

# PROGRESS OF THE COMMERCIAL FISHERIES RESEARCH AND DEVELOPMENT PROGRAM IN THE GULF AND SOUTH ATLANTIC STATES

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## INTRODUCTION

The Commercial Fisheries Research and Development Act (PL 88-309) provides for Federal-State cooperation in conducting research and development projects designed for the enhancement of the fishery resources of the Nation. A total of \$2,664,500 was allocated under the Act to the States of the Gulf and South Atlantic Region (Region 2) of the Bureau of Commercial Fisheries during fiscal years 1966 and 1967. More than 98 percent of the Federal funds allocated for fiscal year 1966 and about 50 percent of those for fiscal year 1967 have been obligated. The remaining funds will be obligated by the States prior to July 1, 1967 for the project renewals and new projects.

The Federal funds provided under Section 4(a) of the Act are matched with State funds at the 25 and 50 percent levels. The higher level of State matching is required for intrastate projects that are not considered regional, national or international in scope. However, no State matching funds are required for allocations made under the Disaster Section (4b) of the Act.

All States in Region 2 have taken full advantage of the PL 88-309 program. A total of \$2,596,325, including \$693,550 in State matching funds, has been obligated in the Region during the first 15 months of the program for 40 approved projects. Twenty-three of the projects have been approved for research, six for development, nine for construction and two for coordination. Forty-one new technical people have been employed by the States for projects in Region 2 under the PL 88-309 program. Most of the States have been able to acquire the necessary personnel, facilities and equipment needed for the initiation of their PL 88-309 projects.

The demand for fishery products in the United States is well beyond our present production. Therefore, imports of food fish from foreign sources have more than doubled within the past ten years.

Approximately 1.7 billion pounds of commercial fish and shellfish are landed annually in Region 2. These landings account for more than one-third of the commercial catch for the Nation. With adequate research, development and management, the potential commercial catch of fish and shellfish for the Region has been estimated at 2.7 billion pounds annually. The commercial fishery studies being conducted by the States in Region 2 under the PL 88-309 program will help considerably in providing the knowledge required for the maintenance, development, management and wise utilization of the commercial fisheries of Region 2 and the Nation.

A summary of the progress of the fisheries research and development projects approved under PL 88-309 program in Region 2 follows.

## RESEARCH PROJECTS

*Estuarine Studies:* One of the most significant PL 88-309 projects in the Nation is the cooperative Gulf of Mexico estuarine inventory. This project was designed by the Estuarine Committee of the Gulf States Marine Fisheries Commission. The study is divided into the following four phases: (1) area description, (2) hydrology, (3) biology, and (4) sedimentology. Standard methods agreed upon by the cooperating Gulf States are used for collecting and recording data. When the project is completed, an atlas of estuarine areas will be prepared by each cooperating State. These State atlases will then be combined into one atlas of all Gulf estuaries by the Bureau of Commercial Fisheries.

The five Gulf States are also cooperating in the joint production of an audio-video film to publicize the importance of estuarine areas for commercial fisheries. More than 85 percent of the total catch of commercial fisheries taken in the Gulf waters are either totally or partially dependent upon estuaries. The estuaries serve as nursery grounds for many major species, including shrimp, menhaden and oysters. These vital areas must be protected against further encroachment and destruction by pollution, land developments, engineering and reclamation projects. According to a recent survey, approximately 540,000 acres of the Gulf estuaries have been heavily damaged or destroyed to date.

In addition to the work on estuaries in the Gulf States, North Carolina has an estuarine study in Pamlico Sound and Bay to determine the effects of industrial and engineering projects on nursery grounds.

In an effort to correlate the relationship of offshore and estuarine waters with regard to growth, migration patterns, and production of marine species, Mississippi is conducting a study of her offshore waters out to the 50-fathom curve. The study area for this project will be immediately adjacent to Mississippi's estuarine study area.

*Oyster Studies:* Alabama, Georgia and North Carolina are engaged in studies to determine the feasibility of the raft culture of oysters. Various types of rafts, materials and methods of sets are being tested to determine the types most suitable. These studies are also providing information on oyster diseases, fouling organisms, and pests associated with raft culture.

A bacteriological study of coliform bacteria and *Escherichia coli* in polluted and unpolluted oyster bottoms is now in progress in Mississippi. This project includes a phase for the depuration of polluted oysters which cannot be legally harvested at the present time because of high bacteria counts in the oyster producing waters.

South Carolina is charting all of her existing and potential oyster producing bottoms. The State is also transplanting oysters into those new areas believed to have a potential for raising oysters.

*Shrimp:* The States of Louisiana, Georgia and North Carolina are engaged in shrimp studies that will collectively provide important new information on the recruitment of post-larval shrimp to the nursery grounds and needed data on the migration, distribution, density, and growth of juvenile shrimp. The studies include post-larval shrimp sampling, juvenile sampling, sampling of over-wintering populations, collection of hydrographic information, and the processing of data. Information obtained from these studies should be most useful for predicting production and determining management techniques for shrimp.

South Carolina has a project approved for the culture of shrimp in ponds. Prior work on the pond culture of shrimp at the Bears Bluff Laboratory in South Carolina has been most promising. PL 88-309 funds have provided for an expansion of this research.

*Clams:* Studies to determine the location and abundance of clams are being conducted by the States of Georgia and Florida. These studies, when completed, will provide information on the economic feasibility of harvesting clams in Georgia and Florida on a commercial basis. The effects of harvesting methods upon the biota will also be determined.

*Scallops:* A study to determine the quality of scallops is being done by North Carolina. The aim of this project is to obtain scientific data on which to base specific recommendations for the handling of scallops from the time they are harvested through the various processing stages until they are marketed in order to provide for a top quality product. The improvement of the quality of scallops is expected to greatly increase the commercial market for this species.

*Economic Survey of Commercial Fisheries:* The Economics Department of the University of Georgia is conducting an economic survey of the commercial fisheries of Georgia under a sub-contract with the State. Information obtained through this study should prove to be most valuable in determining the need for the future development of Georgia's

commercial fisheries by pin-pointing the economic values of the various segments of the industry to the State.

*Gear Research and Exploratory Fishing:* There has been little improvement in the methods of fishing and types of boats and gear used by commercial fisheries in Puerto Rico during the past 50 years. Recognizing the need for upgrading the fishing industry, the Commonwealth has submitted a project for gear research and the testing of two new fishing boats. One of these boats will be approximately 20 feet in length and the other about 30 feet. They will be tested and equipped with gear which appears most suitable for the taking of commercial species common to Puerto Rico's waters. The smaller boat will be used primarily nearer the shore while the larger one will fish in deeper waters beyond 100 fathoms. The larger boat will have sufficient space for mechanized equipment for the handling of fish gear including pot haulers, snapper reels, and outrigger poles for multiple trolling.

*Fishery Surveys:* A survey of the potential fisheries of the Virgin Islands is underway. This study is financed cooperatively with Federal funds provided by the PL 88-309 and Dingell-Johnson programs. One phase of this project includes an investigation of ciguatera poisoning found in many species of commercial and sport fish taken in the waters of the Islands. Most fish now taken in the waters of the Virgin Islands are not eaten because of the fear of being poisoned. The development of a commercial fishery — except possibly for lobsters and other shellfish — cannot be expected until the problem of fish poisoning is solved.

#### DEVELOPMENT PROJECTS

Louisiana and Alabama have planted 36,000 cubic yards and 36,000 barrels of shell for oyster culture, respectively. Both States have reported successful spat sets this year from the plantings. In addition to Section 4(a) funds, Louisiana received assistance in the amount of \$100,000 under the Disaster Section (4b) of PL 88-309 for planting of oyster cultch to replace oyster producing areas damaged or destroyed by Hurricane Betsy.

Most of the funds allocated to Florida under PL 88-309 have been used for a seafoods marketing project. Marketing specialists and home economists have been employed and stationed throughout Florida and in Georgia and Mississippi for the purpose of promoting the sale of commercial fish and shellfish.

Two test kitchens have been set up and others will be opened soon to test new recipes for fishery products. The home economists conduct fish cookery demonstrations throughout most of the South. Large amounts of promotion materials including news articles, pamphlets, photographs, and tapes have been developed for the newspapers, radio, and video media.

#### CONSTRUCTION PROJECTS

*Laboratories and research facilities:* Texas is constructing a coastal experimental station which will include a laboratory, office space, and a series of experimental salt-water ponds. The ponds will be used for controlled environmental studies including research on growth, natural and tagging mortalities, and the culture of important marine species. This station will also be used to demonstrate new procedures to commercial fishermen.

Equipment for temperature control in salt-water culture tanks is being secured by South Carolina. The tanks will be used for experiments in the spawning and culture of shrimp and for the supplemental feeding of oysters.

Alabama is constructing a pond adjacent to her Dauphin Island Laboratory to conduct experiments in commercial pond raising of oysters. Emphasis will be placed on water control, optimum salinities, and feeding.

*Fishing Vessels:* Texas and Georgia are constructing research vessels 72 and 60 feet in length, respectively. Both vessels will be used for

monitoring shrimp populations and for studies aimed at developing new fisheries for underutilized fish and shellfish populations.

Puerto Rico has a project for the design and construction of an improved fishing boat approximately 20 feet in length with seven-foot beam which will be equipped with a motor and facilities for icing fish and the mechanization of fishing gear.

*Public Landings:* The State of Alabama is constructing public docks to be used by commercial fishermen. These docks will be located near the major oyster producing areas of Alabama and will, therefore, be used primarily by the State's oyster fishermen for the transfer of oysters from boats to trucks.

## CONCLUSIONS

All of the States in Region 2 have demonstrated their need for commercial fisheries research and development projects. They are actively participating in a most cooperative way in the PL 88-309 program. The Federal funds allocated to the States are being obligated almost as soon as they are received. The States are to be commended for the contributions they have made in planning well-balanced commercial fisheries research and development programs and for choosing projects of real significance for the development of commercial fisheries. The record of progress for the State PL 88-309 programs in Region 2 has been one of the best—if not the best—in the Nation. With excellent State cooperation such as that received to date, the rate of progress will be maintained and improved as the program continues.

## DISTRIBUTION, FOOD HABITS, AND GROWTH OF YOUNG CLUPEIDS, CAPE FEAR RIVER SYSTEM, NORTH CAROLINA<sup>1</sup>

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### ABSTRACT

A total of 816 American shad (*Alosa sapidissima*), 2,823 blueback herring (*A. aestivalis*), and 79 alewives (*A. pseudoharengus*) was collected between July and November 1963-1965 to determine distribution, food habits, and growth in the Cape Fear River system, North Carolina. Shad and blueback herring were found in the Cape Fear River from four miles south of Wilmington (20 miles from the mouth) to Lock No. 3, a distance of 99 miles, and in the Black River from the mouth to NC-411 bridge, a distance of 35 miles. In the North East Cape Fear River, shad were distributed from the mouth to NC-24 bridge, a distance of 67 miles, whereas blueback herring were distributed from the river mouth to five miles north of NC-53 bridge, a distance of 44 miles. Alewives were collected in a seven-mile stretch of the Cape Fear River, from four miles south of Wilmington to three miles north of Wilmington and in the North East Cape Fear River from the mouth to Lanes Ferry, a distance of 25 miles. None were collected in Black River. The data showed American shad fed primarily on aquatic and terrestrial insects and crustaceans, and insects were the dominant food, whereas blueback herring and alewife fed chiefly on crustaceans. Only minor differences were found in the food habits of each species within or between rivers. The growth rates of individual species were similar between rivers. Seaward

<sup>1</sup>Contribution in part from Federal Aid to Fish Restoration Funds under Dingell-Johnson Project F-16-R, State of North Carolina.