Gulf States Marine Fisheries Commission

CHAIRMAN
[illegible]
[illegible]
MONTGOMERY, ALABAMA [illegible]

VICE-CHAIRMAN
[illegible]
C/O [illegible] SUPP. CO.
[illegible] TEXAS [illegible]

EXECUTIVE SECRETARY
[illegible]

HEADQUARTERS OFFICE
ROOM [illegible]
[illegible] AVENUE
NEW ORLEANS, LOUISIANA [illegible]
TELEPHONE [illegible]

THE GULF STATES MARINE FISHERIES COMMISSION - PALACIO DEL RIO - SAN ANTONIO, TEXAS

[illegible] MEETING
[illegible] 1968

[illegible] MEETINGS

[illegible] October [illegible]

[illegible] Duquesne [illegible]

[illegible] STANDING COMMITTEE
[illegible] COMMITTEE
[illegible]

[illegible] Duquesne [illegible]

[illegible] Duquesne [illegible]

[illegible] Y. [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

GENERAL SESSION THURSDAY (October [illegible])

10:30 AM (Cavalier Room)

[illegible]
[illegible], Director
Fishery Products Division
Washington, D. C.

10:45 AM

[illegible] BUREAU - REGION [illegible]
[illegible] - Deputy Regional
Director - Region 2 [illegible]
St. Petersburg, Florida

11:00 AM

[illegible]

11:15 AM

[illegible]
[illegible]
[illegible]
[illegible]

11:35 AM

[illegible]
[illegible]
[illegible]
[illegible]

12:00 (Noon)

[illegible]

1:15 PM (Cavalier Room)

[illegible]

2:15 PM

[illegible]

[illegible]

[illegible]

[illegible]

GENERAL SESSION — THURSDAY (October 2)

3:30 PM — ABSTRACTS OF CURRENT PRACTICE SCHOOL SCHEDULE (Slides)
Dr. John A. Thomson
Director of Commercial Fisheries
Pascagoula, Mississippi

4:00 PM — COMMENTS FOR THE WHOLE INDUSTRY
F. E. Hamilton, Manager, Heavy Duty Maintenance Sales
Cook, Paint and Varnish Company
Kansas City, Missouri

5:00 PM — (Director's Suite) — ADMINISTRATIVE MEETING

8:00 PM — (Lower Lobby Display) — FASHION PARADE
(Casual Dress for Ladies and Gentlemen) — Courtesy of Texas Dress Center and Dunn's Men's Wear Company

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FRIDAY (October 3)

8:00 AM — (Ballroom Foyer) — ADMINISTRATIVE MEETING

GENERAL SESSION

10:00 AM — (Hawaiian Room) — [illegible]

10:30 AM — [illegible]

GENERAL SESSION

11:00 AM (Cavalier Room)

[illegible]

11:20 AM

CREW TRAINING IN TEXAS
Oscar Longnecker, Executive Sec.
Texas Shrimp Association
Brownsville, Texas

12:40 AM

REPORT OF COMMISSIONERS [illegible]
MEETING

CHAIRMAN'S ANNUAL REPORT

INTRODUCTION OF NEW COMMISSIONERS
[illegible] COMMISSION CHAIRMAN TO
CHAIRMAN

ADJOURNMENT

12:00 (Noon)

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Public Lighter on Mezzanine for transportation [illegible] to Airport. Transportation provided by Texas Parks [illegible]
You can use your personal car for this to save Your Money.

File

Gulf States Marine Fisheries Commission

CHAIRMAN
VERNON K. SHRINER
217 COLUMBUS
MONTGOMERY, ALABAMA 36104

VICE-CHAIRMAN
VIRGIL VERSAGGI
C/O VERSAGGI SHRIMP CO.
BROWNSVILLE, TEXAS 78521

EXECUTIVE DIRECTOR
J. V. (JOE) COLSON

HEADQUARTERS OFFICE
ROOM 225 - 400 ROYAL STREET
NEW ORLEANS, LOUISIANA 70130
TELEPHONE: 524-1785

TENTATIVE PROGRAM

GULF STATES MARINE FISHERIES COMMISSION - HILTON PALACIO DEL RIO - SAN ANTONIO, TEXAS

19th ANNUAL MEETING
October 3-4, 1968

* *

PRE-SESSION MEETINGS — WEDNESDAY (October 2)

10:00 AM	(La Duquesa Room)	G.S.M.F.C. ESTUARINE TECHNICAL COORDINATING COMMITTEE Dr. Ted Ford, Chairman
1:15 PM	(Director's Suite)	COAST GUARD ADVISORY COMMITTEE Admiral Ross P. Bullard, Presiding Joseph Colson, Temprary Chairman
3:00 PM	(La Duquesa Room)	REGIONAL UNDERWATER OBSTRUCTIONS ADVISORY COMMITTEE Robert Evans, Supervisor Oil & Gas Division, Geological Survey U. S. Department of Interior

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GENERAL SESSION — THURSDAY (October 3)

8:30 AM	(Mezzanine)	REGISTRATION (Complimentary)
9:30 AM	(Cavalier Room)	GENERAL SESSION - CALL TO ORDER ROLL CALL Vernon Shriner, Chairman, Presiding INVOCATION WELCOME ADDRESS Introduction: J. R. Singleton Executive Director Texas Parks & Wild Life Department
10:10 AM		BUREAU DIRECTOR'S REPORT H. E. (Skip) Crowther, Director, BCF Washington, D. C.

GENERAL SESSION THURSDAY (October 3)

10:30 AM	(Cavalier Room)	WASHINGTON REPORT ON FISHERIES Ronald De Lucien, Director Fishery Products Division Washington, D. C.
10:45 AM		ACTIVITIES OF BUREAU - REGION 2 R. T. Whiteleather - Deputy Regional Director-Region 2 - BCF St. Petersburg, Florida
11:00 AM		RECESS - COFFEE BREAK
11:15 AM		NATIONAL MARKETING Robert E. Finley, Chief Marketing Office Bureau of Commercial Fisheries Chicago, Illinois
11:35 AM		THE TEXAS WATER PLAN Lewis Seward Texas Water Development Board Austin, Texas
12:00 (Noon)		RECESS - LUNCH
1:15 PM	(Cavalier Room)	U. S. CORPS OF ENGINEERS PANEL (Questions and Answers) George Allen, Moderator - Mobile District Dr. William Burris - Dallas Charles Harris - Vicksburg Thomas Holland - Jacksonville William E. Shell - New Orleans
2:15 PM		MARINE RESOURCES COMMITTEE ACTIVITIES George P. Spinner, Project Director Princeton, N. J.
2:40 PM		UNDERWATER OBSTRUCTIONS COMMITTEE-REPORT Robert Evans, Supervisor, Oil & Gas Division Geological Survey, U. S. Dept. of Interior New Orleans, Louisiana
3:00 PM		ESTUARINE TECHNICAL COORDINATING COMMITTEE-REPORT Dr. Ted Ford, Chief, Oysters & Seafood Louisiana Wild Life & Fisheries New Orleans, Louisiana
3:15 PM		RECESS - COFFEE BREAK

GENERAL SESSION		THURSDAY (October 3)
3:30 PM		ASSESSMENT OF COASTAL PELAGIC SHCOOL FISHERIES (Slides) Dr. John R. Thompson Bureau of Commercial Fisheries Pascagoula, Mississippi
4:00 PM		PLASTICS FOR INDUSTRY National Paint, Varnish & Laquer Assoc. Washington, D. C.
5:00 PM	(Director's Suite)	RESOLUTION COMMITTEE MEETING
6:30 PM	(LONE STAR BEER GARDENS)	SEAFOOD FEAST * * * * * * * Compliments of: Texas Shrimp Assoc. & Lone Star Brewing Company
8:00 AM	Friday, October 4)	COMMISSION EXECUTIVE MEETING (Breakfast)
GENERAL SESSION		FRIDAY (October 4)
10:00 AM	(Cavalier Room)	THE SPORT FISHERY FOR BLUE CRAB IN GALVESTON BAY R. L. Benefield & L. L. Elam Texas Parks & Wild Life Austin, Texas
10:20 AM		MIGRATORY PATTERNS OF FISH & SHELLFISH THROUGH A NATURAL PASS B. D. King III Texas Parks & Wild Life Austin, Texas
10:40 AM		FISHERIES DEVELOPMENT IN FLORIDA AREA Robert M. Ingle, Director of Research Florida Board of Conservation Tallahassee, Florida
11:00 AM		P. L. 88-309 RESEARCH PROGRAM I. B. Byrd, Federal Aid Coordinator Bureau of Commercial Fisheries St. Petersburg, Florida
11:20 AM		CREW TRAINING IN TEXAS Oscar Longnecker, Executive Secretary Texas Shrimp Association Brownsville, Texas

GENERAL SESSION		FRIDAY (October 4)
11:40 AM	(Cavalier Room)	REPORT OF COMMISSIONERS EXECUTIVE MEETING CHAIRMAN'S ANNUAL REPORT INTRODUCTION - NEW GSMFC CHAIRMAN AND VICE CHAIRMAN
12:00 (Noon)		ADJOURNMENT

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We have been fortunate in obtaining a block of rooms in the brand new Hilton Palacio Del Rio, located directly across from the entrance to Hemisfair. The daily rate of all guest rooms will be $25 each with no extra charge for the second person in the room. There is an additional charge of $3.50 per person over the double occupancy. Thus, three can share a room for $28.50 per day, ROOM RESERVATION CARDS ARE ENCLOSED. To be assured of room, the hotel has requested that all reservations be confirmed (card sent in) by September 16, 1968.

If travel is to be by Air, kindly indicate name of Airline, Flight Number and Time of Arrival in San Antonio, as we have arranged for the Texas Department of Conservation to meet arrivals and take them to hotel.

For those who wish to drive, Interstate Highway 10 is now open almost all the way from Lafayette, Louisiana to San Antonio, Texas.

For further information contact our New Orleans office: Phone: (504) 524-1765

Joseph V. Colson, Executive Director
Gulf States Marine Fisheries Commission
400 Royal Street, Room 225
New Orleans, Louisiana 70130

Gulf Coast Austin Chamber Community

CITY AUSTIN REFUNDS

CASH NEGRO TEXAS

[illegible]

GULF STATES MARINE FISHERIES COMMISSION
400 Royal Street, Room 225
New Orleans, Louisiana 70130

MINUTES

FALL MEETING, OCTOBER 3-4, 1968

OFFICIAL ATTENDANCE OF COMMISSIONERS — SAN ANTONIO, TEXAS

	PRESENT	ABSENT	PROXY
ALABAMA	Vernon Shriner		
		Joseph W. Graham	William Anderson
		L. W. Brannan, Jr.	William Anderson
FLORIDA			
	Randolph Hodges		
		J. Lorenzo Walker	Harmon Shields
	Walter O. Sheppard		
LOUISIANA			
	Dr. Leslie L. Glasgow		
		Richard Guidry	
	James Summersgill		
MISSISSIPPI			
	George Brumfield		
	Ted Millette		
	August Rauxet, Jr.		
TEXAS			
	J. R. Singleton		
	Richard H. Cory		
	Virgil Versaggi		

STATE GOVERNMENT REPRESENTATIVES

ALABAMA — William Anderson, Johnie H. Crance, Thelma Robertson

FLORIDA — Dale Beaumariage, Randolph Hodges, Harmon Shields, Michael B. Wollam

LOUISIANA — Gerald Adkins, Barney Barrett, J. C. Broom, Dr. Ted Ford, Dr. Leslie L. Glasgow, Woodrow Mock, Dr. Lyle St. Amant, James Summersgill, Max Summers

State Government Representatives (Continued)

MISSISSIPPI	George Brumfield, Ted Millette, William Demoran, August Rauxet, Jr.
TEXAS	C. E. Bryan, Richard Benefield, Paul Brashear, Ray Childress, Robert Colura, J. A. Daily, Larry L. Elam, T. L. Hefferman, Leslie C. Gale, Spencer Gaille, Henrietta Gossett, Pete Hamilton, Roy B. Johnson, B. D. King III, T. R. Leary, E. G. Marsh, Jr., Rudy Martinez, Robert Mauermann, William R. More, Tom D. Moore, Bill Schwartz, Ernest G. Simmons, J. R. Singleton, Marshall Smith, James R. Stevens, John C. Weber, Wayne L. Wentowrth
WASHINGTON, D. C.	Keith Ozmore
BUREAU OF COMMERCIAL FISHERIES	I. B. Byrd, H. E. Crowther, Bob Finley, Milton J. Lindner Dr. J. K. McNulty, Russell T. Norris, George Snow, John Thompson, R. T. Whiteleather, Kip Robinson
BUREAU OF SPORT FISHERIES	H. D. Fields, Bruce Kimsey
BUREAU OF LAND MANAGEMENT	John L. Rankin
U.S. COAST GUARD	Commander Phillip Hogue
U. S. CORPS OF ENGINEERS	George Allen, Harold L. Blakey, William E. Burris, Charles Harris, Tom Holland, Gordon H. Jones, Berton Maclean, C. L. Pawlik, W. E. Shell, Jr.
U. S. GEOLOGICAL SURVEY	Robert F. Evans, Jake Lowenhaupt
STATE HEALTH DEPARTMENT	Dudley Johnson
INDUSTRY	David C. Byrne, J. G. Carinhas, F. R. Charlton, Capt. M. Ferguson, Joseph M. Jurisich, John B. Keats, John Mehos, Ken McLain, Albert Rea, Jack Styron, John Ray Nelson
TRADE ASSOCIATIONS	Ronald DeLucien, Robert P. Jones, O. M. Longnecker, Jr. Ernest Mitts, William Neblett, Ted Shepard, Elizabeth Wallace
PETROLEUM INDUSTRY	P. M. McFadden, J. W. Pittman
TEXAS WATER DEVELOPMENT BOARD	L. B. Seward
UNIVERSITY-RESEARCH REPRESENTATIVES	Walter Abbott, J. Y. Christmas, Dr. Gordon Gunter, Hoyt Holcom, Tom Mcilvain, Frank Truesdale, Jack Von Lopik

GENERAL SESSION
October 3-4, 1968

Commission Chairman Shriner called the meeting to order at 9:30 AM, and invocation was given.

Upon completion of the roll call and introductions of Commissioners and their proxies, Commissioner J. R. Singleton, Texas Parks and Wildlife Department extended a cordial welcome to Texas, and introduced Mr. Harry Jersig, member of Texas Parks and Wildlife, and President of Lone Star Brewing Company. Mr. Jersig introduced Mr. Ben Barnes, Speaker of the House, State of Texas, who welcomed us most enthusiastically.

The following speakers appeared on the program as listed:

BUREAU DIRECTOR'S REPORT, H. E. Crowther, Director, Bureau Commercial Fisheries, Washington, D. C.

WASHINGTON REPORT ON FISHERIES, Ronald DeLucien, Director, Fishery Products Division, National Canners Association, Washington, D. C.

ACTIVITIES OF BUREAU - REGION 2, R. T. Whiteleather, Deputy Regional Director, Region 2, Bureau of Commercial Fisheries, St. Petersburg, Florida.

NATIONAL MARKETING, Robert E. Finley, Chief, Marketing Office, Bureau of Commercial Fisheries, Chicago, Illinois.

THE TEXAS WATER PLAN, Lewis Seward, Texas Water Development Board, Austin, Tex.

U. S. CORPS OF ENGINEERS PANEL, George Allen, Mobile, Alabama, Charles Harris, Vicksburg, Miss., Thomas Hollan, Jacksonville, Florida, William E. Shell, New Orleans, La., Chester Pawlik, Galveston, Texas, Harold Blakey, Washington, D. C., Berton Maclean, Washington, D. C.

UNDERWATER OBSTRUCTION SUB-COMMITTEE REPORT, Robert Evans, Supervisor, Oil & Gas Division, U. S. Geological Survey, Department of the Interior, New Orleans, La.

ESTUARINE TECHNICAL COORDINATING COMMITTEE REPORT, Dr. Ted Ford, Chief, Oysters & Seafood Division, La. Wild Life & Fisheeries, New Orleans, Louisiana.

ASSESSMENT OF COASTAL PELAGIC SCHOOL FISHERIES (SLIDES SHOWN), Dr. John R. Thompson, Bureau of Commercial Fisheries, Pascagoula, Mississippi.

COATINGS FOR THE MARINE INDUSTRY, F. R. Charlton, Manager, Heavy Duty Maintenance Sales, Cook Paint and Varnish Company, Kansas City, Missouri.

THE SPORT FISHERY FOR BLUE CRAB IN GALVESTON BAY, R. L. Benefield and L. L. Elam, Texas Parks and Wildlife Department, Austin, Texas.

MIGRATORY PATTERNS OF FISH & SHELLFISH THROUGH A NATURAL PASS, B. D. King, III, Texas Parks and Wildlife Department, Austin, Texas.

FISHERIES DEVELOPMENT IN FLORIDA, Dale S. Beaumariage and Michael Wollam, Marine Research Lab, Florida Board of Conservation, St. Petersburg, Florida.

GULF STATES MARINE FISHERIES COMMISSION
Room 225 - 400 Royal Street
New Orleans, Louisiana 70130

SUGGESTED BUDGET FOR FISCAL YEAR 1968-69

Estimated Income F/Y 1968-1969

Alabama	$ 5,000.00		
Florida	4,500.00		
Louisiana	6,000.00		
Mississippi	2,500.00		
Texas	6,000.00		Estimated Funds Available
		$ 24,000.00	
Cash on hand close of F/Y 1967-68		3,284.14 (Checking Account 5,000.00 (Treasury Bills)	
		8,284.14	$ 32,284.14

	Budget-67/68	Spent- 67/68 As Audited	Suggested Budget 1968-1969
Salaries	$ 15,200.00	$14,916.71	$ 16,200.00
Travel	3,200.00	3,454.38	5,000.00
Rent	840.00	840.00	840.00
Office Supplies	500.00	306.01	500.00
Tel. & Telegraph	650.00	671.87	700.00
Postage	250.00	139.00	250.00
Maintenance	75.00	49.64	75.00
Accounting	250.00	250.00	250.00
Insurance	200.00	420.00	450.00
Meeting	700.00	1,006.98	1,200.00
Printing	1,200.00	405.47	1,000.00
FICA Payroll Taxes	525.00	497.16	622.00
Depreciation	100.00		100.00
Petty Cash-Sundry	200.00	194.24	200.00
Office Equipment	1,400.00	1,054.43	250.00
Automobile	2,700.00	2,390.72	200.00
	$ 26,990.00	$ 26,552.08	$ 25,037.00

GULF STATES MARINE FISHERIES COMMISSION
October 3-4, 1968
San Antonio, Texas

"WASHINGTON REPORT ON FISHERIES"

H. E. "Skip" Crowther, Director
Bureau of Commercial Fisheries
Washington, D. C.

It's a real pleasure to be here, I say this in spite of the many problems we face. I recall one of the first meetings I ever came to in the Fisheries back many years ago, almost one of your first meetings that was held in Houston, Texas. I was pretty green on my assignment, the first thing I heard was, "the Feds," and "the States's rights," I moved back closer to the door. I think we have come a long way since that time in our working relationships.

I've been asked for some brief comments, undoubtedly what Joe Colson wanted me to talk about was the condition of the U. S. Fisheries, but I'd like to take just a little bit different approach. I think all of us agree that we are living in a restless, unpredicatable era that is characterized by speed and change, certainly the student disorders throughout the world are symptons of change, I think even the hippies are symptoms of change - I don't know what - but it is evidence of restlessness. Even in the minority groups, there are new patters of operation developing. I'm sure that you would agree that these groups don't express the sentiment of the entire U. S. population, but I do believe it's a fact that the main part of our youth do show that they are not content to follow the pattern of those who went before them; they are accustomed to a faster pace of living and operating. I think even the educational systems have changed, certainly those of you with sons and daughters in

college find that they have advanced far beyond what we had in school. The use of computers, space developments, ballistic missles, sonic transportation which is approaching, are all evidence of a speed-up, even our political conventions show signs of change. In my opinion, the fisheries have not gone untouched, perhaps have not been touched the way some other segment of our population have, but there are changes developing that many of you may not be aware of. For example, the massive foreign fleets that fish off our coast, much faster boats, new equipment that has a capability of catching tremendous amounts of fish, and they have affected us. When they first appeared off the Georgia banks, we weren't too concerned, but the effects of them are becoming quite evident to us now, both on the East and West Coast. In the Haddock Industry, for example, the Soviet Fleet moved in and hit the one year class of fish which would have carried our industry along for a number of years. As a consequence, the Haddock segment is having problems, and on the West Coast we are having identical problems. So far the Gulf has been spared, but in my opinion, if the Russian Fleet should decide to fish for shrimp, and they hit it hard with their massive fleets, you too, will face problems. They will take a large share of the resources, what is left will have to be divided among the vessels in your fleet, and you will find that you are cutting the pie in too many pieces. The International problems that face us, the territorial problem in the fishery limit are indicative of some of the changes that are developing. Just recently the Common Market Trade Acts within the Common Market evidenced change, and this change is affecting the other European Countries and our own market. We are now finding fishery products flooding into our market because they cannot get into the Common Market there. The population increase which is so evident with many problems affects our fisheries. Pollution, which all of you are aware of, is more serious than ever. The number

number of nuclear plants, many thought at first there would be only two or three, but they have proven so successful you are going to see a great number of them springing up all around our coasts. These have an effect on our fisheries. The estuarine destruction which you have heard many speeches on is another evidence of change. The recognition of the hunger problem throughout the world, and the part that fisheries possibly can play in it, has focused much more attention on the fisheries that we ever had in the past. And, even the changing food habits of the people have changed the fisheries. People are now in the position to eat luxury products, and in many cases right now we find luxury products in demand and at pretty substantial prices, while many of our bread and butter fisheries are in trouble.

Another change that has occurred recently is the consolidation of plants. At one time our fishing industry was composed of small companies, now you are seeing more and more mergers and accumulated interests. We also had changes in Government operation, and at this point I want to say that we are no longer able to plan our programs on a project to project basis. We have had introduced into the Government what we call P.P.B., or Program Planning and Budgeting. No longer can we consider the individual items, we must look at the cost ratio, that is, how much money will the National economy get out of a particular project, according to the amount of money that is put into it; we have a completely new way of planning that we must follow. We have our Councils and Commissions which were put into being by law, these groups are now in the process of studying all phases of our fisheries, all phases of oceanography, and within the next few months will determine and make recommendations to where fisheries will fit the whole Government pattern. For example, with the Bureau of Commercial Fisheries - will it remain in the

Interior with other groups joining it, or will it go to a completely new agency, perhaps an ocean agency. The universities are becoming active in probing the problems of our fisheries. I was interested in reading some of the recommendations from the University of Washington conference. One of the items that they cite is that there are too many boats and fishermen in the traditional fisheries and tha the catch has leveled off. These fisheries attracted fishermen and investors when catches were rising and when the harvest limit reached, the fisheries became unprofitable; the Government has stepped in to save the resource, it usually has regulated the fishermen to make them less efficient. We are beginning to hear talk in the meetings and universities of limited entry into our fisheries. It means that the possiblity of some scheme where the number of vessels and the number of fishermen are regulated so that there is more opportunity to make a profit in the fisheries. My own opinion is that we will hear more and more of this in the months to come. British Columbia, Canada has already instituted a limited entry system for salmon; all of us will watch very carefully how this will turn out.

I think we are living in different times than those in the past, I don't think we can go along as usual on our present established course of action. It seems to me that we must be ready to change and to accelerate our pace, especially we in the Government, or we'll be run over. There's no doubt in my mind that the States will in time feel the effects of changes in their fisheries and the programs planned to help the fisheries. Most of us are reluctant to change, it's easier to stay the way we are, but in my opinion, we will very rapidly be forced to change. I don't think anyone in this room can be sure of what changes will occur, but the changes that will take place will develop more rapidly in the next 20 years than they did in the past 20. The leaders in the industry should be watching these changes and preparing for the challenges.

GULF STATTS MARINE FISHERIES COMMISSION
San Antonio, Texas
October 2-4, 1968

"WASHINGTON REPORT ON FISHERIES"

Ronald W. De Lucien, Director, Fishery Products Program
National Canners Association
Washington, D. C.

The National Canners Association welcomes the opportunity to discuss with you developments in Washington concerning the commercial fishing industry.

As with any Washington report, you expect to hear the latest political rumors in the nation's capitol, but I will confine myself to reporting the highlights of events during the past year which have had or will have an affect upon the fishing industry. I am certain you will agree that omitting any reference to politics perhaps is a wise course since I am in Texas today and especially since this is a most unusual and undefinite political election year.

A Washington report on fisheries must first include a look at the Congress. During the 90th Congress, there was continued interest in fishery legislation of major importance.

One of the most publicized congressional developments regarding fisheries was consideration of the so-called Wholesome Fish and Fishery Products Act of 1968. As you well know, the bill proposed increased federal inspection of the fishing industry, and, as sponsored by the White House, would continue to give the regulatory authority to the Federal Food and Drug Administration. Now, what would this legislation brought about, and what would have been the impact upon the domestic industry?

First, we shared the concern with others in industry that whenever legislation such as this is introudced which purports to save the

consumers from either real or alleged dangers, industry has a diffcult time preventing unfair publicity or preventing a distortion of the situation. Unfortunately, a consumer issue becomes a debate based more on hysterical fiction rather than historical fact. Therefore, industry was faced with the task to present a clear and articulate statement to underscore what is being done at the Federal, State and Local, as well as at the Industry Level to protect the consumer and to give the consumer a good quality product. Having said that, however, we are not saying we live in Utopia, or improvements cannot nor should be made. I am saying that we in industry are just as concerned with Mrs. Housewife as any government food inspectors. In fact, the record of the NCA and its fish and seafood canner members shows over the years the importance and emphasis we place on wholesome and quality food products. If this were not done, we would not stay in business for long.

In summary on the subject of further fishery inspection authority, I am happy to report that we and others in industry and government were successful in preventing an unfair clamor which would have distorted the overall image of the seafood industry. It is a fact that this country enjoys the highest standard of hygiene and cleanliness and wholesomeness of its food supply in the world. And I am confidant that if industry continues to work with the regulatory agencies in a spirit of partnership, we will be able to continue to upgrade our food supply.

Now, what of the impact from this proposal? During the Senate hearing, we pointed out that a major concern was the problem presented by equal regulation of domestic production and imports or products of foreign origin. Since this nation is the largest market-place of fish products

in the world and since some 117 foreign nations export their seafood producta to us, we strongly felt that any increased federal inspection should equally apply to foreign plants lest our domestic producers be placed at a severe and gross disadvantage. If this were not done, the consumer would not receive equal protection and the domestic industry would unequivocally face an unfair competitive position because it would be mandatory to meet new Federal guidelines and new Federal regulations. A second concern was the proposal for plant and vessel inspection. We felt that there was not need to have an absolute statutory requirement that inspectors be present in a domestic plant or establishment during operation. This would lead to inefficient use of inspector manpower, particularly in view of the fact there are over 4,000 fishery establishments in this country. Another concern was the provision to give the Federal Agency complete authority to suspend the certification of a domestic plant without a hearing and the right of judicial review. This is basic to our society and without this due process, the industry would have been subjected to the possibility of arbitrary action.

As you know, the fish inspection legislation was not passed or acted upon by this Congress. The Senate did hold hearings on the White House proposal, but no bill was reported out of committee, nor any further action taken. We do not know what the next Congress or a new administration might do. I would urge you to follow any reconsideration of this proposal very closely as I am sure you will. Because any discussion of additional Federal regulatory authority for the fish and seafood industry inevitably involves the very livelihood of those concerned with

the commercial fisheries. If you and other factors in the industry work closely together, I am confident that we in industry, working with Government, would be able to effect a resonable and practical approach. In this way, we think this is a basic principle of good government.

Speaking of unanimity in the industry, this is a subject about which we feel strongly. This was no better illustrated than by the recent Congressional approval of legislation to extend the Commercial Fisheries Research and Development Act, the extension of P.L. 88-309. Public Law 88-309 was due to expire June of 1969, but many of us felt it was imperative for Congress to extend the program now rather than wait until next year. This was particularly important because of the states' budgeting and staffing projections which has to be forecast. Therefore, there was need for accelerated action.

Taking the initiative, I would like at this time to acknowledge the leadership of Joe Colson, Ernie Mitts of the Atlantic States Marine Fisheries Commission and others who convinced the Congress that there was an urgent need for Congressional action. I know that you all agree that this type of Legislative remedy greatly contributes towards the rehabilitation of the industry. I say this because definitive assistance is rendered at the State and Local level which results in the development and utilization of fishery resources. This is a basic need of the industry. Accordingly, 88-309 aids the states to decide what projects should be undertaken rather than for this decision to be made 3,000 miles away in Washington, D. C. There were those cynics who said that the bill could not be passed. The Gulf States Marine Fisheries Commission proved them wrong. I am happy to say that NCA fully supported the 1964 Act and we gave the full cooperation and support to Joe

Colson and others in achieving this noteworthy recent success. In addition to getting decisive and total Congressional help such as in this instance, there is a principle involved and that is the fact that the Fishing industry when it decides to work together towards a common goal is able to succeed.

I would like at this time to publicly acknowledge the contribution that Joe and others made.

Another Congressional development of direct help to the industry was the amendment to the Fishermens' Protective Act of 1954 concerning the problems off Latin America over the illegal harrassment and seizure of U.S. fishing vessels. Congress strengthened the 1954 Act by making mandatory a deduction from Foreign Aid Funds programmed in the amounts expended by the United States arising from illegal seizures of U. S. fishing vessels on the High Seas.

Hopefully, this new law will deter Latin Americans from Acts of Piracy on the High Seas which has resulted over the years in economic hardship and the jeopardizing of the lives and livlihood of American fishermen.

It seems fashionable this year to look at the future of the American Fishing Industry. There have been many conferences and meetings pondering this question. Such a meeting in Seattle last March was attended by representatives from all parts of the Industry and concluded what some of the problems are that is confronting the industry. For example, it pointed out that some of the major problems were too many restrictions by State and Federal regulations. The inability to profitably supply the needs of the Domestic Market by U. S. fishermen and the lack of effective coordination in Independent Government Agencies so that the full potential of the Ocean Resources can be realized. One of the most far reaching and potentially effective developments is the current study by a Cabinet Level National

Washington Report on Fisheries

Council on Marine Resources and Engineering Development and its junior partner, The Commission on Marine Science, Engineering and Resources. The report of this Government Study is to be completed next January and undoubtedly will recommend a restructuring in the Federal Government of Agencies involved in Marine activities.

In addition, we understand the Bureau of Commercial Fisheries has drafted a Master Plan designed towards concentrating on specific problems in specific industries. We are hopeful that the disucssions and decisons both in and out of Government regarding what needs to be done to revitalize and rehabilitate the Domestic Fishing Industry will lead to the constructive approach to meet the immediate as well as long range objectives. We were encouraged when the National Council and Commission welcomed the views of the Industry and States. We think there should be more of an exchange of ideas, an exchange of information, so that Federal activity will be as closely coordinated as possible with the State and Local problems and programs to better serve the industry. We must realize that in the total industrial complex, the fishing industry, is spread out and small. We, therefore, need to give as much support as possible to those in Congress and those in Government who are working to help us. It goes without saying, however, that if that is to be, an effective relationship there must be continuing lines of communication. Perhaps one of the most useful services of a National, Regional or State Fishery Organization is to serve as a spokesman of their respective interests in getting the word to those in Congress and Government as to what should be done. Perhaps it would be useful to suggest that all of us read carefully each year the appropriations justification of the Bureau of Commercial Fisheries so that we would know what their programming and policies are.

Washington Report on Fisheries

Speaking of supporting our government, one of the most encouraging signs was the establishment in the Department of State of a Fisheries Officer with Ambassadorial rank. You will recall the request made by NCA and others also, two years ago for your support to bring about an upgrading of this office. It was perhaps one of the few times where we had complete unanimity in the industry for a common goal. We succeeded because of the collective support of all of you. I would say that the upgrading of the State Department Fisheries Officer has begun to strengthen the U. S. position in its negotiations with other countries to bring about reasonable solutions and workable treaties. The job is not complete, nor perhaps will it ever be finished, but the point is we have a strong team in the State Department working for the American Fishing Industry.

GULF STATES MARINE FISHERIES COMMISSION
San Antonio, Texas
October 2-4, 1968

"ACTIVITIES OF BUREAU - REGION 2
BUREAU OF COMMERCIAL FISHERIES

R. T. Whiteleather, Deputy Regional Director
Region 2, Bureau of Commercial Fisheries
St. Petersburg, Florida

Federal fiscal restraints, well known to you during the year, forced Bureau programs to run under a tight rein. While some activities were of necessity curtailed, productive results have been achieved in others. We count the P1-309 Federal Aid to States Program as one of the productive areas. It is a particular pleasure for me to make such a statement before this Interstate Commission audience. The cooperative nature of these programs brings about a mutual interest in our fisheries that would not otherwise exist.

The Gulf States have continued to strengthen their commercial fisheries research and services as a result of P1-309 allotments, a fact that our regional Federal aid corrdinator, will substantiate in more detail later in this program. At the moment though, and before getting into our regular Bureau programs, I would like to mention some of the very practical accomplishments that have resulted from use of Federal-State matching money.

A coastal experiment station consisting of 21 ponds vaying from one-quarter to four acres in size is almost completed near Palacios, Texas. In addition, 16 experimental ponds, one-quarter acre in size, have been completed at Grand Terre, Louisiana. These experimental ponds in Texas and Louisiana provide the States with some of the best--if not the best--facilities for marine aquaculture research in the Nation.

Activities of Bureau - Region 2

The State of Texas has constructed and placed in operation a 72-foot exploratory fishing vessel, Western Gulf, which will complement Bureau research and development activities in the western Gulf.

The planting of shells for oyster cultch material in Louisiana and Alabama under Section 4(a) and 4(b) of the Act has significantly increased oyster production in these States. Funds made available to Louisiana under Section 4(b) (Disaster section of the Act) expedited recovery of oyster production after damage caused by Hurricane Betsy. The loss of oyster seed beds from unknown causes in certain areas of Alabama is being mitigated by planting of cultch material in remaining seed producing areas. The establishment of new artificial oyster reefs in the Apalachicole area of Florida has been successful.

The seafood market promotional projects in Florida and Texas have had a favorable impact on the sales of seafood produced in the southeastern area. A study recently completed by the University of Florida Bureau of Business and Economic Research confirms that these programs, supplementary to Bureau program efforts, have offset some unfavorable trends and kept the demand for southern fishery products strong.

The cooperative estuarine film and Gulf of Mexico estuarine inventory by the Gulf States and the Bureau is a world-outstanding example of a cooperative effort to enhance knowledge of the estuarines. We will get vital information on these coastal bodies of water, which contribute directly or indirectly to about 85% of the commercial fisheries in the Gulf. There are many more accomplishments to be cited, but I leave this subject now by saying that with the determined assistance of this Commission and cooperation by the other interstate compact groups, the Federal aid to States program

authorization has been extended for four more years by the U. S. Congress in recent session.

A prime achievement in our Bureau programs has been completion of the 170 foot 1600 horsepower exploratory fishing vessel, Oregon II, based at Pascagoula, Mississippi. This vessel has been designed from the keel up for exploratory fishing and gear research activities in tropical and sub-tropical waters, and the initial cruises have shown the vessel to perform well within expectations. The vessel is equipped with ultra-modern fish detection and harvesting equipment, which includes powerful propulsion engines, heavy hydraulic winches, side scanning sonar capable of searching the mid-water sector for as much as two miles on either side of the vessel, and pilot house instruments which permit effective monitoring of the trawl operation and performance. This vessel will furnish capability for intensive mid-water trawl development and deep water bottom trawling. Shoreside, at Pascagoula, a Univac 9200 computer was installed which represents another advancement in our physical plant. The computer rapidly, in fact, almost instantly, turns out selected data from 18 years of fisheries exploration in the Gulf and Caribbean. Used to identify gaps in areas of exploration or to compile data to answer industry inquiries, the computer is equally effective.

Perhaps the most tangible development during the year has been the initial production of thread herring off the west coast of Florida, which was stimulated by Bureau exploration and assessment of pelagic fish schools in this area. While some technical and socio-economic factors limited commercial production in the fishery, the initial efforts confirm the tonnage magnitude of our earlier estimates. Development of more versatile fishing gear is still definitely needed to swing this fishery into its full potential.

Activities of Bureau - Region 2

An unexpected spin-off from the Oregon II shake-down cruises was the finding of large tilefish in depth of 150 to 200 fathoms throught the Gulf. Several catches on bottom long lines were sufficient to indicate that this species may have commercial importance as a separate fishery. Upcoming trials with heavy trawling gear on the Oregon II will give us a better determination of this potential.

Some impressive achievements are materializing in the field of spececraft remote sensing and aerial photographic surveillance. Space photos of the Gulf coastal waters have already produced information applicable to fisheries problems, such as current directions, plumes of sediment-laden waters extending offshore, and water current boundaries. Over a thousand schools of fish have been photographed with color, color infrared and black and white film to determine species identifying characteristics and quantification of the shcools. Location of fish schools by low-level light intensity sensing at night and by various daytime aerial sensing devices are being tried, not just to fritter away money on imaginative ventures, but to determine how much pracitcal pay-out can be expected on the long term research basis.

Shrimp aquaculture experiments at the Bureau laboratory in Galveston have reached a promising stage. A prototype hatchery has been setup and over 200,000 brown shirmp reared to post larva in one experiment. A major problem is that of providing adequate food for mass cultures. Also, bulk foods must be developed to feed the larger shrimp in the ponds. As yet, no food, either natural or processed, has been found to be entirely satisfactory. A pelletized catfish food, composed mainly of fish flour, has been the most promising and several types of fish flour are now being used as a base in additional dietary studies. Another aspect that needs considerably more attention is the rearing of shrimp to maturity and inducing them to spawn under controlled conditions.

Activities of Bureau - Region 2

A large tank at the baboratory is being equipped with facilities for environmental control so that some of these studies can be done using laboratory reared shrimp that have been carried over the winter in ponds.

Chemists at the Bureau's Pascagoula Technological Laboratory made a real break-through in the solution of a problem plaguing the breaded shrimp industry. A blue-green coloration in breaded shrimp was causing numerous rejections and substantial losses of money after the product was well into the trade channels. This problem had vexed half a dozen laboratories and consultants, but the Pascagoula staff found that where fine particles of metal dust occurred in the air at the processing plants, the shrimp, under certain conditions, provided enough available ammonia to combine with the iron, copper, or chromium to produce a veriety of green colors. Recommendations for mitigating the problem were given the industry.

Estuarine research, pesticide studies, and the shrimp dynamics programs were carried on through the year with good results. From menhaden research so far, it appears that one of the major causes for the reduced catches in the Gulf during the first seven months of 1968 is the lack of one-year old fish from the comparatively poor 1967-year catch class. While the catch is barely below that of last year, it still was, for that period, the lowest since 1959.

The regular services, such as statistics, market news, marketing and financial assistance programs continued to yield basic benefits, even though some funding some funding difficulties were encountered and some personnel reduction made in the market promotional program.

While we find general satisfaction in the results of our work during the past year, there are a number of situations related to our fisheries that are still crying for attention. Proliferation of waste dumping in the Gulf of Mexico is a matter of major concern. Chemical companies, even as far away as

Wisconsin, have made application to dump residues in the Gulf by freighting down the Mississippi River. In other cases, sludges of various types , most of which are toxic in some way to fish and shell-fish, are being dumped into the Gulf of Mexico. How much of this kind of material can our highly vaulable Gulf waters absorb without damage to marine life? We believe that some start must be made in understanding and controlling this situation.

Some grave problems will face many segments of our fishing industry in complying with mandatory inspection regulations if such legislation should be enacted as proposed. While we thoroughly endorse any action that will strengthen consumer confidence and expand markets for fishery products, it seems only sensible to be working ahead with industry in imparting technical advice and guidance where needed. Our technological laboratory staff has already had some successful experience in this type of activieyt in working with the fish meal industry to assure compliance with certain FDA requirements.

Problems resulting from tight labor markets and lack of crews for fishing vessels probably will be extremely sticky for a long time. Shrimp vessels, both new and used, are tied up right now at many ports along the Gulf coast because of a lack of captains and fishermen. Studies in the field of automation may ease this problem in the long run, and establisment of training facilities for fishermen could help in the short run, but somebody has to get this started on a large scale.

All of these situations facing the fisheries simply aren't going to go away by themselves, but perhaps, with the help of the Commission and the industry trade associations, we will be able to find ways of getting at them in the near future.

GULF STATES MARINE FISHERIES COMMISSION
October 3-4,1968
San Antonio, Texas

"NATIONAL MARKETING" (SLIDES)

Robert E. Finley, Chief, Marketing Office
Bureau of Commercial Fisheries
Chicago, Illinois

I want to first thank you for letting me come back to the Gulf and to tell you what a real pleasure it is to see old friends again. I think it is always an additional pleasure for me to come to the Gulf because in promotion work and consumer education we find that there is a more tremendous response in the Gulf than any other area that I know of in the United States. In other words, in the term of the hippies, you people "dig" this type of work. I'm pleased to come down and I hope that I can give you some ideas and show you what we are doing. I'm not sure that we have all the answers to your questions, but I can tell you that we are doing the best we can to provide them.

There seems to be a misconception, as far as I'm concerned, as to what consumer education is. Some people seem to think that consumer education is informing the consumer who is buying in a retail store. I don't necessarily feel that way. I think that anyone who buys your product is a consumer, whether it's mass media, or a retail store. If a person is buying fishery products, we certainly consider him a consumer. Today I'm going to deal with images, what the fishing image is at this time, what the cooperative programs in 309 we're working on with you from the Chicago office, and what we, in the Bureau, are doing to improve the fisheries image.

Bob Erkins, Past President of NFI, in a talk at San Francisco in April, said, "We, in the fishing industry, should no longer think of ourselves as separate from the food industry, we should think of ourselves as a part

of the food industry." So, we are designing our programs to bring fishery products with different foods into the community rather than by itself.

I'm going to use a few examples here to put across a point on what an image is. Now an image, according to Webster, is a picture that comes to your mind when you hear a word. I'm going to start my presentation by showing you a few examples. Let's first consider the barber shop, the first thing that comes to your mind when you see the striped barber pole, barbers make sure of this. Now let's think a bit more. Hollywood does a tremendous job on building an image. Some of the images built were those of Marilyn Monroe, Jane Mansfield, etc. Well, let's think of what an image is in this sense. I'm going to say the name of a famous star - Bridgette Bardot - now think - what comes to your mind? Think hard - now we are coming along as to what we think is an image. Now to get back a little more, let's think of our own product - fishery products. What does the average consumer think when he hears the word, "Fish?" Let's try another one "the fish market," what does the consumer think of? Now our education programs are designed to make fisheries appear in a more favorable light.

Now we get on with the major part of the presentation. As far as consumer education is concerned, we are doing our best to get the consumer to learn something from our programs. I'm going to give you another example of how we are working with other people to improve the fishery image. For example, these are the tests kitchens of an association in Chicago. We have worked with them for several years giving them more and more information so they could do a better job tying our product in with their product. These people have a lot of know-how in the food business, they have been doing food work, for the newspapers and magazines for years, in fact, they are one of the very finest trade associations in the country. During the past year we worked with them and

asked them to do a program, that is costing us nothing, but is doing a better job of consumer education on both their product and our own. During the summer they released the following four slides on TV. These slides showing different cuts of fish were followed with appropriate audio, telling how they could use a butter sauce with dill on our product. The steps went even further to show how an aluminum company could also help sell our product, as well as theirs. The butter sauce is spread on the fillets, or steaks, could be any steaks, and this is another thing, when you people see halibut steaks it doesn't necessarily mean that your product is not benefitting from this because they say very clearly in the audio to use whatever products are available in the local area. This is the finished platter, the commercial sells their product and it sells ours.

Another area that I think we have greatly missed is the tie-in with major companies. We are trying to improve in this area through education, not only to the consumer, but to the companies and the associations. For example, the National Biscuit Company, I've worked very closely with them. They have 28,000 salesmen - 28,000 salesmen getting their products into the stores - so why can't we hook our product on with theirs. After several meetings, we asked the head home economist, Ella Krosher, from National Biscuit Company, to put fishery products on a new product of theirs. Here you see Miss Krosher with the Nabisco Brand which carries a fish recipe on the bake. This has been reproduced in tremendous quantity and is available throughout the United States. We have also been working very closely with the different marketing groups. The Bureau has developed a detailed presentation which will be used for our retail clinics. This is assistance to retailers in handling of fish, how to make a cleaner and better approach to the consumer. We have

also asked the different groups, for example, Eddie Doucet, this gentleman demonstrates fishery products all over the United States, and is a member of I.G.A. Food Chain representing around 5,000 stores. We asked him to include more fishery products in his demonstrations to do a better job in consumer education. There is a need for all of us to do a good job in consumer education, to try to reach all groups - industry, associations, companies and the low-income groups.

At the request of the President's office of Consumer Affairs, we designed a publication which we thought would fill a great void that has long existed. The President's office directed us to a dynamic redhead by the name of Barbara Rice. She assisted us with the developemnt of this book, which is specifically a budget book, meant to go to anybody on a budget. Miss Rice worked with us step-by-step to make certain that we had the major points in this low-income book. They also asked us to make this a two-language publication, so we made it in English and conversational Spanish. We had to go a long way with this project; we took Miss Rice's guidance all the way. It was very difficult because we had to take the old McGuffy Reader approach, the whole book was written on a third grade level (that wasn't too hard for us to do). You won't find any lobster tails in there, these are strictly budget foods. Believe me, if she searches, the homemaker can find budget foods in fishery products. A friend of mine asked me, "Are you sure that in fishery products you still have budget items?" I said, "Listen, if you bought ham or bacon lately, you'll find that hogs are living high off people." We do have a lot of budget items, good buys in fishery products - our fish sticks - our portions - our tuna - all sorts of products, including many local products. The book was recently used here in Texas for demonstration tests and found to be

very successful. Some of the minority groups that did not speak English were extremely pleased that they were part of a program where they were pointed out and considered. This book is finding tremendous success throughout the country. I will have copies of this book for you. You'll note how we made this book with spiral bounding on the outside so that as products come in good supply we can send pages to the extension people and have them inserted in these books and become part of the permanent record.

Volume feeding has always been a big thing with us; we make an endeavor to make it front page space and color space in all the major volume feeding magazines. This is a recent spread we had on rainbow trout, here's one you will see on fish portions and Maine sardines. I have just selected a few slides, but believe me, all of your products are treated fairly. This is one of our West Coast representative contacting major magazines to make certain that the fishery products maintain their place in the consumer education field. Here's a spread we had just recently in Good Housekeeping Magazine showing the Bureau's "Basic Guide in Fish Buying," consumer education all the way. More of our programs are being oriented toward mass feeders in addition to the individual consumers. This is the Daily News Food Editor, Miss Alice Peterson, who has something like 2 million readers each day. These are important contacts to us. Here is your own Bertha Fontaine, here in the Gulf, who does a tremendous job on TV demonstrations throughout the Gulf Area telling about our fishery products.

We have been working with the school lunch people, the ones who decide what is going to be on the daily school lunch plate. They have to be convinced that fisheries products are as good, or better, than anything they are serving anytime of the week and we have been quite successful in many areas. To build this up and give them more support, an article we just wrote for School Lunch Journal will go to them - the Journal represents 25 million

meals a day in the United States during school time. You can see that fishery products get quite a fair shake, and you gentlemen who are involved in shrimp - shrimp was very difficult for us to do - we stressed it in our test kitchens, and still have a long way to go, but you will find that as a shrimp barbecue there, we did give a serving price they could afford, so shrimp are included in our school lunch program as an excellent extender and can be used in many ways.

To put a point across, we wrote a booklet called, "Fish Go in Schools." This is designed for people who are in the school lunch business. We show them what they can do in the school to stimulate interest in fishery products, how to build displays, how to call attention to them, and encourage them to tell young people about fishery products. This, for example, is a school in Nashville, Tennessee, which is as far inland as you can get; we conducted a test program there, teaching the school supervisor more about fish. On this particular day, they happened to be serving salmon croquettes; she had a globe there to tell how the salmon grow, how they live, how they go back into the stream to spawn, how they get into the cans and how they end up on the table. The children you see even built a salmon to hang over the mantle piece. These are the things we do to stimulate interest on a lower level, but believe me, these children are so interested in fisheries, you have a tremendous ace in your hand right to begin with. We encouraged the young people to sketch fish, fishing docks, take trips to acquariums, and so forth, in order to learn more about fisheries. Here are some educational exhibits. We, in the Bureau, feel very strongly about educational exhibits which tell the young people more about the fisheries. Here's another one which happens to be on haddock. It took quite a bit of doing, but we prevailed upon Singer Sewing Machine Company to put out patterns of fish designs so that home

economists could give these to the school lunch people to establish more interest in fisheries.

Now we will go from one extreme to another to a group we have overlooked because we thought they were already doing a good job - these are the chefs around the country. We have worked for two years with the Executive Chefs who work in conjunction with the National Restaurant Association. We have built up a culinary competition in Chicago and this is the set of trophies given each year at this culinary awards banquet. Chefs come in from all over the United States to compete in this work - talk about consumer education - you see the homemakers that come there by the thousands and you know that they are creating an interest. Almost 10,000 homemakers paid to see this display of food. Randolph and Harmon gave three awards from Florida. We asked them to contribute awards for Red Snapper, Shrimp and another one. I was very pleased that Randolph was present to give the Florida trophies to the winners as it added a great deal of prestige to the affair. The Shrimp Canners also gave an award, and over half of the trophies you see in this display are seafood trophies. The first year that we had this competition, we had to look for seafoods to judge. This year we had so much seafood, we couldn't find enough meat to judge. The chefs went along with a gleam in their eyes to these seafood trophies, they're traveling trophies, and they come back each year to compete for them. Because they like seafood, they are receptive to our programs, and the main competition of this particular program was in the seafood area. Here after a long judging is the salmon dish that won a top award in the fish category. Long, conscientious judging of these products make certain that fairness is shown throughout the whole thing. By the way, the winning salmon dish will be done again at the Culinary Olympics in Frankfurt, Germany. Now this is our pride and joy -- this is our Culinary

Olympic team that is heading for Frankfurt, German for the World Olympics this week-end. We've had quite a time getting things together for them, promotion material and seafood. We got lobster meat and South Atlantic crab meat, a back-fin Gulf product, which they specified be used. One of the four dishes to be used in the International competition will be a Crab Imperial. We are going to get maximum publicity on this as it's going to be broadcast to the States via Telestar while the Olympics are going on in Germany and Mexico. It's going to be a grand Crab Imperial, I've never seen one quite so elegant. The basis of the whole Crab Imperial is made from Blue Fin Crab Meat - this should please you people who sell blue fin meat - and is garnished with just a little bit of leg from the King Crab because of the red color.

Here's another example of consumer education as far as the chefs are concerened. You people in the Gulf have known spiny lobster as an excellent product for years, but many chefs in many fine restaurants in the North are oriented entirely to Maine Lobsters or lobster tails. We find that with clever usage you can bring many of your own, not so well known, species into prominence with a fine display by a good chef. So chefs do call attention to your product letting the consumer learn more about them. For example, the winner of two awards from the Kon Tiki Restaurant features seafood twice a week and prominently displays the awards. It stirs up a lot of interest, people ask questions and it merchandises fish.

Skip Crowther, at a recent meeting in Washington came up with a term that I like very well called "Fisheries are Fascinating." In fact, we are developing a press kit for Fish Expo in Boston with such background materials on our fisheries.

Randolph asked to announce that we are starting to work on a brand new colored bookbook that will tie-in with the new movie, what I always call the "Cinderella of the Gulf," the mullet. A new colored cookbook on this mullet will be made available very shortly, within three to four months, I hope. We will be doing one on trout, which the trout farmers asked us to work on. We are very proud of the publications we have put out over the years, and naturally we keep trying to make it easier for the fishing industry to get these publications. With permission of the Government Printing Office in Chicago, we now permit direct purchases of these publications by the States. Flroida and Texas have bought many of them, and also outside sources as you can see here. These are two major companies that have bought publications with their own logo inside. The Bureau and the Department still appear on the publication, but these were purchased direct from the printers. One point I'd like to bring out here is that in Chicago during the 1½ years past 1,300,000 of these publications were purchased and distributed.

Here using one of our publications, "Let's Cook Fish" as a tie-in to their product, one of the major companies will hook this on to packages of shrimp that will be displayed in the major stores of metropolitan areas. I was told by the Vice-President, Department of Seafoods, that they feel that these products maintain sales appeal to the eye because of these books hooked on the outside. They also feel that young people will remember the publication, for example, their logo is a small penguin. They believe that the young people will remember this and will continue to buy long after they are grown. Many stores are buying this.

By the way, on image improvement and consumer education we selected fish for the cover of this book. This is the first publication on basic fish cooking that we have put out in years. They asked what fish we wanted to put

in full color, and red snapper immediately came to my mind because of the tremendous color we have in this fish. In consumer education involved here, we tried to establish a close realtionship between the consumer and the product. For example, when a consumer gets fishery products, or goes past the fish counter and sees fillets, there should be no fear, or lack of knowledge, in knowing what to do with it. There should be a close relationship, a rapport between the person who uses it and the product itself. Through these images, a clean image, and getting clean products, we can establish a better relationship. This company, Coles of Milwaukee, just bought 50,000 copies of this book to give out to all fish customers they had. Now this brochure is available from the Government Printing Office, and you can get a limited supply from our field stations if you want to show them to your people.

I read recently about what is called a "total experience," a hippy expression. They have what they call a total experience, derived through pot, or something, which is described as a feeling when a person becomes involved in everything around them. I'm not advocating the pot, but I do think more people in the fishing industry should go through a total experience. A lot of them feel that when their product goes to market, or is loaded on the truck outside their dock, it's all over for them, but this is not my feelings. That person is responsible for, and should be concerned with, that product until it is served on the table and the cook is complimented on the preparation and quality of that product. I'm going to show you how, you, in local areas, can become totally involved. We had a program in Detroit called the Martin Ed Show that is viewed by 2 million people weekly over 7 stations in the State. This man is very sportsminded, so our Ann Arbor people, one being Miss Ann Davies, took advantage of this to coordinate a tie-in. He enjoys cooking and seafood, so what they did is present, as you see, a receipe folder which

our people worked on with them. This is a recipe folder on salmon steaks. This could be any fish steak, I think it reads that way on the folder, "salmon steaks, or any other fish steak, fresh or frozen," so everyone benefits from this. The sponsor of this program, an oil company, gave out 150,000 copies of these receipes in one week, now this is becoming involved in a total experience, and something you people can do to promote seafood around you.

We include our public relations people in the teaching of fishery background and products. This delightful lady here is Maxine Wall, head of the Chicago Seafood Club Public Relations Group. We advised Maxine to get out and learn more about boats, and what happens on them, so she could become involved in a total experience, and tell the newspapers about it. On this thing here you see one of our films; our films are shown weekly in one of the most elegant beauty parlors in Chicago - really a total experience. And here in what is called the Little Theatre, you see the ladies looking at our film reading the receipe books, leisurely, not hurried like they are at night to get something on the table. This is leisurely done - they have time to talk about what they are viewing and reading. And, here again, to show you how you can become more involved in promoting your products is some film supplied to us by Florida on a mullet promotion. This is what we call "Mullet Mexicana" to tie-in with the current Olympics that will be underway very shortly. At this time of the year, we are getting tremendous space with the food editors because of a tie-in with the Olympics. A tie-in for Thanksgiving gave us publicity, and here are some of the colormats made for Florida and Texas last year, and the Shrimp Christmas Tree, which of course, you people have done a wonderful job with. I don't need to tell you, you have done so much more than we hoped. These are some of the things we are doing to improve consumer education on fishery products. Our office is available at anytime for guidance and help.

GULF STATES MARINE FISHERIES COMMISSION
October 3-4, 1968
San Antonio, Texas

"THE TEXAS WATER PLAN"

Lewis B. Seward, Assistant Chief Engineer
Texas Water Development Board
Austin, Texas

I am very pleased to be here today, and I am grateful to you for your kind invitation to participate in your program. I feel that my general discussion of the Texas Water Plan and its program this morning may quiet some of the fears that have been expressed during the past year.

We Texans have a reputation for bragging. We have veen known to boast of our vast size until Alaska joined the Union. We have now been forced to forego our claim to being the biggest state. We have bragged about having more of this and more of that' we have claimed our football teams were the best---but recent gridiron action has proved us wrong.

We are nearing the completion of a total, long range water plan which is designed to guide the water development in Texas for the foreeable future, providing the widest range of benefits for the State as a whole. The planning report is expected to be presented to the public later this year. The Texas Water Plan will be a flexible guide for the development, conservation, and management of the State's water resources to the 2020 and beyond.

This flexible guide for water development will provide water for our municipalities, industry, agriculture, hydropower, mining, navigation, and recreation---all statutory uses of water in Texas. In addition---and of utmost of importance to Texas---the Water Plan provides for the preservation and enhancement of our bay and estuary environment, thereby assuring the continuation and expansion of our commerical and sports fishing and improving the

esthetic and cultural values of this invaluable resource.

I do not plan to discuss the details of the Texas Water Plan at this time since we are still drafting the final report. However, I will speak generally about the Plan and its concepts.

Early in our studies of Texas' water resources and the State's projected requirements, we learned that there simply is not enough water in the State to meet our requirements for the next 50 years. This left us with two alternatives. One, we could get along on what we have, tighten our belts when our water supplies diminsh and do the best we can; two, we could seek surplus water from outside our borders for import into Texas to meet our projected meeds into the next century. The Texas Water Development Board chose the latter course.

The most likely source for out-of-state water appears at this time to be the Lower Mississippi River below New Orleans. I want to make it abundantly clear that when we speak of the possibility of securing water from the Mississippi River we are talking only in terms of "surplus"water.

The Texas Water Development Board is well aware of the importance of the Mississippi River to our neighboring State of Louisiana and to the other states bordering on the Mississippi. It is <u>not</u> our intent or our desire to raid these states and secure any water that is essenttial to their well-being and future growth. We are interested in only the surplus floodwaters which may flow past New Orleans in the spring and early summer. We are only interested in this surplus water if there is no further use for it--- if the bay and estuary requirements of the Gulf States are fulfilled, if the Gulf cities' water supplies are protected from pollution by intrusion of salt water, if water is ample to maintain and expand barge traffic throughout the basin, and if there is ample water to meet the needs and desires of the people

of the rich Mississippi basin. Then---and only then---are we interested in securing water from the Mississippi River.

Most of you are aware, I'm sure, that the Congress appropriated more than $900,000 to the Corps of Engineers and the Bureau of Reclamation for 1969 Fiscal Year studies to determine the future in-basin water requirements and the availability of surplus water. This study will not be completed until 1971. The Bureau of Reclamation is also studying the movement of water to support municipal, industrial, and irrigation requirements. The report will not be available for some time.

In Texas, our planning program has moved ahead on the assumption that surplus water would be available to us to augment our own water resources in our arid and semiarid sections. We could not do otherwise. The time lag between planning concepts and construction and the delivery of water are too great. Had we delayed our water planning until a firm determination had been made that surpolus water would be available, it would be too late. Our studies and projections show that large sections of Texas will experience a declining water supply in 1980---just 12 years from now.

Even though we are nearing completion of our planning report, we haven't definitely selected our routes or the combination of routes for moving the large quantities of water we anticipate we will need for West Texas, the Coastal Bend, the Lower Rio Grande Valley, the El Paso and Winter Garden areas. We have pinpointed some routes, but we will be guided in our routing of water by the Lower Mississippi River Commission and the States of Louisiana if surplus water is available.

While we are looking toward the Mississippi River as a source for surplus water, we are giving every consideration to the desires of our

Louisiana neighbors and their water requirements. It is possible to build a coastal canal across Louisiana, and this could provide navigation, if desired, hurricane protection from canal spoil banks, additional fresh water for their bays and estuaries, and protection of their future water supplies. These benefits are also important to Texas and are being given consideration as "additional' benefits in the Texas Water Plan for our coastal areas and our land-locked cities.

Problems incurred in bringing vast amounts of water into Texas will be economic and political rather than problems of engineering. The Texas Water Plan and its program will be a tremendous undertaking. It is estimated that the total cost of the Plan to local, State and Federal agencies will be between $7 billion and $10 billion by 2020 when---hoepfully---we are providing the water that our projected 30.5 million residents will need.

Two major roadblocks appeared in our planning for providing water for our arid and semiarid sections of Texas---about half of the State--- and fresh water to our bay and estuarine system. Our western and southwestern sections of Texas and our bays and estuaries are important to the economic, social, and cultural well-being of the entire State. To find ways of circumventing these roadblocks has been a task of Herculean proportions.

Our bays, which lie in a broad arch of about 375 miles, pass through a variey of climatic regions, causing them to range from too salty to too fresh. Initial estimates of large fresh water needed for estuaries would not permit reasonable river development as envisioned by the Texas Water Plan. Some of these estimates ran as high as 20 million acre feet annually. Nevertheless, the objective of the Plan is to insure sufficient inflow of fresh water into the bays to maintain present water quality conditions.

Our bays and estuaries are being plaqued by pollution, and the complexities of the bay system and the dearth of authorative information have provided tasks of monumental proportions in our planning. To say that we have overcome these roadblocks would be inaccurate. We feel that we have made progress toward finding ways around these roadblocks.

The Texas Water Development Board, the Texas Water Quality Board, the Parks and Wildlife Department, and the Federal Water Pollution Control Administration have under way studies of our bays and estuaries. We are hopeful for answers to the problems that could wrest from the State one of its most valuable assets. The Board and the other State agencies vitally interested in this economic, ecological, and cultural asset are dedicated to the preservation and enhancement of our bays and estuaries.

The Texas Water Plan, with its 53 new reservoirs, its salt-water barriers, its massive transmission system of canals, pipelines, pumping stations, and power facilites will require dedication, desire, knowledge, understanding, and political expertise of the people of Texas if it is to move from conception to completion. We must put aside our parochialism, our regional differences if we are to be successful in the development of our water resources. We must be united in our desire to provide the water that will be needed in the west and southwest and for our bays and estuaries if we are to convince our Legislature and the Congress that funds must be appropriated for the projects necessary to provide the water needed to meet our requirements. We must recognize that Louisiana and the other Delta States have needs and interests that must be considered.

Texas and Louisiana have experience in working together for their mutual benefit. Toledo Bend dam and reservoir on the Sabine River

is an excellent example of the friendship and cooperation between neighbors. I feel we can again work together in other projects that will be of inestimable benefit to our two States.

I am not discouraged by the problems that confront us as we look ahead toward implementation of the Texas Water Plan. I feel the people of Texas will recognize their responsibilities to Texans of the future and respond in a forthright and responsible manner. I feel, too, the people of Louisiana and the other Lower Mississippi River States, once they are convinced that Texas does not wish to rob them of their birthright but only desires to share the water they do not need, will in the spirit of good neighbors join us in our effort to provide the water we will need.

Thank you for inviting me to be with you today.

GULF STATES MARINE FISHERIES COMMISSION
October 3-4, 1968
San Antonio, Texas

"COASTAL ZONE ACTIVITIES OF THE CORPS OF ENGINEERS"

Harold L. Blakey, Chief, Environmental Branch
Civil Works
Washington, D. C.

In carrying out the Civil Works - Water Resource Development Program of the Department of the Army, the Corps of Engineers has enjoyed a close and profitable working relationship with the Gulf States Marine Fisheries Commission on an informal basis at all levels since its formation as an interstate body. With the increasing importance of estuarine problems in engineering works for imporvements in coastal waters, we continue to have many common interests and consider it of great importance that continuing liaison be maintained with the Commission and its works.

I appeared before you on last instance more than ten years ago in opposition to a proposed program of basic research in the fundamentals of estuarine ecology involving costs ranging upward toward one-million-dollars based on the Gulf Outlet Project - - a segment of the Mississippi River and Tributaries project. The proposal was premature at that time and proposed funding as a cost of the outlet channel was not well conceived.

Since that time the collective effort of all agencies concerned in preservation and enhancement of estuarine resources and socio-economic development and use of coastal waters has been devoted to clarifying the need and developing comprehensive research programs to achieve their respective goals under the guidance of the National Council on Marine Resources and Engineering Development, and its Committee on the Coastal Zone. I particularly appreciate, therefore, this opportunity to briefly outline a

program of research which the Corps of Engineers proposes on its own initiative to undertake in cooperation with the other agencies concerned, to finance in our own budget, and to achieve if possible during the 1970's.

The Corps of Engineers involvement in the coastal zone and the Great Lakes goes back to the earliest days of the Republic, starting with coastal fortification, construction of piers and seawalls, removal of obstructions to navigation, protection of islands and beaches and deepening and maintaining harbors and tidal watercourses. Over the years, Congress has charged the Corps with an ever-widening spectrum of responsibilities in the coastal zone; until today the Corps program of coastal engineering constitutes the largest, most varied, and most widespread combination of activities in this field of vital national interest.

By "coastal engineering" we mean the planning, design, construction, operation and maintenance of engineering works in the coastal and tidal waters and in the Great Lakes, and research and data collection/analysis in support of these activities. Of the current annual level of about $1¼ billion dollars for the entire Civil Works program, the coastal/Great Lakes component represents roughly one-sixty, or about $200 million. By far the largest segment of these activities comprises the design, construction, operation, and maintenance of deep-draft commercial and fishing harbors, with their appurtenant channels to the sea (or connecting channels in the case of the Great Lakes), shallow-draft recreational harbors including harbors of refuge, and intracoastal shallow-draft channels for commercial and recreational craft. This channel and harbor work, in addition to deepening, widening, and straightening by means of several types of dredging (including maintenance of silted channels to authorized dimensions), also includes construction of breadwaters or other protective works, locks on

Great Lakes and intracoastal channels and canals, and railroad and highway bridge relocations. In the interest of navigation, but also more recently in response to concerns for ecological, aesthetic, and other aspects of encironmental quality, the Corps is responsible for removal of wrecks and other obstructions, for issuing permits for construction or other activities involving emplacement of temporary or permanent structures or release of industrial and other waste products in navigable waters, and for certain other regulatory activities.

The Corps, in conjunction with the AEC and other agencies, executes the engineering and scientific studies for the Atlantic-Pacific Interoceanic Canal Studies Commission, in the fields of topography, geology, hydraulics, hydrology, meteorology, accoustics, ecology, and health and sanitation. Another major functional area is the provision and maintenance of beaches, and the protection of developed shore facitilies and undeveloped shore lands from erosion by waves and currents, including hurricane protection, through such means as placing and replenishment of sand, and construction of groins, jetties, seawalls, and other protective works.

The Corps is also concerned with aquatic plant control, salinity intrusion control, and major drainage of coastal marshes and swamps. It also compiles and disseminates information on waterborne commerce and on ports and port facilities, and Great Lakes hydrographic, hadrologic, and other physical data.

In support of these design, construction, and operational activities, the Corps is actively engaged in: comprehensive and preauthorization planning; collection and analysis of scientific, technical, and economic data; research; and special studies and investigations (such as the Chesapeake Bay Model and the problem of dredge spoil disposal in the Great Lakes and estuaries). Of the

Corps $200 million annual coastal activity, $9-10 million is attributable to research and other related scientific activities. There is, of course, a considerable fallout of benefit from these activities to the entire national community of interest in marine science and engineering. These activities programmed for FY 1970 include four research initiatives in the following order of priority: Combating Oil Spills, Effects of Construction Activities on the Ecology of the Coastal Zone, Development of Offshore Facilities, and New Techniques for Restoration of Coastal Shores and Beaches.

COMBATING OIL SPILLS

The recent development of the National Contingency Plan for Combating Oil Spills has strengthened the Nation's preparedness to act in the event of an oil spill emergency along our coasts and waterways. The contingency plan provides the machinery for setting into motion a coordinated multi-agency response to oil pollution incidents. The Federal agencies which are signatories to the National Contingency Plan have many of the resources, including equipment, manpower, and technical capability, generally required to combat a major oil spill. However, a critical need exists for improving or optimizing the known techniques and operational procedures, and to develop new techniques through a selective research program, so that an assured positive capability would be available to respond to any major oil pollution incident.

Three principal areas of concern associated with an oil spill are, containment of oil at the site, destruction or recovery of the oil at the site, and protection and restoration of the shore face. In each of these areas a vigorous program of investigation and research should be pursued, to assure that we have available the most improved and effective methods and equipment to deal successfully with an oil spill emergency.

We are aware that the FWPCA and the Coast Guard have initiated programs and contemplate research efforts in these principal areas. The purpose of this initiative of the Corps is to respond to the urgency of the problem by offering Corps support to the agencies having primary responsibility. The fields of investigation are of multi-agency interest, concerning in particular the FWPCA and Coast Guard, and represent only a segment of the comprehensive research program necessary to assure a successful Federal response to a major oil spill. We recognize and agree that the agencies with primary responsibility for the program should be the FWPCA and the Coast Guard. We feel, however, that since the Corps owns and operates numerous pieces of marine plant and equipment and has the expertise in the fields of coastal engineering, marine operation and construction in the coastal and offshore areas, we are in a favorable position to offer our assistance to these lead agencies and to participate in certain parts of the program.

There is one area of research which I would like to discuss briefly because it involves directly the possible use of Corps hopper dredges, and also because there is a need to clarify the conditions under which the technique, if developed, would be applied. This involves the program to determine the feasibility of developing a technique, adaptable to our hopper dredge plant, whereby chemically treated sand would be sprayed over an oil slick in the ocean environment, causing the oil to adhere to the sand particles and then sink to the bottom. We feel that such a technique could be developed and adapted to our hopper dredges, and thereby provide a quick response capability. We recognize that the chemically treated sand particles and the sinking of theoil to the bottom could adversely affect marine life or the water environment, and thereby make the technique objectionable; this, of course, would be a matter for

determination by the FWPCA. However, we feel that notwithstanding the possiblity that this technique could have only limited applications, we should develop this on-shelf capability to provide a rapid response to a major oil spill when the spill is of such a nature that, despite the possible harmful effects to one segment of our natual resources, the consideration of the overriding situation and overall public interest, as determined by the Department of the Interior, makes the use of this technique the most advisable alternative.

Our preliminary estimate of funding requirements, pending more definitive blocking out of the program by the lead agencies, is on the order of about $1 million per year for four years. Corps involvement in this program would be at the request of the lead agencies and ona reimbursable basis.

In summary, may I re-emphasize that the Corps stands ready to assist the lead agencies in their programs whenever they feel our active participation, and our resources and facilities, would enhance and contribute to the overall national effort.

EFFECTS OF CONSTRUCTION ACTIVITIES ON THE ECOLOGY OF THE COASTAL ZONE

The Corps of Engineers has extensive involvement in the coastal zone, including planning, design, construction, operation, and maintenance of coastal works, such as channel improvements, harbors, canals, protective structures, beaches, salinity intrusion contrd, and major drainage works. We are also involved with systems of upstream channel improvements and reservoir impoundments which affect the estuarine and coastal environment. Many of the other Federal, State, municipal, and private activieis, such as industrial dredging and spoil disposal, dumping, installation and operation of shore and offshore structures, including intakes and outfalls of industrial and power plants generating chemical, biological, radiological, or thermal pollution effects in the coastal zone, are

subect to Corps permits and inspections.

In this work, the Corps has a basic responsibility to consider the impact on socioeconomic and environmental values, as a result of its own activities and of those by others that it monitors. This responsibility for assessing the full impact of construction projects and other engineering activities is currently being accomplished by increased cognizance within the Corps, by greater coordination with other Federal agencies, State and local interests, and various disciplines, and by the participation of these various interests in each phase of a project.

With its Coastal Engineering Research Center, Great Lakes Research Center, Waterways Experiment Station, San Francisco Bay Model, and the Chesapeake Bay Study and Model, the Corps has an array of research facilities and capability that provides a solid base for scientific and engineering research on estuarine problems, including biological, environmental, and socioeconomic.

We, therefore propose, as an extension of present studies of project effects, a major research program be undertaken promptly to assess the nature and extent of the effects of construction activities on the environment of the coastal zone, and to suggest practical measures, related to such construction, for improving the management of our estuarine and coastal waters and adjacent lands. This program would be carried out by the Corps as lead agency, in cooperation with other Federal and State research agencies concerned.

Because of the immensity and complexity of the problem, and the broad spectrum of causes and effects, a wide variety of disciplines and expertise of many agencies will be brought to bear. Conceiving of coastal, biologiical, and physiographic process as a dynamic system, interacting with the

inputs of man's intrusion upon it to produce changing beneficial or adverse outputs, the requisite research on this system and process must itself be systems-oriented. Part of the program would be structured in the form of pilot projects. Before-and-after case studies would be made in detail of the effects (favorable and adverse) of Corps projects and project systems (including reservoirs and upstream channel imporvements) on the coastal environment.

During the crrent year, a preliminary survey of the scope and nature of the problems will be undertaken and a more definitive study plan will be developed. An advisory group, including outstanding expertise from the major relevant disciplines, within and outside the Government, will be established to assist in program formulation and implementation. The Department of the Interior and other agencies having special missions and capabilities in relevant fields are expected to be major contributors to these studies and funds would be transferred to them for this purpose as the coordinated program gets under eay. A suggested optimal schedule for the first five years of the program, to include funding of other-agency participation, would be: FY 70 -- $250,000 (subject to budgetary constraints); FY 71 -- $500,000; FY 72-74 -- $1,000,000 per year.

DEVELOPMENT OF OFFSHORE FACILITIES

The Development of Offshore Facilities is one of the four Corps of Engineers FY 1970 initiatives adopted by the National Matine Council's Committee on Multipe Use of the Coastal Zone. The Committee placed this initiative in Priority 2 -- Essential to orderly development of the Coastal Zone.

This initiative involves research required to develop engineering design criteria and construction techniques for such facilities as offshore

barriers, islands, causeways, airfields, power and desalinization plants, harbors, floating breakwaters, terminal platforms, and access tunnels. Analytical, laboratory, prototype, and possibly oceanographic studies will be conducted to determine the effects of offshore structures on the littoral processes, current circulation patterns, and wave action on adjacent shores. Also, studies will be made of the effects of wave action on bearing capacity of offshore muds and permeable soils in relation to their use for structure foundations.

The research will be assigned to the Corps Coastal Engineering Research Center for accomplishment. The Center will corrdinate the researcg program with other interested Federal agencies. Subject to budgetary constraints, funds in the amount of $150,000 for FY 1970 are needed, under an optimal shcedule, to prepare a comprehensive plan of study and to initiate the research. Thereafter, funds in the amount of $250,000 per year for five years are estimated as necessary for timely completion of this program of studies.

NEW TECHNIQUES AND EQUIPMENT FOR RESTORATION OF COASTAL SHORES AND BEACHES

The Corps of Engineers was assigned its Civil Works mission in shore restoration and stabilization by Congress in 1930. Since that time, our field experience with beach improvement projects and our coastal engineering research program have demonstrated three things.

(1) That most of our "non-rocky" seashore is eroding rather than accreting.

(2) That the most satisfactory form of shore restoration and protection, in most cases, is to replenish and maintain the beaches with a new supply of sand. The beaches thus stabilized generally have a high recreation value as well as a protective value.

(3) Beach restoration and protection by sand placement generally costs from $50 to $100 a front foot, while seawall costs run from $500 to $2,000

per front foot.

Most of our Federally authorized beach erosion control projects, since 1940, have involved the placement of sand on the beaches.

The economic justification of beach erosion control projects is, of course, related to the cost of bringing this sand to the eroding shore. Until the present, most of this sand has been trucked in from inland sand pits or pumped in from the quiet waters of inland bays and lagoons. The cost of sand thus has run from about 50¢ to $2.00 per cubic yard in place on the beach, depending on local conditions.

Currently, however, we find ourselves in an adverse situation with respect to our sand sources. The inland sand pits are selling sand for road and building construction at increasingly higher rates, and costs up to $3.50 and $4.00 are being encountered. These prices break the economic justification of many of the shore projects which were well justified at $1.00 or so a cubic yard. Also, we have been increasingly interested in avoiding the disturbance of the ecology of the bays and lagoons by wholesale excavations of sand for beach replenishments. As a result, this source of sand is rapidly being denied to beach-building purposes.

Recognizing this increasing difficulty and expense of obtaining sand from the inland sources, the Coastal Engineering Research Center of the Corps, in 1965, began a survey of offshore waters along the Atlantic Coast to determine whether suitable beach sand was available between about the 15-foot to 100-foot depths. Portions of the coasts of Florida, Delaware, Virginia, New Jersey, Long Island, and much of New England have been surveyed. These surveys are made by private contractors under specifications furnished by the Coastal Engineering Research Center and involve "sparker" echo-sounder-

type runs to develop the stratification of the bottom and 3 & 5-inch cores up to 20 feet in length, to develop the suitability of the bottom materials for beach purposes. Todate, some 2 billion cubic yards of suitable sand have been located in the waters off New Jersey and Florida, and the records have not yet been completely analyzed. As an aside, it can be noted that the Corps has assessed the needs of sand along the studied sections of the New Jersey and Florida coasts at 25 million cu. yds. each.

As stated earlier, the effective use of this sand to replenish our beaches depends on the cost of getting the sand ashore. One test of our ability to dredge and pump this sand ashore has already been made by the Corps, using conventional dredging equipment. The Corps ocean-going hopper dredge "GOETHALS" was used. This dredge has a pump-out capability, that is, the dredge can either dump its load through trap-doors or pump its load overboard by an internal pumping system. The test was made at Sea Girt, New Jersey, with the sand deposit located in some 45 feet of water about 2 miles from Sea Girt. An underwater dredge line 2000' long was laid from the shore to an offshore terminal barbe. A special flexible assembly was utilized for the connection between the submerged line and the terminal barge. The flexible assembly was the only piece of equipment specially constructed for the operation.

After some initial testing with the terminal barge, routine operations were implemented and a quarter of a million cubic yards of sand pumped onto the beach. A detailed analysis of the operation by the Corps Philadelphia District, which carried out the project, shows that the sand was placed on the beach at an economically justifiable unit cost. It should be noted that the sand deposit was some 2 miles distant from the

terminal barge so that the dredge was involved in a 4-mile round trip for each 3,000 cu. yd. (approx.) load.

Now the important point to consider is that this operation was done with conventional equipment, most of which was already on hand. The only new -- or novel -- piece of equipment was the flexible coupling which, incidently, was the weak point in the system.

The question we now raise is whether a better system can be developed for moving the offshore sand onto the beach. We think it very possible that some more effective system can be designed, and that such a system can be justified, in view of the tremendous quantities of sand that need to be moved to restore and maintain our beaches.

Though we do not have designs, we do have ideas for study and testing. For instance, we feel that bottom-founded equipment would have many advantages over floating equipment. For one thing, it would not be in constant motion due to surface wave action, and would probably have much less idle time due to weather than the floating equipment. This includes, of course, the possiblity of a bottom-founded dredge, or a bottom-founded hopper with a pump-out capability into which a surface dredge could dump its load to be pumped ashore. These are two of the possibilities that would be studies.

Only the sand transfer from offshore is mentioned above. Actually, we have an equally pressing problem in the transfer across inlets of the alongshore littoral drift of sand. A number of arrangements for transferring this sand have been worked out, mostly by the Corps, though all of them need study and improvement. Among the arrangements are:

Fixed plants with a swinging boom.

Trestle-mounted plants.

Weir-jetties with deposition basins.

Deposition basins protected by offshore breakwaters.

Subject to the availability of funds, optimum scheduling of this program would require $300,000 per year for the four years FY 1970-73.

GULF STATES MARINE FISHERIES COMMISSION
October 3-4, 1969
San Antonio, Texas

"REPORT OF THE FISHING INDUSTRY ADVISORY COMMITTEE," and
"UNDERWATER OBSTRUCTIONS SUB-COMMITTEE"

Robert Evans, Supervisor, Oil & Gas Division
Geological Survey, Department of the Interior
New Orleans, Louisiana

The Underwater Obstructions Advisory Committee was formed a year ago and held their first meeting in Montgomery, Alabama. At that time we defined several problem areas that were interrelated between the oil industry and the commercial fishing industry and we established a working subcommittee based in New Orleans to attempt to resolve some of the problems. The primary area of trouble was the underwater obstructions, underwater casing stubs, underwater well completions. We also decided to review geophysical activity and pollution at the same time. There were several meetings held at which time many of the various factors involved in both industries were discussed freely-openly. As a result, we have attempted to resolve the problems. The geophysical activity apparently was not causing much trouble at thistime; therefore, we shelved it for any later consideration. The area of oil pollution will be discussed in a moment. The primary trouble area was the underwater casing stubs. There were many suggestions and many avenues that were suggested as a solution to this, such as marking with buoys,or cutting them off below the mudline. We resolved to try a method which would call for a revision of OCS Order No. 4 which would allow the majority of the presently existing casing stubs to be removed and those that weren't removed to be marked with a buoy provided, of course, they were in an area that could be marked, would be technically feasible, and would be acceptable by the Corps

of Engineers and the Coast Guard for marking. We are in the process of forwarding our recommendations for the revision of this order to Washington. Unfortunately, we couldn't forward it as soon as we had anticipated. We were hoping to get this forwarded much earlier than this but we have encountered some technical problems and some internal problems connected with it; however, these have been mostly overcome and we are expecting to get this forwarded to Washington by the end of this month. We anticipate that it will be favorably received. We are receiving the cooperation of the Bureau of Land Management and the Bureau of Comm ercial Fisheries with their recommenddations and we are hopeful that the proposed revision will be approved. Naturally, we cannot give any assurances that it will be since it does rest for decision making at a high level in Washington. If not approved, we will revert back to some of the other recommendations presented before the subcommittee and we will pursue those. We will solve the problem one way or another. In attempting to solve this problem we did come upon a possible side benefit in a shear pin device that has been submitted to the Bureau of Commercial Fisheries for evaluation and testing. It is possible that this device, if it proves workable, could assist the commercial fisheries people in their trawling operations in whatever they might happen to hang up on--not necessarily just underwater casing stubs. It could be bad bottoms, wrecks, pipelines, and so forth. It is my understanding this device has has not yet been tested as they have not had the opportunity.

We are also thinking in terms of appealing to the Coast and Geodetic Survey to assist in identifying some of the bad bottom areas of wreckage to see if perhaps they can't remove some of it. It is our understanding they

have two ships operating in the Gulf dragging the fairways and anchorage areas first, to remove any obstacles in those areas, and it is possible that they can also cover some of the other troublesome areas that we have been able to isolate in a general way. We do not have specific areas, but insofar as this is concerned we need more input information as to these areas where there is known wreckage and trash on the bottom. We are appealing to you and to any of your constituents to supply the information to us as to the location of any wreckage on the bottom that is giving you trouble. We don't know whether anything can be accomplished but at least we can try.

The area of pollution appears to be pretty well under control although there are some areas that are still giving us some trouble. We are quite active in our own agency in attempting to control any pollution by preventing it from originating and we have been somewhat successful in our venture. There are other agencies also working very closely with this, the Coast Guard, the Federal Water Pollution Control Administration, the various state agencies as well as the commercial fisheries group and we believe that much progress has been made towards pollution abatement. Naturally, all these problems have not been yet solved.

There has been one other trouble area that I have been advised of just recently and is the first information I've had to this effect. It has been in the last week or so that I received a complaint that the fishermen are losing anchors on pipelines. My understanding is that a number of anchors have been lost when the shrimp boats have been riding out a storm dragging anchor and have lost anchors on pipelines. I do not have much information on this. If this is true then there are some possibilities of how this could be corrected. Perhaps we could require a burial of all pipelines where technically

feasible. We have required that all pipelines that were not buried would have to be proven to us that they were not an obstruction to trawling operations. However, if the loss of anchors is presenting a problem I would like to know more specifically about this and request that any of you that have any information concerning this please route it through us to the subcommittee where we can try to resolve an answer to this problem if it is indeed a problem. We have one possibility which as I say is burying the line or lines, the other possibility is to bury the lines deeper. I am in the process of receiving a report as to the technical feasibility as well as the economic feasibility of burying the lines an additional foot deeper. In other words, burying it 4 feet deep rather than 3 feet deep; however, I don't know what the problems are connected with this or the cost involved but we are looking at it already although we have not identified it as a particularly large problem or one of magnitude as yet. We are considering it.

This is the bulk of the information as the results of our working sub-committees and we hope that we will have a more favorable report concerning the underwater obstructions at the next semiannual meeting. Thank you.

GULF STATES MARINE FISHERIES COMMISSION
October 3-4, 1969
San Antonio, Texas

"REPORT OF THE ESTUARINE TECHNICAL COORDINATING COMMITTEE"

Dr. Ted Ford, Chief, Oysters & Seafood
Louisiana Wild Life & Fisheries
New Orleans, Louisiana

The proposed "Marine Resources Conservation and Development Act", H. R. 17369, introduced by Congressman Ed Willis of Louisiana was explained and discussed by Mr. George Arceneaux, Special Counsel to Governor McKiethen. The bill applies to proceeds derived from the base of Outer Continental Shelf lands be used for marine resources conservation and development programs. The adjacent coastal states would receive 37.5% of the proceeds for highways and schools. The bill gnerally tracks the Mineral Leasing Act of 1920. A resolution will be referred to the Gulf States Marine Fisheries Commission Resolutions Committee.

The Committee discussed the needs for establishing a separate committee, or subcommittee, on Mariculture in view of the substantial interest among the Gulf and South Atlantic States. It was decided that a Mariculture Sub-committee would be established since it would be conerned largely with estuarine dependent forms, the membership to be comprised of one representative from each public or private group in the Gulf and South Atlantic States, and it would meet once a year at one of the facilities where work was in progress, at some time not to conflict with the regular Gulf States Marine Fisheries Commission meetings. The known interested groups will be contacted.

A status report was received from the Standards Sub-committee for the Gulf of Mexico Estuarine Inventory and Study project. This sub-committee has done a fine job and will continue to function in order to

handle problems arising in the recordation of data for computer analysis.

The committee decided that it would be a good practice to have an annual P.L. 88-309 coordinator's meeting immediately prior to the spring meeting of the Gulf States Marine Fisheries Commission meeting, at which time administrative practices, existing and proposed projects, and project activities could be discussed and inspected.

The organization of the Gulf States Council on Wildlife, Fisheries and Mosquito Control was announced. Its purposes and functions were discussed and technical representatives of the respective Gulf States were encouraged to participate in this group. Consideration will be given to coordinating its scheduled annual meeting in conjunction with one of the Gulf States Marine Fisheries Commission regular meetings.

The current series of public hearings provided for by the Clean Waters Restoration Act of 1966 were discussed. It was considered that each of the states should make their own presentations.

The committee adopted a resolution commending the Directors of the Atlantic, Gulf and Pacific States Marine Fisheries Commissions for their fine efforts toward the extension of P.L. 88-309 and will refer it to the Resolutions Committee of the Gulf States Marine Fisheries Commission with a recommendation for its adoption by the Commission.

The title of the Estuarine Film was discussed birefly. Afterwards, the Estuarine Film Sub-committee, in executive session, agreed upon three suggested titles which will be recommended to Elliott Macklow, Chief, Audio-Visual Services, B.C.F., for consideration in lieu of the originally proosed title, A Promise to Pete." They are as follows:

A. Estuarine: Seaside Nurseries

B. Estuaries: Ocean Breadbasket

C. Estuarines: A Promise to Pete

Various members of the committee and some of our departmental staff, as well as others, think the word "estuary" should be in the title.

The committee's attention was called to the serious implications associated with thermal pollution and the increased number of power plants scheduled for installation in future years. The committee took this under advisement.

GULF STATES MARINE FISHERIES COMMISSION
October 3-4, 1968
San Antonio, Texas

"ASSESSMENT OF COASTAL PELAGIC SCHOOL FISHERIES" (Slides Shown)

Dr. John R. Thompson
Assistant Base Director, Bureau of Commercial Fisheries
Exploratory Fishing and Gear Research Base
Pascagoula, Mississippi

Some years ago a resolution of the Gulf States Marine Fisheries Commission encouraged us to start looking into the vast, but unquantifiable stocks of coastal pelagic school fishes as alternate sources to menhaden for meal and as potentials in their own right. Although we had encouraged this resoltuion, we found we had a serious problem on our hands. How were we to assess these stocks?

Traditionally, fishery biologists depend for stock assessments on (1) commercial fishery landing statistics, (2) population studies, and (3) intensive knowledge of life histories. Ironically, it is when the resources shows signs of overfishing, that the best stock estimates can be made.

But with our Gulf pelagic shcoolfish, we had no commercial landings, no population studies, no life history knowledge. All we had from a few years of aerial surveillance was a general impression of hordes of fish schools. We went out on a limb in putting an educated guess on the quantity present at only one time off the west Florida coast. It was time for us to start "putting up or shutting up." We, therefore, knocked our heads together to come up with systematic approaches to (1) search and detection methods and (2) assessment methods. Although still in the methodology or technological phases, rather than in the "scientific" phases. we have high hopes of achieving

a real breakthrough in pelagic stock assessment through a multifaceted approach that can best b explained in historical perspective through the use of slides. Involved are uses of (1) aerial survey cameras and a variety of film types, (2) accurate sonar measurements of schools simultaneous with photography, (3) follow-up capture and physical quantification of the school by commercial vessels, (4) different approaches through film analysis, (5) spectroradimetric measurements of specific species for school identification, (6) image intensifiers for nighttime searches for shcools.

GULF STATES MARINE FISHERIES COMMISSION
October 3-4, 1968
San Antonio, Texas

"COATINGS FOR THE MARINE INDUSTRY" (Slides)

F. R. Charlton, Manager, Heavy Duty Maintenance Sales
Cook Paint and Varnish Company
Kansas City, Missouri

I'm happy to be here to tell you about some of the things my company is working on to help your industry.

Salt water is one of your problems, and here we feel that we have offered you an answer and its a relatively long term one for stopping corrosion on steel hulls.

This slide shows conveying equipment, these may be belt conveyors, bucket conveyors, men passing fish hand to hand. The industry people, like Link Belts, and a number of others make conveying equipment, but unfortunately, they do not put paint that can withstand exposure to salt water, they put little better than a house paint. You go to Link Belt and say, "I'm going to use my conveyor where it will be exposed to salt water, how much more do you want to give me a marine resistant coating system?" The price immediately goes up 50%, and delivery lengthens 50%, neither of these things can you live with. We, in the industry, have fought with the equipment manufacturers trying to persuade them to offer you people a heavy duty coating system because your service is tough. Most of them will not respond to this, they say it holds up the production lines and give every reason why it doesn't work. Every industry is the same way, you look at the automobile in Iowa or Wyoming, they never rust out, look at them down here, they rust out in 18 months.

Does the oil industry give you better paint for the coastal area? No, they're just the same way with the handling equipment that you, in your industry, have to buy. Here we come in to help you with your equipment, we

can show you how putting extra coats of paint on this equipment that will help resist the marine salt water and tough handling you must subject it to. This has been done with new equipment, with an old conveyor it's very, very difficult for us to come in and do anything with them.

The lining of tin cans is one of the most complex industries that we know of, and we admit that we haven't solved all your problems. You cannot can, and I hope I'm not saying this wrong, can shrimp successfully without some pick-up taste and some loss of structure. I believe that this is a reflection on my industry, we haven't solved that one completely yet. You can buy shrimp that is palatable yes, but it still lacks that little something which those of you in the coastal areas get from fresh shrimp. The advent of the aluminum can saved weight, a number of processing improvements gave us fits because coatings which we had developed to go on the traditional tin cans wouldn't stick to aluminum. We are steadily working our way out of that too.

The plastic wrap which the housewife likes to see at the market presented yet other problems. Plastics which the FDA felt were suitable for wrapping food were not transparent, so the food was wholesome, but the housewife couldn't see it, in fact it made the fish look terrible, so she said, "Oh that looks bad," and she wouldn't buy it. Here again, we are gradually working with the FDA toward ways to make these transparent films attain transparency and still not leech contaminants, in their sense of the word, into the fish. You have a problem in the buildings in which you do handling and canning, walls are probably the worst offenders, you maintain scrupulous sanitary conditions, wash down with detergents one or more times a day and paint will just not take it. Now we can offer specialized wall coatings that will stand washing forever, that will not pick up stains and have a very smooth surface. We realize that labor is

one of the expensive things today and we are able to offer you these almost tile like finishes for the wall that you can paint on the get long life out of it, and not only that being able to put it over resistant coating is not restricted to new buildings. We feel that we have solved the problem of keeping walls clean for you. FDA, at this stage, tend to phase out, they say that we won't commit ourselves, but within reason you can put what you want to on the walls because the stuff is not so close that it will fall down in the can and get into the product, they always keep a ringer in there, and point out that, "by golly, if it does, you and the coating industry, and the canning industry are going right up in front of the judge."

There is another Government organization which we feel, and I'm sorry that the fishing industry doesn't have its counterpart, and this is - the Meat Inspection Department - of the Department of Agriculture. They are most helpful, we we will submit samples of the wall paint I was just talking about, and they will come right back and they will say, we recognize this as being suitable for walls and ceilings of Meat Inspection Departments premises. This is something the FDA will never give, the FDA takes the completely negative attitude that we tell you what you can use, but we won't give it our blessing. Meat Inspection goes a little further, it gives guidance and helps people like yourselves.

Ceilings in general don't present too much of a problem, we go along with the conventional house paint type of thing if you have a high humidity, steam rooms and son on, treat your ceilings the same way as your walls with your wall coatings that I mentioned. Floors - floors are another additional problem, wood ones like wood tables take a beating, the ladies come in with their spike heels and they will penetrate any coating I'll put down, there isn't too much we can do with wood floors. But with concrete floors we can help you considerably.

Coatings for the Marine Industry

Concrete suffers from lack of chemical resistants to many of the stronger cleaning detergents. We could give you coatings which brush or roll onto concrete to make them resistant, we can offer you coatings where you can rebuild concrete floors that have worn away from constant passage, or broken up and disintegrated from old age and detergents. These are maintenance products which your own janitorial type of staff can put down to rebuild your concrete floors to protect them without having to go to an outside contractor who will say I'll have to lay two inches of concrete.

Those of you who are at this hotel may have noticed that the floors in the bathrooms here are something new. This is a radically new approach to floors where you put down a liquid palstic and you literally squeeze it on the floor and its half-way between being solid and half-way between being almost like a sheet of rubber. And talking of this, I would like to withdraw a little bit of what I said about wooden floors, in that, if the floors are in good condition, you can lay this type of floor over them. We are now talking about, not so much protective coating, but an overlay. In the case of the floors here in the hotel, what they do is squeeze down a base coat, they sprinkle flakes of paint on it, then cover with a clear glaze. You, in the industry, can dispense with the plates in the middle, its just an addec cost and not necessary. The abrasion resistance of these floors is astronomical. For those of you who spend some of your time as I do girl-watching - look down and see what the itty bitty spike that is holding up a 110 pound girl is doing. You start calculating on your slide rule what the pressure of that heel is on the floor and you find that it's several thousand pounds. You can have these lovely girls walking over these plastic floors and not leave heel dimple marks on them. They are a radically new development, the price is now down to a realistic one, but when

they first came out people were charging about the same as carpeting, so many dollars a square yard,now they are down to the order of $5, or perhaps $10, per square yard. One thing I would tell you - you see the high gloss on it, and you say,"What is the chance of skidding on this?" Skid resistance is remarkably good. If you feel that you have particular areas where skidding may be a danger you just add some sand to that top glaze coat. Before I close I would like to say a little bit of what the coating industry can do for the ships that go out to sea to gather these fish, crustaceans and mammals. It used to be the case traditionally that you had someone painting day after day, but nowadays ships go to sea with crews of only 10 or 12 people. These 10 or 12 are kept busy enough with other occupations, even some of the later ships coming out of Japan today have not paint lockup on them. Today we can offer you systems for inside and outside of a ship that have service lives of 5 to 10, even 15, years compared to the traditional, almost zero life where you painted it every 3 weeks, or every time you turned around. I won't go into details of this, I merely want to inform you that these things are available. We have developed fire-retardant paints down to the almost typical household wall paint where you can go out and use it on crew quarters and so on. They swell up to several inches thick and form a carbonacious deposit that delays, it does not stop, the spread of fire. It delays it till your fire-fighting people get after the fire. The insurance industry are beginning to recognize this as a legitimate reason for reducing your premiums. The basic philosophy is that delaying the fire will often save the building, those few minutes of grace. That, gentlemen, I think covers a few of the contributions that our industry is making to your industry. I think I have pointed out some of the places where we have failed, but here we are still trying. Thank you.

GULF STATES MARINE FISHERIES COMMISSION
October 3-4, 1968
San Antonio, Texas

"PROGRESS REPORT OF THE SPORT CRAB FISHERY SURVEY IN THE GALVESTON BAY SYSTEM"

Larry Elam and Lynn Benefield
Texas Parks and Wildlife Department
Austin, Texas

Texas initiated research studies on the blue crab, Callinectes sapidus, in 1962. Data on seasonal trends, relative abundance, growth rates, movements and environmental factors are used to study the blue crab population. Commercial landings are tabulated by statistical agents and in some areas catch per effort data are obtained from crab fishermen. In 1967 the commercial crab catch was 2.7 million pounds valued at an estimated $213,000. The commercial fishery has been studied in Florida and several states on the Atlantic Coast but research on the sport crab fishery has been neglected.

In any consideration of a management plan for the crab fishery, data on the amount of fishing and value of the "Sport Crab Fishery" would be required. The Parks and Wildlife Department began a study of the recreational crab fishery in April 1968. The objectives of this study are to determing seasonal trends in sport crab fishing, catch rates, areas fished and monetary values associated with the fishery. The survey is scheduled to end in December 1968.

PRECEDURES

A stratified sampling system is being used to conduct monthly counts and interviews at selected crabbing sites in the Galveston Bay area. The sites surveyed are classified as areas 1 thru 6. Areas 1, 2, & 3 are grouped to form the upper census run; areas 4 & 5 the lower census run.

Initally, few sport crabbers were encountered in Area 6, and sampling after June was infrequent. Utilization by sport crabbers and easy accessability by automobile were criteria used in selecting sampling sites.

One upper and one lower run interview is conducted each month on week-days. Information requested during the interviews included county or state of residence, cost of trip, type of bait used and number of crabs caught. Three or more total counts (all areas) of crabbers are made each month. On selected days, 2 separate counts at four hour intervals were made. Data from these samples will be used to compute total effort for that day.*

RESULTS

Data on the number of crab fisherment encountered per month was extrapolated to testimate total fishing pressure within the bay system. Monthly totals were compared as to weekend days against week days and the upper run against the lower run. To date 4,317 crabbers were counted on the upper run, 400 of which were interviewed. On the lower run 428 of the 3,024 crabbers encountered were interviewed. Extropolated totals for the upper and lower run were 49,678 and 38,076, respectively. The largest number of individuals encountered in any one sample was 600 crabbers on July 4, 1968. The largest number interviewed was 240 crabbers on July 11, 1968.

90 per cent of all crabbers interviewed were from Galveston or Harris Counties (survey counties) indicating that sport crabbing is mostly a localized recreational activity. Twelve other counties were listed, the fartherest being Ector County. Seven groups of crabbers interviewed were from out of state.

Chicken was the most popular bait (49%), but beef and scrap fish were also used.

* Preliminary investigations indicated that an average crabbing trip lasts from 3-4 hours.

The cost of each trip ranged from 57¢ per person to $1.13 per person. An estimate of total money spent for sport crabbing in the five month period from April-August was $71,380.40.

Comparison of commercial and sport crabbing landings in the Galveston Bay System

Month	Commercial Catch (Pounds)	Extrapolated Sport Catch (Pounds)
April	42,345	5,088
May	202, 591	16,896
June	110,073	21,134
July	197,820	62,152
August	239,894	14,386
Totals	792,723	119,656

GULF STATES MARINE FISHERIES COMMISSION
October 3-4, 1968
San Antonio, Texas

"MIGRATORY PATTERNS OF FISH & SHELLFISH THROUGH A NATURAL PASS"

B. D. King, III
Austin, Texas
Texas Parks and Wildlife Department

This research project, Study of migratory pattersn of fish and shellfish through a natural pass (Popularly called the Cedar Bayou Project within the Parks and Wildlife Department), is conducted by Department personnel with the financial assistance of the Bureau of Commercial Fisheries under the Commercial Fisheries Research and Development Act of 1964.

The project is conducted in two phases, the first involving the study of the movement of the larval and postlarval stages of the commercially important fish and crustaceans of the Texas coast from gulf to bay through Cedar Bayou Pass, the second phase being a study of the subsequent use of the pass by emigarating juvenile and adult crustaceans.

The species under study are the brown, pink and white shrimp, blue crab, redfish, drum, flounder, sheepshead and speckled trout.

The objectives of the first pahse, relating to larval and post-larval stages, are the determination of the seasonal movements, the relative mangnitude of diurnal and nocturnal movements, the vertical and horizontal distribution of organisms within the pass, and the evaluation of environmental factors which may cause or affect migration of larval fish, shrimp and crabs from the Gulf of Mexico into Texas bays and estuaries.

The objectives of the second phase, involving juvenile and adult

shrimp and crabs, are the determination of the seasons, dates and nocturnal and diurnal sequences of juvenile shrimp movements from bay to gulf, the relative magnitude, size range and species composition of successive waves of migrating shrimp, the times of adult crab movements through Cedar Bayou Pass and the direction of travel, and the evaluation of environmental factors which might cause or affect these movements.

Presentation of slides illustrating descriptions of Cedar Bayou, the sampling gear, and their methods of operation (extemporaneous).

Although relatively few of the postlarval samples have been processed to date, gross examination indicates the occurrence of the following events:

Crab megalops entered the bay during all months; the rate of influx increased during the mid-February and again in mid-March.

Postlarval grooved shrimp were also taken throughout the period from January through August; peak periods of immigration occurred on March 7 and March 26 through 28.

White shrimp were first noted on May 15. There was no discernible peak in immigration but the influx of this species was relatively steady.

The shrimp trap samples indicated that the first emigration of juvenile brown shrimp occurred on May 14; peak emigration of this species occurred on the nights of May 28, 29 and 30 with a smaller peak on June 12 and 13. In each instance, movement occurred on night outgoing tides and the

shrimp were most numerous on the surface in mid-channel.

Little data was obtained from the crab trap due to maintenance problems, but visual observations indicated a gulfward movement of adult female blue crabs from April 23 through April 26.

GULF STATES MARINE FISHERIES COMMISSION
October 3-4, 1968
San Antonio, Texas

"FISHERIES DEVELOPMENT IN THE FLORIDA AREA"

Dale S. Beaumariage
Michael Wollam
Marine Research Laboratory
Florida Board of Conservation
Tallahassee, Florida

Our laboratory's facilities at the Maritime Base on Bayboro Harbor in downtown St. Petersburg consist of adequate deep water dockage for our research vessels, two occupied office buildings, and an unoccupied storage building. We are conveniently located across the street from the Albert Whitted Airport, adjacent to the U. S. Coast Guard Air Station, and just down the street from the new administrative offices of the U. S. Bureau of Commercial Fisheries. We feel that we are thus prominently situated for an institution engaged in the dynamic field of marine science.

The heart of any research organization is its library. As important as the detailed collection of scientific data, is the correlation of that information with what has been previously learned. Our reference library boasts of 936 books, about 9,3000 reprints, contributions from over 100 journals, and various microfilms, pictures, etc. all of which pertain strictly to the field of oceanography. Our laboratory has itself contributed some 240 publications to the scientific community. Much of our Department's earlier work was confined to inshore tidal waters and consisted of contractual services with Florida's various educational institutions. Later we were able to centralize our research activities at Bayboro Harbor where we have been for the past twelve years. We finally gained the capacity to study the entire marine evironment when

in 1964 L. C. Ringhaver donated his 1100th shrimp boat to our laboratory for scientific research. Florida's continental shelf was now no longer out of reach as the 73-ft. R/V HERNAN CORTEZ is capable of sampling in offshore waters in both fair weather and foul.

This vessel has recently completed a 28 month monitor of the bottom sea life out to 40 fathoms along Florida's west coast. Project Hourglass was designed to gather information on the seasonal fluctuations in the fish and invertebrate benthic fauna as it is related to depth, temperature, and other environmental changes.

Stations A through E on the top leg, and station I through M on the bottom leg were fishery stations. They were sampled each month - at night - with a dredge, trynet, and plankton net. Stations F and N, and G, H, O, and P were Red Tide stations. Here, water was collected at various depths with a van Doren sampler and rushed back to the laboratory for a live analysis. When time permitted at the end of the month, fishery stations B. C. and D were again sampled with the same gear during the day - to compare any diurnal variation in the animals collected.

The Hourglass Cruises have yielded a wealth of ecological information concerning the seasonal abundance, distribution, growth rates, spawning periods, food preferences, etc., of the animals encountered. Such information will serve as a foundation for life history studies of those species presently of commercial importance in the southeastern Gulf, as well as those which show commercial potential.

Our fish fauna is quite extensive in Florida, many of the species found in our waters have special economic significance in other states at some time furing their life cycles. The fishes collected during Hourglass

enhanced our fish reference collection by some 50 new species, giving us an approximate total of 600 species inhabiting Florida waters. Of the 157 species taken during this program and catalogued thus far, 18 are of current commercial importance on the market, five are currently used for bait or fish meal, and 46 show potential importance under one of these categories.

The Hourglass Cruises have also given us a broad spectrum from which to build an invertebrate reference collection. Todate we have accessioned some 10,000 specimen lots representing around 1,6000 species. We feel this gives us one of the most well rounded invertebrate collections in the southeast. It certainly forms the basis for numerous ecological evaluations of several valuable species of molluscs and crustacea, as well as those indirectly valuable as part of the food chain.

Often the meticulous plodding of scientific research frustrates the layman who is depending upon positive statements with which to formulate plans, and hopefully, profits. The only way I can explain such seemingly esoteric sampling as plankton tows is to show a few examples of the bizarre connections of the composition of plankton with the life cycle of some important animals.

The drawings shown here look perhaps like the doodlings of a science fiction illustrator. They are in fact examples of the zoeal stage of a crab's life cycle. Crabs which you often encounter in a more easily recognizable form such as the adult stone crab here, or the widely known blue crab.

If you were to view this wierd looking bug through the bottom of your glass you would probably swear off - or at least switch. Actually it is the phyllosome stage of the larval life cycle of one of Florida's noblest invertebrates, the spiney lobster.

Knowledge of the distribution, abundance, and composition of plankton, the duration of various larval forms within it, and the environment with which they exist is quite important. For example, the success of a particular species in any given area is often dependent upon its adaptions to external pressures, such as temperature, salinity, nutrients, and shelter. Its life cycle is usually most vulnerable during the time it exists in a planktonic form.

Our studies are not confined to larval life histories, much of our basic fishery biology deals with the adult. It has been said that fish never quit growing, which is generally true. However, their growth is very rapid when they are young, slows as they grow older, and is eventually surpassed by a loss of metabolic effeciency as they die. Since fish are cold blooded, their rate of growth is a function of the water temperature, the realted abundance of food, and subject to other stresses such as spawning.

Such variations in growth may be observed in the hard parts of the fish such as in the scales or bones. Here we see magnified, a middle ear bone (or otolith) from a red grouper. Notice that the annual variations in growth are reflected by the amount of calcium deposited at a slower rate in the winter, forming "rings" (or annuli) similar to the rings in the trunk of a tree. By counting these rings we may determine the age of the fish, and by measuring the increment between each ring we can estimate the growth rate. Back calculation of the actual length and weight of the fish from which the otoliths were taken yields the real growth rate.

The red grouper is peculiar in that almost all the younger fish are functional females which slowly change to become functional males later in life. This slide shows a magnified section of tissue from the roe of a five

year old, 18 inch, female red grouper which is just beginning to develop male sperm crypts.

The red grouper is an important commercial and sports fish in Florid's offshore waters and knowledge of its intricate life history will eventually be required to insure safe maximum use of its stocks. I might add that we are now conducting a similar study to understand the growth rates, spawning potential, and seasonal population fluctuations of Spanish and king mackerel.

Florida, like her fishing industry, is not ignoring our desirable shellfish. In fact, through industries cooperation we are beginning to gain greater knowledge of previously neglected stocks of shellfish like the sun-ray venus clam shown here.

Mr. George Kirvin of Apalachicola allowed one of our biologists to conduct growth investigations and to study his most effecient method of harvesting this clam in the open Gulf of Mexico at depths of up to 20 feet. The unique dredge uses water pressure to loosen the sediment and clams similar to the action achieved by the "tickler" bars on the roller of a frame trawl used in shallow water bait shrimping.

With the help of federal matching funds under PL 88-309, our laboratory has acquired a clam barge which emplous the same type of dredge head but which feeds the catch onto a continuous picking belt. This method of harvesting the hard shell or quohaug clam has proved most effecient in New York. We wish to determine the effect this type of harvester will have on various types of shallow bay bottoms in Florida and to conduct some exploratory fishing for other types of shellfish.

All of this of corse deals with the nomadic hunt and capture

techniques which have historically been the established method of man's quest for food products from the sea. One of the earliest, and still successful, of man's attempts to cultivate his seafood is the replanting of oyster shells to insure an adequate substrate for the settling of oyster spat.

Our Oyster Division at Apalachicola continues these operations, but our St. Petersburg laboratory has brought the highly prized shellfish indoors. We have conducted studies using various nutrients and find that we achieve the greatest gorwth (as much as 1200% increase in glycogen within six weeks) with corn meal suspended in sea water. The difference in meat volume from one of the normal feeding experiments is evident here.

The next step is to conduct a commercial feasiblity study using the two large circular outdoor tanks shown here. In conjunction, temperature control rooms are being constructed to find the optimum temperature and salinity under which oysters will flourish.

We have also conducted pond rearing studies on pompano, the results of which have recently been published. This slide shows our originally designed aquarium system which is being used in an attempt to rear juvenile pompano and sea bass from the egg. Again, control of the temperature and salinity as well as the pH, oxygen content, and food is of crucial importance.

We also take pains in growing animals which are not beneficial as food. By culturing organisms which are harmful to valuable marine life in their natural environment and which could be disasterous to a mariculture experiment, we learn at which point in its life cycle the harmful organism is most vulnerable to control measures.

Here we have cultures of fungal parasite which infects oysters. This parasite is in itself not lethal to the oyster and is in no way

harmful to man. However, it is a chronic infection which may remain within and spread throughout entire beds of oysters without causing death. Then when some slight adverse environmental change like a rise in water temperature or a sudden drop in salinity occurs, this causes a stress under which the weakened oysters quickly succumb.

Here is a picture of an infamous little organism which is normally found in sea water in minute quantities. This is the dinoflagellate, Gymnodinimum breve, or the Red Tide organism. When this unicellular pest undergoes a population explosion, increasing its numbers into the millions in a quart of sea water, we experience what is know as a "bloom".

These blooms turn the water to a rust color, hence the name Red Tide. The water is toxic within these concentrations and sea life in the area may be killed. When the kills occur close to shore or are blown ashore, a very undesirable nuisance results.

We know that the blooms are triggered by certain conditions in the sea water and by specific nutrients carried in river runoff. As there are several complex biochemical pathways involved, the prevention is currently obscured. We are continuing to grow the organism in cultures and are monitoring the Red Tide areas in the hopes we may find a way to live with the menace.

I amy also mention the work which is being done at our field stations, in Stuart on Florida's east coast and in Key West. Spiney lobsters are of prime importance in both areas and have garnished consideration.

Here I have a slide showing an underwater babitat developed in Stuart for the collection of post larval lobsters, shrimp, or crabs. This particular habitat is anchored to the bottom, the porous leaves floating up to offer refuge to those postlarvae settling out of the plankton. These

leaves also can be suspended from a float to collect those stages which are still riding the currents into sheltered areas.

In key West these habitats augmented special plankton samples for the collection of postlarval lobsters used in rearing studies. Here you see various sizes of juvenile lobsters used in our growth experiments. So far it appears that about 2½ years are required to grow a lobster to marketable size from the first postlarval stage.

Presently, it seems that it would be too expensive to attempt raising lobsters in captivity. Therefore, we should try to provide the greatest opportunity for the postlarvae to settle in protected areas and grow naturally. Thus we are developing more types of underwater habitats which we hope will serve as a home for those juveniles that are annually wafted to our shores from the Caribbean.

The variety of the work carried on under the auspices of the Florida Board of Conservation Marine Research Laboratory typifies the versality of our department in meeting the challenge presented today by the wide open field of oceanography. I have presented an all too cursory look at the intricacies involved in some of our marine research. I have some pamphlets with me on our current research activities which some of you may wish to peruse at your leisure. I also have our list of publications should anyone have a specific interest or require further detailed information.

GULF STATES MARINE FISHERIES COMMISSION
October 3-4, 1968
San Antonio, Texas

"PROGRESS OF FEDERAL AID COMMERCIAL FISHERIES PROGRAM OF THE GULF STATES"

I. B. Byrd, Federal Aid Coordinator
Bureau of Commercial Fisheries
St. Petersburg, Florida

Federal funds totaling $1,022,000 are allocated annually to the five Gulf States under the Commercial Fisheries Research and Development Act, (PL 88-309), the Anadromous Fish Act (PL 89-304), and the Jellyfish Act (PL 89-720). These programs - particularly PL 88-309 - have provided the means for cooperative State-Federal research and development efforts which are essential for the proper management of the commercial fisheries resources of the Gulf.

PL 88-309

The $950,000 allocated annually to the Gulf States under PL 88-309 has been used effectively for projects which will help to encourage the optimum use of our fishery resources and insure an adequate, dependable and diverse supply of fish and shellfish products. Director Crowther 1/ has said that: " - - State research and development, if adequately supported, could well be the key to the survival of important segments of the commercial fishing industry which produce, process and market high quality fish and shellfish from coastal, estuarine and inalnd waters."

Some of the major accomplishments of the PL 88-309 program in the Gulf States are as follows:

The cooperative Gulf of Mexico estuarine study is progressing on schedule. Most of the field work for this study will be

1/ U. S. Department of the Interior Circular No. 286, "Commercial Fisheries Federal Aid to States."

completed during this fiscal year. This is the most exhaustive study of estuaries ever attempted on such a large scale utilizing standarized methods and procedures. The values of the Gulf estuaries are being clearly defined and the biological, hydrological, and sedimentology data obtained as a result of this investigation will serve as the basis for the future management of these valuable areas.

The cooperative Gulf of Mexico estuarine films will provide documentaries on estuaries which will be of tremendous importance in creating a public awareness of the significance of estuarine areas to the Nation's fisheries. The shooting of the films has been completed and it is anticipated that they will be completed and available for distribution by June 30, 1969.

A coastal experiment station consisting of 21 ponds varying from 1/4 to 4 acres in size for a total acreage of 23 acres is near completion in Texas. In addition, 16 experimental ponds, 1/4-acre in size, have been completed by Louisiana. These experimental ponds in Texas and Louisiana provide the States with some of the best - if not the best - facilities for marine aquaculture research in the Nation. Alabama has also constructed an experimental pond for marine aquaculture.

The State of Texas has constructed a 72-foot exploratory fishing vessel, Western Gulf, which is being used to complement the research by the Bureau's exploratory fishing base in the western Gulf and to monitor fish and shellfish populations in the State.

The seafood marketing projects in Florida and Texas have had a

tremendous effect on the sales of seafood in Region 2. This has been reflected by the fact that seafood production and prices in Region 2 have remained level or expanded while a reduction of production and prices have resulted in most of the other States of the Nation. These State marketing programs have also greatly supplemented and complemented the Bureau's marketing efforts. Mississippi's study of coliform bacteria and E. coli on polluted and unpolluted oyster bottoms has provided information which could increase the State's oyster production by about 100,000 barrels valued at $1,500,000 annually. Project results indicate that the oyster producing areas in lower Biloxi Bay could be opened seasonally. In addition, oysters from the polluted areas of the State can be moved at a feasible cost to selected relay areas for depuration which is normally completed within 10 days. A total of 13,900 barrels taken from closed beds were moved to unpolluted depuration areas in 1968 at a cost of 50 cents per barrel. The oyster fishermen then harvested more than 90 percent of these. The planting of shells for oyster cultch material in Louisiana and Alabama under Sections 4(a) and 4(b) of the Act has significantly increased oyster production in these States. In fact, the Federal funds allocated to Louisiana under Section 4(b) (Disaster section of the Act) provided the impetus for the recovery of the oyster industry of the State which was almost totally destroyed by Hurricane Betsy.

A similar recovery of the oyster industry of Alabama is expected following the planting of cultch material to establish new seed

beds in Mississippi Sound to replace those which were destroyed by unknown causes in 1967.

Oyster producing areas have been greatly expanded in the Appalachicola area of Florida as result of the establishment of new permanent-type artificial oyster reefs.

Three public landing facilities have increased the efficiency of oyster fishing in Alabama by providing suitable docking facilities for commercial oyster fishermen.

A procedure for the raft culture of oysters has been perfected in Alabama. However, the procedure is not considered practical at this time for general use because of the limitation of suitable areas and the high cost of production.

Research in Florida on the harvesting of clams and the evaluation of this harvesting on the marine habitat are expected to aid in the development of a valuable clam industry in the State. Results to date indicate that clams can be harvested economically in Florida without significantly affecting the estuarine habitat.

Louisiana's oyster lease control monument project has placed over 9,800 acres of leased water bottoms under control plus an additional 30,000 acres suitable for leasing in the State. The accurate identification of lease boundaries and locations has greatly enhanced the State's ability to manage their oyster resources. In addition, this project is being received with much enthusiasm by oyster fishermen.

PL 89-304

Approximately $60,000 is allocated annually to the Gulf State under PL 89-304 on a 50-50 cost sharing basis for the conservation, development, and

enhancement of anadromous fishery resources. Unlike the PL 88-309 program, State matching funds may be in the form of real and/or personal property rather than cash. PL 89-304 funds are being used primarily for striped bass investigations in the Gulf. Alabama, Mississippi and Louisiana have completed surveys of striped bass habitats and are preesntly working on techniques for rearing fingerlings for the experimental stocking of suitable streams and estuaries. Alabama has successfully reared striped bass from fry to adult size in tanks and ponds. A conversion ratio (food to fish) as low as 1.1 to 1 has been obtained under experimental conditions. One of the primary objectives of these striped bass projects is to stock several hundred thousand striped bass in suitable streams and estuaries in an effort to establish a commercial fishery for this species.

Florida is using their PL 89-304 allocation to further study the American shad population in the St. Johns River in an effort to formulate techniques to manage and enhance this fishery.

PL 89-720

PL 89-720 provides for Federal cooperation with States on a 50-50 cost sharing basis to protect fish and shellfish resources utilized commercially and for recreation by controlling sea nettles and other such pests, and by controlling floating seaweed.

Mississippi presently has a project utilizing Federal funds in the amount of $12,000 annually to study the coelenterates in Mississippi waters. Florida has submitted a project proposal under the program to determine the abundance and movements of Portuguese Man-of-War and associated species along the Atlantic and Gulf coasts of Florida.

GULF STATES MARINE FISHERIES COMMISSION
October 3-4, 1968
San Antonio, Texas

"CREW TRAINING IN TEXAS"

O. M. Longnecker, Jr., Executive Secretary
Texas Shrimp Association
Brownsville, Texas

At the time I consented to talk about the Crew Training Program, or Proposal, in Texas at this meeting of the Gulf States Marine Fisheries Commission the Texas Shrimp Association was presenting our program to the Regional Administrator of the Manpower Administration, Department of Labor in Dallas, Texas. I fully expected by this time we would be setting up to begin the training of shrimp boat crewmen. As it is we are still working with a proposal, about the thrid or fourth in fact. I have almost reached a point that I fear the Texas shrimp boat crewman is destined to go through life unenlightened. I might pause here and recount some of the efforts in Texas to try to set up a crew training program. Considerably before my time in the Texas Shrimp Association and on-the-job training program was undertaken by the shrimping industry in the Brownsville area, and possibly at other points on the coast. The program met with mediocre success for reasons that I don't know. The teachers were boat owner-operators who had the problems of running their own businesses and most of them, I am sure, were not skilled teachers.

About four or five years ago the Texas Shrimp Association undertook to develop a vocational training program for shrimp boat crews through the Del Mar Vocational Institute in Corpus Christi, Texas. A very excellent program was developed by the Del Mar authorities, but we were unable to get it funded by any of the Government agencies mainly for lack of approval by

the Texas Education Agency and our inability to establish need through the Texas Employment Service, which lacked budget funds to make the necessary surveys. The Texas Shrimp Association made those surveys later on its own initiative and has developed information which has been interesting to the Department of Labor.

Soon after the beginning of this year we were contacted by Mr. Robert Wallace, who had associated himself with the James W. Fitzgerald Laboratories, Inc. of Annapolis, Maryland, and he later furnished us with a copy of "A Comprehensive Program for the Manpower Requirements of the U. S. Fishing Industry", dated February 28, 1968. It was proposed to begin with the shrimping industry in the Gulf of Mexico.

Bob Wallace is generally known throughout the gulf shrimping industry. He was executive director of the Florida Shrimp Association for awhile, and conducted two successful shrimp boat crew training programs in the Tampa, Florida area. While all of the people who completed his training programs did not stay in the shrimping industry they did go into marine oriented occupations which made the programs highly successful in the eyes of the Department of Labor which financed them under Florida Shrimp Association sponsorship.

Under date of April 8, 1968, the Fitzgerald Laboratories submitted a proposal, "A Comprehensive Program for the Manpower Requirements of the Gulf Shrimp Industry," known as the "Brownsville Project" because it was proposed to establish the first of several programs at Brownsville, Texas. This would be the pilot program. The proposal was submitted to Mr. Stanley Ruttenberg, Assistant Secretary for Manpower Administration, U. S. Department

of Labor in Washington, D. C. There was interest on the part of the Labor Department in a large number of dis-advantaged Latin-Americans in the Brownsville region who were classified as hard-core unemployed, the Latin-Americans being a minority group. By this time there was considerable interest generated in the program all the way around the Gulf of Mexico from Texas to Florida, and in April in a meeting in New Orleans a group of representatives of the shrimping industry from the several states were asked their feelings about a training program, or rather the first of several training programs being established at Brownsville. Their answer was that the need for trained personnel on the shrimp boats is so acute that, if a program can be started, its location is not too importanct. In other words, this was not a competative situation between ports. In the early summer there was considerable effort exerted to develop congressional support with contacts being made from the various states around the Gulf with their congressional representatives.

In July a third revision was filed with the Assistant Secretary and Manpower Administrator in Washington. We were given an appointment with the Regional Manpower Administrator in Dallas to discuss our program and be guided in its preparation in conformity with the proper application form. We were certain that we "had it made" this time as representatives of Fitzgerald Laboratories and the Texas Shrimp Association spent a day with the specialists in the Labor Department in Dallas. We encountered a couple of guide line problems which it was generally felt would be waived when an application to the proper authorities would be made. The first of these was a limitation of funding for MA-3 programs (which was the only class of training programs that were adequately financed and was the form we would enter our proposal under)--- limitation to fifty designated Metropolitan Statistical Areas. The fifty are

the big manufacturing type centers, but we proposed to point out that the fishing industry was overlooked when the criteria or guidelines were set up, and that our industry is important to the economy of the nation, and that we are able to guarantee jobs to the hard-core unemployed. The other guideline problem was the $1.60 per hour guaranteed minimum wage requirement. We were sure this would be waived when we pointed out that fishermen are specifically exempt from the Wage and Hour Law because theirs is a joint venture and they share in the proceeds of the catch; and we would supply dependable information to establish that crewmen earn considerably more than the established minimum wage for the number of days worked in the calendar year. We filed another proposal, the forth, I guess, on August 15, 1968 along with our request for the waivers. We were turned down on our application for a waiver of the necessity to be located in one of the 50 designated Metropolitan Statistical Areas by the National Alliance of Business men who laid down the guidelines, or ground rules, for the MA-3 programs. It was explained that if an exception was granted it would open the door to others, and there were not enough funds appropriated to throw the door open. This was the group that is headed by Henry Ford II as Chairman. We didn't get to the second problem.

Subsequently, we have had another conference with the Dallas Regional Office of the Manpower Administration after we found that we might circumvent the metropolitan area barrier by locating a training program within the Houston Metropolitan area which includes five countries. Freeport is located in one of them. This, we hope, will permit us to move along toward establishing a training program and permit us to work on the Brownsville program through other channels. After talking with the experts in the Dallas office again last month we feel confident that the industry, giving assurance of a

definite annual return to the trainee which exceeds the minimum standards of the Labor Department. A survey is being conducted by the Texas Shrimp Association in the Texas shrimping industry to establish what this figure should be. The propcsal will be presented through the Job Opportunities in the Business Sector (JOBS) and would be an MA-4 program. There is to be a meeting next week with the Freeport based industry to develop the program through the Freeport Shrimp Association.

The training program will be for Rigmen (to be called Mates) and would be under a contract between the Federal Government and the Freeport Shrimp Association to train 100 men in a two year period. It is much easier to increase rather than reduce the number of trainees after a contract is signed. Boat captains who would form a consortium will give powers of attorneys for their association to contract for them. Each contracting captain will guarantee a job for one of the men, when trained. The men must come from the Houston Metropolitan Area and they will work for those captains who contract for them for tegular or standard pay. No one outside the Freeport area can enter into one of the contracts and therefore the trainees will work on Freeport based boats for the first year. A captain does not lose his right to discharge a trainee for cause. However, he has contracted to supply a job for one year, and he must start over with another trainee if he discharges one. We think a trained man will be much more competant and therefore more desirable than untrained personnel.

We have already begun to hunt for some other government agency, outside the Labor Department, to finance the Brownsville program, on some other basis than the MA-4 type. All of the people at the various levels of the Department of Labor from Dallas to Washington have shown interest, in fact, enthusiasm, for the program and its objectives. We think they genuinely want

the program and have shown a strong inclination to help us find a way to get it established.

Last March, as a representative of the shrimping industry, I presented a paper at the "Conference on the Future of the United States Fishing Industry" at the University of Washington in Seattle in which I stated that manpower is the number one problem of the shrimping industry and that as boats and equipment improve there will be demand for trained personnel to operate them. Trained personnel will facilitate the operation of the boats, save fishing time, reduce break-downs and costly repairs. Trained personnel will give proper care and maintenance to the equipment and will generally improve the economy of the operation. It has been reported that the insurance companies which carry the risks on the boats are making it almost prohibitive to protect the boat investment because of the abuses and incompetent maintenance of the boats by irresponsible crews. It is hinted that as men become available who are certified as vocationally trained for a shrimp boat there will be allowances made to the employing boat owners by the insurance underwriters. Science is developing sophisticated equipment and techniques for the fishing industry that make up-grading of the boat personnel mandatory. Without trained personnel for the boats, progress will be delayed and many savings that could obtain will be lost. Vocational training for the crews of the shrimp boats is not only important, it is imperative, and we must develop not just one program, but a number of programs located around the Gulf to serve the entire shrimping industry.

GULF STATES MARINE FISHERIES COMMISSION
San Antonio, Texas
October 3-4, 1968

COAST GUARD ADVISORY COMMITTEE

CDR. Phillip Hogue
Chief, Search and Rescue
U. S. Coast Guard

Mr. Chairman, Director Colson, distinguished members, guests, and visitors, on behalf of Admiral Bullard, I extend to you his best wishes and express his regret that an urgent meeting with the Governor of Mississippi precludes his attendance today. It is a pleasure to meet with you and to discuss our mutual interests in the Gulf of Mexico.

As you gentlemen well know, the national interest in the sea is increasong tremendously each year. If you haven't read this week's issue of "Life", I would commend it to you, for it is a fascinating look at current and future exploration of the sea and its resources. If I did not know by any other means, I have been forced to recognize within my own service that our participation in oceanography programs will increase 30% to 40% in FY 1969 alone. As I read of the Coast Guard's national and international commitments for the support of research and development of ocean resources, I realize that we are on the threshold of a takeoff point for exciting progress, which cannot help but be of interest and benefit to you. Coast Guard experts are today wrestling with a 7 year program, working with industry and DOD to develop the requirements for construction, operation, Search and Rescue and salvage of underwater submersibles of every size and description. There are few rule books in existence, and when they are finally developed, we expect to have had an active part in their authorship.

It is of interest that on the 11th of this month the Manned Orbital Flight will operate with CG Aircraft and a BU Fisheries research vessel to photograph dyes and fish schools in the Gulf of Yucatan. As we plumb the mysteries of the sea and its depths, we expect to ease the problems of harvesting its resources. As a continuing part of government/industry teamwork, I intend to tell you how you can best help yourselves and also help the Coast Guard, from my point of view; and in return, I will be here for 3 days to get to know you better and to learn from you what we can do to help you from <u>your point of view</u>.

First, let me assure you that after the first of next year the 8th Coast Guard District will have replaced all of its old cutters with new vessels not long off the ways. We will have helicopters in the western Gulf at Corpus Christi for the first time. These are in addition to our units at Houston, New Orleans, and Mobile. New Orleans will replace their present equipment with new twin turbine helos, capable of reaching vessels farther from the shore than ever before. Within the next three months you will no longer hear the KIMBALL, MCLANE, AND CARTIGAN - instead - the RELIANCE,

VALIAN, DURABLE and DEPENDABLE - larger, faster and more capable than any of their predecessors. You know our relatively new 82' cutters, and these we have located to better serve you and the public.

As with ministers and clergy at Christmas and Easter, this is too fine an opportunity to miss conversing with you concerning Coast Guard problems in the Gulf of Mexico with fishing vessels. Quite frequently the Coast Guard is called upon to render Search and Rescue assistance to fishing vessels in the Gulf of Mexico. Reasons for such calls vary, but the vessels requiring assistance are either disabled, taking on water, or just plain lost due to navigaitonal error. It is realized that the Coast Guard does not become aware of all the distress cases arising throughout the entire Gulf of Mexico. If the Service actively participated in each and every case of distress in this Area, more vessels would have to be assigned that are available. There are other ways to achieve the same end result. This information is presented to inform owners and operators of means now available to greatly increase the Search and Rescue coverage in the Gulf of Mexico.

Communications

Effective communications is the backbone of Search and Rescue efforts. Without communications, assistance to the distressed vessel is often virtually impossible, and at best is seriously delayed. In the event operators become aware of distress traffic on any frequency, clear the channel and remain clear until all distress traffic is completed. Often the distressed vessel's transmissions are weak or difficult to read, and excess traffic on the channel rings the death knell for effective search and assistance or rescue.

Remember, your communications on a channel being used for distress traffic may cause the death of a human being, be he competitor or friend.

The use of citizens band radio equipment as the only means of communications on some fishing vessels has created an additional problem for Coast Guard units. The Coast Guard has no equipment capable of monitoring CB Transmission. On many occasions, the distressed vessel has been either unsure of his position or totallly lost. When such is the case, and when communications have been established with the distressed vessel on a Coast Guard emergency frequency, the assisting vessel can utilize his radio direction finder to home in on the distress and render assistance at the earliest practicable time. Installation of suitable radio telephone ship-to-shore equipment and correct usage of recognized distress frequencies would do much to increase the effectiveness of Coast Guard vessels and shore stations.

Frequently, owners and agents contact the Coast Guard for assistance in locating fishing vessels unheard for a substantial period of time. Often the vessel is reported as overdue, and the Coast Guard is requested to commence a search. Some of these have turned out to be bona-fide overdue vessels, but the great majority have been declared overdue merely because the operator failed to advise the owner of either his intentions or his actual whereabouts. It is suggested that each owner and agent

establish a definite schedule for communications inorder that the vessel location is known. The elimination undue search effort would then be the result.

Navigation

If position reports given by distressed vessels are any criteria, most fishing vessels in the Gulf of Mexico navigate by the seat of the operator's pants and the grace of God. Vessels report their position as so many hours from a given shore location; for example, "10 hours south of Freeport, Texas." Depending on speed of the vessel, weather and current conditions, and other factors such as reliability of compass headings, the vessel can, in actuality, be from 10 to 200 miles from Freeport. Depending on the severity of the distress, this type of position report may well result in the loss of the vessel with resultant loss of the crew, due to many variables effecting navigation of this sort. Use of latitude and longitude when reporting is one means of alleviating this difficulty. By far, the best means is the use of laran for fixing position. On 1 November 1968 additional installations of loran transmitting equipment along the shores of the Gulf wil make effective coverage of the entire Gulf a reality. Owners should take advantage of this and install loran equipment on vessels.

Compass reliability, although apparently ignored by many owners and agents, is the first and foremost tool of navigation. Boarding by Coast Guard vessels and units indicates that many fishing vessel compasses are not accurate. Compasses should be checked at least annually and at any time the vessel has yardwork done or new equipment installed. Vessels without accurate compass arebeing hazarded daily in the Gulf of Mexico. The solution to this problem is simple and relatively inexpensive when compared to the cost of a lost vessel. Scheduled compass calibration is a necessity.

Mutual Assistance

As was stated in the beginning, the Coast Guard does not become aware of all distress cases in the Gulf of Mexico, but those of which they do become aware invariably state there is no assistance other than Coast Guard available to them. However, upon Coast Guard arrival on scene, there is usually at least one other and most often many other fishing vessels in the area. The demand on the limited Coast Guard forces is so great as to require the establishment of a Serach and Rescue priority system. That is, the most urgent cases are handled first. It then follows that Coast Guard assistance to a disabled vessel is less imperative than assistance to a vessel fire or sinking. Mutual assistance of each other is a method by which Coast Guard forces may be freed to assist those in immediate danger.

Maintenance and Upkeep

The most requests for assistance are necessitatied by vessels either sinking or disabled. It is believed that many of the fishing vessels, particularly those vessels handled by agents or companies for owners far removed from the shore, are in such poor condition, both hull wise and mechanically, that even moderately severe weather and sea conditions hazard the vessel and the lives of the crew. Only a preventative maintenance and upkeep

program will solve this problem.

Medical Advice and Evacuations

Men who follw the sea are well aware of the problems encountered when persons are injured or become ill at sea. The master or operator is usually not qualified to render other than emergency treatment and must request advice from competent authority ashore. The Coast Guard does not prescribe medical treatment. All such requests are referred to the nearest U. S. Public Health Service Hospital in order that a doctor may determine the best possible course of action. When received, such adivce must be followed as closely as possible for the ultimate good of the patient. In the event medical evacuation by helicopter is recommended, the below listed procedures must be followed.

When the helicopter arrives in your area, change course into the wind and continue at standard speed. The helicopter will provide the basket/litter for use in hoisting the patient. Do not use your equipment. Do not allow your crewmembers to touch the basket/litter until it has grounded itself on your vessel. If the basket/litter has to be taken to the patient, first unhook it from the hoist cable. Do not move the basket/litter from beneath the helicopter with the hoist cable still attached. Upon removal of the hoist cable, do not attach it to any part of your vessel. A cleared area for hoisting is madatory. The aft section of your vessel will probably be the best position from which to hoist it. Take down or lower all possible antennas, booms, rigging, flag staffs or other obstructions.

Salvage

The Coast Guard is frequently called on to render assistance to vessels which are in no immediate danger and in instances where commercial salvors have either arrived on scene or have indicated a willingness to attempt salvage. The Coast Guard is prohibitied from interfering with commercial enterprise by law. Therefore, the Coast Guard position in such cases is such that they are damned if they do and damned if they do not assist. Normally, the Coast Gurad vessels will proceed to the area of the distressed vessel and standby to render assistance to the personnel on board if conditions worsen to the degree that lives are endangered. The Coast Guard is not sufficiently equipped to attempt large salvage operations.

The Coast Guard stands ready and willing to assist all those in difficulty on navigable waters. However, there are limitations to its capability. Owners, operatiors, and agents can increase the capability of its search and rescue efforts in their behalf by insuring that the best available personnel and equipment are utilized in the operation and repair of fish boats, and by calling on the Coast Guard for assistance only after all other means of assistance have been exhausted.

Remember,

1. Clear channels on which distress traffic is being handled.

2. Use of citizens band radio for the sole communications means is not sufficient.

3. Establish communications shcedules between owners and operators.

4. Report position using latitude and longitude rather than in hours from a given shore location.

5. Require compass calibration on a scheduled basis.

6. Assist each other if at all possible.

7. Provide suitable maintenance and upkeep of vessels to prevent gross deterioration of hull and machinery.

8. When medical evacuation is ordered, follow the evacuation units' instructions as closely as possible, and

9. Do not request the Coast Guard to act as a salvor.

Gulf States Marine Fisheries Commission

CHAIRMAN
VERNON K. SHRINER
217 COLUMBUS
MONTGOMERY, ALABAMA 36104

VICE-CHAIRMAN
VIRGIL VERSAGGI
C/O VERSAGGI SHRIMP CO.
BROWNSVILLE, TEXAS 78521

EXECUTIVE DIRECTOR
J. V. (JOE) COLSON

HEADQUARTERS OFFICE
ROOM 225 - 400 ROYAL STREET
NEW ORLEANS, LOUISIANA 70130
TELEPHONE: 524-1765

BE IT RESOLVED that the COMMISSIONERS AND STAFF of the GULF STATES MARINE FISHERIES COMMISSION express to the TEXAS PARKS AND WILD LIFE DEPARTMENT their most sincere appreciation for the hospitality extended to the delegates at the 19th Annual Meeting held in San Antonio, Texas, October 2-4, 1968.

BE IT FURTHER RESOLVED, that the COMMISSION'S gratitude is extended to the Honorable J. R. Singleton, Honorable Robert G. Mauermann, and to the Honorable Terrance R. Leary for their valuable assistance in perfecting meeting arrangements.

* * * * * * * * * *

The foregoing resolution was adopted by the Gulf States Marine Fisheries Commission, October 4, 1968, at the 19th Annual Commission Meeting held at the Hilton Palacio del Rio, San Antonio, Texas.

Joseph V. Colson

Joseph V. Colson, Executive Director
Gulf States Marine Fisheries Commission

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RESOLUTION

BE IT RESOLVED that the COMMISSIONERS and STAFF of the GULF STATES MARINE FISHERIES COMMISSION convey to the LONE STAR BREWING COMPANY, to the Honorable Harry Jersig, and to General Jack Gordon, their most sincere appreciation for the delightful reception and most enjoyable tour of the brewery given for the delegates of their 19th Annual Meeting, October 2, 1968 in San Antonio, Texas.

* * * * * * * * * *

The foregoing resolution was adopted by the Gulf States Marine Fisheries Commission, October 4, 1968, at the 19th Annual Commission Meeting held at the Hilton Palacio del Rio, San Antionio, Texas.

Joseph V. Colson

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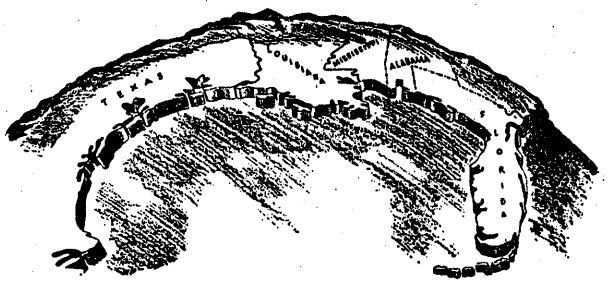

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RESOLUTION

BE IT RESOLVED that the COMMISSIONERS and staff of the GULF STATES MARINE FISHERIES COMMISSION express to the TEXAS SHRIMP ASSOCIATION and to OSCAR LONGNECKER their sincere appreciation for the delicious shrimp served to the delegates of their 19th Annual Meeting on Thursday, October 2, 1968, at the Lone Star Brewing Company in San Antonio, Texas.

* * * * * * * * * *

The foregoing resolution was adopted by the Gulf States Marine Fisheries Commission, October 4, 1968, at the 19th Annual Commission Meeting held at the Hilton Palacio del Rio, San Antionio, Texas.

Joseph V. Colson

Joseph V. Colson, Executive Director
Gulf States Marine Fisheries Commission

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RESOLUTION

BE IT RESOLVED that the COMMISSIONERS and STAFF of the GULF STATES MARINE FISHERIES COMMISSION do hereby convey to the FLORIDA BOARD OF CONSERVATION their sincere appreciation for the valuable assistance provided by their home economists in preparing the delicious buffet served to its delegates October 2, 1968, at the Lone Star Brewing Company in San Antonio, Texas.

* * * * * * * * * * *

The foregoing resolution was adopted by the Gulf States Marine Fisheries Commission, October 4, 1968, at the 19th Annual Commission Meeting held at the Palacio del Rio, San Antionio, Texas.

Joseph V. Colson

Joseph V. Colson, Executive Director
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RESOLUTION

BE IT RESOLVED that the COMMISSIONERS and STAFF of the GULF STATES MARINE FISHERIES COMMISSION do hereby express to the SAN ANTONIO CHAMBER OF COMMERCE their sincere appreciation for the assistance given by Mrs. Mary Francis Moore, and other courtesies extended on the occasion of their 19th Annual Meeting at the Hilton Palacio del Rio in San Antonio, Texas, October 2-4, 1968.

* * * * * * * * * * *

The foregoing resolution was adopted by the Gulf States Marine Fisheries Commission, October 4, 1968, at the 19th Annual Commission Meeting held at the Hilton Palacio del Rio, San Antonio, Texas.

Joseph V. Colson

Joseph V. Colson, Executive Director
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RESOLUTION

BE IT RESOLVED that the COMMISSIONERS and STAFF of the GULF STATES MARINE FISHERIES COMMISSION express to the CHIEF and his STAFF of the ENFORCEMENT DIVISION, TEXAS PARKS AND WILD LIFE DEPARTMENT their most sincere appreciation for the transportation and other courtesies provided the delegates during their 19th Annual Meeting, October 204, 1968 in San Antonio, Texas.

* * * * * * * * * * *

The foregoing resolution was adopted by the Gulf States Marine Fisheries Commission October 4, 1968, at the 19th Annual Commission Meeting held at the Hilton Palacio del Rio, San Antonio, Texas.

Joseph V. Colson

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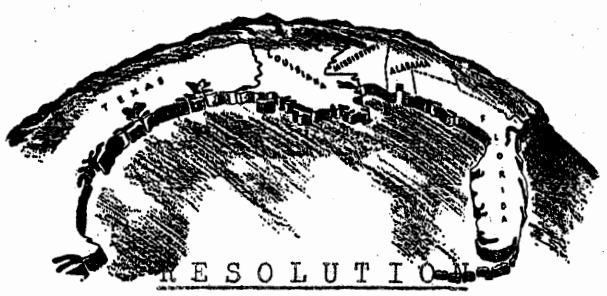

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J. V. (JOE) COLSON

HEADQUARTERS OFFICE
ROOM 225 - 400 ROYAL STREET
NEW ORLEANS, LOUISIANA 70130
TELEPHONE: 524-1765

RESOLUTION

BE IT RESOLVED that the GULF STATES MARINE FISHERIES COMMISSION does hereby express its sincere appreciation to the management and staff of the HILTON PALACIO DEL RIO for the cordial hospitality and service enjoyed by the group on the occasion of their 19th Annual Meeting, October 204, 1968.

* * * * * * * * * * *

The foregoing resolution was adopted by the Gulf States Marine Fisheries Commission, October 4, 1968, at the 19th Annual Commission Meeting held at the Hilton Palacio del Rio, San Antonio, Texas.

Joseph V. Colson

Joseph V. Colson, Executive Director
Gulf States Marine Fisheries Commission

Gulf States Marine Fisheries Commission

CHAIRMAN
VERNON K. SHRINER
217 COLUMBUS
MONTGOMERY, ALABAMA 36104

VICE-CHAIRMAN
VIRGIL VERSAGGI
C/O VERSAGGI SHRIMP CO.
BROWNSVILLE, TEXAS 78521

EXECUTIVE DIRECTOR
J. V. (JOE) COLSON

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RESOLUTION

WHEREAS, mineral production and mining activities in the Estuarine areas and on the Continental Shelf are creating, or contributing to, problems affecting other natural resources of such areas, and

WHEREAS, such problems, unless solved, can work irreperable harm and injury upon such other resources, particularly the living resources of the sea, and

WHEREAS, the production and mining of mineral resources of the Estuarine areas and the Continental Shelf are, in effect, depleting such resources, and, ultimately, such resources will be exhausted as a result thereof, and

WHEREAS, prudent conservation principles require that a major portion of the revenues and incomes derived from such depleting activities should be applied towards solving and/or preventing the problems and damage such activities may cause, or to which they may contribute:

NOW THEREFORE, BE IT RESOLVED by the GULF STATES MARINE FISHERIES COMMISSION that a fair and adequate share of the revenues and incomes derived from the production of minerals and from mining activities conducted on the outer Continental Shelf of the United States should be applied and dedicated to the support of pollution abatement, fisheries and other marine research, market development and similar marine-oriented activities, including, but not limited to, the regulation, development and management of the resources of the Estuarine areas and the Continental Shelf, and

BE IT FURTHER RESOLVED, that all such funds so made available should be allocated to and among the programs supported thereby, as well as to and among the areas where such programs are in operation on a fair and equitable basis, considering the need of such areas for such programs, and, further, should be administered by authorities and agencies of the states, or localities so affected, to the maximum intent possible.

* * * * * * * * * * *

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RESOLUTION

WHEREAS, the United States by legislation extended its fishery jurisdiction from three to twelve miles, and

WHEREAS, the several coastal states have in effect laws and regulations pertaining to the conservation of valuable fisheries, but are presently limited in enforcement to three miles, and

WHEREAS, it is desirable and necessary that there be adequate fishing conservation and enforcement in the area between 3 and 12 miles and no Federal or State Agency is presently charged with this duty,

NOW, THEREFORE, BE IT RESOLVED, that the Gulf States Marine Fisheries Commission recommends and urges that legislation be adopted reserving to littoral states the power and authority to regulate fishing in the seaward area between three and twelve miles from their shore lines.

BE IT FURTHER RESOLVED, that copies of this Resolution be furnished to each Senator and Congressman representing the States which are members of this Commission, and to the Atlantic States Marine Fisheries Commission, and the Pacific Marine Fisheries Commission.

* * * * * * * * * *

The foregoing resolution was adopted by the Gulf States Marine Fisheries Commission, October 4, 1968, at the 19th Annual Commission Meeting held at the Hilton Palacio del Rio, San Antonio, Texas.

Joseph V. Colson

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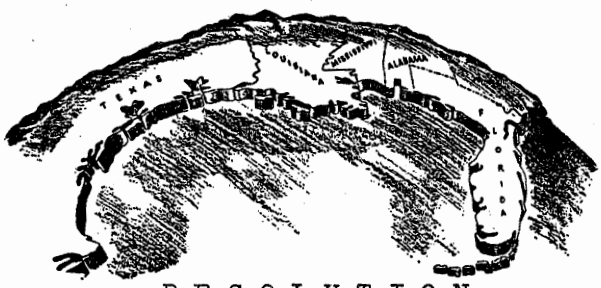

EXECUTIVE DIRECTOR
J. V. (JOE) COLSON

HEADQUARTERS OFFICE
ROOM 225 - 400 ROYAL STREET
NEW ORLEANS, LOUISIANA 70130
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RESOLUTION

WHEREAS, the United States has slipped from fifth to sixth place among fishing nations of the world, and the Federal Government continues to cut back its fishery programs, and

WHEREAS, the productive estuarine areas are endangered by expansion of industrial and residential developments, while the demand for recreational fishing on the Gulf Coast is increasing, and

WHEREAS, there exists a need for responsible action by individual citizens, and that such action may be properly recognized:

NOW, THEREFORE, be it resolved that each year at its spring meeting, the Gulf States Marine Fisheries Commission will select five individuals to be awarded plaques for meritorious service to the Gulf fisheries. Such contribution may be in industrial development, conservation, research, legislation, or other fields as they relate to fisheries. One each of the five individuals will be selected by the three Commissioners from each member state. Following receipt of the names of the five individuals to be recognized, the Executive Director will provide the plaques with sutiable inscription.

* * * * * * * * * *

The foregoing resolution was adopted by the Gulf States Marine Fisheries Commission, October 4, 1968, at the 19th Annual Commission Meeting held at the Palacio del Rio, San Antonio, Texas.

Joseph V. Colson

Joseph V. Colson, Executive Director
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RESOLUTION

WHEREAS, each of the member States has important projects funded under PL 88-309, the Federal Aid to Commercial Fisheries Research and Development Act, and said Act, was due to expire in 1969, and

WHEREAS, the Executive Directors of the Gulf States Marine Fisheries Commission, the Atlantic States Marine Fisheries Commission, and the Pacific Marine Fisheries Commission recognized that the member States must have sufficient time to plan and appropriate funds for such work; and

WHEREAS, it is largely through their untiring efforts that legislation to renew this Act has been passed by both Houses of Congress;

NOW, THEREFORE, be it resolved that the Gulf States Marine Fisheries Commission expresses its gratitude and commends Ernest Mitts, Leon Verhoeven, and, especially, Joseph V. Colson for their work on behalf of all State fisheries programs.

* * * * * * * * * * *

The foregoing resolution was adopted by the Gulf States Marine Fisheries Commission, October 4, 1968, at the 19th Annual Commission Meeting held at the Palacio del Rio, San Antonio, Texas.

Joseph V. Colson

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RESOLUTION

BE IT RESOLVED by the Gulf States Marine Fisheries Commission that the salary of its Executive Director be increased from $10,000 to $11,000 per annum, effective at the beginning of the current fiscal year.

* * * * * * * * * * *

The foregoing resolution was adopted by the Gulf States Marine Fisheries Commission, October 4, 1968, at the 19th Annual Commission Meeting held at the Palacio del Rio, San Antonio, Texas.

Joseph V. Colson

Joseph V. Colson, Executive Director
Gulf States Marine Fisheries Commission

Florida's rolling out the RED CARPET for You!

SPRING Meeting!

Gulf States Marine Fisheries Commission

March 20-22, 1968

FONTAINEBLEAU TERRACE
14401 West Highway 98
Panama City, Florida 32401

Regular Session Registeration
Thursday-- 8:30-9:30 AM

You'll find something new to talk about

- marketing
- packaging
- federal assitance
- coast guard buoy service
- fish-oyster report
- inspection bill hr-15155

SPECIAL FEATURES
WEDNESDAY - 20 th. STARTING -(1:00 PM)
Pre-Session..

ESTUARINE TECH. COORDINATING COMM. COAST GUARD ADV COMM (2:45 PM)
REGIONAL OIL & GAS ADV. COMMITTEE (4:45 PM)

Transportation from Airport To Motel
Courtesy of Florida Board Of Conservation

Host.....
Florida Board
Of Conservation

Thursday
6:30 PM

Gulf States Marine Fisheries Commission

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SPRING MEETING

Fontainebleau Terrace
Panama City, Florida

March 20-22, 1968

PRE-SESSION

MARCH 20, 1968 - 1:00 PM

ESTUARINE TECHNICAL COORDINATING COMMITTEE
Dr. Ted B. Ford, Chairman

MARCH 20, 1968 - 2:45 PM

U. S. COAST GUARD ADVISORY
Capt. Fred T. Merritt
Chief Research & Rescue Branch
Joe V. Colson, Temporary Chairman

MARCH 20, 1968 - 4:45 PM

REGIONAL OIL & GAS ADVISORY COMMITTEE
Jake Lowenhaupt, Senior Staff Engineer
Oil & Gas Division, Geological Survey

COCKTAILS

March 21, 1968 - ROOF GARDEN
6:30 PM
Compliments of Southern
Industries

FISHERY

Compliments of Florida Board of Conservation

REGISTRATION - MARCH 21, 1968

8:30 - 9:30 AM

5th FLOOR

GENERAL SESSION

9:30 AM

CALL TO ORDER - GENERAL SESSION	5th FLOOR MEETING ROOM
INVOCATION	
WELCOME ADDRESS	Honorable Randolph Hodges Florida Board of Conservation
FLORIDA MARKETING & QUALITY CONTROL	Honorable Randolph Hodges, Florida Board of Conservation Harmon Shields, Administrative Assistant
COOPERATIVE STATE & BUREAU MARKETING PAYS OFF	Jack T. Brawner, Regional Coordinator Marketing, B/C/F, St. Petersburg

11:00 AM

RECESS - COFFEE BREAK	Fifteen Minutes
REPORT ON FISH PROTEIN CONCENTRATE	Seton Thompson, Director Region 2 B/C/F, St. Petersburg

12:00 NOON

GOVERNOR CLAUDE R. KIRK	LUNCH

1:15PM

88-309 MATCHING FUNDS	Don Geagan, Assistant Federal Aid Coordinator B/C/F, St. Petersburg
THE AIMS OF GULF UNIVERSITY RESEARCH CORP.	John C. Calhoun, President College Station, Texas
THE NATIONAL DATA BUOY SYSTEM	Commander Virgil W. Rineheart U.S C.G. Headquarters, Washington, D. C.
REPORT - GSMFC ESTUARINE COORDINATING COMMITTEE	Dr. Ted. B. Ford, Chairman La. Wild Life and Fisheries Commission
REPORT OF ACTIVITIES OIL & GAS ADVISORY COMMITTEE	Jake Lowenhaupt, Senior Staff Engineer Oil & Gas Division, Geological Survey New Orleans

PACKAGING	A. J. Lethbride, Regional Sales Representative W. R. Grace Co., Duncan, S. Carolina
OREGON II TILE FISH LONGLINE FISH DISCOVERY	Walter R. Nelson, B/C/F, Pascagoula, Miss.

3:20 PM

RECESS - COFFEE BREAK	Fifteen Minutes
DISCUSSION MANDATORY INSPECTION BILL	H. R. 15155 (Wholesome Fish and Fishery Products Amendments to the Federal Food, Drug, and Cosmetic Act.
RESOLUTION COMMITTEE MEETING	

FRIDAY (MARCH 22)

8:00 AM

COMMISSION EXECUTIVE BREAKFAST RESERVED SECTION OF MAIN RESTAURANT

10:00 AM

ANADROMOUS FISH Reserach & Other Commercial Fishing Work	Dr. E. W. Shell, Associate Professor Fisheries, Auburn Univieristy
PROGRESS REPORT FEEDING SHRIMP IN PONDS	Jerry G. Broom, Marine Biologist La. Wild Life & Fisheries Comm., Grand Isle
DEPURATION OF BILOXI BAY OYSTERS BY RELAY	Gary W. Childers, Gulf Coast Research Lab Dr. David Cook " " " "
EXECUTIVE SESSION REPORT	Vernon K. Shriner, Commission Chairman

ADJOURNMENT

TRADE & STATE COMPACT MEETING (General Meeting Room 5th Floor)	Senate Bill H. R. 15155 & 2958 (Wholesome Fish & Fishery Products Amendments to the Federal Food, Drug and Cosmetic Act)

1:30 pm

Gulf States Marine Fisheries Commission

CHAIRMAN
VERNON K. [illegible]INER
817 COLUMBUS
MONTGOMERY, ALABAMA 36104

VICE-CHAIRMAN
VIRGIL VERGAGGI
C/O VERGAGGI SHRIMP CO.
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NEW ORLEANS, LOUISIANA 70130
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MINUTES

SPRING MEETING

PANAMA CITY, FLA. —

MARCH - 20-22, 1968

ALABAMA • FLORIDA • LOUISIANA • MISSISSIPPI • TEXAS

GULF STATES MARINE FISHERIES COMMISSION
400 Royal Street, Room 225
New Orleans, Louisiana 70130

MINUTES

SPRING MEETING, MARCH 20-22, 1968
Fontainebleau Terrace
Panama City, Florida

OFFICIAL ATTENDANCE OF COMMISSIONERS

	PRESENT	ABSENT	PROXY
ALABAMA		Claude Kelley	William F. Anderson
		L. W. Brannan, Jr.	William F. Anderson
	Vernon Shriner		
FLORIDA	W. Randolph Hodges		Harmon Shields (Executive Session only)
		J. Lorenzo Walker	Harmon Shields
		Walter Sheppard	Robert M. Ingle
LOUISIANA		Dr. Leslie Glasgow	Lyle St. Amanat
	Richard Guidry		
	James H. Summersgill		
MISSISSIPPI			
	Charles Weems		George Brumfield (Executive Session)
		Ted Millette	George Brumfield
TEXAS		J. R. Singleton	Robert Mauermann
		Richard Cory	
	Virgil Versaggi		

STATE GOVERNMENT REPRESENTATIVES

ALABAMA — W. F. Anderson, Heino Beckert, Johnnie Crance, Hugh Swingle

FLORIDA — Ben Bailey, Robert Ingle, Harmon Shields, Randolph Hodges, C. C. Shuman

LOUISIANA — Max Summers, Dr. Ted Ford, Lyle St. Amant, Wilson Gaidry, William Perrett, Barney Barrett, J. C. Broom, J. F. Pollard

MISSISSIPPI — George Brumfield, James N. Travirca, George Williams

TEXAS — Terrance Leary, Robert Mauermann

GENERAL SESSION
March 21, 1968

Commission Chairman Shriner called the meeting to order at 9:30 AM, and invocation was rendered.

Upon completion of the roll call and introductions of Commissioners and their proxies, Commissioner Randolph Hodges of the Florida Department of Conservation extended a very cordial welcome to the State of Florida on behalf of Governor Kirk, and the Department of Conservation.

The following speakers appeared on the program as listed:

FLORIDA MARKETING & QUALITY CONTROL, Randolph Hodges and Harmon Hields, Florida Board of Conservation, Tallahassee, Florida.

COOPERATIVE INDUSTRY-STATE BUREAU MARKETING PAYS OFF, Jack T. Brawner, Regional Coordinator Marketing, Bureau of Commercial Fisheries, St. Petersburg, Florida.

FISH PROTEIN CONCENTRATE AS AN INDUSTRY, Seton Thompson, Region 2 , Bureau of Commercial Fisheries, St. Petersburg, Florida.

P.L. 88-309 MATCHING FUNDS, Don Geagan, Assistant Federal Aid Coordinator, Bureau of Commercial Fisheries, St. Petersburg, Florida.

AIMS OF GULF UNIVERSITY RESEARCH CORPORATION, John C. Calhoun, President, College Station, Texas.

NATIONAL DATA BUOY SYSTEMS PROJECT, CDR. V. W. Rinehart, Deputy Project Manager, National Data Buoy Systems Project, Washington, D. C.

REPORT - GULF STATES MARINE ESTUARINE COORDINATING COMMITTEE, Dr. Ted Ford, Chief, Oyster & Seafood Division, Louisiana Wild Life and Fisheries Commission, New Orleans, Louisiana.

REPORT - OIL AND GAS ADIVSORY COMMITTEE, Jake Lowenhaupt, Senior Staff Engineer, Oil and Gas Division, Geological Survey, New Orleans, Louisiana.

PACKAGING, A. J. Lethbride, Regional Sales Representatives, W. R. Grace Co., Duncan, South Carolina.

RESULTS OF BOTTOM LONGLINING ON CRUISE I OF R/V OREGON II, Walter R. Nelson, Fishery Biologist, Bureau of Commercial Fisheries, Pascagoula, Mississippi.

DISCUSSION MANDATORY INSPECTION BILL. General discussion regarding H. R. 15155 and S. 2958 (Wholesome Fish and Fishery Products Amendments to the Federal Food, Drug and Cosmetic Act.)

At the suggestion of the Texas representatives, Mr. Robert Mauermann and Mr. Terrance Leary, and with the approval of the Commissioners, the next meeting was changed from Broadwater Beach Hotel, Biloxi, Mississippi to Palacio del Rio, San Antonio, Texas, to coincide with Hemisfair. The Biloxi meeting will be held at the time the Texas meeting has been scheduled in October, 1969.

The speakers were sincerely thanked for their presentations. Everyone was invited to attend the meeting in October in San Antonio. Our appreciation was expressed to the Florida Board of Conservation for their cooperation and assistance in making this one of our most successful meetings.

Director Colson again urged all members to keep in close touch with the Commission so that the problems facing our industry can be brought to everyones attention, and the solutions to these problems worked on together.

There being no further business, the meeting was adjourned.

TRADE & STATE COMPACT MEETING. Discussion H. R. 15155 and S. 2958 (Wholesome Fish and Fishery Products Amendments to the Federal Food Cosmetic Act).

GULF STATES MARINE FISHERIES COMMISSION
March 21-22, 1968
Panama City Florida

Senator Randolph Hodges, Director
Florida Board of Conservation
Tallahassee, Florida

Mr. Haron Sheilds, Assistant Director
Division of Salt Water Fisheries
Florida Board of Conservation
Tallahassee, Florida

"QUALITY CONTROL IN FLORIDA"

"PROGRESS OF THE FLORIDA MARKETING PROGRAM"

Senator Hodges gave a comprehensive report on the new quality control program drafted by a 30-man committee of fishing representatives from the fishing industry with state officials. He said that the code was prepared in anticipation of Congress passing similiar regulations for the whole nation so that Florida could retain control over its own fishing industry. "It's better to do it here at the state level than to let the federal government do it," he said.

He then asked Mr. Harmon Shields, who has headed the Florida Marketing Program since 1964 to tell us of the great strides in their marketing program. Mr. Shields gave us a brief background of the conception of the program, its development into a highly specialized endeavor with trained personnel in various fields to promote Florida seafood. He said that the rapid changes in the past few years in upgrading quality, methods of packaging, processing, etc., make seafood products tastier and more attractive which helps to build our market.

Colorful slides were shown and promotional material displayed.

Presentation at the Gulf States Marine Fisheries Commission Meeting
March 21 - 22, 1968 by Jack T. Brawner

Cooperative Industry-State-Bureau Marketing Program Pays Off

The year 1966 was perhaps the best year in the history of our industry. Food fish production was a minute fraction above the past 15-year average. However, it was a record value year at all levels -- production, imports, processing, wholesale, and retail. Conversely, the year 1967 was a poor year. The relaxation of Friday abstinence rules for this country's 45 million Roman Catholics in late November of 1966 contributed substantially to a decline in demand for seafoods. For example:

1. U.S. fishery production in 1967 was the lowest since 1942 -- 4.1 billion pounds. A decrease of 241 million pounds from 1966.
2. Imports of fishery products in 1967 were substantially below 1966 -- nearly 90 million pounds less.
3. In spite of a lower catch and a decrease in imports, cold storage holdings on December 31, 1967, were only about 25 million pounds less than for the comparable period in 1966.
4. Prices for several species declined substantially in 1967. For example, prices paid to fishermen for tuna and halibut were substantially lower in 1967 than in 1966. Prices of fish blocks also declined substantially.

With this background in mind, the question is raised: What happened to our fisheries in the South Atlantic and Gulf in 1967? The answer is: In 1967, our preliminary figures show that landings were 1,554 million pounds with an ex-vessel value of $147 million compared to 1,557 million pounds in 1966 and an ex-vessel value of $148.2 million -- in other words, only $1.2 million shy of a new record.

There is no doubt in my mind that an aggressive industry-state-federal cooperative marketing program has been largely responsible for our prospering southern fisheries during rather trying times in most other sections of the country. Permit me now to present several case studies to document the central thesis that our cooperative marketing programs have paid off:

Case Study 1 - Spanish Mackerel

In 1964, Florida produced 5.9 million pounds of Spanish mackerel. In 1965, Florida produced 7.8 million pounds of Spanish mackerel, and during the latter half of the year the market was glutted. A special market development program was launched to alleviate glutted conditions and to develop new markets for this product. Special emphasis was placed on introducing this item in cafeteria chains not previously handling the item and increasing movement in established outlets. In the former case substantial outlets were established in about four new cafeteria chains, and movement was increased substantially in eight

major restaurant and cafeteria chains that already used this product. For example, one new outlet now is using over 100,000 pounds of Spanish mackerel fillets per year, and the largest former user -- about one million pounds per year -- has increased its use of this product by about 20 percent or about 1.2 million pounds per year.

What then has been the net effect? In 1966, production jumped to 9.2 million pounds, and fishermen received an average price of 11.38 cents per pound compared to 9.08 cents per pound in 1963. More fish were sold at a higher price -- certainly the ideal situation!

Case Study 2 - Mullet

Without going into detail, considerable marketing effort was directed toward increasing markets for fresh mullet, developing markets for boneless mullet fillets, and developing a new mullet canning industry. These efforts resulted in commercial fishermen in Florida receiving a higher price for mullet in 1966 than at any time since 1951. And, it is understood that industry in Alabama, Mississippi, and North Carolina realized direct benefits from these special marketing efforts.

Case Study 3 - Calico Scallops

About nine years ago the largest known scallop bed in the entire world was discovered off the east coast of Florida by the Bureau's exploratory vessel, the Silver Bay. About the same time, much smaller beds were discovered off the coast of North Carolina. During the past

two years our cooperative marketing program has substantially expanded the demand for calico scallops, and in 1966, the production in North Carolina increased to nearly two million pounds. Limited production has begun in Florida during the past couple of months, and we intend to develop this into one of the largest dollar value fisheries in the country.

Case Study 4 - Shrimp

In 1967, the shrimp fishery became the first $100 million dock-side value fishery in the United States. In the Gulf and South Atlantic alone the ex-vessel value was about $98 million. In 1967, production of shrimp reached a new record. In 1967, we imported a record 186 million pounds of shrimp. In spite of record imports and record domestic production, U.S. fishermen received good prices for shrimp. This fact is reflected in the record ex-vessel value of our domestic shrimp fishery last year.

As early as last April we recognized we would have a substantial shrimp marketing problem in 1967. Dr. St. Amant predicted that we would have a bumper crop of shrimp in the Gulf. I cannot emphasize too strongly how much assistance this was to those of us in fishery marketing -- it enabled us to start gearing up for a national promotional program that was begun in May and lasted throughout the remainder of the year. These eight months of intensified marketing effort on the part of industry, the States of Texas and Florida, and our

Bureau involved four major national promotional programs: Outdoor Fish Cookery during the summer, National Fish 'n Seafood Month in October, Turkey 'n Shrimp in November and December, and the Shrimp Christmas Tree promotion in December. This national shrimp promotional program was an outstanding success. The basic reason that it was a success is that it was a "team approach" to solve a particular problem. The shrimp industry -- primarily through the International Shrimp Council -- increased its promotional effort. Brand advertising was substantially increased. We were able to effect increased promotional efforts by restaurant and retail food chains. The States of Texas and Florida did a superb job. Our Bureau was particularly effective in complementing the efforts of industry and the States of Texas and Florida -- particularly with respect to assisting in national distribution of educational and promotional materials.

I now will highlight a few examples of our coordinated efforts:

Outdoor Fish Cookery. The State of Florida provided a home economist to conduct extensive television demonstrations in the Middle Atlantic and New England areas during August. The Bureau marketing staff in these areas scheduled 17 television demonstrations for the Florida home economist. State and Bureau home economists appeared extensively on television throughout the country to promote shrimp.

National Fish 'n Seafood Month. Our Bureau requested in August that the United States Department of Agriculture list fresh and frozen shrimp on its list of "Plentiful Foods for October." The State of Florida developed a 3 1/2-minute color film for distribution to 210 television stations nationally. Bureau and Agriculture marketing staffs followed through and personally contacted many of these television stations urging use of these films. The Bureau marketing staff distributed food photographs, recipes, and fact sheets to food editors throughout the country. Restaurant and retail food chains were contacted personally and urged to promote shrimp. These personal contacts were made by State, Bureau, and Agriculture marketing representatives.

Shrimp 'n Turkey Promotion. The States of Texas and Florida jointly financed a colormat featuring Oysters, Shrimp, and Turkey for Thanksgiving and Christmas. This colormat was distributed nationally. The State of Florida produced a color film on the same subject for distribution to 210 television stations throughout the country. Bureau and State home economists appeared on television stations throughout the country demonstrating these tie-in products. USDA representatives promoted this tie-in theme nationally.

Shrimp Christmas Tree Promotion. The Shrimp Christmas Tree Promotion was one of the most successful seafood promotions ever conducted in this country. Again, a fully coordinated and cooperative industry-

state-Bureau marketing program was responsible for the degree of success that was achieved. The States of Florida and Texas jointly financed the development of 1,750,000 shrimp tree cards and several thousand posters and freezer strips for distribution through retail markets -- principally retail food chains. The Bureau marketing staff assisted in national distribution of these materials. The State of Florida distributed 210 copies of a 3 1/2-minute color film on this subject to television stations nationally. Personal contacts were made with key food merchandisers nationally. Special promotional materials were developed for restaurant chains by Florida marketing personnel.

Of course, the key question is: What effect did these promotions have on the sale of shrimp? To determine the answer to this basic question, an evaluation was made of the sale of shrimp by three food chains in Alabama, Louisiana, and Mississippi. The period evaluated was from December 15 through January 5, a time when the customer would be expected to purchase shrimp for making a shrimp tree for holiday entertaining. Following are the results of this evaluation:

1. A food chain containing 68 supers in the New Orleans area reported that:
   a. Sales of all frozen shrimp products throughout 1967 were 7 percent ahead of 1966.

b. This trend continued through December on all market forms except peeled and deveined shrimp. Sales of this item increased 28 percent during the period December 15 through January 5.

2. A food chain containing 122 supers in the Montgomery area reported that sales doubled on PDQ and frozen headless shrimp during the period December 15 through January 5.

3. A 48-unit food chain covering three states reported that sales of all frozen shrimp in November and December of 1967 ran 27 percent ahead of the comparable period in 1966. A weekly breakdown was not available in this instance. However, December sales of frozen headless and IQF shrimp increased 46 percent over 1966.

In each of the above-mentioned instances, the food chain executives attributed these sales increases exclusively to the shrimp tree promotion.

In summing up my central thesis that our cooperative industry-state-federal marketing efforts have really paid off, I would use our shrimp industry as an example. We had essentially the same conditions in 1954, 1959, and 1963 as in 1967. In each year we had a problem of heavy supplies of shrimp. Our shrimp industry suffered serious setbacks in 1954, 1959, and 1963. An aggressive and well-cordinated national marketing program in 1967 contributed significantly to probably the most financially successful year our shrimp industry has ever experienced -- record imports, record domestic production, and record per capita consumption, all at high prices.

The statistics I have presented show conclusively that 1967 shrimp sales in three major food chains located in Alabama, Louisiana, and Mississippi were substantially above shrimp sales in 1966 -- the inference being of course that cooperative marketing efforts influenced these sales increases. We went further and specifically measured the impact of the Shrimp Christmas Tree promotion on the sale of shrimp through these three major food chains. And, the very smallest net increase in sales as a direct result of this promotion was 21 percent. This measurement of sales covered a total of 238 supermarkets in a three-state area. Any researcher would accept this as a valid sample of that particular universe.

Many examples could be given of special shrimp promotions that were effected with individual companies. However, the statistics above are evidences of the effectiveness of the cooperative marketing program. And, moving a combined record domestic production and record imports into normal trade channels at high prices is the greatest success story in the history of our commercial fishing industry -- it produced this country's first $100 million plus dockside value fishery.

GULF STATES MARINE FISHERIES COMMISSION
Panama City, Florida
March 21-22, 1968

"FISH PROTEIN CONCENTRATE AS AN INDUSTRY"

Seton H. Thompson, Regional Director
Bureau of Commercial Fisheries
St. Petersburg, Florida

Fish protein concentrate - FPC for short - is a relatively new term to most of us. What is it?

By definition, FPC is any inexpensive, stable, wholesome product of high nutritive quality, hygenically prepared from fish, in which the protein and other nutrient materials are more concentrated than they were in the fresh fish. This definition includes FPC products of varying characteristics ranging from tasteless, odorless, light colored flourlike materials through coarse meals having a fishy taste and odor, to highly flavored, dark colored pastes or powders resembling meat extracts.

Although the term FPC may be new to us, the product actually has a long history. The earliest record goes back to 325 B. C. when one of the ancient explorers reported its preparation and use along the Persian Gulf. In the first century B. C. the manufacture of a prototype FPC was one of the few large-scale food processing industries in Rome. The first record I can find of FPC production in the United States was in 1880 when a process for using menhaden was described with the conclusion that "a new source of food is within reach which, at no distant day, may contribute materially to human welfare."

What does all this mean in the terms of the Gulf of Mexico? Now that hake and hake-like species have been approved by the Food and Drug Administration for use in the manufacture of FPC, studies have been started

on fatty fish, such as menhaden, anchovies, and thread herring. The results will be used to develop a second food additive petition, requesting approval to utilize fatty fish in the production of FPC. These are the fish that occur in the Gulf in large numbers, where they can be harvested throughout the year at a low cost. I know it is disappointing news to many of you that preparation of this petition is still at least a year away. It is equally disappointing to us. In the meantime, however, we have an opportunity to delineate more precisely the thread herring and anchovy stocks in the Gulf, and improve on methods of capture.

This crash program, to bring into existence an FPC industry, has been an intense and sometimes frustrating experience. Although much remains to be done, results thus far promise the establishment of a significant, financially rewarding new industry with humanitarian overtones beyond the reaches of the imagination.

While producing concentrated protein from fish is not new, it has been only during the last 25 years that extensive efforts have been made to find a method that would yield a protein supplement of superior quality. Most of this effort has been in the last five years, concurrently with the growing awareness, through the United Nations and its agencies, of the world need for food.

In developing countries where two-thirds of the world's people live, malnutrition is widespread. Half of the world's population is underfed, or undernourished, and 50 per cent live in countries where the average diet is below the minimum standard of 10 grams a day of animal protein.

The limited quantity of food is critical in many parts of the developing world, but the protein value is even more crucial, particularly with respect to the mental and physical development of preschool children. Even while we discuss this issue today, over 300 million children are

suffering from malnutrition that will greatly retard their growth and physical development, and slow their learning. Unless measures are taken immediately, countless others in future generations will be affected.

We know from calculated population growth and nutritional requirements that our food needs will at least double in the next two decades.

It is difficult to see at this time how the production of land animals, or their products, can be increased to supply even the minimum protein needs of the world. By contrast, the quantity of animal protein available from the sea is tremendous. Biologists estimate the potential world yield of marine fishery resources at 200 million tons annually. Several million of these can be found in the Gulf of Mexico. Each ton contains 300-400 pounds of protein.

To make available the needed animal protein in enourmous quantities at low cost, the Bureau of Commercial Fisheries launched a crash program in 1965 to develop a single prototype commercial FPC process and make available a product for exhaustive testing. The process was developed and FPC was produced from whole Atlantic red hake through the use of isopropyl alcohol extraction process. Wholesomeness tests were carried out by cooperating universities and private laboratories. The results of these tests and experiments were compiled, and based upon them the Food and Drug Administration was asked to approve the product for use as a human food additive. That approval was given just 13 months ago.

At this point, then, we know there is a desperate need for FPC, we know there is a large supply of raw material from which to make it, and we know how to make it, at least from certain species and on a small scale.

The next step is to convert this preliminary process information into

a complete and finished design for an FPC pilot demonstration plant. Legislation to accomplish this was enacted late in 1966. Construction of the first plant is scheduled to begin this year. It is being designed to convert 50 tons of fish a day into 7 1/2 tons of FPC. Data obtained from the plant design, construction and operation, hopefully, will be sufficient to provide private industry with adequate engineering and technical data to construct commercial plants.

It is presently estimated that a commercial processing plant with a capacity of 200 tons of raw fish per day can produce 30 tons of FPC for a processing cost of 7- or 8- cents per pound. Assuming a cost of not more than 2 cents per pound for raw fish, the final FPC would cost around 19 cents. Adding 6 cents a pound for packaging, distribution, and profit, FPC should cost the consumer no more than 25 cents per pound.

The limited quantities of FPC produced in pilot plants will be made available to scientists working with AID, and other groups, to carry out market feasibility studies on this unique, new, high-protein food supplement in the United States and selected countries of the world. Creating markets for this product could be our greatest problem and it will not be solved overnight. It is being worked on now.

GULF STATES MARINE FISHERIES COMMISSION
March 21-22, 1968
Panama City, Florida

"PL 88-309 PROGRESS"

Donald W. Geagan, Assistant Federal Aid Coordinator
Bureau of Commercial Fisheries
St. Petersburg, Florida

The States of Region 2 have received allotments totaling $4,003,900 during the three fiscal years the PL 88-309 program has been funded. Of this amount, $2,709,400 or approximately two-thirds was allocated to the five Gulf States. In turn, these five States have obligated $2,533,476 or 94 percent of this total allotment to date. Plans have also been completed by the States to utilize the remaining six percent. This utilization of funds as well as the high degree of interest and enthusiasm which the Gulf States have shown indicates very positive need for commercial fisheries research and development programs. In addition to the above funds, Louisiana has received $100,000 from the resource disaster section of the PL 88-309 Act and Texas has also just received approval of a $50,000 project. These are more commonly called Section 4(b) or disaster monies and they do not have to be matched by State funds.

There are a total of 33 projects underway which cover a broad spectrum of activities including research, development and construction.

Many of the projects now underway are in their third and final year. Others such as the cooperative estuarine inventory and study will be extended to allow sufficient time to fulfill their objectives. The newer projects which the States are now initiating are getting underway much faster since the States have already acquired the necessary technical staff and, in many cases, the necessary facilities and equipment.

Rather than describe the individual State programs and their

respective projects which have not changed greatly since Buck Byrd's report at your meeting last fall in Montgomery, I would like to mention some of the results from these projects.

Texas' new research vessel Western Gulf is presently being utilized in active research of shrimp and fin fishes. It is filling a very important need in this area of the Gulf. Their new statistics project coupled with the Bureau's program is providing the State with production figures essential for the management of their commercial fishery.

Louisiana has reported successful spat sets of 60 - 90 percent from their shell planting projects funded under both their regular allocation and the previously mentioned Section 4(b) of the Act. The State's oyster lease control monument project has progressed to a point where they have begun to map and identify their oyster leases with a degree of accurace heretofore impossible. The results of shrimp post-larvae sampling conducted under their estuarine project has been valuable in the management of this important resource.

Mississippi has obtained similar information regarding their shrimp resource. The State's oyster depuration project has provided the basic informatin for their recent large scale oyster transplants.

Alabama has completed the construction of oyster landing facilities for the convenience of their oyster fishermen and their recently constructed oyster research pond on Dauphin Island provides the facilities for expanded oyster research.

Florida's marketing program has been successful to such a degree that the State's commercial fishery production has reflected no decrease as a result of the Catholic church's recent decree eliminating abstinence on Friday. The

State has recently completed the construction of four permanent oyster reefs in Apalachicola. This type of reef has proven very productive in the past and it is anticipated these reefs will contribute significantly to the production of this area.

These are merely some of the results of the program from the last three years. I have made no mention of the vast array of important data resulting from research projects such as the cooperative estuarine inventory and oyster culture studies. When these and other research projects are completed the resulting data will provide part of the all important basis for the management of the commercial fishery resources of the five Gulf States.

GULF STATES MARINE FISHERIES COMMISSION
Panama City, Florida
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"THE AIMS OF GULF UNIVERSITIES RESEARCH CORPORATION"

John C. Calhoun, Jr., President
Gulf University Research Corporation
College Station, Texas

I'm appearing today as President of the Gulf Universities Research Corporation. I wish to note that I am a full-time staff member of the Texas A&M University which has an agreement with the Gulf Universities Research Corporation for managing GURC. Last fall I had conversations with your Executive Director, Mr. Joe Colson, and he suggested that our program would be of sufficient interest to bring it ot the attention of the members of the Gulf States Marine Fisheries Commission. I am very happy to be here to tell you something about what we are doing.

First, What is the Gulf Universities Research Corporation? I point out that the word is plural - "Universities" not "University." The Corporation is chartered in the State of Texas for educational and research purposes and has a 501-C3 rating from IRS. We don't intend to give degrees as an educational organization and we do not intend to operate as a university. It is our intent, however, that our program will be directed toward education and research goals. Although the charter is written in such a way that our activities can be in almost any area of education and research, we are concentrating upon those problems of particular interest to the Gulf of Mexico region and to the improvement of understanding of knowledge and use of the Gulf of Mexico.

Who makes up the Corporation? When it was founded in January of 1965, there were seven members, five in Texas, one in Louisiana, and one in Florida. Almost immediately, other universities joined the activity and the

university membership grew rapidly to reach its present size of sixteen. Member universities in the State of Florida are the University of Miami. The University of Alabama and the University of Southern Mississippi are the single members from their respective states. In Louisiana, there are two university members -- Tulane University, and Louisiana State University. The largest number of university members are from Texas and they include the University of Texas, Texas A&M University, the Univeristy of Houston, Texas Technological College, Southern Methodist University, Texas Christian University, Rice University and the Southwest Center for Advanced Studies. We have one member from Mexico, the University of Mexico. Associate Members of the Corporation are the Gulf South Research Institure of Louisiana, and the Southwest Research Institute of San Antonio, Texas. Corporations are eligible for Advisory Membership and to date we have nine such Advisory Members. They are the Pan American Petroleum Corporation, Gulf Research & Development Company, Chevron Research Company, Tennessee Gas Foundation, Superior Oil Company, Kerr-McGee Oil Company, the Esso Production Research Company, Shell Oil Company, and the Bendix Field Engineering Corporation.

Essentially, any accredited university can become a member of the Corporation. We require only that the university demonstrate a commitment of staff and resources to research relative to areas of interest to the Corporation. Any industrial corporation which has areas of interest parallel to the Gulf Universities Research Corporation can become an Advisory Member. The Associate Membership is available to non-accredited institutions, research institutes, and other organizations that have an interest in the programs of the Corporation.

At the moment, the only group having voting powers in the Corporation are the University Members. They are the group that establish the By-Laws, elect

Board members, and elect new members, It is possible some time in the future that we may wish to change our membership structure so that Advisory and Associate Members also have voting power. We expect to consider this question as it becomes important to the welfare of the Corporation. The management of the Corporation at the moment is effected by an agreement between GURC and the Texas A&M University, which agreement calls for a certain portion of my time.

What was the stimulation for the formulation of the Corporation? Was it formed in response to some specific need? To answer this question I need to give a brief discussion on the emergence of a new type of instituion for educational and research activities in the post world-war II era.

The most obvious need requiring these new institutions arose from the management problems of special scientific facilities. As the nation began to build large scale nuclear reactors of interest to scientists from a number of universities, the question arose -- how can these facilities be managed for the maximum use of the total scientific community? In consideration of this problem, the Associated Universities was formed as a corporation to manage the Brookhaven facility. Within the last few years, the Atomic Energy Commission has announced the creation of a large Bevatron. They have turned to the National Academy of Sciences to consider the management question, and a new corporation made up of member universities has been formed for this purpose.

Other special corporations have been formed to deal with broad environmental problems. Perhaps the best example of this is the Univesity Corporation for Atmospheric Research which was formed in 1959 and which has approximately 24 member universities. The particular goal of this corporation is to do the broad research which is needed in the atmosphere and which can not very weel be done by single universities. This corporation has established a National Center for Atmospheric Research in Boulder, Colorado and is funded by the National Science

Foundation. After they looked at the atmospheric problem, this group came to the conclusion that there was need for a balloon facility to supply scientists with the capability of doing experiments in the upper atmosphere. This has evolved into a special facility program for this particular environmental problem.

Still other corporations of this nature have been brought into being to meet various social problems. In this category are the special educational corporations, of which there are now approximately eight. We have one that covers the states of Texas and Louisiana. The members of this corporation include school boards, school districts, universities, municipalities, industries and other groups. The particular mission of this corporation is to apply kinds of technology and scientific advance to the solution of education problems in the southwest.

To repeat my point, these corporations are a new type of institution which has appeared in our society and which serve a function at the level between federal programs and local programs. In one sense for our research and knowledge industry, we might think of them as being the counterpart of the nationwide corporations that came into being a half century or so ago to satisfy consumer demands on a nation-wide basis.

The Gulf Universities Research Corporation is one of these new types. In our particular case, three broad challenges form the need for the Corporation and provide a basis for its program. First, is the need to step-up the quality of universities in the region, to provide for possible common research facilities of an extemely large nature and to carry on joint research projects where needed. In short, a major challenge is to serve the regional educational needs of the Gulf. For too long we have focused just upon the south. This focus should be translated into realistic programs and the Gulf coast with the Gulf of Mexico provide an important regional focus to assist in accomplishing these goals.

A second need is to establish a coordinated attack on the research needs of and the growth in knowledge about the Gulf. This coordinated attack should involve common planning and a unitized look at the Gulf of Mexico. This is a resource in which there are many users and in which there is no fixed legal resource ownerships. Consequently, there will be conflicts among users and a need for decisions respecting the most desirable uses and methods of use. Such decisions cannot be made without knowledge. Although there is a great deal of research effort going on in the Gulf of Mexico, generally speaking each user group attacks its own problems in its own way and little attention is given to what other user groups are doing. There is only one Gulf of Mexico and it should be looked at as a unit.

Furthermore, it is about time our national marine resources program undertook to examine some ocean area in considerable detail. Most of our past oceanographic work has been directed toward broad scoping problems. Although in recent years we have given some attention to expedions that have focused upon a given area, these have generally been of an exploratory nature. We lack in directing our efforts toward a complete understanding in the sense of translating our knowledge to use.

The Gulf is in our backyard, so to speak. It is a locale where a great deal of our weather is generated. It has a large coastline with much recreation potential. There is a large fishing industry in the Gulf. Streams going into the Gulf carry runoff from over half of the continental United States. Oil and gas production on the continental shelf is greater here than elsewhere on our coast. There is probably no other offshore region which can equal the Gulf of Mexico in the order of magnitude of resource use or interaction between users. It is a logical place to provide a coordinated, focused effort. There is a

national need for a focused look.

This leads to the third need for which the Corporation has expressed its goals, namely, there is a need to bring together representatives of all types of groups who have a concern for knowledge about the Gulf and its resources. These groups include universities, state agencies, municipalities, port authorities, recreational and user groups, industries, federal agencies and many others. Just as you people get together to consider all the problems of the fishery groups, so there is an equal need for all types of users to get together. We need to consider common problems and to decide how total resources can be most effectively used to understand the Gulf of Mexico and to provide for the hard decisions that will be necessary.

Let me now turn to the question as to how this job might be done. I have outlined a rather broad and ambitious goal. The first step, of course, is to form an action group. We believe this group has been formed in the establishment of Gulf Universities Research Corporation. The second step is to provide a staff through which action can be taken. Although the Corporation was formed in 1965, its program actually began in September, 1966, when a conference was held in New Orleans. November, 1967 represents the next significant date. At that time the Corporation hired its first full-time employee, Dr. Peter Badgley, a Program Director. As with all new organizations, the most difficult problems is to obtain funding to get the organization off the ground. In order to build our staff and to get into operation, we are relying upon annual dues from members and two small grants from the Moody Foundation.

Our principal efforts to date have been in establishing communication and in defining our program goals. A great deal of this communication has been by individual efforts and by committees and panels which have been looking at

the various scientific areas of concern to our member universities scientists. In addition, however, we have held a Marine Geology Workshop, we have co-sponsored several conferences, one dealing with Manpower in Oceanography and another dealing with Remote Sensing from Satellites.

The principal element of communication has been by personal visit and through the publication of a monthly newsletter, called Gulf Review. In this monthly newsletter, we print information about our member universities and about various research agencies doing work in the Gulf of Mexico. The Bureau of Commercial Fisheries, the U. S. Geological Survey, the Navy, and others have supplied us with short information pieces which tell about their program of interest to marine scientists.

We have established links with other groups, particularly with industry and with federal agencies. We have had several points of contacts with the President's Council on Marine Resources and with members of the President's Commission. Last year, at the invitation of the Commission on Marine Resouces, we sponsored a briefing session for Vice President Humphrey in Houston.

In order to bring the various user representatives together, we have established an Advisory Board and have invited representatives of state agencies, industries, federal agencies and universities to serve on this Advisory Board. Our corporate Board of Directors consists of sixteen persons and our By-Laws say that five of these can be at-large. We expect to rely upon our Advisory Board for recommendations for names to serve on the Board of Directors. At our last annual meeting, the Corporation voted Dr. William Walton of Pan American Petroleum Corporation, and Mr. George Mitchell, independent oil producer of Houston to be members of our board.

Naturally, we are anxious to initiate project activity at an early date.

We have several proposals now being prepared for submission to various federal agencies for funding. A proposal has just been filed with the Water Pollution Control Administration. We plan to submit proposals in the near future to the Sea Grant Program and to the National Science Foundation. We are seeking project activity which is of a regional nature and which is not likely to be done by a single university acting unilaterally. Indded, if the work to be done is of such a nature that a single university should undertake it, GURC does not see a role to fulfill. Last year the Corporation asked, on behalf of all universities, for release of industry coring and foundation data so that we could study the recent sediments in the Mississippi Delta Region. We believe that the companies made this information available to us when they would not have made it available to any single university. We have arranged for this data to be transmitted to Professor Morgan of LSU who is acting on behalf of the Corporation in the early stages on a project on sedimentation.

Our principal effort has been titled the Gulf Science Year. It is our stated intent to plan and organize a year-long series of synoptic observations in the Gulf of Mexico for the year 1970-71. There may be some reason to change this date, depending upon how rapidly we can complete the planning.

The purpose of such a year-long period of investigation is to confirm what we think we know about the Gulfof Mexico, to fill in significant gaps in our understanding, and to lay the groundwork for a longer period of investigations which we think will be necessary to understand completely the behavior and resource potential of the Gulf.

GURC has established a Steering Committee andhas set up eight panels for the purpose of organizing the Gulf Science Year. Each of these panels has had at least one meeting and some have had more than one. Four of the panels have filed reports indicating their analysis of the most important needs. We expect to contin

this planning and organizing effort as rapidly as we can obtain funds ot do so.

The question always comes up concerning the intent of the Corporation to have its separate staff and laboratory. I believe we will have to have a separate staff and laboratory if we are to do the job which the region and the Gulf of Mexico demands. There either is or isn't a job to be done over and beyond that being done by the universities and existing agencies. If there is a new job to be done, then it will take a new staff to do that job. If there isn't a new job to be done then GURC should fold.

I think that our national needs are sufficient to require a major regional marine resource laboratory in the Gulf of Mexico. I believe such a laboratory will become part of the federal funding structure. When such a laboratory is established, I would prefer to see it managed by a local group rather than a federal group and I think GURC has the potential for being such a managing group.

In short, it seems to me that between the diverse local groups concerned with marine resources and the unified national program for marine resources, we should visualize a regional link. This regional activity can be in tune with and a part of the national program but responsible to the local users and research interests. In this level between the local and federal levels, we offer the Gulf Universities Research Corporation as a unifying device.

GULF STATES MARINE FISHERIES COMMISSION
Panama City, Florida
March 21-22, 1968

"NATIONAL DATA BUOY SYSTEMS PROGRAM"

Commander V. W. Rinehart, Deputy Project Manager
National Data Buoy Systems Project
Washington, D. C.

Mr. Chairman, Commissioners, ladies and gentlemen:

It is indeed a pleasure to have the opportunity to present to you today a summary of a new national program presently under development by the U. S. Coast Guard, which on April 1 will complete its first year of operation under the Department of Transportation. This program, identified as the National Data Buoy Systems program, is designed to satisfy in part the growing need for more data on the present and predicted future environmental conditions on the surface of the oceans, gulfs, lakes and estuaries, in the air above these waters, and in the depths below. Like all "national" programs it is justified only if it meets the needs of a large number of beneficiaries, and if it does this better and more economically than some other approach.

This is the first opportunity we have had to present our proposed program to a group of potential "end users" of this data. I am convinced that you and other users should be convinced that this program <u>is</u> justified if it is indeed to be successful.

Reluctance to accept a new and somewhat untried concept, especially if its implementation will be expensive, is a perfectly understandable and reasonable reaction. It is through meetings such as this that we hope to generate information on what your information needs are, and what the impacts, both good and bad, will be on your enterprises.

To help you better understand the nature, goals, value and perhaps

shortcomings of these proposed data buoy systems, I would like now to summarize the background of this program, present certain technological and management considerations and give you a look at our present and future plans.

BACKGROUND

On 15 November 1967 the Coast Guard, with the approval of the Department of Transportation, was selected by the President's Marine Sciences Council, more formally, the National Council on Marine Resources & Engineering Development (NCMRED), to undertake the research, development, testing and evaluation necessary for the implementation of national data buoy systems. The broad mission of national data buoy systems is to collect extensive marine environmental data synoptically - with specific requirements as to accuracy and geographic and temporal spacing - and to transmit this data to processing centers and users in a rapid and reliable manner.

As part of their quest for suitable marine observation and prediction systems, many federal agencies have been developing buoys as data sensing platforms. In general these programs have not had coordinated goals, funding has been inadequate, and a "systems approach" has been lacking. In 1966 the Ocean Engineering Panel (now an arm of the Marine Sciences Council) recognized that the development, deployment and operation of consolidated national, rather than individual agency, data buoy systems held considerable potential, and requested that the Coast Guard manage an interagency study to investigate the feasibility of such systems. The Coast Guard undertook this task and contracted with Travelers Research Center for a ten-month Feasibility Study which was completed in October 1967. Their study documented the extensive national requirements for marine meteorological and oceanographic data, established the technical feasibility of data buoy systems as cost effective means for collection of a substantial segment of these requirements

developed representative plans for implementation of data buoy systems, and identified areas where substantial national benefits would accrue from such systems. Figure I portrays an artist's conception of such systems.

More specifically, the study identified 78 separate agency mission-operations that required marine data for operations or research in the fields of national security, economy, health and safety. These mission operations encompassed over one hundred variables including state and motion variables from the bottom of the ocean up to 100,000 feet, as well as biological, chemical parameters. Data was required from thousands of locations on and in the water areas of the globe. The requirements were analyzed and reduced to the following groupings:

Operational requirements; Deep Ocean; large scale (greater than 200 mile grid spacing).

Operational requirements; Coastal North American; medium scale (50-200 mile grid spacing).

Operational requirements: U. S. Estuarine; small scale (less than 50 mile grid spacing).

By combining individual agency requirements within these four groupings, the study achieved a four to one reduction in observation sites through the use of national systems that eliminated redundant efforts.

The Buoy Systems Feasibility Study also emphasized the lack of reliability and survivability information derived from operational tests of existing data buoys in the ocean environment. It concluded that costs and benefits would be optimized for operational systems in theoceans if data buoys were of sufficient size and reliable enough to permit long periods between servicing, and to support sensors measuring many meteorological and oceanographic variables from the air/sea interaction zone to the ocean depths. It should be emphasized that no specific size or shape buoy

has been selected. Based on these findings, representative plans for research, development, testing, evaluation, procurement and operation of data buoy systems were developed. Figure 2 portrays one representative plan for national data buoy systems which includes 150 deep ocean buoys, 290 coastal buoys, 100 estuarine buoys and 50 research buoys at an average annual cost of $50 million for the first 10 years. This estimate includes all costs associated with research, development, testing, evaluation, procurement and operation. Once more this plan represents only a possiblity. Actual numbers and locations of buoys will be determined as the system is developed based on needs of users and benefits to them. The study then identified potential benefits relating to these systems in the fields of national defense, agriculture, fishing, offshore mining, construction, ocean engineering, ship design, water and air pollution control, ocean transportation, and research--plus several savings to the gneral public realting to imporved weather prediction. The study report in five volumes, entitled "A Study of the Feasiblity of National Data Buoy Systems" and a shorter one volume "Summary" are available from the U. S. Department of Commerce, National Bureau of Standards, CFSTI, Springfield, Va. 22151. Document numbers for ordering purposes are AD 664 617, -18, -19, -20, & -21 for the five volume report and AD 665 314 for the Summary. Cost is $18.00 for the complete set or $3.00 per volume.

After review by its subordinate committees, the Marine Sciences Council approved the general findings of the Feasibility Study, concluded that research, development, testing and evaluation were required leading to implementation of national data buoy systems, and designated the Coast Guard as the agency for systems development. In December 1967 the Coast Guard established a National Data Buoy Systems Project Management Office from existing resources and commenced planning activities. Studies have been initiated to refine user requirements, and $5 million has been included in the FY 1969 budget request to Congress for first

year development costs. The President in his recent message on "Conservation" has endorsed that request.

TECHNOLOGICAL CONSIDERATIONS

The technical problems associated with data buoy systems are those inherent in the development and operation lf any unattended complex glcbal system required to measure and relay approximately 20 separate enviornmental parameters, some of them at 20 different vertical locations on a three-mile-long mooring line. These problems are intensified in data buoy systems due to the need for continuous, reliable operation in a changing, rugged oceanic environment--with the resulting sensor platform motion, extreme pressures on sensors with depth, and fouling by marine organisms. Many of the 48 different existing data buoys which were studied have utilized technological designs which address these problems in a limited sense, but none emcompasses the total range of measurements required. Also, none has been tested sufficiently to establish reliability and accuracy for long term cost-effective deployment on systems basis.

Data buoy systems may be considered in terms of four major subsystems --data gathering, ocean platform, ship support and shore support.

The funciton of the data gathering subsystem is essentially to sense each of the environmental parameters to be measured, convert the measurements into suitable form, and transmit that information to a central point for immediate use. Major technical problems exist in the sensors themselves. Basic devices to sense such variables as pressure, temperature, salinity, sound speed, current speed and current direction are relatively straightforward. However, modifying these devices to function properly at great depths, protected against pressure, marine fouling, corrosion, shock, vibration, and fish attack, presents severe problems. Minute amounts of fouling alone can change drastically the calibration of rotors which which measure current speed, or resonant paths which measure sound speed. Reliable

unattended devices to sense other required variables pertaining to nutrients, dissolved chemicals, viasbility, turbidity, magnetic intensity, and others, have not been developed sufficiently for cost effective on data buoys.

The next step in the data gathering function --the translation of the basic measurement into electrical impulses for transmission--is also relatively straightforward in concept. But the transmission of electrical impulses from detphs as great as 15,000 feet to an antenna on board an ocean platform presents a series of problems related to the electrical integrity of the conductor within a neutrally buoyant mooring line, and to the interface between the conductor in the line and both the down-line sensors and buoy platform. Finally, reliable transmission of environmental information from the ocean platform to communication hubs over long distances, either directly or via satellite, also requires further testing and evaluation. Each of these individual tasks has been accomplished on a limited basis, usually with human attention and control, but not as an integrated operational system, working automatically and continuously in the deep ocean.

The ocean platform subsystem consists of the flotation hull, power supply, mooring, and aids to navigation markings--all designed to support the required data gathering components. For the most part, existing buoy hulls have not been designed to optimize characteristics for servicability and long-term reliability in the ocean environment. Many failures have occurred, but because a detailed post-mortem of the hardware involved was not possible or was not carried out, the causes of many of the failures remain unknown. For this reason, an extensive investigation of the influences of hull size and shape on systems design is scheduled early in the proposed program. Reliable bottom holding devices, long-term power supplies and buoy hulls with adequate payload, stability and survivability all represent

technological problems, none of which is insurmountable. And the entire buoy subsystem must be capab le of routine handling and servicing by a tender with minimum time and effort. The problems outlined are those of optimizing individual components within the ocean platform subsystem, and in turn optimizing total system design.

The ship and shore support subsystems consist of (1) the vessels to routinely service and refurbish the buoys at sea, (2) the shore depots to perform major data buoy overhaul and to support the servicing vessels, (3) the communications relay stations that provide quality control and the transmission links for the measured information, and (4) the associated training facilities, repair facilities, and supply activities. Development of a buoy tenderto handle large buoy platforms and long mooring lines, both with sensitive instrumentation attached, across the air-sea interface in most weather conditions presents problems that can be solved only by considering the motions of the servicing vessel and the serviced platform relative to each other. It is again apparent that the buoy platform and the servicing vessel must be treated as elements of a single system. Similarly, design of support facilities ashore must be integrated into the overall system since the operational effectiveness of the system is greatly influenced by the quality and timeliness of the scheduled maintenance it receives.

MANAGEMENT CONSIDERATIONS

Continuing interaction between changing user requirements and systems hardware development is implicit in the National Data Buoy Systems Project. The requirements of 18 separate agencies representing the federal government and the interests it serves must be evaluated and refined into composite national requirements. These detailed requirements must be devloped with full recognition that the rate or intensity of smapling of parameters should be governed by the response scales of the senor and the spectral properties of the processes being sampled.

In turn, systems must be designed with sufficient flexibility to allow for changes in requirements, due to improved scientific knowledge of environmental functions and to improvements in sensors state-of-the-art.

Paralleling the refinement of user requirements is the need for refinement of user benefits--both to assist in determining initial areas of systems implementation and to determine the extent to which systems implementation is warranted. This, of course, is the area where we are most interested in having your support and assistance through the appropriate federal agencies.

National Data Buoy Systems will be major subsystems within the overall national marine data acquisition system. This acquisition system is in turn a part of marine environmental prediction systems. Data buoy systems implementation is being coordinated with these related systems through the Marine Sciences Council. Coordination also extends beyond the national to the international arena. The United States is coordinating with both the Intergovernmental Oceanographic Commission and the World Meteorological Organization concerning the development of data buoy systems that will meet international requirements. In addition, it is apparent data buoy systems should be designed with sufficient flexibility to be responsive to reasonable changes in these related systems.

COAST GUARD PLANNING

The technological and coordination considerations previously discussed have led the Coast Guard to establish a National Data Buoy Systems Project Management Office, with the centralized authority, responsibility and control of resources necessary to develop major systems. TheProject Management Office is now preparing plans for systems development. Data user requirements are being refined. Alternative technical approaches and technical development plans are being considered. Segments of the Travelers Data Buoy Systems Feasibility Study

and other studies being considered in systems planning are being reviewed in depth to verigy their applicability. Studies are being conducted to relate user requirements to the natural variability of the phenomena to be observed and the sensor to be used. Related development efforts of other agencies, industry and the scientific community are being monitored to determine how programs can be coordinated to provide maximum return for expenditures.

Flexibility in both systems planning and design will be utilized to ensure that during development the systems will be able to respond to changes in user requirements, new technology, and changes in interfaces with related systems. With this in mind, a four pronged effort will be initiated in FY 1969 with operational systems implementation in later years as shown in figure 2 and discussed below:

Management. Organization and procedures for systems management are being developed which will be used for life cycle planning.

STATE-of-the-art-Testing. Testing of state-of-the-art components and subsystems will be conducted in the laboratory and in the oceans to evaluate reliability, survivability and maintainability. Five ocean buoy test platforms will be produced as part of this effort. Existing programs of the Coast Guard and other agencies will be used to further this program where appropriate.

Prototype Systems Development. A prototype deep ocean/coastal system will be developed wtih implementaion of a 35-buoy network in FY 1973. This prototype network will be used to evaluate systems development, including hardware capabilities; effectiveness of plans for operations and support; safety; adequacy of data for user requirements; and interfaces with related systems. The network will be located where the resulting data will meet user requirements and demonstrate benefits to be derived from larger operational systems.

Research. A study and applied research program will be initiated in FY 1969 aimed at investigating potential systems improvements beyond the near

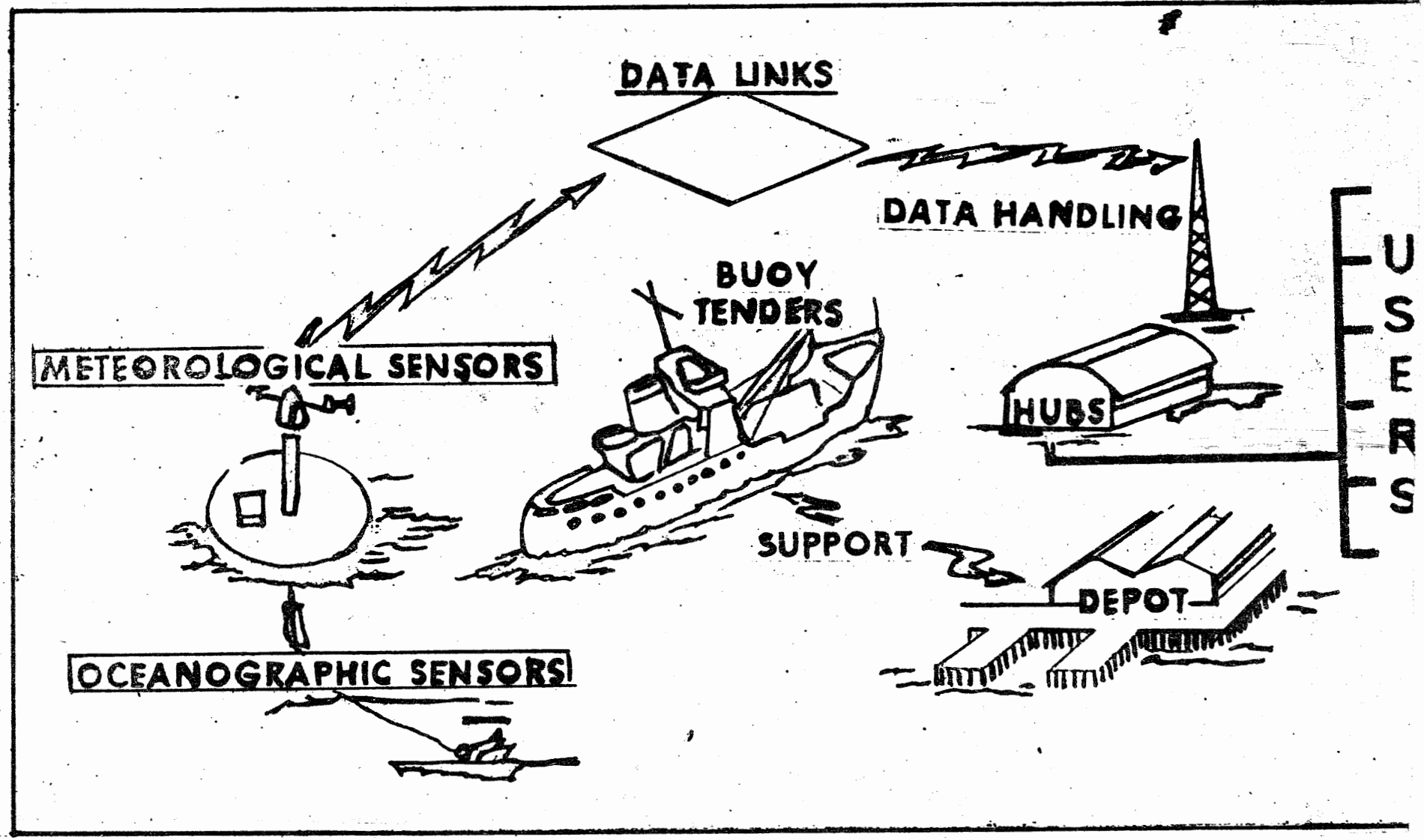
term state-of-the-art. Included in this effort will be further investigation of research and Lakes and Estuarine requirements to determine more clearly if national systems are warranted or if such systems should be developed by individual agencies and institutions. The feasibility of developing an upper air capability will be investigated. Research will be conducted to improve sensors and to develop additional sensors to measure chemical and biological variables.

Operational Systems Development and Implementations. The prototype network discussed above, modified to eliminate any inadequacies and improved by the latest technology, will form the basis for development and implementation of systems to be operational in FY 1975.

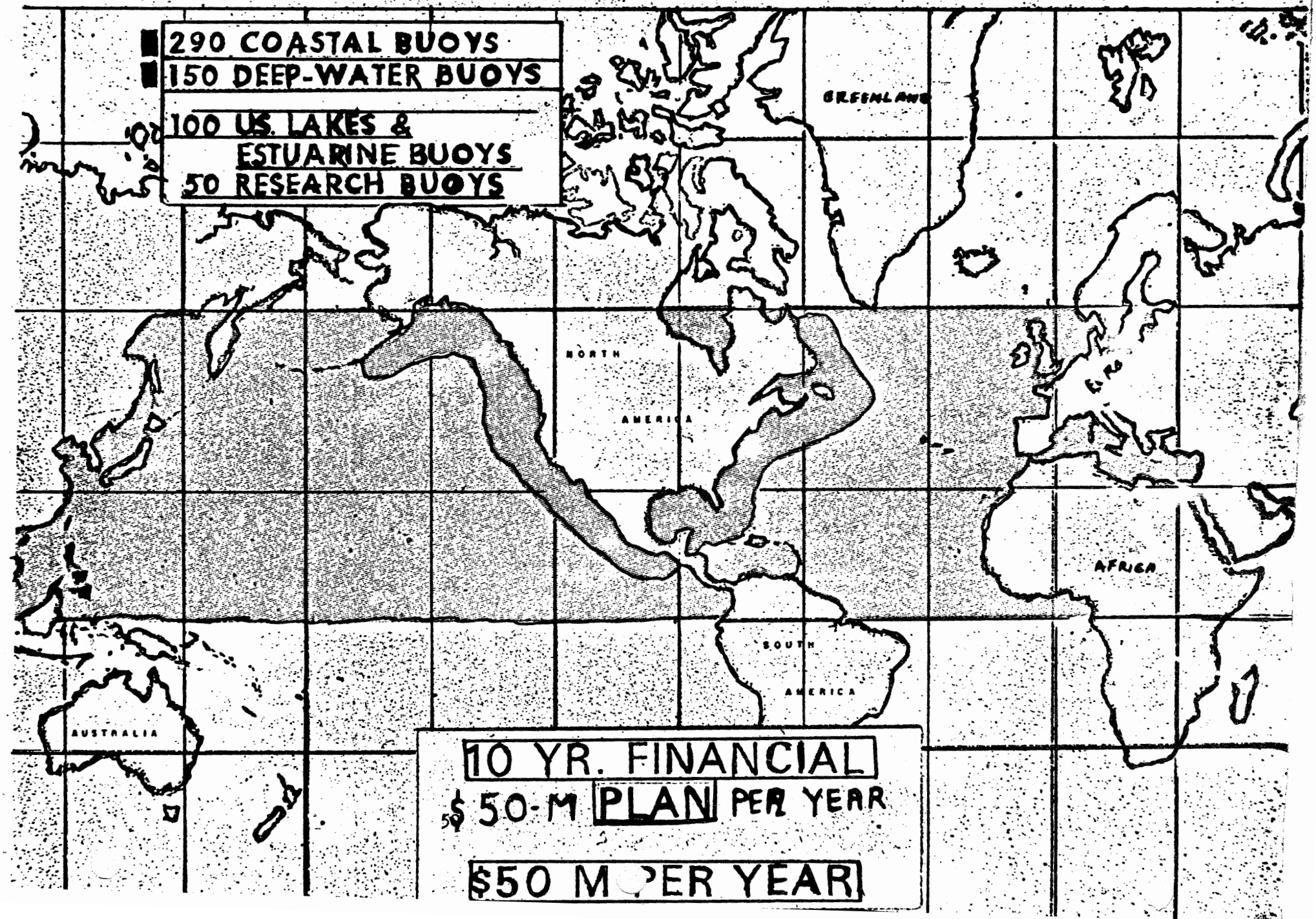
CONCLUSION

We encourage organizations which represent scientific and commercial interests to transmit their requirements, interests, and complaints (and being realistic, there will probably legitimate complaints) of those interests to the federal agencies. By maintaining close coordination with users, appropriate federal agencies, industry and the scientific community; and by following a deliberate path to systems development, the Coast Guard intends to develop data buoy systems which are responsive to the nation's needs and which are based upon a sound technological and fiscal program.

Concept of Data Buoy System



EPRESENTATIVE NATIONAL DATA BUOY SYSTEMS



GULF STATES MARINE FISHERIES COMMISSION
March 21-22, 1968
Panama City, Florida

"PROGRESS REPORT OF ESTUARINE COMMITTEE"

Dr. Ted B. Ford, Chief
Division of Oysters, Water Bottom and Seafood
Louisiana Wild Life and Fisheries Commission
New Orleans, Louisiana

Mr. Chairman, Commissioners, Ladies and Gentlemen, it's always good to be here with you to report on the activities of the Estuarine Technical Coordinating Committee. Since our October meeting we've had two separate sub-committee meetings which have been functioning and we think making good progress.

One of these sub-committees is the mapstandards unit under the chairmanship of Johnnie Crance and this sub-committee was authorized to proceed for the full committee in developing a base map which would be used by the Gulf of Mexico Estuarine inventory for presenting data which would best be illustrated on maps. This group has agreed upon a base map having a scale of 1 - 250,000 for presenting priority items; optional items shall be presented on maps of the most appropriate size or scale. For example, in this particular case, it depends on whether or not a particular state or group that is working on a project has considerable detail that could best be illustrated on a large scale map of a relatively small area. They have also agreed upon the symbols to be used on the base maps.

Next the standards sub-committee under the chairmanship of J. Y Christmas has virtually completed the format for the four phases of the Estuarine project, namely (1) area description, (2) hydrology, (3) sedimentology, and (4) biology, in cooperation with the National Oceanographic Data Center. The forms for recording the data should be finalized in the very near future, possibly

before the meeting is concluded. Also included in the work by the committee is the adoption of alternate procedures for the determination of nitrates and total phosphates and sea water under the hydrology phase. Purpose of this is to provide better levels of accuracy. These would be alternate procedures also acceptable with those previously approved by the committee.

I would like to bring you up-to-date on the current status of the estuarine film. Shooting was initiated last November. The initial effort, proposed to begin in Alabama, was delayed due to a conflict which resulted in the crew coming to Louisiana where they spent three days in the field using planes and one boat. It was reported that they did obtain some good sequences of film. I might add that the week in which they were there was relatively cloudy and overcast, not the most desirable, but presumably they were able to obtain some pretty good footage. The previous week we experienced complete blue bird weather, it was ideal for almost anything they could have wanted, but the schedule is developed in Washington and involves telephone coordination in making arrangements for the equipment so that it will be in the right place at the right time. The next proposed shooting is scheduled for Texas and then in Mississippi in the very near future. Subsequent shooting will be scheduled for Alabama and Florida after that. In the meantime they have located a twelve year old boy in South Alabama who will be our freckled face hero in this particular film.

The next item is one that has not been resolved yet, but we do have a subcommittee to consider the preparation of a resolution relative to clean waters for estuarine areas in the Gulf of Mexico to be submitted to the Federal Water Pollution Control Administration. It is proposed that if we can get some background data that is not preently available to us, we will then submit this to the Commission for their consideration. If they like it, then I presume it would be

adopted and forwarded on to the Federal Water Pollution Control Administration. You may recall last October at our Montgomery meeting that we had Jim Silva present, and he reviewed this Estuarine Survey Program and the purpose of these hearings to obtain the feelings of local interests,whether it be private, public or other, as to the future needs and present conditions of our waters throughout the country.

GULF STATES MARINE FISHERIES COMMISSION
Panama City, Florida
March 21-22, 1968

"REPORT OF ACTIVITIES - OIL AND GAS ADVISORY COMMITTEE"

Jake Lowenhaupt, Senior Staff Engineer
Oil and Gas Division, Geological Survey
New Orleans, Louisiana

Mr. Chairman, Ladies and Gentlemen, it's a real pleasure to be here today. At the October meeting of the Gulf States Marine Fisheries Commission, the Fishing Industry Advisory Committee was formed. The Advisory Committee at that time was made up of representatives from the oil industry, fishing organizations, federal and state agencies. The purpose of the committee, of course, was to make it possible for the oil industry and all the other interested parties to live together and best utilize our natural resources. The committee is attempting to seek solutions to problems existing in the outer-continental shelf area. Certain positive steps were made prior to the formation of the committee. The committee was actually one year in development prior to the initial meeting in October. Some of the positive steps taken prior to the meeting were scheduling of lease sales in such a manner that the conflict between the geophysical interests and the fishing interests would be minimized. In other words, with our coordination between federal agencies, sales were scheduled in such a manner that the major geophysical activity would be conducted prior to the shrimping season. In addition, in December, 1966, a submerged well list was distributed for usage of the fishing interest. This has been distributed monthly since that time and has been of considerable value although we still have some problems. The full Fishing Industry Advisory Committee in each of the two meetings considered geophysical operations, underwater obstructions and also pollution. It was decided yesterday at the meeting that geophysical operations are no longer a problem. The problems that were

in existence have been fairly well solved and only occasionaly does one develop.

At the initial Fishing Industry Advisory Committee meeting, an Underwater Obstructions Committee was formed. The major complication facing us is the existence of wells in the outer-continental shelf area that are not required to be buoyed. The Coast Guard requires buoys on submerged objects that have less than 85' of water coverage. Some wells are existant on the continental shelf that are in the prime shrimping areas, deeper than the 85' of water, and there are no buoys. Our sub-committee is seeking the solution to this enigma. There has been three meetings during the interim between the October meeting and the present time. There is now a basic understanding of the problems facing the oil industry and the fishing interests. We have accumulated quite a bit of background information and note progress being made. Naturally, progress is never rapid enough when you have problems of this magnitude. We are occupied with three areas of study now which appear to be our best step forward in promoting ideal working relationships. Our technical study group is working toward a possible change in policy and/or regulations which will prevent the existence of stubs in the future. We have high hopes for this project, although it is going to take some time to work out, possibly four to five months before we see some results.

There have been several meetings of an Offshore Operators Committee formulating the technical study group. The Bureau of Commercial Fisheries reported yesterday on their study of a shear-pin device to be put on the door of trawls. The device, which would allow shrimpers to get off some of the underwater obstructions they run into, appears workable. We have also devoted a considerable amount of time studying buoys of all types, lighted and unlighted, the use of charts with buoys, and so forth. Although buoys have been given consideration, they have not, in my estimation, proved to be an across-the-board answer. However, I would like to say that we feel progress is being made.

GULF STATES MARINE FISHERIES COMMISSION COPY
Panama City, Florida
Fontainebleau Terrace
March 21, 1968

"PACKAGING"

A. J. Lethbride, Regional Sales Representative
W. R. Grace Company, Duncan, South Carolina

The fish industry today can be likened to the poultry industry of 5 years ago. They all felt they needed a new way to market their product and proceeded to do something about it, expecially in the frozen line. Chicken whole and in parts was put into attractive boxes but no way to see the actual product which being frozen by a slow freeze left much to be desired. After this tray packed poultry product wrapped in a tray with a film overwrap was born. Some products were put into bags and vacuumized therefore giving the housewife a better view of what she was buying. Frozen fish today is going the same way - in store wrapping which leaves a lot to be desired. There are many attractive boxes of fish but it doesn't give the housewife a view of what she is buying. Quick flash freezing is the answer to many of these problems.

Captain Joe Ramos was nice enough to bring in some flounder he is packing in his plant today which you see displayed before you on the table.

The U. S. Department of the Interior, Bureau of Commercial Fisheries has taken an interest in vacuum packed fish. The following is a letter written to me by Melvin Waters of that Department which I would like to read to you now.

Dear Al:

I have talked with the people here who are responsible for the projects underway relative to the vacuum packaging of fish. As I said our two projects concern the prevention of browning of the flesh of red snapper; fading of the pigment in the skin of red snapper, and the prevention of rancidity in Spanish mackerel.

Mr. Harold Thompson tells me that vacuum packaging seems to do a better job of preventing fading of the skin in red snapper. It is much too early to draw any conclusions on the browning of red snapper, but it seems the vacuum packaging is far superior to the non-vacuum packaged product.

Mr. Robert Farragut has just begun his chemical and organoleptic analysis of the Spanish mackerel. No conclusions can be drawn from this data.

As I said before, this work is in its infant stages and these conclusions may change during the course of the experiment. The experimental period is designed for one year and at that time I am sure we will report our findings at meetings such as the Gulf States Marine Fisheries Commission or in scientific literature.

I am sorry we don't have more detailed information concerning this work, however, we may have further information by the time the meeting convenes at Panama City Beach. If you have further questions, call; if not, hope to see you at Panama City.

Sincerely yours,

s/Melvin Waters

Melvin E. Waters

Show 6250 film and pass out brochures.

GULF STATES MARINE FISHERIES COMMISSION
Panama City, Florida
March 21-22, 1968

"RESULTS OF BOTTOM LONGLINING ON CRUISE 1 OF R/V OREGON II"

Walter R. Nelson, Fishery Biologist
Bureau of Commercial Fisheries
Exploratory Fishing and Gear Research Base
Pascagoula, Mississippi

Through the years, there has been a reduction in the availability of Gulf of Mexico red snapper to the industry. Production has increased, but the catch per unit of effort of individual vessels has decreased. A large potential is available in yelloweye snapper, but they are not as acceptable to the market as red snapper. The combination of these two factors has, at present, placed an economic strain on the snapper industry.

The Bureau's Exploratory Fishing and Gear Research Base, at Pascagoula, Miss., has been concerned with improving the harvest and harvesting methods of the industry and finding stocks of bottomfish which are not currently being utilized as food. In the late 1950's, the use of roller-rigged fish trawls for snapper and grouper was demonstrated to be practical by the Bureau, but has not been accepted as yet by the industry. More recent emphasis has been placed on bottomfish explorations in an area which has received only token coverage in the past. Shrimp and snapper explorations have generally been confined to depths of less than 50 fathoms, with most deep-water shrimp (royal red) explorations being carried out in excess of 200 fathoms. The limited sampling, which had been conducted in the 50- to 200-fathom depth range along the edge and upper slope of the Continental Shelf, was done with shrimp trawls, which are not efficient for catching large mobile fish.

In an effort to increase our exploratory coverage on bottomfish stocks

within this depth range, two trips were made with the OREGON II. These segments of Cruise 1 desginated as Trips 3 and 7, in which fishing activities were conducted in the north, south, and east Gulf, were made to determine the availability of deep-water bottomfish to longline gear and to evaluate the commercial feasibility of this gear, in addition to evaluating the performance of the R/V OREGONII during the sea-trial period. Winches were not installed on the vessel at the time of its delivery, and the shakedown cruise provided an excellent opportunity to use fishing gear other than trawls.

This cruise was concerned with exploration for new fishery resources, with our emphasis being placed on coverage and not on maximum production. Hopefully, the rather low catch rates would have been quite a bit higher if we had followed the urge to try to load up the boat in areas where good catches were made. Also, the gear was a small sampling unit when compared with the several-thousand-hook longlines traditionally used by the groundfish industry in the northeast United States.

The bottom longline or "trawlline" which was used for the survey consisted of three 100-hook baskets of gear shackled together. One basket each of circle hooks, sizes 6, 7 and 9, was fished at each station. Hooks on 6- and 12-inch monofilament gangions were attached at 10-foot intervals to a 1/4-inch polydactylene or nylon mainline. When set, the mainline covered a bottom area approximately 3,000 feet long.

Trip 3, September 25-October 11, 1967, was conducted off the Texas coast from an area south of Galveston to western Louisiana, where 29 bottom sets were made.

Trip 7, January 4-February 1, 1968, was centered on the Campeche Bank (43 sets), west coast of Florida (24 sets), and northern Gulf from Cape

San Blas to the Mississippi River Delta (23 sets).

The highest foodfish production was found off the Texas-Louisiana coasts, with decreasing abundance on the Campeche Bank, in the northern Gulf, and off the west coast of Florida, respectively.

Areas of highest foodfish production in Texas were found at 100 fathoms (45 pounds per 100 hooks) and 200 fathoms (51 pounds per 100 hooks). On Campeche, peak abundance was found at 150 fathoms (37 pounds per 100 hooks). In the northern Gulf, 24 pounds per 100 hooks were taken at 175 fathoms. Catches were very low off the west coast of Florida with an average catch of only 7 pounds per 100 hooks at 125 fathoms, the depth of highest production.

Two species of foodfishes dominated the catch. Surprisingly, the most abundant food species by number and weight was the northern tilefish, Lopholatilus chamaeleonticeps. We anticipated catching sharks and hake on the deep end of our depth coverage as a result of past exploratory work in this depth zone, and were quire surprised whena strange-looking 25-pound fish came up on the longline. Occasionally, small tilefish have been picked up in the explorations with deep-water shrimp trawls, but never in abundance or large size.

Fishery statistics whow that a few thousand pounds of tilefish are caught yearly off south Florida, and are landed in Florida ports. These are taken incidentally by snapper fishermen in small numbers, but they have not previously considered to be of potential commercial importance as a separate fishery.

Tilefish were taken in all Gulf areas sampled. Total depth range was 100-125 fathoms, with greatest abundance at 150-200 fathoms. Thirty- eight longline sets were made in depths of 150-200 fathoms in the Gulf and tilefish were caught on 27 of these sets. Size of the fish ranged from 1 to 27 pounds with an average weight of 6 pounds.

Tilefish were taken over a temperature range of 50-63°F., but were

abundant only in a narrow temperature range of 55-57°F. Their distribution appears to be affected by both depth and temperature in that they were caught only once from depths greater than 200 fathoms, even though several deeper stations had temperatures in the optimum range. Also, they were caught only once at depths of less than 125 fathoms, although numerous shallower sets were made in waters of less than 63°F.

At times, small tilefish were taken on several consecutive hooks, indicating that they may exhibit schooling behavior. Larger individuals, however, were more widely separated on the line and did not appear to occur in shcools.

At no time did depth recorder tracings indicate large concentrations of fish in tilefish areas. Individual fish, picked up on a cathode ray fish finder, proved to be small sharks when sets were made. Nothing was found to indicate that dense concentrations of tilefish occur as in some other bottom species.

Tilefish appeared to be more abundant on rough bottom or on moderate to steep slopes than on broad expanses of smooth bottom. This might either be a habitat preference or food availability phenomenon.

All of our tilefish information was gathered in October and January and distribution and abundance could change radically during other parts of the year. However, the environment should be fairly stable at depths of 150-200 fathoms, and any major seasonal changes would be quite surprising.

Highest catches were made off the Texas coast. A maximum catch of 285 pounds per set was made at 150 fathoms, with 217 pounds per set being the highest at 200 fathoms. Average catches were 29 and 48 pounds per 100 hooks at 150 and 200 fathoms, respectively. Tilefish were taken on all of six sets in this depth range off Texas.

Next in the tilefish abundance was the Campeche Bank. The greatest catch per set 12 fish weighing 16y pounds. Highest fish density was found at 150 fathoms, but the catch per 100 hooks at that depth wss only 23 pounds. Tilefish were taken in 15 out of 19 sets from 150 to 200 fathoms. Tilefish decreased in abundance from west to east along the northern edge of the Campeche Shelf, and were taken only in small numbers east of Alacran Reef.

Another species, the gray tilefish, Caulolatilus microps, was taken in moderate numbers on east Campeche from 75 to 125 fathoms. This species is familiar to snapper fishermen, who refer to it as the soapfish. Maximum catch made was 125 pounds at 125 fathoms. Average size was 3 to 4 pounds with the largest weighing 15 pounds. In a few cases, both species were taken on the same set, but their ranges did not generally overlap.

Tilefish were taken off the west coast of Florida from 125 to 225 fathoms, but only one or two were caught per set. The catch, however low, at least showed the presence of tilefish in the area, and concentrated on tilefish stocks may have been missed due to limited coverage. A few gray tilefish were caught in the 75- to 125-fathom depth range, but appear to be more southerly in distribution than Lopholatilus.

Tilefish were found in two areas of concentration in the northern Gulf--the mouth of the Mississippi River and the eastern portion of DeSoto Canyon. The maximum catch was 14 fish weighing 104 pounds. The depth of greatest abundance was 175 fathoms, with an average of 23 pounds per 100 hooks. Central and western portions of DeSoto Canyon were not sampled, but it is quite probable that tilefish are located throughout the whole canyon area off northwest Florida.

The other food fish found in some abundance was the strangely named

yellowedge grouper, Epinephelus flavolimbatus. This species is well known to snapper fishermen, who refer to it as yellowfin grouper and hold it in high esteem as a food-fish. It accounted for more than 50 percent of the total weight of all species of grouper taken. The yellowedge grouper depth range was 75-150 fathoms, with the greatest abundance occurring at 100 fathoms. The fish were relatively large with an average weight of 10-1/2 pounds and a size range of 4 to 20 pounds.

In contrast to many other species of grouper, the yellowedge was not limited to rough bottom and was caught frequently in areas of flat topography. Yellowedge were abundant in only two of the Gulf areas sampled. Highest catches were made off the Texas coast where an average weight of 22 pounds per 100 hooks was taken at 100 fathoms. The largest catch per set was 24 fish weighing 271 pounds.

The largest catch on the Campeche Bank was a 105-pound set made on the northwestern edge. The highest average catch was 14 pounds per 100 hooks at 100 fathoms. Yellowedge grouper were not taken from the west coast of Florida and only two were caught in the northern Gulf.

Other foodfish taken in small quantities were red snapper; vermilion snapper; wenchman; scamp; warsaw, red, and black grouper; porgies; and hake.

Sharks, comprising 32 percent of the toal catch, constituted the largest single bottomfish component taken. The bulk of the shark total was taken from the northern Gulf area and was comprised mostly of dogfish, Squalus and Centrophorus, and smoothhounds, Mustelus, averaging about 4 pounds.

As a note of interest, 10 Centrophorus livers weighing 16 pounds produced 14 pounds of oil. Shark livers containing 30-40 percent squaline bring about 35 cents per pound. The Centrophorus livers, which were checked by our Technological Laboratory, had a squaline content of about twice that mentioned, and could provide significant supplementary income if taken coincidentally in a

The bottom longline appears to be a valuable research tool for studying larger deep-water fishees. Its value as a piece of commercial fishing gear may be marginal, however. The groundfish fishery off the northeast United States and Canada was carried out almost exclusively, at one time, with longlines or "trawllines." However, this method of fishing gradually phased out over a long period of years because it simply was not as efficient as the fish trawl which replaced it. In bottom areas that are both too rough to trawl and too deep to be fished easily by handlines, longlines might be of some commercial value.

Our findings agree with those of earlier workers in that longline gear does not appear to be commercially feasible for snapper, but may have some application to grouper. A number of our sets were made on rough bottom within the depth range of red and, especially, yelloweye snapper. Only one yelloweye and 65 red snapper were caught during the entire cruise. Grouper catches were higher, but approached what might be considered commercial catch rates only off Texas in depths of about 100 fathoms.

The apparent absence of dense schooling behavior on the part of the tilefish makes it appear unlikely that they would support a handline fishery. A longline, which covers a relatively large bottom area compared to handlines, should provide higher catch rates per unit of effort. Early reports on longline catches of northern tilefish give rates of 30-40 individuals per 400 or 500 hooks, which compare favorably with catch rates made in areas of greatest concentration off Texas.

The area off Texas is the only portion of the Gulf sampled which appears to offer a comercial potential with a bottom longline fishery. A large number of hooks would have to be fished. Projections from our tilefish catch rates indicate that a daily fishing effort of 5,000 hooks should result in average daily catches of about 2,000 to 4,000 pounds.

We conclude, however, that the bottom longline appears to be of more value as a tool for locating and assessing bottomfish stocks than as a method of commercial harvest.

A trawling potential appears likely on bottom areas throughout the Gulf which are not excessively rough. Tilefish are taken commercially with trawls in the northeast United States and should be susceptible to trawling in the Gulf. Most of the bottom area in which tilefish were taken was rough or sloping, but little bottom was recorded which appeared to be prohibitive to the use of roller-rigged fish trawls. Certainly a tilefish potential exists which warrants further exploration. During the next 1-1/2 years, the R/V OREGONII has four deep-water fish trawling cruises scheduled in the Gulf, and, hopefully, will reveal that a trawl fishery for these foodfish is feasible.

This cruise again shows the still unknown nature of the total resource in our Region, in that yet another potential fishery stock was found which had been under our noses all the time.

GULF STATES MARINE FISHERIES COMMISSION COPY
Panama City, Florida
Fontainebleau Terrace
March 22, 1968

"RESEARCH ON THE STRIPED BASS IN ALABAMA"*

Dr. E. W. Shell
Associate Professor Fisheries
Auburn University

In past years spawning runs of the striped bass occurred in several Alabama Rivers and locally important fisheries for this species developed. Few fish have been taken since the early 1960's either by commercial or sport fishermen. The reason for the disappearance of these runs of striped bass is not known. Pollution in the lower reaches of the rivers near Mobile has been suggested as the major cause; however insufficient information is available to establish this point.

There is little evidence that the striped bass runs historically were of sufficient magnitude on which to base a significant commercial fishery. This species has not been taken in sufficient quantity in Alabama to be included in Fishery Statistics of the U. S. published physical and possibly the chemical characteristics of Alabama rivers were not satisfactory for spawning, hatching, and survival of the early life history stages of this species; yet conditions necessary for the survival and growth of the young of the species, once they reach fingerling size, seem to be excellent with the possible exception of areas of pollution which might limit their migration to and utilization of the highly productive estuarine areas of the state

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* This research is being conducted by the Fisheries Division of the Auburn University Agricultural Experiment Station in cooperation with the Alabama Department of Conservation, Division of Seafoods.

The establishment of a run of striped bass into the estuarine areas and associated river systems of Alabama would be of significant economic benefit to the commercial fishing industry of the state. Further, it is felt that this species would convert the abundance of forage fishes in the area into a more valuable form; thus utilizing the productive potential of the estuarine and riverine environments more effectively.

Three areas of research on the striped bass in Alabama are being conducted concurrently: 1) Survey of the striped bass fishery in Alabama, 2) Culture of striped bass from fry to large fingerling and 3) Stocking of marked large fingerlings into selected areas in the Mobile Delta Region and associated rivers.

Commercial fishermen, fishing camp operators and seafood processors were interviewed in an attempt to establish the present status of striped bass in Alabama. Twenty-six commercial fishermen and fish camp operators were interviewed and all were in general agreement that the last significant run of striped bass occurred in 1961. Officials of two seafood companies were contacted concerning purchases of striped bass in the past few years. In one case records show that the last striped bass was purchased in 1963, and that they were purchased in relatively large quantity in the late 1940's and early 1950;s. A second company purchased their last striped bass in 1961 and verified that prior to that time, they were commonly brought in by fishermen.

A small run of striped bass occurred in the spring of 1967 in the Tallapoosa River. Although apparently there was a small run of striped bass that reached the lower Tallapoosa River there was no

noticeable increase in the catch of striped bass by either sport or commercial fishermen in the Mobile Delta Region.

We have not been successful in keeping striped bass fry alive in hatching jars past 13 days of age at Auburn; however, it is felt that water quality is the most likely cause of our failure to do so. We have not attempted to rear fry in ponds on natural foods.

Fingerling striped bass have been produced using pond culture with forage, pond culture with feeding and trough culture with feeding. Pond culture with forage produced the largest fingerlings (up to 9 inches in 126 days), but pond culture with feeding produced the most pounds per acre of water (217 pounds in 119 days). The growth rate of fingerling fish in troughs utilizing feed was much lower than in the ponds.

Fingerling fish suitably marked so they can be identified later with respect to time and location of stocking have been stocked in the north end of Mobile Bay and approximately 75 miles up the Alabama River. Vinyl spagetti tags and fin clips were used as marks.

GULF STATES MARINE FISHERIES COMMISSION
Panama City, Florida
March 21-22, 1968

"POND STUDIES ON SHRIMP"

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Pond cultivation studies were begun in 1962 at the Marine Laboratory (10th Biennial Report). Preliminary experiments were conducted with brown and white shrimp and these animals seemed to lend themselves well to cultivation. In 1965, five additional 1/4 acre ponds were constructed, but hurricane "Betsy" destroyed them before they could be used. These ponds were rebuilt and used in experiments with shrimp, oysters and mullet in 1967.

In the spring of 1967, each of the five experimental ponds, A-7 through A-3 were stocked with 5,000 juvenile brown shrimp. Two of the ponds, A-7 and A-5, were fed ground, yellow, cornmeal at rates of 10% of the total shrimp weight per day. Two other ponds, A-6 and A-4, were fed at 5% per day. Pond A-3 was used as a control and was not fed. Samples of 50 shrimp were removed, weighed and returned to the ponds each week. Feeding weights were increased to proportion to the weekly weight gain. At the end of 80 days, the ponds were drained and the shrimp removed, counted and weighed. During the draining period, a fish kill was experienced throughout the immediate area where the ponds are located. This oxygen deficiency kill, caused by several windless, cloudy days, made the end results misleading. Mortalities in ponds A-5 through A-3 were high, while ponds A-7 and A-6, the ponds drained before the kill, had low mortalities.

In the summer of 1967, ponds A-6 and A-7 were each stocked with 5,000 juvenile white shrimp. Pond A-7 was fed cornmeal at the rate of 10% of the shrimp weight daily and pond A-6, 5%. The other ponds were not

stocked due to the lack of small white shrimp near the Marine Laboratory. Weekly samples were made and feed added as previously noted with the brown shrimp. After 49 days, the wall of pond A-7 was broken while adding water and the experiment on this pond was terminated.

At the end of 80 days, pond A-6 was drained, the shrimp removed, counted and weighed. Mortalities were low and weight increases were comparatively high.

During the experimental periods salinities ranged from 17 to 31 parts per thousand (PPT). The daily average was 23.6 ppt. Salt concentration in the ponds did not reach as high a level this year as had been previously experienced. Possibly, this was because of the amount of water that had to be added to the new ponds due to percolation and seepage. Water temperatures ranged from a high of 37 C in July to a low of 16 C in October. The average monthly temperature was 27.5 C.

The above tests were the first large scale feeding experiments conducted at this laboratory. They seem fairly successful in that slightly over 400 pounds of shrimp per acre were produced with relatively low mortalities (Table 1). The food conversion ratio (C) is very significant. This is the pounds of cornmeal needed to produce one pound of shrimp gain. Using the C Factor, the cost of the brown shrimp in A-6 may be calculated as follows: 4.1 (C factor) X $.03 (cost of cornmeal per pound) equals $.12 per pound of shrimp produced over the stocking weight. If costs of feeding are calculated, it would not seem feasible to raise shrimp in this manner. However, the feeds used thus far are not intended for commercial production. Their use is only to explore the potential ability of shrimp to use supplemental feeds. Future studies will be made to find more complete and desirable feeds.

In the near future, more ponds will be built at the Grand Terre

Island Marine Laboratory. These ponds will be used to study the problems concerning cultivation of shrimp, oysters and commercially important finfish. Some of the problems to be studied are:

1. Control of fish which are not predatory but do utilize supplemental feed.
2. Control of predatory fishes
3. Harvesting methods
4. Spawning techniques
5. Control of parasites and diseases
6. Supplemental feeding
7. Stocking rates

Pond Studies on Oysters and Mullet

To enhance the economic feasibility of pond culture of marine species, a pilot program for the rearing of species compatible with shrimp was begun in the spring of 1967. Species selected for the study were the American oyster and striped mullet. A Major factor in the selection of these species was the fact that they are non-predatory. Other factors considered were compatability, economic importance, food requirements and/or availability.

Long range purposes of the study are:

1. Determine the optimum number of each species required for a maximum yield.
2. Determine a satisfactory, economical feed which can be utilized by all species and the amount required for the maximum production.
3. Determine the optimum environmental conditions required for maximum production.

Stockings of oysters and mullet inot five, 1/4 acre shrimp ponds, was initiated in April 1967 at the rate of 40,000, 2 year

old oysters and 4,000, 1 inch mullet per acre. However, we were unable to catch a sufficient number of mullet and it was necessary to lower their stocking rate to 2,500 per acre.

Of the five ponds stocked, four were fed a daily ration of finely ground cornmeal on a basis of 5% or 10% of the body weight of the shrimp; the fifth pond was used as a control and received no cornmeal. The shrimp population was sampled weekly and the feeding ration adjusted accordingly. For a more detailed description of this phase of the study see the section on pond shrimp studies.

Water was supplied to the ponds from Barataria Bay with a 6" pump. Water depth in the ponds averaged 2 ft. Additional water was added to the ponds once each week to offset losses due to seepage and evaporation. Temperature and salinity were measured by the use of a continuous recording instrument.

Oysters were placed on the dry pond bottom at a density of approximately one per square foot. This method required considerable hand labor and resulted in the oysters being exposed to direct sunlight at high temperatures for a considerable time before being covered with water.

It is believed that this method of stocking contributed heavily to the death of nearly 3,500 of the oysters. Death was evident immediately after stocking. These oysters were removed and replaced with live stock.

The stocked oysters spawned in late April or early May. A heavy set of young spat was caught on the adult shells and that part of the pond wall below the water line. This heavy catch of spat raised the number of oysters per acre from 40,000 to an estimated 958,000.

Mullet were removed from the ponds in July after 80 days of feeding. All appeared to be in excellent condition. Data collected from the recovered mullet revealed the following: Mortality in the control pond was 35%; ponds fed at the

5% rate was 28% and in the ponds fed at 10%, it was 21%. The mullet grew from an average length of 1" at stocking to 4-1/3" in the control pond, 4-3/4" in the 5% ponds and 5-1/4" in the10% ponds. Average weight gain per mullet was 14.72 gms in the control pond, 22.01 gms in the 5% ponds and 25.54 gms in the 10% ponds.

The present oyster study in the shrimp ponds will continue to mid-1968. These results will be in the next biennial report. Additional studies are being planned to:

1. Investigate the possibility of controlling the time and place of set of oyster spat.
2. Investigate the possibility of early season fattening of oysters by supplemental feeding, temperature and light control.
3. Initiate laboratory controlled spawning of oysters.
4. Develop a satisfactory method of monitoring oyster spawining and spat mortality.

The study on pond rearing of mullet will be repeated next year with the fish held in the ponds for a longer period of time. Brood stock are being over-wintered in the ponds this year. They should furnish an adequate supply of young mullet for next year's study. The study will also be expanded to include other species of salt water fishes.

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March 22-23, 1968

"DEPURATION OF BILOXI BAY OYSTERS BY RELAYING"

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This study was financially supported by the Mississippi Marine Conservation Commission and the U. S. Department of the Interior, Bureau of Commercial Fisheries under the Commercial Fisheries Research and Development Act, PL 88-309, Project 2-28-R

DEPURATION OF BILOXI BAY OYSTERS BY RELAYING

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Introduction

When productive oyster reefs are closed to commercial harvesting, because of a deterioration of the sanitary quality of the water over the reef, the problem of what to do with the oysters growing there must be faced. The state agency or private owner of the oyster reef has several alternatives. First, the small oysters can be used to seed new areas for establishing new oyster reefs or placed on old reefs for additional growth. Second, the oysters can be harvested and purified in a depuration plant prior to commercial marketing although this procedure is somewhat prohibited by a cost which is dependent upon the size and operation of the plant (1). Third, the oysters may be relaid to clean waters for a two-week depuration period prior to commercial harvesting. And last, the oysters can be left where they are and to whatever fate may come to them. With the great demand for oysters today, we hope that the latter will be come the exception rather than the rule.

In the Fall of 1966, the Microbiology Section of the Gulf Coast Research Laboratory launched a three year research project to study the problem of high coliform counts in the waters over

some of Mississippi's oyster reefs and to study the possibility of dupuration of oysters from closed areas by relaying. This project is funded jointly by the Bureau of Commercial Fisheries and the Mississippi Marine Conservation Commission using funds made available under Public Law 88-309.

In the Fall of 1967, all of the oyster reefs in Biloxi Bay (see Map 1) were closed to commercial harvesting by the Mississippi State Board of Health. This placed an economic strain on many oyster tongers in the area. An accelerated program was then put into effect to find suitable areas for relaying of oysters from the closed reefs thus providing some economic relief for the oyster tongers.

When looking for an area to be used for relaying of oysters from closed reefs, several important factors must be considered:

(1) Sanitary quality of the water in the depuration area.

(2) Depth - the depuration area should be located where both the oyster tongers and the dredge boats bringing in the oysters for relaying can work.

(3) Water conditions - the depuration area should have water conditions (e.g., temperature, salinity, pH, etc.) similar to those in the area from which the oysters were harvested.

(4) Bottom - the area should have a bottom that will support the weight of the oysters placed on it and be of such consistency that new oyster reefs can be established there from the oysters and shells left over from one year to the next.

(5) Transportation Cost - the relay area should be as close as possible to the harvesting area to cut the cost of transportation of the oysters.

Materials and Methods

All bacteriological procedures were conducted in accordance with the "Recommended Procedures for the Bacteriological Examination of Sea Water and Shellfish." (2)

Experimental depuration studies were conducted in covered racks 30 x 18 x 3 inches, constructed of 1" welded wire mesh. Each rack accommodated approximately 80 commercial size oysters.

Oysters harvested with a hand dredge, culled and placed in the rack and immediately transferred to the depuration area. The racks were allowed to sit on the bottom unless otherwise stated. Some racks were placed on a set of legs to support them approximately six inches off the bottom. The racks were marked with a float connected by a retrieving line tied to the rack.

For studies of commercial relaying, the oysters were harvested by a power dredge boat (Uranus - MMCC) and transported to the depuration area and shoveled overboard. No culling was practiced.

The glycogen content was measured on a composit sample from ten oysters using the extraction method of Carrol, Longley and Roe (3) and the determination method of Montgomery (4).

In all depuration studies, oyster samples were collected every other day after relaying and analyzed for the coliform MPN and EC positive MPN.

Results

In the Fall of 1966, a routine water sampling program was initiated at each of the stations shown on Map 2. Surface and bottom water samples were collected every 3 to 4 weeks and analyzed bacteriologically. Table 1 shows the median coliform MPN and EC gas positive MPN at each of the smapling stations in Biloxi Bay. As can be seen, Station 103 shows the highest coliform count. The median coliform count drops off sharply as we proceed through the Bay seaward. These results indicated that the water near the mouth of the Bay was of a sanitary quality suitable for use in a depuration area.

With the aid of the Marine Biologist of the Mississippi Marine Conservation Commission (Mr. William J. Demoran) two areas were located with bottoms suitable for the establishing of oyster reefs. Both of these areas were in 4 to 6 feet of water at low tide which made them accessible to both dredge boats bringing in the oysters and for tonging (see Map 1). These areas have been designated D-1 and D-3.

More intensive studies of the water quality were made in both areas and it was found that the median coliform MPN fell within the MPN level suggested for growing areas. Area D-3 was found to have better quality water and to be less affected by rainfall than area D-1 but in the summer months, the salinity became very high in the D-3 area allowing the intrusion of the oyster drill.

Figure 1 shows the changes in the coliform MPN and the EC positive MPN of oysters relaid to the D-3 area. The counts dropped very rapidly in the oysters in both of the racks on legs and the oysters in the racks that were sitting directly on the mud bottom. Depuration was completed in both areas by the eighth day.

No significant differences were noted between depuration of indicator bacteria from oysters placed directly on the mud bottom as compared with the oysters held off the mud bottom in racks (Figure 2). Depuration proceeded somewhat slower, but was completed by about the tenth day.

In Figure 3, we see a comparison of the oyster depuration in D-1 area with the D-3 area. Excellent reduction in the coliform and EC positive MPN were obtained in both areas. Again depuration was completed by the eighth day.

The effect of rainfall and wind direction on the depuration process is noted in Figure 4. On the eighth day, after the oysters were moved to the area, moderate rainfall occurred and a norther moved through which flushed much of the water from the heavily contaminated part of the Bay out over the depuration area. This caused a very sudden increase in the bacterial counts in the oysters. The same thing occurred on about the fifteenth day. The effect was noted much less in the the D-3 area than in the D-1 area.

To obtain a measure of how well the oysters were faring in their new environment, the glycogen content of the oysters was measured periodically during depuration. Over a sixteen day period

there was no significant change in the glycogen content of oysters relaid into either of the areas (Figure 5). This indicated that the oysters were feeding and did not have to rely on their stored energy sources.

In February of 1968, approval was obtained from the Mississippi State Board of Health and the U. S. Public Health Service to use the D-1 area as a relaying area.

Shortly thereafter, 4,370 barrels of oysters were moved into the northern most section of the D-1 area by the Mississippi Marine Conservation Commission for commercial purposes. Figure 6 shows the change in the number of indicator bacteria in the oysters during depuration. Almost complete depuration was obtained in 10 days. On the twelfth day, rainfall occurred when a norther went through causing the count to rise slightly in the oysters.

Fourteen days after the last oysters were relaid into the area, it was opened for commercial harvesting by tonging. It was reported that some 40 to 50 boats worked on the area during the first 2 days and even after 2 weeks a few boats were still working in the area.

Summary

Two areas have been located which meet the before mentioned criteria for a good oyster depuration area. Bacteriological studies have shown that the depuration of indicator organisms from oysters was acheived in a shorter time than the recommended 15 days.

Acknowledgements

We wish to acknowledge the financial support of the Mississippi Marine Conservation Commission and the U. S. Department of Interior, Bureau of Commercial Fisheries under the Commercial Fisheries Research and Development Act (PL 88-309), Project No. 2-28-R-2. We also wish to thank the Mississippi Marine Conservation Commission and especially their biologist for their cooperation and technical assistance.

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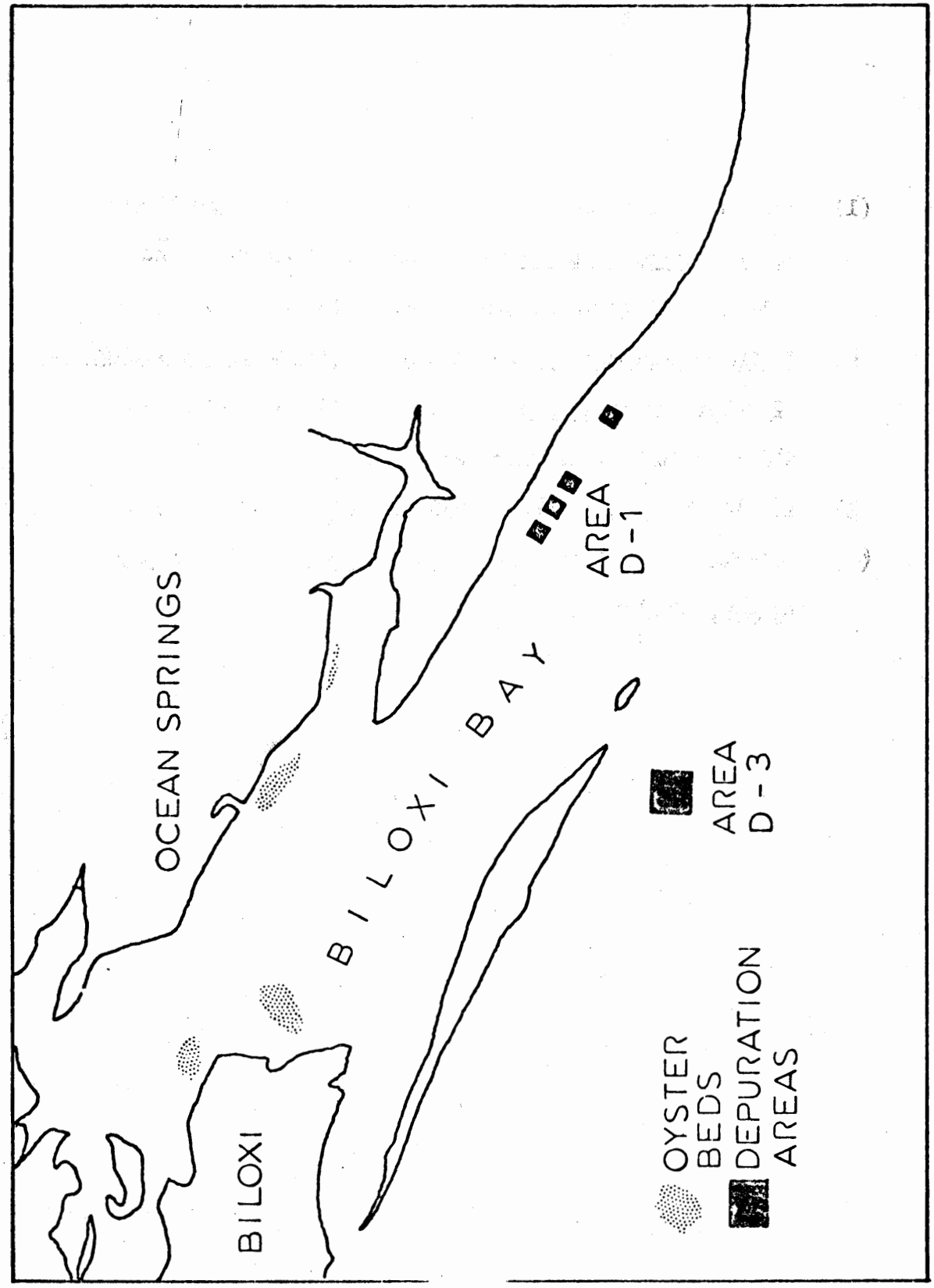
MAP 1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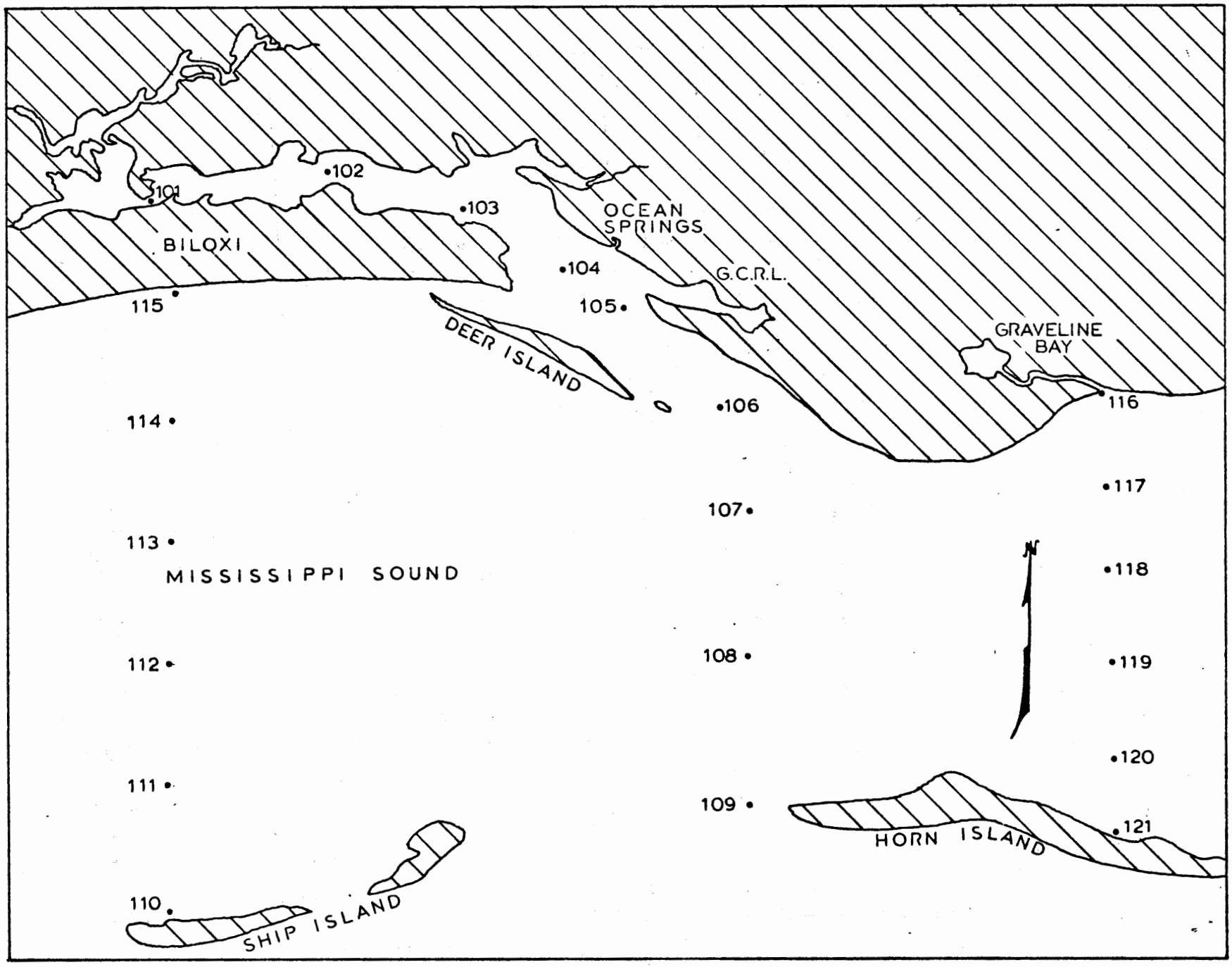
BILOXI BAY
AREA D-1
AREA D-3
OYSTER BEDS
DEPURATION AREAS



STATIONS IN BACK BAY OF BILOXI AND IN TRANSIT ACROSS MISSISSIPPI SOUND REF. U.S.G.S. NH16-4

MAP 2

TABLE 1

Median* Bacterial Counts at
Water Sampling Stations in Biloxi Bay

	SURFACE		BOTTOM	
Station No.	Confirmed MPN	EC+ MPN	Confirmed MPN	EC+ MPN
101	490	33	240	79
102	490	33	330	130
103	1400	220	240	49
104	310	33	170	13
105	47	10	23	5
106	23	8	8	<2

*Nineteen water samples were collected at each station between December 1966 and February 1968.