The Saltonstall-Kennedy Grant Program: Fisheries Research and Development

REPORT
2001

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U.S. DEPARTMENT OF COMMERCE
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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) 2001. The report contains information on the S-K Program regarding its legislative authority, the application solicitation and grant selection process, recipients, and funding information.

A notice was published in the *Federal Register* on March 7, 2001, to solicit applications contingent on the FY 2001 allocation. The application review process was initiated in FY 2001, and the S-K Program expects to have approximately $4 million available for grant awards for FY 2001.

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 2001 program. Appendix III contains a list of proposals received in response to the FY 2001 S-K solicitation. These proposals currently are undergoing the review process, and funding recommendations are expected to be made by mid-November 2001. Those proposals recommended will be funded from the FY 2001 S-K allocation. Appendices listing those project applications recommended for funding and those not recommended for funding for FY 2001 will be provided in the 2002 report to Congress.

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

1. The fisheries development goals and funding priorities for a national program of research and development for the next fiscal year

2. A description of all pending fisheries research and development projects

3. A list of those applications approved and disapproved and the total amount of grants made for the current fiscal year

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

5. 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

As noted above, the information required in item 3 is not available for this report due to the timing of the FY 2001 S-K solicitation and will be provided in the next report to Congress.

II. BACKGROUND

The S-K Act, as amended (15 U.S.C. 713c-3), established a fund (known as the S-K fund) that the Secretary of Commerce uses to provide grants or cooperative agreements for fisheries research and development projects. 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.

The S-K Grant Program funding priorities are based on the NOAA Strategic Plan, which was developed in consultation with the public. Further, a request for comments on the scope and funding priorities for the FY 2001 S-K Program was published in the *Federal Register* on February 25, 2000 (65 Fed. Reg. 10051 [February 25, 2000]). The funding priorities and the NOAA Strategic Plan are consistent with the goals and objectives of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). 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. Specific priorities for the FY 2001 S-K Program are conservation engineering, optimum utilization, fishing community transition, and marine aquaculture. 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. NMFS expects to fund one award, dealing with sustainable fisheries, under the National Program from the FY 2001 allocation as directed by Congress. For FY 2002, NMFS plans to make funds available only under the competitive Grant Program, unless otherwise directed.

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. Table 1 indicates the total duties collected on fishery products; the

total receipts in the S-K fund for FY 2001; 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 2001, the S-K allocation was $4.83 million. However, an additional $0.7 million was available for use from unobligated carryover funds and unanticipated prior year recoveries.

Table 1. S-K Funding for FY 2001 ($ in millions)

Funding Item	**Amount**
Total Duties Collected on Fishery Products	$242.76
Total S-K Transfer	72.83
ORF Offset	68.00
S-K Allocation	4.83
Carryover*	0.70
Total Amount Available for S-K	5.53
S-K Program Obligations/Commitments	
Grant Program	TBD**
National Program***	0.85
Program Administration	0.50
Estimated Unobligated Balance	TBD**
Total	TBD**

*Includes unanticipated prior year recoveries and FY 2000 balances not previously obligated.
**To be determined.
***Includes $600,000 for the Alaska Fisheries Development Foundation for activities related to sustainable fisheries (award pending) and $250,000 awarded to the Interstate Shellfish Sanitation Conference for activities related to shellfish safety. These awards are congressionally directed.

As indicated in Table 2 (next page), the available S-K allocation has increased for FY 2001 to its highest amount since FY 1996, with a corresponding increase in allocation as percentage of the total transfer. This trend should continue if total duties continue to show modest increases and if the ORF allocation remains steady at $68.0 million.

Table 2. S-K Funding, 1993–2000 ($ in millions)

Fiscal Year	Total Duties	Total S-K Transfer	ORF Offset	Available S-K Allocation	% of Allocation as Transfer
1993	204.70	61.40	55.00	6.40	10.42
1994	215.89	61.94	54.80	7.14	11.53
1995	242.98	64.77	55.50	9.27	14.31
1996	221.27	72.89	63.00	9.89	13.57
1997	221.27	66.38	66.00	0.38	0.57
1998	219.11	65.73	62.38	3.35	5.10
1999	221.42	66.43	63.38	3.05	4.59
2000	233.07	69.92	68.00	1.92	2.75
2001	242.76	72.83	68.00	4.83	6.73

NOTE: The FY 2001 S-K Grant Program cycle does not coincide with the schedule for publishing this report. A list of proposals received and currently undergoing the competitive review process is provided in Appendix III. FY 2001 funds will be obligated when funding decisions are made (expected to be mid-November 2001). The 2002 report to Congress will contain appendices listing those applications recommended for funding and those not recommended from the FY 2001 cycle.

III. PROGRAM HIGHLIGHTS

THE SALTONSTALL-KENNEDY GRANT PROGRAM AND THE WESTERN PACIFIC: OPPORTUNITIES FOR MEANINGFUL IMPACTS

Introduction

The Saltonstall-Kennedy (S-K) Act established a means of providing technical assistance in the form of grants or cooperative agreements aimed at developing and sustaining many aspects of U.S. fisheries. Recent S-K *Federal Register* announcements for requests for proposals have defined *U.S. fisheries* as any fishery, commercial or recreational, that is, or may be engaged in, by citizens or nationals of the United States, or citizens of the Commonwealth of the Northern Mariana Islands (CNMI), the Republic of the Marshall Islands (RMI), the Republic of Palau (ROP), and the Federated States of Micronesia (FSM). Access to S-K funds is a result of the long and historic role the U.S. has played in the development of many Pacific Islands – many of which were part of the former Trust Territories. The U.S. Insular Pacific consists of the above-mentioned sovereign nations (RMI, ROP, FSM) along with the territories of Guam and American Samoa; the State of Hawaii; and the non–self-governing Pacific Islands of Wake, Johnston Atoll, Palmyra, Howard, and Baker. The area served in the western Pacific is larger than any Exclusive Economic Zone (EEZ) region in the country, including Alaska. In fact, the collective U.S. Pacific Insular EEZs are the largest of any Pacific coastal state (between the latitudes of 40 degrees North and 40 degrees South). The vast majority of the inhabitants of these islands and atolls are somehow tied to coastal or pelagic marine resources, whether it be for subsistence, recreational, commercial fishing, or "non-consumption" uses such as eco-tourism.

Perhaps more than any other community within the U.S., the inhabitants of the U.S.-affiliated Pacific Insular areas are truly dependant upon the sea. As with many areas in the world, increased population is taking its toll on the local fisheries. Recognizing the growing demands of the region, S-K grant funds have recently been awarded to organizations for projects that both conform to a traditional fisheries development paradigm (e.g., development of underutilized resources) as well as support unique and innovative activities in an effort to understand and efficiently utilize and conserve the precious marine resources of the Pacific. The following section outlines some recently completed S-K projects in the Western Pacific that highlight the unique challenges faced by coastal communities on those islands. Following that, a project in Palau is analyzed in some detail to demonstrate the scope and effectiveness of the S-K program in the Western Pacific.

Investigating Opportunities for Sustainable Development

Two Western Pacific S-K projects completed in 2000 and 2001 attempted to assess domestic fisheries development potential and educate novice fishermen in subsistence fishing methods and values. One of

the projects, entitled "Economic Assessment of the Domestic Fisheries Development Potential of the Commonwealth of the Northern Mariana Islands (CNMI)," attempted to determine why domestic pelagic fisheries have not developed in the CNMI. The investigators utilized a dock-side intercept interview methodology to obtain input from fishermen and assess profitability of the existing fishery. The investigators found that development of larger-scale domestic pelagic fisheries in the CNMI does not appear to be likely at this time because the available infrastructure is not oriented toward commercial fishing and is not cost competitive with other ports (e.g., Port of Guam). Thus, the investigators suggested that efforts to develop the pelagic fisheries of the CNMI should focus on improvements in the existing small-boat pelagic fishery.

Another project, entitled "Education in Subsistence Fishing Methods and Values: Mo'omomi Community Subsistence Fishing Area, Island of Molokai, Hawaii," attempted to design and implement an educational program to initiate novice fishermen in subsistence fishing methods and values and to facilitate exchange of resource knowledge between subsistence fishers and scientifically trained fishery managers. This grant helped support an annual program that trains intermediate- and high school-aged youths in subsistence fishing methods/values. In addition, with the help of outside scientific expertise, the grant recipient established a resource monitoring program at the subsistence fishing area.

A third, ongoing project entitled "Re-Training of Hawaiian Micronesian Fisherfolk as Pearl Culture Seeding Technicians," is designed to provide basic training in all aspects of oyster biology and pearl farm husbandry and seeding of mabe pearls. According to the project description, the grant recipient will provide the basic training, and a master seeding technician then will provide an intensive training course, including one-on-one supervision of seeding. Results of seeding trials will be used to select the two most promising candidates for further training. These candidates then will continue on-the-job training and assist in maintenance and conditioning of the oysters for a second set of seeding trials.

These three projects have attempted and are attempting to prepare Western Pacific fishermen for a changing future that might include fully developed and expanded domestic fisheries, sustainable subsistence fishing methods, or new careers like pearl culture seeding. If allocations for the S-K Program continue to increase as they have for FY 2001, the program should be able to continue to try to meet the needs of fishermen in the Western Pacific.

Introducing Eco-tourism as an Alternative

The Republic of Palau is at a crossroads with respect to the management of living marine resources and protection of the marine environment. In April 2000, the Palau Conservation Society completed a final report for a project supported by the S-K Program entitled "Sustainable Sport Fishery Development for Palau: Demonstration Project." This demonstration project was undertaken in an effort to address issues related to inshore fisheries optimization, job creation, and resource allocation. The Palau Conservation Society partnered with the Palau Marine Resources Division, The Nature Conservancy, the South Pacific Forum Fisheries Agency, the Pacific Community, the Guam Department of

Agriculture Division of Aquatic and Wildlife Resources, and the University of Washington's Marine Affairs Program for this project.

The Republic of Palau is a small Pacific Island nation that entered into a compact of Free Association with the United States in 1994. The current population is 15,000 along with 5,000 foreign guest workers. In 1993, Palau was characterized as having the "richest reefs in the Pacific with the highest species diversity" by the World Conservation Union. Although sustainable subsistence fishing has been practiced for more than 2,000 years, more recently introduced commercial inshore fishing has created the potential for unsustainable marine resource extraction.

One pressing problem in Palau concerns the viability of small-scale fisheries. These small-scale fisheries have considerable economic, nutritional, and cultural importance in Palau. In 1995, the number of full-time and part-time fishermen deriving an income from the sale of inshore species was estimated at roughly 850 persons (or 6% of the local population). This figure dramatically increases when non-commercial fishing activities (e.g., subsistence fishing for consumption by the nuclear and extended family, subsistence fishing for sharing and non-market exchange, and fishing for sport) are taken into account.

Today, the niche of small-scale inshore fishermen is widely acknowledged to be at risk. This is a consequence of a number of factors including the displacement of fishermen from fishing grounds (arising from conflicts with scuba divers and from the implementation of area, seasonal, and species harvest restrictions). At present, the inshore fisheries resource base is widely considered by fishermen and resource managers to be in decline, and for some important species, at risk of collapse. This is a pressing issue as this resource base supports not only the fishermen, but also Palau's fish consumers, tourism sector (especially through diving experience but also through fish consumption at local restaurants), and Palauan culture.

The growing demand on Palau's inshore marine resources created both a constraint and opportunity for alternative income generation. Building on this, the Palau Conservation Society, working in conjunction with the Palau Marine Resources Division and The Nature Conservancy, identified appropriate sportfishing development as an opportunity to address some of the pressing resource and user-conflict issues emerging in Palau.

This project was partially based on the concept that the development of sportfishing in Palau would simultaneously address several general problems related to efficiency and allocation. The first problem was the fact that Palau's reef fish stocks are widely acknowledged to be in decline. These resources support several of the country's most important economic sectors, as well as Palau's culture itself. Second, Palau's reef fish stocks are not being used in a way that leads to the derivation of their greatest value. Finally, the flow of benefits from tourism has largely been restricted to the urban center of Koror, with few benefits reaching the outlying states. Although the development of sportfishing was

proposed as a solution to these general problems, this particular project addressed two specific problems. First, small-scale commercial fishermen are unlikely to bear the risks of making the transition from commercial/subsistence fishing to sportfishing (as guides) without seeing successful demonstrations and receiving appropriate training. Second, Palau's state governments–the resource owners–are unlikely to design and implement appropriate management regimes for their inshore resources without expert assistance.

The specific accomplishments of the S-K supported project were to (1) organize fishermen and tourism brokers into a sport fishery system; (2) test, evaluate, and improve the system; and (3) provide assistance to Palauan states in the management of their inshore resources. A professional job profile and strategy was developed for small-scale Palauan fishermen diversifying into the sport fishery. Sportfishing trials were successfully conducted involving Palauans from Koror and the Northern Reefs. International angler-tourists participated in the trials and provided evaluations of the potential in Palau for sportfishing and advice for improvement of the project. This project helped advance a variety of laws and policies pertaining to the protection of sport fish and marine environmental resources and to the development of a sport fishery. In addition, this project helped promote legislative attention to the creation of sportfishing and conservation zones. This project also created a new occupational niche for fishermen and developed a training program for fishermen and tourism brokers. Finally, the project provided assistance to national and state leaders in the design of marketing materials and strategies.

The benefits of developing a new niche for small-scale local fishermen are self-evident. The real issues are economic and social sustainability. It is unclear at present whether, despite the successful implementation of this S-K project, over-exploitation of Palau's inshore fishery resources can be avoided. It is not certain that an indigenously owned and operated inshore sport fishery will fully develop. However, it is possible to conclude that modest program resources can be leveraged to bring a variety of multidisciplinary interests together to focus, in an effective and efficient manner, on pressing marine resource development, conservation, and management issues in the Western Pacific.

IV. PENDING GRANT PROGRAM PROJECTS

This 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: University of Alaska, Fairbanks, AK
Grant No.: NA06FD0172 *NMFS Contact*: F/AKR
Project Title: Utilization Options for Bitter Crab
Funding: *Federal*: $76,669 *Recipient*: $16,111

Description: To (1) identify the chemical compound(s) responsible for the flavor found in bitter crab and develop a bitterness scale for product evaluation; (2) develop processing methods that can be used prior to cooking, during cooking, or during cooling and/or subsequent handling to eliminate, reduce, or mask bitter flavors; and (3) develop a secondary product from picked crab meat should results from earlier tests be only partially successful.

MANAGEMENT ALTERNATIVES AND FISHERIES USER CONFLICTS

Grantee: University of Alaska, Fairbanks, AK
Grant No.: NA06FD0171 *NMFS Contact*: F/AKR
Project Title: Population Structure of Rougheye, Shortraker, and Northern Rockfish Based on Analysis of Mitochondrial DNA Variation and Microsatellites: Completion
Funding: *Federal*: $135,466 *Recipient*: $28,624

Description: To combine the use of mitochondrial DNA (mtDNA) and microsatellite variation to characterize additional collections of rougheye and northern rockfish and complete analyses of shortraker rockfish. With S-K funding (in part), the PI has developed PCR-based techniques for analysis of variation in rockfish mtDNA. Preliminary analysis of North Pacific rougheye revealed strong genetic heterogeneity among collections of fish in the Gulf of Alaska and Aleutian Islands. These differences indicate a population structure that most likely results from reproductive isolation. In contrast, a cursory examination of shortraker rockfish revealed little variation and, hence, no basis for making conclusions. Preliminary analysis of mtDNA and microsatellites from northern rockfish show variation, but sample sizes are too small to infer population structure. Population structure is often revealed from patterns of genetic variation. To accomplish this, the investigators have developed primers to amplify rockfish mtDNA regions that they have not analyzed and have developed primers to analyze variation at available microsatellite loci. An increased number of collections and individuals and the addition of microsatellite analysis will provide improved information that should more clearly delineate the nature of stock structure

of these rockfish species in the Gulf of Alaska and Aleutian Islands.

Grantee: University of Washington, Seattle, WA
Grant No.: NA96FD0055 *NMFS Contact*: F/AKR
Project Title: The Effects of Fishery-Induced Directional Selection on Run Timing in Sockeye Salmon
Funding: *Federal*: $80,903 *Recipient*: $8,467

Description: To (1) quantify selection pressure on run timing by comparing the temporal pattern of escapement with that of the total run (catch plus escapement) in five fishing districts for the last 35-40 years; (2) examine whether the selective pressure on run timing increases with the systems by compiling the data on total run and compare predicted change to absolute change per system; (3) estimate the heritability of run timing within these populations; and (4) measure the potential correlated effects of selection for run timing on selection for spawning time through two related field studies.

Grantee: Squaxin Island Tribe, Shelton, WA
Grant No.: NA96FD0130 *NMFS Contact*: F/NWR
Project Title: Rebuilding Naturally Spawning Coho Salmon Stocks--An Assessment of Bycatch Reduction Measures and Spawning Escapement Stock Composition in the Southern Puget Sound (Fishery Management Area 13 D-K)
Funding: *Federal*: $141,768 *Recipient*: $141,768

Description: To estimate the stock composition and the abundance and distribution of hatchery and naturally-spawned coho salmon contributions to the Tribal commercial coho salmon fishery. The Squaxin Tribe will sample 100% of the fishery. All salmon will be examined for marks and coded wire tags. Scale samples will be collected. Adult sampling weirs will be installed on Skookum Creek and Mill Creek, which feed Area 13 D-K. Fish caught in the weirs will be examined to assess the straying rate of hatchery-origin coho salmon in Area 13 D-K creeks, to estimate the stock composition of the spawning escapement. In addition to collecting mark, tag, and scale data at the weirs, other selected creeks in Area 13 D-K will be surveyed to recover coho carcasses. Those fish will be examined for marks and coded wire tags. Scale samples will be collected to determine origin.

Grantee: Northwest Indian Fisheries Commission, Olympia, WA
Grant No.: NA76FD0405 *NMFS Contact*: F/NWR
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, Washington, 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: Regents of the University of California, Santa Barbara, CA
Grant No.: NA96FD0208 *NMFS Contact*: F/SWR
Project Title: Restoration of the White Abalone in Southern California: Population Assessment, Brood Stock Collection, and Development of Husbandry Technology
Funding: *Federal*: $244,806 *Recipient*: $105,841

Description: To develop the basic husbandry and culture techniques and a biological habitat model for white abalone. The study will include a field work component and a laboratory/culture component. In the field work component, live, individual broodstock abalone will be located using a manned submersible and collected by hand using scuba divers. Existing bathymetry data will be entered into a geographic information system to generate a map identifying optimal search areas for white abalone habitat. The bathymetry data and flora and fauna data collected during the survey will be used to develop the habitat model to help researchers identify optimal areas for future white abalone outplanting and restoration work. The husbandry and culture techniques will be developed in the laboratory/culture component. These techniques may help establish white abalone as an important aquaculture food product for the current abalone aquaculture industry, and provide individuals for use in restoration.

Grantee: University of Rhode Island, Narragansett, RI
Grant No.: NA06FD0180 *NMFS Contact*: F/NER
Project Title: Age of Loligo with Respect to Season, Location, and Depth
Funding: *Federal*: $48,007 *Recipient*: $9,294

Description: To identify the timing and location of different spawning periods of Loligo. This research will be part of a collaborative effort with the NMFS's Northeast Fisheries Science Center in Woods Hole, Massachusetts. The main set of samples was collected by NMFS during their fall, winter, and spring surveys from the mid-Atlantic bight, Southern New England, Georges Bank, and the Gulf of Maine. Summer and fall inshore samples were also obtained. The squid from representative subsamples has been weighed and measured, and their sexual maturity has been determined. The resulting 915 pairs of statoliths will be used to age the subsamples. These data will provide the necessary detail to identify the timing and location of the different spawning periods. This work is an extension of previously funded S-K research.

Grantee: Virginia Institute of Marine Science, Gloucester Point, VA
Grant No.: NA06FD0182 *NMFS Contact*: F/NER
Project Title: Community-Based Area Management Strategies and Capacity Reduction Programs for the Sea Scallop Industry
Funding: *Federal*: $179,565 *Recipient*: $76,914

Description: To develop a collaborative or community-based adaptive response program to permit communities and individuals associated with the northwest Atlantic sea scallop fishery to plan for area management strategies and capacity reduction programs. The study also proposes to develop a framework to allow communities and individuals to be more involved in area management and capacity reduction programs. This is the only way to ensure that the needs of the communities and individuals are adequately considered.

Grantee: University of Maryland, Cambridge, MD
Grant No.: NA96FD0071 *NMFS Contact*: F/NER
Project Title: Test of Two Stock Hypotheses for Atlantic Bluefin Tuna Using Otolith Elemental Fingerprints
Funding: *Federal*: $88,374 *Recipient*: $22,207

Description: To determine the spatial and temporal stability of elemental fingerprints classified for Mediterranean and western Atlantic bluefin tuna nurseries, using results from a previous S-K project on otolith microconstituent analysis. Juvenile otoliths collected over two years and among several sites within each nursery will be analyzed. Inductively coupled plasma mass spectrometry will also be evaluated to determine the elemental fingerprints associated with the first year of life.

Grantee: University of Maryland, Cambridge, MD
Grant No.: NA96FD0073 *NMFS Contact*: F/NER
Project Title: Recruitment Dynamics of Northern Shrimp (*Pandalus borealis*)
Funding: *Federal*: $92,789 *Recipient*: $21,871

Description: To investigate the influence of physical factors, excluding temperature, on northern shrimp recruitment. The match-mismatch hypothesis in relation to shrimp recruitment will also be investigated. A stock-recruitment model, incorporating the effects of significant environmental and ecological variables, will be developed. In addition, potential overfishing definitions of northern shrimp, with explicit consideration of the impact of environmental and ecological variation, will be explored.

Grantee: Rhode Island Lobstermen's Association, Wakefield, RI
Grant No.: NA96FD0074 *NMFS Contact*: F/NER
Project Title: Tagging Study to Improve Biological Information Concerning the Overfished Status of the American Lobster
Funding: *Federal*: $70,508 *Recipient*: $37,500

Description: To enhance data collection for American lobster stock assessment purposes. Fishermen will tag and v-notch sublegal and legal female lobsters (60,000) during the year. Upon recapture, information concerning growth, movement, molting probability, and egging frequency will be collected.

Biologists from the University of Rhode Island and the Rhode Island Department of Environmental Management will analyze the data and provide biological information to the Atlantic States Marine Fisheries Commission Lobster Technical Committee. The data will be used in the eggs per recruit model for Area 2 and may also prove useful for Areas 3 and 6.

Grantee: University of Maryland, Cambridge, MD
Grant No.: NA96FD0076 *NMFS Contact*: F/NER
Project Title: Density-Dependent Growth and Reproduction of Chesapeake Bay Striped Bass
Funding: *Federal*: $88,702 *Recipient*: $23,404

Description: To estimate the age and year class-specific growth rates of Chesapeake Bay striped bass juveniles, pre-migrant sub-adults, and migratory females. Evidence for density dependence in growth will also be examined. In addition, fecundity and age at first maturation for females of year classes varying in initial abundance will be estimated, and the density effects on these rates will be tested. Finally, the importance of these density-dependent effects in calculating biological reference points and overfishing thresholds will be evaluated.

Grantee: University of Delaware, Lewes, DE
Grant No.: NA96FD0079 *NMFS Contact*: F/NER
Project Title: Genetic Monitoring of Oyster Stock Enhancement in the Chesapeake Bay
Funding: *Federal*: $68,835 *Recipient*: $24,819

Description: To use a genetic marker to distinguish Louisiana oyster seed outplanted in the Choptank River from resident oysters. Oyster seed of Louisiana origin were planted in the Choptank River at several defined sites in 1997. The survival and reproductive success of outplanted oyster seed will be evaluated in 1999 and 2000. This is a unique opportunity to capitalize on an ongoing stock enhancement program, and will provide direct information on its efficacy. The information obtained will be of immediate regional relevance and will highlight the value of genetic monitoring in shellfish and finfish enhancement.

Grantee: Community Economic Development Center of Southeastern Massachusetts, New Bedford, MA
Grant No.: NA96FD0080 *NMFS Contact*: F/NER
Project Title: Fishing Industry Cooperative Enterprises Co-Production Training Program
Funding: *Federal*: $103,202 *Recipient*: $94,344

Description: To develop an innovative training program for the transition of displaced fishers to aquaculture, hydroponics, and other related professions, while promoting hybrid striped bass aquaculture. This three stage comprehensive training program will be implemented on a continuous basis, with each

stage lasting three months. The stages will be presented in the following sequence: (1) basic concepts (12 students); (2) apprenticeship (8 students); and (3) internship (4 students). Bristol Community College will provide education assistance and aquaculture courses. Eastern Fish Farms, Inc. will provide both the hydroponics/aquaculture training program and facility supervision. The demonstration facility will be constructed coincidental to program start-up with funds from the Hitachi Foundation.

Grantee: University of Delaware, Lewes, DE
Grant No.: NA46FD0329 *NMFS Contact*: F/NER
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 for amplification and efficient selection of individuals for further examination by restriction fragment length polymorphism analysis or direct DNA sequencing.

Grantee: South Carolina Department of Natural Resources, Charleston, SC
Grant No.: NA06FD0300 *NMFS Contact*: F/SER
Project Title: Evaluation of an Alternative Harvesting Methodology for Horseshoe Crabs and Determination of Juvenile Life History Parameters in a Nursery Habitat
Funding: *Federal*: $52,994 *Recipient*: $5,998

Description: To compare the methodology of hand harvesting to current harvesting methods and a control group at three sites in South Carolina. Hand harvest of spawning animals 30 minutes after time of predicted high tide may allow most animals to successfully spawn before being harvested without affecting harvesting totals. Juvenile horseshoe crabs in three nursery habitats will be studied to determine growth rates, survivability, age class structure, and behaviors. Preliminary experimental design work for each study has been completed by the South Carolina Department of Natural Resources. Information obtained within these studies will be presented to the Atlantic States Marine Fisheries Commission's (ASMFC's) Horseshoe Crab Technical Committee for dissemination and management use. These research needs are specified within the ASMFC Horseshoe Crab Fisheries Management Plan.

Grantee: Texas A&M Research Foundation, College Station, TX
Grant No.: NA06FD0301 *NMFS Contact*: F/SER
Project Title: Assessment of Natal Origin and Stock Structure of Atlantic Bluefin Tuna using Otolith Elemental Fingerprints
Funding: *Federal*: $61,165 *Recipient*: $18,334

Description: To continue sampling efforts to complete the assessment of spatial and temporal "stability" of otolith elemental fingerprints and to quantify trace element signatures of juvenile bluefin tuna from 2000

and 2001 from both the western and eastern Atlantic. This research builds on two previously funded otolith microconstituents studies funded by the S-K Program. First-year support was obtained to develop otolith handling and cleaning protocols and standardization of procedures for otolith microconstituent analysis of Atlantic bluefin tuna using inductively coupled plasma mass spectrometry. A second year of support has been used to examine spatial and temporal scales to determine whether differences in elemental fingerprints are consistent over time or within a given spawning ground. This current research project is the next logical step in evaluating the reliability of elemental fingerprints for discriminating stocks of Atlantic bluefin tuna. By collecting specimens from several year classes and regional nurseries, the reproducibility or stability of trace element signatures can be rigorously tested. In addition, samples from two additional age classes will also provide the necessary data to construct a database of elemental fingerprints that can be used in the future to determine the natal origin of Atlantic bluefin tuna.

Grantee: Virginia Institute of Marine Science, Gloucester Point, VA
Grant No.: NA97FD0063 *NMFS Contact*: F/SER
Project Title: Development of Hypervariable, Nuclear-DNA Markers for Population Structure Analysis of Atlantic Bluefin Tuna
Funding: *Federal*: $125,866 *Recipient*: $21,539

Description: To develop a minimum of ten single-copy-nuclear (scn) DNA loci and 20 microsatellite DNA loci specific for Atlantic bluefin tuna using procedures developed previously by the grantee. For scnDNA loci, a bluefin tuna genomic library will be used to generate fragments 0.5-2.0 kilobase pairs in length. Appropriately sized, single-copy fragments will be sequenced to develop primer pairs for amplification using the polymerase chain reaction (PCR). Amplified loci will be digested with a suite of restriction endonucleases to identify polymorphic locus/enzyme combination. For microsatellite DNA loci, radiolabeled tri-and tetra-nucleotide probes will be used to identify candidate loci from a genomic DNA library. Candidate loci will be sequenced to identify PCR primer pairs, and amplification with individual primer pairs will be optimized. For both types of DNA markers, 20-30 individuals sampled from the western Atlantic Ocean and Mediterranean Sea will be screened to document polymorphism and identify allelic variants.

Grantee: University of South Carolina, Columbia, SC
Grant No.: NA97FD0064 *NMFS Contact*: F/SER
Project Title: Spatial and Temporal Analyses of Genetic Variability in Bigeye and Yellowfin Tuna Larvae
Funding: *Federal*: $80,000 *Recipient*: $13,120

Description: To assess samples of larval tuna obtained from the Gulf of Guinea for genetic variation at both mitochondrial and nuclear DNA loci. Nuclear markers will include both restriction fragment length polymorphisms and microsatellite loci. The resulting data will be analyzed to determine whether the genetic variation observed in single samples is representative of that found in the adult population. Also, samples obtained at different seasons or in successive years will be compared to determine seasonal and temporal variation. Ultimately, these results will be used to develop a monitoring scheme for the

assessment of tuna reproduction in the Gulf of Guinea, off the west coast of Africa. In addition, the data will be useful for establishing monitoring schemes for other tuna spawning areas for other large pelagic fish.

Grantee: South Carolina Department of Natural Resources, Charleston, SC
Grant No.: NA97FD0066 *NMFS Contact*: F/SER
Project Title: Sampling and Evaluation of White Spot and IHHN Virus in Commercially Important South Atlantic Penaeid Shrimp Stocks
Funding: *Federal*: $136,931 *Recipient*: $42,494

Description: To screen samples of native shrimp for white spot and infectious hypodermal and hematopoietic necrosis (IHHN) viruses. Based on statistically rigorous protocol, shrimp samples will be collected during existing sampling cruises and archived. All samples will undergo an initial screen for the viruses by polymerase chain reaction, a technique successfully used by these researchers to identify viruses in local crustacean stocks. Suspect samples will be further analyzed by histopathology. Viral identification and pathogenicity will be confirmed in controlled bioassay studies. All data will be entered into an existing inventory relational database and analyzed statistically to evaluate incidence and distribution. Results summarizing the viral disease status of indigenous stocks will be disseminated in presentations, reports, and publications.

Grantee: University of Puerto Rico, San Juan, PR
Grant No.: NA97FD0069 *NMFS Contact*: F/SER
Project Title: Management of the Red Hind Fishery in Western Puerto Rico through a Regional Demographic Analysis
Funding: *Federal*: $144,100 *Recipient*: $91,364

Description: To develop and parameterize a population model for managing red hind (*Epinephelus guttatus*) in western Puerto Rico (PR). Red hind are one of the most commercially important species of the Caribbean, the Bahamas, and Bermuda. Increasing fishing pressure has caused substantial reduction in size and structure of the stock that threatens to collapse the fishery. The University of Puerto Rico researchers will work cooperatively with the PR State Fisheries Laboratory to develop a scientifically based management plan for this fishery. Information from adult demography, larval settlement patterns, and the genetic structure of adults and settling larvae will be combined into a single cohesive management framework. This project, which relies heavily on local fishermen, will furnish government managers and lawmakers with data to chart stock recovery and evaluate location, numbers, and size of proposed Marine Fishery Reserves across PR. Since red hind share a suite of life history characteristics with other large serranids, the demographic information and management strategies generated in this project can be easily extended to other threatened grouper fisheries.

FISHERIES BYCATCH

Grantee: University of Washington, Seattle, WA
Grant No.: NA96FD0120 *NMFS Contact*: F/AKR
Project Title: Reducing Seabird Bycatch in the North Pacific Longline Fisheries
Funding: *Federal*: $180,000 *Recipient*: $20,090

Description: To establish an industry-university collaboration to test a subset of required seabird bycatch mitigation devices on active commercial longline vessels using specially trained fishery observers. This work will be conducted in two fisheries during the 1999 and 2000 fishing seasons: The Individual Transferrable Quota sablefish and halibut longline fisheries operating in the Gulf of Alaska; and the Pacific cod fishery operating in the Bering Sea/Aleutian Islands area. Two required mitigation devices will be compared to a control in each fishery. The data collection and analysis strategy focuses on linking seabird abundance and behavior data during gear deployment to observed hooking rates. In addition, the species-specific interactions of seabirds with longline fishing gear on active fishing vessels will be characterized. The investigators will work with the industry and resource management agencies in developing recommendations for specific seabird bycatch avoidance regulations and performance standards based on project results. Recommendations for future research projects and research protocols will also be developed.

Grantee: University of Alaska Fairbanks, Fairbanks, AK
Grant No.: NA76FD0037 *NMFS Contact*: F/AKR
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 University of Alaska Fishery Industrial Technology Center, 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 adapted to separate flatfish species.

Grantee: Washington Department of Fish and Wildlife, Olympia, WA
Grant No.: NA06FD0278 *NMFS Contact*: F/NWR
Project Title: Evaluate Tangle Nets for Selective Fishing
Funding: *Federal*: $78,377 *Recipient*: $23,468

Description: To fish tangle nets at several locations and estimate catch per set, species composition, and immediate mortality of all species caught. The tangle net is analogous to a small meshed gill net, but rather than gilling the fish, it entangles the fish by the teeth or maxillary bones. The fish are able to continue respiring and can be released live from the net. The investigators will compare our results to a conventional gill net to evaluate reductions in bycatch. All fish released from the tangle net will be tagged for later recovery at hatcheries and on spawning grounds for estimation of their long-term survival.

Grantee: Pfleger Institute of Environmental Research, Oceanside, CA
Grant No.: NA06FD0447 *NMFS Contact*: F/SWR
Project Title: A Device for Greatly Reducing Fishing Mortality for Protected Giant Seabass (*Stereolepis gigas*) and Jewfish (*Epinephelus itajara*)
Funding: *Federal*: $19,211 *Recipient*: $15,999

Description: To create a device that returns fish back to the bottom using detachable (and recoverable) weights, eliminating unintentional mortalities. California's giant seabass and Florida's jewfish are both very large protected species that are incidentally caught by recreational and commercial hook and line anglers. When brought to the surface, the air in the swim bladder of these fishes expands greatly, making the fish so buoyant that it cannot swim back to the bottom when released. Good-intentioned anglers often pierce the body wall and swim bladder to vent the excess air. However, when the fish swims away, it usually dies from the injury.

Grantee: New England Aquarium Corp., Boston, MA
Grant No.: NA06FD0177 *NMFS Contact*: F/NER
Project Title: Increasing Juvenile Cod Bycatch Survival in a Northwest Atlantic Longline Fishery
Funding: *Federal*: $99,457 *Recipient*: $88,307

Description: To (1) augment the survival data already collected on juvenile cod bycatch caught by demersal longlines, (2) quantify mitigated survival of juvenile cod bycatch caught by demersal longlines when treated by immersion in solutions of potassium chloride, (3) quantify the degree of physiological stress experienced by juvenile cod bycatch caught by demersal longlines through the analysis of biological parameters in the blood, and (4) continue to solicit advice from longline fishermen relative to increasing the survival of groundfish discards.

Grantee: Manomet, Inc., Manomet, MA
Grant No.: NA06FD0183 *NMFS Contact*: F/NER
Project Title: Development of Cod Excluder Devices for Northwest Atlantic Trawl Fisheries
Funding: *Federal*: $71,500 *Recipient*: $40,600

Description: To test the effectiveness of a new bycatch reduction device (Ex-It) in reducing the inadvertent catch of undersized fish in the northwest Atlantic. The study will focus primarily on retention of juvenile and undersized cod. This will be an international venture involving the Manomet Center for Conservation Sciences, Massachusetts Division of Marine Fisheries, Maine Department of Marine Resources, Canadian Department of Fisheries and Oceans, commercial fishermen, and industry input from Nordurnet, Iceland. Sea trials on board chartered commercial fishing vessels will be conducted in the Gulf of Maine and in Canadian territorial waters. Selectivity parameters of trawl nets with and without the Ex-It bycatch reduction device will be determined. Trials with different grid spacings will be conducted to determine the most appropriate configuration for small-cod exclusion. Video observations will be made on the behavior of fish in the vicinity of the bycatch reduction device, and detailed behavioral analysis will be

carried out. Reports and videotapes will be made available to all interested parties. Recommendations on the effectiveness of the bycatch reduction device will be made available to fisheries managers in both the USA and Canada.

Grantee: Massachusetts Division of Marine Fisheries, Boston, MA
Grant No.: NA96FD0072 *NMFS Contact*: F/NER
Project Title: Developing a Low Impact Sea Scallop Dredge
Funding: *Federal*: $35,388 *Recipient*: $10,994

Description: To verify whether bay scallops and sea scallops respond to certain acoustic stimuli, and ascertain if a dredge could be developed that would take advantage of this behavior. Observations of bay scallops *in situ* have shown that they react to certain acoustic stimulation and will swim vertically off the sea bottom. The dredge would be of a type that lightly skims over the sea bottom, thus reducing impact to the benthos which would, if associated with bay scallop harvesting, include eel grass.

Grantee: New England Aquarium Corporation, Boston, MA
Grant No.: NA86FD0108 *NMFS Contact*: F/NER
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.

PRODUCT QUALITY AND SAFETY

Grantee: University of Alaska, Fairbanks, AK
Grant No.: NA96FD0052 *NMFS Contact*: F/AKR
Project Title: Evaluation of Ozone for Ready-to-Eat Seafoods
Funding: *Federal*: $80,715 *Recipient*: $16,143

Description: To (1) determine ozone concentrations necessary for inactivating microbial biofilms on seafood equipment and reducing microbial counts on raw material used for ready to eat (RTE) production; (2) evaluate the effect of ozone on Listeria monocytogenes inoculated seafoods; (3) measure shelf life characteristics of ozone treated RTE seafoods; and (4) compare ozone and chlorine treatments for RTE production in a commercial operation.

Grantee: University of Alaska, Fairbanks, AK
Grant No.: NA96FD0053 *NMFS Contact*: F/AKR
Project Title: Seafood HACCP Validation Using the ATP Bioluminescent Assay
Funding: *Federal*: $63,133 *Recipient*: $7,939

Description: To (1) compare adenosine triphosphate (ATP) bioluminescent assays to aerobic plate count methods to determine surface contamination levels on processing lines, equipment surfaces, and utensils after sanitation by plant personnel; (2) compare contamination load on surfaces after different processing and sanitation shifts and correlate residual sanitizer (chlorine and quaternary ammonium compounds) concentration on surfaces with ATP bioluminescence levels; (3) determine if the ATP bioluminescent assay distinguishes microbial contamination of raw materials from non-microbial ATP for use as a control point at receiving; and (4) conduct in-plant workshops and demonstrations of the ATP bioluminescent assay and determine if microbial quality of raw products improves after training of plant personnel.

Grantee: University of Washington, Seattle, WA
Grant No.: NA86FD0393 *NMFS Contact*: F/NWR
Project Title: Harmful Algal Blooms and their Impacts on Shellfisheries and Finfisheries in Western Washington
Funding: *Federal*: $216,551 *Recipient*: $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 descriptions 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. These data will allow researchers to better understand the temporal and spatial variability of various harmful species in the region.

Grantee: University of Arizona, Tucson, AZ
Grant No.: NA06FD0448 *NMFS Contact*: F/SWR
Project Title: Development of Real-Time PCR Assays for Detection of White Spot Syndrome Virus, Yellow Head Virus, Taura Syndrome Virus, and Infectious Hypodermal and Hematopoietic Necrosis in Penaeid Shrimp
Funding: *Federal*: $75,393 *Recipient*: $47,671

Description: To develop a rapid, sensitive, and reliable method (real-time PCR) for screening shrimp viruses. This method can be employed at points of entry so that imports can continue and the U.S. shrimp industry will be protected. This method also can be used to screen U.S. shrimp and marine products that are being exported to the growing number of countries requiring certification. Viral diseases in marine shrimp have become prevalent and caused severe economic losses in many countries. Several virulent viruses have been spread to other countries through trade in live and commodity shrimp and infected farm

shrimp and wild stocks. Following the lead of its major trade partners in the Americas, the U.S. government may ban imports of shrimp from countries known to have viral epizootics. Such a ban would constitute a trade barrier that would adversely affect a $12 billion industry in shrimp importation in the U.S.

Grantee: University of Massachusetts–Amherst, Amherst, MA
Grant No.: NA06FD0178 *NMFS Contact*: F/NER
Project Title: Improvement of Oxidative Stability of Encapsulated Fish Oil in Food Powders
Funding: *Federal*: $92,073 *Recipient*: $33,798

Description: To study the physical effects on lipid oxidation of fish oil in encapsulated systems. Lipid oxidation of powders is principally determined by the physico-chemical properties of the emulsion droplets and encapsulating matrix, the presence of antioxidants, and the processing condition. The information gained from this project will lead to future technological innovation for increased utilization of fish oil in commercial food products. These innovations will be of considerable benefit to U.S. fisheries.

Grantee: University of Rhode Island, Kingston, RI
Grant No.: NA06FD0179 *NMFS Contact*: F/NER
Project Title: Industry Pilot to Evaluate the Ammonia Ion Selective Electrode for Use as a Simple, Rapid Determination of Seafood Quality
Funding: *Federal*: $99,265 *Recipient*: $28,510

Description: To implement a pilot program to transfer ion selective electrode technology to the seafood industry. Ion selective electrode methodology has been successfully developed for routine monitoring of volatiles in seafood (AOAC 999.01) for quality, particularly characteristics of initial decomposition. Organization of the 6-month pilot will be accomplished with the cooperative efforts of the National Fisheries Institute, which will solicit the 8–10 companies for their involvement in the project. All meters, probes, and reagents necessary will be assembled in a kit form and donated by Orion Research, Inc. Additional chemical, microbiological, and sensory testing, as well as verification of industry results, will be done at the Food Science and Nutrition Department at the University of Rhode Island, the Rhode Island Department of Health, and/or the Sensory Division of the NMFS Inspection Branch to add to the existing seafood database. Results will be statistically analyzed, and information will be disseminated through participant survey and informal forums/workshops.

Grantee: University of Southern Mississippi, Hattiesburg, MS
Grant No.: NA06FD0298 *NMFS Contact*: F/SER
Project Title: A Histamine Dipstick Test for Spoilage in Fisheries Products
Funding: *Federal*: $57,023 *Recipient*: $23,723

Description: To incorporate a recombinant enzyme (the investigators currently are in the process of cloning and expressing kidney diamine oxidase) into a second-generation histamine dipstick, which then will

be compared to the standard AOAC test in a method validation study. Scombroid poisoning is a form of chemical poisoning that occurs when consumers ingest spoiled tuna and related fish. It typically is associated with high levels of histamine produced by bacterial decomposition of these fish. Because odor and appearance do not reliably indicate this type of spoilage, a simple test for histamine that can be used in widespread quality-control testing of fisheries products is needed. The investigators have developed and published such a rapid test in the form of a dipstick. Before this dipstick can be produced on a large scale in a form suitable for widespread use, however, the histamine-specific enzyme component must be produced in large quantities and optimized for the currently allowed FDA levels for histamine.

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 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.

AQUACULTURE

Grantee: Taylor Resources, Inc., Shelton, WA
Grant No.: NA06FD0231 *NMFS Contact*: F/NWR
Project Title: Rock Scallop Culture in the Off-Shore Environment
Funding: *Federal*: $91,179 *Recipient*: $54,938

Description: To develop technology and methodology to culture the rock scallop to maturity and commercial harvest in high-energy, off-shore environments in an ecological and economically viable and cost-effective manner. Researchers will test a new technology (Scallop Spar) for a range of engineering considerations including installation, submersion, towing, system integrity, and harvest functions. In addition, the disc culture surfaces will be evaluated for survival of scallops, ability to attach to the surface, growth rates, and stocking densities. A separate set of hatchery culture studies will be carried out that include broodstock collection and conditioning, spawning and larval production, and juvenile seed and grow-out methods.

Grantee: Pacific Shellfish Institute, Olympia, WA
Grant No.: NA06FD0280 *NMFS Contact*: F/NWR
Project Title: Probiotics to Increase Shellfish Hatchery Production
Funding: *Federal*: $99,986 *Recipient*: $36,132

Description: To improve the production efficiencies and profits of national production of shellfish seed using beneficial bacteria to displace disease-causing bacteria. The recipient will use its large collection of

shellfish hatchery bacteria and other bacteria, as well as new isolates, to select those bacteria with the strongest probiotic effect. The selected bacteria will be tested to determine whether the bacteria can prevent bacterial disease in oyster seed and larvae using a laboratory challenge system. If successful, the project will provide candidate probiotic bacteria for use in a future commercial-scale test.

Grantee: Pacific Shellfish Institute, Olympia, WA
Grant No.: NA96FD0194 *NMFS Contact*: F/NWR
Project Title: Manila Clam Mortality and Health Evaluation
Funding: *Federal*: $168,111 *Recipient*: $32,410

Description: To initiate the establishment of production standards and a health baseline for intensive clam production on the west coast of the United States. These activities will form the basis of an integrated health management program for manila clam and support the production of healthy clams from all regions of the country. The baseline data on manila clam health will also be used to assist state and tribal shellfish biologists in assessments of public and tribal clam resources. The researchers will monitor clam growth, survival, yield, health, and environmental conditions at sites of intensive clam production. Adult and seed clams will be examined for the presence of infectious diseases, and experimental studies at a clam production facility will be conducted to expose clams to defined freezing and freshwater exposures. This latter study will allow growers to identify high-risk beds and manage them to reduce impacts of low temperature and excessive freshwater exposure. Finally, the recipient will set up a clam mortality response team to address grower concerns about clam morbidity and mortality and help identify the causes of such episodes. Completion of these tasks will enhance the competitiveness of adult clams and seed clam production in world markets, increase domestic supplies, and reduce the need for imported clams.

Grantee: Black Pearls, Inc., Holualoa, HI
Grant No.: NA06FD0303 *NMFS Contact*: F/SWR
Project Title: Re-Training of Hawaiian Micronesian Fisherfolk as Pearl Culture Seeding Technicians
Funding: *Federal*: $97,903 *Recipient*: $29,880

Description: To provide basic training in all aspects of oyster biology and pearl farm husbandry and seeding of mabe pearls. Trainee technicians will be contracted to BPOM. Black Pearls, Inc., will provide the basic training, and a master seeding technician then will provide an intensive training course at the BPOM farm site, including one-on-one supervision of seeding. Results of seeding trials will be used to select the two most promising candidates for further training. These candidates then will continue on-the-job training at the BPOM farm site and assist in maintenance and conditioning of the oysters for a second set of seeding trials. Mabe and round pearls will be harvested to evaluate shape, color, and nacre quality.

Grantee: Regents of the University of California, Davis, CA
Grant No.: NA96FD0206 *NMFS Contact*: F/SWR
Project Title: Life History of an Exotic Sabellid Polychaete Pest in Cultured Abalone in California

Funding: *Federal*: $112,064 *Recipient*: $25,945

Description: To describe the life history of the fan worm which infests cultured abalone. All life stages and reproductive ability at temperatures experienced in California will be identified. Life stages of fan worms reared *in situ* and *in vitro* will also be identified, as will the timing of each developmental stage and the reproductive potential. Generation times at several temperatures between 9 and 23^0C will be determined. Using a combination of light and electron microscopy, and fertilization experiments, it will be determined whether the sabellid is capable of self and/or cross fertilization. The potential risk associated with the release of precompetent larval and embryonic stages will also be examined. In order to assess the possibility that infested abalone may have been outplanted, the researchers will survey several outplant sites for infested abalone and other gastropods. If found, mark and recapture studies will be conducted using initially uninfested gastropods to determine rates of fan worm transmission in the field. Based on the findings, changes will be recommended in abalone husbandry methods to aid in eradication of the fan worm from aquaculture facilities and reduce its potential establishment in the wild.

Grantee: Coral Reef Foundation, Koror, Palau
Grant No.: NA86FD0068 *NMFS Contact*: F/SWR
Project Title: Culture of Marine Fish for the Home Aquarium Industry
Funding: *Federal*: $32,640 *Recipient*: $10,420

Description: To identify species of marine fish appropriate for the aquarium trade and develop "low-tech" mariculture methods to raise these species 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: University of Rhode Island, Kingston, RI
Grant No.: NA06FD0181 *NMFS Contact*: F/NER
Project Title: Stress and Performance of Finfish in Open-Ocean Aquaculture
Funding: *Federal*: $69,979 *Recipient*: $13,548

Description: To characterize the dynamics of stress response, identify practices that induce stress, and develop culture technology–including use of anesthetics–to mitigate stresses of handling and transportation. The project will produce new technology that improves the health and survival of cultured flatfish. The basic rationale is that handling and transportation of cultured marine flatfish to grow-out sites stresses them and reduces their performance capacity. Performance capacity includes the ability to resist disease, maintain metabolic homeostasis, and adapt to further perturbations.

Grantee: Virginia Institute of Marine Science, Gloucester Point, VA
Grant No.: NA96FD0075 *NMFS Contact*: F/NER
Project Title: Influence of Host Genetic Origin and Geographic Location on QPX Disease in Hard

Clams (*Mercenaria mercenaria*)
Funding: *Federal*: $212,998 *Recipient*: $68,120

Description: To examine variation in the expression and pathogenicity of QPX disease in relation to genetic origin and geographic location of hard clams. The research will focus on identifying a strain(s) of hard clams resistant to QPX disease. The main objectives of the project are to (1) compare clam growth (size), condition, survival, and QPX prevalence and severity in five hatchery-reared strains of hard clams at three regionally separated QPX endemic locations; (2) determine the significance of the effect of strain and region on hard clam growth, condition, survival, and QPX disease through time; and (3) determine the best strain for culture in QPX endemic areas, and recommend strains for future efforts to enhance resistance to QPX through selective breeding.

Grantee: Woods Hole Oceanographic Institution, Woods Hole, MA
Grant No.: NA96FD0078 *NMFS Contact*: F/NER
Project Title: Aquaculture Regulation: Economic and Legal Models for the U.S. Exclusive Economic Zone
Funding: *Federal*: $92,935 *Recipient*: $26,107

Description: To develop a framework for analyzing access system design for ocean mariculture operations and to characterize an economically optimal access system. An economic analysis will be conducted to complement current efforts by academia, public interest groups, Federal agencies, and the U.S. Congress to develop laws and regulations governing ocean mariculture in the U.S. Exclusive Economic Zone.

Grantee: Purdue University, West Lafayette, IN
Grant No.: NA76FD0149 *NMFS Contact*: F/NER
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 for establishing a selective or optimal medium for nitrifying bacteria in recirculating system aquaculture. Five minerals, critical for the bacteria but rarely added to diets for fish, will be the focus of this research. The results of this research may lead to the development of sustainable recirculating systems for the mass production of a variety of species.

Grantee: University of Texas at Austin, Austin, TX
Grant No.: NA06FD0299 *NMFS Contact*: F/SER
Project Title: Development of Hatchery Technologies for Snapper
Funding: *Federal*: $169,987 *Recipient*: $33,938

Description: To address the development of larval rearing technologies for the production of juvenile snapper for off-shore operations. Results from this project are expected to (1) diversify the number of cultured species available to the mariculturist, (2) expand our understanding of larval rearing requirements of snapper, and (3) advance commercial technologies for the production of fingerlings. The proposed research will build on previous projects that successfully developed maturation techniques for the year-round spawning of yellowtail snapper as well as mass production techniques for other marine species such as red drum. Yellowtail snapper is one of several snapper species that are listed as "overfished" and displays positive potential for development in the mariculture industry. The researchers have maintained spawning populations of wild fish since 1992 and currently have an F1 population of laboratory-reared fish spawning three times per week producing 250,000 eggs/spawn. Initial protocols for larval rearing using live and prepared feeds have resulted in overall survival of 3% from egg to advanced juvenile.

Grantee: North Carolina State University, Raleigh, NC
Grant No.: NA97FD0068 *NMFS Contact*: F/SER
Project Title: Flounder Sex Determination: Biotechnology for Controlled Breeding in Fishery Enhancement and Mariculture
Funding: *Federal*: $68,465 *Recipient*: $48,432

Description: To provide information and technologies critical to generating predictable sex ratios in flounder restocking efforts and producing monosex stocks of faster growing females for mariculture. The means to control sex determination in summer and southern flounders will be developed. In addition, markers and timing of sex determination in flounder will be determined to characterize the developmental periods during which temperature irreversibly exerts its effect.

HABITAT CONSERVATION

Grantee: University of Florida, Gainesville, FL
Grant No.: NA97FD0065 *NMFS Contact*: F/SER
Project Title: Conserving and Enhancing Essential Fish Habitats by Differentiating the Specific Sources of Fecal Pollution in Estuarine Waters
Funding: *Federal*: $89,922 *Recipient*: $13,192

Description: To develop and test innovative methods to determine the specific type and extent of human and non-human fecal pollution, and produce tools to identify the specific animal sources of fecal pollution in estuarine waters. Estuarine waters are the habitat of numerous marine species, including molluscan shellfish. This habitat is increasingly impacted by fecal bacteria, signifying a decrease in water quality, and potential risk of human and resource disease. The researchers will expand on previous research showing that selected phenotypic and genotypic characteristics accurately discriminate between human and non-human sources of *E. coli*. The investigation involves: (1) isolating *E. coli* from predominant

agriculture and wildlife species; (2) determining ribotype (DNA fingerprint), multiple antibiotic resistance, and serotype profile; (3) correlating specific profiles with animal source; and (4) defining the significant fecal pollution sources within the study site.

V. PENDING NATIONAL PROGRAM PROJECTS

This 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.

FISHERIES UTILIZATION

Grantee: Alaska Fisheries Development Foundation, Anchorage, AK
Grant No.: NA86FD0580 *NMFS Contact*: F/AKR
Project Title: An Ocean of Answers
Funding: *Federal*: $150,000 *Recipient*: $0

Description: To investigate the development of a permanent endowment for the Alaska Fisheries Development Foundation to support the goals and objectives of the Magnuson-Stevens Fishery Conservation and Management Act by (1) conducting a feasibility study and donor survey; (2) designing a capital development campaign; (3) designing an educational outreach campaign; (4) creating an endowment instrument and a plan for perpetuity; and (5) exploring funding assistance available from state and local governments and other funding organizations.

MANAGEMENT ALTERNATIVES AND FISHERIES USER CONFLICTS

Project No.: 97-AK-01 *NMFS Contact*: F/AKR
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 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-03 *NMFS Contact*: F/AKR
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/AKR
Project Title: Individual Fishing Quota/Community Development Quota (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 under IFQ/CDQ. 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.: 96-SW-02 *NMFS Contact*: F/SWR
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-SE-21 *NMFS Contact*: F/SER
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.

FISHERIES BYCATCH

Project No.: 97-NE-13 *NMFS Contact*: F/NER
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, Columbia, SC
Grant No.: NA97FD0087 *NMFS Contact*: F/HQ
Project Title: Development of a National Education Program to Influence Consumption Behavior of High-Risk Individuals Regarding Raw Molluscan Shellfish-Phase III
Funding: *Federal:* $500,000 *Recipient:* $73,000

Description: To reduce the number of illnesses and deaths from *Vibrio vulnificus* associated with the consumption of raw oysters, the Interstate Shellfish Sanitation Conference will increase awareness of risk in high-risk individuals through an educational campaign targeted to specific high-risk groups. A baseline study will be performed at the beginning of the project, followed by targeted consumer education. Effectiveness will be evaluated at the end of the education period. The goal of this project is to increase high-risk consumer awareness of the risks of eating raw shellfish 40% above baseline levels and to increase the proportion of high-risk consumers who refrain from eating raw shellfish to 20% above baseline levels.

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. This will ensure that artificial spawning is performed only during periods of peak spawning potential and will 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.: 96-SE-GA *NMFS Contact*: F/SER
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/SER
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 will be held to develop a draft base permitting process.

VI. COMPLETED GRANT PROGRAM PROJECTS

This section contains an assessment of each S-K Grant Program project completed during the period June 1, 2000 to May 31, 2001, 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: Coastal Enterprises, Inc., Portland, ME
Grant No.: NA86FD0106 *NMFS Contact*: F/NER
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

Assessment: This project resulted in a book entitled Beyond Waste: Navigating Fisheries Byproducts in the Northeast. This book is aimed at northeastern fishermen, seafood processors, and entrepreneurs interested in learning about the opportunities and pitfalls presented by fishery byproducts at the turn of the millennium. The book may be considered a sequel and update to the 1986 book New Markets for Maximizing New England Fisheries Byproduct Values, which also was produced with S-K support.

MARINE RECREATIONAL FISHERIES

Grantee: Palau Conservation Society, Koror, Palau
Grant No.: NA77FD0043 *NMFS Contact*: F/SWR
Project Title: Sustainable Sport Fishery Development for Palau: Demonstration Project
Funding: *Federal*: $103,284 *Recipient*: $10,000

Assessment: The overarching goals of this project were to develop a sport fishery that (1) targets small-scale fishermen, (2) is compatible with sustainable ecotourism, and (3) helps provide for the conservation and best use of Palau's inshore resources. Primary goals included (1) the organization of fishermen and tourism brokers in a sport fishery system; (2) the testing, evaluation, and improvement of the system; and (3) the provision of assistance to Palauan states in the management of their inshore resources. Demonstration objectives included (1) the creation of a new occupational niche for fishermen, (2) the development of a training program for fishermen and tourism brokers, and (3) field trials of the sport fishery system. Institutional objectives included assistance (1) to national and state leaders in the implementation of sport fishery laws and policies and (2) to tourism leaders in the design of marketing materials and strategies. These goals and objectives were attained. The demonstration project was successful in providing an avenue for diversification. The implication of these results is that the overarching goals remain viable and show promise of being attained as demonstration and institutional objectives are supplanted by sport fishery system refinement objectives in a supplementary project.

MANAGEMENT ALTERNATIVES AND FISHERIES USER CONFLICTS

Grantee: University of Alaska, Fairbanks, AK
Grant No.: NA96FD0054 *NMFS Contact*: F/AKR
Project Title: Population Structure of Rougheye, Shortraker, and Northern Rockfish Based on Analysis of Mitochondrial DNA Variation in Microsatellites
Funding: *Federal*: $151,018 *Recipient*: $25,783

Assessment: Shortraker (*Sebastes borealis*), rougheye (*S. aleutianus*), and northern (*S. polyspinis*) rockfish are commercially valuable species in the Gulf of Alaska and Bering Sea fisheries. Little is known about their population structure, although it is critical to know the geographical limits of individual production units in order to optimally manage harvests without eroding productivity bases. Segregation of productivity units can produce genetic isolation. Consequently, genetic structure can provide information about the geographic/oceanographic (upper) limits of productivity units of a species. This project conducted preliminary surveys of mitochondrial and microsatellite DNA variation in geographically distinct samples of these species. The preliminary analyses detected indications of population structure in rougheye and shortraker rockfish but not in northern rockfish. However, failure to detect structure should not be interpreted as absence of structure. For the second phase of this project, the investigators planned to increase the numbers of samples and collections examined.

Grantee: Commonwealth of the Northern Mariana Islands
Grant No.: NA96FD0471 *NMFS Contact*: F/SWR
Project Title: Economic Assessment of the Domestic Fisheries Development Potential of the Commonwealth of the Northern Mariana Islands
Funding: *Federal*: $40,068 *Recipient*: $4,795

Assessment: Locally based pelagic fisheries in the Commonwealth of the Northern Mariana Islands (CNMI) have not developed to fully utilize the 200-mile EEZ, nor have they achieved harvest levels of formerly operating foreign fleets. This report provides the results of economic research focused on determining why domestic pelagic fisheries have not developed in the CNMI. Due to lack of participation, the study modified its original format from holding focus meetings to utilizing a dock-side intercept interview methodology to obtain input from fishermen and assess profitability of the existing fishery. Investigative research was used to assess whether labor conditions, markets, infrastructure, regulations, and the availability of finance are constraining development. Analysis has found that the existing pelagic fishery is generally profitable for a large majority of participants. Development of larger-scale domestic pelagic fisheries in the CNMI does not appear to be likely at this time. Further, the primary constraints on such development are that (1) the available infrastructure is not oriented toward commercial fishing and (2) it is not cost competitive with other ports (e.g., Port of Guam). Thus, the study suggests that efforts to develop the pelagic fisheries of the CNMI should focus on improvements in the existing small-boat pelagic fishery.

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

Grant No.: NA86FD0070 *NMFS Contact*: F/SWR
Project Title: Evaluation of the Sustainability of the Sea Cucumber Fishery in California
Funding: *Federal*: $93,124 *Recipient*: $43,376

Assessment: The objective of this project was to provide a biological basis for the management of a sustainable sea cucumber fishery in the northeast Pacific, especially in California. The researchers documented historical changes in standing stocks of *Parastichopus californicus* and *P. parvimensis* using existing but previously unanalyzed data; estimated the effects of fishing on the standing stocks of *P. parvimensis* using Before/After/Control Paired Sample analysis; collected monthly data on biological parameters critical to fishery management (e.g., relative allocation to reproduction, feeding, respiration, wall musculature); determined the extent to which size structure and abundance of *P. californicus* vary with depth and season. Although analyses of some of the data are still ongoing, results of the study have been provided to the California Department of Fish and Game to aid them in developing a sound management plan for these fisheries.

Grantee: North Carolina State University, Raleigh, NC
Grant No.: NA87FD0100 *NMFS Contact*: F/SER
Project Title: Reproduction of Bluefin: Assessing Maturity Using Sex-Specific Compounds
Funding: *Federal*: $128,145 *Recipient*: $23,066

Assessment: The goal of the project was to characterize the reproductive biology of Atlantic bluefin tuna (*Thunnus thynnus*) and to develop the biotechnology necessary to generate maturity schedules for bluefin without the need for the collection and processing of gonad tissue. Plasma, gonads, muscle tissue, otoliths, and length measurements were collected from wild bluefin on an annual basis in order to develop the means to nondestructively or noninvasively identify the sex and maturational status of individual fish. Sex-specific hormones and proteins present in muscle biopsy samples vary with sex and maturation in fish and therefore can serve as biochemical indicators for gender and maturational stage. The approach was to be validated by detailed histological examination of gonads to definitively identify the sex and state of maturation of individual animals. Levels of vitellogenin (VTG), the egg-yolk protein precursor, were measured as a marker for maturity, following development of an enzyme-linked immunosorbent assay (ELISA) for yellowfin tuna (*Thunnus albacares*) VTG. Once the assay was established and validated for detection of VTG in the blood plasma of yellowfin, it was adapted for use with muscle tissue. Reproductive hormones were measured in bluefin by radiommunoassay (RIA). Levels of testosterone (T) and 111-ketotestosterone (11KT) were used as an index of male function; T and estradiol-17B (E2) levels were used as an index of female function. The RIAs were modified for use to detect the steroids in muscle biopsy samples. The reproductive cycle of bluefin is most likely similar to that of other teleosts. Peaks in VTG and reproductive steroids should be seen immediately prior to the spawning season in females, with peaks in T and 11KT occurring in males. These cycles are correlated with growth and maturation of the gonads. At this time, the biotechnology to complete this work is established. The techniques developed can be used to identify reproductively mature bluefin and perhaps other tunas as well. The only limitation encountered to date is that insufficient samples have been collected to complete final validation of the assays and construct maturity schedules. Extensive efforts to collect the necessary samples are now being coordinated through the National Marine Fisheries Service.

Grantee: University of South Alabama, Mobile, AL
Grant No.: NA77FD0077 *NMFS Contact*: F/SER
Project Title: Monitoring the Socio-Economic Impacts of Federal Regulations on Gulf of Mexico Commercial Shrimp Fishermen
Funding: *Federal*: $68,750 *Recipient*: $70,785

Assessment: This study was designed to document the effects that bycatch reduction devices (BRDs) have had on shrimp fishermen. The investigators' previous research on shrimp fishermen in 1987 and 1994 provided baseline data that allowed the effects of bycatch devices to be measured. This project compared findings from four samples of "nearshore" and "offshore" shrimp boat captains: Alabama 1987 (n=90), Alabama 1994 (n=80), Gulf of Mexico 1994 (n=390), and Alabama 1999 (n=90). The dimensions evaluated consisted of objective criteria including a demographic profile of fishermen and their current economic conditions measured from past to present. A number of subjective criteria also were evaluated, including occupational stressors or job demands, current levels of job satisfaction, and attitudes toward and experiences with BRDs. In addition, this project assessed the current psychological state of fishermen and their own perceptions about the communities in which they live. This study found that captains are spending more days at sea and that their maintenance costs have increased. Consistent with these findings is the fact that the extrinsic value captains derive from fishing has declined. Therefore, the investigators expect that fewer individuals will seek out fishing as a labor niche and that attrition from the industry will likely continue given the captains' age composition and length of time captains have fished. It would appear that those persisting in the industry are becoming more efficient in their fishing efforts. Encouragingly, fishermen in this study's sample are significantly more optimistic about their future as fishermen than they were five years ago.

Grantee: University of Maryland, Cambridge, MD
Grant No.: NA86FD0110 *NMFS Contact*: F/NER
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

Assessment: Scientific evidence has been insufficient to support stock structure assumptions in the management of Atlantic bluefin tuna. The goal of this project was to develop techniques in microconstituent analysis of bluefin tuna otoliths to support estimation of mixing rates between spawning contingents of Atlantic bluefin tuna. Otolith microconstituent analysis has been successfully used in applications of stock discrimination for Atlantic cod and other species. However, the technology remains novel and requires further standardization between laboratories if it is to be used to resolve highly charged stock structure issues in the future. This investigation involved two laboratories with analytical capabilities in inductively coupled mass spectrometry that attempted to ground-truth the emerging technology of otolith microconstituent analysis and develop acceptable protocols.

FISHERIES BYCATCH

Grantee: Fisheries Information Services, Juneau, AK
Grant No.: NA06FD0170 *NMFS Contact*: F/AKR
Project Title: Tools for Reducing Inadvertent Take and Bycatch Wastage of Skates and Sharks in Hook-and-Line Fisheries
Funding: *Federal*: $3,400 *Recipient*: $850

Assessment: Skates and sharks are the major components of the "other species" quotas under the Fisheries Management Plans for Groundfish in the Bering Sea and Aleutian Islands (BSAI) and the Gulf of Alaska. In 1998, the BSAI quota of other species was exceeded by 15%. In 1999, the bycatch of skates by some vessels participating in Community Development Quota fisheries was higher than expected, threatening boat quotas. In 1998, the Alaska Board of Fisheries took action to close the state commercial fishery for sharks and establish permit requirements for fishing for skates and rays in state waters. This project intended to expand information about the distribution of sharks and skates in a way useful to fisheries planners and to hook-and-line fishermen–the group of Alaskan fishermen who most frequently encounter these species. This project also provided recent information about utilization. Given that some level of bycatch is inevitable in hook-and-line fisheries, there may be potential to develop markets for fish that currently are being discarded.

Grantee: Gulf and South Atlantic Fisheries Development Foundation, Inc., Tampa, FL
Grant No.: NA87FD0099 *NMFS Contact*: F/SER
Project Title: Enhancing Industry Contributions toward Bycatch Reduction in the Shrimp Fishery of the Gulf of Mexico and South Atlantic
Funding: *Federal*: $486,342 *Recipient*: $54,500

Assessment: After reviewing fishing industry proposals submitted to the Gulf and South Atlantic Fisheries Foundation, Inc. (the Foundation), 15 bycatch reduction devices (BRDs) were chosen by a gear review panel for hydrodynamic performance evaluation, tuning, and/or field certification aboard cooperating commercial fishing vessels from the Gulf of Mexico and South Atlantic. Two additional BRD prototypes and one gear improvement study were added to the Foundation's list for field-testing or gear modification. Only two devices (one of which is shown on the next page) were able to accumulate the 30 minimum good tows required for certification analysis. Although both prototype devices showed good red snapper reduction capabilities, more design improvements are still needed to improve their shrimp retention performance. Various environmental, operational, and BRD Certification Testing Protocol-related problems were encountered during the implementation of this project. Despite these problems, a number of BRD prototypes showed promising results in terms of their potential bycatch reduction and shrimp retention capabilities. Investigators recommended that tests on five promising devices be conducted to complete the 30 good tows required by the BRD Certification Testing Protocol.

Grantee: New England Aquarium Corporation, Boston, MA
Grant No.: NA77FD0105 *NMFS Contact*: F/NER
Project Title: Leatherback Turtle Movements in Relation to New England Pelagic Fisheries

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

Assessment: The goal of this project was to develop tag attachment methods that would allow the tracking of leatherback turtle movements in relation to the environment and pelagic fisheries off New England. In June 1998, the recipient tested the direct attachment of a time depth recorder (TDR) satellite tag with absorbable bone anchor screws on a nesting female leatherback in Culebra, Puerto Rico. This tag reported position and dive data for ten days. The turtle headed directly offshore and was approximately 250 miles northeast of Culebra when data transmission ceased. In 1998 there were no opportunities to tag leatherbacks in New England waters. In 1999 two more TDR satellite tags were deployed on nesting turtles in Culebra. These tags transmitted data for six and eight days respectively before transmissions ceased. In the summer and fall of 1999, the recipient met with a group from Nova Scotia to discuss direct capture techniques for turtles. Two turtles were captured and released in Nova Scotian waters. Unfortunately, no leatherbacks were intercepted in the New England region, and the recipient was unable to deploy the remaining satellite tags. Although no additional funds were available to continue this work, the recipient hopes to develop a more successful attachment technique that will allow the tracking of the leatherback's pelagic travel.

Grantee: Maine Department of Marine Resources, Augusta, ME
Grant No.: NA76FD0101 *NMFS Contact*: F/NER
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

Assessment: This project was designed to (1) collect information to determine whether there is a bycatch problem in the Gulf of Maine mobile gear fishery and (2) evaluate the feasibility of collecting information from commercial herring fishermen that could be used to assess the status of individual spawning stocks. Results of the bycatch monitoring indicated that the herring fishery is "clean." Only dogfish and mackerel showed up in the catches in significant quantities. The training of fishermen to collect sea sampling data was somewhat problematic. Although a form for recording data collected was given to the fishermen, there was little interest in filling out the form. Much of the information requested was duplicative of information that fishermen are already required to include in their mandatory trip reports. The fishermen were not interested in double record keeping. In addition, because this was a voluntary program, it was impossible to sustain the fishermen's interest once observers were off their boats. Fishermen generally prefer to make a phone call to writing information down on paper. Perhaps in the future, a phone-in system could be used to obtain more detailed catch and effort information from selected fishermen.

Grantee: Atlantic Gillnet Supply, Inc., Gloucester, MA
Grant No.: NA76FD0107 *NMFS Contact*: F/NER
Project Title: Effectiveness of Acoustically Reflective Gillnet in Reducing/Eliminating Marine Mammal Bycatch
Funding: *Federal*: $170,860 *Recipient*: $79,700

Assessment: This project sought to ameliorate the bycatch of dolphins and porpoise by manufacturing and using a gillnet that was highly detectable to the mammals' echolocation. The project tested whether fillers loaded into monofilament nylon would enhance the acoustic reflectivity of gillnet to a degree sufficient for cetaceans to "see" and avoid the net. This concept was entirely new and presented the possibility of a passive approach to reducing bycatch, as opposed to the active approach taken by equipping nets with pingers. Net was made containing 10% by weight $BaS0_4$. The net was tested outside pinger areas near Gloucester, Massachusetts; in an observer program conducted in the Bay of Fundy during the summer of 1998; and in a much smaller program in the summer of 1999. Fish catches were normal or near normal. One cetacean was caught in the experimental nets in our observer program, and six were taken in conventional netting in the Bay of Fundy study. In addition, five cetaceans were taken in conventional netting during the informal program (with no observer onboard) near Gloucester.

Grantee: University of Rhode Island, Kingston, RI
Grant No.: NA46FD0325 *NMFS Contact*: F/NER
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

Assessment: Experiments were conducted to evaluate two different strategies for the reduction of flatfish bycatch in the small-mesh groundfish bottom trawl. The first set of experiments was devoted to modifications of the fishing line and sweep. Vertical openings of varying height separating the fishing line from the sweep were evaluated, as were discontinuities in the bosum of the sweep. Of the four modifications tested, only one experimental trawl with a 2.1-m long by 0.3-m high discontinuity in the sweep resulted in significant reductions in flatfish bycatch (96% on average) while not affecting catch of target fish. The second set of experiments was directed at modifications that included an escape panel in the lower belly. The escape panels were designed with openings of different sizes and twines (color and diameter). Of the four modifications tested, again only one experimental trawl with 40.6-cm diamond-shaped meshes constructed with 1.6-mm diameter orange-colored twine proved effective in significantly reducing the flatfish bycatch (73%) while not affecting the catch of the target species. Both strategies are simple and could be easily incorporated into similar small mesh bottom trawl fisheries in New England.

PRODUCT QUALITY AND SAFETY

Grantee: PacMar, Inc., Honolulu, HI
Grant No.: NA86FD0067 *NMFS Contact*: F/SWR
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

Assessment: Histamine or scombroid fish poisoning is among the top three seafood-related public health problems reported in the United States. Epidemiological data from Hawaii between September 1989 through September 1999 indicate that mahimahi and tuna were the leading fish species implicated in

illnesses due to histamine poisoning at 54% and 25% respectively. Imported "seafood" was responsible for 48% and imported mahimahi was responsible for 45% of the total number of illnesses. A practical Hazard Analysis Critical Control Point (HACCP)-based approach for controlling histamine accumulation in susceptible pelagic fish species caught by Hawaii's longline, handline, and trolling fleets was developed and explored in this project. The FDA HACCP seafood inspection program guidelines for controlling histamine accumulation recommend that fish be chilled to below 50º F within 6 hours and to below 40º F within 24 hours after death. Vessel Standard Operating Procedures (VSOP) for on-board fish handling were evaluated against these established guidelines. Fish temperature profiles were recorded at sea and compared with histamine analyses. Results suggest that Hawaii fishing fleets are capable of meeting the FDA fish handling guidelines for fish brought to the vessel alive. The actual chilling rates for fish that died on the line could not be determined. However, once boarded, fish were chilled to below 40º F within 24 hours. The histamine concentration of all fish (dead and alive) with known on-board temperature profiles was well below the FDA defect action limit of 5 mg/100g (mean = 0.26 mg/100g, range = 0.02 – 0.88mg/100g, SD 0.2 mg/100g). The efficacy of fish quality grading and sensory evaluation at the time of delivery to the first receiver was evaluated as a practical screening method for eliminating fish with high histamine risk from the market. A market sample of 583 fish from 42
commercial longline trips, 45 trolling trips, and 32 handline trips was collected, graded for quality, evaluated organoleptically, and analyzed for histamine concentration. Fish quality grading and sensory evaluation (for odors of decomposition) were effective in culling out all fish (14 out of 583 fish sampled) with high histamine concentrations. The fish rejected for odors of decomposition included bigeye, yellowfin, and albacore tuna; striped marlin; blue marlin; and mahimahi. Within the sample set of odor rejects, only bigeye tuna, yellowfin tuna, albacore tuna, and mahimahi were found with histamine levels exceeding the defect action limit. It was estimated that the actual prevalence of high-histamine fish in Hawaii's fresh fish landings is less than 0.00117%. A practical HACCP-based approach utilizing VSOP for controlling histamine on fishing vessels and sensory evaluation for screening for fish with high histamine risk in the Hawaii fresh tuna industry is presented in the final report.

Grantee: Woods Hole Oceanographic Institution, Woods Hole, MA
Grant No.: NA57FD0012 *NMFS Contact*: F/SWR
Project Title: A Predictive Index for Paralytic Shellfish Poisoning Events on the Northern California Coast
Funding: *Federal*: $42,007 *Recipient*: $0

Assessment: A meeting was held at the California Department of Health Services in July 1995 to initiate the study by determining where analyses would be focused, which years would be included in the analysis, who would provide the necessary data, and what data formats would be used. A long time-series (1967-1994) of upwelling indices and a short-term time-series subset (1989-1994) for which the investigators had consistent shellfish toxicity data were analyzed. In general, this project was successful. A promising correlation between the relaxation of upwelling and paralytic shellfish poisoning (PSP) toxicity was detected using several independent data sources. Further, a putative "offshore initiation zone" was identified southwest of San Francisco where the investigators believe toxic *Alexandrium* populations accumulate during stratified, upwelling-dominated conditions. Analyses similar to those conducted during this study are recommended to determine the extent to which the mechanisms identified in this study apply to PSP outbreaks elsewhere along the U.S. west coast.

Grantee: Louisiana State University Health Sciences Center, New Orleans, LA
Grant No.: NA97FD0062 *NMFS Contact*: F/SER
Project Title: Reduction in the *Vibrio vulnificus* Load in Oysters by a Novel Short-Term Combination Biodepuration Treatment
Funding: *Federal*: $173,111 *Recipient*: $133,283

Assessment: A short-term biodepuration system that used a battery of high-titered *Vibrio vulnificus*-specific phage strains combined with a specific anti-*V. vulnificus* oyster protein (AVVOP) and that experienced exposure to a temperature of 4" C. for several hours was found to significantly reduce the *V. vulnificus* load in oysters destined to be consumed raw. Live oysters were placed in tanks containing natural or artificial estuarine water to which a pooled mixture of nine *V. vulnificus* phage strains together with a known concentration of AVVOP had been added. After a 4-to-6 hour exposure, the oysters were removed from the tank and stored overnight at 4" C. The "shotgun" use of the phage strains along with AVVOP and subsequent exposure to a 4" C temperature resulted in the *V. vulnificus* present in the oyster being lysed by one or more of the phage strains. If it was not lysed, the *V. vulnificus* was inactivated by the combined presence of AVVOP and cold temperature. The investigators outlined a simple, safe, feasible, relatively inexpensive, and non–labor-intensive method for reducing the *V. vulnificus* load in oysters destined to be eaten raw through exposure to the combined effects of pooled *V. vulnificus*-specific phage, AVVOP, and a temperature of 4" C.

Grantee: University of Southern Mississippi, Hattiesburg, MS
Grant No.: NA97FD0067 *NMFS Contact*: F/SER
Project Title: A Histamine Dipstick Test for Spoilage in Fisheries Products
Funding: *Federal*: $52,875 *Recipient*: $22,207

Assessment: The objective of this project was to obtain a source of diamine oxidase (DAO) necessary for large-scale production of a simple and rapid dipstick method for determining histamine in processed and fresh seafood products. Human diamine oxidase cDNA was inserted into two different vectors designed to secrete the enzyme into the media of cultured insect (*Drosophila)* cells. Neither expression of cloned DAO from insect cells, nor optimized purification procedures from pig kidneys, have to date provided sufficient quantities of enzyme. The investigators were able to obtain the human diamine oxidase cDNA and subclone it into two expression vectors. However, expression of the diamine oxidase cDNA proved much more difficult than anticipated. The investigators obtained no discernable expression at all in their insect cells. One problem might be the existence of a single nucleotide mutation or deletion somewhere in the clone. The investigators believe that a likely reason for their inability to detect DAO in transiently transfected cells is that the transfection was inefficient and too few cells were producing enzyme. The investigators will continue attempts to express the human DAO in insect cells since they believe this is the best solution to the expression problem.

AQUACULTURE

Grantee: Qutekcak Native Tribe, Seward, AK
Grant No.: NA66FD0045 *NMFS Contact*: F/AKR
Project Title: Broodstock Selection and Hatchery Development of Purple-Hinged Rock Scallops (*Crassodoma gigantea*) for Marine Aquaculture
Funding: *Federal*: $69,795 *Recipient*: $35,145

Assessment: After obtaining acquisition and transport permits, 80 adult rock scallops were collected by scuba divers at a southeastern Alaska site, 500 miles from the Qutekcak Shellfish Hatchery. The first 30 scallops were sacrificed for analysis by the Alaska Department of Fish and Game Pathology laboratory and revealed no organisms of transport significance. The hatchery was permitted a maximum of 50 adults for broodstock. Broodstock were spawned and reconditioned regularly throughout the year. Conditioning and larval rearing methods evolved and are described in detail in the final report for this project. Initially, poor larval growth and survival required development of an appropriate diet for larvae and broodstock. Four species of microalgae–Tahitian *Isochrysis galbana* (tIso), *Chaetoceros calcitrans* (Ccal), *Pavlova lutheri* (Pl), and *Chroomonas salina* (Chsa) were fed at specific cell ratios and increasing density. This diet provided (1) the essential PUFA 22:6n3 at a 22:6n3/20:5n3 ratio greater than two and some 20:4n6; (2) the three sterols: cholesterol, stigmasterol, and $-sitosterol; and (3) carbohydrates for incorporation in the gametes. Rock scallop larvae grow about three microns/day at 14 C with about 25% survival to the eyed pediveliger stage. The project period ended before adequate development of setting and spat rearing methods were complete.

Grantee: Washington Department of Fish and Wildlife, Olympia, WA
Grant No.: NA76FD0213 *NMFS Contact*: F/NWR
Project Title: An Analysis of the Effects of Family and Rearing Environment on the Adult Size and Early Life History Development of Freshwater and Sea Pen-Reared Captive Broodstock Chinook Salmon
Funding: *Federal*: $47,964 *Recipient*: $26,023

Assessment: The use of captive broodstocks for endangered and threatened Pacific salmon populations is being investigated and used as a possible stock recovery tool. Among the options for initiating a captive broodstock project is the choice of rearing environment. The purpose of this project was to compare and analyze the effects of freshwater and saltwater captive broodstock rearing on reproductive performance of chinook salmon. Specifically, the project objectives were to quantify effects of freshwater versus saltwater rearing, family effects and interactions between family and environment on adult-size measures, egg quantity and fertility, and fry development success. Sea pen-reared broodstock had larger males, and the progeny of the sea pen-reared females had higher developmental mortality, most of which was due to egg fertility. Families differed from each other significantly in female size, egg infertility, and mortality from eye to hatch. Total developmental mortality from green eggs through yolk absorption was greater for eggs from the sea pen-reared females and was highly correlated with egg infertility. Overall, the major goal of analysis of variance based on the matrix of experimental crosses was not achieved because of low survival and maturity rates of sea pen-reared broodstock, especially in males. However, efforts were made to complete the crosses, and while the original crosses were not completed, satisfactory analyses were possible because of crosses made between females from the target families and males from other,

nontargeted families.

Grantee: Regents of the University of California, Oakland, CA
Grant No.: NA86FD0069 *NMFS Contact*: F/SWR
Project Title: Development of Rock Scallop Grow-Out Techniques
Funding: *Federal*: $48,088 *Recipient*: $6,815

Assessment: This project identified several factors that influence permanent attachment of the purple-hinge rock scallop (*Crassadoma gigantea*). From these findings the following recommendations for cost-effective and efficient grow-out methods were developed: (1) permanent attachment should be promoted, as unattached scallops grow more slowly; (2) flat PVC plastic or similar substrates should be used over cement or ceramic substrates in order to minimize damage to animals and gear during harvesting; (3) plastic or similar smooth substrates should be roughened prior to use to increase attachment strength, thereby minimizing unintended dislodgement of animals during grow-out; (4) scallops should be artificially attached (e.g., glued) to substrates prior to grow-out to allow use of any size seed scallop and to provide a means for manipulating attachment location and optimizing spatial distribution.

Grantee: University of Rhode Island, Kingston, RI
Grant No.: NA76FD0143 *NMFS Contact*: F/NER
Project Title: Development of Commercial Aquaculture of Black Sea Bass
Funding: *Federal*: $99,385 *Recipient*: $15,246

Assessment: All of the objectives of this research project were successfully completed. The results of this investigation demonstrated that commercial aquaculture of black sea bass is feasible and desirable. The adults and juveniles were robust, tolerated captivity, and grew well on formulated feeds developed for other marine species. Adults were readily spawned in captivity, and culture of metamorphosed larvae was consistent with that of other marine species. The potential for commercial culture was demonstrated on a pilot scale in studies conducted at Great Bay Aquafarms in Newington, New Hampshire, in which juvenile black sea bass were cultured to market size. The results of these investigations provided sufficient evidence for the firm to begin small-scale commercial culture of black sea bass at its facility.

Grantee: University of Maryland Biotechnology Institute, Baltimore, MD
Grant No.: NA76FD0145 *NMFS Contact*: F/NER
Project Title: Optimization and Clearance Studies of a New Hormone-Based Spawning Induction Technology for Aquacultured Finfish
Funding: *Federal*: $132,546 *Recipient*: $77,826

Assessment: This research characterized and optimized a GnRH-based spawning induction technology for striped bass and related species, using sustained-release biodegradable GnRHa delivery systems. The recipient demonstrated that D-Arg^{6} -cGnRHII (an analog of a common perciform GnRH) is equally

important compared to the D-Ala^{6} -mGnRH agonist (which is currently used in culture situations). Doses for acute administration and analog effectiveness in eliciting *in vivo* gonadotropin release also were established. Finally, the data demonstrated rapid and satisfactory clearance rates of the GnRHa from fish tissues. This research was conducted in view of facilitating regulatory approval of the GnRH-based technology and its large-scale application in the aquaculture industry.

Grantee: Bioshelters, Inc., Amherst, MA
Grant No.: NA66FD0017 *NMFS Contact*: F/NER
Project Title: Renovation of Phosphorous and Other Aquacultural Wastes using Constructed Wetlands with Planted Peat and Rockwool
Funding: *Federal*: $65,559 *Recipient*: $7,160

Assessment: A pilot lab study tested the ability of a constructed wetland (CWL) to remove phosphate and other aquacultural wastes. Bioshelter's (BSI's) CWL had primary treatment drying beds (PTDBs) with sand planted in phragmites. Secondary treatment trenches (STTs) composed of peat and rockwool were planted in reed canary grass. The STT media functioned as an unsaturated subsurface flow environment with a high surface area enhancing bacterial activity and enabling the CWL to handle waste in a small area. Originally, the project proposed addition of dopants to STT media to bind phosphate. Lab studies using a packed column reactor loaded with PTDB effluent produced some unexpected results. When large volumes of PTDB effluent were run through the reactor, most of the phosphate continued to be removed without cessation. BSI plans to take advantage of this chemistry in subsequent design modifications, to remove most of the phosphate upstream from the STTs. During a year of bimonthly monitoring, the average phosphate leaving the greenhouse was 30mg/L. To reach the goal proposed for phosphate discharge (0.03 mg/L), 99.9% would need to be removed by the CWL. Refinements made in 1998, including an aeration step, resulted in a 50% removal. Laboratory studies showed that reduction to 2.7 mg/L is possible in water just as it leaves the greenhouse. By combining aeration with ferric chloride, a total removal efficiency of 91% was achieved. To reach the goal set forth in the proposal, another 9% needs to be removed. This next step of removal, going from 2.7 mg/L to 0.03 mg/L (or 98.9%), will be very difficult, although BSI has obtained several insights that may contribute to the eventual successful realization of this goal.

Grantee: South Carolina Department of Natural Resources, Charleston, SC
Grant No.: NA77FD0078 *NMFS Contact*: F/SER
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

Assessment: Hard clams, common along the Atlantic U.S. coast and northern Gulf of Mexico, have historically supported a valuable fishery. Although wild-stock landings have remained constant or deceased over the last decade, mariculture production has increased steadily. The deployment of hundreds to thousands of clam-culture pens or mesh-covered bottom enclosure plants, each with tens of thousands of

clams, has the potential to affect: (1) local hydrodynamics, (2) sediment characteristics, (3) associated benthos, (4) food quality, and (5) ultimately the carrying capacity of the local habitat. In South Carolina, hard clam culture is performed on low intertidal mudflats within small tidal creeks that are typically surrounded by dense oyster reefs (*Crassostrea virginica)*. This study was conducted in collaboration with a large clam aquaculture facility, addressing some of the preceding issues in an intertidal soft-bottom system typical of the southern eastern U.S. The structural presence of cages imparted profound changes to the hydrodynamic regimes within and around clam pens, thereby altering numerous sediment attributes (such as grain size and chlorophyll *a* concentrations). Moreover, cage-induced mixing caused a localized decouping of the benthic boundary layer, which dramatically affected the temporal variation of resuspended algal food supplies. Despite clam pen-induced differences and sediment attributes, total biomass of sediment infauna (non-clam) was not adversely impacted by high-density clam pens. Although the investigators observed density-dependent effects on clam growth, they did not see evidence of depletion of food resources in the water column overlying the clam pens. Stable isotope data support the observation of a lack of adverse impacts at this time, both with respect to use of algal food supplies and to impacts on local food web dynamics. Although the local habitat may indeed be able to support high densities of clams necessary for mariculture purposes, individual clam growth was much greater when clams were subjected to lower-density treatments. Moreover, over longer time scales, the pens themselves provide additional hard substrate habitat for nontarget species (e.g., oysters, sponges, tunicates). The maintenance and ultimate removal of caging materials present additional future concerns as do the possible impacts of excess nutrients on the ecosystem.

HABITAT CONSERVATION

Grantee: University of Washington, Seattle, WA
Grant No.: NA76FD0036 *NMFS Contact*: F/AKR
Project Title: Recruitment Limitation in Alaska Red King Crab: The Importance of Early Life History Stages
Funding: *Federal*: $115,175 *Recipient*: $21,532

Assessment: The primary objective of this project was to examine how the unique habitat requirements of early post-settlement states (or the "early benthic phase [EBP]) of Alaskan red king crab (RKC) (*Paralithodes camtschaticus*) are responsible for structuring commercial crab stocks by examining the linkages between larval supply, larval settlement, and early post-settlement survivorship that govern the distribution, abundance, and recruitment patterns of juvenile crab. In order to quantitatively establish the early habitat needs of the species, the investigators conducted *in situ* abundance sampling of EBP crab, settlement experiments, and simultaneous assessments of larval supply in the shallow coastal waters of Auke Bay in southeast Alaska. These studies established that EPB RKC rely heavily, if not exclusively, upon complex shallow-water habitat for settlement and early recruitment. Settlement and post-settlement survivorship were high within rocky nursery habitat and lower in shell-hash. No settlement or survivorship could be detected in homogenous muddy-silt habitat despite high levels of larval supply. These habitat requirements suggest that recruitment to fishable stocks is likely to be governed by the spatial structure of the stock in relation to suitable EBP nursery habitat. In particular, the delivery of larvae to suitable settlement sites will be critical to ensure future recruitment, and this process can only be ensured if larvae are spawned and hatched in areas that are oceanographically "upstream" of nursery habitats. In order to assess the likelihood of these events within the Bristol Bay population, the investigators have begun an oceanographic modeling effort that will predict larval delivery patterns given present knowledge of regional oceanography

and spatial stock structure. This model will enhance our ability to predict the impact of environmental factors on large-scale recruitment trends and help us to identify spatially explicit management options for the stock. The investigators also analyzed historic shifts in centers of adult breeding distribution to study how subsequent larval dispersion may affect survival relative to final settlement in nursery habitat. To fully realize their goals of developing spatially explicit stock management models, the investigators recommended that future research should include assessments of local habitat structure and distribution, as well as field research examining larval distribution and behavior in relation to important oceanographic features and conditions.

Grantee: University of Massachusetts, Boston, MA
Grant No.: NA97FD0070 *NMFS Contact*: F/SER
Project Title: The Effect of Bank-Barrier Reef Lagoon Habitat Loss on Post-Settlement Juvenile and Sub-Adult Coral Reef Fishes
Funding: *Federal*: $85,790 *Recipient*: $43,261

Assessment: In six bays of St. Croix, U.S. Virgin Islands, small (<3 cm), medium (3–5 cm), and large (<5 cm) fishes in lagoons and associated bank-barrier back-reefs were surveyed at 4-month intervals (in February, June, and October) from June 1999 through February 2001. Overall, most recruitment took place during the summer. Densities of small fishes were higher in lagoon patch reef and/or lagoon rubble than in the back-reef. This indication that the former lagoon habitats may be essential for fish populations is borne out by substantially higher levels of recruitment of several species (but not all species) to these lagoon habitats than to back-reefs. Differences among bays in attracting settling fishes and maintaining juveniles are evidently not influenced strongly by oceanographic processes. Preliminary analysis of experimental augmentation of lagoonal patch reefs suggests that (1) overall, small and medium fishes use the artificial and natural patch reefs in a similar manner, thus indicating the investigators' habitat augmentation approach was appropriate, and (2) that habitat augmentation had no effect on densities of large fishes in adjacent back-reefs (compared to control sites). However, further data collection is required for conclusive interpretation. Adventitious research associated with this project indicates that (1) Hurricane Lenny (November 1999) had little evident impact on the fishes under study, (2) long-spine sea urchins on St. Croix have begun to recover from the die-off of 1983–84, and (3) tagging juvenile fishes in nursery habitats is a feasible method for following fishes through ontogenetic habitat shifts.

VII. COMPLETED NATIONAL PROGRAM PROJECTS

This section contains an assessment of each S-K National Program project completed during the period June 1, 2000 to May 31, 2001, 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.

MANAGEMENT ALTERNATIVES AND FISHERIES USER CONFLICTS

Project No.: 97-AK-02 *NMFS Contact*: F/AKR
NA77FD0164
Project Title: Monitoring and Evaluation of the Halibut and Sablefish Individual Fishing Quota (IFQ) System
Funding: *Federal*: $71,820 *Recipient*: $4,500

Assessment: In 1995, NMFS's Alaska Region implemented a new IFQ program for the management of the "fixed-gear" sablefish and halibut fisheries off Alaska. The purpose of this study was to document and analyze changes that occurred during the first two years of the halibut IFQ program. The report resulting from this study is restricted mainly to topics that can be addressed using NMFS's Restricted Access Management administrative and catch data. Some ancillary data also were used.

FISHERIES BYCATCH

Project No.: 97-AK-13 *NMFS Contact*: F/AKR
Project Title: Bycatch of Halibut and Sablefish as an Impediment to Development of a Commercial Fishery for Arrowtooth Flounder
Funding: *Federal*: $200,000

Assessment: The overall goal of this project was to develop a method that would minimize bycatch of Pacific halibut and sablefish in a directed arrowtooth flounder fishery. To accomplish this goal, this project intended to develop a PC-based expert system that would aid small-boat fishermen in the Gulf of Alaska in developing an arrowtooth flounder fishery. The specific objectives to accomplish the overall goal were (1) to evaluate spatial and temporal patterns in the Gulf of Alaska groundfish community using community analysis and statistical modeling techniques based on NMFS groundfish survey data, (2) to evaluate NMFS observer data and fishermen logbook data from the Gulf of Alaska to determine qualitative relationships, and (3) to incorporate the observer data and models into an expert system knowledge base that would be used to assist fishermen in developing an arrowtooth flounder fishery. To meet the first objective, the investigators analyzed catch data from standardized surveys to describe spatial and temporal patterns in species composition of the Gulf of Alaska groundfish community. To meet the second objective, a partial prototype system was developed, which is an interactive system that utilizes the PC-based ReSolver expert system development shell. Due to questions concerning database utilization and unexpected development delays, the investigators were unable to complete the final objective of the project. Although the expert system

development was not completed as anticipated, and questions concerning data confidentiality were

not resolved, the prototype program that was developed demonstrated the utility of linking conventional algorithmic-type programs such as S-Plus with knowledge-based programs to address industry problems.

Project No.: 97-SW-01 *NMFS Contact*: F/SWR
Project Title: Determination of Viable Technical and Operational Solutions for Reduction of Economic Discards in the Northwestern Hawaiian Islands Lobster Fishery
Funding: *Federal*: $99,000

Assessment: This project examined discards in the Northwest Hawaiian Islands (NWHI) lobster fishery. Discards are those lobsters not retained by fishermen for economic or regulatory reasons. The analysis of discards in the fishery required the investigation of a variety of ancillary issues pertaining to the management and conservation of the NWHI lobster resource. These included the seasonality of the target species, a review of previous research on possible causes and estimates of discard mortality, a survey of the economics associated with the primary producers in the fishery, a census of key stakeholders' views on the management of the fishery, and the possible application of an individual transferable quota system to the fishery.

PRODUCT QUALITY AND SAFETY

Grantee: Interstate Shellfish Sanitation Conference, Columbia, SC
Grant No.: NA67FD0260 *NMFS Contact*: F/SF2
Project Title: Development of a National Education Program to Influence Consumption Behavior of High-Risk Individuals Regarding Raw Molluscan Shellfish
Funding: *Federal*: $250,000 *Recipient*: $52,500

Assessment: The second phase of this currently three-phase project focused on educating high-risk individuals on the risks of consuming raw molluscan shellfish, using previously developed educational brochures. High-risk individuals were reached through partnership efforts with groups such as the American Liver Foundation and the Iron Overload Deficiency Foundation, whose primary audiences are individuals with specific medical conditions that place them at high risk for *Vibrio vulnificus* infection if they eat raw molluscan shellfish. The project employed a four-part approach: (1) development and dissemination of educational materials; (2) pre-pilot distribution and analysis of self-administered questionnaires to assess the effectiveness of educational materials; (3) state health department identification and involvement of medical providers responsible for treating high-risk individuals; and (4) provider dissemination of information and materials to high-risk patients.

APPENDIX I

ADDRESSES OF NATIONAL MARINE FISHERIES SERVICE OFFICES

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/NER)
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/SER)
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/SWR)
Fisheries Management Division
501 West Ocean Boulevard
Suite 4200
Long Beach, California 90802-4213
Telephone: (562) 980-4030
Email: pat.donley@noaa.gov

Kevin A. Ford, National Marine Fisheries Service (F/NWR)
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

Barbara A. Fosburg, National Marine Fisheries Service (F/AKR)
Office of Management and Information
P.O. Box 21668
Juneau, Alaska 99802
Federal Building
709 W. 9th Street, 4th Floor
Juneau, Alaska 99801
Telephone: (907) 586-7273
Email: barbara.fosburg@noaa.gov

APPENDIX II

FY 2001 SOLICITATION NOTICE, PUBLISHED IN THE *FEDERAL REGISTER* MARCH 7, 2001

restored by relocating the channels to their natural course, addition of woody debris and rock structures, and revegetation. These activities would occur in approximately 5 miles of stream.

Following the cooperative project development process, the proposed actions were scoped with the public in the summer of 2000 including a direct mailing to over 400 individuals in August and a field trip in September. Approximately 20 letters were received in response to the original scoping, and 27 individual attended the field trip. Based on the comments received, the following issues with the proposed action been identified: (1) Effects to the aquatic environment; (2) Effects to old and mature forest and dependent species; (3) Use of timber harvest, prescribed burning and herbicides as forest management tools and; (4) Effects to motorized recreation opportunities.

To address the issues identified above, alternatives to the proposed action have been developed. These alternatives propose varying levels of activities from those previously described. Some alternatives would require amendment of the Nez Perce Forest Plan to allow vegetation management within delineated old growth (Management Area 20). Some of the harvest proposed would exceed 40 acres in size and would require approval from the Regional Forester (Northern Region). Some of the activities associated with road repair and decommissioning and stream channel restoration would require permits from the Corps of Engineers to authorize work within a stream's high water mark.

The decisions to be made in response to this analysis include (1) Are vegetation management activities needed and if so where, when and how would they be implemented? (2) What transportation system is necessary in the analysis area and how will it be managed? (3) How will the roads identified as excess be returned to forest production? (4) Are the stream channel restoration activities necessary and if so where, when and how would they be implemented? (5) What mitigation is needed to assure forest management activities are consistent with the Nez Perce Forest Plan and environmental law? (6) Is an amendment to the Nez Perce Forest Plan necessary to implement the proposed actions? (7) What implementation and effectiveness monitoring is needed?

The responsible official for this project is the Nez Perce Forest Supervisor. Comments to this notice should be sent to the address and contacts identified above and should be submitted within 30 days of publication of this notice in the **Federal Register**. A Draft Environmental Impact Statement (EIS) is expected to be available in April 2001 and a Final EIS in July 2001. Should an action alternative be selected, implementation would be initiated in 2002. Implementation of any or all of the actions authorized with this decision may occur utilizing the stewardship contracting authorities granted in Section 347 of the 1999 Interior Appropriations Bill.

The comment period on the draft environmental impact statement will be 45 days from the date the Environmental Protection Agency publishes the notice of availability in the **Federal Register**.

The Forest Service believes it is important to give reviewers notice at this early stage of several court rulings related to public participation in the environmental review process. First, reviewers of draft environmental impact statements must structure their participation in the environmental review of the proposal so that it is meaningful and alerts an agency to the reviewer's position and contentions. Vermont Yankee Nuclear Power Corp. v. NRDC, 435 U.S. 519, 553 (1978). Also, environmental objections that could be raised at the draft environmental impact statement stage but that are not raised until after completion of the final environmental impact statement may be waived or dismissed by the courts. Wisconsin Heritages, Inc. v. Harris, 490 F. Supp. 1334, 1338 (E.D. Wis. 1980). Because of these court rulings, it is very important that those interested in this proposed action participate by the close of the 45-day comment period so that substantive comments and objections are made available to the Forest Service at a time when it can meaningfully consider them and respond to them in the final environmental impact statement.

To assist the Forest Service in identifying and considering issues and concerns on the proposed action, comments on the draft environmental impact statement should be as specific as possible. It is also helpful if comments refer to specific pages or chapters of the draft statement. Comments may also address the adequacy of the draft environmental impact statement or the merits of the alternatives formulated and discussed in the statement. (Reviewers may wish to refer to the Council on Environmental Quality Regulations for implementing the procedural provisions of the National Environmental Policy Act at 40 CFR 1503.3 in addressing these points.).

Dated: February 27, 2001.

Michael J. Cook,

Acting Forest Supervisor, Nez Perce National Forest.

[FR Doc. 01–5593 Filed 3–6–01; 8:45 am]

BILLING CODE 3410–11–M

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[Docket No. 960223046–1049–06; I.D. 011801D]

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 (hereinafter ''we'' or ''us'') issues this document to describe how to apply for funding under the Saltonstall-Kennedy (S-K) Grant Program and how we will determine whether to fund a proposal.

Under the S-K Program, we provide financial assistance for research and development projects that address various aspects of U.S. fisheries (commercial or recreational), including, but not limited to, harvesting, processing, marketing, and associated infrastructures.

DATES: We must receive your application by the close of business May 7, 2001 in one of the offices listed in section I.F. Applications Addresses of this document. You must submit one signed original and nine signed copies of the completed application (including supporting information). We will not accept facsimile applications.

ADDRESSES: You can obtain an application package from, and send your completed application(s) to, the NMFS Regional Administrator located at any of the offices listed in section I.F. Application Addresses of this document. You may also obtain the application package from the S-K Home Page (see section I.G. Electronic Access **ADDRESSES**). However, we cannot accept completed applications electronically.

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

SUPPLEMENTARY INFORMATION:

I. Introduction

We are soliciting applications for Federal assistance pursuant to the Saltonstall-Kennedy Act (S-K Act), as amended (15 U.S.C. 713c–3). This document describes how you can apply for funding under the S-K Grant Program, and how we will determine which applications we will fund.

A. Background

The S-K Act established a fund (known as the S-K fund) that the Secretary of Commerce uses to provide grants or cooperative agreements for fisheries research and development projects addressed to any aspect of U.S. fisheries, including, but not limited to, harvesting, processing, marketing, and associated infrastructures. U.S. fisheries[1] include any fishery, commercial or recreational, 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 objectives of the S-K Grant Program, and, therefore, the funding priorities, have changed over the years since the program began in 1980. The program has evolved as Federal fishery management laws and policies, and research needs, have evolved in response to changing circumstances.

The original focus of the program was to develop underutilized fisheries within the U.S. Exclusive Economic Zone (EEZ, i.e., 3–200 miles (4.8–320 kilometers) off the coast). This focus was driven in part by the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). The Magnuson-Stevens Act, originally passed in 1976, directed us to give the domestic fishing industry priority access to the fishery resources in the EEZ. In 1980, the American Fisheries Promotion Act amended the S-K Act to stimulate commercial and recreational fishing efforts in underutilized fisheries. The competitive S-K Program initiated as a result included fisheries development and marketing as funding priorities.

In the following years, the efforts to Americanize the fisheries were successful to the point that most nontraditional species were fully developed and some traditional fisheries became overfished. Therefore, we changed the emphasis of the S-K Program to address conservation and management issues and aquaculture.

In 1996, the Sustainable Fisheries Act (SFA) (Public Law 104–297), was enacted. The SFA amended the Magnuson-Stevens Act and supported further adjustment to the S-K Program to address the current condition of fisheries.

The Magnuson-Stevens Act, as amended by the SFA, requires us 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. It further requires that we take into account the importance of fishery resources to fishing communities; provide for the sustained participation of such communities; and, to the extent possible, minimize the adverse economic impacts of conservation and management measures on such communities. The Magnuson-Stevens Act defines a ''fishing community'' 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 (16)). We have refocused the S-K Program to address the needs of fishing communities as defined by the Magnuson-Stevens Act.

The NOAA Strategic Plan, updated in 1998, has also shaped the S-K Program. The Strategic Plan has three goals under its Environmental Stewardship Mission: Build Sustainable Fisheries (BSF), Recover Protected Species, and Sustain Healthy Coasts. The fisheries research and development mission of the S-K Program directly relates to the BSF goal. There are three BSF objectives in the Strategic Plan:

1. Eliminate and prevent overfishing and overcapitalization.
2. Attain economic sustainability in fishing communities.
3. Develop environmentally and economically sound marine aquaculture.

For the FY 2001 S-K Grant Program announced in this document, we have attempted to address the most important needs of fishing communities in terms of the preceding BSF objectives. This goal is reflected in the four funding priorities listed in section II of this document. Successful applications will be those aimed at helping fishing communities to resolve issues that affect their ability to fish; make full use of species currently under Federal jurisdiction or explore the potential for development of new sustainable managed fisheries; and address the socioeconomic impacts of overfishing and overcapitalization.

The S-K Program is open to applicants from a variety of sectors, including industry, academia, and state and local governments. We encourage applications that involve collaboration between industry and the other sectors listed.

B. Changes from the Last Solicitation Notice

We have changed some of the conditions in this document from the last S-K Grant Program solicitation notice published on June 21, 1999 (64 FR 33050). For example, the scope of the FY 2001 program announced in this document is limited to marine species under Federal jurisdiction. Therefore, we encourage you to read the entire document before preparing your application.

C. Comments and Responses

We published a notice in the **Federal Register** on February 25, 2000, (65 FR 10051) seeking comments on the proposed scope and priorities for the FY 2001 S-K Program. We proposed limiting the scope of the program to marine species under Federal management. Within the scope, we proposed four priority areas for funding. The proposed scope and priorities covered the issues we deemed to be the most important and the most appropriate for the limited funds and time frame of the S-K Program.

We received comments from one individual, two industry associations, a research institute, and an aquaculture company by the deadline date. We have combined similar comments here.

Comment 1: One individual called for proper legal analysis and coordination among Federal agencies on legal, regulatory, and national security issues as part of the proposed funding priority on developing marine aquaculture in the off-shore environment. In addition, he recommended that we add specific criteria to the notice (knowledge and experience) for successful applicants to address this priority area.

Response: We agree that applications should address all relevant considerations and should demonstrate the knowledge and ability of the investigator(s) to carry out the project, as well as familiarity with related work. However, these requirements are not unique to the aquaculture priority, but are evaluated for all applications in our technical review process (see IV.B.1 of

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

this document). Appropriate subject matter experts rate all applications, regardless of their priority area, on ''Project management and experience and qualifications of personnel,'' and the other technical review criteria. Therefore, we do not agree that we need to revise the aquaculture priority to include a criterion dealing with the expertise of those applicants proposing to address off-shore aquaculture.

Comment 2: A research laboratory director and a seafood industry association commented that we should solicit proposals dealing with the critical area of improved data for fisheries management, including biological data for stock assessments, either as part of Priority A., Conservation Engineering, or as a separate priority.

Response: We agree that better data are essential to successful management for sustainable fisheries. However, we do not believe that the S-K Program is the best means to conduct such work, due to the limited funding and the short term of S-K grants. Both NMFS and the Regional Fishery Management Councils (Councils) receive funds for stock assessments and related activities under their responsibilities for implementing the Magnuson-Stevens Act.

Comment 3: An aquaculture company and a shellfish industry group objected to our proposal to limit the program scope to federally managed species, and the aquaculture priority to only the off-shore marine environment, not land-based or near-shore aquaculture.

Response: In the past, we have accepted applications that addressed Great Lakes species and species under state management plans as well as federally managed species. While we have funded many worthy projects on non-federally managed species in the past, current funding is inadequate to cover every important and deserving project.

However, we have modified the scope somewhat. We recognize that species that are not currently federally managed, i.e., under Federal fishery management plans (FMPs), may be relevant to our fisheries management mission. For example, such species could present an opportunity to develop a sustainable managed fishery to substitute for an overfished fishery. Therefore, the scope of the program for FY 2001 has been changed to species under Federal jurisdiction, i.e., in the EEZ.

We have also modified the proposed funding priority for aquaculture, in response to the comments received and in accordance with the NMFS research plan for aquaculture. Although NOAA and NMFS continue to support all aspects of aquaculture development through various efforts, marine aquaculture remains the appropriate focus for NMFS and the S-K Program. While off-shore aquaculture development is still a priority need, we have added language to clarify that for projects that address off-shore aquaculture, the actual work does not need to be conducted in the off-shore environment. We have also added other priority areas, including the need to address environmental issues, develop best management practices, and develop effective enhancement strategies for wild stocks of marine and anadromous species.

As we stated in the notice of proposed priorities, other programs of the U.S. Department of Agriculture and NOAA's Office of Oceanic and Atmospheric Research address land-based and near-shore aquaculture operations. Another possible source of assistance for aquaculture is our Fisheries Finance Program, which we have revised to make loans to aquaculture ventures a priority.

D. Funding

We expect to have approximately $3.8 million available for grant awards for Fiscal Year (FY) 2001, which began on October 1, 2000. However, we cannot guarantee that sufficient funds will be available to make awards for all proposals deserving of funding.

In order to be funded under the S-K Grant Program, applications must propose activities that: address the funding priorities listed in section II of this document; are expected to produce a direct benefit (e.g., tool, information, service, or technology) to the fishing community (as defined in section I.A. of this document); and can be accomplished within 18 months. Acceptable research and development activities include applied research, demonstration projects, pilot or field testing, or business plan development. However, we will not fund projects that primarily involve infrastructure construction, port and harbor development, or start-up or operational costs for private business ventures. Furthermore, if your proposed project primarily involves data collection, we will only consider it if it is directed to a specific problem or need and has a fixed duration. Data collection programs of a continuing nature will not be considered.

E. Eligibility

You are eligible to apply for a grant or a cooperative agreement under the S-K Grant Program if:

1. You are a citizen or national of the United States;

2. You are 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. You are a citizen of the Republic of the Marshall Islands, Republic of Palau, or the Federated States of Micronesia; or

4. You represent an entity that is a corporation, partnership, association, or other non-Federal entity, non-profit or otherwise (including Indian tribes), 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).

We support cultural and gender diversity in our programs and encourage women and minority individuals and groups to submit applications. Furthermore, we recognize 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, so we also encourage applications from individuals, government entities, and businesses in U.S. insular areas.

We are strongly committed to broadening the participation of Minority Serving Institutions (MSIs), which include Historically Black Colleges and Universities, Hispanic Serving Institutions, and Tribal Colleges and Universities, in our programs. The DOC/NOAA/NMFS vision, mission, and goals are to achieve full participation by MSIs, to advance the development of human potential, strengthen the Nation's capacity to provide high-quality education, and increase opportunities for MSIs to participate in and benefit from Federal financial assistance programs. Therefore, we encourage all applicants to include meaningful participation of MSIs.

We encourage applications from members of the fishing community, and applications that involve fishing community cooperation and participation. We will consider the extent of fishing community involvement when evaluating the potential benefit of funding a proposal.

You are not eligible to submit an application under this program if you are an employee of any Federal agency; a Council; or an employee of a Council. However, Council members who are not Federal employees can submit an application to the S-K Program.

Our employees (whether full-time, part-time, or intermittent) are not allowed to help you prepare your application, except that S-K Program staff may provide you with information

on program goals, funding priorities, application procedures, and completion of application forms. Since this is a competitive program, NMFS and NOAA employees will not provide assistance in conceptualizing, developing, or structuring proposals, or write letters of support for a proposal.

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

F. Duration and Terms of Funding

We will award grants or cooperative agreements for a maximum period of 18 months.

We do not fund multi-year projects under the S-K Program. If we select your application for funding and you wish to continue work on the project beyond the funding period, you must submit another proposal to the competitive process for consideration, and you will not receive preferential treatment.

If we select your application for funding, we have no obligation to provide any additional future funding in connection with that award. Renewal of an award to increase funding or extend the period of performance is totally at our discretion.

Even though we are publishing this announcement, we are not required to award any specific grant or cooperative agreement, nor are we required to obligate any part or the entire amount of funds available.

G. Cost Sharing

We are requiring cost sharing in order to leverage the limited funds available for this program and to encourage partnerships among government, industry, and academia to address the needs of fishing communities. You must provide a minimum cost share of 10 percent of total project costs, but your cost share must not exceed 50 percent of total costs. (For example, if the proposed total budget for your project is $100,000, you must contribute at least $10,000, but no more than $50,000, toward the total costs. Accordingly, the Federal share you apply for would range from $50,000 to $90,000.) If your application does not comply with these cost share requirements, we will return it to you and will not consider it for funding.

The funds you provide as cost sharing may include funds from private sources or from state or local governments, or the value of in-kind contributions. You may not use Federal funds to meet the cost sharing requirement except as provided by Federal statute. In-kind contributions are non-cash contributions provided to you by non-Federal third parties. In-kind contributions may include, but are not limited to, personal services volunteered to perform tasks in the project, and permission to use, at no cost, real or personal property owned by others.

We will determine the appropriateness of all cost sharing proposals, including the valuation of in-kind contributions, on the basis of guidance provided in 15 CFR parts 14 and 24. In general, the value of in-kind services or property you use to fulfill your cost share will be the fair market value of the services or property. Thus, the value is equivalent to the cost for you to obtain such services or property if they had not been donated. You must document the in-kind services or property you will use to fulfill your cost share.

If we decide to fund your application, we will require you to account for the total amount of cost share included in the award document.

H. Catalog of Federal Domestic Assistance

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

I. Application Addresses

Northeast Region, NMFS, One Blackburn Drive, Gloucester, MA 01930; (978) 281–9267.

Southeast Region, NMFS, 9721 Executive Center Drive, North, St. Petersburg, FL 33702–2432, (727) 570–5324.

Southwest Region, NMFS, 501 West Ocean Boulevard, Suite 4200, Long Beach, CA: 90802–4213, (562) 980–4033.

Northwest Region, NMFS, 7600 Sand Point Way, N.E., BIN C15700, Building 1, Seattle, WA 98115, (206) 526–6115.

Alaska Region, NMFS, P.0. Box 21668, Juneau, AK 99802 or Federal Building, 709 West 9th Street, 4th Floor, Juneau, AK 99801–1668, (907) 586–7224.

J. Electronic Access Addresses

This solicitation and the application package are available on the NMFS S-K Home Page at: *www.nmfs.noaa.gov/sfweb/skhome.html.*

The 1998 updated Executive Summary of the NOAA Strategic Plan is available at: *www.strategic.noaa.gov/* and the Magnuson-Stevens Act is available at: *www.nmfs.noaa.gov/sfa/magact/*.

The list of species that are currently under Federal FMPs is in the publication, *Status of Fisheries of the United States*, available at: *www.nmfs.noaa.gov/sfa/reports.html*.

II. Funding Priorities

Your proposal must address one of the priorities listed here as they pertain to species under Federal jurisdiction. If you select more than one priority, you should list first on your application the priority that most closely reflects the objectives of your proposal.

If we do not receive proposals that adequately respond to the priorities listed, we may use S-K funds to carry out 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.

The priorities are not listed in any particular order and each is of equal importance.

A. Conservation Engineering

Reduce or eliminate adverse interactions between fishing operations and nontargeted, protected, or prohibited species, including the inadvertent take, capture, or destruction of such species. These include juvenile or sublegal-sized fish and shellfish, females of certain crabs, fish listed under the Endangered Species Act (ESA), marine turtles, seabirds, or marine mammals.

Improve the survivability of fish discarded or intentionally released and of protected species released in fishing operations.

Reduce or eliminate impacts of fishing activity on essential fish habitat (EFH) that adversely affect the sustainability of the fishery.

B. Optimum Utilization of Harvested Resources under Federal Jurisdiction

Reduce or eliminate factors such as diseases, human health hazards, and quality problems that limit the marketability of fish under Federal jurisdiction and their products in the United States and abroad.

Increase public knowledge of the safe handling and use of fish under Federal jurisdiction and their products.

Develop usable products from economic discards (defined in the Magnuson-Stevens Act as ''fish which are the target of a fishery, but which are not retained because they are of an undesirable size, sex, or quality, or for other economic reasons'') and from byproducts of processing of federally managed species.

Develop fishing data to be presented to the Council(s) to determine the

feasibility of a new sustainably managed fishery.

C. Planning for Fishing Community Transition

Help fishing communities to address the socioeconomic effects of overfishing and overcapitalized fisheries through business, community, or state planning activities, including business planning for fishing capacity reduction. Activities may complement, but should not duplicate, programs available from other Federal, state, or local agencies.

D. Marine Aquaculture

Advance the implementation of marine aquaculture in the off-shore environment (i.e., the EEZ) by addressing technical aspects such as systems engineering, environmental compatibility, and culture technology. Although you are not required to conduct the actual work in the EEZ, your application must demonstrate that the project will contribute to the goal of off-shore industry development.

Reduce or eliminate legal and social barriers to off-shore aquaculture development, e.g., legal constraints, use conflicts, exclusionary mapping, and appropriate institutional roles.

Address environmental issues for marine aquaculture, e.g., measure and reduce water quality and benthic community impacts; evaluate and reduce negative interactions between aquaculture and wild stocks, protected resources, and EFH; develop best management practices with scientific analysis and assessment of risk.

Develop effective enhancement strategies for marine and anadromous species to help in the recovery of wild stocks.

III. How to Apply

You must follow the instructions in this document in order to apply for a grant or cooperative agreement under the S-K Program. Your application must be complete and must follow the format described here. Your application should not be bound in any manner and must be printed on one side only. You must submit one signed original and nine signed copies of your application.

A. Cover Sheet

You must use Office of Management and Budget (OMB) Standard Form 424 and 424B (4–92) as the cover sheet for each project. (In order to complete item 16 of Standard Form 424, see section V.A.5. of this document.)

B. Project Summary

You must complete NOAA Form 88–204 (10–98), Project Summary, for each project. You must list on the Project Summary the specific priority to which the application responds (see section II. of this document).

C. Project Budget

You must submit a budget for each project, using NOAA Form 88–205 (10–98), Project Budget and associated instructions. You must provide detailed cost estimates showing total project costs. Indicate the breakdown of costs between Federal and non-Federal shares, divided into cash and in-kind contributions. To support the budget, describe briefly the basis for estimating the value of the cost sharing derived from in-kind contributions. Specify estimates of the direct costs in the categories listed on the Project Budget form.

You may also include in the budget an amount for indirect costs if you have an established indirect cost rate with the Federal government. For this solicitation, the total dollar amount of the indirect costs you propose in your application 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. If you have an approved indirect cost rate above 25 percent of the total proposed direct cost, you may use the amount above the 25-percent level up to the 100-percent level as part of the non-Federal share. You must include a copy of the current, approved, negotiated indirect cost agreement with the Federal government with your application.

We will not consider fees or profits as allowable costs in your application.

The total costs of a project consist of all allowable costs you incur, 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 you and an authorized representative of the U.S. Government and ends on the date specified in the award. Accordingly, we cannot reimburse you for time that you expend or costs that you incur in developing a project or preparing the application, or in any discussions or negotiations you may have with us prior to the award. We will not accept such expenditures as part of your cost share.

D. Narrative Project Description

You must provide a narrative description of your project that may be up to 15 pages long. The narrative should demonstrate your knowledge of the need for the project, and show how your proposal builds upon any past and current work in the subject area, as well as relevant work in related fields. You should not assume that we already know the relative merits of the project you describe. You must describe your project as follows:

1. Project goals and objectives. Identify the specific priority listed earlier in the solicitation to which the proposed project responds. Identify the problem/opportunity you intend to address and describe its significance to the fishing community. State what you expect the project to accomplish.

If you are applying to continue a project we previously funded under the S-K Program, describe in detail your progress to date and explain why you need additional funding. We will consider this information in evaluating your current application.

2. Project impacts. Describe the anticipated impacts of the project on the fishing community in terms of reduced bycatch, increased product yield, or other measurable benefits. Describe how you will make the results of the project available to the public.

3. Evaluation of project. Specify the criteria and procedures that you will use to evaluate the relative success or failure of a project in achieving its objectives.

4. Need for government financial assistance. Explain why you need government financial assistance for the proposed work. List all other sources of funding you have or are seeking for the project.

5. 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; section 404 or section 10 permits issued by the Corps of Engineers; experimental fishing or other permits under FMPs; environmental impact statements to meet the requirements of the National Environmental Policy Act; scientific permits under the ESA and/or the Marine Mammal Protection Act; or Magnuson-Stevens Act EFH consultation if the project may adversely affect areas identified as EFH. Describe the relationship between the project and these FMPs or activities, and list names and addresses of persons providing this information. You can get information on these activities from the NMFS Regions (see Section I.F., Application **ADDRESSES**). If we select your project for funding, you are responsible for complying with all applicable requirements.

6. Project statement of work. The statement of work is an action plan of activities you will conduct during the period of the project. You must prepare a detailed narrative, fully describing the work you will perform to achieve the project goals and objectives. The narrative should respond to the following questions:

(a) What is the project design? What specific work, activities, procedures, statistical design, or analytical methods will you undertake?

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

(c) What are the major products and how will project results be disseminated? Describe products of the project, such as a manual, video, technique, or piece of equipment. Indicate how project results will be disseminated to potential users.

(d) What are the project milestones? List milestones, describing the specific activities and associated time lines to conduct the scope of work. Describe the time lines in increments (e.g., month 1, month 2), rather than by specific dates. Identify the individual(s) responsible for the various specific activities.

This information is critical for us to conduct a thorough review of your application, so we encourage you to provide sufficient detail.

7. Participation by persons or groups other than the applicant. Describe how government and non-government entities, particularly members of fishing communities, will participate in the project, and the nature of their participation. We will consider the degree of participation by members of the fishing community in determining which applications to fund.

8. Project management. Describe how the project will be organized and managed. Identify the principal investigator and other participants in the project. If you do not identify the principal investigator, we will return your application without further consideration. Include copies of any agreements between you and the participants describing the specific tasks to be performed. Provide a statement no more than two pages long 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, you must follow procurement guidance in 15 CFR part 24, ''Grants and Cooperative Agreements to State and Local Governments,'' and 15 CFR part 14, ''Uniform Administrative Requirements for Grants and Agreements with Institutions of Higher Education, Hospitals, Other Non-Profit, and Commercial Organizations.'' If you select a consultant and/or a subcontractor prior to submitting an application, indicate the process that you used for selection.

E. Supporting Documentation

You should include any relevant documents and additional information (i.e., maps, background documents) that will help us to understand the project and the problem/opportunity you seek to address.

IV. Screening, Evaluation, and Selection Procedures

A. Initial Screening of Applications

When we receive applications at any of the NMFS Regional Offices, we will first screen them to ensure that they were received by the deadline date (see DATES); include OMB form 424 signed and dated by an authorized representative (see section III. A. of this document); were submitted by an eligible applicant (see section I.E. of this document); provide for at least a 10-percent cost share but not more than 50 percent (see section I.G. of this document); involve an eligible activity (see section I.D. of this document); address one of the funding priorities for species under Federal jurisdiction (see section II.A.-D. of this document); include a budget and a statement of work including milestones (see sections III.C. and III.D.6 of this document); and identify the principal investigator (see section III D.8. of this document). If your application does not conform to these requirements and the deadline for submission has passed, we will return it to you without further consideration.

We do not have to screen applications before the submission deadline, nor do we have to give you an opportunity to correct any deficiencies that cause your application to be rejected.

B. Evaluation of Proposed Projects

1. Technical Evaluation

After the initial screening, we will solicit individual evaluations of each project application from three or more appropriate private and public sector experts to determine the technical merit. These reviewers will be required to certify that they do not have a conflict of interest concerning the application(s) they are reviewing. They will assign scores ranging from a minimum of 60 (poor) to a maximum of 100 (excellent) to applications based on the following criteria, with weights shown in parentheses:

a. Soundness of project design/conceptual approach. Applications will be evaluated on the conceptual approach; the likelihood of project results in the time frame specified in the application; whether there is 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 will be evaluated. The project's principal investigator and other personnel, including consultants and contractors participating in the project, will be evaluated in terms of related experience and qualifications. Applications that include consultants and contractors will be reviewed to determine if your involvement, as the primary applicant, is necessary to the conduct of the project and the accomplishment of its objectives. (25 percent)

c. Project evaluation. The effectiveness of your 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)

Following the technical review, we will determine the weighted score for each individual review and average the individual technical review scores to determine the final technical score for each application. Then, we will rank applications in descending order by their final technical scores and determine a ''cutoff'' score that is based on the amount of funds available for grants. We will eliminate from further consideration those applications that scored below the cutoff.

2. Constituent Panel(s)

For those applications at or above the cutoff technical evaluation score, we will solicit individual comments and evaluations from a panel or panels of three or more representatives selected by the Assistant Administrator for Fisheries (AA), NOAA. Panel members will be chosen from the fishing industry, state government, non-government organizations, and others, as appropriate. We will provide panelists with a summary of the technical evaluations, and, for

applications to continue a previously funded project, information on progress on the funded work to date.

Each panelist will evaluate the applications in terms of the significance of the problem or opportunity being addressed, the degree to which the project involves collaboration with fishing community members and other appropriate collaborators, proposed means to disseminate project results, and the merits of funding each project. Each panelist will provide a rating from 0–4 (poor to excellent) for each project, and provide comments if they wish. Panel members will be required to certify that they do not have a conflict of interest and that they will maintain confidentiality of the panel deliberations.

Following the Constituent Panel meeting, we will average the individual ratings for each project. We will then develop a ranking of projects based on the individual ranks within each of the priority areas.

C. Selection Procedures and Project Funding

After projects have been evaluated and ranked, we will use this information, along with input from the NMFS Regional Administrators (RAs) and Office Directors (ODs), to develop recommendations for project funding. RAs/ODs will prepare a written justification for any recommendations for funding that fall outside the ranking order, or for any cost adjustments.

The AA will review the funding recommendations and comments of the RAs/ODs and determine the projects to be funded. In making the final selections, the AA may consider costs, geographical distribution, and duplication with other federally funded projects. Awards are not necessarily made to the highest ranked applications.

We will notify you in writing whether your application is selected or not. Furthermore, if your application is not selected, we will return it to you. Successful applications will be incorporated into the award document.

The exact amount of funds, the scope of work, and terms and conditions of a successful award will be determined in preaward negotiations between you and NOAA/NMFS representatives. The funding instrument (grant or cooperative agreement) will be determined by NOAA Grants. You should not initiate your project in expectation of Federal funding until you receive a grant award document signed by an authorized NOAA official.

We will not award any Federal funds to you or any 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 Commerce are made.

V. Administrative Requirements

A. Your Obligations as an Applicant

You must:

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

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

3. Submit a completed 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 26.105) 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 26.605) 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 28.105) 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 applies to applications for grants or cooperative agreements for more than $100,000; 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 your use and should not be sent to the Department of Commerce (Commerce). You should send an SF-LLL submitted by any tier recipient or subrecipient to Commerce only if your application is recommended for funding. Instructions will be contained in the award document. We will provide you with all required forms.

5. Complete Item 16 on Standard Form 424 (4-92) regarding clearance by the State Point Of Contact (SPOC) established as a result of Executive Order 12372. You can get the list of SPOCs from any of the NMFS offices listed in this document or from the S-K Home Page (see section I.G. Electronic Access Addresses of this document). It is also included in the ''Catalog of Federal Domestic Assistance.'' You must contact the SPOC, if your state has one, to see if applications to the S-K Program are subject to review. If SPOC clearance is required, you are responsible for getting that clearance in time to submit your application to the S-K Program by the deadline (see **DATES**).

6. Complete Standard Form 424B (4-92), ''Assurances—Non-construction Programs.'' B. Your Obligations as a Successful Applicant (Recipient) If you are awarded a grant or cooperative agreement for a project, you 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 these records for audit and examination by the Secretary of Commerce, the Comptroller General of the United States, or their authorized representatives; and, submit financial status reports (SF 269) to NOAA's Grants Management Division in accordance with the award conditions.

3. Submit semiannual project status reports on the use of funds and progress of the project to us within 30 days after the end of each 6-month period. You will submit these reports to the individual identified 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 you performed and the results and benefits in sufficient detail to enable us to assess the success of the completed project.

We are committed to using available technology to achieve the timely and

wide distribution of final reports to those who would benefit from this information. Therefore, you are required to submit final reports in electronic format, in accordance with the award terms and conditions, for publication on the NMFS S-K Home Page. You may charge the costs associated with preparing and transmitting your final reports in electronic format to the grant award. We will consider requests for exemption from the electronic submission requirement on a case-by-case basis.

We will provide you with OMB-approved formats for the semiannual and final reports.

5. In addition to the final report in section V.B.4. of this document, we request that you submit any publications printed with grant funds (such as manuals, surveys, etc.) to the NMFS Program Officer for dissemination to the public. Submit either three hard copies or an electronic version of any such publications.

You are encouraged to the extent feasible to purchase American-made equipment and products with the funding provided under this program.

Note, if you incur any costs prior to receiving an award agreement signed by an authorized NOAA official, you do so solely at your own risk of not being reimbursed by the Government. Notwithstanding any verbal or written assurance that you may have received, Commerce has no obligation to cover preaward costs.

C. Other Requirements

1. Federal Policies and Procedures

If you receive Federal funding, you are subject to all Federal laws and Federal and Commerce policies, regulations, and procedures applicable to financial assistance awards. You must comply with general provisions that apply to all recipients under Commerce grant and cooperative agreement programs.

2. Name Check Review

You may be subject to a name check review process. We use name checks to determine if you or any key individuals named in your application have been convicted of, or are presently facing, criminal charges such as fraud, theft, perjury, or other matters that significantly reflect on your management, honesty, or financial integrity.

3. Financial Management Certification/ Preaward Accounting Survey

You may, at the discretion of the NOAA Grants Officer, be required to have your 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. If you are a first-time applicant for Federal grant funds, you may be subject to a preaward accounting survey by Commerce prior to execution of the award.

4. 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.

Furthermore, 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 Executive Order 12866.

Applications under this program are subject to Executive Order 12372, ''Intergovernmental Review of Federal Programs.''

This document contains collection-of-information requirements subject to the Paperwork Reduction Act (PRA). The use of Standard Forms 424, 424B, and SF-LLL have been approved by OMB under the respective control numbers 0348–0043, 0348–0040, and 0348–0046. NOAA-specific requirements have been approved under OMB control number 0648–0135. These requirements and their estimated response times are 1 hour for a project summary, 1 hour for a budget form, 2.5 hours for a semiannual report, and 13 hours for a final report. These estimates include the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding these burden estimates or any other aspect of this collection of information, including suggestions for reducing this burden, to Alicia Jarboe, F/SF2, Room 13112, 1315 East West Highway, Silver Spring, MD 20910–3282.

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 PRA 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: February 28, 2001.

William T. Hogarth,

Acting Assistant Administrator for Fisheries, National Marine Fisheries Service.

[FR Doc. 01–5560 Filed 3–6–01; 8:45 am]

BILLING CODE 3510–22–S

DEPARTMENT OF DEFENSE

[OMB Control Number 0704–0231]

Information Collection Requirements; Defense Federal Acquisition Regulation Supplement; Mortuary Services Contracts

AGENCY: Department of Defense (DoD).

ACTION: Notice and request for comments regarding a proposed extension of an approved information collection requirement.

SUMMARY: In compliance with section 3506(c)(2)(A) of the Paperwork Reduction Act of 1995 (44 U.S.C. Chapter 35), DoD announces the proposed extension of a public information collection requirement and seeks public comment on the provisions thereof. DoD invites comments on: (a) Whether the proposed collection of information is necessary for the proper performance of the functions of DoD, including whether the information will have practical utility; (b) the accuracy of the estimate of the burden of the proposed information collection; (c) ways to enhance the quality, utility, and clarity of the information to be collected; and (d) ways to minimize the burden of the information collection on respondents, including the use of automated collection techniques or other forms of information technology. The Office of Management and Budget (OMB) has approved this information collection requirement for use through July 31, 2001. DoD proposes that OMB extend its approval for use through July 31, 2004.

DATES: DoD will consider all comments received by May 7, 2001.

ADDRESSES: Respondents may submit comments directly on the World Wide Web at *http://emissary.acq.osd.mil/dar/dfars.nsf/pubcomm.* As an alternative, respondents may e-mail comments to: *dfars@acq.osd.mil.* Please cite OMB Control Number 0704–0231 in the subject line of e-mailed comments.

Respondents that cannot submit comments using either of the above methods may submit comments to:

APPENDIX III

LIST OF FY 2001 S-K APPLICATIONS RECEIVED

Proposal Number	Priority	Title	Applicant	Federal Share	Cost Share
01-AKR-001	A	Tools for Reduction of and Estimation of Halibut Bycatch in Gulf of Alaska Hook-and-Line Cod Fisheries	Fisheries Information Services	$13,766	$2,429
01-AKR-002	C	Evaluation of the Cook Inlet Regional Salmon Enhancement Plan 1981-2000	Cook Inlet Aquaculture Association	$112,878	$50,969
01-AKR-003	B	Utilizing Bycatch: Developing Products from Arrowtooth Flounder and Other Economic Discards	University of Alaska, Fairbanks	$78,636	$16,545
01-AKR-004	A	The influence of water temperature on the potential for conflicts between the Pacific cod fishery and Stellar sea lions in Alaskan waters	University of Alaska, Fairbanks	$76,859	$13,050
01-AKR-005	B	Increasing the Value and Markets for Alaskan Salmon: Development of new technologies, products, and processes to increase profits of fishermen and processors, and expand year round job and processing opportunities.	Phoenix Food Consulting, Ltd.	$900,000	$1,766,500
01-AKR-006	C	A Market Model for Alaska Snow Crab	University of Alaska, Fairbanks	$59,828	$39,724
01-AKR-007	B	Salmon Shark Abundance and Residency Times in Areas of Prince William Sound	Virginia Institute of Marine Science	$167,352	$33,978
01-AKR-008	A	Assessment of Sperm Whales as Bycatch in the Alaska Longline Fisheries	University of Alaska, Southeast	$181,213	$56,551
01-AKR-009	A	Development of a Field Techniques Manual for the Collection of Data on King Crabs, Lithodes and Paralithodes	William E. Donaldson	$29,800	$7,055
01-AKR-010	A	Development of Electronic Crab Caller	Somate Corporation	$334,030	$55,445
01-AKR-011	B	Optimizing the Utilization of Pollock Byproducts Focusing on Skin, Bones, Scales, and Viscera	Cornell University	$150,613	$49,648
01-AKR-012	B	Salmon Reclamation for Food Source	Trinity Foundation, Inc.	$391,650	$52,100
01-NER-001	D	Open-Ocean Aquaculture: Economic Measures for Mitigating Risk and Encouraging Development	Woods Hole Oceanographic Institution	$107,257	$45,601
01-NER-002	C	Institutionalizing Social Science Data Collection: A Pilot Project	Massachusetts Fishermen's Partnership, Inc	$136,250	$17,900
01-NER-003	A	The Good Stewardship Project: A Conservation Engineering Project for the New Immigrant Hispanic Populations of New York	Brooklyn College	$215,788	$115,458
01-NER-004	B	Data Quality and Retrospective Problem in Virtual Population Analysis of Federally Managed Fisheries in the Northeast United States	University of Maine, Orono	$85,408	$30,430
01-NER-005	D	Offshore Aquaculture: Stress Reduction and Performance of Flatfish	University of Rhode Island	$72,793	$11,064
01-NER-006	B	Developing Stock Assessment Methods for the New England Deep Sea Red Crab Fishery	Bigelow Laboratory for Ocean Sciences	$85,302	$9,555
01-NER-007	B	Geographic Variation in Life History Traits and Population Dynamics of Western Atlantic Skates	University of Maryland	$250,418	$28,940
01-NER-008	B	Population Structure Analysis of Atlantic Bluefin Tuna Using Hypervariable, Nuclear DNA Markers	Virginia Institute of Marine Science	$126,793	$23,445
01-NER-009	D	Development of Sea Urchin Hatchery System for Aquaculture	University of New Hampshire	$116,377	$24,436
01-NER-010	D	Bioconversion of Squid Processing Waste for the Production of Specialty Aquaculture Feed Ingredients	University of Rhode Island	$108,848	$25,644

Proposal Number	Priority	Title	Applicant	Federal Share	Cost Share
01-NER-011	B	Quality and Safety Assessment of Commercially Produced Tasteless Smoked Seafood Products	University of Rhode Island	$98,948	$28,969
01-NER-012	C	Feasibility Study to Evaluate Industry Interest/Commitment Necessary for the Formation of a National Voluntary Generic Fish & Seafood Promotional Education Board	Garden State Seafood Association	$127,800	$22,000
01-NER-013	A	Effects of Increasing Mesh Size in the Multispecies Fisheries in New England Waters: Applied Research and Outreach	University of Rhode Island	$128,750	$34,570
01-NER-014	C	Massachusetts Fishing Community Audit and Strategic Planning Project	Gloucester Fishermen's Wives Devopment Program, Inc.	$189,240	$23,640
01-NER-015	B	Feasibility of Commercial Scale Development of Value-added Fishery Products Using the By-products of Seafood Processing Operations	Black Tiger Company Inc.	$73,200	$18,000
01-NER-016	D	A Pilot Winter Flounder Stock Enhancement Program for Massachusetts	Massachusetts Institute of Technology	$207,500	$23,100
01-NER-017	B	WITHDRAWN - Producing Stable, Value-Added Fish Oil Emulsions for Use in Functional Foods	University of Massachusetts	$105,899	$33,256
01-NER-018	B	Optimizing the Economic Return of Maryland's American Eel Fishery through an Analysis of Market Demand and Fishery Yield	Maryland Department of Natural Resources	$70,296	$26,351
01-NER-019	D	Juvenile American Lobster Rearing for Aquaculture and Enhancement	New England Aquarium Corporation	$82,171	$69,672
01-NER-020	D	Marine Mammal Responses to Aquaculture Netting	New England Aquarium Corporation	$96,470	$63,059
01-NER-021	A	Use of Otolith Microconstituent Analysis to Characterize Atlantic Bluefin Tuna Stock Structure	University of Maryland	$173,406	$24,025
01-NER-022	B	Reduce Health Hazards from Handling and Storage of Scombroid Fish on Vessels	Joseph W. Slavin & Associates	$109,575	$17,160
01-NER-023	B	Sand Crab Resource Demonstration and Marketability Study	Gustaferro, Inc	$157,280	$29,567
01-NER-024	D	Open-Ocean Aquaculture of Yearling Surf Clams using Commercial Diving Techniques	Seafood Divers, Inc	$89,992	$13,681
01-NER-025	A	Evaluation of a By-catch Reduction Device for the Commercial Crab and Eel Pot Fishery	Ohio University	$92,151	$18,895
01-NER-026	B	Optimizing Crustacean Resources with the Development of Extruded Snacks from Processing Byproducts and Green Crab	University of Maine, Orono	$79,735	$55,225
01-NER-027	A	Reducing Blue Shark Bycatch in Pelagic Longline Fisheries	Massachusetts Division of Marine Fisheries	$53,050	$8,311
01-NER-028	A	Could Filled Gillnet Reduce Cetacean, Bird and Turtle By-catch	Atlantic Gillnet Supply, Inc.	$141,100	$24,000
01-NER-029	D	Estimation of Wave Conditions Influencing Distribution of Fish-farm Wastes and Structural Integrity of Aquaculture Units	University of Maine, Orono	$145,059	$28,768
01-NER-030	A	On-Deck Sorting and Release of Undersized Lobsters (Homarus americanus): A Study of Post-Release Predation Mortality	University of Rhode Island	$65,488	$11,931
01-NWR-001	A	WITHDRAWN - Evaluation of Modified Footrope Configuration to Reduce Bycatch and Benthic Habitat Impacts from Trawl Gear in the Ocean Shrimp Fishery	Oregon Department of Fish and Wildlife	$82,037	$25,522

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01-NWR-002	B	Validation of Rapid Assays to Detect Domoic Acid in Crab Viscera and to Identify Toxigenic Species of Psuedonitzschia in Seawater	Quileute Indian Tribe	$109,672	$28,400
01-NWR-003	D	Recovery of Wild Chinook Salmon Production in the Snake River Basin	University of Idaho	$146,566	$24,018
01-NWR-004	D	Development of an Aquatic Animal Health Plan for Commerce between the EEZ and Washington State	Washington Department of Fish and Wildlife	$53,877	$15,661
01-NWR-005	A	Development Testing and Evaluation of Pot Gear for West Coast Flatfish Fisheries to Reduce Bycatch and Protect Habitat	Oregon State University	$103,540	$56,349
01-NWR-006	A	Assessment of Fish Abundance and Habitat Structure in Reduced-Trawl Zones: Can Trans-oceanic Cable Corridors Serve as Marine Protected Zones	Oregon State University	$99,595	$27,003
01-NWR-007	A	A Project to Evaluate the Influence of Oceanographic Variables on Non-Target Species of Bycatch in the At-Sea Pacific Whiting Fishery	Pacific Whiting Conservation Cooperative	$17,022	$11,000
01-NWR-008	A	Evaluate Tangle Nets for Selective Fishing	Washington Department of Fish and Wildlife	$184,870	$33,420
01-SER-002	A	Lateral Flow Competitive Immunoassay Identification Kits for the Conservation of Billfish Species	Florida Atlantic University	$97,210	$11,915
01-SER-007	B	A Biological Evaluation Relating to the Development of a Sustainable Fisheries Management Plan for Whelk Populations in Georgia.	University of Georgia	$82,383	$26,265
01-SER-008	B	The Role of the ropS Gene in Virulence of Vibrio vulnificus.	University of North Carolina, Charlotte	$87,725	$14,265
01-SER-009	B	A Delineation of Winter Nursery Grounds, Migratory Patterns, and Critical Habitat of Juvenile Sandbar Sharks, Carcharhinus plumbeus, in the Western Atlantic Ocean.	Virginia Institute of Marine Science	$186,939	$86,983
01-SER-011	B	Incidence and Severity of White Spot Syndrome Virus Infection in Reproductive Populations of White Shrimp, Litopenaeus setiferus, and the Blue Crab, Callinectes sapidus.	South Carolina Department of Natural Resources	$194,160	$42,579
01-SER-012	B	Epidemiology Studies on Spiny Lobsters, Panulirus argus, Infected With a Pathogenic Herpes-like Virus.	Virginia Institute of Marine Science	$183,444	$36,823
01-SER-016	C	Identifying Links between Commercial Fishing and Nonfishing Coastal Industry in the Southeast U.S.: Developing Models to Respond to Declining Fisheries	Aguirre International	$110,835	$11,112
01-SER-017	C	Development of a Vessel Buyout Business Plan for the Southeastern U.S. Commercial Shark Fishery	Gulf & South Atlantic Fisheries Foundation	$366,560	$43,999
01-SER-023	D	Bay Scallop (Argopecten irradians) Population Restoration on the West Coast of Florida	Florida Fish and Wildlife Conservation Commission	$206,753	$41,798
01-SER-024	D	Temperature Effects on Sex Determination in Flounder: Timing, Latitudinal Variation and Controlled Breeding in Mariculture	North Carolina State University	$81,895	$71,103
01-SER-026	D	Offshore Cage Culture: Environmental Impact and Perceptions by Local Fishing Community	University of Puerto Rico, Mayaguez	$363,357	$67,152
01-SER-027	D	Development of DNA Microsatellites for Genetic Applications in Cobia (Rachycentron canadum)	Texas A&M University - College Station	$120,627	$40,542

Proposal Number	Priority	Title	Applicant	Federal Share	Cost Share
01-SWR-001	B	The Influence of Microbial Communities on the Growth and Survival of Larval Marine Fish	California State University Foundation	$162,166	$49,875
01-SWR-002	A	Population Genetic Structure of Cabezon in The California Commercial Live-Fish Fishery	California Polytechnic State University Foundation	$93,411	$30,587
01-SWR-003	A	Acoustic Monitoring of Rockfish Using Ambient Noise	University of California, San Diego	$462,847	$55,375
01-SWR-004	A	Can Leatherback Sea Turtle Bycatch Be Reduced in the Swordfish Longline Fishery by Modifying Fishing Methods?	Pfleger Institue of Environmental Research	$105,518	$25,168
01-SWR-005	D	Restoration of White Abalone in Southern California: Brood Stock Collection and Development of Culture Technology	California Wildlife Foundation	$202,781	$128,733
01-SWR-006	B	A project to evaluate the feasibility of using archival tags to obtain distributional data and life history information from albacore tuna	American Fishermen's Research Foundation	$63,465	$71,000
01-SWR-050	A	Can Spillover from Marine Protected Areas Enhance Local Reef Fishery Yields in Guam?	University of Guam	$74,130	$19,839
01-SWR-051	D	Overcoming Social and Cultural Obstacles to Marine Aquaculture Expansion in Hawaii	University of Hawaii	$130,064	$13,696
01-SWR-052	A	Broadband Sonar for Monitoring of Bottom Fish Behavior and Assessment of Bottom Fish Stock.	University of Hawaii	$142,200	$15,800
01-SWR-053	D	Relief for Hawaii's Bottomfish: Solutions through Aquaculture	Black Pearls, Inc.	$159,040	$17,850
01-SWR-054	A	Education and Training to Reduce Adverse Interactions between Commercial Fishing Operations and Marine Turtles in the EEZ of the FSM	Micronesian Fisheries Authority	$59,005	$8,511
01-SWR-055	B	Verification of a HACCP System for the Control of Histamine for the Fresh Tuna Industry.	Pacmar, Inc.	$199,143	$22,238
01-SWR-056	D	A Seaweed Scrubber for Off-Shore Aquaculture.	University of Arizona	$122,276	$24,862
01-SWR-057	D	Develoment of a Floating Hatchery for Production and Delivery of Fry to an Open Ocean Aquaculture Farm.	Hawaii Applied Research, Inc.	$366,500	$40,800
01-SWR-058	D	Aquaculture Offshore Industry Development Research Project.	Cynthia Lynn Chamness	$47,600	$9,200
01-SWR-059	D	Sustainable Harvesting and Culturing of Reef Fish for Local Use and for Exportation in the Marshall Islands.	University of New England	$70,205	$7,213
01SER001	A	Enhancing Industry Contribution Towards Documentation of Fishing Effort and Bycatch Reduction in the Shrimp Fishery of the Southeastern United States.	Gulf & South Atlantic Fisheries Foundation	$564,550	$65,000
01SER003	A	A Program to Estimate Sea Turtle Abundance and Fishery Related Mortality Along the Northwestern Gulf of Mexico.	Gulf & South Atlantic Fisheries Foundation	$501,439	$57,000
01SER004	A	A Program to Document Catch Composition and Stock Assessment Parameters of the South Atlantic Commercial Rock Shrimp Fishery.	Gulf & South Atlantic Fisheries Foundation	$384,911	$45,000
01SER005	A	Physiological Effects of Capture on Atlantic Sharpnose Sharks.	University of Texas at Austin	$135,151	$41,678
01SER006	A	Migration of Billfishes as Indicated by Pop-up Satellite Tags in the Gulf of Mexico.	University of South Alabama	$235,165	$26,907

Proposal Number	Priority	Title	Applicant	Federal Share	Cost Share
01SER010	B	Application of a National Education Program Designed to Influence Consumption Behavior of High Risk Individuals Regarding Raw Molluscan Shellfish - Pase IV.	Interstate Shellfish Sanitation Conference	$250,000	$87,000
01SER013	B	Nearshore Habitats as Critical Nurseries for Commercially Important Fishes of Caribbean Coral Reefs.	University of Massachusetts, Boston	$169,780	$62,489
01SER014	C	Breakeven Analysis and Business Alternatives for South Carolina Commercial Shrimp Trawler Owners/Operators.	Clemson University	$75,833	$9,100
01SER015	C	Feasibility of Fisheries Stock Enhancement and Fishing Community Transition.	North Carolina State University	$71,274	$20,640
01SER018	C	Publication Titled: "The Changing Face of Pamlico County's Fishing Community"	Maureen Donald	$48,600	$5,400
01SER019	D	Over-wintering Requirements of Red Snapper Juveniles.	Auburn University	$113,861	$24,620
01SER020	D	Teaching Students on an Offshore Island, to Develop Environmentally and Economically Sound Marine Aquaculture by Growing Oysters Off Bottom From a Hatchery in the Bayside Oyster Nursery.	Bay Side Oyster Nursery Inc	$11,183	$30,278
01SER021	D	Enhancing Availability of Black Sea Bass to Consumers and Anglers, Phase I: Refinement of Culture Technology for Production and Stocking, and Recruitment Reef Design.	South Carolina Department of Natural Resources	$79,312	$19,302
01SER022	D	Mariculture of Marine Ornamentals for the Aquarium Trade Through the use of Hormones, Pigments and Alternative Plankton.	Ornamental Mariculture Inc.	$318,923	$19,904
01SER025	D	Development of Best Management Practices for Offshore Cage Aquaculture in the Southeast United States.	Florida Department of Agriculture and Consumer Services	$38,000	$26,101
01SER028	D	Evaluating the Status of the Offshore Aquaculture in the Gulf of mexico and Developing a Generalized Model for the Financial and Economic Evaluation of These Enterprises.	Texas A&M University - College Station	$43,726	$26,800
NA16FD1649YR1		The Long Trawl	Alaska Fisheries Development Foundation, Inc.	$600,000	$0