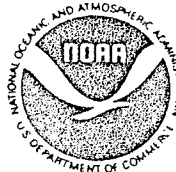


FINAL REPORT

PROJECT TITLE: "Strategic Planning for the Management of Bycatch in the Directed Commercial Fisheries of the Gulf of Mexico"

PRINCIPAL INVESTIGATOR: Judy L. Jamison
Gulf & South Atlantic Fisheries Development
Foundation, Inc.

GULF & SOUTH ATLANTIC FISHERIES DEVELOPMENT FOUNDATION, INC.
COOPERATIVE AGREEMENT NO. NA17FF0233-01 (#45)
AWARD PERIOD 05/01/91 THROUGH 01/31/93



* A report by the Gulf & South Atlantic Fisheries Development Foundation, Inc. to the National Oceanic and Atmospheric Administration pursuant to NOAA Award No. NA17FF0233-01. The views expressed herein are those of the author and do not necessarily reflect the views of NOAA or any of its sub-agencies.

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Grant No. NA17FF0233-01

Foundation Contract No. #45

Amount of Grant: Federal \$109,660 Match \$-0- Total \$109,660

Project Title: "Strategic Planning for the Management of Bycatch in the Directed Commercial Fisheries of the Gulf of Mexico"

Grantee: Gulf & South Atlantic Fisheries Development Foundation, Inc.

Award Period: From: 1 May 1991 To: 31 January 1993 (amended)

Budget Period: From: 1 May 1991 To: 31 January 1993 (amended)

Under this award, the original cooperative agreement dates were 1 May 1991 through 30 April 1992; during the course of this award three amendments were executed. Amendment #1 (1 Oct. 1991) added supplemental funds totalling \$9,660 to the original budget, and revised certain specified terms and conditions pertaining to the award. Amendment #2 (1 May 1992) provided a no-cost extension of the project and budget completion date to 31 July 1992. Amendment #3 (1 August 1992) provided a no-cost extension of the project and budget completion date to 31 January 1993.

I. EXECUTIVE SUMMARY

Concerns about finfish bycatch in the shrimp trawl fishery of the southeastern U.S. prompted a 1990 amendment to the Magnuson Fishery Conservation and Management Act. This amendment ("Incidental Harvest Research Program") mandated, in Section 304(g), that the Secretary of Commerce establish a program to assess the impact on fishery resources of incidental harvest by the shrimp trawl fishery under the jurisdiction of the South Atlantic and Gulf of Mexico Fishery Management Councils. In response to this mandate, the National Marine Fisheries Service developed a document "*Shrimp Trawl Bycatch Research Requirements*" that set forth experimental and statistical designs for a bycatch research program.

Using this document as a template, the Gulf and South Atlantic Fisheries Development Foundation, Inc. assumed the lead role in developing an infra-structural Steering Committee and associated advisory panels that would provide a cooperative approach to

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addressing the multitude of problems associated with this issue. This Steering Committee was developed to include representatives from commercial and recreational fishing interests, NMFS, universities, state fisheries management agencies, regional marine fisheries commissions, federal fishery management councils, and public environmental organizations. The Committee and its panels met several times over the course of the project to outline the specific requirements of the document.

This ambitious project, with complementary and concurrent funding through Saltonstall-Kennedy funds (grant # NA17FD-0103-01), led to the final production of a document *"Research Plan Addressing Finfish Bycatch in the Gulf and South Atlantic Shrimp Fishery"* in 1992. Over 400 copies of this document have been distributed to interested parties throughout the southeast region for their use.

This document is currently being used as the primary reference source for the implementation of research projects designed to address the by-catch issue. All research projects funded under the auspices of NOAA/NMFS (i.e. MARFIN and S-K programs) must conform to the outline of this Research Plan. The Steering Committee and its Panels (Technical Review Panel, Gear Review Panel, and Statistical Panel) continue to monitor the progress of research.

This MARFIN project specifically covered expenses incurred by participants from the Gulf of Mexico region, and the concurrent and complementary Saltonstall-Kennedy project covered expenses incurred by participants from the South Atlantic region. The S-K project included funds for sub-contract research that addressed bycatch problems. Following a solicitation for research proposals, several such sub-contracts were awarded; all but one pertained to the South Atlantic region, and were covered under the S-K monies. The one sub-contract that pertained to the Gulf of Mexico region was covered in part under monies from this MARFIN project, and the results of that study are included in this report.

A sub-contract was awarded to Mississippi State University Coastal Research and Extension Service with D. Burrage as the Principal Investigator. This project examined the by-catch reduction capabilities of two modified shrimp trawl designs. Comparison tows against standard nets produced approximately a 30 percent reduction in bycatch with no significant shrimp loss.

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II & III. INTRODUCTION and PURPOSE

Identification of Problem: Among U.S. fisheries, the shrimp fishery traditionally ranks first or second in value and in the top ten in volume, with the majority of production coming from the southeast (South Atlantic and Gulf of Mexico) coastal states (Fish. Stat. 1988-1991). In 1991, the southeast region landed 265.5 million pounds of shrimp valued at \$478.3 million, accounting for >80% of landings and >90% of value of the entire U.S. shrimp industry. In the southeastern U.S., the shrimp fishery provides substantial direct (harvesting, processing, distribution, retail) and indirect (boat building and maintenance, fishing gear/fuel/etc. suppliers) economic opportunities, and the influence of this fishery is felt throughout the U.S. because of wide-spread demand for this delicacy.

Over time, the fishery has developed several economically efficient capture gears; however the gear with the widest applicability, the otter trawl, is also a very non-selective gear with a large incidental harvest (by-catch). The magnitude of this by-catch is well-documented (i.e. Bullis and Carpenter 1968; Chittenden and McEachran 1975; Pavella 1977), and although a portion of the by-catch is marketable, much is not, and therefore it is discarded. Attempts to better utilize this resource (i.e. Beaumariage 1968; Guthertz et al. 1975) have only been partially successful because of a lack of economic incentive.

Concerns over the magnitude and species composition of by-catch and discards stems from various factors. First, there is a growing public realization that ocean resources are finite and must be utilized efficiently. Secondly, stocks of several commercially and recreationally important species are thought to be overexploited, and management strategies that include catch restrictions have increased allocation conflicts among proliferating user groups. Reports such as Nichols et al. 1987, which suggest that shrimping activities have impacted recruitment capabilities of these stocks, have led to the consideration of additional management strategies that require catch reductions in such non-directed fishery efforts. Finally, increased urbanization of the southeastern region (leading to environmental degradation and a yet unquantified effect on fish stocks) has also produced an increased awareness, and in some cases mis-perceptions, of a wide variety of man's activities, including intensive fishing activities in coastal waters.

These concerns about finfish bycatch prompted a 1990 amendment to the Magnuson Fishery Conservation and Management Act. This amendment ("Incidental Harvest Research Program") mandated, in Section 304(g), that the Secretary of Commerce establish a program

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to assess the impact on fishery resources of incidental harvest by the shrimp trawl fishery under the jurisdiction of the South Atlantic and Gulf of Mexico Fishery Management Councils.

Goals and Objectives: The overall goal of this project was to develop an acceptable research strategy to alleviate by-catch problems in the shrimp fishery, and thus provide alternative management strategies for fishery resources in the Gulf of Mexico. Specific objectives were:

- the development of an integrated plan to provide the gear development, testing, and data collection necessary to provide viable solutions to current by-catch problems;
- the identification of by-catch management strategies for the shrimp trawl fishery
- the specification of data requirements for by-catch management in the shrimp trawl fishery, with consensus among the state and federal fishery management agencies;
- recommendations based on an agreed upon responsibilities for funding, data collection, and management through an industry-supported system, incorporating the state management agencies, Sea Grant, and NMFS; and
- a proposed schedule and protocol for implementation

IV. APPROACH

Description of Work Performed: Initially, representatives from the Foundation and NMFS outlined the development of a multi-organizational Bycatch Steering Committee composed of representatives of the commercial and recreational fishing sectors, NMFS, universities, state fisheries management agencies, regional marine fisheries commissions, federal fishery management councils, and public environmental organizations that would oversee and develop a Bycatch Research Plan for implementation.

Over the course of the next 15 months the Steering Committee met three times to consider options in the development of the Bycatch Research Plan. Following the third meeting, a draft of the Research Plan document was distributed for final comment from a variety of sources. Following incorporation of comments, a final copy of the Research Plan was available for distribution in October 1992. The Steering Committee met a fourth time to outline its future role in monitoring progress of the Bycatch Research Program.

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During the course of its deliberations, the Steering Committee received input from a Technical Review Panel and a Statistical Panel composed of its membership. The Technical Review Panel met three times over the course of the project period, and the Statistical Panel twice, to outline the experimental and sampling design necessary for the research program.

Another Panel (Gear Review), which is now playing an important role in the evaluation of various bycatch reduction devices, was an outgrowth of the Technical Review Panel. The GRP is composed of gear specialists from industry, NMFS, and Sea Grant. This panel provides recommendations as to the efficiency and promise of experimental BRD's. Without a recommendation from the GRP, the Foundation and NMFS does not pursue additional testing of a specified design.

Project Management: Throughout the course of this project, all aspects of coordination and management have been directed by the Foundation and its staff personnel. The interactive meetings and communications among 30+ people representing a wide variety of organizations required a central administrative organization to specifically address the logistical problems of coordination.

V. FINDINGS

This project had the primary goal of producing a reference document - "*A Research Plan Addressing Finfish Bycatch in the Gulf and South Atlantic Shrimp Fishery*" that will continue to be used to guide the implementation of actual research projects addressing the bycatch problem. That document is included with this report as Attachment A-1 and the summary document as Attachment A-2.

This MARFIN project specifically covered expenses incurred by participants from the Gulf of Mexico region, and the concurrent and complementary Saltonstall-Kennedy project covered expenses incurred by participants from the South Atlantic region. The S-K project included funds for sub-contract research that addressed bycatch problems. Following a solicitation for research proposals, several such sub-contracts were awarded; all but one pertained to the South Atlantic region, and were covered under the S-K monies. The one sub-contract that pertained to the Gulf of Mexico region was covered under monies from this MARFIN project, and the results of that study are included in this report.

A sub-contract was awarded to Mississippi State University Coastal

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Research and Extension Service with D. Burrage as the Principal Investigator. This project examined the by-catch reduction capabilities of two modified shrimp trawl designs. Comparison tows against standard nets produced approximately a 30 percent reduction in bycatch with no significant shrimp loss. Detailed information concerning the findings of this study are presented in a final report by the sub-contractor which is included here as Attachment B.

VI. EVALUATION

A. Project Goals and Objectives: The specific details of the goals and objectives are outlined in Section II & III above. In general the objectives were to design an integrated research plan that addressed the various aspects associated with the problems of shrimp trawl bycatch.

These objectives were attained through the development, general approval, and implementation of the Bycatch Plan document attached here.

B. Specific Accomplishments: This project accomplished its original goals and objectives in the development of a Bycatch Research Plan. Through the efforts of a multi-organizational Steering Committee representing numerous interest and user groups, a consensus document outlining specific objectives and tasks to alleviate shrimp trawl bycatch was completed. Using this document as a guide, the Foundation, NMFS and other research organizations are now pursuing specific high-priority research needs identified in the Plan.

This project was especially beneficial in that it indicated a willingness for cooperation among user and interest groups often thought to be at odds with each other over resource allocations. Through the continued cooperative participation of these various entities a solution to this high-profile and high-priority problem will be achieved.

The one field research project supported through this contract indicated that two versions of modified shrimp trawls could reduce unwanted bycatch by as much as 30% with no significant shrimp loss.

C & D. Benefit to Industry: During this project, two documents were generated: a Bycatch Research Plan Summary which provided a general overview of the goals and objectives of the Plan, and the

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actual Plan document itself. Over 600 copies of the Summary were distributed to interested parties both within and outside of industry at various meetings or through mailings. Additionally, close to 1,000 copies of the entire plan have similarly been distributed.

By having these documents available, industry representatives have the opportunity to ascertain the value of the successful completion of the Research Program. The document emphasizes that this is a truly cooperative effort among industry, recreational interests, government regulatory agencies, and conservation groups. Successful completion of the Research Program will benefit industry through better management of finite marine resources.

By gaining an understanding of the goals and objectives of the Research Program, industry becomes better informed, and more interested in participating in the actual research that will lead to bycatch reductions. Current interest in participating in the Research Program is increasing. Fishermen and vessel owners are increasingly allowing observers on-board their vessels. This is indicative of the cooperative efforts being put forth by industry, and the interest that the Research Plan and Research Program have generated. Concurrent projects, funded by other NOAA/NMFS grants to the Foundation, are supporting industry-developed ideas for bycatch reduction devices, and observer coverage throughout the southeast region.

The development of the Bycatch Research Plan document is only the first step in addressing a 4-year planned Research Program to address the bycatch issue; thus there are no immediate economic benefits to the results of this particular project. However, there are long-term benefits to not only the shrimp industry, but to other finfish fisheries as well.

Successful completion of the tasks and objectives identified in the Plan to reduce unwanted bycatch will provide for a more efficient shrimp fishery through reduced effort during harvesting, and improved product quality because of less damage during harvesting from large quantities of unwanted bycatch. That this ambitious goal is achievable is indicated by the results of a preliminary field study supported by this project.

Successful completion of the Bycatch Research Program will also ameliorate problems in other fisheries that may be affected from increased stock mortality stemming from shrimp trawl bycatch. Increased release of these unwanted bycatch fishes from shrimp nets will increase their chance of survival and eventual recruitment to fisheries which target them.

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VII. CONCLUSION

This project produced a tangible product that will be used as a guide to address a Congressional mandate: to develop a Research Program to alleviate problems associated with shrimp trawl bycatch in the southeastern United States. The development of this document, now generally accepted as the formal guide for future research projects, was especially beneficial in that it indicated a willingness for cooperation among user and interest groups often thought to be at odds with each other over resource allocations.

Through the continued cooperative participation of these various entities a solution to this high-profile and high-priority problem will be achieved.

July 2 Jamison
Signature of Principal Investigator

4-30-93
Date

[Signature]
Signature of Project Director

30 Apr 93
Date