T.
Office of the Secretary
of Commerce
1100 Commerce, 9640
Dallas, TX 75242

Moore, Dana M.
752 SW 11th
Newport, OR 97365

Mordecai, Mary Day
105 1911 Building
North Carolina State University
Raleigh, NC 27607

Murphy, Stanley R.
Division of Marine Resources
University of Washington
Seattle, WA 98195

Murray, Thomas E.
12 Enid Court
Potomac, MD 20854

Nowlin, Worth D., Jr.
Sea Grant Office
Texas A&M University
College Stateion, TX 77843

O'Hara, Norbert W.
Florida Institute of
Technology
Melbourne, FL 32901

Ostenso, Ned A.
National Sea Grant Program
NOAA
3300 Whitehaven Street NW
Washington, D.C. 20235

Palmer, David D.
Box U-164
Social Science Data Center
University of Connecticut
Storrs, CT 06268

Pariser, E. R.
Massachusetts Institute of
Technology
1-211
Cambridge, MA 02138

Peterson, Dallas O.
3134 Oxford Road
Madison, WI 55105

Peyton, Patricia
Washington Sea Grant Program
3716 Brooklyn NE
Seattle, WA 98105

Pfund, Rose T.
Sea Grant Program
University of Hawaii
2540 Maile Way
Spalding 255
Honolulu, HI 96822

Pittman, J. T.
Rt. 12, Box 515
Sanford, NC 27330

Popenoe, Hugh L.
2001 McCarty Hall
University of Florida
Gainesville, FL 32611

Posner, Gerald
11801 Rockville Pike
Rockville, MD 20852

Price, Kent S.
Box 286
University of Delaware
Lewes, DE 19958

Pruitt, Nancy S.
Michigan Sea Grant
University of Michigan
Ann Arbor, MI 48109

Ragotzkie, Robert A.
Sea Grant College Program
University of Wisconsin
1800 University Avenue
Madison, WI 53706

Reeb, Mary Lou
University of Wisconsin
1800 University Avenue
Madison, WI 53706

Richards, Bob
4600 Parksdale, Suite 103
Corpus Christi, TX 78411

Rorholm, Niels
210B Woodward Hall
University of Rhode Island
Kingston, RI 02881

Rosenberg, Donald H.
Alaska Sea Grant Program
University of Alaska
Fairbanks, AK 99701

Samuelson, Donald F.
722 7th Avenue
Aberdeen, WA 98520

Schmidt, Anton
8239 Enterprise Drive
Newark, CA 94560

Schneider, Richard William
College of Marine Studies
University of Delaware
Newark, DE 19711

Schroeder, William W.
P. O. Box 386
Dauphin Island, AL 36528

Schweitzer, James P.
Department of Marine Sciences
Louisiana State University
Baton Rouge, LA 70803

Seaman, William, Jr.
2018 NW 1 Avenue
Gainesville, FL 32607

Shannon, W. Wayne
Social Science Data Center
University of Connecticut
Storrs, CT 06268

Shephard, Robert J.
National Marine Advisory Service
NOAA Office of Sea Grant
3300 Whitehaven Street NW
Washington, D.C. 20235

Sherburne, Gilbert P.
Maritime Int. Law Division
G-LMI/81, U.S. Coast Guard
400 7th Street SW
Washington, D.C. 20590

Shuman, Jack Norman
Office of Ocean Engineering
NOAA
Rockville, MD 20852

Smith, John M.
Grays Harbor College
Aberdeen, WA 98520

Smith, Lloyd L.
132A Hodson Hall
University of Minnesota
St. Paul, MN 55108

Snow, Beverly C., Jr.
Coastal Plains Marine Center
1518 Harbour Drive
Wilmington, NC 28401

Snyder, Clair A.
Marine Program Office
University of New Hampshire
Durham, NH 03824

Stout, Prentice K.
University of Rhode Island
Narragansett, RI 00882

Sweet, Fran
Alaska Sea Grant
University of Alaska
Fairbanks, AK 99701

Thoroughgood, Carolyn
College of Marine Studies
University of Delaware
Newark, DE 19711

Thornton, Gary
U.S. Coast Guard
Hale Boggs Federal Building
500 Camp Street
New Orleans, LA 70130

Van Lopik, Jack R.
Center for Wetland Resources
Louisiana State University
Baton Rouge, LA 70803

Veal, C. David
11646 W. Beach
Suite 1-E
Biloxi, MS 39531

Volker, Al
Box 248106
University of Miami
Coral Gables, FL 33124

Wardle, William John
Virginia Institute of
Marine Sciences
Office of Special Programs
Gloucester Point, VA 23062

Wascom, Mike
644 Massachusetts Avenue NE
Apt. 208
Washington, D.C. 20002

Weimer, Linda L.
University of Wisconsin
Madison, WI 53706

Wick, William Q.
Sea Grant Program Office
Adm. Serv. Bldg. A-320
Oregon State University
Corvallis, OR 97331

Wilkins, Bruce
Fernow Hall
Cornell University
Ithaca, NY 14853

Wood, Thomas J.
413 Administration Bldg.
University of Minnesota
Duluth, MN 55812

Young, William H.
325 Russell Senate Office Bldg.
Washington, D.C. 20510

Zielinski, Paul B.
401 Fife Drive
Clemson, SC 29631

SPEAKERS AND/OR PANELISTS

Alfieri, Donal J.
Port Director
Port of Wilmington
P.O. Box 1191
Wilmington, DE 19899

Breaux, John B.
Louisiana Congressman
House of Representatives
House Office Building
Washington, D.C. 20515

Craig, Frank
Law Center
Louisiana State University
Baton Rouge, LA 70803

Crawford, Fred B.
General Manager
Board of Harbor Commissioners
P. O. Box 151
San Pedro, CA 90733

Fitzgerald, Jack P.
Chief Executive Officer and
Port Director
Indiana Port Commission
P. O. Box 189
Portage, IN 46368

Gaither, William S.
Dean, College of Marine Studies
University of Delaware
Newark, DE 19711

Gardner, Richard
Office of Coastal Zone
Management, NOAA
3300 Whitehaven Street NW
Washington, D.C. 20235

Goodwin, Robert F.
Coastal Resources Program
71731 University Way NE
Seattle, WA 98115

Jones, James I.
Director, Mississippi-Alabama
Sea Grant Consortium
P. O. Drawer AG
Ocean Springs, MS 39564

Mosher, Charles A.
Executive Director
Committee on Science and
Technology
2321 Rayburn House Office Bldg.
Washington, D.C. 20515

Murphy, Stanley R.
Director, Sea Grant Program
Division of Marine Resources
University of Washington, HG-30
Seattle, WA 98195

Ostenso, Ned A.
Director, National Sea Grant
Program
National Oceanic and Atmospheric
Administration
3300 Whitehaven Street NW
Washington, D.C. 20235

Palmer, David D.
Box U-164
Social Science Data Center
University of Connecticut
Storrs, CT 06268

Ragotzkie, Robert A.
Sea Grant College Program Director
University of Wisconsin
1800 University Avenue
Madison, WI 53706

Read, William B.
President, LOOP, Inc.
350 Bank of New Orleans Bldg.
1010 Common Street
New Orleans, LA 70112

Reed, Edward S.
Executive Port Director and
General Manager
Board of Commissioners
Port of New Orleans
New Orleans, LA 70160

Rorholm, Niels
Coordinator, Sea Grant Program
210 B Woodward Hall
University of Rhode Island
Kingston, RI 02881

Shannon, W. Wayne
Social Science Data Center
University of Connecticut
Storrs, CT 06268

Shephard, Robert J.
National Marine Advisory Serv.
NOAA Office of Sea Grant
3300 Whitehaven Street NW
Washington, D.C. 20235

10TH NATIONAL SEA GRANT ASSOCIATION CONFERENCE

Hosts	Paul W. Murrill, Chancellor Louisiana State University
	Jack R. Van Lopik, Dean, LSU Center for Wetland Resources; and Director, Louisiana Sea Grant Program
Association President	Hugh L. Popenoe, Director State University System Sea Grant Program, University of Florida, Gainesville
Program Committee	R. E. Becker Louisiana State University
	Dorothy M. Bjur University of Southern California
	Joseph Bockrath Louisiana State University
	Ted B. Ford Louisiana State University
	R. E. Harris University of Washington
	W. G. Klussmann Texas A&M University
	Patricia Peyton University of Washington
	G. S. Posner City University of New York
	Wm. W. Schroeder Dauphin Island Sea Lab
	Jack R. Van Lopik Louisiana State University
Conference Coordinators	Ted B. Ford and R. E. Becker
Communications Coordinator	Sally T. Kuzenski
Proceedings Editor	Linda L. McQueen
Design and Production	C. Joseph Poche, artist Jean Gazaway, production typist