The Saltonstall-Kennedy Grant Program: Fisheries Research and Development

REPORT
1998

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U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
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I. INTRODUCTION

This report to Congress on the Saltonstall-Kennedy (S-K) Grant Program, administered by the National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce, covers fiscal year (FY) 1998. The report contains information on the S-K Program regarding its legislative authority, the application solicitation and grant selection process, recipients, and funding information.

There was no competitive S-K Program in FY 1997, due to the lack of sufficient funds allocated to conduct the program. Instead, a notice was published in the *Federal Register* on April 29, 1997, to solicit applications contingent on the FY 1998 allocation. The application review process was initiated in FY 1997, and grants were awarded in FY 1998. Therefore, this Annual Report includes information on grants awarded under the FY 1998 S-K Program.

Appendix I contains addresses of NMFS Headquarters and Regional Offices from which information regarding the S-K Program may be obtained. Appendix II contains the *Federal Register* notice soliciting applications for the FY 1998 program. Appendix III contains a list of applications approved for funding from the FY 1998 S-K solicitation, and Appendix IV contains a list of applications disapproved.

This report is submitted pursuant to the S-K Act, as amended, which requires that the following information be submitted annually to Congress:

1. A description of all pending fisheries research and development projects (Page 4)

2. A list of those applications approved and those disapproved and the total amount of grants made for the current fiscal year (Appendices III and IV)

3. A statement of the extent to which available funds were not obligated or expended by the Secretary for grants during the current fiscal year (Page 3)

4. An assessment of each project that was completed in the preceding fiscal year regarding the extent to which objectives of the project were attained and the project contributed to fishery development (Page 89)

5. The fisheries development goals and funding priorities for a national program of research and development for the next fiscal year (Page 2)

II. BACKGROUND

The S-K Act, as amended (15 U.S.C. 713c-3), provides that a fund (known as the S-K fund) will be used to provide grants for research and development projects addressed to any aspect of U.S. fisheries including, but not limited to, harvesting, processing, marketing, and associated infrastructures. Under this authority, grants and cooperative agreements are made annually on a competitive basis, to assist in carrying out projects related to U.S. commercial and recreational fisheries.

Program funding priorities for the S-K Grant Program have been developed in consultation with the public, and are consistent with the goals and objectives of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), and the NOAA Fisheries Strategic Plan. The objective of the S-K Grant Program is to address the needs of fishing communities (as defined in the Magnuson-Stevens Act) in optimizing economic benefits within the context of rebuilding and maintaining sustainable fisheries, and in dealing with the impacts of conservation and management measures. The solicitation for proposals under the Grant Program, including funding priorities, application requirements, and proposal evaluation criteria, is published each year in the *Federal Register* (Appendix II).

Proposals received in response to the notice are evaluated by appropriate private and public sector experts for their technical merit. Comments are then solicited from representatives of various fisheries constituencies selected by the NOAA Assistant Administrator for Fisheries. These individual panelists rank proposals in terms of importance of the problem or need for funding, and provide recommendations on the level of funding. After proposals have been evaluated and ranked, recommendations for funding are developed and submitted to the Assistant Administrator, who determines the projects to be funded.

In addition, 15 U.S.C. 713c-3(d) provides authority for the Secretary of Commerce to carry out a national program of research and development (National Program) to address aspects of U.S. fisheries that are not adequately addressed by projects assisted under the Grant Program. Projects funded or expected to be funded in FY 1998 under the National Program deal with aquaculture, sustainable fisheries, and shellfish safety education. For FY 1999, NMFS expects an allocation of about $4 million for S-K, and plans to make these funds available only under the competitive Grant Program, unless otherwise directed. Therefore, the National Program is not expected to be implemented in FY 1999, and so funding priorities for such a program have not been identified.

The S-K fund is capitalized through annual transfers by the Secretary of Agriculture to the Secretary of Commerce of amounts equal to 30 percent of the gross receipts collected under the customs laws on imports of fish and fish products. The following table indicates the total duties collected on fishery

products; the total receipts in the S-K fund for FY 1998; the amount appropriated to offset some of NOAA's costs related to operations, research, and facilities (ORF); and the amount allocated for the S-K Program, including the competitive Grant Program, the National Program, and program administrative costs. In FY 1998, the S-K amount included in the President's Request was $4 million. However, this amount was based on an overestimation of the duties that capitalize the S-K fund. The amount available for the S-K Program was $3.35 million. After accounting for the obligations summarized in the table, approximately $150,000 of S-K funds will not be obligated in FY 1998.

Fiscal Year 1998
($ in millions)

Total Duties Collected on Fishery Products	$219.1
Total S-K Transfer	65.7
ORF Offset	62.3
S-K Allocation	3.4
Grant Program	2.0
National Program*	0.7
Program Administration	0.5

*Includes $330,000 to Coastal Alabama Seafood Harvest for aquaculture research (p. 86); $250,000 to Interstate Shellfish Sanitation Conference for *V. vulnificus* education (award pending); and $150,000 to Alaska Fisheries Development Foundation for activities related to sustainable fisheries (award pending).

III. PENDING GRANT PROGRAM PROJECTS

The following section contains a description of all pending (ongoing) projects under the S-K Grant Program, along with the name of the grantee, grant number, project title, federal funding level, recipient funding level (i.e., cost share), and the NMFS contact, addresses of whom are in Appendix I. The projects are listed by grantee within each subject area.

Fisheries Utilization

Grantee: Alaska Food Group, Juneau, AK

Grant No.: NA76FD0041 NMFS Contact: F/AKO

Project Title: Dried Fish Asian Market Investigation and Analysis and an Industry Demonstration Project to Produce Dried Fishery Products from Underutilized Salmon and Bycatch Species

Funding: Federal: $189,935 Recipient: $89,935

Description: To study, develop, and produce dried fish prototypes, conduct a selected international market analysis, and provide an industry demonstration project that will produce dried, dried salted, dried seasoned, and dried smoked fishery products from underutilized Alaskan salmon and trawl-caught bycatch species.

Grantee: University of Alaska, Fairbanks, AK

Grant No.: NA76FD0038 NMFS Contact: F/AKO

Project Title: Blended Seafoods: Utilizing Bycatch for New Products from Undervalued Fish

Funding: Federal: $79,920 Recipient: $15,984

Description: To develop a blended seafood product using small whitefish fillets and/or trimmings and pink or chum salmon fillets that will add value, convenience, and appeal to consumers. Using surveys of institutional and retail seafood buyers, products made by varying flake size, salmon-whitefish ratios, and additives will be evaluated. Fresh and frozen shelf life, sensory profiles, and end-user analysis will complete product testing. Economic analysis will determine costs and market potential. Results will be disseminated through the Marine Advisory Program.

Grantee: University of Alaska, Fairbanks, AK - Year 2

Grant No.: NA76FD0034 NMFS Contact: F/AKO

Project Title: Utilization of Giant Grenadier (*Albatrossia pectoralis*) II: Production of Stabilized Mince and Development of a Promotional/Marketing Study

Funding: Federal: $ 86,543 Recipient: $17,308

Description: To develop a stabilized minced or flaked product from giant grenadier, an underutilized species. Modification to produce acceptable texture will be accomplished by removing moisture through physical means or binding moisture using food additives. Shelf life and end user evaluation of stabilized mince will follow product development. A targeted promotional effort and marketing study will introduce product forms to buyers and sellers of Alaska seafood and provide a financial feasibility study to determine economic viability of utilizing giant grenadier.

Grantee: Alaska Fisheries Development Foundation, Anchorage, AK

Grant No.: NA56FD0619 NMFS Contact: F/AKO

Project Title: Alaska Salmon: Taming the Wild Thing

Funding: Federal: $337,412 Recipient: $130,450

Description: To provide innovative product development, process evaluation, and market strategy development to achieve optimum use of the Alaska salmon resource through: (1) determination of processing, quality, and costing of intermediate and finished product manufacture; (2) formulation and processing protocol for cut, formed, and processed salmon products; and, (3) developing a strategic marketing plan and major product trials for the selected products and specific market niche(s).

Grantee: Oregon State University, Astoria, OR

Grant No.: NA76FD0212 NMFS Contact: F/NWO

Project Title: Production of a Carnosine and Anserine-Containing Antioxidant Extract From Surimi Wash Water

Funding: Federal: $71,070 Recipient: $11,081

Description: To extract two natural antioxidants, carnosine and anserine, from surimi wash water and determine their usefulness in preventing lipid oxidation in seafood products. Researchers will evaluate microfiltration and heat coagulation processes in removing large proteins from the wash water. The extracted antioxidants will be applied to minced mackerel in an attempt to inhibit oxidative rancidity, and to red rockfish to reduce color loss.

Grantee: Oregon State University, Corvallis, OR

Grant No.: NA90AAHSK138 NMFS Contact: F/NWO

Project Title: Role of Pacific Groundfish in International Groundfish Trade - Year 2

Funding: Federal: $74,744 Recipient: $25,296

Description: To continue research to estimate existing and potential sources of world groundfish supplies, including estimates of production; determine trade flows for groundfish, including demand factors, national economic indicators, international trade factors, and characteristics of distribution networks; and determine the role that Pacific groundfish may play in the international trade arena.

Grantee: Coastal Enterprises, Inc., Portland, ME

Grant No.: NA86FD0106 NMFS Contact: F/NEO

Project Title: Maximizing the Value of the Northeast's Marine Harvest, A Resource Guide to Secondary and Byproduct Markets

Funding: Federal: $99,708 Recipient: $22,500

Description: To investigate domestic and export markets for secondary products and byproducts of species typically harvested in the Northeast. Specifically, this project will catalog byproduct market opportunities; investigate byproduct markets through a survey and interviews; conduct technical evaluations of products; and conduct an economic analysis of price, quantity, packaging, and distribution. Results of the investigation will be made available in a resource guide.

Grantee: University of Massachusetts, Amherst, MA

Grant No.: NA86FD0107 NMFS Contact: F/NEO

Project title: Bioconversion of Mackerel Byproducts into Value-Added Products for the Nursery and Plant Propagation Industry

Funding: Federal: $62,215 Recipient: $18,708

Description: To incorporate mackerel waste hydrolysates into a growth medium for efficient clonal propagation of high value nursery and horticultural crops and a microbial inoculant formulation to stimulate growth of all agricultural and horticultural plants. The success of this project will result in an immediate value-added technology that will result in the utilization of all components of mackerel wastes, including unhydrolyzed debris and bone chips.

Grantee: University of Massachusetts, Amherst, MA

Grant No.: NA76FD0109 NMFS Contact: F/NEO

Project Title: Commercialization of an Ultrasonic Device for Measuring Fat Content of Mackerel

Funding: Federal: $68,758 Recipient: $0

Description: To adapt an ultrasonic technique so that it can be manufactured as a commercial device which can be purchased by the fish processing industry. The device will be used as a rapid and precise method of non-destructively grading the fat content of mackerel, thereby opening up new markets for this underutilized species.

Grantee: University of Massachusetts, Dartmouth, MA

Grant No.: NA76FD0108 NMFS Contact: F/NEO

Project Title: Investigate the Impact of Reduced Fresh Groundfish Supply on Processors and Wholesalers

Funding: Federal: $28,896 Recipient: $11,641

Description: To (1) describe the current New England groundfish processing and wholesaling sectors, including the number and types of activity--primary, secondary, wholesaling, processing, transport, etc.; (2) provide an estimate of income, employment, and output of these sectors in detail and of what products are co-processed with fresh groundfish; (3) estimate the impact on the processing and wholesaling sectors of an 80% reduction in groundfishing effort phased in over a two-year period in the harvest sector; (4) identify important trade issues facing the processing and wholesaling sectors over the next ten years; and, (5) outline the outlook for processors and wholesalers of the development of international markets for underutilized New England species.

Grantee: University of Maine, Orono, ME

Grant No.: NA76FD0100 NMFS Contact: F/NEO

Project Title: Determination of Aeration Rates, End-Product Quality, and Economic Analysis of In-Vessel Composting Systems for Crab Waste Products

Funding: Federal: $86,172 Recipient: $13,788

Description: To explore if crab processing waste could be economically recycled into a useful, value-added product which could be used commercially in landscaping and the nursery industry. Currently, crab processing waste is collected and hauled off-site to a landfill, a costly and environmentally unsound solution. In-vessel composting systems can overcome the problems of odor and vermin and help accelerate the breakdown of the organic components. The goal of this project is to determine the aeration rate which will accelerate the breakdown in an in-vessel system. The end-product compost will be analyzed for quality parameters, and an economic analysis will be conducted to indicate the potential practicality of the compost system for seafood processors.

Grantee: Rhode Island Seafood Council, Wakefield, RI

Grant No.: NA66FD0016 NMFS Contact: F/NEO

Project Title: Commercial Utilization of Atlantic Mackerel: Technology, Production, and Marketing

Funding: Federal: $198,082 Recipient: $51,250

Description: To design a high-speed cutting system, adaptable to existing skinning machines, which can remove dark flesh and pin bones from Atlantic mackerel to produce boneless light meat fillet and mince blocks for further processing by industry. This is an integral step in the successful completion of a prior S-K grant to produce mackerel nuggets. The researchers will also analyze the quality parameters of fresh and frozen fillets and cryostabilization of fillets and mince blocks which are free of dark flesh. There will be commercial testing of the cutting system, as well as evaluation of the new mackerel forms. An economic analysis of production costs and a marketing analysis to assess the potential demand for these products will be completed, and a waste management plan will be developed.

Grantee: Radford University, Radford, VA

Grant No.: NA66FD0010 NMFS Contact: F/NEO

Project Title: The Arkshell Clams, *Noetia ponderosa* & *Andara ovalis* in the Oceanside Lagoon System of Virginia: A Study of Predation, Reproductive Biology, and Condition Index

Funding: Federal: $57,582 Recipient: $1,250

Description: To study the biology of the blood clams *Noetia ponderosa* and *Anadara ovalis*, which are the subject of a new fishery in Virginia. This is a continuation of an ongoing S-K study. The project includes field and laboratory predation studies, determination of condition indices throughout the year, and a detailed analysis of gametogenesis. The results of the study will be valuable in developing fishery management measures for the species.

Grantee: Virginia Polytechnic Institute and State University, Blacksburg, VA

Grant No.: NA36FD0100-01 NMFS Contact: F/NEO

Project Title: Development of Underutilized Species: The Atlantic Mackerel Fishery

Funding: Federal: $46,335 Recipient: $29,942

Description: To provide product development work and market assessment analysis to further the ability of the U.S. Atlantic mackerel fishery to market its product, and to provide a guide for multi-disciplinary underutilized species development from "water to table." A fresh and frozen shelf-life study of Atlantic mackerel will investigate best management practices for handling Atlantic mackerel and two value-added products will also be developed.

Marine Recreational Fisheries

Grantee: Palau Conservation Society, Koror, Palau

Grant No.: NA77FD0043 NMFS Contact: F/SWO

Project Title: Sustainable Sport Fishery Development for Palau: Demonstration Project

Funding: Federal: $103,284 Recipient: $10,000

Description: To evaluate the local sport fishery system with the involvement and assistance of the tourist sport fishermen, and to implement national and state management systems designed to support the sport fishery system. This project is the successor to an earlier S-K project which established the viability of small-scale sport fishing in Palau.

Grantee: MBC Applied Environmental Sciences, Costa Mesa, CA

Grant No.: NA76FD0050 NMFS Contact: F/SWO

Project Title: Southern California Commercial Sportfish Catch Database

Funding: Federal: $93,755 Recipient: $88,383

Description: To complete the computer entry of 29 years of California sport catch data to form a database spanning 36 years. Fishery managers, industry, researchers, and the public will have direct access to the information resource presented by this project.

Grantee: Florida Atlantic University, Boca Raton, FL

Grant No.: NA77FD0075 NMFS Contact: F/SEO

Project Title: Production and Testing of Immunoassay Kits for the Identification of Billfish Species

Funding: Federal: $18,000 Recipient: $1,530

Description: To produce and assemble 100 kits for in-field evaluation and identification of sailfish species, and provide these kits to NMFS scientists. In addition, a blue marlin specific monoclonal antibody will be evaluated and incorporated into a bead assay format already developed. Several monoclonal antibody-secreting hybridomas will be secured and the utility of an anti-billfish clone and a clone secreting antibody that recognizes billfish antibodies will be evaluated.

Grantee: Virginia Institute of Marine Science, Gloucester Point, VA

Grant No.: NA77FD0073 NMFS Contact: F/SEO

Project Title: Analysis of the Genetic Stock Structure of the Atlantic Sailfish Using Restriction Fragment Length Polymorphism Analysis of Both Mitochondrial DNA and PCR Amplified Nuclear DNA

Funding: Federal: $62,713 Recipient: $12,859

Description: To use molecular genetic techniques to evaluate hypotheses of stock structure of the sailfish within the Atlantic Ocean. Currently, the International Commission for the Conservation of Atlantic Tunas assumes that Atlantic sailfish comprise discrete eastern Atlantic and western Atlantic stocks. This hypothesis and alternative hypotheses using restriction fragment length polymorphism analysis of mitochondrial and nuclear DNA will be evaluated.

Grantee: South Carolina Department of Natural Resources, Charleston, SC

Grant No.: NA77FD0062 NMFS Contact: F/SEO

Project Title: A Cooperative Interstate Study to Evaluate Non-Reporting Level of Recreational Anglers Who Capture Tagged Red Drum - Year 2

Funding: Federal: $68,625 Recipient: $28,478

Description: To document the non-reporting level of anglers who capture tagged red drum. The resulting data can then be used by appropriate regulatory agencies to develop an adjustment factor for application to models evaluating fishing mortality and escapement rates.

Grantee: Sport Fishing Institute, Washington, DC

Grant No: NA36FD0155 NMFS Contact: F/SF2

Project Title: The Effects of Fishery Regulations on Marine Recreational Fishing and the Sport Fishing Industry

Funding: Federal: $62,688 Recipient: $0

Description: To determine the impact of fisheries management alternatives on angling behavior through the use of hybrid conjoint and choice simulator models. The study will lead to a better understanding of how regulations and other factors affect fishing participation, and will allow for estimating the impacts on businesses providing goods and services to the sport fishing public.

Management Alternatives and Fisheries User Conflicts

Grantee: Alaska Department of Fish and Game, Kodiak, AK

Grant No.: NA86FD0077 NMFS Contact: F/AKO

Project Title: Bottom Trawl Assessment of Seasonal Distribution of Tanner Crab, Pacific Cod, and Shallow-Water Flatfish in Marmot Bay, Alaska

Funding: Federal: $129,563 Recipient: $113,972

Description: To conduct four systematic summer bottom trawl surveys in the Kodiak Island (Marmot Bay area) and Alaska Peninsula areas to develop population estimates of crabs and standardized population indices of groundfish. These four surveys, coupled with routine annual surveys conducted outside the scope of this project, will provide needed information on seasonal changes in distribution of Tanner crab, Pacific cod, and shallow-water flatfish occurring in the area. Expected benefits to marine resource management include: clarification of the relationship between summer survey data and winter Tanner crab fishery data; answers to stock biology questions related to development of the Alaska state waters Pacific cod fishery; and, information on seasonal co-occurrence of species to help reduce bycatch.

Grantee: Alaska Department of Fish & Game, Kodiak, AK

Grant No.: NA76FD0039 NMFS Contact: F/AKO

Project Title: Development of an Expert Computer-Based Imaging System to Enhance Fisheries Management of Crab and Groundfish Fisheries.

Funding: Federal: $93,695 Recipient: $13,624

Description: To adapt existing computer-based crab imaging system technology and develop new technology for use by fishers and field biologists that should lead to wiser and more profitable use of Alaska's fisheries resources, including red king crab, and commercial groundfish species. A consortium of biologists and engineers will develop a prototype working tool for Alaska's commercial fishers. The result will be a rugged and compact computer-based crab and groundfish identification and measuring system that should allow further utilization of the resources, reduction of bycatch, and improvement of assessment techniques.

Grantee: University of Alaska Fairbanks, Fairbanks, AK

Grant No.: NA76FD0032 NMFS Contact: F/AKO

Project Title: Comparison of Three Genetic Methodologies for Stock Identification of Pink, Chum, and Sockeye Salmon in the North Pacific - Phase 2

Funding: Federal: $156,604 Recipient: $28,567

Description: To determine the relative discrimination ability of three different types of genetic data which are used or being developed for salmonid stock identification. The genetic methods to be compared are protein electrophoresis, mtDNA RFLP analysis, and single-locus micro-satellite DNA analysis. The study will compare estimates of variations within and among populations revealed by each method on collections of chum, sockeye, and both even- and odd-year pink salmon from nine populations sampled broadly across the North Pacific.

Grantee: University of Alaska, Fairbanks, AK

Grant No.: NA66FD0043 NMFS Contact: F/AKO

Project Title: Availability of Commercial Fish Species as Food for Marine Mammals - Year 2

Funding: Federal: $135,545 Recipient: $23,172

Description: To investigate the abundance of commercial fish species as a food supply for marine mammals. Various gear types will be used to determine distribution, abundance, and inter-annual fluctuations of juvenile and sub-adult stages of commercially and non-commercially important fishes found within foraging range of sea lion rookeries in the Gulf of Alaska.

Grantee: Northwest Indian Fisheries Commission, Olympia, WA

Grant No.: NA76FD0405 NMFS Contact: F/NWO

Project Title: Estimation of the Stock Composition of Chum Salmon Fisheries in Puget Sound, Washington: An Improved Technical Basis for Fisheries Management - Year 3

Funding: Federal: $134,856 Recipient: $33,413

Description: To collect tissue samples from chum salmon fisheries in various fisheries in Puget Sound, WA, which will be subjected to genetics based stock identification analyses to determine stock composition. These data will aid in describing migration timing and distribution of contributing Puget Sound chum stocks, and provide improved in-season and post-season estimates of stock abundance. This study will quantify the extent to which non-local stocks contribute to the terminal fisheries.

Grantee: University of Washington, Seattle, WA

Grant No.: NA76FD0299 NMFS Contact: F/NWO

Project Title: Development of a Semi-Automated Microsatellite Based Genotyping System for Kinship Analysis of Chinook Salmon

Funding: Federal: $80,145 Recipient: $11,089

Description: To develop and test a sensitive genetic tool for accurate, large scale kinship analyses of chinook salmon. This tool will permit the critical evaluation of chinook salmon restoration projects, and provide the technology needed to monitor pedigrees and avoid inbreeding in captive broodstocks. Evaluations of the system utility will be carried out at the Dungeness River Chinook Salmon Rebuilding Project.

Grantee: Washington Department of Fish and Wildlife, Olympia, WA

Grant No.: NA76FD0213 NMFS Contact: F/NWO

Project Title: Pacific Salmon Captive Broodstocks: Comparison of Reproductive Performance of Full-Siblings Reared in Fresh and Saltwater

Funding: Federal: $47,964 Recipient: $26,023

Description: To compare and analyze the effects of freshwater and saltwater captive broodstock rearing on reproductive performance of chinook salmon. Full-sibling adults and their progeny will be raised, with one-half raised in saltwater and the other half in a freshwater environment. The researchers will isolate important factors such as broodstock weight and size, progeny survival, and fertilization rates to determine optimum rearing methodology.

Grantee: Regents of the University of California, Santa Barbara, CA

Grant No.: NA86FD0070 NMFS Contact: F/SWO

Project Title: Evaluation of the Sustainability of the Sea Cucumber Fishery in California

Funding: Federal: $93,124 Recipient: $43,376

Description: The overall objective is to provide a biological basis for the management of a sustainable sea cucumber fishery in the northeast Pacific, especially in California. This will be achieved by documenting historical changes in standing stocks of *Parastichopus californicus* and *P. parvimensis* and estimating the effects of the fishery on the standing stocks; characterizing the size structure of populations of both species; and collecting data on demographic and population parameters crucial to fishery management.

Grantee: The Regents of the University of California, Berkeley, CA

Grant No.: NA76FD0053 NMFS Contact: F/SWO

Funding: Federal: $88,400 Recipient: $0

Project Title: Sportfish in California Waters: Seasonal and Interannual Distribution and Dependence on Oceanic Temperature

Description: To construct a database that can be used to determine the migrations and anomalies of sportfish species and determine their relationships with sea surface temperature, an objective important for fisheries management and for potential predictive models. Sportfishing logbook data for the period 1936 through 1979 will be digitized and entered into a comprehensive database which already contains sportfishing logbook data from 1980 to the present.

Grantee: Stanford University, Stanford, CA

Grant No.: NA76FD0047 NMFS Contact: F/SWO

Project Title: Molecular Genetic Analysis of Anadromous Steelhead Trout (*Oncorhynchus mykiss*) at the Southern Extent of Their Range: A Comparison of Genetic Methods

Funding: Federal: $103,821 Recipient: $29,901

Description: To conduct genetic analyses of tissues from steelhead trout. A compatible database containing the results of these different genetic analyses will allow scientists to examine the degree of stock resolution available from each technique. Correlation of data will be critical to establishing management regulations for steelhead stocks at risk and will contribute to the conservation of the species.

Grantee: Hui Malama O Mo'omomi, Kaunakakai, Molokai, HI

Grant No: NA67FD0051 NMFS Contact: F/SWO

Project Title: Education in Subsistence Fishing Methods and Values: Mo'omomi Community Subsistence Fishing Area, Island of Molokai, Hawaii

Funding: Federal: $80,275 Recipient: $57,700

Description: To design and implement an education program to initiate novice fishermen in subsistence fishing methods and values and to facilitate exchange of resource knowledge between subsistence fishermen and scientifically trained fishery managers.

Grantee: University of Minnesota, Minneapolis, MN

Grant No.: NA66FD0058 NMFS Contact: F/SWO

Project Title: Investigation of Hawaiian Monk Seal, *Monachus schauinslandi*, Pelagic Habitat Use: Range and Diving Behavior

Funding: Federal: $219,610 Recipient: $11,250

Description: To investigate Hawaiian monk seal pelagic ecology and ascertain the extent of the range and diving patterns. Hawaiian monk seals at French Frigate Shoals and Laysan Island will be instrumented with Argos satellite telemetry packs, including time-depth recorders. Adult and juvenile seals of both sexes will be tracked. Movements and diving behavior will be analyzed to determine marine habitat use in the different classes. A summary of the results will be provided to the NMFS Protected Species Division to aid in the evaluation of potential monk seal-fishery interactions and relevant management policies.

Grantee: University of Maryland Center for Environmental Science, Cambridge, MD

Grant No.: NA86FD0110 NMFS Contact: F/NEO

Project Title: Inter-Laboratory Investigation of the Feasibility of Otolith Microconstituent Analysis to Characterize Atlantic Bluefin Tuna Stock Structure

Funding: Federal: $105,548 Recipient: $27,371

Description: To address whether inductively coupled mass spectrometry (ICPMS)-based otolith microconstituent analysis can resolve Atlantic bluefin tuna stock structure issues. Protocol and standardization procedures will be developed. In a double blind test between two ICPMS laboratories, compositional differences between western Atlantic and Mediterranean bluefin tuna otoliths will be tested.

Grantee: Virginia Institute of Marine Science, Gloucester Point, VA

Grant No.: NA76FD0148 NMFS Contact: F/NEO

Project Title: Mortality and Pathophysiology Studies of Blue Crabs Infected with the Parasitic Dinoflagellate *Hematodinium perezi*

Funding: Federal: $117,868 Recipient: $13,511

Description: To examine host mortality from *Hematodinium perezi*, an internal parasite of the blue crab, and to estimate the potential loss of infected crabs to the fishery. The parasite presumably kills any blue crab that it infects; hence the pathophysiological mechanisms underlying crab mortalities will be investigated. This information may be useful for management plans in estimating the mortalities in blue crab populations.

Grantee: Virginia Institute of Marine Science, Gloucester Point, VA

Grant No.: NA76FD0146 NMFS Contact: F/NEO

Project Title: Evaluation of the Selectivity and Efficiency of Sea Scallop Trawls

Funding: Federal: $97,839 Recipient: $49,950

Description: To compare selectivity and efficiency of sea scallop dredges with scallop trawl nets as regulated by Amendment #4 to the Sea Scallop Fisheries Management Plan, and to quantify bycatch of finfish and undersized scallops (< 70mm) by scallop trawls. Data on the quantity and size frequency distribution of scallops retained and discarded, finfish retained and discarded, and miscellaneous invertebrates will be obtained. Statistical treatment of catch and effort data will be used to determine and compare technical efficiency with each gear type.

Grantee: New York University Medical Center, Tuxedo, NY

Grant No.: NA76FD0144 NMFS Contact: F/NEO

Project Title: Mixed Stock Analysis of Wintertime Aggregations of Striped Bass Along the Mid-Atlantic Coast

Funding: Federal: $80,016 Recipient: $35,901

Description: To sample wintertime aggregations of adult striped bass off the North Carolina coast, in the mouth of Delaware Bay, and along the New Jersey coast. Mitochondrial DNA and nuclear DNA genotype frequency data in a mixed stock model will be used to determine the relative contributions of the Hudson River and Chesapeake Bay stocks to these wintertime aggregations of striped bass. The results will help in the design of stock-specific management plans for Atlantic coastal striped bass.

Grantee: Dana L. Morse, Narragansett, RI

Project Title: The Effects of Bottom Ground Gear on Flatfish Catches in the Southern New England Whiting Industry

Grant No.: NA76FD0141 NMFS Contact: F/NEO

Funding: Federal: $65,339 Recipient: $2,250

Description: To make trawl fishing more selective through conservation engineering. Specific goals are: (1) to reduce the catch of flounder in whiting trawls to as low a level as possible, while retaining the ability of the gear to catch target species -- ideally, a bycatch of less than 5% of the total haul weight will be achieved; (2) to provide the information from this study to the commercial industry, via popular literature, reports, conferences, etc., in order to provide alternatives to boost a troubled economic situation; and, (3) to contribute to the overall understanding of the relationship between fishes and trawls, advancing the possibility of more highly selective fishing gear.

Grantee: Gloucester Fishermen's Wives Development Programs, Inc.

Grant No.: NA76FD0112 NMFS Contact: F/NEO

Project Title: Oral History Project to Collect Traditional Ecological Knowledge (Including Spawning Area Data) and Develop an Historical Record of Fishermen/Scientists Interactions

Funding: Federal: $54,203 Recipient: $4,750

Description: To interview fishermen to build a database of traditional spawning areas using a Geographic Information System; to secure a series of oral histories of fishermen's experiences at sea; and to document joint efforts between fishermen and scientists.

Grantee: Marine Biological Laboratory, Woods Hole, MA

Grant No.: NA76FD0111 NMFS Contact: F/NEO

Project Title: Determination of Spawning Success and Female Fecundity to Assess the New England Squid Fishery

Funding: Federal: $89,021 Recipient: $47,049

Description: To answer a basic biological question regarding the number of young produced by female squid. Adult Loligo (long-finned) squid will be caught and brought to the laboratory where spawning behavior will be observed and recorded on video-tape. The number of young per egg pod will then be determined. The results will provide direct measurements of squid fecundity, rather than relying on estimates, and this information will improve fisheries management by allowing more accurate stock descriptions.

Grantee: University of New Hampshire, Durham, NH

Grant No.: NA76FD0103 NMFS Contact: F/NEO

Project Title: Collaborative Decision Making Workshops

Funding: Federal: $ 25,800 Recipient: $0

Description: To provide instruction in collaborative decision making to a minimum of 200 fisheries management stakeholders from New England. Of those 200, it is hoped that within one year at least 50 will become actively involved in the fisheries management process, capitalizing on these newly learned skills.

Grantee: Bio-Concept Laboratories, Inc., Salem, NH

Grant No.: NA76FD0102 NMFS Contact: F/NEO

Project Title: Bleach-Dipped Lobster Detection Technique

Funding: Federal: $ 41,179 Recipient: $9,750

Description: To refine the technique for detection of the presence of chlorine bleach on lobster swimmerettes following the illegal removal of eggs. Since the lobster resource is heavily dependent on new recruits entering the fishery, the illegal practice of "scrubbing" the eggs from "berried" females contributes to high egg mortality, threatening each new year class. Enforcement must have adequate tools to discourage this illegal practice. The most appropriate dye and staining technique will be determined and procedures will be established for law enforcement officers to detect and successfully prosecute lobster fishery violators who have used chlorine bleach to remove eggs from female lobsters.

Grantee: University of Maine, Orono, ME

Grant No.: NA66FD0013 NMFS Contact: F/NEO

Project Title: Design Issues in a Transferable Input Management System for the New England Groundfishery

Funding: Federal: $59,343 Recipient: $9,970

Description: To apply econometric techniques for estimating production functions to NMFS data on landings and relate this to vessel or trip characteristics to address the following questions: (1) What database best measures fishing power? (2) How well do simple indices of effort measure fishing power? (3) What distortionary incentives are created by alternative indices of fishing power? (4) How can fishery management program design features (such as a transfer tax) limit distortionary incentives and deal with increased fishing power through technological change?

Grantee: University of Delaware, Lewes, DE

Grant No.: NA46FD0329 NMFS Contact: F/NEO

Project Title: Rapid Detection of Genetic Variation for Fisheries Stock Identification

Funding: Federal: $91,284 Recipient: $12,388

Description: To develop a simple and rapid procedure for quantifying DNA sequence variation in regions of mitochondrial and nuclear genomes. This screening method will allow for efficient selection of genes to be amplified and for efficient selection of individuals to be examined further, i.e., by RFLP analysis or direct DNA sequencing.

Grantee: North Carolina State University, Raleigh, NC

Grant No.: NA87FD0100 NMFS Contact: F/SEO

Project Title: Reproduction of Bluefin: Assessing Maturity Using Sex-Specific Compounds

Funding: Federal: $128,145 Recipient: $23,066

Description: To develop the means to biochemically identify the sex and maturational status of individual bluefin tuna, using routine immunoassay of sex-specific hormones and proteins present in blood and muscle tissue samples. These substances vary seasonally with sex and maturation in all teleost fish studied to date, and can serve as indicators for age at maturity and sex ratio in a population. An antiserum and immunoassay for bluefin vitellogenin, the egg-yolk protein precursor specific to maturing female fish, will be created. Muscle and plasma samples will be analyzed for estradiol-17B and vitellogenin to identify mature females, and testosterone and 11-ketotestosterone to identify mature males. Detailed histological examination of the gonads will be conducted to definitively identify the sex and state of maturation of individual fish. The hormone and vitellogenin profiles of these fish will be used to identify levels of these substances characteristic of each specific stage of maturation, and to develop a length-based maturity schedule.

Grantee: University of South Alabama, Mobile, AL

Grant No.: NA77FD0077 NMFS Contact: F/SEO

Project Title: Monitoring the Socio-Economic Impacts of Federal Regulations on Gulf of Mexico Commercial Shrimp Fishermen

Funding: Federal: $68,750 Recipient: $70,785

Description: This project will monitor the effects of regulations on shrimp fishermen by noting the changes in five key areas: social, economic, occupational, physical, and psychological well-being. The results will provide regulatory agencies with information for evaluating the effects of policy changes on user groups.

Grantee: Texas A&M Research Foundation, College Station, TX

Grant No.: NA77FD0076 NMFS Contact: F/SEO

Project Title: Development of Microsatellite Loci for Stock Structure Study of Gulf Red Snapper

Funding: Federal: $46,389 Recipient: $13,847

Description: To develop species-specific genetic tools and background information that can be employed to address the resource-based issue of whether discrete genetic subpopulations of red snapper occur in the northern Gulf of Mexico.

Grantee: University of Georgia Research Foundation, Inc., Athens, GA

Grant No.: NA77FD0074 NMFS Contact: F/SEO

Project Title: Reproductive Parameters Needed to Evaluate Recruitment Overfishing of Spotted Seatrout in the Southeastern U.S.

Funding: Federal: $84,712 Recipient: $14,625

Description: To estimate spawning seasonality, age- and size-specific maturity, and fecundity of spotted seatrout. A hydrophone and trammel net will be employed to capture the fish using a random stratified sampling design. Captured fish will be measured for various parameters and aged by thin-sectioned otoliths. Batch fecundity for gravid females using the hydrated oocyte method and spawning frequency based on occurrence of post-ovulatory follicles in female histological samples will be estimated.

Grantee: University of Georgia, Athens, GA

Grant No.: NA77FD0061 NMFS Contact: F/SEO

Project Title: Assessment of Ark Populations in Whelk and Calico Scallop Fishing Grounds off the Coasts of GA and FL to Determine Distribution, Abundance, and Potential Commercial Fishery Development of the Cut-Ribbed Ark (*A. floridana*) and Other Promising Ark Species

Funding: Federal: $49,521 Recipient: $23,489

Description: To determine if sufficient stocks of the ark or other ark species are present in the scallop grounds off Cape Canaveral, FL or in the commercial whelk harvesting areas of Georgia.

Grantee: New York University Medical Center, Tuxedo, NY

Grant No.: NA77FD0071 NMFS Contact: F/SEO

Project Title: Genetic Structure, Status, and Mixed Stock Analysis of Atlantic Sturgeon in the Southeastern U.S.

Funding: Federal: $175,000 Recipient: $137,336

Description: To determine the amount of genetic diversity necessary for successful release of aquacultured (raised in captivity under "ideal" conditions) sturgeon to augment wild stocks. The fisheries which cause sturgeon mortality when sturgeon are either the target species or a bycatch species will also be investigated. Mitochondrial and nuclear DNA diversity in Atlantic sturgeon stocks south of Cape Hatteras will be characterized. An evaluation of homing fidelity in the two subspecies of sturgeon will be conducted by comparing levels of genetic differentiation in sturgeon in geographically proximal rivers along the south Atlantic and Gulf of Mexico coasts. Additionally, the contributions of various northern and southern stocks to the coastal shelf and estuarine aggregations in the southeast will be estimated.

Grantee: Florida Department of Environmental Protection

Grant No.: NA77FD0069 NMFS Contact: F/SEO

Project Title: Assessing Status and Trends of Florida's Halfbeak Fishery

Funding: Federal: $64,899 Recipient: $19,900

Description: To assess the status and trends of the halfbeak fishery based on catch rates, fishing effort, species composition, and size-structure. The secondary goal is to investigate the reproductive biology of both halfbeak species using both gonadal-somatic ratios and histological preparations of gonads.

Grantee: Gulf & South Atlantic Fisheries Development Foundation, Tampa, FL

Grant No.: NA77FD0068 NMFS Contact: F/SEO

Project Title: Continuation of an Observer Program to Characterize and Compare Regional Efforts in the Directed Commercial Shark Fishery in the Eastern Gulf of Mexico and South Atlantic

Funding: Federal: $180,238 Recipient: $0

Description: To continue an important observer program that has been identified as a specific need for the better management of the shark resources of the U.S. Atlantic coast. Three observers are allocated 72 days each to monitor the shark fishing fleet in three different geographic areas which comprise the majority of the fishery landings: North Carolina, Atlantic Florida, and Gulf of Mexico Florida. Descriptive fishery statistics will be kept concerning fishing effort.

Grantee: Skidaway Institute of Oceanography, Savannah, GA

Grant No.: NA77FD0066 NMFS Contact: F/SEO

Project Title: Use of Genetic Probes and Artificial Recruit Collectors to Monitor and Enhance the Success of Bay Scallop Reseeding Programs

Funding: Federal: $60,393 Recipient: $27,191

Description: To enhance the success of bay scallop reseedment efforts in depleted estuaries by understanding the larval ecology and improving larval recruitment of seeded populations.

Grantee: Oklahoma Department of Wildlife Conservation, Oklahoma City, OK

Grant No.: NA77FD0064 NMFS Contact: F/SEO

Project Title: Grand Lake Commercial Freshwater Mussel Stock Assessment

Funding: Federal: $33,227 Recipient: $244

Description: To quantify the freshwater mussel resource of Grand Lake. The results will provide vital baseline data for monitoring future commercial mussel harvest efforts as well as for determining the effects of the exotic zebra mussel.

Grantee: Louisiana State University, Baton Rouge, LA

Grant No.: NA57FD0070 NMFS Contact: F/SEO

Project Title: An Economic Analysis of the U.S. Shrimp Market and Impacts of Management Measures

Funding: Federal: $96,776 Recipient: $32,378

Description: To provide a current economic assessment of the U.S. shrimp fishery to assess gains/losses in economic surplus from alternative management measures. A seasonal econometric model of the U.S. shrimp marketing and harvesting sector will be developed and used to analyze various regulatory options, such as closures and gear.

Fisheries Bycatch

Grantee: University of Alaska Fairbanks, Fairbanks, AK

Grant No.: NA76FD0037 NMFS Contact: F/AKO

Project Title: Quantitative Evaluation of Species Specific Flatfish Behavior: Basis for Bycatch Reduction and Selective Trawl Development

Funding: Federal: $62,076 Recipient: $12,415

Description: To analyze existing videotapes of fish capture archived at the FITC, to quantify species-specific flatfish behavior. This information will provide a more comprehensive understanding of how individual flatfish species are captured and how the capture process can be exploited to separate flatfish species.

Grantee: University of Alaska Fairbanks, Fairbanks, AK

Grant No.: NA66FD0041 NMFS Contact: F/AKO

Project Title: Flatfish Size Separation in Trawl Gear: Technique to Increase Bycatch Reduction and Underutilized Species Development

Funding: Federal: $178,510 Recipient: $55,942

Description: To provide research to determine the applicability of separator panels in reducing discards in the rock sole fishery, separating flatfish species, and improving halibut release in directed cod trawl fisheries. The result will ensure wise management of the fisheries, attain optimum yields from stocks, and preserve the integrity of the fishery. In particular, it will focus on reducing the catch of male rock sole and developing techniques to separate halibut and arrowtooth flounder.

Grantee: Fisheries Information Services, Juneau, AK

Grant No.: NA76FD0033 NMFS Contact: F/AKO

Project Title: Study of Bycatch Avoidance by Fishermen in Hook and Line Greenland Turbot Fishery

Funding: Federal: $10,806 Recipient: $0

Description: To provide: (1) a database and maps for bycatch avoidance; (2) monitoring of seasonal hot-spots and individual vessels in 1997; (3) an assessment of the fishery in three years under three different conditions; and, (4) an analysis of the effectiveness of various bycatch reduction approaches.

Grantee: Alaska Department of Fish and Game, Anchorage, AK

Grant No.: NA46FD0356 NMFS Contact: F/AKO

Project Title: Genetic Stock Identification of Alaska Chinook Salmon

Funding: Federal: $144,951 Recipient: $31,235

Description: To evaluate the ability of genetic data to identify stock components of the trawl bycatch in the Bering Sea, Aleutian Islands, and Gulf of Alaska.

Grantee: Alaska Fisheries Development Foundation, Inc., Anchorage, AK

Grant No. NA36FD0149 NMFS Contact: F/AKO

Project Title: Trawl Cod-End Mesh Size and Shape Investigations to Reduce Catch and Discard of Undersized Pollock

Funding: Federal: $675,000 Recipient: $0

Description: To develop and test experimental cod-ends (square mesh vs. diamond mesh) designed to reduce the catch of small pollock, and estimate the short-term and long-term effects of the experimental cod-ends on the harvest, economics, and status of the pollock stocks.

Grantee: Arete Associates, Inc., Tucson, AZ

Grant No.: NA77FD0045 NMFS Contact: F/SWO

Project Title: Demonstration and Evaluation of the Streak Tube Imaging LIDAR (STIL) for Use in Bycatch Reduction

Funding: Federal: $139,131 Recipient: $42,399

Description: To conduct an airborne demonstration of Streak Tube Imaging Lidar, a type of sensor system, for use in surveillance to find tuna not associated with dolphin. Data gathered from in-flight tests will be analyzed and a summary of research findings will be prepared.

Grantee: National Fisheries Institute, Inc., Arlington, VA

Grant No.: NA86FD0113 NMFS Contact: F/NEO

Project Title: Bycatch in Pelagic Longline Fisheries: Temporal, Spatial, Gear, and Operational Characteristics for Longline Sets North of 35 North Latitude

Funding: Federal: $35,173 Recipient: $11,618

Description: To quantitatively summarize U.S. longline observer data in terms of both catch and catch disposition. For the Mid-Atlantic Bight, Georges Bank, and Grand Banks regions, seasonal patterns in catch rates for priority bycatch species will be investigated. Temporal, spatial, gear, and operational factors will be evaluated in terms of their influence on catch rates of priority species. Commercial fishermen will be solicited for practical options to reduce bycatch. A report describing data, analysis, and practical suggestions for minimizing bycatch will be prepared and distributed to permitted Atlantic longline fishermen, fishery managers, and members of advisory panels involved in the management of Atlantic highly migratory species.

Grantee: New England Aquarium Corporation, Boston, MA

Grant No.: NA86FD0108 NMFS Contact: F/NE0

Project Title: Increasing Survival of Juvenile Atlantic Cod, *Gadus morhua*, and Haddock, *Melanogrammus aeglefinus,* in the Northwest Atlantic Demersal Longline Fishery

Funding: Federal: $163,244 Recipient: $127,386

Description: To build upon the selectivity work already conducted and investigate how different hauling strategies might affect wound size and juvenile groundfish survivability. Preliminary survival statistics from current longline work suggest that survival of juvenile bycatch is correlated to hooking wound magnitude and that effective selectivity against juveniles can be accomplished using modified circle hooks.

Grantee: New England Aquarium Corporation, Boston, MA

Grant No.: NA77FD0105 NMFS Contact: F/NEO

Project Title: Leatherback Turtle Movements in Relation to New England Pelagic Fisheries

Funding: Federal: $81,225 Recipient: $0

Description: To place satellite tags on leatherback sea turtles on the New England pelagic fishing grounds in order to follow their movements, diving patterns, and interactions with pelagic swordfish longline and drift gill net fishing activities, in relation to oceanographic conditions. This information will be used to identify whether fishing practices can be modified to reduce incidental capture of leatherback turtles.

Grantee: New England Aquarium Corporation, Boston, MA

Grant No.: NA66FD0028 NMFS Contact: F/NEO

Project Title: Selectivity and Survival of Atlantic Cod, *Gadus morhua*, and Haddock, *Melanogrammus aeglefinus*, in a Northwest Atlantic Longline Fishery

Funding: Federal: $200,000 Recipient: $80,452

Description: To examine the selectivity of commercial hook gear, i.e., hook size and shape, hook spacing, and bait size, to evaluate the claim that juvenile fish caught by hook have minimal stress, and consequently, better survival. The degree of stress induced will be analyzed through the quantification of stress parameters in the blood of the bycatch in relation to the location of hooking wounds, depth of set, and rate of gear retrieval.

Grantee: Manomet Observatory for Conservation Science, Manomet, MA

Grant No.: NA76FD0110 NMFS Contact: F/NEO

Project Title: Bycatch Reduction Project

Funding: Federal: $266,139 Recipient: $254,288

Description: To develop selective trawls and lay the foundation for their use in the industry. Activities include reviewing the literature on fishing gear experiments, creating an industry advisory group, using underwater video and other electronics to analyze fish behavior with regard to standard fishing gear and gear which has been modified to increase selectivity, comparing modified gear with controls using paired tows, producing videos of the results, and distributing the new technology to the industry.

Grantee: Atlantic Gillnet Supply, Inc., Gloucester, MA

Grant No.: NA76FD0107 NMFS Contact: F/NEO

Project Title: Effectiveness of Acoustically Reflective Gillnet in Reducing/ Eliminating Marine Mammal Bycatch

Funding: Federal: $170,860 Recipient: $79,700

Description: To prepare a monofilament gillnet enhanced with acoustically reflective material and to test its efficiency during sea trials, both alone and in combination with pingers, to determine whether marine mammal bycatch can be avoided.

Grantee: Maine Department of Marine Resources, Augusta, ME

Grant No.: NA76FD0101 NMFS Contact: F/NEO

Project Title: Using Observers to Monitor Status of Atlantic Herring Spawning Stocks and Groundfish Bycatch in the Gulf of Maine

Funding: Federal: $ 71,220 Recipient: $ 5,332

Description: To sample the extent of bycatch associated with mid-water trawling and surface purse seining for herring to see if groundfish constitute more than 5% of the catch, the current regulatory limit established by the New England Fishery Management Council. Observers will take 20 trips to sea of at least 5 consecutive days on a single fishing vessel, subsampling the catch and counting and weighing all species other than herring. The resulting data will be statistically analyzed to determine the percent bycatch.

Grantee: University of Rhode Island, Kingston, RI

Grant No.: NA46FD0325 NMFS Contact: F/NEO

Project Title: Reduction of Flatfish Bycatch in the Small Mesh Bottom Trawls Used in the New England Whiting Fishery: An Investigation of Fish Behavior and an Evaluation of Separator Trawl Technologies

Funding: Federal: $84,232 Recipient: $57,550

Description: To investigate fish behavior in relation to bottom trawls using a low-light video camera system and to develop hypotheses on species- or species group-specific behavioral patterns based on the video data. The results of these behavioral analyses will be used to design innovative techniques for separating flatfish from groundfish in small mesh trawls. Alternate-paired tow comparisons aboard fishing vessels will be conducted to evaluate a separator trawl design.

Grantee: Maine Department of Marine Resources, Augusta, ME

Grant No.: NA46FD0324 NMFS Contact: F/NEO

Project Title: Lessening the Impact of the Northern Shrimp Fishery on Juvenile Groundfish in the Western Gulf of Maine

Funding: Federal: $99,240 Recipient: $46,419

Description: To provide a careful definition of the habitat in which the juvenile groundfish are found, including the physical habitat and the prey species of the juvenile groundfish. Work will assess the modification of shrimp fishing gear by using square mesh in the cod-end; assess the effect of the use of the Nordmore grate and square mesh on the mesh selection curve for northern shrimp; and further characterize the interaction between juvenile groundfish and northern shrimp.

Grantee: Gulf and South Atlantic Fisheries Development Foundation, Inc. Tampa, FL

Grant No.: NA87FD0099 NMFS Contact: F/SEO

Project Title: Enhancing Industry Contributions Toward Bycatch Reduction in the Shrimp Fisheries of the Gulf of Mexico and South Atlantic

Funding: Federal: $486,342 Recipient: $54,500

Description: To address the bycatch issue in the southeastern shrimp trawl fishery by working cooperatively with the shrimp industry to enhance their contribution to the development, evaluation, or modification of existing or new bycatch reduction devices (BRDs). With BRD regulations being drafted and/or implemented, only now are the gears being used extensively. The day-to-day knowledge and experience of commercial fishers can provide valuable insights towards addressing current inadequacies of available BRDs. To support industry contribution in the development of the most efficient BRDs, the Foundation will solicit proposals from industry representatives to develop or modify BRDs, and will work with the successful applicants to complete tests and evaluations of modified BRDs, or new designs.

Grantee: Gulf and South Atlantic Fisheries Development Foundation, Inc. Tampa, FL

Grant No.: NA77FD0067 NMFS Contact: F/SEO

Project Title: Continued Efforts to Reduce Bycatch in the Gulf of Mexico and South Atlantic Shrimp Fisheries and Disseminate Such Information to the Fishing Industry

Funding: Federal: $560,740 Recipient: $0

Description: This proposal seeks to address the issue of bycatch in the shrimp trawl fishery of the southeast U.S. Three objectives are to: (1) continue observer coverage aboard commercial shrimp vessels evaluating the efficiency of bycatch reduction devices (BRDs); (2) provide support for additional industry contribution to the development, evaluation, or modification of existing or new BRDs; and, (3) disseminate programmatic results to the most directly affected group, the commercial shrimp fishers, through a series of workshops.

Grantee: South Carolina Department of Natural Resources, Charleston, SC

Grant No.: NA77FD0065 NMFS Contact: F/SEO

Project Title: Removing Gas from the Distended Swim Bladder of Reef Fish: Does it Really Increase Post-Release Survival?

Funding: Federal: $38,196 Recipient: $9,827

Description: To reduce bycatch mortality and increase the effectiveness of management for reef fishes of the southeastern U.S. by determining whether puncturing the swim bladder affects survival.

Grantee: Mote Marine Laboratory, Sarasota, FL

Grant No.: NA57FD0031 NMFS Contact: F/SEO

Project Title: Reduction of Bluefin Tuna and Undersize Swordfish Bycatch in Atlantic Longline Fisheries

Funding: Federal: $128,438 Recipient: $13,804

Description: To evaluate information about depth, temperature, time, location, and other factors associated with capture of bluefin tuna, swordfish, yellowfin tuna, and other species, using hook timers and depth-time recorders on operating gear aboard commercial longliners. This information will allow fishermen to more precisely set longline gear to avoid bycatch and maximize landings of target species. A "weak link" of lighter test monofilament will also be tested to reduce giant bluefin tuna catches.

Product Quality and Safety

Grantee: University of Washington, Seattle, WA

Grant No. NA86FD0393 NMFS Contact: F/NWO

Project Title: Harmful Algal Blooms and Their Impacts on Shellfisheries and Finfisheries in Western Washington

Funding: Federal: $216,551 Regional: $38,668

Description: To provide approaches to the study and mitigation of harmful algal blooms. A field guide to the common phytoplankton in western Washington waters will be developed and published. The guide will contain light microscope and scanning electron microscope photographs of many phytoplankton species and short description of characteristics. The guide will include many harmful species and serve as a guide for health managers who are examining water samples on site. Also, the researchers will continue their monitoring program for harmful algal species on Washington coastal beaches and the Puget Sound Basin. This data will allow researchers to better understand the temporal and spatial variability of various harmful species in the region.

Grantee: University of Washington, Seattle, WA

Grant No.: NA66FD0113 NMFS Contact: F/NWO

Project Title: Domoic Acid, Diatoms, and the Shellfish Industry in Western Washington/ Harmful Phytoplankton Blooms and Their Impacts on the Shellfish and Finfish Fisheries in Western Washington

Funding: Federal: $165,569 Year 1 Recipient: $0 Year 1
$173,888 Year 2 $0 Year 2

Description: To determine which species of algae produce domoic acid in Washington coastal waters; determine the environmental conditions that enhance or control toxin production in those species; identify factors controlling the distribution of the domoic acid-producing species; and elucidate the role of domoic acid on the phytoplankton themselves. Domoic acid has been found in Dungeness crab and other shellfish and presents a severe health hazard to humans. Results from this work may provide needed information that will allow for an early warning of potential blooms.

Grantee: University of Washington, Seattle, WA

Grant No.: NA66FD0103 NMFS Contact: F/NWO

Project Title: *Heterosigma carterae*: Laboratory Induction of Toxin Production/Target Marine Species - Year 2

Funding: Federal: $106,098 Recipient: $7,522

Description: Heterosigma is a toxic alga known to cause mass mortalities in farmed salmon and other finfish. The researcher will utilize a Heterosigma isolate to determine the environmental factors that induce bloom formation and maximize toxin production. Further, the susceptibility of both vertebrate and invertebrate marine species to Heterosigma toxin will be analyzed.

Grantee: Monterey Bay Aquarium Research Institute, Moss Landing, CA

Grant No.: NA76FD0051 NMFS Contact: F/SWO

Project Title: Rapid Detection of Harmful Algal Species and Their Associated Toxins Using DNA Probes and a Receptor Binding Assay

Funding: Federal: $128,578 Recipient: $33,673

Description: To test sea water for the presence of Pseudonitzschia diatoms using a probe that was developed as the result of a previous grant. If successful, a method to identify and even predict the presence of domoic acid will have been perfected. Domoic acid is a dangerous toxin that infects fish who eat the host diatoms, and in turn, poisons humans who eat infected fish.

Grantee: PacMar, Inc., Honolulu, HI

Grant No.: NA86FD0067 NMFS Contact: F/SWO

Project Title: Development of a HAACP-Based Strategy for the Control of Histamine for the Fresh Tuna Industry

Funding: Federal: $199,513 Recipient: $34,622

Description: To develop a Hazard Analysis Critical Control Point (HACCP)-based approach to the problem of histamine formation in fresh tuna which integrates the industry linkages (fishing vessel/processor/distributor) in an effective, efficient, and practical system capable of ensuring public safety and compliance with FDA Seafood Regulations. This will be achieved by: (1) evaluating epidemiological data on histamine toxicity in Hawaii; (2) developing fishing fleet profiles in terms of fishing methods, post-harvest handling methods, and potential risk of histamine production; (3) verifying the post-harvest handling procedures by using temperature loggers deployed at sea to record the temperature history of fish aboard fishing vessels; and, (4) determining the importance of gear type, post-handling methods, and fresh tuna quality grades as indicators of histamine concentration.

Grantee: PacMar, Inc., Honolulu, HI

Grant No: NA66FD0057 NMFS Contact: F/SWO

Project Title: Development of a Stock Profile for Methyl Mercury in the North Pacific Broadbill Swordfish Fishery

Funding: Federal: $240,963 Recipient: $51,062

Description: To develop a stock profile for methyl mercury in the north Pacific swordfish fishery. This profile has the potential as a predictive model to be used by industry and regulatory agencies as a guideline for identifying potential methyl mercury hazards in swordfish.

Grantee: Virginia Institute of Marine Science, Gloucester Point, VA

Grant No.: NA76FD0052 NMFS Contact: F/SWO

Funding: Federal: $118,213 Recipient: $11,993

Project Title: The Therapeutic Treatment of Abalone Infected with the Putative Agent of Abalone Withering Syndrome

Description: To test and evaluate the efficacy of several different antibiotics for the treatment of withering syndrome in abalone. Withering syndrome is a serious and, thus far, incurable disease which has decimated some populations of abalone in southern and central California waters.

Grantee: California State University, Hayward Foundation, Hayward, CA

Grant No.: NA76FD0048 NMFS Contact: F/SWO

Project Title: Using an Innovative Technique to Assess Fecal Contamination in Estuarine Waters and Shellfish

Funding: Federal: $39,613 Recipient: $24,838

Description: To investigate a new method for enhancing the recovery of certain bacteria to assess fecal contamination in estuarine waters and in shellfish. Results of this project will improve the quality and safety of commercially available shellfish.

Grantee: The Regents of the University of California, Berkeley, CA

Grant No.: NA76FD0046 NMFS Contact: F/SWO

Project Title: Investigation of the Role of Rickettsiales-Like Procaryotes in Withering Syndrome of Black Abalone: Koch's Postulates and Molecular Probes

Funding: Federal: $55,040 Recipient: $37,099

Description: To continue the ongoing investigations of the possible causes of withering syndrome, a disease that has infected and decimated abalone populations along the coast of California.

Grantee: Woods Hole Oceanographic Institution, Woods Hole, MA

Grant No.: NA57FD0012 NMFS Contact: F/SWO

Project Title: A Predictive Index for Paralytic Shellfish Poisoning Events on the Northern California Coast

Funding: Federal: $42,007 Recipient: $0

Description: To investigate whether a predictive index developed for paralytic shellfish poisoning (PSP) in northwest Spain can be applied to northern California; to test the hypothesis that the onset of PSP in northern California is linked to the relaxation of upwelling and the delivery or transport of established blooms to the shore with warm, stratified offshore waters.

Grantee: University of Rhode Island, Kingston, RI

Grant No.: NA76FD0142 NMFS Contact: F/NEO

Project Title: Technology Development for Flavor Production from Seafood Processing Wastes

Funding: Federal: $108,123 Recipient: $28,134

Description: To refine the current enzyme hydrolysis technique for seafood flavor manufacturing and to optimize purification and concentration procedures for commercial scale-up. The overall goal is to help create a seafood flavor manufacturing industry while improving the current flavor manufacturing process.

Grantee: University of Rhode Island, Kingston, RI

Grant No.: NA76FD0140 NMFS Contact: F/NEO

Project Title: Standardization of the Ammonia Electrode Method for the Evaluation of Seafood Quality by Correlation to Sensory Analysis

Funding: Federal: $77,780 Recipient: $6,298

Description: To design and implement a valid sensory and analytical protocol for correlation with results obtained with an ammonia ion selective electrode (ISE) for seafood quality. The anticipated benefits will be a simple rapid procedure for screening seafood quality.

Grantee: Mote Marine Laboratory, Sarasota, FL

Grant No.: NA77FD0081 NMFS Contact: F/SEO

Project Title: Utilization of Molecular Biomarkers to Provide an Assay for Shellfish Exposure to Polyether Toxins from Harmful Algal Blooms

Funding: Federal: $212,883 Recipient: $68,910

Description: To determine the sensitivity and selectivity of protein biomarkers for toxin exposure. Clams will be exposed to known concentrations of *G. breve* at Mote Marine Laboratory. Extracts of select tissue will be analyzed for brevetoxin content by HPLC and by receptor binding assay. An aliquot of the extracts will be assayed by one-dimensional electrophoresis to determine the time course of expression and extinction of the protein biomarkers relative to toxin content and annual testing.

Grantee: Baylor College of Medicine, Houston, TX

Grant No.: NA77FD0080 NMFS Contact: F/SEO

Project Title: Molecular Assessment of Public Health Suitability of Shellfish for Human Consumption

Funding: Federal: $183,680 Recipient: $0

Description: To develop methods for the detection of potentially infectious human caliciviruses that will contribute directly to improve shellfish safety and will provide the tools needed for a better understanding of the epidemiology and transmission of these viruses.

Grantee: University of Florida, Gainesville, FL

Grant No.: NA77FD0079 NMFS Contact: F/SEO

Project Title: Critical Control Limits, Infective Dose, and Prevalence of Pathogenic Vibrio Species in Shellfish Products

Funding: Federal: $95,660 Recipient: $37,278

Description: To determine levels of *V. vulnificus* that pose human health risks, the critical controls that can maintain *V. vulnificus* at safe concentrations in shellfish products, and the prevalence of pathogenic *Vibrio spp*. in the environment.

Grantee: University of Florida, Gainesville, FL

Grant No.: NA67FD0037 NMFS Contact: F/SEO

Project Title: Moisture Content in Penaeid Shrimp Destined for U.S. Consumption

Funding: Federal: $65,395 Recipient: $30,206

Description: To authenticate the moisture content for penaeid shrimp in an effort to address good manufacturing practices, regulatory compliance, and consumer expectations. All data will be based on authentic, verified sampling plans and analytical procedures for four domestic wild species and one primary cultured species of foreign origin. Also, “natural” non-processed moisture levels will be established, while accounting for all processing steps, plus freezing methods, thawing, refreezing, use of phosphates, and cooking.

Grantee: University of Georgia, Athens, GA

Grant No.: NA67FD0035 NMFS Contact: F/SEO

Project Title: The Effect of Phosphates on the Moisture Content of Commercial Shrimp and Their Use to Improve the Quality and Shelf Life of Frozen Breaded Shrimp

Funding: Federal: $94,219 Recipient: $40,325

Description: To treat four commercial species of shrimp with phosphates and then measure the following quality attributes of frozen breaded shrimp made from the treated raw materials: (1) water content and distribution in shrimp and breading to assess desiccation and moisture migration; (2) nutritional content; (3) amine levels; (4) rancidity; (5) phosphate levels; and, (6) sensory quality. Also, to measure moisture levels in four domestic and foreign commercially important species of freshly caught shrimp; monitor changes in the moisture content of nonbreaded shrimp after treatment with phosphates; determine moisture levels in treated and untreated shrimp after freezing; and measure moisture levels in fresh and frozen treated and untreated shrimp harvested at different times of the year.

Grantee: North Carolina State University, Raleigh, NC

Grant No.: NA67FD0500 NMFS Contact: F/SF2

Project Title: A New Toxic Dinoflagellate Affecting Cultured and Wild Estuarine Fish -Year 2

Funding: Federal: $149,953 Recipient: $38,932

Description: To characterize the ecological distribution, algal physiology, disease effects, and toxin of a new toxic dinoflagellate recently discovered in the Albemarle-Pamlico Estuary. The data will provide critical information needed to assess the impact of this toxic dinoflagellate on wild and cultured fish populations.

Grantee: Regents of the University of California, Berkeley, CA

Grant No: NA47FD0416 NMFS Contact: F/SF2

Project Title: Microbial Safety: Rapid Methods for Shellfish and Seawater-Injured *E. coli*

Funding: Federal: $72,209 Recipient: $29,034

Description: To complete the final development of a rapid, sensitive, and more simplified test for the detection of *E. coli* in shellfish. The method will reduce by 50% the time and labor required for current routine microbiological screening of molluscan shellfish. It will also increase the sensitivity, making it easier to investigate whether low concentrations of *E. coli* correlate well with other indicators of possible hazards. The new test will make *E. coli* enumeration simple enough to incorporate into HACCP plans and seafood microbiological standards.

Grantee: University of North Carolina, Charlotte, NC

Grant No: NA36FD0271 NMFS Contact: F/SF2

Project Title: Detection and Enumeration of Viable but Nonculturable *Vibrio vulnificus*

Funding: Federal: $108,808 Recipient: $0

Description: The objective of the project is to develop methods for the differentiation and enumeration of *Vibrio vulnificus* cells present in the environment in the "viable but nonculturable" state.

Aquaculture

Grantee: University of Alaska Southeast, Juneau, AK

Grant No.: NA76FD0035 NMFS Contact: F/AKO

Project Title: Nori Cultivation: Physiological Ecology of Native Alaskan Porphyra Species - Year 3

Funding: Federal: $151,351 Recipient: $33,149

Description: To determine the physiological and ecological conditions for the successful cultivation of native Porphyra species in the state of Alaska. Laboratory experiments will determine or confirm the optimal culture conditions for growth and maturation of conchocelis and release of conchospores of up to four Alaskan species of Porphyra with commercial aquaculture potential.

Grantee: Qutecak Native Tribe, Seward, AK

Grant No.: NA66FD0045 NMFS Contact: F/AKO

Project Title: Broodstock Selection and Hatchery Development of Purple-Hinged Rock Scallops, *Crassodoma gigantea*, for Marine Aquaculture

Funding: Federal: $69,795 Recipient: $35,145

Description: To develop sources of purple-hinged rock scallop seedstock suitable for use in suspended culture and develop or demonstrate cost-effective approaches for advancing environmentally sound private aquaculture development.

Grantee: Pacific Shellfish Institute, Olympia, WA

Grant No. NA86FD0262 NMFS Contact: F/NWO

Project Title: High Health Management of Pacific Oysters

Funding: Federal: $117,282 Recipient: $42,657

Description: To initiate and advance an integrated health management program for regional Pacific oyster health. This program will conduct a regional health assessment of adult Pacific oysters for infectious disease organisms in various hydrogeographic zones in Washington, Oregon, and California to meet Organization Internationale Epizooties standards. Also, a manual will be prepared on industry-wide Pacific oyster high health protocols and policies, and initiate training and coordination among industry, researchers, and regulators. The manual provides the required documentation for USDA/APHIS export certification for industry.

Grantee: Pacific Shellfish Institute, Olympia, WA

Grant No.: NA66FD0123 NMFS Contact: F/NWO

Project Title: Oyster Seed Mortality Prevention

Funding: Federal: $97,335 Recipient: $34,275

Description: To attempt to determine precise causes of seed mortality by detailing seed growth and health; compare the growth and health of diploid and triploid oysters; publish a description of the histological development of oyster seed; and develop a protocol for the examination and diagnosis of juvenile oyster diseases.

Grantee: Washington State University, Pullman, WA

Grant No. NA76FD0300 NMFS Contact: F/NWO

Project Title: Optimal Design of a Water Recirculation System for Shellfish Depuration

Funding: Federal: $98,820 Recipient: $29,802

Description: To develop an optimal design of a water recirculation system for shellfish depuration and wet storage. The research will provide a guideline for determining the maximum carrying capacity for shellfish utilizing a certain biofilter. Researchers will investigate coliform disinfection effectiveness of UV technology under different turbidity; determine shellfish excretion rates as a function of water temperature; investigate nitrification efficiency and dynamics under different temperatures; and evaluate and document a depuration system in a commercial setting.

Grantee: Washington State University, Pullman, WA

Grant No.: NA26FD0110-01 NMFS Contact: F/NWO

Project Title: Improved Fertilization Solutions for Cryopreserved Salmonid Sperm

Funding: Federal: $54,479 Recipient: $8,378

Description: To develop improved conditions so that sperm cryopreservation can be easily and reproducibly applied in salmonid enhancement and aquaculture projects. The researchers will compare motility and fertilization rate with cryopreserved sperm and various fertilization solutions. They will also examine the effect of varying concentrations of egg yolk, identified as a critical variable in the extender solution for sperm cryopreservation.

Grantee: Oregon State University, Corvallis, OR

Grant No.: NA66FD0107 NMFS Contact: F/NWO

Project Title: Microencapsulated Delivery of Amino Acids to Striped Bass and Other Altricial Larvae

Funding: Federal: $169,897 Recipient: $33,393

Description: To evaluate the usefulness of lipid-walled microcapsules in enhancing the delivery of dietary amino acids and stimulation of feeding behavior of striped bass larvae. Although striped bass is the target species of this research, results and methods will be applicable to other species of finfish. The development of finfish aquaculture in the U.S. is impeded by a lack of high quality micro-particulate diets that are digestible and meet the nutritional needs of larvae.

Grantee: Oregon State University, Newport, OR

Grant No.: NA66FD0110 NMFS Contact: F/NWO

Project Title: Conservation of Commercial Kumamoto Oyster Broodstock

Funding: Federal: $81,890 Recipient: $12,465

Description: To produce a pure Kumamoto oyster, which will require the redevelopment of the broodstock. West Coast oyster growers are finding that Kumamoto oyster seed is producing a hybridized Kumamoto and Pacific oyster, which has less value in the marketplace. The recipient will obtain samples of broodstock from participating farms and determine which are pure Kumamoto, and will cull those which carry the Pacific oyster genes. Further, the recipient will attempt to obtain pure Kumamoto oysters at traditional grow-out sites, in order to bolster a pure Kumamoto broodstock for commercial use.

Grantee: Regents of the University of California, Oakland, CA

Grant No.: NA86FD0069 NMFS Contact: F/SWO

Project Title: Development of Rock Scallop Grow-Out Techniques

Funding: Federal: $48,088 Recipient: $6,815

Description: To develop recommendations on rock scallop grow-out methods by conducting laboratory experiments and dissections and pilot field studies. Laboratory work will examine behavioral and developmental mechanisms responsible for final attachment. The field studies, to be done in collaboration with California aquaculturists, will further refine potential grow-out techniques identified in the laboratory for use in various culture systems.

Grantee: Coral Reef Foundation, Koror, Palau

Grant No.: NA86FD0068 NMFS Contact: F/SWO

Project Title: Culture of New Marine Invertebrates for the Home Aquarium Industry

Funding: Federal: $32,640 Recipient: $10,420

Description: To identify species of marine invertebrates, principally sponges and ascidians, and develop “low-tech” mariculture methods to raise these for sale in the marine aquarium trade. It is anticipated that this work will encourage increased involvement of Pacific Islanders in this industry by expanding the number of species available for culture.

Grantee: Black Pearls, Inc., Holualoa, HI

Grant No.: NA76FD0054 NMFS Contact: F/SWO

Project Title: The Hawaiian Pearl Oyster Partnership: A Public-Private Initiative for Commercial Pearl Oyster Farming and a Test Case of Ocean Leasing Laws

Funding: Federal: $99,540 Recipient: $15,557

Description: To develop a public-private partnership between the State of Hawaii and private interests to establish ocean leasing for aquaculture in Hawaii. The grantee will attempt to obtain the first commercial aquaculture ocean lease and establish a farm/reproductive reserve for a species that was once abundant in the main Hawaiian Islands but is now considered rare.

Grantee: Hubbs-Sea World Research Institute, San Diego, CA

Grant No.: NA76FD0049 NMFS Contact: F/SWO

Project Title: Commercialization of White Seabass Aquaculture Pilot Program: Grow-Out to Market

Funding: Federal: $208,982 Recipient: $72,494

Description: To test the commercial feasibility of white seabass aquaculture from grow-out to market. Currently, white seabass are raised to small sizes for use only in stock enhancement. This project will grow the fish to a larger size and attempt to introduce the fish in the commercial market to test the technical and economic feasibility of a commercial white seabass aquaculture operation.

Grantee: Marine Resources Management Division, Colonia, Yap FSM

Grant No: NA67FD0053 NMFS Contact: F/SWO

Project Title: Trochus Reseeding in the Outer Islands of Yap State, FSM

Funding: Federal: $12,040 Recipient: $11,847

Description: To seed and establish reproducing populations of the commercial topshell, *Trochus niloticus*, in the remaining outer islands of Yap State.

Grantee: Purdue University, West Lafayette, IN

Grant No.: NA76FD0149 NMFS Contact: F/NEO

Project Title: Toward Sustainable Aquacultural Production Systems: Promoting Optimum Media for Nitrifying Bacteria in Recirculating Aquaculture Systems

Funding: Federal: $120,700 Recipient: $0

Description: To explore the potential of establishing a selective or optimal medium for nitrifying bacteria for recirculating system aquaculture. Five minerals, critical for the bacteria but rarely added to diets for fish, will be the focus of this research. The potential results of this research are sustainable recirculating systems for mass production of a variety of species.

Grantee: University of Maryland Biotechnology Institute, Baltimore, MD

Grant No.: NA76FD0145 NMFS Contact: F/NEO

Project Title: Optimization and Clearance Studies of a New Hormone-Based Spawning Induction Technology for Aquacultured Finfish

Funding: Federal: $132,546 Recipient: $77,826

Description: To optimize an efficient, reliable, and physiologically sound technology to induce ovulation, spawning, and sperm production in farmed fish, using hybrid striped bass. This work will provide information that will facilitate the regulatory approval of the technology in view of making it accessible to commercial hatcheries and finfish growers.

Grantee: University of Rhode Island, Kingston, RI

Grant No.: NA76FD0143 NMFS Contact: F/NEO

Project Title: Development of Commercial Aquaculture of Black Sea Bass

Funding: Federal: $99,385 Recipient: $15,246

Description: To collect broodstock, evaluate natural and artificial spawning, conduct photoperiod studies, and analyze the effects of salinity changes and various diets for black sea bass, each phase of which will follow procedures which have proven successful for other species. Eggs in excess of the study requirements will be provided to others interested in black sea bass aquaculture. This base-line study will provide essential data to evaluate the potential for raising black sea bass from eggs to juveniles as a commercial aquaculture endeavor.

Grantee: University of New Hampshire, Durham, NH

Grant No.: NA76FD0104 NMFS Contact: F/NEO

Project Title: Development of an Integrated Aquaculture and Sea Ranching System for the Green Sea Urchin, *Strongylocentrotus droebachiensis*, in the Gulf of Maine

Funding: Federal: $165,720 Recipient: $52,660

Description: To: (1) manipulate the reproductive cycle to extend the period when ripe gametes for larval culture can be obtained; (2) standardize the rearing of larval and juvenile urchins for mass cultivation; (3) utilize a commercial diet to document the timing and economics of land-based grow-out versus field grow-out and short-term bulking for maximum roe yield; (4) determine the optimum size and time of year for seeding urchins into a field site for sea ranching; and, (5) integrate the various information obtained from the research and from the literature to produce a system for a sustainable urchin fishery.

Grantee: MER Assessment Corporation

Grant No.: NA76FD0096 NMFS Contact: F/NEO

Project Title: To Investigate Culture Technique to Rear Fingerling Size Atlantic Cod and Larval/Fingerling Sized Haddock for Use in Production Aquaculture and for Use in a Public Restoration Project to Study the Efficacy of Restoring Natural Cod Stocks in the Gulf of Maine

Funding: Federal: $477,773 Recipient: $46,068

Description: To transfer cod aquaculture techniques from a research project to a commercial enterprise. Experimental techniques developed at the University of Maine will be transferred to a production level at a commercial hatchery. The investigators will: (1) optimize brood fish handling and transport techniques; (2) improve successful laboratory larval cod rearing techniques; (3) investigate and demonstrate cost-effective juvenile cod feeding and rearing techniques at a production scale; (4) explore and mitigate causes of juvenile cod mortality; (5) document and transfer successful cod hatchery management techniques via the production of a management guide and training video; and, (6) explore larval and juvenile haddock rearing techniques as a premise for future commercialization. In addition, this project will provide significant numbers of juvenile cod to the Maine Department of Marine Resources for restoration stocking experiments to enhance Gulf of Maine cod stocks.

Grantee: Ohio State University Research Foundation, Columbus, OH

Grant No.: NA66FD0029 NMFS Contact: F/NEO

Project Title: Domestication of Lake Whitefish, *Coregonus clupeaformis*: Production of Broodstock and Assessment of Gamete Quality

Funding: Federal: $101,005 Recipient: $6,526

Description: To determine the optimum diet formulation for lake whitefish broodstock by substituting analogs (mixtures of animal byproducts such as blood or feathers) for fish meal in the diet formulation. The fish meal will be replaced by analog concentrations of 25, 50, or 75%. Gamete ripening and steroid hormone correlations in both sexes will be monitored during the yearly cycle. The researchers will examine female fecundity, biochemical composition of eggs, and survival of embryos and fry after different dietary treatments. Males will be examined for milt density, motility, and fertility after cryopreservation. The primary objective of the modified diet would be its lower cost, assuming no decline in the overall health and reproductive potential of the broodstock fish. This naturally translates to greater profitability for the aquaculture operation.

Grantee: Westport Fishing Corporation, New Bedford, MA

Grant No.: NA66FD0027 NMFS Contact: F/NEO

Project Title: Sea Scallop Enhancement and Sustainable Harvesting

Funding: Federal: $157,000 Recipient: $156,936

Description: To separate sub-marketable sea scallops taken during normal fishing operations and transport them to a grow-out site which eight fishing vessels will share, each with its own lane within the area. In addition to open bottom culture, some scallops will be kept in cages on the bottom, or in cages in the water column, for growth comparisons. Underwater video cameras (TUGOS) will be used to monitor scallop activity and bottom conditions. An economic analysis will assess the entire operation and the results will be shared with the fishing industry.

Grantee: University of Maine, Orono, ME

Grant No.: NA66FD0024 NMFS Contact: F/NEO

Project Title: Refinement of Computer Models for Determining Distribution of Finfish Aquaculture Wastes and Transfer of Technology to Regulatory Agencies

Funding: Federal: $118,900 Recipient: $16,916

Description: To refine previous computer simulation models, taking into account critical shear velocities associated with re-suspension of settled wastes. Readily usable models will be assessed and modified to be more user-friendly, and the technology transferred to state and federal regulators. Work under a previous S-K award has clearly shown that computer simulation models are effective tools for estimating distribution of net-pen aquaculture wastes. However, this technology is not easily available to regulators for routine applications.

Grantee: New England Fisheries Development Assn., Boston, MA

Grant No.: NA66FD0023 NMFS Contact: F/NEO

Project Title: A New Harvest: Sea Scallop Enhancement and Culture in New England

Funding: Federal: $265,548 Recipient: $34,074

Description: To collect scallop spat from promising locations using traditional and new gear. The spat will be cultured to 5-10 mm at the University of New Hampshire Jackson Laboratory, then stocked for on-bottom and suspended culture. This process will be evaluated with on-board processing of spat and stocking directly to the grow-out areas without the intermediate culture stage at the Jackson Lab. Two to three one-acre sites will be used as the grow-out areas under conditional permits. The fishermen involved will also secure seed scallops and stock the areas to test their suitability and to gain experience in this new "fishery." The grantees will also produce a quarterly newsletter for the industry on sea scallop aquaculture.

Grantee: Bioshelters, Inc., Amherst, MA

Grant No.: NA66FD0017 NMFS Contact: F/NEO

Project Title: Renovation of Phosphorous and Other Aquacultural Wastes Using Constructed Wetlands with Planted Peat and Rockwool

Funding: Federal: $65,559 Recipient: $7,160

Description: To "filter" the discharge water from an aquaculture facility using an artificial wetland constructed from peat and rockwool, and planted with reed canary grass. The primary objective is to remove phosphorous. The experiment will evaluate the use of doping agents, lime, iron, and aluminum sulfate in removing phosphorous. It is anticipated that the study will create an inexpensive technique which the aquaculture industry will readily adopt, with widespread water quality benefits to the receiving waters downstream from their facilities.

Grantee: Mississippi Agricultural and Forestry Experiment Station
Mississippi State, MS

Grant No.: NA67FD0033 NMFS Contact: F/SEO

Project Title: Use of Constructed Wetlands to Improve Water Quality in Finfish Pond Culture - Phase 2

Funding: Federal: $146,806 Recipient: $17,712

Description: To evaluate the effectiveness of constructed wetlands in improving water quality in aquaculture ponds and assess the potential economic benefits associated with the new technology. Six one-quarter acre fish ponds and six constructed wetlands will be used. Water quality parameters will be monitored on a daily and weekly basis. Fish growth will be measured by comparing stocking weight to harvest weight. Off-flavor testing will be conducted on a quarterly basis. The effects of the use of constructed wetlands, wetlands size, and water flow rates will be evaluated by using covariance analysis. The additional benefits arising from the use of constructed wetlands will be compared to the associated costs of constructing and operating the marsh systems. Investment analysis will be conducted on treatments (wetlands size, water flow rates) which have favorable budget results. Technology and information transfer activities such as newsletters, mass media, journal articles, extension publications and demonstrations will be conducted based on project results. The project will supplement research in 12 additional one-quarter acre ponds and nine constructed wetlands.

Grantee: South Carolina Department of Natural Resources, Charleston, SC

Grant No.: NA77FD0078 NMFS Contact: F/SEO

Project Title: Hard Clam, *Mercenaria mercenaria,* Mariculture in U.S. Waters: Evaluating the Effects of Large-Scale Field Outgrowth Practices on Clam Growth, Nutrition, and Inshore Estuarine Creek Communities

Funding: Federal: $138,570 Recipient: $ 38,914

Description: To conduct several experimental field studies, in conjunction with a large-scale operating clam enterprise, to: (1) experimentally evaluate the potential effects of food and flow on individual (seed) clam growth at various stocking densities within creeks and among seasons; (2) manipulate pen and clam densities and configurations to examine the direct and indirect effects of large-scale clam mariculture on inshore creek communities; and, (3) utilize stable isotope ratios to provide insight into clam diets and food web structure.

Grantee: South Carolina Department of Natural Resources, Charleston, SC

Grant No.: NA67FD0030 NMFS Contact: F/SEO

Project Title: Sustainable Aquaculture and Stock Enhancement for Native White Shrimp, *Penaeus setiferus*

Funding: Federal: $142,369 Recipient: $32,879

Description: To determine effects of stocking density, level of dietary protein, and their interaction on growth and survival of *P. setiferus* in intensive culture; and, to develop a reliable, cost-effective means for enhancing wild stocks of *P. setiferus* following winter kill, using artificially overwintering sub-adults. The primary factor limiting aquaculture industry use of *P. setiferus* is its slower growth rate under pond culture conditions, apparently because *P. setiferus* is more carnivorous than *P. vannamei*, and requires more dietary protein. The protein requirements of *P. setiferus*, and the possible interactions of dietary protein and population density, will be evaluated in a factorial experiment using various levels of protein in the diet and various stocking densities. To investigate winter kill of overwintering brood shrimp, which has severely reduced or eliminated South Carolina's spring “rock shrimp” fishery and often caused a marked decrease in the fall fishery as well, the researchers will enclose a 0.1 ha pond in a greenhouse structure and overwinter 15,000 subadult *P. setiferus* (half of which have been tagged). Survivors will be stocked into natural water in late April, and their subsequent recruitment to the spawning population determined by trawl sampling and reports of tagged shrimp captures from the commercial fishery.

Grantee: The University of Texas at Austin, Austin, TX

Grant No.: NA77FD0070 NMFS Contact: F/SEO

Project Title: Application of Nutritional Strategies for the Development of Low Pollution Feeds for Marine Species

Funding: Federal: $70,625 Recipient: $29,134

Description: To evaluate the effects of dietary protease supplement on growth and net protein retention for red drum and Pacific white shrimp.

Grantee: Texas A & M Research Foundation, College Station, TX

Grant No.: NA67FD0036 NMFS Contact: F/SEO

Project Title: Technology Development for Commercial Production of Native Bait Shrimp in the U.S.

Funding: Federal: $247,000 Recipient: $85,450

Description: To develop culture methods for native bait shrimp for the sportfishing industry and the bait shrimp dealers, which will reduce overfishing of shrimp populations and provide more jobs. The objectives of the proposed study are to identify limiting factors and develop technology needed for production of native bait shrimp. Experiments will be conducted under controlled laboratory conditions, in outdoor ponds, and in an experimental intensive raceway system. The laboratory studies will identify nutritional growth limiting factors, while the outdoor studies will test and develop the needed production management technology.

Grantee: Regents of the University of California, Berkeley, CA

Grant No.: NA66FD0104 NMFS Contact: F/SF2

Project Title: Fate and Microbial Effects of Aquaculture Drug Residues in the Environment

Funding: Federal: $172,165 Recipient: $51,969

Description: To develop data on the environmental fate and effects of two chemotherapeutants used in aquaculture in order to expedite FDA approval of drugs for industry and assess environmental issues associated with their use.

Grantee: North Carolina State University, Raleigh, NC

Grant No.: NA67FD0131 NMFS Contact: F/SF2

Project Title: A Novel, Potent, Immunological Defense in Rainbow Trout

Funding: Federal: $136,550 Recipient: $41,862

Description: To characterize a novel, potent, antimicrobial polypeptide from rainbow trout, *Oncorkynchus mykiss*, using methods already developed to isolate it in a quantity that will allow it to be tested against selected fish pathogens. Also, to develop a rapid test for measuring the activity in tissue and determine if activity is inducible after “immunization.”

Grantee: Cornell University, Ithaca, NY

Grant No.: NA66FD0059 NMFS Contact: F/SF2

Project Title: Increasing Economic Efficiency of Water Recirculating Systems by Improving Water Quality and Reducing System Costs

Funding: Federal: $88,940 Recipient: $82,960

Description: To evaluate and demonstrate a new nutrification system (reduces costs by factor of 30); evaluate and demonstrate cost efficient solids removal techniques, including use of ozone; and demonstrate findings with commercial cooperators using full scale systems.

Habitat Protection

Grantee: University of Washington, Seattle, WA

Grant No.: NA76FD0036 NMFS Contact: F/AKO

Project Title: Recruitment Limitation in Alaska Red King Crab: The Importance of Early Life History Stages

Funding: Federal: $115,175 Recipient: $21,532

Description: To examine settlement behavior and habitat use of juvenile red king crab, *Paralithodes camtschaticus*, in order to quantify nursery habitat suitable for management and protection.

Grantee: New Jersey Marine Science Consortium

Grant No.: NA86FD0109 NMFS Contact: F/NEO

Project Title: The Role of Tidal Salt Marsh as Essential Habitat in Production of Juvenile Weakfish

Funding: Federal: $89,384 Recipient: $84,141

Description: To provide a direct test of the hypothesis that salt marshes support weakfish, *Cynoscion regalis*, production through trophic pathways, both *in situ*, and by the export of marsh products to the estuary. Weakfish are among a group of marine transient species that spawn in lower estuaries, or in the coastal zone, and whose young utilize estuarine habitats including tidal salt marshes.

Grantee: Virginia Commonwealth University, Richmond, VA

Grant No.: NA76FD0147 NMFS Contact: F/NEO

Project Title: Critical Evaluation of Conservation Success in Restoration of James River and Ocean Run American Shad

Funding: Federal: $163,542 Recipient: $157,212

Description: To sample mitochondrial and satellite DNA from hatchery broodstock and fry and to compare with wild fish to see if restoration procedures are maintaining natural biodiversity. Prior studies have shown the James River and other shad rivers to be quite diverse and genetically discrete from one river to another. The study will provide confidence to fisheries managers that restoration efforts using stocking will not adversely impact upon the wild stocks.

Grantee: Capt. Edward Boynton, Gloucester, MA

Grant No.: NA76FD0106 NMFS Contact: F/NEO

Project Title: Establishing the Food Web Links Between Estuaries and Near Shore Fisheries in New England

Funding: Federal: $93,866 Recipient: $0

Description: To determine nutrients present from the Parker River estuary, and the fish fauna present, by collecting samples at six stations on the ocean side of Parker Island in Ipswich Bay, MA. Sampling will be done by beam trawl on the bottom and at mid-depth. Fish taken will be measured and weighed; water temperature and salinity will be recorded. In addition, chlorophyll-a levels will be determined from water samples on a monthly basis. Predictions of the relationships between these observations, as well as the interactions with other levels in the food web, will be made and the relative importance of the estuary to the species found will be described.

Grantee: The Research Foundation of State University of New York, Stony Brook, NY

Grant No.: NA66FD0012 NMFS Contact: F/NEO

Project Title: Identification of Continental Shelf Groundfish Nursery Habitats in the New York Bight

Funding: Federal: $200,000 Recipient: $48,119

Description: To assess recruitment of marine organisms in relationship to habitat characteristics in the New York Bight, with a focus on groundfish. The researchers intend to identify critical settlement/nursery habitat and how requirements for this habitat change during the growth and development of the organisms. The investigators intend to encourage fishermen to be actively involved in the study, and to present their findings at regional Fishermen's Forums.

Grantee: Texas Parks and Wildlife Department, Austin, TX

Grant No.: NA77FD0072 NMFS Contact: F/SEO

Project Title: An Analytical Method for Predicting Potential Spread of Exotic Species from Aquaculture and Aquatic Research Facilities in Texas

Funding: Federal: $54,243 Recipient: $18,132

Description: To develop GIS coverages (maps) for each of the river drainage basins in Texas; locate each aquaculture and aquatic research facility near the Texas coast that could contain exotic aquatic species; and develop analytical procedures to determine the potential impact of escapement of exotic species on Texas commercial and recreational fisheries industries for each facility, and for potential future sites within each basin.

Grantee: South Carolina Department of Natural Resources, Charleston, SC

Grant No.: NA77FD0063 NMFS Contact: F/SEO

Project Title: Critical Habitats of Atlantic Sturgeon

Funding: Federal: $129,473 Recipient: $27,621

Description: To collect information on the abundance, habitat use, age distribution, and seasonal movements of adult Atlantic sturgeon in two major river systems to assist the effective management and recovery of Atlantic sturgeon stocks in the southeastern U.S.

Other

Grantee: Boone Bait Co., Inc., Winter Park, FL

Grant No.: NA27FD0095 NMFS Contact: F/SF2

Project Title: Impact of EC92 on U.S. Fishing Tackle Sales

Funding: Federal: $79,000 Recipient: $45,000

Description: To analyze the new rules and regulations that will impact U.S. manufactured fishing tackle in Europe as a result of EC92, including tariffs, standards, labeling requirements, and non-tariff barriers, if any. In addition, tariff and non-tariff barriers that affect U.S. markets for fishing tackle in the Eastern Bloc countries will be identified.

IV. PENDING NATIONAL PROGRAM PROJECTS

The following section contains a description of all pending (ongoing) projects under the S-K National Program, along with project number, project title, federal funding level, and the NMFS contact.

Management Alternatives and Fisheries User Conflicts

Project No.: 97-AK-01 NMFS Contact: F/AKO

Project Title: ADF&G/NMFS Bottom Trawl Calibration Study

Funding: Federal: $134,800

Description: To conduct an experiment to detect fishing power differences between the net and vessel configuration used by National Marine Fisheries Service (NMFS) during their Gulf of Alaska (GOA) triennial groundfish surveys and the net and vessel configuration used by the Alaska Department of Fish and Game (ADF&G) during their annual GOA crab survey. The results of this experiment will allow both NMFS and ADF&G to augment each survey by allowing direct comparisons of the respective databases. For example, being able to fully incorporate the ADF&G survey database into the annual status of stocks process would greatly enhance the management of important groundfish species such as walleye pollock, Pacific cod and many flatfish species.

Project No.: 97-AK-02/ NA77FD0164 NMFS Contact: F/AKO

Project Title: Monitoring and Evaluation of the Halibut and Sablefish Individual Fishing Quota (IFQ) System

Funding: Federal: $71,820 Recipient: $4,500

Description: To correlate existing NMFS Restricted Access Management Division and Alaska Department of Fish and Game/ Commercial Fisheries Entry Commission database information to provide a detailed analysis of changes in the distribution of quota shares in the Alaska halibut and sablefish IFQ program to fulfill the stewardship responsibilities of NMFS and the statutory requirements of the Secretary of Commerce, and the North Pacific Fishery Management Council.

Project No.: 97-AK-03 NMFS Contact: F/AKO

Project Title: Development of an Experimental Approach to Testing the Efficacy of Steller Sea Lion Fishery Exclusion Zones

Funding: Federal: $24,900

Description: To develop an experimental design for the evaluation of Steller sea lion fishery exclusion zones which, when implemented, will increase the likelihood of recovery of threatened Steller sea lion populations in Alaska, and reduce the conflicts between the fishing industry and the Steller sea lion recovery program.

Project No.: 97-AK-06 NMFS Contact: F/AKO

Project Title: IFQ/CDQ Program Research Support

Funding: Federal: $50,000

Description: To improve the automated systems that control permit issuance and transfer and management of fishery landings. Currently, these data systems are an inefficient means of retrieving the amount and detail level of information needed for information requests and for research purposes. This project will provide contractual assistance to structure and retrieve data so as to address these information needs. Tasks include: improving system documentation; developing reports and data summaries; and increasing the variety, amount and detail of information available through NMFS Internet sites and computer bulletin boards.

Project No.: 97-NW-04 NMFS Contact: F/NWO

Project Title: Pinniped-Salmonid Co-Occurrence: Assessment of Potential Impacts of Pinnipeds on Salmonids in Selected Estuaries

Funding: Federal: $120,000

Description: To provide information needed by NMFS and the State of Oregon to determine where and if management actions are needed to reduce or eliminate pinniped predation impacts on west coast salmonids. Field observations on pinniped foraging will be conducted in Oregon estuaries during salmonid migration. Pinniped counts will be conducted on haul-outs and in-river locations. In addition, information on foraging behavior and observed prey consumption will be collected. Spawning escapement (run size) data will be obtained form the State and compared to pinniped occurrence and foraging behavior. Minimum estimates of pinniped predation on each salmonid run will be determined and compared to spawning escapements and preseason forecasts to assess impacts.

Project No.: 97-SW-01 NMFS Contact: F/SWC

Project Title: Develop and Test Pulsed-Power Devices

Funding: Federal: $300,000

Description: To construct a pulsed-power device that will deter California sea lions from interacting with commercial passenger fishing vessels (CPFV). A contractor will be competitively selected to: (1) develop and construct the pulsed-power device; (2) establish safety zones for marine mammals; (3) conduct a transmission loss experiment to evaluate the appropriateness of the predicted safety zones; (4) design an experimental protocol to evaluate the effectiveness of the pulsed-power system in deterring California sea lions from interacting with CPFV operations and the associated effect on angler catch rates; and, (5) test the pulsed-power discharge system in waters off California.

Project No.: 97-SW-04 NMFS Contact: F/SWC

Project Title: Reconstructing Time Series of Rockfish Abundances by Conventional and Molecular Techniques

Funding: $113,000

Description: To examine the California Cooperative Oceanic and Fisheries Investigations (CalCOFI) data base from the perspective of rockfish management. Rockfish data will be summarized to provide fisheries managers with a time series on historical trends in rockfish abundances. Abundance and time series information will be assembled for familiar and newly identified rockfish species in the CalCOFI ichthyoplankton collections.

Project No.: 97-SW-05 NMFS Contact: F/SWC

Project Title: Genetic Analysis of the Population Structure of Thresher Sharks (Lamnifores: Alopiidae) in the Northeastern Pacific Ocean

Funding: Federal: $44,000

Description: To genetically determine the stock/species structure of thresher shark in the northern Pacific Ocean utilizing state-of-the-art DNA auto-sequencing equipment.

Project No.: 97-NE-19 NMFS Contact: F/NEO

Project Title: Innovative Approach to Improve Fisheries Management

Funding: Federal: $150,000

Description: To analyze current technologies in “phone in” accounting systems for potential use in northeast regional fishery management programs. A consulting firm will be selected using a competitive bid process to: (1) prepare a written assessment of available systems detailing features and prices; (2) present these findings to the New England Fishery Management Council and NMFS representatives; and, (3) select and oversee a test project of the most optimal system.

Project No.: 97-SE-21 NMFS Contact: F/SEO

Project Title: Red Drum, *Sciaenops ocellatus,* Mark/Recapture and Age Composition Studies in the Northern Gulf of Mexico

Funding: Federal: $195,000

Description: To assess the status and determine the age structure of red drum stocks in the northern Gulf of Mexico. The proven and accepted estimation technique of mark and recapture will be used to assess the current size of the adult stock. Estimates indicate that if 10,000-20,000 red drum are tagged within a relatively short time, and then approximately 50,000 fish are examined for the presence of tags, a reasonably precise estimate of the adult red drum biomass can be developed for use in quota and resource allocation decisions. The goals are to improve red drum fishery management and optimize commercial and recreational utilization of the resource.

Project No.: 97-SE-23 NMFS Contact: F/SEO

Project Title: Collection of Biological Samples and Catch/Effort Data from the U.S. South Atlantic and Gulf of Mexico Headboat Fisheries

Funding: Federal: $169,664

Description: To elevate coverage under the NMFS Gulf of Mexico headboat fishery survey to the level maintained from 1986-1994. These data have been used extensively in stock assessments and other analyses to support the Fishery Management Plan for the reef fish resources of the Gulf of Mexico. In 1998, the recreational harvest of red snapper will be managed under a quota system. Landings of red snapper from the headboat fishery must be monitored for successful quota management. The project will: (1) collect length/weight data from approximately 2,000 fish/month; (2) collect biological materials (otoliths, gonads, etc.) from approximately 200 fish/month; and, (3) distribute, collect, code, and verify approximately 1,200 trip reports per month.

Project No.: 97-SF-01 NMFS Contact: F/SF

Project Title: The Federal Role in Subsidizing and Otherwise Influencing Harvesting Capacity in U.S. Fisheries

Funding: Federal: $200,000

Description: To contract for a study on the Federal government's role in subsidizing the expansion and contraction of fishing capacity in the U.S. fishing fleets and otherwise influencing the aggregate capital investments in fisheries. The study will analyze information on a number of Federal financial service programs administered by the Department of Commerce and other Federal agencies, as well as on other Federal programs and policies to determine to what degree these initiatives have influenced investment in the fisheries harvesting sector. The information will be used to help determine effective approaches to address overcapitalization in the harvesting sector.

Project No.: 97-SF-02 NMFS Contact: F/SF

Project Title: Comprehensive Management Plan for the Pelagic Longline Fishery

Funding: Federal: $50,000

Description: To contract for the design and conduct of a survey and workshops on the Atlantic pelagic longline fishery, in cooperation with the Longline Advisory Panel, in order to develop recommendations for a comprehensive management system for this fishery, including property rights-based management systems if appropriate.

Fisheries Bycatch

Project No.: 97-AK-13 NMFS Contact: F/AKO

Project Title: Bycatch of Halibut and Sablefish as an Impediment to Development of a Commercial Fishery for Arrowtooth Flounder

Funding: Federal: $200,000

Description: To develop approaches to minimize the bycatch of halibut and sablefish in a directed arrowtooth flounder fishery. In order to develop a commercial fishery for arrowtooth flounder, the bycatch issue must be addressed. The composition, distribution, annual cycle, and natural history of the species will be examined. Historical information available from NMFS surveys will be analyzed to develop predictive models catch composition based on environmental factors, geographic location, and time. Windows of spatial distribution of fish stocks may allow arrowtooth flounder harvesting without significant bycatch of prohibited species.

Project No.: 97-NW-01 NMFS Contact: F/NWO

Project Title: Columbia River Steelhead Stock Composition and Bycatch Monitoring Program

Funding: Federal: $125,000

Description: To characterize passage timing of selected steelhead stocks at Bonneville Dam and stock-specific impacts in both the fall and winter/spring season fisheries. The current stock composition monitoring program only distinguishes between hatchery and wild fish and Group A and Group B steelhead. The Group A/B distinction depends on assumptions related to passage timing or length information which provide conflicting results. This project will focus initially on distinguishing among ten steelhead groups.

Project No.: 97-NW-02 NMFS Contact: F/NWO

Project Title: Recreational Salmon Fishery Bycatch Assessment

Funding: Federal: $84,000

Description: To: (1) provide information necessary for evaluating the effect of selective fisheries on natural-origin chinook and coho; (2) develop estimates of encounter rates for selected Washington coastal and Puget Sound fisheries; and, (3) continue development of methods to efficiently monitor selective fisheries. Trained observers will be placed onboard recreational fishing vessels to collect information on the frequency and species of all fish encountered, including legal and sub-legal sized chinook and coho salmon. The same fisheries will be sampled simultaneously using shore-based observers to determine the efficacy of shore-based data collection. This determination is critical because of the prohibitive cost of routine onboard monitoring.

Project No.: 97-NW-14 NMFS Contact: F/NWO

Project Title: Bycatch Reduction in the West Coast Shrimp Trawl Fishery

Funding: Federal: $168,568

Description: To adapt finfish separator technology to the west coast pink shrimp trawl fishery. Finfish bycatch can impose a burden on shrimp trawlers by increasing the cost of catch sorting, damaging the shrimp in their catch, or forcing them to leave otherwise productive grounds. The research proposed here is aimed at reducing shrimp loss rates with various existing shrimp separator designs. Commercial shrimp trawlers operating under normal fishing conditions will be employed for these studies. From the results, guidelines for troubleshooting and improving the performance of separators will be developed and communicated to fishermen and gear manufacturers on the west coast.

Project No.: 97-SW-01 NMFS Contact: F/SWO

Project Title: Determination of Viable Technical and Operational Solutions for Reduction of Economic Discards in the Northwestern Hawaiian Islands Lobster Fishery

Funding: $99,000

Description: To identify commercially viable technical or operational measures to significantly reduce lobster bycatch (economic discards) and minimize bycatch mortality in the northwestern Hawaiian Islands lobster fishery.

Project No.: 97-NE-13 NMFS Contact: F/NEO

Project Title: Development of Solutions for the Problem of Entanglement of Right Whales with Fixed Fishing Gear

Funding: Federal: $60,000

Description: To develop solutions to the problem of right whale entanglement with the buoy lines of fixed fishing gear. This will be accomplished with a contract to design, develop, and test a weak link which will allow the surface buoy of fixed fishing gear to separate from the line when the buoy line is snagged. The contract will also include the development of a mechanism or means to replace knots and buoy attachments with smooth transitional devices which will not hang up on the baleen or appendages of right whales.

Product Quality and Safety

Grantee: Interstate Shellfish Sanitation Conference

Grant No.: NA67FD0260 NMFS Contact: F/SEC8

Project Title: *Vibrio vulnificus* Model Education Campaign

Funding: Federal: $250,000 Recipient: $55,920

Description: To minimize the number of illnesses and deaths resulting from the bacterial pathogen, *Vibrio vulnificus*, by educating high-risk consumers to avoid consumption of raw oysters. The primary objective is to increase the number of high-risk consumers who receive and understand the message (comprehension) and say they would not eat raw oysters (behavior change). This project will also attempt to reach individuals who are at risk and are unaware of their existing medical condition.

Aquaculture

Project No.: 96-NW-01 NMFS Contact: F/NWC

Project Title: Captive Broodstock Technology

Funding: Federal: $275,000

Description: To evaluate the adaptability of various marine finfish to captive rearing; select four species for broodstock spawning; diagnose and treat diseases associated with these projects; and develop larval and juvenile feeds that minimize environmental effects of marine aquaculture.

Project No.: 96-SW-01 NMFS Contact: F/SWR

Project Title: Evaluate Ultrasound Applications in Salmonid Conservation and Aquaculture

Funding: Federal: $30,000

Description: To refine techniques for using ultrasound to determine the maturation of fish prior to artificial spawning so that artificial spawning is performed only during periods of peak spawning potential; and to optimize spawning success by minimizing handling of fish. The technology developed for this project will be applied to the captive breeding program for endangered winter run chinook salmon. In addition, the applications developed for this project will also enhance our ability to successfully rear other species of fish for aquaculture.

Project No.: 97-NE-07 NMFS Contact: F/NEO

Project Title: Shellfish and Finfish Aquaculture: Recirculating Systems, Technology Development, Testing, and Demonstration

Funding: Federal: $235,945

Description: To: (1) advance significantly the culture and promotion of commercially and recreationally important marine shellfish and finfish species, such as scallop and tautog; (2) identify and communicate practical operational parameters of closed, recirculating, land-based culture systems for marine finfish and shellfish; and, (3) evaluate the economic costs and returns associated with the operational parameters and identify key economic factors affecting the financial viability of those land-based recirculating systems.

Project No.: 96-SE-PC NMFS Contact: F/SEO

Project Title: Climate Controlled Seawater System

Funding: Federal: $57,000

Description: To construct a climate controlled seawater system at the Panama City Laboratory to further develop hatchery rearing techniques for red drum, and further investigate spawning, rearing, and growth requirements, and the sex reversal process of gag grouper.

Project No.: 96-SE-GA NMFS Contact: F/SEO

Project Title: Penaeid Aquaculture

Funding: Federal: $35,000

Description: To conduct further research on aquaculture of penaeids at the Galveston Laboratory, and to transfer resulting technology to the U.S. aquaculture industry.

Project No.: 96-SE-ML NMFS Contact: F/SEO

Project Title: Evaluation of Baseline Aquaculture Permitting Protocols

Funding: Federal: $20,000

Description: To research, codify, and determine feasibility of base guidelines for streamlining the aquaculture permitting process. A set of common protocols, arrived at by consensus of state and Federal regulatory units, applicable research personnel, and aquaculture operators, will be developed and evaluated for practical application. Information on presently utilized aquaculture permitting procedures will be collected and analyzed. A workshop is to be held for development of a draft base permitting process.

Project No.: 96-SE-OX NMFS Contact: F/SEC

Project Title: Shellfish Disease and Pathology

Funding: Federal: $15,000

Description: The Oxford Laboratory will initiate a startup program to focus on the effects of shellfish diseases and their pathology in aquaculture species.

Grantee: Auburn University, Auburn, AL

Grant No.: NA66RG0206 NMFS Contact: F/SF2

Project Title: Coastal Alabama Seafood Harvest

Funding: Federal: $990,000 Recipient: $139,836

Description: The various objectives of the project are to: (1) identify the costs and benefits of maintaining oxygen saturation levels at 65, 45, and 25% in shrimp ponds; (2) determine operational efficiency of three types of commonly used aerators; and, (3) publish and distribute the Alabama Aquaculture Guide. These objectives are being addressed over a three-year period with the annual federal share totaling $330,000 and the annual recipient share totaling $46,612.

Habitat Protection

Project No.: 97-SW-03 NMFS Contact: F/SWC

Project Title: Characterization of Hawaiian Monk Seal, (*Monachus schauinslandi*) Pelagic Habitat, Home Range, and Diving Behavior

Funding: Federal: $153,280

Description: To characterize pelagic habitat use and foraging patterns of adult monk seals. This information will increase understanding of the critical habitat needs of the monk seal and improve integration of protective measures with fisheries regulations; ensuring monk seal conservation while maintaining sustainable fisheries.

Project No.: 97-HC-01 NMFS Contact: F/HC

Project Title: National Project to Pursue Habitat Management as an Innovative Approach to Fisheries Management

Funding: Federal: $600,000

Description: To provide each of the five NMFS Regions with $120,000 for work to be conducted under contracts and in-house relating to identifying essential fish habitat (EFH). The objectives are to describe, identify and map EFH for managed species, and determine threats to habitat and corrective measures on a regional basis. Each region will cooperate with the appropriate state agencies and Fishery Management Council(s) (FMCs) in accomplishing the work, which will include preparing literature searches, writing technical sections, preparing tabular data, and compiling maps. Habitat information for each Federally managed species will be compiled, peer reviewed, and documented. To the extent practical, products will be electronically available (with Geographic Information System and other analytic capabilities) as tables, maps, and narratives. These materials will be transmitted to the appropriate FMCs as statutorily required EFH recommendations. These activities will be coordinated with the NMFS Headquarters Office of Habitat Conservation.

Project No.: 97-HC-03 NMFS Contact: F/HC

Project Title: Mapping Fishery Habitat to Support Innovative Fisheries Management

Funding: Federal: $350,000

Description: To establish and implement an overall framework for identifying and mapping essential fish habitat (EFH) for priority species, as well as threats to habitat and corrective measures. Protocols will be developed for identifying threats to EFH and implemented with the NMFS Regional Habitat Programs, Fishery Management Councils, and states. The project will describe the information needed to: (1) allow Fishery Management Councils to incorporate EFH management into fishery management plans; (2) establish priorities by which fishery management plans will be amended; and, (3) develop plans for collecting and analyzing the necessary information.

V. COMPLETED GRANT PROGRAM PROJECTS

The following section contains an assessment of each S-K Grant Program project completed during the period June 1, 1997 to May 31, 1998, regarding the extent to which the objectives of the project were attained and the project contributed to fishery development. The projects are listed by grantee within each subject area, along with the grant number, project title, federal funding level, recipient funding level (i.e., cost share), and NMFS contact.

Fisheries Utilization

Grantee: University of Alaska, Fairbanks, AK

Grant No.: NA46FD0354 NMFS Contact: F/AKO

Project Title: Utilization of Giant Grenadier (*Albatrossia pectoralis*): Abundance, Quality Factors, Product Forms, and Marketing Potential

Funding: Federal: $136,497 Recipient: $0

Assessment: The objective of the project was to investigate whether giant grenadier, a discarded bycatch species of the Alaska groundfish trawl and longline fisheries, can be processed into useful products. The causes of soft flesh in giant grenadier and the means for improving its texture were investigated. The relationships of moisture and protein content, protease activity, and storage time to flesh softness were determined. Texture modification using physical methods (freeze-thaw cycles, osmotic moisture removal, static pressure, and centrifugal force) and injection of food additives (soy, whey, and egg white proteins, starch, and gum) were evaluated.

Grantee: Kevin G. Hart, Majuro, Marshall Islands

Grant No. NA67FD0055 NMFS Contact: F/SWO

Project Title: Project for the Utilization of Non-Perishable Marine Resources in the Outer Atolls of the Republic of the Marshall Islands

Funding: Federal: $37,976 Recipient: $9,600

Assessment: The objective of this project was to demonstrate that dried shark fin, trochus shell, and sea cucumber were valuable, underutilized marine resources which could be harvested on a sustainable basis to supplement the incomes of outer atoll families with principal earnings derived from copra-making. A mark-recapture survey method was used to conduct a trochus stock assessment in Ailinlaplap Atoll in conjunction with a 10-day harvest period, yielding 4.3 metric tons of shell. Local merchant-traders acted as agents for collection, grading, storage, shipment, and purchase of product. Harvested shell was sold for $2.11/ pound, with producers receiving $1.78 and agents receiving $0.07/ pound. The project's success prompted the Marshall Islands Marine Resources Authority to request recommendations for the management and regulation of trochus stocks for all atolls. Atoll fishermen were instructed in processing fin from sharks caught as bycatch in ocean and lagoon tuna fishing. Local merchant-traders were enlisted to grade and purchase fin, most of which was sold to a Hawaii-based buyer. Prices paid to producers ranged from $10 to $27/ pound, while the wholesale selling price to buyers ranged from $15 to $30/ pound. Desirable species of sea cucumber at the atoll were difficult to harvest and of insufficient quantities to justify an effort to process and sell them commercially. Actual income to atoll residents increased by $19,118 from sales of trochus and shark fin during the final twelve months of the project. This supplemented income from copra, selling for $0.16/ pound during the same period, by 8.3%.

Grantee: Milbrand Cinema, Solana Beach, CA

Grant No: NA67FD0052 NMFS Contact: F/SWO

Project Title: Fish for Tomorrow: An Educational Video Designed to Obtain Optimum Utilization of Harvestable Marine Resources While Continuing Economic Growth

Funding: Federal: $63,723 Recipient: $10,840

Assessment: The objective of this project was to provide the public with a better understanding of responsible fishing. Through the medium of television, Fish for Tomorrow educates and instructs anglers and boat operators along the California coast. The project's central theme is the promotion of catch and release fishing which will preserve recreational sportfishing interests while sustaining economic development opportunities. The targeted viewers of the video are passengers who travel on recreational sportfishing vessels, and customers at tackle shops and fishing shows.

Grantee: New England Fisheries Development Association, Boston, MA

Grant No.: NA66FD0022 NMFS Contact: F/NEO

Project Title: Overcome Barriers to Foodservice-Institutional Use of Unfamiliar Species

Funding: Federal: $79,000 Recipient: $9,000

Assessment: This project provided recipes, videos, and a manual to help foodservice and institutional feeding operators and others preparing food for consumption away from home, to adopt unfamiliar New England fish species to their menus. A website, http://www.fishfacts.com, was developed to provide information on species availability, seasonal factors, and handling tips. New England Fisheries Development Association will maintain and update the site.

Grantee: Puerto Rico Department of Natural and Environmental Resources, San Juan, PR

Grant No.: NA67FD0040 NMFS Contact: F/SEO

Project Title: Puerto Rico Fishery Census, 1995-96

Funding: Federal: $32,593 Recipient: $13,062

Assessment: The objective was to obtain information on active commercial fishermen, vessels, and gear in Puerto Rico. Results indicated that the number of fishermen in Puerto Rico did not show a significant change since 1974. On the other hand, an increase of fishing effort (number of gears and vessels) was observed in the 1995-96 census. Forty-eight percent of commercial fishermen surveyed mentioned that the fishery resource is worse than in the past. Pollution was the most frequently mentioned cause, followed by overfishing and coral degradation. Another 48% of fishermen believed that the fishery resource is still the same, and 4% believed the fishery resource was in better condition than in the past. The survey indicated that commercial fishermen need more information on the status of the fishery resource.

Marine Recreational Fisheries

Grantee: South Carolina Department of Natural Resources, Charleston, SC

Grant No.: NA67FD0031 NMFS Contact: F/SEO

Project Title: A Cooperative Interstate Study to Evaluate Non-Reporting Rate of Recreational Anglers Who Capture Tagged Red Drum - Year 1

Funding: Federal: $88,383 Recipient: $36,979

Assessment: The non-reporting levels of tagged red drum, *Sciaenops ocellantus*, captured by recreational anglers in two estuaries, one in Georgia and one in South Carolina, were evaluated. Two tag reward messages were used: Reward and $100 Reward. (The Reward message is the standard message used in fishery-dependent tagging programs in the southeast U.S.) Equal numbers of legal size fish (356 mm TL) were tagged with either reward message and released into ten locations in South Carolina and Georgia. A total of 1,500 fish have been stocked to date. Data from the three stockings within the Charleston Harbor estuary in South Carolina and from the three stockings in St. Simons Sound, Georgia were analyzed. The main assumption was that a $100 reward would be adequate incentive to assure 100% reporting of captured tagged fish, and that the difference between "$100 Reward" and "Reward" tags would yield the non-reporting level. Overall return level for all tagged fish in South Carolina was 24.4 + 1.4%, significantly higher than that reported in Georgia i.e., 16.5 + 1.5%. However, using all data no significant differences were detected between Reward tags (22.7 + 0.8%) and $100 Reward tags (26.2 + 2.5%) in South Carolina. In Georgia, 18.7 + 2.3% of $100 reward tags were reported, which was not significantly different from Reward tags (14.4 + 1.0%). Non-reporting estimates ranged from 0-44%, which are lower than the 50% value commonly used by managers. However, analysis of this first data set suggests that the non-reporting level is not statistically identifiable. Future inclusion of reporting data from the final stockings (2 estuaries with 3 stockings/estuary) will allow a more robust interpretation of the non-reporting levels for anglers who captured tagged red drum in these two states.

Management Alternatives and Fisheries User Conflicts

Grantee: University of Alaska, Anchorage, AK

Grant No. NA37FD0184 NMFS Contact: F/AKO

Project Title: Long-term Effects of Limiting Access to Alaska's Sablefish and Halibut Fisheries

Funding: Federal: $318,500 Recipient: $19,532

Assessment: The study analyzed potential long-term effects of the Alaska halibut and sablefish individual transferrable quota (ITQ) program for the fishing fleet and coastal communities. The analysis focused on changes in the fleet structure, fisheries markets, fish processing, transportation, and regional shifts in the pattern of harvesting and processing activities. As a tool for projecting the combined effects of these major changes, two complementary models for long-term scenarios of fish prices, total allowable catch, catch by management area, and rate of intercommunity quota transfers were developed, which showed that some communities could see large changes as a result of the program. The projected gains and losses are sensitive to assumptions about prices processors can pay in each community, suggesting a role for further research on evolving processing and transportation costs.

Grantee: University of Alaska, Fairbanks, AK

Grant No. NA36FD0178 NMFS Contact: F/AKO

Project Title: Economic Impacts of Alternative Vessel Moratorium and Gear Restrictions Management Policies in the Alaska King and Tanner Crab Fisheries

Funding: Federal: $58,428 Recipient: $53,364

Assessment: This study examines an overview of the history (including management history) and current status of Alaska's Bering Sea snow crab and Bristol Bay red king crab fisheries. Special management considerations emanating from biological characteristics of the crab stocks were examined. An econometric evaluation of pot limits and proposed license limitations was conducted and a theoretical overview of individual transferable quotas (ITQs) was developed. Socio-economic outcomes of transferable quota management in Iceland, New Zealand, and Australia (the three nations with the oldest and most extensive ITQ systems), as well as the Mid-Atlantic surf clam and quahog fisheries (the first major ITQ experiment in the United States) were reviewed, and a theoretical scenario for ITQ management in the Bering Sea/Aleutian Islands (BSAI) crab fisheries was developed. A likely pattern of initial distributions, assuming that recipients of licenses under the newly adopted license program would be eligible for quota in an amount based on their historical catch, was formulated. An economic analysis of Individual Transferable Pot Quotas (ITPQs) was presented to the Fishery Management Council. ITPQs were subsequently rejected by the Council as a possible option for comprehensive rationalization of the BSAI crab fisheries. The crab management debate showed that before selecting a management plan for any fishery it is important to define the goals of management. For example, whether to ensure maximum profitability to the industry, to secure the fishery's competitiveness, to ensure weak profits to many or strong profits to a few, to maximize employment, to protect the integrity of isolated communities, to ensure consumers a steady supply of high quality fish, to focus on present-day problems, or to try to consider the financial health of future generations of fishers.

Grantee: Northwest Indian Fisheries Commission, Olympia, WA

Grant No.: NA56FD0578 NMFS Contact: F/NWO

Project Title: Estimation of the Stock Composition of Chum Salmon Fisheries in Puget Sound, Washington: An Improved Technical Basis for Fisheries Management - Year 2

Funding: Federal: $114,977 Recipient: $31,322

Assessment: The objective of this study was to collect tissue samples from commercial chum fisheries in North Puget Sound, South Puget Sound, Hood Canal, and the Strait of Juan de Fuca, which were analyzed using a starch gel electrophoresis method to determine stock composition. The four areas are currently managed as terminal fisheries, which are assumed to have only local stocks. Understanding the actual composition of terminal fisheries is of particular importance in managing commercial fisheries to achieve escapement and allocation objectives. The results of the research found that non-local stocks contribute significantly to each area. Specifically, chum originating in Hood Canal and North Puget Sound contribute between 33-51% of the fishery in Area 10, which has been presumed to harvest South Puget Sound stocks only. Similarly, North and South Puget Sound stocks comprised 15-25% of the fishery in the Hood Canal (Areas 12 and 12B). With data collected from this project, the researchers were able to use a run reconstruction model and estimate terminal abundance of various stocks. Revised estimates of terminal abundance for South Puget Sound chum were 2-17% below prior estimates, while Hood Canal chum varied only 3%.

Grantee: University of Maine, Orono, ME

Grant No.: NA66FD0025 NMFS Contact: F/NEO

Project Title: Incentives for Age of Capture Under Alternative ITQ Programs in the Atlantic Scallop Fishery

Funding: Federal: $48,480 Recipient: $8,145

Assessment: The objectives of the project were to build a computer simulator that can assess how alternative Individual Transferable Quota (ITQ) designs for the Atlantic scallop fishery affect fisher incentives, especially incentives to harvest scallops below the age of optimal yield per recruit; and to use the simulator to assess alternative ITQ designs. Upon completion of these objectives, the following determinations were made: (1) It is possible to improve economic incentives for fisheries property-rights holders by incorporating incentives to catch fish at the optimal age in any fishery. (2) Under assumptions of constant recruitment, the possible improvement over simple maximum economic yield management (through effort controls or ITQs) is relatively small in the scallop fishery, economic returns improve as dredge ring size increases, and pulse fishing with constant recruitment yields minimal economic benefits. (3) Both the constant recruitment and stochastic recruitment models suggest that the marginal economic benefit of transferable dynamic stock rights may be small relative to an efficient ITQ (or equivalent effort control). Bankable ITQs may, however, be part of a transitional management strategy to incorporate incentives for overfished stocks to recover more rapidly. (4) Analysis using the random recruitment model suggests that pulse fishing with highly stochastic recruitment has a significant advantage over constant effort harvesting with ring sizes of 3-3.5 inches. This indicates that transferable dynamic stock rights may generate significant economic advantages when recruitment is highly variable among fishing grounds. In the context of current management, there are three implications. First, getting an efficient quota or effort control is the most important management issue. Second, the impact of ring size changes is relatively small if an efficient ITQ is set. Third, an optimal transition from open access to efficient management seems to involve a closure of perhaps 3 to 5 years to allow stocks to recover. The economic returns from rapid stock recovery more than outweigh the lost rents during the closure.

Grantee: University of Rhode Island, Narragansett, RI

Grant No.: NA66FD0019 NMFS Contact: F/NEO

Project Title: Seasonal Variation in Hatching and Growth of Loligo

Funding: Federal: $91,522 Recipient: $7,584

Assessment: The objective of this project was to provide fundamental Loligo life history data to be used by the Mid-Atlantic Fishery Management Council and others in the formulation of an effective squid fishery management plan (FMP). The resulting data can be used to improve the existing squid FMP by allowing development of seasonal and regional allocations of allowable catch. Ages and dates of hatching of squid caught by the inshore summer and offshore winter commercial fisheries were determined in order to identify major spawning periods and to estimate seasonal growth rates. The commercial samples were supplemented by additional survey samples from inshore and offshore. Squid were aged using a relationship relating age in days to statolith dry weight and by counting growth increments in the statloliths.

Grantee: Virginia Institute of Marine Sciences, Gloucester Point, VA

Grant No.: NA67FD0038 NMFS Contact: F/SEO

Project Title: Specific Identification of Billfish Fillets Using Molecular Genetic Characters

Funding: Federal: $59,444 Recipient: $10,247

Assessment: The objective was to develop a molecular genetic key to the identification of billfish tissue samples that will work on market quality tissues, using techniques that can easily be employed for forensic purposes in state and Federal fisheries laboratories. Independent molecular markers based on mitochondrial and nuclear DNA were developed to provide positive identification of istiophorid and xiphiid billfishes (marlins, spearfishes, sailfish, and swordfish). Both classes of markers are based on amplification of short segments (< 1.5 kb) of DNA by the polymerase chain reaction and subsequent digestion with informative restriction endonucleases. No more than two restriction digestions are necessary to allow identification. Dichotomous keys for both markers are provided. Limited intra-specific variation of the species-specific markers was observed in analysis of a large number of individuals of each species from a broad geographic distribution. The protocols developed in this study were validated in a blind analysis by another laboratory and the information was transferred to interested user groups in a two-day workshop.

Grantee: Texas A&M Research Foundation, College Station, TX

Grant No.: NA57FD0069 NMFS Contact: F/SEO

Project Title: Genetic Studies to Determine Stock Structure of Greater Amberjack in the Gulf of Mexico and Southeastern (U.S.) Atlantic

Funding: Federal: $82,129 Recipient: $16,949

Assessment: The objective was to determine if discrete stocks of greater amberjack, *Seriola dummerili*, occur within or between the Gulf of Mexico and southeastern U.S. Atlantic through the use of restriction enzyme site variation in mitochondrial DNA (mtDNA). Appropriate tissues were obtained between 1994 and 1996 from 444 greater amberjack sampled from 11 offshore localities in the northern Gulf of Mexico (Gulf) and along the U.S. southeast Atlantic coast (Atlantic). Restriction sites of mtDNA from each individual were surveyed by using a battery of 16 type-II restriction enzymes. A total of 49 mtDNA haplotypes (genotypes) were detected. Percent nucleotide-sequence divergence among the haplotypes ranged from 0.156 to 2.623 (mean + S.D. = 0.980 + 0.015). Nucleon diversity within samples ranged from 0.845 to 0.906, and intrapopulational mtDNA diversities ranged (mean + S.D.) from 0.483 + 0.370 to 0.619 + 0.419. The latter did not differ significantly from one another.

Grantee: Louisiana State University, Baton Rouge, LA

Grant No.: NA47FD0290 NMFS Contact: F/SEO

Project Title: Southeast Finfish Processing Activities of Federally Managed Species, Particularly Reef Fish, and Potential Impact of Regulation

Funding: Federal: $63,868 Recipient: $19,427

Assessment: The objective was to provide an economic analysis of the southeast finfish processing sector, specifically the reef fish fishery, to evaluate the impact of different management options. Results of the study indicate potentially large underreporting of reef fish processing establishments (this does not include the underreporting by firms who report no reef fish processing activities to NMFS). The underreporting was particularly apparent with respect to grouper and amberjack. The 29 firms surveyed in this study reported 2.4 million pounds of processed grouper products and 459 thousand pounds of processed amberjack products. Total industry production of these two species, as reported in the NMFS processor database, equaled 2.5 million pounds and 270 thousand pounds, respectively. Hence, an incomplete survey of the population of identified firms accounted for essentially all of the grouper production reported by NMFS and almost twice the reported amberjack production. Two possible reasons can be advanced for the apparent differences in overall production figures. First, identified processors could be underreporting actual processing figures in the NMFS end-of-the-year processor survey. Alternatively, processors may have overreported their actual production in the current survey. This second explanation seems somewhat remote, however, given the fact that many of the interviewed processors provided their actual records from which the researchers derived annual and monthly figures. This calls into question the value of using NMFS processed finfish data for purposes of analysis and leads to the conclusion that mandatory reporting by processors may enhance the NMFS database.

Fisheries Bycatch

Grantee: International Pacific Halibut Commission, Seattle, WA

Grant No.: NA66FD0049 NMFS Contact: F/AKO

Project Title: Size-Specific Spatial Dynamics of Pacific Halibut: A Key to Reduce Bycatch in the Groundfish Fisheries

Funding: Federal: $46,000 Recipient: $13,250

Assessment: The objective was to provide a prediction of relative Pacific halibut bycatch rates in groundfish fisheries of the Bering Sea and Gulf of Alaska, using distribution of halibut size classes and patterns of groundfish harvest as a means of reducing halibut bycatch. It was determined that halibut year class strength (numbers and biomass) varies by an order of magnitude. Catch-per-unit-effort of each size group will change dramatically as strong and weak year classes pass through, causing bycatch rates to vary year by year. Additionally, the proportion of halibut that could be protected by closing any Bering Sea area of concentration may be fairly small, as Clark and Walters (1997) show that halibut sampled by trawl surveys are typically more abundant in the Gulf of Alaska than in the Bering Sea. It was concluded that the best use of this data set is by fishermen voluntarily adjusting the fishing pattern to harvest groundfish with a minimum of halibut bycatch. Mandatory time-area management would inevitably have some closure occurring where halibut are in relatively low abundance, while allowing fishing in areas of high halibut concentration.

Grantee: Alaska Fisheries Development Foundation, Anchorage, AK

Grant No.: NA56FD0620 NMFS Contact: F/AKO

Project Title: Practical Application of Fishing and Handling Techniques in Estimating the Mortality of Discarded Trawl-Caught Halibut

Funding: Federal: $154,452 Recipient: $0

Assessment: The objective was to evaluate the practical application of two estimates of mortality for discarded trawl-caught halibut. Halibut bycatch mortality was estimated via two models: the IPHC model, which relates halibut condition to halibut mortality; and the UW model, which considers mortality as a function of fishing and handling practices. The results indicate that trawl-caught halibut mortality can be reduced through modified fishing and handling practices and current observer sampling practices lead to overestimates of mortality when the IPHC method is employed.

Grantee: University of Alaska, Anchorage, AK

Grant No.: NA26FD0154-01 NMFS Contact: F/AKO

Project Title: Management of the Incidental Catch of Crab, Halibut, Herring, and Salmon in the Groundfish Fisheries Off Alaska

Funding: Federal: $44,436 Recipient: $7,250

Assessment: The project demonstrated a new approach to modeling incidental harvest (bycatch) of the North Pacific groundfish fleet using a spreadsheet-based optimization model. The approach models industry decisions as the pursuit of profit-maximization by exploiting a mixed-stock common property fishery under total allowable catch regulations for both target species and incidental harvest. Trial simulations with a small-scale version of the model suggest that the approach realistically portrays the behavior of the fleet and the implications of bycatch management choices. An interactive user interface constructed for the model guides users through the assumptions and options of the model, making them transparent to the user.

Grantee: Scientific Fishery Systems, Anchorage, AK

Grant No.: NA77FD0044 NMFS Contact: F/SWO

Project Title: Long Range Tuna Detection

Funding: Federal: $75,000 Recipient: $0

Assessment: A bi-static sonar system design was developed to detect schools of tuna at longer ranges and for a greater portion of the day than was previously attainable. This system included the ability to detect tuna schools not associated with other animals, such as dolphins or birds. The design incorporates current technology at both a low technical risk and low cost by using techniques developed for military use and commercial “off-the-shelf” equipment. This system was developed with input from the tuna fishing fleet to maximize usefulness and minimize the added workload on personnel at sea.

Grantee: SER Enterprises, Fairhaven, MA

Grant No.: NA66FD0026 NMFS Contact: F/NEO

Project Title: Sea Scallop Dredge Finfish Excluders: Development and Demonstration of Techniques to Eliminate or Reduce the Bycatch of Finfish in the New Bedford Scallop Dredge

Funding: Federal: $101,048 Recipient: $40,333

Assessment: Three modifications to standard sea scallop dredges were tested to determine their effects on incidental catches of commercial finfishes. The modified dredges were compared to standard dredges at 140 stations of paired tows during six trips to Georges Bank. Catch data were recorded for scallops, yellowtail flounder, "other flatfish", monkfish, skates, cod, and "other fish." Results were evaluated with t-tests of paired comparisons and indicate that an eight-inch square mesh twine top significantly reduces the catch of flatfish and cod. Square root transformations of catch data did not yield statistical results inherently superior to those of untransformed data. An economic evaluation of the impact on fishermen of excluding finfish from scallop dredges was conducted. The analysis revealed that the proposed modification will have no direct impact on fishing vessel income.

Grantee: Texas Parks and Wildlife Department, Austin, TX

Grant No.: NA67FD0034 NMFS Contact: F/SEO

Project Title: Degradability of Natural Materials Used to Attach Escapement Panels to Blue Crab Traps in Texas Coastal Waters

Funding: Federal: $16,306 Recipient: $5,435

Assessment: The objective of this project was to assess the degradable qualities of materials used to construct escapement panels in blue crab traps. Mortality of blue crabs associated with "ghost" fishing traps in the recreational and commercial fisheries is a problem of increasing concern to fisheries managers, commercial fishermen, and environmental groups. Degradability (days-to-breaking) of four binding materials (jute, heavy duty cotton, cotton cable, and medium weight cotton) used in the construction of escapement panels and attachment loops for lid tie-down straps in Texas coastal waters was monitored for a 17-month period. Jute and sisal materials had lower days to breaking than the cotton materials. Their use is recommended to reduce the effects of ghost fishing by abandoned traps in Texas coastal waters.

Grantee: South Carolina Department of Natural Resources, Charleston, SC

Grant No.: NA67FD0032 NMFS Contact: F/SEO

Project Title: Bycatch of Atlantic and Shortnose Sturgeon in the South Carolina Shad Fishery - Year 3

Funding: Federal: $37,013 Recipient: $13,169

Assessment: Information on incidental capture of shortnose sturgeon, *Acispenser brevirostrum*, and Atlantic sturgeon, *A. oxyrhynchus*, in commercial fisheries was derived from four studies conducted in South Carolina and Georgia. In a Georgia study, 97 of 1,534 tagged juvenile Atlantic sturgeon and 12 of 551 tagged shortnose sturgeons were reported recaptured in commercial nets. Gill net fisheries for American shad, *Alosa sapidissima*, accounted for 52% of Atlantic sturgeon and 83% of shortnose sturgeon recaptured. The trawl fishery for shrimp, *Penaeus spp.*, was responsible for 39% of Atlantic sturgeon and 8% of shortnose sturgeon recaptured. In the other three studies, catch-per-unit-effort estimates for the American shad gill net fishery varied from 0.003 to 0.137 sturgeon per 91.4 m of gill net per hour. Most Atlantic sturgeon were less than 150 cm in total length (juveniles), and most shortnose sturgeon exceeded 55 cm in total length (mature or nearly so). The ratio of shortnose to Atlantic sturgeon in the shad fishery bycatch increased with inland distance from the ocean. In a South Carolina study, 16% of 51 sturgeon captured incidentally in gill nets died outright and another 20% were injured.

Grantee: Gulf and South Atlantic Fisheries Development Foundation, Inc., Tampa, FL

Grant No.: NA57FD0261 NMFS Contact: F/SEO

Project Title: Final Implementation of High-Priority Objectives of a Bycatch Reduction Research Program for the Gulf of Mexico and South Atlantic Shrimp Fishery

Funding: Federal: $601,725 Recipient: $0

Assessment: This award completed a multi-organizational, multi-year research program to address bycatch in the southeastern U.S. shrimp fishery. Primarily, this award supported continued at-sea data collection by observers and Foundation efforts to disseminate information about bycatch and its reduction to interested and affected parties. Observer data from the catch of commercial shrimp trawlers during 36 sampling trips in southeast U.S. waters were evaluated for the exclusion capability of various experimental bycatch reduction devices (BRDs), or the exclusion efficiency of various turtle excluder devices (TEDs). This project provided BRD efficiency results for two modifications to fisheyes, two modifications to an expanded mesh design, and an industry-developed BRD, Kiffe v.4.0. The two fisheye modifications and one expanded mesh configuration did not meet the exclusion requirements for key finfish species, but one expanded mesh version did. The Kiffe BRD did not lose shrimp, but was not tested in areas where these key species exist; further work is recommended. Results for tests of hard TEDs found insubstantial amounts of finfish bycatch exclusion, while soft TEDs excluded substantial quantities of finfish bycatch, including the key finfish species. Bycatch reduction of key finfish species without concurrent shrimp loss is beneficial to the southeastern U.S. shrimp industry and the public. The results of this study may be a useful aid to management groups in developing strategies for the long term economic and ecological stability of various fisheries in this region.

Product Quality and Safety

Grantee: University of Rhode Island, Kingston, RI

Grant No.: NA66FD0021 NMFS Contact: F/NEO

Project Title: An Inter-Laboratory Study for the Use of the Ammonia Electrode to Evaluate Seafood Quality

Funding: Federal: $53,146 Recipient: $8,712

Assessment: The objective of the project was to design and implement an inter-laboratory study to evaluate the precision, accuracy, reproducibility, and correlation of the ammonia electrode for use in evaluating seafood quality. This was achieved through: (1) evaluation of the ion-selective ammonia electrode (ISE) method using a variety of finfish species and inter-laboratory cooperation; (2) conduct of a comprehensive survey of fatty fish species and other seafood as to the applicability of the ammonia electrode procedure as compared to trimethylhaline and total volatile bases (TVB); and, (3) initiation of an official Association of Official Analytical Chemists (AOAC)-International study for acceptance of the procedure. The study proved the reproducibility and precision of the simple, rapid ion-selective ammonia gas sensing methodology for apparent ammonia in fish tissue. The lack of sensitivity of this probe for only ammonia, as elucidated in this study, clearly elevates its value to a possible replacement for the TVB method done by steam injection distillation. While the project had originally been described as an inter-laboratory study with future design on a collaborative program, the research was designed and written as a collaborative study and, upon initial review, is currently being submitted to the AOAC as a collaborative effort for acceptance as an official method. Finally, many more species of fish, both finfish and crustacean, were evaluated over storage trials. Particular emphasis was given to those species that had a high export value. The pattern of development for TVB and apparent ammonia for all species tested was almost identical and points to the enormous potential of the ISE procedure for screening of fish for spoilage and decomposition.

Grantee: University of Massachusetts, Amherst, MA

Grant No.: NA66FD0020 NMFS Contact: F/NEO

Project Title: Development of a Rapid Non-Destructive Technique to Measure Fat Content of Mackerel

Funding: Federal: $52,000 Recipient: $21,552

Assessment: The objective was to ascertain the relationship between the ultrasonic properties of fish and their composition. Fish analogs with varying protein (15-25 wt%), lipid (0-25 wt%), and moisture (55-80 wt%) contents were prepared by mixing dried cod powder, sunflower oil, and distilled water. The temperature dependence of the ultrasonic velocity of fish analogs was measured from 5 to 35 ^{N}C. The ultrasonic velocity increased with solids-non-fat at all temperatures, but had a more complex dependence on fat content. Around 15 ^{N}C the ultrasonic velocity was independent of fat, at lower temperatures it increased with fat, and at higher temperature it decreased. Empirical equations were developed to relate the ultrasonic velocity to composition. The results highlight the potential of ultrasonic velocity measurements to rapidly and nondestructively determine fish composition.

Grantee: Virginia Institute of Marine Sciences, Gloucester Point, VA

Grant No.: NA66FD0018 NMFS Contact: F/NEO

Project Title: An Investigation into the Epizootiology of *Hematodinium perezi*, a Parasitic Dinoflagellate in the Blue Crab, *Callinectes sapidus*

Funding: Federal: $87,523 Recipient: $12,765

Assessment: The objective of the project was to examine the parasite *Hematodinium perezi* to determine its distribution and abundance in blue crabs and clarify the potential threat to the blue crab industry. *H. perezi* is a lethal parasitic dinoflagellate found along the eastern seaboard of the U.S. where it occurs in epizootics in the commercially important blue crab, *Callinectes sapidus*. Crab mortalities associated with the disease occur in high salinity waters, typically in poorly draining estuaries. The epizootiology studies found that the prevalence of the disease along the Virginia portion of the Delmarva Peninsula varied from 20-50% in legal crabs in October 1996. Lower prevalences (1-10%) were noted for crabs caught between Cape Henry and Cape Charles, i.e., the mouth of the bay. In Spring and Fall 1997, the disease had a higher prevalence in the coastal bays and creeks. The effects of other species of Hematodinium on several crab and lobster fisheries and data from the present study indicate that *H. perezi* may have a significant impact on the coastal blue crab fisheries

along the Atlantic seaboard of the U.S.

Grantee: University of Southern Mississippi, Hattiesburg, MS

Grant No.: NA66FD0091 NMFS Contact: F/SF2

Project Title: A Putrescine/Cadaverine Dipstick Test for Decomposition

Funding: Federal: $51,179 Recipient: $33,122

Assessment: The objective of this project was to develop a rapid, simple method to detect putrescine, cadaverine, and histamine in decomposing tuna samples. A colorimetric enzyme-based dipstick assay method was developed. The degree of color development in this method was proportional to the amine concentration in the sample. The assay reacted strongly with all three amines but there was a preference for putrescine and cadaverine over histamine. It was equally specific for putrescine and cadaverine.

Grantee: CAS-Emcon Marine Sciences, Inc., Carlsbad, CA

Grant No.: NA37FD0193 NMFS Contact: F/SF2

Project Title: P-450 RGS: A Rapid, Inexpensive Screening Test for Seafood Contamination

Funding: Federal: $168,736 Recipient: $7,180

Assessment: The objectives of the project were to develop and refine the Reporter Gene System (RGS) for use in rapid screening of seafood products for the presence of toxic, carcinogenic, or mutagenic contaminants; to transfer this capability to a commercial laboratory; and to provide guidance for the potential transfer to government laboratories. Testing has demonstrated that the RGS assay provides approximately additive results from multiple contaminants within a class (PAHs, dioxns, furans) and approximately additive results from multiple classes. Therefore, response is equivalent to the total of toxic and carcinogenic compounds present, thus, not missing dioxins when they are mixed with PCBs or PAHs. Due to high costs, few analyses for dioxins are required at present, increasing the chance of missing toxic areas within sites. Use of this approach on field-collected or shipped samples will test the ability of the method to screen actual samples and compare the responses of the RGS to chemical analyses. By using the RGS assay, regulatory agencies can accomplish a cost-effective, comprehensive investigation of a site, assuring public safety. The assay may also prove an effective tool to be used in screening seafood products arriving in U.S. ports before the cargo is shipped to markets and kitchens across the country.

Grantee: University of Maryland, Baltimore, MD

Grant No.: NA36FD0224 NMFS Contact: F/SF2

Project Title: Rapid Identification and Enumeration of *Vibrio vulnificus*, and its Application to Aquaculture and Seafood Safety

Funding: Federal: $60,000 Yr. 1 $108,372 Yr. 2 Recipient: $7,953 Yr. 1 $5,200 Yr. 2

Assessment: The objective of the project was to identify and characterize the factors which may contribute to the ability of *Vibrio vulnificus* to cause human diseases. The ability of environmental strains to express a capsule, and evaluation of the rate of shift between encapsulated and unencapsulated phase variants, were investigated. Under task 1, a total of 200 isolates were screened for encapsulation and expression of the type 1 carbotype. In addition, 100 isolates were screened for the presence of genes associated with capsule expression. Finally, a subset of 40 isolates was screened to determine the rate of shift between encapsulated and unencapsulated phase variants. In task 2, the frequency of various *V. vulnificus* capsular types (carbotypes) among environmental isolates was determined. With the completion of these tasks, it became apparent that the majority of environmental strains were encapsulated, decreasing our interest in (and the potential relevance of) the task 1 studies. Future efforts should focus primarily on the establishment of a carbotyping system for *V. vulnificus* (task 2).

Aquaculture

Grantee: University of Alaska Southeast, Juneau, AK

Grant No.: NA66FD0044 NMFS Contact: F/AKO

Project Title: Nori Cultivation: Physiological Ecology of Native Alaskan Porphyra Species - Year 2

Funding: Federal: $117,166 Recipient: $16,521

Assessment: The objective of this project was to define the physical, chemical, biological, and ecological aspects of successful cultivation of seaweed, or nori, in order to develop a seaweed aquaculture industry in Alaska. Research was carried out on the physiological ecology of species of Porphyra from southeast Alaska. Species were collected from various field sites near Juneau, Sitka, Metlakatla, and Kachemak Bay. Conchocelis cultures were started and maintained as both free and shell cultures. Environmental conditions for conchocelis maturation and spore release were investigated. Growth experiments were carried out on the microscopic conchocelis phase of three species. Multi-factorial experiments assessed the interactive effects of light intensity, salinity, and temperature on growth. Preliminary experiments that investigated the effects of light intensity, salinity, temperature, and nutrients on the growth of young *Porphyra torta* blades were performed. *Porphyra torta* was outplanted during the summer and fall. Some efforts were made for outreach and technology transfer with Alaskan native organizations. Additional work is needed before a seaweed aquaculture industry can be developed in Alaska.

Grantee: University of Alaska Southeast, Juneau, AK

Grant No.: NA46FD0355 NMFS Contact: F/AKO

Project Title: Nori Cultivation: Physiological Ecology of Native Alaskan Porphyra Species - Year 1

Funding: Federal: $137,070 Recipient: $20,338

Assessment: The objective of the project was to define the physical, chemical, biological, and ecological characteristics necessary to successfully cultivate the red marine algae, Porphyra, with a goal of eventually developing a seaweed aquaculture industry for Alaska. Research was performed on selected species of Porphyra from southeast Alaska collected from various field sites in Juneau, Sitka, Angoon, and Elfin Cove. Preliminary photosynthesis experiments were performed to determine the optimal experimental conditions for measurements. The effects of mixing speed, fresh plant weight, incubation time, freezing of the thallus, thallus part, and light intensities were investigated. Some site specific photosynthesis measurements were also taken. Growth experiments were carried out on the microscopic conchocelis phase of two species of Phorphyra. Multi-factorial experiments were done assessing the interactive effects of light intensity, salinity, and temperature on growth. Preliminary culture work was initiated for five species of Phorphyra. These cultures are being grown in oyster shells and eventually will be used for experimental outplanting and for growth and photosynthesis experiments. It is anticipated that the project will require two additional years of work before project objectives will be met.

Grantee: University of Alaska, Fairbanks, AK

Grant No.: NA46FD0352 NMFS Contact: F/AKO

Project Title: A Low-Cost Rearing Method for Alaskan Oyster Spat

Funding: Federal: $47,607 Recipient: $0

Assessment: The objective of the project was to compare two methods of spat production for Pacific oyster, *Crassostrea gigas:* one using phytoplankton mass cultured in artificially upwelled water with the oyster spat, and another without the inclusion of the phytoplankton. Pacific oyster spat were reared in an outdoor seawater pond where artificial upwelling and the addition of agricultural fertilizers were used separately and together to culture phytoplankton. Spat reared in a nearby fiord served as controls to determine whether shell and meat growth was accelerated in the nutrient enriched habitat. The phytoplankton taxa in the pond and cell abundance changed continually throughout each two week assay. In the fiord, phytoflagellates dominated the summer growth assays. In the nutrient enriched pond, phytoflagellates and diatoms co-existed and phytoplankton were 2-21 times more abundant than in the fiord. Neither phytoplankton abundance nor their taxa present in the pond were predictably related to the fertilization method. In 5 of the 6 growth assays, oyster spat reared in the fertilized pond had more rapid tissue weight gains than those reared in the fiord, and in 4 of 6 trials the phytoplankton community in the fertilized pond supported larger increases in shell length. In the fertilized pond, the shells of oyster spat grew an average of 0.1 $mm.d^{-1}$ for all of the growth assays, vs. 0.06 $mm.d^{-1}$ for spat reared in the fiord.

Grantee: University of Washington, Seattle, WA

Grant No.: NA66FD0099 NMFS Contact: F/NWO

Project Title: Development of Protocols for Pacific Halibut Enhancement

Funding: Federal: $116,454 Recipient: $0

Assessment: The objective was to develop effective methods of broodstock maintenance, optimal environmental conditions for holding larvae, and an appropriate feeding protocol to convert postlarvae from live to prepared feeds using experimental rations. The major goal, keeping halibut larvae alive through to metamorphosis, was not met due to a failure of the water pump and inability to control water temperature. Several thousand larvae were maintained for over 60 days and were experiencing good growth rates at the time of the pump failure. Despite these difficulties, some useful data were collected. It was determined that the time between hatching and first feed can be reduced by rearing larvae in water temperatures of 9 or 11^{N}C as compared to normal ambient temperature of 6^{N}C. First-feeding Pacific halibut larvae appeared to prefer rotifers to brine shrimp or wild copepods. Survival of larvae from hatching to 30 days appeared to improve when a thyroid hormone, either triiodothyronine or thyroxine, was added to the culture water.

Grantee: The Regents of the University of California, Oakland, CA

Grant No: NA66FD0050 NMFS Contact: F/SWO

Project Title: Rock Scallop Culture: Optimizing Growth Rates Through the Manipulation of Attachment and Water Movement

Funding: Federal: $14,531 Recipient: $5,273

Assessment: The objective of the study was to advance the aquaculture potential of the rock scallop, *Crassadoma gigantea*, by providing recommendations for the development of cost effective grow-out techniques. Three primary issues were addressed: the existence of a preferred orientation; the effect of changing current directions and velocities on scallop orientation; and the effect of current velocity and attachment on growth. Upon completion of this study, it was determined that, although several factors have been identified that should be considered in the grow-out of rock scallops, additional information is needed before specific recommendations on grow-out methods can be made. Specifically, studies of appropriate substratum types and manipulation of the cementing stage are now needed for continued development of efficient and economical grow-out techniques.

Grantee: North Carolina State University, Raleigh, NC

Grant No.: NA47FD0296 NMFS Contact: F/SEO

Project Title: Reproduction of Flounder: Biotechnology for Controlled Breeding in Fishery Enhancement and Aquaculture

Funding: Federal: $86,120 Recipient: $35,008

Assessment: The goal of the project was to develop the techniques and knowledge required to establish the routine and controlled breeding of flounder for fishery enhancement and aquaculture. The following objectives were successfully achieved during the project: (1) creation of founded flounder broodstocks and practical knowledge of their requirements for good husbandry; (2) development of induced spawning protocols, including the use of sustained release mammalian gonadotropin releasing hormone analogue (mGnRHa) implants; (3) the first demonstration of successful tank spawning of southern flounder; and, (4) establishment of hatchery and nursery techniques for extensive culture of larvae for production of juveniles. With the knowledge and techniques now in place, domestic broodstocks can be developed for year-round production of larvae for use in restocking programs, aquaculture, or research.

Grantee: Black Pearls, Inc., Holualoa, HI

Grant No: NA66FD0056 NMFS Contact: F/SWO

Project Title: Remote Hatchery Production of Pearl Oyster Spat for Commercial Black Pearl Farms in the Marshall Islands

Funding: Federal: $96,695 Recipient: $59,543

Assessment: The objective of the project was to investigate and develop the commercial feasibility of using a remote hatchery in Hawaii to provide pearl oyster spat to commercial black pearl farms in the Marshall Islands and throughout Micronesia. There is immense potential for expansion of black pearl culture throughout the Marshall Islands and the wider U.S.-affiliated Pacific Islands. This project aimed to resolve the remaining technical constraints to commercial black pearl culture in the Marshall Islands, which include determining the feasibility of the remote hatchery system; identifying effective early nursery methods; and developing spat and juvenile grow-out regimens for the farm. These improvements have resulted in commercial-scale spat production, with dramatically improved survivorship through early nursery and juvenile grow-out stages. Given these results, rapid expansion of this industry is expected.

Grantee: Black Pearls, Inc., Holualoa, HI

Grant No: NA56FD0083 NMFS Contact: F/SWO

Project Title: The Hawaiian Black-Lip Pearl Oyster: Restoring the Stocks, Re-Establishing the Pearl Shell Fishery, and Evaluating the Potential for Reef Ranching and Pearl Farming

Funding: Federal: $91,034 Recipient: $12,050

Assessment: The objective was to begin the restoration of the Hawaiian black-lip pearl oyster by developing methods to re-establish and enhance the commercial pearl shell fishery, and by assessing the potential for extensive reef ranching for pearl shell production and/or pearl farming in Hawaii. Black Pearls, Inc. has developed hatchery techniques for this oyster, opening up potential for stock re-establishment, extensive reef reseeding, and potential pearl culture in Hawaii. This project assessed the current status of wild stocks and recruitment, and examined the potential for conservation measures to support a renewed fishery effort, or for commercial culture. The last significant refuge of this species in Hawaii is Kaneohe Bay, where permanent transects set in 1989 and resurveyed in 1996 showed a 60% stock decrease over the period. Oyster grow-out trials focused on five sites which had proven suitable during earlier experiments. Although survivorship in the early nursery stages in land-based and ocean-based grow-out trials at the various sites was poor, use of an unfiltered green-water nursery culture system on Kaneohe Bay improved survivorship dramatically, as did methods to decrease predation on juvenile and adult animals by Cymatium snails. Most of the sites tested proved amenable to grow-out, and commercial expansion is technically feasible in most cases with technological refinements. The research has provided the necessary methodology for re-establishment of stocks of this oyster. The potential for commercial pearl culture has been demonstrated and farming permits and leases are now being actively pursued.

Grantee: University of Texas, Austin, TX

Grant No.: NA67FD0039 NMFS Contact: F/SEO

Project Title: Development of Cost-Effective Low-Pollution Feeds for Marine Species

Funding: Federal: $65,888 Recipient: $27,855

Assessment: This work was designed to advance environmentally sound aquaculture through the development of low-pollution feeds for the commercial production of *Sciaenops ocellatus* and *Penaeus vannamei*. The first approach sought to reduce waste production by enhancing digestion of feed ingredients. This research evaluated two feed supplements (a protease and an acidifying agent with probiotic properties) for their effect on apparent protein digestibility (APD) values for both species. Although the responses were different, protein digestibility values were increased by 6.7 and 12.7% through the addition of an acidifying agent in fish feeds and the protease in shrimp feeds, respectively. The second approach was to optimize the lipid component of a previously developed nutrient dense diet, designed for *Sciaenops ocellatus* juveniles, and to further optimize nutrient retention and minimize the deposition of intraperitoneal fat. For this research varying levels of menhaden fish oil (MFO) and medium chain triglycerides (MCT) were evaluated as energy sources in a basal diet containing 44% protein and 5.7% lipid. The supplementation of an additional 3% MFO was required for maximum growth and feed utilization. However, higher levels did not affect growth or feed utilization but facilitated lipid deposition in the fish.

Grantee: University of Texas, Austin, TX

Grant No.: NA57FD0032 NMFS Contact: F/SEO

Project Title: Development of Methods for the Mass Cultures of Marine Ornamental Fishes and Invertebrates

Funding: Federal: $88,859 Recipient: $18,509

Assessment: The objective was to design larval rearing systems and feeding protocols for the mass culture of two popular marine ornamental finfish species. Two species, cubbyu and peppermint shrimp, were both successfully reared in captivity and individuals from both species were sexually mature and spawning at the end of the project period. Feeding schedules for larvae and juveniles were defined and constraints on production were identified. The captive rearing of these species will provide the framework for the mass culture of several ornamental marine species, reducing collecting pressures on wild stocks and coral reef habitats.

VI. COMPLETED NATIONAL PROGRAM PROJECTS

The following section contains an assessment of each S-K National Program project completed during the period June 1, 1997 to May 31, 1998, regarding the extent to which the objectives of the project were attained and the project contributed to fishery development. The projects are listed by subject area, along with the project number, project title, federal funding level, and NMFS contact.

Fisheries Bycatch

Project No.: 97-AK-04 NMFS Contact: F/AKO

Project Title: Development of a Research Program Outlining Specific Plans for Testing the Effectiveness of Seabird Bycatch Avoidance Gear and Methods Used in the Alaskan Groundfish Longlining Fisheries

Funding: Federal: $20,000

Assessment: The objective of the project was to develop a research program outlining specific plans for testing seabird bycatch avoidance gear and methods used by fishermen in the Alaskan Groundfish Longline Fisheries. To meet this objective, the project resulted in a research plan to be implemented in three phases between 1998 and 2002. Phase I involves a comprehensive literature review, a report on the benefits of night fishing with respect to seabird conservation, development of methodologies to test the effectiveness of deterrent measures, and the garnering and analysis of industry input. Phase II involves the experimental testing of the deterrent devices and the deployment of fisheries observers. Phase III allows for the conduct of additional experiments and/or the continuation of actions taken in Phases I and II.

Aquaculture

Project No.: 96-NE-01 NMFS Contact: F/NEO

Project Title: Shellfish and Finfish Aquaculture Enhancement: Technology Development and Demonstration

Funding: Federal: $180,400

Assessment: The project objective was to expand upon finfish and shellfish research to develop modern aquaculture technology for the commercial production of bay scallop and tautog. Studies of the culture, genetics, nutrition, disease, and ecology of these species were conducted and hatchery and nursery grow-out technologies were developed and evaluated. Modern process control engineering was applied to rearing and feeding systems. A new, automated process-control recirculating seawater facility was established as a nursery for the rearing of bay scallop juveniles, along with an automated process-control greenhouse designed to produce 5,000 liters of algal feed per day for scallop rearing. New recirculating seawater systems for larval and juvenile tautog were also developed.

APPENDIX I

Information regarding the Saltonstall-Kennedy Grant Program may be obtained from the following offices of the National Marine Fisheries Service:

Alicia L. Jarboe, National Marine Fisheries Service (F/SF2)
Financial Services Division
1315 East West Highway
Silver Spring, Maryland 20910
Telephone: (301) 713-2358
Email: Alicia. Jarboe@noaa.gov

Kenneth L. Beal, National Marine Fisheries Service (F/NEO)
State, Federal & Constituent Programs Division
One Blackburn Drive
Gloucester, Massachusetts 01930
Telephone: (978) 281-9267
Email: Ken.Beal@noaa.gov

Ellie F. Roche, National Marine Fisheries Service (F/SEO)
Cooperative Programs Division
9721 Executive Center Drive, North
Koger Building
St. Petersburg, Florida 33702
Telephone: (727) 570-5324
Email: Ellie.Roche@noaa.gov

Patricia J. Donley, National Marine Fisheries Service (F/SWO)
Fisheries Management Division
501 West Ocean Boulevard
Suite 4200
Long Beach, California 90802-4213
Telephone: (560) 980-4033
Email: Pat.Donley@noaa.gov

Kevin A. Ford, National Marine Fisheries Service (F/NWO)
Trade and Industry Services Division
7600 Sand Point Way, NE
BIN C15700, Building 1
Seattle, Washington 98115
Telephone: (206) 526-6115
Email: Kevin.Ford@noaa.gov

William P. Hines, National Marine Fisheries Service (F/AKO)
Office of Trade and Industry Services and International Affairs
P.O. Box 21668
Juneau, Alaska 99802
Federal Building
709 W. 9th Street, 4th Floor
Juneau, Alaska 99801
Telephone: (907) 586-7224
Email: William.Hines@noaa.gov

APPENDIX II

take this opportunity to comment on proposed and/or continuing information collections, as required by the Paperwork Reduction Act of 1995, Public Law 104–13 (44 U.S.C. 3506(c)(2)(A)).

DATES: Written comments must be submitted on or before June 30, 1997.

ADDRESSES: Direct all written comments to Linda Engelmeier, Departmental Forms Clearance Officer, Department of Commerce, Room 5327, 14th and Constitution Avenue, NW, Washington DC 20230.

FOR FURTHER INFORMATION CONTACT: Requests for additional information or copies of the information collection instrument(s) and instructions should be directed to the National Marine Fisheries Service, Southwest Regional Office, 501 W. Ocean Blvd., Suite 4200, Long Beach, CA 90802–4213 (562–980–4019).

SUPPLEMENTARY INFORMATION:

I. Abstract

The purpose of the collection of information is to comply with the requirements of the Marine Mammal Protection Act. The Act requires the Secretary of Commerce to promulgate regulations restricting the importation of tuna from those nations without a marine mammal protection program comparable to that of the United States. In addition, tuna that is not dolphin-safe cannot be transported or sold in the United States. The collection serves three purposes: (1) documents that the shipment is dolphin safe, (2) verifies that the fish was not harvested by large-scale high seas driftnets, and (3) verifies that tuna was not harvested by a nation under primary or secondary embargo.

II. Method of Collection

Forms are submitted by foreign exporters or domestic importers for shipments entering the United States. Forms must be accompanied by statements from vessel Captains that the fish were harvested outside of the Eastern Tropical Pacific Ocean and that no purse seine net was intentionally deployed on or encircled dolphins on the particular voyage on which the tuna were harvested.

III. Data

OMB Number: None (currently covered by 0648–0040, but requirements under that number are being separated and a new number may be assigned upon approval).

Form Number: NOAA Form 370.

Type of Review: Regular Submission.

Affected Public: Fish processors and importers/exporters, fishery vessel Captains.

Estimated Number of Respondents: 350.

Estimated Time Per Response: 20 minutes for processors and importers/exporters, 5 minutes for vessel Captains.

Estimated Total Annual Burden Hours: 1,033 hours.

Estimated Total Annual Cost to Public: $0 (no material or equipment will need to be purchased to provide information).

IV. Request for Comments

Comments are invited on: (a) Whether the proposed collection of information is necessary for the proper performance of the functions of the agency, including whether the information shall have practical utility; (b) the accuracy of the agency's estimate of the burden (including hours and cost) of the proposed collection of information; (c) ways to enhance the quality, utility, and clarity of the information to be collected; and (d) ways to minimize the burden of the collection of information on respondents, including through the use of automated collection techniques or other forms of information technology.

Comments submitted in response to this notice will be summarized and/or included in the request for OMB approval of this information collection; they also will become a matter of public record.

Dated: April 22, 1997.

Linda Engelmeier,

Departmental Forms Clearance Officer, Office of Management and Organization.

[FR Doc. 97–10925 Filed 4–28–97; 8:45 am]

BILLING CODE 3510–22–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[Docket No. 960223046–7083–02; I.D. 031897A]

RIN 0648–ZA09

Financial Assistance for Research and Development Projects to Strengthen and Develop the U.S. Fishing Industry

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice of solicitation for applications.

SUMMARY: NMFS issues this document describing the conditions under which applications will be accepted under the Saltonstall-Kennedy (S-K) Grant Program and how NMFS will select applications for funding. Some of the conditions and procedures have changed significantly from the last S-K Program solicitation notice of March 19, 1996.

The S-K Grant Program assists eligible applicants in carrying out research and development projects that address aspects of U.S. fisheries (commercial or recreational), including, but not limited to, harvesting, processing, marketing, and associated infrastructures.

DATES: Applications must be received by close of business June 30, 1997. in one of the offices listed in **ADDRESSES**. Applicants must submit one signed original and nine signed copies of the completed application (including supporting information). No facsimile applications will be accepted.

ADDRESSES: Application packages can be obtained from, and completed applications sent to any office listed below:

Regional Administrator, NMFS, One Blackburn Drive, Gloucester, MA 01930; telephone: (508) 281-9267.

Regional Administrator, NMFS, Koger Bldg., 9721 Executive Center Drive, North, St. Petersburg, FL 33702; telephone: (813) 570-5324.

Regional Administrator, NMFS, 501 West Ocean Boulevard, Suite 4200, Long Beach, CA 90802–4213; telephone: (310) 980–4033.

Regional Administrator, NMFS, BIN C15700, 7600 Sand Point Way, NE., Seattle, WA 98115; telephone: (206) 526-6117.

Regional Administrator, NMFS, P.0. Box 21668, Juneau, AK 99802, or Federal Building, 709 W. 9th Street, 4th Floor, Juneau, AK 99801; telephone: (907) 586-7224.

This solicitation notice may also be retrieved from the NMFS Home Page.

FOR FURTHER INFORMATION CONTACT: Alicia L. Jarboe, S-K Program Manager, (301) 713-2358.

SUPPLEMENTARY INFORMATION:

I. Introduction

A. Background

The S-K Act, as amended (15 U.S.C. 713c-3), provides that a fund (known as the S-K fund) will be used by the Secretary of Commerce to provide grants for fisheries research and development projects addressed to any aspect of United States fisheries, including, but not limited to, harvesting, processing, marketing, and associated infrastructures. U.S. fisheries[1] include

[1] For purposes of this document, a fishery is defined as one or more stocks of fish, including

any fishery that is or may be engaged in by citizens or nationals of the United States, or citizens of the Northern Mariana Islands, the Republic of the Marshall Islands, Republic of Palau, and the Federated States of Micronesia.

The funding priorities of the S-K Grant Program have evolved over the years since the program began in 1980. The original focus of the program was on development of underutilized fisheries within the U.S. Exclusive Economic Zone (EEZ). The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), originally passed in 1976, directed NMFS to provide the domestic fishing industry priority access to the fishery resources in the EEZ. In an attempt to accelerate development of domestic fisheries, the American Fisheries Promotion Act of 1980 amended the S-K Act to stimulate commercial and recreational fishing efforts in underutilized fisheries.

In the ensuing years, the efforts to Americanize the fisheries were successful to the point that most nontraditional species were fully developed and traditional fisheries became overfished. Therefore, the S-K Program priorities evolved to include a wide range of resource conservation and management issues and aquaculture.

In 1993, NOAA developed a long-range Strategic Plan that included a focus on rebuilding fisheries for sustainable use. The NOAA Strategic Plan strengthened the basis for the continued shift in the priorities of the S-K Program toward such issues as overfishing and bycatch.

Passage in 1996 of the Sustainable Fisheries Act (Public Law 104–297), which amended the Magnuson-Stevens Act, supports further adjustment to the S-K Program to address the current condition of fisheries.

The Magnuson-Stevens Act recognizes that U.S. fisheries face many problems. It also recognizes the adverse effects of fishing in terms of bycatch of nontarget species, and habitat impacts. The Act requires that overfishing be stopped and that the problems of U.S. fisheries be corrected. Specifically, the Magnuson-Stevens Act requires NMFS to undertake efforts to prevent overfishing, rebuild overfished fisheries, insure conservation, protect essential fish habitats, and realize the full potential of U.S. fishery resources. However, the Act also acknowledges the potential adverse impacts on people in making such corrections. Therefore, it requires that conservation and management measures, consistent with conservation requirements of the Act, take into account the importance of fishery resources to fishing communities in order to provide for the sustained participation of such communities and, to the extent practicable, minimize adverse economic impacts on such communities. A ''fishing community'' is defined in the Magnuson-Stevens Act as ''a community which is substantially dependent on or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew and United States fish processors that are based in such community.'' (16 U.S.C. 1802.)

The 1998 S-K Grant Program announced under this notice will address the needs of fishing communities in optimizing economic benefits within the context of rebuilding and maintaining sustainable fisheries and in dealing with the impacts of conservation and management measures. The funding priorities listed under section II of this notice identify areas of research and development that relate to these needs.

While the S-K Program continues to be open to applicants from a variety of sectors, including industry, academia, and state and local governments, successful applicants will be those whose projects demonstrate significant direct benefits to fishing communities.

B. Funding

NMFS issues this document to solicit applications for Federal assistance, pursuant to 15 U.S.C. 713c–3(c), describing the conditions under which applications will be accepted under the S-K Grant program and how NMFS will select the applications it will fund.

This notice is published subject to, and funding of projects is contingent upon, the appropriation of funds by Congress for this program in Fiscal Year (FY) 1998, which begins on October 1, 1997. The Administration's request for the S-K Grant Program for FY 1998 is $4 million, which will be used to support projects solicited under this document.

Funding under the program will be provided for research, development, and technology transfer activities that address the funding priorities listed in section II. Funding will not be provided for projects that primarily involve infrastructure construction, port and harbor development, and start-up or operational costs for private business ventures. Furthermore, projects primarily involving data collection should be directed to a specific problem or need and be of a fixed duration, not of a continuing nature, in order to be considered.

C. Catalogue of Federal Domestic Assistance

The S-K Grant Program is listed in the ''Catalogue of Federal Domestic Assistance'' under number 11.427, Fisheries Development and Utilization Research and Development Grants and Cooperative Agreements Program.

II. Funding Priorities

Applicants should ensure that their proposals address one or more of the following priorities, which are listed in no particular order:

A. Minimize Interactions Between Fisheries and Protected or Non-Targeted Species

Develop methods to eliminate or reduce adverse interactions between fishing operations and nontargeted, protected, or prohibited species (e.g., juvenile or sublegal-sized fish and shellfish, females of certain crabs, marine turtles, seabirds, or marine mammals), including the inadvertent take, capture, or destruction of such species.

Conduct research on behavioral responses of both target and nontarget marine organisms to fishing gear and practices, in order to facilitate the design of gear and practices to actively avoid nontarget organisms.

Develop methods to improve the survivability of fish discarded and protected species released in fishing operations, including modifications in gear, fishing practices, and handling practices to reduce the detrimental effects of capture, and develop methods to assess both the immediate and delayed mortality associated with capture.

Develop reliable methods to assess or record the extent and composition of fisheries bycatch, especially onboard vessels, to reduce the need for labor-intensive and expensive onboard observer programs.

B. Rebuild Overfished Fisheries

Develop scientific information, plans, procedures, and methods that contribute to the rebuilding of overfished fisheries, including information on status of overfished stocks, prototype capacity reduction programs, and projects that facilitate the development of rebuilding plans for fisheries.

Develop innovative approaches to address the transition of fishing communities affected by declines in traditional fisheries toward alternate

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tuna, and shellfish that are identified as a unit based on geographic, scientific, technical, recreational and economic characteristics, and any and all phases of fishing for such stocks. Examples of a fishery are Alaskan groundfish, Pacific whiting, New England whiting, and eastern oysters.

employment or new business opportunities. NMFS is not soliciting proposals solely involving start-up or operational costs for individuals or individual businesses.

C. Maintain Healthy Fish Stocks

Conduct biological, economic, social, and other studies to support the development of sound management practices for important recreational and commercial species.

Develop innovative approaches to improve fisheries management, including but not limited to, assessment of alternative management systems and resolution of user conflicts.

D. Obtain Maximum Social and Economic Benefits from Harvestable Marine Resources

Contribute to the development of commercial and recreational fisheries for underutilized or non-utilized species of potential economic importance, while maintaining long-term sustainability.

Optimize the utilization of harvestable resources available to the fishing industry through innovations in how such resources are harvested, processed, or marketed.

Develop marketable products from economic discards, either whole fish discarded because they are an undesirable species, size, or sex, or parts of fish discarded as not commercially useful.

Develop improved approaches to control environmental hazards which affect fishery resource health and the safety of harvested fish and their products for human consumption.

E. Promote Aquaculture Development

Develop or demonstrate cost-effective approaches for advancing environmentally sound public and private aquaculture for food, enhancement, industrial, and other purposes.

Develop and evaluate strategies for culturing systems, disease control, and reducing the potential for negative interactions between cultured and wild stocks.

Develop models for aquaculture regulation that address the impediments to development caused by current regulatory processes.

F. Conserve and Enhance Essential Fish Habitat

Develop information needed by fisheries managers on the identification and status of essential fish habitat.

Develop scientific approaches to assess and reduce human induced impacts on habitat.

If proposals received do not adequately respond to the above listed priorities, NMFS may carry out, in addition to the program announced by this document, a national program of research and development addressed to aspects of U.S. fisheries pursuant to section 713c–3(d) of the S-K Act, as amended.

III. How to Apply

A. Eligible Applicants

Applications for grants or cooperative agreements for fisheries research and development projects may be made, in accordance with the procedures set forth in this document, by:

1. Any individual who is a citizen or national of the United States;

2. Any individual who is a citizen of the Northern Mariana Islands (NMI), being an individual who qualifies as such under section 8 of the Schedule on Transitional Matters attached to the constitution of the NMI;

3. Any individual who is a citizen of the Republic of the Marshall Islands, Republic of Palau, or the Federated States of Micronesia; or

4. Any corporation, partnership, association, or other non-Federal entity, non-profit or otherwise, if such entity is a citizen of the United States or NMI, within the meaning of section 2 of the Shipping Act, 1916, as amended (46 U.S.C. app. 802).

DOC/NOAA/NMFS are committed to cultural and gender diversity in their programs and encourage women and minority individuals and groups to submit applications. Recognizing the interest of the Secretaries of Commerce and Interior in defining appropriate fisheries policies and programs that meet the needs of the U.S. insular areas, applications from individuals, government entities, and businesses in U.S. insular areas are also encouraged. Furthermore, NMFS encourages applications from members of the fishing community, and applications that involve fishing community cooperation and participation. The extent of fishing community involvement will be considered by the Constituent Panel(s) evaluating the potential benefit of funding a proposal.

DOC/NOAA/NMFS employees, including full-time, part-time, and intermittent personnel are not eligible to submit an application under this solicitation or aid in the preparation of an application, except to provide information on program goals, funding priorities, application procedures, and completion of application forms. Since this is a competitive program, NMFS employees will not provide assistance in conceptualizing, developing, or structuring proposals, or write letters of support for a proposal.

Employees of Federal agencies, and Regional Fishery Management Councils and their employees, are not eligible to submit an application under this solicitation.

B. Duration and Terms of Funding

Generally, grants or cooperative agreements are awarded for a period of 1 year but no more than 18 months at a time.

If an application for an award is selected for funding, NMFS has no obligation to provide any additional prospective funding in connection with that award in subsequent years. Any subsequent proposal to continue work on an existing project must be submitted to the competitive process for consideration and will not receive preferential treatment. Renewal of an award to increase funding or extend the period of performance is at the total discretion of Commerce.

Publication of this announcement does not obligate NMFS to award any specific grant or cooperative agreement or to obligate any part or the entire amount of funds available.

C. Cost-Sharing

For this solicitation, NMFS is requiring cost-sharing in order to leverage limited funds and to encourage partnerships among government, industry, and academia to address the needs of fishing communities. A minimum of 10 percent up to a maximum of 50 percent cost-share is required. (NMFS must contribute at least 50 percent of total project costs, as provided by statute.) Applications that do not provide for at least the minimum cost- share will be returned to the applicant and will not receive further consideration.

The non-Federal share may include funds received from private sources or from state or local governments or the value of in-kind contributions. Federal funds may not be used to meet the non-Federal share except as provided by Federal statute. In-kind contributions are non-cash contributions provided by the applicant or non-Federal third parties. In-kind contributions may be in the form of, but are not limited to, personal services rendered in carrying out functions related to the project, and permission to use real or personal property owned by others (for which consideration is not required) in carrying out the project.

The appropriateness of all cost-sharing proposals, including the valuation of in-kind contributions, will be determined on the basis of guidance

provided in the relevant Office of Management and Budget (OMB) Circulars. In general, the value of in-kind services or property used to fulfill the applicant's cost-share will be the fair market value of the services or property. Thus, the value is equivalent to the costs of obtaining such services or property if they had not been donated. Appropriate documentation must exist to support in-kind services or property used to fulfill the applicant's cost-share.

The degree to which cost-sharing exceeds the minimum level may be taken into account by the NOAA Assistant Administrator in the final selection of projects to be funded. Applicants whose proposals are selected for funding will be obligated to account for the amount of cost-share reflected in the award documents.

D. Format

Project applications must be clearly and completely submitted in the following format:

1. Cover sheet: An applicant must use OMB Standard Form 424 and 424B (4–92) as the cover sheet for each project. (In completing item 16 of Standard Form 424, see section V.A.5. of this document.)

2. Project Summary: An applicant must complete NOAA Form 88–204 (10–95), Project Summary, for each project. The specific priority(ies) contained in section II of this document to which the application responds must be listed on the Project Summary.

3. Project Budget: A budget must be submitted for each project, using NOAA Form 88–205 (10–95), Project Budget and associated instructions. The applicants must submit detailed cost estimates showing total project costs. Cost-sharing must be indicated as Federal and non-Federal shares, divided into cash and in-kind contributions. To support the budget, the applicant must describe briefly the basis for estimating the value of the cost-sharing derived from in-kind contributions. Estimates of the direct costs must be specified in the categories listed on the Project Budget form.

The budget may also include an amount for indirect costs if the applicant has an established indirect cost rate with the Federal government. The total dollar amount of the indirect costs proposed in an application under this program must not exceed the indirect cost rate negotiated and approved by a cognizant Federal agency prior to the proposed effective date of the award, or 100 percent of the total proposed direct costs dollar amount in the application, whichever is less. The Federal share of the indirect costs may not exceed 25 percent of the total proposed direct costs. Applicants with approved indirect cost rates above 25 percent of the total proposed direct costs may use the amount above the 25 percent level up to the 100 percent level as part of the non-Federal share. A copy of the current, approved, negotiated indirect cost agreement with the Federal government must be included in the application.

NMFS will not consider fees or profits as allowable costs for applicants.

The total costs of a project consist of all allowable costs incurred, including the value of in-kind contributions, in accomplishing project objectives during the life of the project. A project begins on the effective date of an award agreement between the applicant and an authorized representative of the U.S. Government and ends on the date specified in the award. Accordingly, the time expended and costs incurred in either the development of a project or the financial assistance application, or in any subsequent discussions or negotiations prior to award, are neither reimbursable nor recognizable as part of the cost-share.

4. Narrative Project Description: The narrative project description may be up to 15 pages in length. The narrative should demonstrate knowledge of relevant research and development activity, and demonstrate how the proposal builds upon any past and current work in the subject area, as well as relevant work in related fields. Each project must be described as follows:

a. Project goals and objectives: Identify the problem/opportunity to be addressed by the proposed project and what the project is expected to accomplish. Identify the specific priority(ies) to which the project responds. Indicate the size and economic value of the fisheries involved and the fishing community affected. If the application is for the continuation of a project previously funded under the S-K Program, describe in detail the progress to date and explain why additional funding is necessary.

b. Need for government financial assistance: Explain why government financial assistance is needed for the proposed work. List all other sources of funding that are being or have been sought for the project.

c. Participation by persons or groups other than the applicant: Describe the participation by government and non-government entities, particularly members of fishing communities, in the project, and the nature of such participation.

d. Federal, state, and local government activities and permits: List any existing Federal, state, or local government programs or activities that this project would affect, including activities requiring certification under state Coastal Zone Management Plans, those requiring section 404 or section 10 permits issued by the Corps of Engineers, those requiring experimental fishing or other permits under fishery management plans, and those requiring scientific permits under the Endangered Species Act and/or the Marine Mammal Protection Act. Describe the relationship between the project and these plans or activities, and list names and addresses of persons providing this information.

e. Project statement of work: The statement of work is an action plan of activities to be conducted during the period of the project. This section requires the applicant to prepare a detailed narrative, fully describing the work to be performed that will achieve the previously articulated goals and objectives. The narrative should respond to the following questions:

(1) What is the project design? What specific work, activities, procedures, statistical design, or analytical methods will be undertaken?

(2) Who will be responsible for carrying out the various activities? (Highlight work that will be subcontracted and provisions for competitive subcontracting.)

(3) What are the major products?

A milestone chart must be included which graphically illustrates the specific activities and associated time lines to conduct the scope of work. Time lines should be described in increments (e.g., month 1, month 2), rather than by specific dates. The individual(s) responsible for the various specific activities shall be identified.

Because this information is critical to understanding and reviewing the application, NMFS encourages applicants to provide sufficient detail. Applications lacking sufficient detail may be eliminated from further consideration.

f. Project management: Describe how the project will be organized and managed. Identify the principal participants in the project and include copies of any agreements between the participants and the applicant describing the specific tasks to be performed. Provide a statement of the qualifications and experience (e.g., resume or curriculum vitae) of the principal investigator(s) and any consultants and/or subcontractors, and indicate their level of involvement in the project. If any portion of the project will be conducted through consultants and/or subcontracts, applicants must follow procurement guidance in 15 CFR

part 24, ''Grants and Cooperative Agreements to State and Local Governments,'' and OMB Circular A-110 for Institutions of Higher Education, Hospitals, and Other Non-Profit Organizations. Commercial organizations and individuals who apply should use OMB Circular A–110. If a consultant and/or subcontractor is selected prior to application submission, indicate the process used for selection.

g. Project impacts: Describe the anticipated impacts of the project on fishing communities in terms of reduced bycatch, increased product yield, or other measurable factors. Describe how the results of the project will be made available to the public.

h. Evaluation of project: Describe the procedures for evaluating the relative success or failure of a project in achieving its objectives.

5. Supporting documentation: This section should include any required documents and any additional information necessary or useful to the description of the project. The amount of information given in this section will depend on the type of project proposed.

IV. Evaluation Criteria and Selection Procedures

A. Evaluation of Proposed Projects

1. Initial screening of applications: Upon receipt NMFS will screen applications for conformance with requirements set forth in this document. Applications that do not conform to the requirements may not be considered for further evaluation. In addition, proposals from ineligible applicants or those seeking funds primarily for infrastructure development and business costs will not be considered and will be returned to the applicant.

2. Consultation with interested parties: As appropriate, NMFS will consult with NMFS Offices, the NOAA Grants Management Division, Department and other Federal and state agencies, the Regional Fishery Management Councils, and other interested parties who may be affected by or have knowledge of a specific proposal or its subject matter.

3. Technical evaluation: NMFS will solicit individual technical evaluations of each project application from three or more appropriate private and public sector experts. These reviewers will assign scores ranging from a minimum of 60 (poor) to a maximum of 100 (excellent) to applications based on the following evaluation criteria, with weights shown in parentheses:

a. Soundness of project design/ conceptual approach. Applications will be evaluated on the fishing community need(s) to be addressed by the project; the conceptual approach; whether the applicant provided sufficient information to evaluate the project technically; and, if so, the strengths and/or weaknesses of the technical design relative to securing productive results. (50 percent)

b. Project management and experience and qualifications of personnel. The organization and management of the project, and the project's principal investigator and other personnel in terms of related experience and qualifications will be evaluated. The principal investigator must be identified in order for the application to be accepted. (25 percent)

c. Project evaluation. The effectiveness of the applicant's proposed methods to monitor and evaluate the success or failure of the project in terms of meeting its original objectives will be examined. (10 percent)

d. Project costs. The justification and allocation of the budget in terms of the work to be performed will be evaluated. Unreasonably high or low project costs will be taken into account. (15 percent)

In addition to the above criteria, in reviewing applications that include consultants and contracts, NMFS will make a determination regarding the following:

(1) Is the involvement of the primary applicant necessary to the conduct of the project and the accomplishment of its objectives?

(2) Is the proposed allocation of the primary applicant's time reasonable and commensurate with the applicant's involvement in the project?

(3) Are the proposed costs for the primary applicant's involvement in the project reasonable and commensurate with the benefits to be derived from the applicant's participation?

4. Constituent Panel(s): After the technical evaluation, individual comments will be solicited from a panel or panels of three or more representatives selected by the NOAA Assistant Administrator for Fisheries (AA), from the fishing industry, state government, and others, as appropriate, to evaluate and rank the projects. Considered in the rankings, along with the technical evaluation, will be the significance of the problem or opportunity addressed in the project and the degree of involvement by fishing community members. Each panelist will rank the projects in terms of importance or need for funding, and provide recommendations on the level of funding NMFS should award and the merits of funding each project.

B. Selection Procedures and Project Funding

After projects have been evaluated and ranked, the reviewing NMFS offices will develop recommendations for project funding. These recommendations will be submitted to the AA who will determine the projects to be funded, ensuring that there is no duplication with other projects funded by NOAA or other Federal organizations, and that the projects selected for funding are those that best meet the objectives of the S-K Grant Program.

The exact amount of funds awarded to a project will be determined in preaward negotiations between the applicant and NOAA/NMFS program and grants management representatives. The funding instrument (grant or cooperative agreement) will be determined by the NOAA Grants Management Division. Projects should not be initiated in expectation of Federal funding until a notice of award document is received.

V. Administrative Requirements

A. Obligation of the Applicant

An Applicant must:

1. Meet all application requirements and provide all information necessary for the evaluation of the proposal, including one signed original and nine signed copies of the application.

2. Be available, upon request, to respond to questions during the review and evaluation of the proposal(s).

3. Complete Form CD–511, ''Certification Regarding Debarment, Suspension and Other Responsibility Matters; Drug-Free Workplace Requirements and Lobbying.'' The following explanations are provided:

a. Nonprocurement debarment and suspension. Prospective participants (as defined at 15 CFR part 26, section 105) are subject to 15 CFR part 26, ''Nonprocurement Debarment and Suspension'' and the related section of the certification form prescribed above applies;

b. Drug-free workplace. Grantees (as defined at 15 CFR part 26, section 605) are subject to 15 CFR part 26, subpart F, ''Governmentwide Requirements for Drug-Free Workplace (Grants),'' and the related section of the certification form prescribed above applies;

c. Anti-lobbying. Persons (as defined at 15 CFR part 28, section 105) are subject to the lobbying provisions of 31 U.S.C. 1352, ''Limitation on Use of Appropriated Funds to Influence Certain Federal Contracting and Financial Transactions,'' and the lobbying section of the certification

form prescribed above applies to applications/bids for grants, cooperative agreements, and contracts for more than $100,000, and loans and loan guarantees for more than $150,000, or the single family maximum mortgage limit for affected programs, whichever is greater; and

d. Anti-lobbying disclosures. Any applicant who has paid or will pay for lobbying using any funds must submit an SF-LLL, ''Disclosure of Lobbying Activities,'' as required under 15 CFR part 28, appendix B.

4. If applicable, require applicants/bidders for subgrants, contracts, subcontracts, or other lower tier covered transactions at any tier under the award to submit a completed Form CD–512, ''Certifications Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions and Lobbying'' and disclosure form SF-LLL, ''Disclosure of Lobbying Activities.'' Form CD–512 is intended for the use of recipients and should not be transmitted to Commerce. An SF-LLL submitted by any tier recipient or subrecipient should be submitted to Commerce in accordance with the instructions contained in the award document. This requirement applies only to applicants whose applications are recommended for funding. All required forms will be provided to successful applicants.

5. Complete item 16 on Standard Form 424 (4–92) regarding clearance by the State Point Of Contact (SPOC) established as a result of E.O. 12372. A list of SPOCs may be obtained from any of the NMFS offices listed in this document (see **ADDRESSES**), and is also included in the ''Catalog of Federal Domestic Assistance.''

6. Complete Standard Form 424B (4–92), ''Assurances—Non-construction Programs.''

7. Complete the Financial Audit Information form.

B. Obligations of Successful Applicants (Recipients)

A recipient of a grant award for a project must:

1. Manage the day-to-day operations of the project, be responsible for the performance of all activities for which funds are granted, and be responsible for the satisfaction of all administrative and managerial conditions imposed by the award.

2. Keep records sufficient to document any costs incurred under the award, and allow access to records for audit and examination by the Secretary, the Comptroller General of the United States, or their authorized representatives.

3. Submit semiannual project status reports on the use of funds and progress of the project to NMFS within 30 days after the end of each 6-month period. These reports will be submitted to the individual specified as the NMFS Program Officer in the funding agreement.

4. Submit a final report within 90 days after completion of each project to the NMFS Program Officer. The final report must describe the project and include an evaluation of the work performed and the results and benefits in sufficient detail to enable NMFS to assess the success of the completed project.

NMFS is committed to using available technology to achieve the timely and wide distribution of final reports to those who would benefit from this information. Therefore, recipients are required to submit final reports in electronic format, in accordance with the award terms and conditions, for publication on the NMFS Home Page. Costs associated with preparing and transmitting final reports to NMFS in electronic format are appropriately funded from the grant award. Requests for exemption from this requirement may be considered by NMFS on a case-by-case basis.

Formats for the semiannual and final reports, which have been approved by OMB, will be provided to successful applicants.

5. In order for NMFS to assist the grantee in disseminating information, the grantee is requested to submit all publications printed with grant funds (in addition to the final report in V.B.4. above) to the NMFS Program Officer. Either three hard copies or an electronic version of any such publications should be submitted.

C. Other Requirements

1. Federal policies and procedures. Recipients and subrecipients are subject to all Federal laws and Federal and Commerce policies, regulations, and procedures applicable to Federal financial assistance awards.

2. Name check review. All recipients are subject to a name check review process. Name checks are intended to reveal if any key individuals associated with the recipient have been convicted of, or are presently facing, criminal charges such as fraud, theft, perjury, or other matters that significantly reflect on the recipient's management, honesty, or financial integrity.

3. Financial management certification/preaward accounting survey. Successful applicants for S-K funding, at the discretion of the NOAA Grants Officer, may be required to have their financial management systems certified by an independent public accountant as being in compliance with Federal standards specified in the applicable OMB Circulars prior to execution of the award. Any first-time applicant for Federal grant funds may be subject to a preaward accounting survey by Commerce prior to execution of the award.

4. Past performance. Unsatisfactory performance under prior Federal awards may result in an application not being considered for funding.

5. Delinquent Federal debts. No award of Federal funds shall be made to an applicant or to its subrecipients who have an outstanding delinquent Federal debt or fine until either:

a. The delinquent account is paid in full,

b. A negotiated repayment schedule is established and at least one payment is received, or

c. Other arrangements satisfactory to the Department of Commerce (Commerce) are made.

6. Buy American. Applicants are hereby notified that they are encouraged to the extent feasible to purchase American-made equipment and products with the funding provided under this program.

7. Preaward activities. If applicants incur any costs prior to an award being made, they do so solely at their own risk of not being reimbursed by the Government. Notwithstanding any verbal or written assurance that may have been received, there is no obligation on the part of Commerce to cover preaward costs.

8. False statements. A false statement on the application is grounds for denial or termination of funds and grounds for possible punishment by a fine or imprisonment (18 U.S.C. 1001).

Classification

Prior notice and an opportunity for public comments are not required by the Administrative Procedure Act or any other law for this notice concerning grants, benefits, and contracts. Therefore, a regulatory flexibility analysis is not required for purposes of the Regulatory Flexibility Act.

This action has been determined to be not significant for purposes of E.O. 12866.

Applications under this program are subject to Executive Order 12372, ''Intergovernmental Review of Federal Programs.''

This document contains a collection-of-information requirement subject to the Paperwork Reduction Act. The collection of this information has been approved by OMB under control

number 0648–0135. Notwithstanding any other provision of law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a currently valid OMB Control Number.

A solicitation for applications will also appear in the ''Commerce Business Daily.''

Dated: April 23, 1997.

Gary C. Matlock,

Acting Assistant Administrator for Fisheries, National Marine Fisheries Service.

[FR Doc. 97–10997 Filed 4–28–97; 8:45 am]

BILLING CODE 3510–22–F

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[I.D. 042297A]

Mid-Atlantic Fishery Management Council; Meetings

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice of public meetings.

SUMMARY: The Mid-Atlantic Fishery Management Council (Council) and its Summer Flounder Industry Advisory Subcommittee, Large Pelagic Committee, Demersal Species Committee, and Surfclam and Ocean Quahog Committee, with Surfclam and Ocean Quahog Industry Advisory Subcommittee will hold public meetings.

DATES: The meetings will be held on May 12–15, 1997. See **SUPPLEMENTARY INFORMATION** for specific dates and times.

ADDRESSES: The meetings will be held at the Meadowlands Hilton, Two Harmon Plaza, Secaucus, NJ 07094; telephone: 201–348–6900.

Council address: Mid-Atlantic Fishery Management Council, 300 S. New Street, Dover, DE 19904; telephone: 302–674–2331.

FOR FURTHER INFORMATION CONTACT: David R. Keifer, Executive Director, Mid-Atlantic Fishery Management Council; telephone: 302–674–2331.

SUPPLEMENTARY INFORMATION: On Monday, May 12, the Summer Flounder Industry Advisory Subcommittee will meet jointly with the Atlantic States Marine Fisheries Commission (ASMFC) Summer Flounder Advisors beginning at 1:00 p.m. On Tuesday, May 13, the Large Pelagic Committee will meet from 8:00 a.m. until 10:00 a.m. The Council will meet as a Demersal Species Committee of the Whole jointly with the ASMFC Summer Flounder, Scup, and Black Sea Bass Management Board beginning at 10:00 a.m. On Wednesday, May 14, the Council will meet from 8:00 a.m. until noon. The Council will meet as a Surfclam and Ocean Quahog Committee of the Whole from 1:00 p.m. until 5:00 p.m. On Thursday, May 15, the Council will meet from 8:00 a.m. until approximately noon.

The purpose of the meetings is to review proposed changes to federal regulations on large pelagics, discuss public comments on and possibly adopt for Secretarial approval Amendment 10 to the Summer Flounder, Scup, and Black Sea Bass and Amendment 10 to the Surfclam and Ocean Quahog Fishery Management Plans, discuss and possibly adopt a control date for the Atlantic mackerel fishery, and other fishery management matters.

The above agenda items may not be taken in the order in which they appear and are subject to change as necessary; other items may be added. The meetings may also be closed at any time to discuss employment or other internal administrative matters.

Special Accommodations

The meetings are physically accessible to people with disabilities. Requests for sign language interpretation or other auxiliary aids should be directed to Joanna Davis at least 5 days prior to the meeting dates.

Dated: April 23, 1997.

Gary C. Matlock, Ph.D.,

Director, Office of Sustainable Fisheries, National Marine Fisheries Service.

[FR Doc. 97–10958 Filed 4–28–97; 8:45 am]

BILLING CODE 3510–22–F

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[I.D. 042297E]

Pacific Fishery Management Council; Public Meeting

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice of public meeting.

SUMMARY: The Pacific Fishery Management Council's Committee on Alternative Groundfish Management Strategies will hold a public meeting.

DATES: The meeting will be held on May 15, 1997, beginning at 8:00 a.m. and may go into the evening until business for the day is completed.

ADDRESSES: The meeting will be held at the Shilo Inn - Portland Airport, 11707 NE. Airport way, Portland, OR.

Council address: Pacific Fishery Management Council, 2130 SW Fifth Avenue, Suite 224, Portland, OR 97201.

FOR FURTHER INFORMATION CONTACT: Lawrence D. Six, Executive Director; telephone: (503) 326–6352.

SUPPLEMENTARY INFORMATION: The committee will discuss its operating procedures, meeting schedule, and alternative management approaches for the groundfish fishery off the West Coast. This is not a forum to discuss management of the fixed gear sablefish fishery.

Special Accommodations

The meeting is physically accessible to people with disabilities. Requests for sign language interpretation or other auxiliary aids should be directed to Eric Greene at (503) 326–6352 at least 5 days prior to the meeting date.

Dated: April 23, 1997.

George H. Darcy,

Acting Director, Office of Sustainable Fisheries, National Marine Fisheries Service.

[FR Doc. 97–11035 Filed 4–28–97; 8:45 am]

BILLING CODE 3510–22–F

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[I.D. 042197D]

Western Pacific Fishery Management Council; Public Meeting

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice of public meeting.

SUMMARY: The Western Pacific Fishery Management Council (Council) will hold a meeting of its Pelagic Plan Team.

DATES: The meeting will be held on May 8–9, 1997, from 8:30 a.m. to 5:00 p.m., each day.

ADDRESSES: The meeting will be held at the Ala Moana Hotel, Ilima Room, 410 Atkinson Drive, Honolulu, HI; telephone: (808) 955–4811.

Council address: Western Pacific Fishery Management Council, 1164 Bishop St., Suite 1405, Honolulu, HI 96813.

APPENDIX III

Region		Project Title	Recipient Organization	Federal Funding	Recipient's Cost Share
Alaska					
	1.	Bottom Trawl Assessment of Seasonal Distribution of Tanner Crab, Pacific Cod, and Shallow-water Flatfish in Marmot Bay, Alaska	State of Alaska Kodiak, AK	129,563	113,972
			Sum	129,563	113,972
Northeast					
	1.	Inter-Laboratory Investigation on the Feasibility of Otolith Microconstituent Analysis to Characterize Atlantic Bluefin Tuna Stock Structure	The University of Maryland Cambridge, MD	105,548	27,358
	2.	Bycatch in Pelagic Longline Fisheries: Temporal, Spatial, Gear and Operational Characteristics for Longline Sets North of 35 North Latitude	National Fisheries Institute, Inc. Arlington, VA	35,172.62	14,455.51
	3.	The Role of Tidal Salt Marsh as Essential Habitat in Production of Juvenile Weakfish (Cynoscion regalis)	New Jersey Marine Sciences Consortium Fort Hancock, NJ	89,384	84,141
	4.	Bioconversion of Mackerel Byproducts Into Value-Added Products For the Nursery and Plant Propagation Industry	University of Massachusetts Amherst, Hampshire, MA	62,215	18,078
	5.	Increasing Survival of Juvenile Atlantic Cod (Gadus morhua) and Haddock (Melanogrammus aeglefinus) in a Northwest Atlantic Demersal Longline Fishery	New England Aquarium Corp. Boston, MA	163,244	127,386
	6.	Maximizing the Value of Northeast's Marine Harvest: A Resource Guide to Secondary and Byproduct Markets	Coastal Enterprises, Inc. Portland, ME	99,708	22,500
			Sum	555,271.62	293,918.51
Northwest					
	1.	High Health Management of Pacific Oysters	Pacific Shellfish Institute Olympia, WA	117,282	42,657
	2.	Harmful Algal Blooms (HABs) and their impacts on shellfisheries and finfisheries in western Washington	University of Washington Seattle, WA	216,551	38,668

Region		Project Title	Recipient Organization		Federal Funding	Recipient's Cost Share
Northwest						
				Sum	333,833	81,325
Southeast						
	1.	Enhancing Industry Contributions Toward Bycatch Reduction in the Shrimp Fishery of the Gulf of Mexico and South Atlantic	Gulf & South Atlantic Fish. Dev. Found Tampa, FL		486,342	54,500
	2.	Reproduction of Bluefin: Assessing Maturity Using Sex-Specific Compounds	North Carolina State University Raleigh, NC		128,145	23,066
				Sum	614,487	77,566
Southwest						
	1.	Development of a HACCP-based Strategy for the Control of Histamine for the Fresh Tuna Industry	PACMAR, Inc. Honolulu, HI		199,513	34,622
	2.	Culture of New Marine Invertebrates for the Home Aquarium Industry	Coral Reef Research Foundation (Palau) Koror, Palau,		32,640	10,420
	3.	Development of Rock Scallop Grow-Out Techniques	The Regents of the Univ. of California Oakland, CA		48,088	6,815
	4.	Evaluation of the Sustainability of the Sea Cucumber Fishery in California	The Regents of the Univ of California Santa Barbara, CA		93,124	43,376
				Sum	373,365	95,233
				Grand Total	2,006,519.62	662,014.51

APPENDIX IV

Region		Project Title	Applicant	Requested Federal Funding	Applicant's Cost Share
Alaska					
	1.	An Ecomonic Analysis and Design of an Individual Transferable Pot Quota Program for the Adak Brown King Crab Fishery	University of Alaska Fairbanks Fairbanks, AK	39,856	7,971
	2.	The Effects of Fishery-Induced Directional Selection on Run Timing in Sockeye Salmon	University of Washington Seattle, WA	68,094	10,077
	3.	Hydroacoustic Survey of Black Rockfish in Chiniak & Marmot Bays, Alaska	State of Alaska Kodiak, AK	98,402	28,961
	4.	Porphyra Mariculture - Optimizing Spore Production for Successful Field Cultivation	University of Alaska Southeast Juneau, AK	145,553	33,313
	5.	Sediment Contamination Classification for Essential Fish Habitat	Scientific Fishery Systems, Inc. Anchorage, AK	100,000	27,500
	6.	Collaborative Bycatch Reduction Roundtable to Provide Alternative Problem Solving Solutions Outside of the Formal Regulatory and Allocation Process.	Alaska Fisheries Development Foundatn Anchorage, AK	121,796	103,200
	7.	Bycatch Mortality of King and Tanner Crab: A Review and Analysis of the Literature and Research Data	Alaska Fisheries Development Foundatn Anchorage, AK	27,663	6,235
	8.	Hydrodynamic Studies of Codends. Evaluation of Mechanisms to Improve Escape and Survival	Alaska Fisheries Development Foundatn Anchorage, AK	170,447	27,293
	9.	Benthic Disturbance by Trawl Gear: II Deeper Water-Offshore-Effects	University of Alaska Fairbanks Fairbanks, AK	116,768	33,854
	10.	Predator-Prey Relationship in Sockeye Salmon Nursery Lakes	University of Alaska Fairbanks Fairbanks, AK	55,781	23,257
	11.	Recovery of Commercial Products from Seafood Processing By-Products	Dantec Engineering, Inc. Danville, CA	127,000	32,000
	12.	Development of a Sole Pot Fishery - A Technique to Reduce Bycatch and Waste in the Rock Sole Fishery	Situk, Inc. Sitka, AK	170,691	111,363

Region		Project Title	Applicant	Requested Federal Funding	Applicant's Cost Share
Alaska					
	13.	Development of Animal Food Prototypes using Salmon from Alaska Hatcheries	Zoic Resources, Inc Auke Bay, AK	175,740	169,600
	14.	Development of a Sustainable Green Sea Urchin Industry in Southeast Alaska	Kake Fisheries Kake, AK	131,171	42,924
	15.	Qutekcak Shellfish Hatchery and Nursery Project	Qutekcak Native Tribe Seward, AK	112,837	109,872
	16.	Seafood Hazard Anaylsis Critical Control Point (HACCP) Validation Using the Adenosine Triphosphate (ATP) Bioluminescent Assay	University of Alaska Fairbanks Fairbanks, AK	47,188	6,937
	17.	Development of a Definition and Standard for Surimi	University of Alaska Fairbanks Fairbanks, AK	186,499	41,174
	18.	Population Structure of Rougheye and Shortraker Rockfish based on analysis of Mitichondrial DNA Variation	University of Alaska Fairbanks Fairbanks, AK	109,114	15,665
	19.	Evaluation of Pacific Cod and Halibut Visual Acuity: Determining Mechanisms to Control Behavior and Reduce By-Catch	University of Alaska Fairbanks Fairbanks, AK	99,262	34,241
	20.	The Feasibility of Utilizing Bait to Minimize Bycatch in the Alaska Longline Fishery	Alaska Fisheries Development Foundatn Anchorage, AK	161,681	60,074
	21.	Halibut Bycatch Summit	Alaska Fisheries Development Foundatn Anchorage, AK	145,972	54,000
	22.	Passive Long-Range Crab Detection	Scientific Fishery Systems, Inc. Anchorage, AK	100,000	26,000
	23.	Observer's Associate	Scientific Fishery Systems, Inc. Anchorage, AK	75,000	13,000
	24.	Forecasting Pink Salmon Returns to Prince William Sound from Otolith Marked Outmigrating Juveniles Captured by Purse Seine in the Southwest Passages.	State of Alaska Juneau, AK	39,806	28,580
			Sum	2,626,321	1,047,091

Region		Project Title	Applicant	Requested Federal Funding	Applicant's Cost Share
Northeast					
	1.	Development and Demonstration of a Floating Hatchery/Nursery Shellfish Culture System	Martha's Vineyard Shellfish Group, Inc Oak Bluffs, MA	47,228	7,725
	2.	Retraining Fishermen for U.S. Coast Guard Licenses and Documents	Northeast Maritime, Inc. New Bedford, MA	150,685	16,743
	3.	The Designation, by Consensus, of Oyster Resource Sanctuaries in Maryland's Oyster Recovery Areas	Chesapeake Appreciation, Inc. Annapolis, MD	89,300	23,616
	4.	Genetic Stock Structure of Pleuronectes americanus (Winter Flounder) Larvae in Spawning Nurseries	University of Connecticut Storrs, CT	123,977	78,475
	5.	Recruitment Dynamics of Northern Shrimp	University of Maryland Cambridge, MD	107,585	23,303
	6.	Examination of the Toxicity of Copper and Azinphosmethyl and Their Mixture to Mercenaria mercenaria (quahog clam)	VA Polytechnic Institute and State U Blacksburg, VA	43,115	20,423
	7.	Developing Gene Maps of Five Aquaculture Species: Catfish, Oyster, Salmonid, Shrimp and Tilapia	Trustees of Tufts College Boston, MA	103,500	60,626
	8.	The Modification of Fixed Fishing Gear to Minimize Interactions with Endangered Species of Large Whales	International Wildlife Coalition East Falmouth, MA	128,070	60,420
	9.	Biological Data Collection for Management of Deep-sea Finfish Fisheries in the Northeast	Jon Alistair Moore New Haven, CT	188,902	59,400
	10.	Microbial Decontamination of Fish Using High Intensity Ultrasound	University of Massachusetts Amherst, Hampshire, MA	84,190	16,899
	11.	Developing a Commercial Fishery for Royal Red Shrimp (Pleoticus robustus) in the Northeast	University of Rhode Island Kingston, RI	177,253	36,385
	12.	The Use of Cavitation Level Ultrasound to Enhance the Uptake of Vaccines and Antibiotics by Striped Bass and Channel Catfish	UMBI College Park, MD	120,000	70,432

Region		Project Title	Applicant	Requested Federal Funding	Applicant's Cost Share
Northeast					
	13.	Baseline Studies of Water Quality and Its Relationship to the Occurence of Opportunistic Bacterial Pathogens with Emphasis on Vibrios During the Production of Summer Flounder, Paralichthys dentatus in Large Scale Closed Culture Systems	Virginia Institute of Marine Science Gloucester Point, VA	53,213	16,377
	14.	CCCHFA: Realizing the Potential to Harvest, Transport, and Market Live Groundfish Caught by Hook and Line Gear	Cape Cod Commercial Hook Fishermen's West Chatham, MA	113,800	39,600
	15.	Investigations of the Incidental Capture and Interaction of Loggerhead Sea Turtles and Pilot Whales with Pelagic Longline Operations	Cornell Cooperative Extension Riverhead, NY	631,877	168,110
	16.	Training of Fishermen and Geographic Expansion of the Use of Fishing Vessels for Oceanographic Survey, Monitoring and Resource Assessment	CR Environmental, Inc. Falmouth, MA	223,372	46,698
	17.	New Income Opportunity For Fishermen	Maine Cranberry Growers Association Hampden, ME	47,727	4,800
	18.	Harmful Algal Bloom (HAB) Monitoring Program - Connecticut Coastal Waters	CT Department of Agriculture Milford, CT	18,323	6,474
	19.	Evaluating the Impact of Upland Land Use on Intertidal Shellfish Habitat	Merrimack Valley Planning Commission Haverhill, MA	62,481	11,529
	20.	Maximizing the Potential of the Herring and Mackerel Resources	Slavin Point Judith Co. Narragansett, RI	192,997	161,592
	21.	Evaluation of Two Rearing Systems for the Culture of Summer Flounder (Paralicgthys dentatus) in Recirculated Saltwater	Trio Algarvio, Inc. New Bedford, MA	411,592	395,150
	22.	Advanced Information Technologies On Fishing Vessels: Case Studies and Benefits to Fishermen, Scientists, and Managers	Manomet, Inc. Manomet, MA	61,988	9,519
	23.	Marine Natural and Nutraceutical Products: Global Survey and Resource Availability in the Northeast Region	University of Rhode Island Kingston, RI	20,375	9,804

Region		Project Title	Applicant	Requested Federal Funding	Applicant's Cost Share
Northeast					
	24.	Career Transition and Skill Enhancement Services for Rhode Island Fishermen	Galilee Mission to Fishermen, Inc. Narragansett, RI	131,702	66,977
	25.	Finite Element Modeling (FEM) of Open-Ocean Aquaculture Cage Performance Verified by Scale Model Tests in Sea Keeping Tanks	University of New Hampshire Durham, NH	164,039	65,430
	26.	Native Species Utilization Project	Poling Aquaculture, Inc. Hillsboro, NH	115,096	33,500
	27.	Design of an Optimal Access System for Ocean Mariculture	Woods Hole Oceanographic Institution Woods Hole, MA	86,502	24,066
	28.	QPX Infection in the Hard Clam: Isolation, Development of Enhanced Diagnostics, and Chemotherapy	Virginia Institute of Marine Science Gloucester Point, VA	118,989	15,531
	29.	Comparative Study of Fishing With Mobile Gear Cod Ends of Various Mesh Sizes	Gloucester Fishermen's Wives Assn Gloucester, MA	335,148	58,500
	30.	Developing a Low Impact Sea Scallop Dredge	Commonwealth of Massachusetts Boston, MA	32,788	8,914
	31.	Assessing the Acoustic Environment Around Working Gillnets with Pingers and the Potential Impact on the Harbor Porpoises	University of New Hampshire Durham, NH	98,268	33,016
	32.	Culturing Activities for Three Commercially Important Species: Placopecten magellanicus (Atl. scallop), Ostrea edulis (European oyster), and Gadus morhua (Atl. Cod) - Spawning and Nursery Techniques for Developing Seed and Broodstock	Salem State College Salem, MA	121,343	71,191
	33.	Density-Dependent Growth and Maturation of Chesapeake Bay Striped Bass	University of Maryland Cambridge, MD	101,701	25,938
	34.	Implementation of an Education and Training Program for the Atlantic Coastal Cooperative Statistics Program	Atlantic States Marine Fisheries Comm. Washington, DC	249,824	30,000

Region		Project Title	Applicant	Requested Federal Funding	Applicant's Cost Share
Northeast					
	35.	Proposal to Assess Marine Artificial Reef Development Along the Atlantic and Gulf of Mexico Relative to Fishing Community Needs and National Mandates	Atlantic States Marine Fisheries Comm. Washington, DC	137,930	15,000
	36.	Field and Laboratory Studies of QPX (Quahog Parasite Unknown) in Hard Clams, Mercenaria mercenaria, from Virginia	Virginia Institute of Marine Science Gloucester Point, VA	156,708	30,388
	37.	Development of Molecular Diagnostics and Culture Studies of Hematodinium perezi, A Parasitic Dinoflagellate of the Blue Crab	Virginia Institute of Marine Science Gloucester Point, VA	129,795	25,661
	38.	Production and Evaluation of Transgenic Winter Flounder Carrying Atlantic Salmon Growth Hormone Gene	The Research Foundation of CUNY New York, NY	139,978	86,796
	39.	Bycatch Reduction in the Pound Net Weakfish Fishery Through the Use of Escape Panels	Virginia Marine Resources Commission Newport News, VA	38,541	18,344
	40.	Maximizing the Social and Economic Benefits of Underutilized and Commercially Undesirable Species	Wellspring House, Inc. Gloucester, MA	151,240	96,752
	41.	Voluntary Fisheries Bycatch Reporting Program	Barbara Stevenson Portland, ME	271,123	60,900
	42.	Investigation of Acoustic Devices for Deterring Cetacean Bycatch	Frederick J. Matera West Kingston, RI	77,687	20,000
	43.	Spatial and Temporal Variability in the Growth and Vulnerability of Blue Crab (Callinectes sapidus) in the Chesapeake Bay	University of MD Center for Env. Sci. Cambridge, MD	67,876	17,132
	44.	Evaluation of the Effects of Chronic Low Levels of Gas Supersaturation on Commercially Cultured Salmonids	West Virginia Department of Education Charleston, WV	65,153	38,519
	45.	A Comparative Evaluation of Narrowband and Broadband Fish Stock Assessment Tools	Scientific Fishery Systems, Inc. Anchorage, AK	50,000	8,278

Region		Project Title	Applicant	Requested Federal Funding	Applicant's Cost Share
Northeast					
	46.	Developing Innovative Responses to Declining Fisheries: Building on Fishers' Adjustments to Fisheries in Crisis	Juarez and Associates, Inc. Washington, DC	100,977	11,757
	47.	Optimizing the Use of Assistance Funds for Displaced Fishers in New England Coastal Communities	The University of Memphis Memphis, TN	50,346	6,042
	48.	AFLP-genotyping of Silver Hake - Application for a Neural Network Stock Identification	University of Rhode Island Narragansett, RI	229,916	97,385
	49.	Oyster Restoration in Tangier and Pocomoke Sound	Virginia Marine Resources Commission Newport News, VA	54,547	10,099
	50.	Sea Scallop Rotational Enhancement in Ipswich Bay, Massachusetts	Harborlife, Inc. Nantucket, MA	107,250	25,000
	51.	Fishing Industry Cooperative Enterprises (Co-Production Training and Business Development Program)	Community Economic Development Ctr New Bedford, MA	62,068	60,067
	52.	Making Hard Clam Fisheries Sustainable	Rutgers University Toms River, NJ	64,350	35,702
	53.	Algae-based Denitrator for Marine Aquaculture	Coastal BioMarine Bridgewater, CT	52,960	29,750
	54.	Addressing the Balance Between Optimal Control of Sea Lice (Caligidae: Crustacea) Ectoparasitic on Atlantic Salmon, Salmo salar with Minimal Impact on Fisheries	University of Maine Orono, ME	25,675	11,648
	55.	Bluefish Network: Fishermen and Scientists Working Together to Understand Bluefish	Rutgers University Piscataway, NJ	146,016	78,347
	56.	Proper Particle Size for Marine Waste Composting	University of Maine Orono, ME	80,336	11,046
	57.	A Management Information System for Monitoring the American Lobster Population	University of Maine Orono, ME	101,208	14,945

Region		Project Title	Applicant	Requested Federal Funding	Applicant's Cost Share
Northeast					
	58.	Identification of Vital Parameters and Representation by Seafloor Classification System	Maryland Dept. of Natural Resources Annapolis, MD	82,419	75,018
	59.	Recruitment and Survival of Juvenile Groundfish in Nursery Habitat Within the New York Bight With Emphasis on Yellowtail Flounder	The Research Foundation of SUNY Stony Brook, NY	268,429	82,683
	60.	Enhanced Striped Bass Larval Survival and Growth With Hormone Enriched Microencapsulated and Bioencapsulated Diets	Virginia Institute of Marine Science Gloucester Point, VA	131,945	28,237
	61.	Development/Demonstration of Technology for an Acoustic Buoyless Lobster Trap System	George R. Main d/b/a West Cove Lobster Noank, CT	208,275	58,126
	62.	Enhancement of Soft-Shelled Clam (Mya arenaria) Recruitment in New England	Spinney Creek Shellfish, Co. Eliot, ME	49,428	17,787
	63.	Safety and Efficacy in Controlling Microbial Contamination of Fresh Fish	National Food Processors Association Washington, DC	80,024	59,112
	64.	Boat and Clam Dredge Calibration	Rutgers University Piscataway, NJ	177,549	41,555
	65.	Development of Mammal Excluder Devices For Trawls	Rutgers University, IMCS Piscataway, NJ	146,886	35,036
	66.	Essential Fish Habitat Initiative: Identification and Incorporation of State Data Sources	Atlantic States Marine Fisheries Comm. Washington, DC	119,376	33,768
	67.	Oral History Project to Collect Ecological Knowledge Including Spawning Area Data	Gloucester Fishermen's Wives Gloucester, MA	163,428	14,000
	68.	Feasibility of Developing a Marketable, Safe, Commercial White Perch Fishery in Southern Green Bay, Lake Michigan	Wisconsin Dept. of Natural Resources Madison, WI	27,000	3,000

Region		Project Title	Applicant	Requested Federal Funding	Applicant's Cost Share
Northeast					
	69.	Viability of Fish Traps in the New England Multispecies Fishery	William Hugo Amaru South Orleans, MA	77,800	21,500
	70.	Evaluation of Mackerel Edible Flesh for Accumulation of PSP Toxin	University of Rhode Island Kingston, RI	142,516	26,157
	71.	Enhancing the RI Fisheries for Winter Flounder, Pleuronectes americanus, With Hatchery Reared Juveniles: A Feasibility Study	University of Rhode Island Kingston, RI	116,981	46,980
	72.	Fishery Interactions: An Evaluation of the Biological Impact of Pelagic Longline Fisheries on Co-occurring Fisheries in the Mid-Atlantic and Southern New England Bight	National Fisheries Institute, Inc. Arlington, VA	47,152.52	16,858.79
	73.	Market-based Incentives to Marine Fisheries Bycatch Reduction: A Cost-Effectiveness Analysis	Woods Hole Oceanographic Institution Woods Hole, MA	73,480	25,837
	74.	Establishment of a Socioeconomic Baseline for Atlantic Coast Commercial Fisheries	Atlantic States Marine Fisheries Comm. Washington, DC	164,306	20,000
	75.	Inland Market Development For Fresh and Whole Processed Marine Species	Long Island Seafood Export, Inc East Quogue, NY	87,500	133,500
	76.	Feasibility of Intensive Culture of Mummichog and Striped Killifish for Urban Baitfish Markets	Cornell University Ithaca, NY	197,112	90,534
	77.	Quality Control of Cryostabilized Fish Mince From Herring, Mackerel and Red Hake	University of Rhode Island Kingston, RI	88,122	23,872
	78.	A Comparative Evaluation of Modeled and Empirically Measured Broadband Fish Backscatter	Scientific Fishery Systems, Inc. Anchorage, AK	80,000	8,778
	79.	Assessing the Effectiveness of Marine Resources	University of Maryland Cambridge, MD	119,293	35,343

Region		Project Title	Applicant		Requested Federal Funding	Applicant's Cost Share
Northeast						
	80.	Development of an Area Specific Management Plan and Supporting Research Program for Maine Sea Scallop Fishing	Maine Department of Marine Resources Augusta, ME		252,581	39,522
	81.	Fish Gelatin From Fish Bone Waste	Cornell University Ithaca, NY		16,525	11,225
	82.	Mixed Stock Analysis of Wintertime Aggregations of Striped Bass Along the Mid-Atlantic Coast	New York University Medical Center Tuxedo, NY		88,479	40,119
	83.	Development of Value-Added Food Ingredients From Water-Soluble Mackerel Proteins	University of Massachusetts Amherst, Hampshire, MA		74,673	15,887
	84.	Producing High Quality Herring and Mackerel Fillets By Rapid Blood Removal and Antioxidant Application	University of Massachusetts Amherst, Hampshire, MA		117,101	69,559
				Sum	10,317,010.52	3,660,714.79
Northwest						
	1.	Solar Power Ion Collection Unit	LIFEFORCE Stanwood, WA		78,353	8,709
	2.	Development of Optimum Pasteurization Methods for the U.S. Surimi Seafood Industry	Oregon State University Astoria, OR		90,753	22,623
	3.	Genetic Immunization of Rainbow Trout Against Infectious Pancreatic Necrosis Virus (IPNV)	Diagxotics, Inc. Corvallis, OR		177,779	23,200
	4.	An Economical Bivalent Vaccine for Infectious Hematopoietic Necrosis Virus and Yersinia ruckeri	Washington State University Pullman, WA		88,961	47,152
	5.	Nutrient Transfer to Stream Insect Communities by Salmon Carcasses: Enhancement of Food Sources for Juvenile Salmonids	University of Washington Seattle, WA		108,583	12,104

Region		Project Title	Applicant	Requested Federal Funding	Applicant's Cost Share
Northwest					
	6.	Stimulation of Non-Specific Immune Mechanisms in Rainbow Trout by an Avirulent Picorna-Like Virus	Clear Springs Foods, Inc. Buhl, ID	47,460	5,540
	7.	Green/Duwamish River Chinook Behavior Study	Muckleshoot Indian Tribe Auburn, WA	121,774	36,000
	8.	Thermal Effects on Growth, Survival, Development, and Otolith Structure of Pacific Halibut Larvae	International Pacific Halibut Comm. Seattle, WA	30,000	26,890
	9.	Salmonid Habitat Maintenance and Enhancement Using Engineered Large Woody Debris	University of Washington Seattle, WA	128,315	17,418
	10.	Development of Scientific Approach to Reduce Human-Induced Impacts on Water Quality and Habitat at a Watershed Level by Expanding Washington's Watershed Analysis Process to Address Agricultural and Urban Non-Point Source Pollution Sources & Habitat Imp.	Washington State Department of Ecology Olympia, WA	114,450	12,750
	11.	Geoduck Genetics Study	Washington Dept. of Fish and Wildlife Olympia, WA	175,396	53,740
	12.	Management Plan for Columbia River Smelt	Washington Dept. of Fish and Wildlife Olympia, WA	144,622	34,502
	13.	Evaluation and Status of Sturgeon and Paddlefish Caviar Fishing, Processing and Marketing Operations in North America	University of Idaho Moscow, ID	105,735	12,397
	14.	Pulsed Toxin Release by a Fish-Killing Alga	University of Washington Seattle, WA	148,127	45,472
	15.	Using Ecotourism to Restore and Enhance Coho Salmon Habitat	Oregon State University Corvallis, OR	124,516	21,521
	16.	Development of a Nearshore Rockfish Research and Management Plan for the Pacific Coast	Pacific States Marine Fisheries Comm. Gladstone, OR	88,403	9,897

Region		Project Title	Applicant	Requested Federal Funding	Applicant's Cost Share
Northwest					
	17.	Molecular Probes for Assessing the Safety of Shellfish Contamination with Pathogenic Caliciviruses	Oregon State University Corvallis, OR	203,591	72,623
	18.	Lake Washington Sockeye Salmon - Early Lake Survival	King County Department of Natural Reso Seattle, WA	120,928	83,166
	19.	Molecular Probe for the Oyster Pathogen, Mikrocytos mackini	Pacific Lutheran University Tacoma, WA	79,504	19,848
	20.	Refining Fishwaste Composting Processes to Reduce Ammonia Volatilization and Improve Quality and Effectiveness of Fishwaste Compost as a Nitrogen Source for Crop Production	Washington State University Puyallup, WA	74,294	11,471
	21.	Characterization and Expression of the Salmonid Nramp 1 Gene and Correlation with Host Defense Mechanisms	University of Wisconsin-Milwaukee Milwaukee, WI	98,664	31,890
			Sum	2,350,208	608,913
Southeast					
	1.	The Use of Bacteriophage Display to Isolate Antibody Fragments that Bind to Brevetoxins and Saxitoxins. These Antibodies Should have Widespread Uses for Detecting Toxin Contamination of Water, fish and Other Marine Life	U.T. Southwestern Medical Center Dallas, TX	144,138	34,593
	2.	Age and Size Distribution of Commercially Harvested Red Snapper (Lutjanus campechanus) in Texas Coastal Waters	Texas Parks and Wildlife Department Austin, TX	94,347	58,665
	3.	Comparison of Survival of Bycatch Associated with Bait Shrimping in Three Texas Estuarine Areas	Texas Parks and Wildlife Department Austin, TX	62,059	21,139
	4.	Do Estrogens in Formulated Diets Reduce Productivity in Marine Finfish Aquaculture?	Medical University of South Carolina Charleston, SC	107,279	15,240

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Southeast					
	5.	Assessments of the Population Biology and Critical Habitat for the Horseshoe Crab, (Limulus polyphemus), in the Georgia Bight	S.C. Department of Natural Resouces Charleston, SC	43,027	11,291
	6.	Reproductive Parameters Needed to Evaluate Recruitment Overfishing of Spotted Seatrout in the Southeastern U.S.	Univ. of Georgia Research Foundation Athens, GA	120,612	13,412
	7.	Evaluation of Perkinsus Marinus Infection in Populations of Eastern Oysters from Galveston and San Antonio Bays, Texas	Texas Parks and Wildlife Department Austin, TX	16,041	15,636
	8.	Critical Habitats of Atlantic Sturgeon	S.C. Department of Natural Resources Charleston, SC	129,645	28,068
	9.	Hybridization of Atlantic and Southern Atlantic Surfclams for Aquaculture	University of Georgia Athens, GA	50,110	11,587
	10.	Population Dynamics of Ponderous Ark Beds Offshore Georgia	University of Georgia Savannah, GA	47,871	11,462
	11.	Identification of Critical Quality Attributes for Acceptance of Underutilized Fish in Menu Items of Restaurants	Univ. of Georgia Research Foundation Athens, GA	130,648	70,251
	12.	Is Bycatch a Biological Problem? Response by Fishermen and Blue Crabs	North Carolina State University Raleigh, NC	130,012	41,981
	13.	Ultrasonic Telemetry of Red Snapper, Lutjanus Campechanus, In Relation To Habitats, Environmental Factors, and Sexual Maturity	Auburn University Auburn, AL	78,693	28,728
	14.	Recruitment Forecast Model for Economically Important Reef Fishes in the Eastern Gulf of Mexico	Florida State University Tallahassee, FL	309,990	57,038
	15.	Labeling and Detection of Paralytic Shellfish Toxins	University of South Carolina Columbia, SC	91,108	24,737
	16.	The Importance of Microbial Mats as Fishery Habitat	Louisiana State University Baton Rouge, LA	66,857	31,342

Region		Project Title	Applicant	Requested Federal Funding	Applicant's Cost Share
Southeast					
	17.	A Study of the Effect of Swimbladder Rupture on Survivorship of Released Undersized Catch in the Reef Fish Fishery	Mote Marine Laboratory Sarasota, FL	196,449	42,184
	18.	Year Round Production of Live Bait Shrimp in Super Intensive Closed Recirculating System and Development of Indigineous Shrimp Species Broodstock Program	Texas A&M Research Foundation College Station, TX	399,264	131,503
	19.	High Density Recirculating Finfish Aquaculture	Tampa Bay Tropicals, Inc. Ruskin, FL	263,450	122,960
	20.	Stock Analysis of Marine Turtles Using Nuclear DNA Markers	University of Florida Gainesvile, FL	55,232	12,787
	21.	Reducing Bycatch in the Yellowfin Tuna Longline Fishery	Mote Marine Laboratory Sarasota, FL	122,858	13,649
	22.	Development of a Sensitive Color Based Assay for the Detection of Toxins Responsible for Diarrhetic Shellfish Poisoning (DSP)	University of South Alabama Mobile, AL	130,939	29,551
	23.	Genetic Analysis of the Variability of Larval Surveys in the Breeding Grounds of Bigeye and Yellowfin Tuna	University of South Carolina Columbia, SC	80,000	36,400
	24.	A Strategy for Reduction of Juvenile Finfish Bycatch and Optimization of Yield in North Carolina's Multispecies Gill Net Fishery	West Virginia University - Res Corp Morgantown, WV	116,260	43,596
	25.	Fishing Communities, the Administration of Justice, & Fisheries Management	Florida State University Tallahassee, FL	118,543.74	18,932.25
	26.	Oculina Bank Habitat Area of Particular Concern User Group Profiles	Impact Assessment, Inc. La Jolla, CA	97,910	22,600
	27.	Stock Resolution in U.S. Reef Fisheries	University of Florida Gainesvile, FL	95,275	12,787

Region		Project Title	Applicant	Requested Federal Funding	Applicant's Cost Share
Southeast					
	28.	Spanish Mackerel Release Mortality: Longer-term Assessment and Increased Sample Size for Determination of a Precise Estimate for Spanish Mackerel and Useful Estimates for King Mackerel and other Pelagic Species	Mote Marine Laboratory Sarasota, FL	134,277	25,141
	29.	Host Factors That Predispose Humans to Vibrio Vulnificus Infections	University of Florida Gainesville, FL	95,637	24,975
	30.	Age, Growth, and Sexual Maturity of White Grunt (Haemulon plumieri) in the Eastern Gulf of Mexico	University of Florida Gainesville, FL	66,192	30,381
	31.	To Restore Employment in Two Small Fishing Communities of 400 People of which Approximately 90% are Native American Indians, by Setting Baby Oysters into Permanent Identification Holders	Oyster Delicacies Inc. Montegut, LA	31,750	27,700
	32.	The Economic Impacts of Marine Recreatioal Fishing in North Carolina	East Carolina University Greenville, NC	76,465	36,986
	33.	Promoting Sustainable Development of the Shrimp Farming Industry in Texas	Environmental Defense Fund New York, NY	75,517.87	15,201.38
	34.	Tests to Improve Shrimp Retention in BRDs with Prototype BRD Components, New BRDs and Modified TEDs Mandated for Sea Turtle Conservation Zones	University of Georgia Athens, GA	61,875	29,677
	35.	Controlled Maturation and Spawning of Mutton Snapper (Lutjanus analis), a New Candidate Marine Fish Species for U.S. Aquaculture	Univ. of North Carolina at Wilmington Wilmington, NC	131,098	154,420
	36.	White Spot Syndrome and Yellow Head Disease Viruses of Penaeid Shrimp: Development and Application of Molecular Probes and the Polymerase Chain Reaction for Use As Diagnostic and Detection Methods for these Viruses	University of Arizona Tucson, AZ	75,000	40,900

Region		Project Title	Applicant	Requested Federal Funding	Applicant's Cost Share
Southeast					
	37.	A Study to Minimize Shark Interaction with Fishing Operations when a Nontarget Species and Conserve Sharks as Top Predition to Ensure Health Fish Stocks in the Gulf of Mexico	Gregory Alan Cruise Homosassa, FL	111,634.97	14,337
	38.	Use of Constructed Wetlands to Improve Water Quality in Finfish Pond Culture, Phase III	Mississippi State University Mississippi State, MS	202,274	38,828
	39.	Minimize Interactions Between Fisheries and Protected or Non-Target Species by Conducting Research on Fishing Gear Practices and Recording Effects on Marine Organisms	Ruth E. Oliver Port Lavaca, TX	86,250	28,750
	40.	Predator-Prey Relationship of Key Reef fish Species in the Northern Gulf of Mexico	Gulf & South Atlantic Fish. Dev. Found Tampa, FL	100,900	12,863
	41.	Identification of Early Life Stages of Snapper (Lutjanidae) from the Western Central Atlantic with Monoclonal Antibodies and Immunologic Methods	University of Miami Miami, FL	137,357	100,697
	42.	Relationship Between Population Structure and Water Quality in the Eastern Oyster (Crassostrea virginica)	Univ. of North Carolina at Wilminton Wilmington, NC	79,415	23,719
	43.	Genetic Resources Analysis of Channel Catfish: Interactions Between Domestic and Wild Catfish Populations	Auburn University Auburn, AL	191,875	40,940
	44.	Genetic Structure, Status, and Mixed Stock Analysis of Atlantic Sturgeon in the Southeastern U.S.	New York University Medical Center Tuxedo, NY	214,455	62,056
	45.	An Economic and Biological Assessment of Atlantic-Gulf of Mexico Swordfish Management Policies	Texas A&M Research Foundation College Station, TX	105,480	68,555
	46.	Apalachee Seafood Research and Development Center	Wakulla County Crawfordville, FL	479,675	213,514
	47.	Characterization of the Toxins Produced by the Dinoflagellate (Pfiesteria piscicida)	North Carolina State University Raleigh, NC	250,313	55,566

Region		Project Title	Applicant	Requested Federal Funding	Applicant's Cost Share
Southeast					
	48.	A Novel Potent Immunological Defense in Rainbow Trout	North Carolina State University Raleigh, NC	101,215	18,219
	49.	Rapid Detection of Brevetoxin and Ciguatoxin Using Recombinant Na+ Channels	University of South Alabama Mobile, AL	63,938	24,464
	50.	Towards the Aquaculture of Cobia (Rachycentron canadum)	Virginia Institute of Marine Science Gloucester Point, VA	105,368	27,187
	51.	Strategies for Enhancement of Encrusting Organism Recruitment to Live Rock Aquaculture	Sea Critters Dover, FL	146,526.52	175,230
	52.	Population Genetic Studies of White Shrimp (Penaeus setiferus)	S.C. Department of Natural Resources Charleston, SC	143,483	16,098
	53.	Calibration of Passive Sonar for Assessment of Population Density and General Health of Penaeid Shrimp in Mariculture Ponds	Texas A&M Research Foundation College Station, TX	156,938	18,387
	54.	Effects of Broodstock Diet on Fecundity, egg Quality, and Production in Marine Ornamental Shrimps	Florida Institute of Technology Melbourne, FL	46,063	11,000
	55.	The Effects of Stocking Density and Feeding Rate on Growth, Survival, and Incidence of Cannibalism in Mahimahi (Coryphaena hippurus) Raised in an Intensive Cuture System	Florida Institute of Technology Melbourne, FL	41,915	31,267
	56.	Fishery-Independent Monitoring of the Large Coastal Shark Stock of the Southeastern United States During Periods of Fishery Closure	Gulf & South Atlantic Fish. Dev. Found Tampa, FL	337,103	43,200
	57.	Competitive interaction Measured by RNA/DNA Ratio Comparisons Among Stocked Red Drum, Naturally Spawned Red Drum, Black Drum and Atlantic Croaker Fingerlings	Texas Parks and Wildlife Department Austin, TX	56,824	23,890
	58.	Commercial Demonstration of Land Based Red Drum Aquaculture in Florida	Tampa Bay Tropicals, Inc. Ruskin, FL	537,217	159,400

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Southeast					
	59.	Ozone Parameter Study For Aquaculture Finfish Application in a Novel Foam Fractionator/Filter	Tampa Bay Tropicals, Inc. Ruskin, FL	69,819	48,908
	60.	Age and Growth, Rreproduction, and Risk Analysis of the Blacktip Shark, (Carcharhinus limbatus), in the Gulf of Mexico and Atlantic Ocean	Mote Marine Laboratory Sarasota, FL	121,664	19,442
	61.	Aquisition of the Basic Biological Information Necessary to Assess the Status of the Common Dolphin, 'Coryphena hippurus' Along the Southeast Coast of the United States	S.C. Department of Natural Resources Charleston, SC	109,943	54,722
	62.	From Hatchery to Release in Summer Flounder: Potential Behavioral Deficit, Optimal Habitat for and Environmental Impacts of Mass Releases	North Carolina State University Raleigh, NC	110,745	52,082
	63.	A Survey of the Commercial Tuna Fishery in Puerto Rico for 1997-98 and Development of a Tuna Guide for Commercial Fishermen	Puerto Rico Dept. of Nat. & Env. Res. San Juan, PR	49,668	34,602
	64.	Rapid Determination of Microbial Contamination of Fish and Shellfish by Measurement of Adenosine Triphosphate	Florida Institute of Technology Melbourne, FL	73,848	15,807
	65.	Assessment of Composition and Magnitude of Bycatch Associated with the Live Bait Shrimp Trawling Industry in Texas Coastal Bays	Texas Parks and Wildlife Department Austin, TX	84,537.99	26,863.76
	66.	Evaluation of Bycatch Reduction Device Gear in the Texas Bay Shrimp Trawl Fishery	Texas Parks and Wildlife Department Austin, TX	122,716.45	40,570.8
			Sum	8,485,590.54	2,848,665.19
Southwest					
	1.	Economic Benefits of Dolphins in the United States Eastern Tropical Pacific Purse-Seine Tuna Industry	John Haraden Consulting Del Mar, CA	73,400	9,000

Region		Project Title	Applicant	Requested Federal Funding	Applicant's Cost Share
Southwest					
	2.	Wotje Atoll Fisheries Assessment and Development Project	Timothy Ipo Mehau Majuro, MH	158,502	62,473.5
	3.	Improvement and Expansion of the Recreational Fishing Industry in the Marshall Islands	Marshalls Billfish Club, Inc. Majuro, MH	83,310	21,050
	4.	Carangid Ulua Tag and Release Program	Kinney Louie Hilo, HI	59,421	16,800
	5.	Marketing Survey of Coastal Fisheries in Majuro Atoll, Marshall Islands	MALGOV'T Majuro, MH	55,600	6,400
	6.	Preliminary Studies on Establishing a Milkfish (Chanos chanos) Bail Industry to Support the Tuna Longline Fishery in Pohnpei, Federated States of Micronesia.	Marine & Environmental Research Pohnpei, Fed State of Micronesia, FM	28,490	7,403
	7.	Prey of Large Pelagic Fish; An Educational Brochure	Argonaut Honolulu, HI	76,500	8,000
	8.	Hawaii Squid Fishery Development	Steve Gates Kailua, HI	198,990	23,000
	9.	Effects of Longline Hooks on Marine Turtle Health	Hubbs - Sea World Research Institute San Diego, CA	245,696	112,257
	10.	Mo'omomi Community Marine Resources Conservation: Hawaiian Fishing Management Calendar ('Imi 'Ike)	Hui Malama O Mo'omomi Kaunakakai, Molokai, HI	110,746	71,880
	11.	Investigation of Hawaiian Monk Seal, Monachus schauinslandi, Pelagic Habitat Use: Range and Diving Behavior.	University of Minnesota Minneapolis, MN	221,545	46,492
	12.	Analysis of Acoustic Behavior of Dolphins to Develop Tuna/Dolphins Bycatch Prevention Measures	University of Hawaii Honolulu, HI	91,341	11,000
	13.	Evaluation of the Effectiveness of Using Live Milkfish (Chanos chanos) as Bait on Commercial Longline Vessels.	The Oceanic Institute - Makapuu Point Waimanalo, HI	249,255	96,507

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Southwest					
	14.	Conference on Ornamental Marine Aquaculture	University of Hawaii Honolulu, HI	85,787	18,798
	15.	Standardized Data Collection System	Oceantronics, Inc. Honolulu, HI	74,126	9,225
	16.	Increased Seafood Safety Through an Improved Method for Ciguatera Screening	University of Hawaii Honolulu, HI	138,219	19,800
	17.	Spot Prawn (Pandalus platyceros) Hatchery Culture and Ocean Enhancement Evaluation Study	Charles Edward Winkler San Pedro, CA	29,600	13,400
	18.	Enhancing Marine Recreational Fishery Statistics Survey (MRFSS) to Gather Consumption and Demographic Data	Pacific States Marine Fisheries Comm. Gladstone, OR	196,283	31,518
	19.	DNA Profiles and Reproductive Potential of Selected Fishes in the Commercial Live-Fish Fishery of California	Calif. Polytechnic State Univ. Found. San Luis Obispo, CA	91,026	15,080
	20.	Development of a Signal Processing Algorithm for Fisheries Lidar	The Regents of the Univ of Colorado Boulder, CO	146,755	23,716
	21.	A Proposal to Identify and Assess Important Scientific, Economic, and Social Issues to be considered in Planning, Designing, Siting, Constructing, and Managing Artificial Reefs in Southern California	American Sportfishing Association Alexandria, VA	175,600	48,070
	22.	Developing Genetic Markers in Red Abalone, Haliotis rufescens, for use in Fishery Management and Assesment, Forensic Identification, and Abalone Mariculture	Genetic Identification Services Chatsworth, CA	76,917	24,271
	23.	Effects of Protien Content on the Overall Growth, Gonad Production, and Cellular Gonad Condition of Juvenile Sea Urchins, Strongylocentratus franciscanus and S. purpuratus	Regents University of California Oakland, CA	7,788	1,899
	24.	Enhancement of Culture Techniques for Metamorphosing California Halibut, Paralichthys californicus	Los Angeles Co. Museum of Natural Hist Los Angeles, CA	158,578	120,704

Region		Project Title	Applicant		Requested Federal Funding	Applicant's Cost Share
Southwest						
	25.	The Effects of Ozone on a Kelp Exudate: Implications for Abalone Culture	Cardiff Seafarms, Inc. Cardiff by the Sea, CA		121,103	20,450
	26.	Optimize the Cryopreservation of Sperm from the California Abalone Haliotis rufescens	Cardiff Seafarms, Inc. Cardiff by the Sea, CA		35,329	7,221
				Sum	2,989,907	846,414.5
				Grand Total	26,769,037.06	9,011,798.48