THE SECRETARY OF COMMERCE
Washington, D.C. 20230

August 7, 2007

The Honorable Henry E. Brown, Jr.
Ranking Member
Subcommittee on Fisheries,
Wildlife and Oceans
Committee on Natural Resources
U.S. House of Representatives
Washington, D.C. 20515

Dear Representative Brown:

I am pleased to submit the Department of Commerce's FY 2007 report regarding the Saltonstall-Kennedy (S-K) Grant Program, the requirements for which are specified by the Saltonstall-Kennedy Act of 1954 as amended (15 U.S.C. 713c-3).

The report includes funding information, a description of ongoing projects, and an assessment of projects completed since the last report. The report contains information on projects funded under both the competitive grant program and the national program of research and development (National Program). The funding allocation for FY 2007 was insufficient to conduct the competitive S-K Program. Projects were, however, funded under the National Program, and are described in the report.

For FY 2008, the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service plans to conduct a competitive program, subject to the availability of federal allocations. Funding priorities reflect NOAA's goal to optimize economic benefits within the context of rebuilding and maintaining sustainable fisheries, and in dealing with the impacts of conservation and management measures. The S-K Program expects to have approximately $5.3 million available for grant awards in FY 2008, based on the President's Budget Request.

If you have any questions, please contact me or Nat Wienecke, Assistant Secretary for Legislative and Intergovernmental Affairs, at (202) 482-3663.

Sincerely,

Carlos M. Gutierrez

Enclosure

THE SECRETARY OF COMMERCE
Washington, D.C. 20230

August 7, 2007

The Honorable Daniel Inouye
Chairman, Committee on Commerce,
Science and Transportation
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

I am pleased to submit the Department of Commerce's FY 2007 report regarding the Saltonstall-Kennedy (S-K) Grant Program, the requirements for which are specified by the Saltonstall-Kennedy Act of 1954 as amended (15 U.S.C. 713c-3).

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Carlos M. Gutierrez

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THE SECRETARY OF COMMERCE
Washington, D.C. 20230

August 7, 2007

The Honorable Ted Stevens
Vice Chairman
Committee on Commerce, Science
and Transportation
United States Senate
Washington, D.C. 20510

Dear Senator Stevens:

I am pleased to submit the Department of Commerce's FY 2007 report regarding the Saltonstall-Kennedy (S-K) Grant Program, the requirements for which are specified by the Saltonstall-Kennedy Act of 1954 as amended (15 U.S.C. 713c-3).

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Sincerely,

Carlos M. Gutierrez

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THE SECRETARY OF COMMERCE
Washington, D.C. 20230

August 7, 2007

The Honorable Maria Cantwell
Chairperson, Subcommittee on Fisheries
and the Coast Guard
Committee on Commerce, Science
and Transportation
United States Senate
Washington, D.C. 20510

Dear Madam Chair:

I am pleased to submit the Department of Commerce's FY 2007 report regarding the Saltonstall-Kennedy (S-K) Grant Program, the requirements for which are specified by the Saltonstall-Kennedy Act of 1954 as amended (15 U.S.C. 713c-3).

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Sincerely,

Carlos M. Gutierrez

Enclosure

THE SECRETARY OF COMMERCE
Washington, D.C. 20230

August 7, 2007

The Honorable Olympia J. Snowe
Ranking Member
Subcommittee on Fisheries and
the Coast Guard
Committee on Commerce, Science
and Transportation
United States Senate
Washington, D.C. 20510

Dear Senator Snowe:

I am pleased to submit the Department of Commerce's FY 2007 report regarding the Saltonstall-Kennedy (S-K) Grant Program, the requirements for which are specified by the Saltonstall-Kennedy Act of 1954 as amended (15 U.S.C. 713c-3).

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Sincerely,

Carlos M. Gutierrez

Enclosure

THE SECRETARY OF COMMERCE
Washington, D.C. 20230

August 7, 2007

The Honorable Bart Gordon
Chairman, Committee on Science and Technology
U.S. House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

I am pleased to submit the Department of Commerce's FY 2007 report regarding the Saltonstall-Kennedy (S-K) Grant Program, the requirements for which are specified by the Saltonstall-Kennedy Act of 1954 as amended (15 U.S.C. 713c-3).

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Sincerely,

Carlos M. Gutierrez

Enclosure

THE SECRETARY OF COMMERCE
Washington, D.C. 20230

August 7, 2007

The Honorable Ralph Hall
Ranking Member
Committee on Science and Technology
U.S. House of Representatives
Washington, D.C. 20515

Dear Representative Hall:

I am pleased to submit the Department of Commerce's FY 2007 report regarding the Saltonstall-Kennedy (S-K) Grant Program, the requirements for which are specified by the Saltonstall-Kennedy Act of 1954 as amended (15 U.S.C. 713c-3).

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Sincerely,

Carlos M. Gutierrez

Enclosure

THE SECRETARY OF COMMERCE
Washington, D.C. 20230

August 7, 2007

The Honorable Nick J. Rahall, II
Chairman, Committee on Natural Resources
U.S. House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

I am pleased to submit the Department of Commerce's FY 2007 report regarding the Saltonstall-Kennedy (S-K) Grant Program, the requirements for which are specified by the Saltonstall-Kennedy Act of 1954 as amended (15 U.S.C. 713c-3).

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Sincerely,

Carlos M. Gutierrez

Enclosure

THE SECRETARY OF COMMERCE
Washington, D.C. 20230

August 7, 2007

The Honorable Don Young
Ranking Member
Committee on Natural Resources
U.S. House of Representatives
Washington, D.C. 20515

Dear Representative Young:

I am pleased to submit the Department of Commerce's FY 2007 report regarding the Saltonstall-Kennedy (S-K) Grant Program, the requirements for which are specified by the Saltonstall-Kennedy Act of 1954 as amended (15 U.S.C. 713c-3).

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If you have any questions, please contact me or Nat Wienecke, Assistant Secretary for Legislative and Intergovernmental Affairs, at (202) 482-3663.

Sincerely,

Carlos M. Gutierrez

Enclosure

THE SECRETARY OF COMMERCE
Washington, D.C. 20230

August 7, 2007

The Honorable Madeleine Z. Bordallo
Chairman, Subcommittee on Fisheries,
Wildlife and Oceans
Committee on Natural Resources
U.S. House of Representatives
Washington, D.C. 20515

Dear Madam Chair:

I am pleased to submit the Department of Commerce's FY 2007 report regarding the Saltonstall-Kennedy (S-K) Grant Program, the requirements for which are specified by the Saltonstall-Kennedy Act of 1954 as amended (15 U.S.C. 713c-3).

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If you have any questions, please contact me or Nat Wienecke, Assistant Secretary for Legislative and Intergovernmental Affairs, at (202) 482-3663.

Sincerely,

Carlos M. Gutierrez

Enclosure

The Saltonstall-Kennedy Grant Program: Fisheries Research and Development

Report 2007

August 2007

U.S. DEPARTMENT OF COMMERCE
Carlos M. Gutierrez
Secretary

National Oceanic and Atmospheric Administration
Vice Admiral Conrad C. Lautenbacher, Jr., U.S. Navy (Ret.)
Under Secretary of Commerce for Oceans and Atmosphere
and NOAA Administrator

National Marine Fisheries Service
William T. Hogarth, Ph.D., Assistant Administrator for Fisheries
Gary Reisner, Director, Management and Budget Office
Leo Erwin, Chief, Financial Services Division

Cover Design: Barbara Comstock, National Marine Fisheries Service, Pascagoula, Mississippi

The Saltonstall-Kennedy Grant Program: Fisheries Research and Development

REPORT
2007

August 2007

U.S. DEPARTMENT OF COMMERCE
Carlos M. Gutierrez, Secretary

National Oceanic and Atmospheric Administration
Vice Admiral Conrad C. Lautenbacher, Jr., U.S. Navy (Ret.)
Under Secretary of Commerce for Oceans and Atmosphere
and NOAA Administrator

National Marine Fisheries Service
William T. Hogarth, Ph.D., Assistant Administrator

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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) 2007. The report contains information on the S-K Program regarding its legislative authority, the application solicitation and grant selection process, recipients, and funding.

Due to an insufficient funding allocation for FY 2007, the competitive program was not conducted.

This report is submitted pursuant to the S-K Act, as amended, which requires 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 (page 5).

2. A description of all pending fisheries research and development projects (page 8).

3. A list of those applications approved and disapproved and the total amount of grants made (Not provided, as the FY 2007 Grant Program was not conducted due to lack of funds).

4. A statement of the extent to which available funds were not obligated or expended by the Secretary for grants (page 6).

5. An assessment of each project completed in the preceding fiscal year regarding the extent to which objectives of the project were attained and the project contributed to fishery development (page 15).

The Appendix provides addresses of NMFS Headquarters and Regional Offices from which information regarding the S-K Program may be obtained.

II. BACKGROUND

The Saltonstall-Kennedy 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 (subject to funding) to assist in carrying out projects related to U.S. commercial and recreational fisheries.

The S-K Grant Program funding priorities are consistent with the goals and objectives of the NOAA and NMFS Strategic Plans and the Magnuson-Stevens Fishery Conservation and Management 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.

Proposals received in response to a solicitation are evaluated for merit by appropriate private- and public-sector experts, and for usefulness by representatives of various fisheries constituencies. Proposals are ranked by their average scores. After proposals have been evaluated and ranked, recommendations for funding are developed and submitted to the Assistant Administrator for Fisheries, who determines the projects to be funded.

In addition, 15 U.S.C. 713c-3(d) authorizes the Secretary of Commerce to carry out a national program of research and development (National Program) to address aspects of U.S. fisheries not adequately addressed by projects assisted under the Grant Program.

For FY 2008, NMFS plans to conduct a competitive program, subject to the availability of federal allocations. Funding priorities reflect NOAA's goal to conserve, protect, manage, and restore living marine resources and coastal and ocean resources critical to public health and the vitality of the U.S. economy. The S-K Program expects to have approximately $5.3 million available for grant awards in FY 2008, per the President's Budget Request, which will primarily focus on Right Whale Gear Entanglement Mitigation Research, Strategies to Minimize Catch of the Klamath River Chinook Salmon in Mixed Salmon Fisheries on the West Coast, Understanding the Impacts of Reduced Fishing Effort in Shrimp and Reef Fisheries in the Gulf of Mexico Ecosystem, and Cooperative Research in the Northeast Related to Changes in Trawl Survey Procedures.

The S-K program is capitalized through annual transfers by the Secretary of Agriculture to the Secretary of Commerce into the Promote and Develop Fishery Products account 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 Promote and Develop for FY 2007; the amount transferred 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, including monitoring of ongoing awards.

Table 1. S-K Funding for FY 2007 ($ in millions)

Funding Item	Amount
Total Duties Collected on Fishery Products	$276.05
Total Transfer to Promote and Develop account	82.82
ORF Transfer	(79.00)
S-K Allocation	3.82
Carryover[1]	0.24
Total Available for S-K Program	4.06
S-K Program Obligations/Commitments	
FY 2007 Grant Program	0
National Program[2]	3.30
Program Administration	0.50
Estimated Unobligated Balance	0.26
Total	4.06

[1] Includes unanticipated prior year recoveries as well as unobligated funds.
[2] For aquaculture pilot projects, alternative feed study, and bluefin tuna activities.

Table 2 indicates the recent funding history of the S-K Program.

Table 2. S-K Funding, 1996–2007 ($ in millions)

Fiscal Year	Total Duties	Total P&D Transfer	ORF Offset	Funds Directed to Non-S-K Activities in Appropriations Legislation	Available S-K Program Allocation	S-K Program Allocation as % of Transfer to P&D
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
2002	263.77	79.13	68.00	-	11.13	14.07
2003	250.75	75.22	65.00	10.00	0.22[3]	0.29
2004	265.75	79.72	62.00	17.00	0.72[4]	0.90
2005	258.46	77.54	65.00	10.00	2.54[5]	3.28
2006	264.28	79.28	67.00	7.00[6]	5.28	6.66
2007	276.05	82.82	79.00	-	3.82	4.61

[3] Another $10 million was allocated, but directed to the Alaska Fisheries Marketing Board, outside of the S-K Program.

[4] Another $17 million was allocated, but directed to the Alaska Fisheries Marketing Board, Gulf and South Atlantic Fisheries Foundation, Inc., South Carolina Seafood Alliance, Oregon Trawl Commission, and Oregon State University Seafood Laboratory, outside of the S-K Program.

[5] Another $10 million was allocated, but directed to the Alaska Fisheries Marketing Board, outside of the S-K Program.

[6] Allocation directed to Alaska Fisheries Marketing Board, per Public Law 109-108, Section 208.

III. 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 for whom appear in the Appendix). The projects are listed by grantee within each subject area.

FISHERIES UTILIZATION

Grantee: University of Michigan, Ann Arbor, Michigan
Grant No.: NA03NMF4270149 *NMFS Contact*: F/NER
Project Title: Gear, Product, and Market Development for the Underutilized, Yet Burgeoning Populations of Freshwater Cod *(Lota lota)* in the Great Lakes
Funding: *Federal*: $120,284 *Recipient*: $29,791

Description: To (1) develop gear that will more efficiently harvest live burbot and reduce bycatch, (2) determine methods to handle and preserve fish for product research and testing, and (3) develop fish products for public consumption and test them using established markets and marketing strategies.

MANAGEMENT ALTERNATIVES AND FISHERIES USER CONFLICTS

Grantee: University of Rhode Island, Kingston, Rhode Island
Grant No.: NA03NMF4270146 *NMFS Contact*: F/NER
Project Title: A Compliance Diagnostic for the Northeast Groundfish Fishery
Funding: *Federal*: $50,052 *Recipient*: $15,258

Description: To survey groundfish fishermen and analyze the data to reveal salient linkages between the procedures used for establishing and implementing policy and fishermen's compliance decisions.

Grantee: University of Maryland, Cambridge, Maryland
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 2 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: Virginia Institute of Marine Science, Gloucester Point, Virginia
Grant No.: NA16FD2294 *NMFS Contact*: F/NER
Project Title: Population Structure Analysis of Atlantic Bluefin Tuna Using Hypervariable, Nuclear DNA Markers
Funding: *Federal*: $126,793 *Recipient*: $23,445

Description: To critically examine population structure of the Atlantic bluefin tuna. Through an ongoing S-K award, the investigator has developed a suite of hypervariable, nuclear-DNA markers that reveal considerable genetic variation within the Atlantic bluefin tuna. The investigator will use these genetic tools to screen biologically meaningful collections of young bluefin collected from the western and eastern North Atlantic Ocean to determine whether there is significant spatial or temporal partitioning of genetic variation among collections. Hypotheses of stock structure of the Atlantic bluefin tuna will be tested. The investigators also will use these markers to screen bluefin taken in the central North Atlantic.

Grantee: Florida State University, Tallahassee, Florida
Grant No.: NA03NMF4270086 *NMFS Contact*: F/SER
Project Title: Incorporating Fisher Behavior into Management Models: A Case Study of the Reef Fish Fishery of the Eastern Gulf of Mexico
Funding: *Federal*: $210,425 *Recipient*: $37,319

Description: To characterize fisher behavior using data from NMFS logbooks and the Florida Marine Research Institute trip tickets for grouper-snapper fishers operating in the eastern Gulf of Mexico. All data will be kept confidential. The intent is simply to produce a predictive model of fisher behavior in response to fishery regulations, particularly spatially explicit regulations including marine protected areas. Results will be integrated with a stage-based life history model of groupers being developed by one of the investigators.

Grantee: University of California, Santa Cruz, California
Grant No.: NA03NMF4270155 *NMFS Contact*: F/SWR
Project Title: Measuring Impacts on Fishing Communities: A Framework for Integrated Socioeconomic Assessment
Funding: *Federal*: $149,987 *Recipient*: $24,998

Description: To conduct a two-part study using the combined approaches of fisheries sociology and economics to (1) conduct ethnographic interviews and small surveys and archival research to estimate an input-output (I/O) matrix for the Moss Landing fishing community, compute community-specific multipliers, and compare the community-level and county-level I/O data and multipliers, as well as the tradeoffs of these two approaches; and (2) using this information, work with the Moss Landing community to develop and analyze scenarios that reflect alternative definitions of community and potential management actions, to determine and compare their potential socioeconomic impacts on the community.

FISHERIES BYCATCH

Grantee: Massachusetts Division of Marine Fisheries, Boston, Massachusetts
Grant No.: NA03NMF4270139 *NMFS Contact*: F/NER
Project Title: Further Testing of Cod Avoiding Trawl Net Designs
Funding: *Federal*: $318,760 *Recipient*: $44,085

Description: To further verify the effectiveness of two cod-avoiding trawl net designs, the "Ribas" and "Topless" trawls, using larger versions of the designs and including nighttime testing.

Grantee: Manomet, Inc., Manomet, Massachusetts
Grant No.: NA03NMF4270208 *NMFS Contact*: F/NER
Project Title: Relating Fish Shape to Mesh Size: How Morphometric Variability Affects Trawl Net Selectivity in the Gulf of Maine
Funding: *Federal*: $92,776 *Recipient*: $18,877

Description: To collect morphometric measurements of key groundfish species during standard fishing operations on commercial fishing vessels in the Gulf of Maine. Variability of body measurements for each length class of fish will be calculated. A simple model will be formulated to estimate the mesh size and configuration through which commercial fish species of any size will be most likely to escape. The model will enable managers and the fishing industry to predict potential retention rates of major commercial fish species for a range of mesh sizes and configurations.

Grantee: University of Hawaii, Kaneohe, Hawaii
Grant No.: NA03NMF4270187 *NMFS Contact*: F/PIR
Project Title: Broadband Sonar Identification of Hawaiian Bottom Fish Species
Funding: *Federal*: $128,155 *Recipient*: $14,240

Description: To obtain critical information that will allow for the design and fabrication of a prototype broadband sonar that may be used to identify and monitor bottom fish species from the surface. Specifically, to develop a management tool to monitor the state of overfished areas set aside as a reserve and monitor critical fishing areas for conservation and management.

Grantee: The Regents of the University of California, Santa Cruz, California
Grant No.: NA03NMF4270098 *NMFS Contact*: F/SWR
Project Title: Pilot Project: Testing the Feasibility of Pot Gear to Catch Petrale Sole and Reduce Rockfish Bycatch
Funding: *Federal*: $117,400 *Recipient*: $35,282

Description: To determine appropriate bait for petrale sole by returning live fish to the laboratory facility and introducing different types of fish, mollusks, and crustacea. The investigators will then work with expert fishermen and gear designers to develop up to four trap designs for initial testing on petrale sole. The most effective design will be more thoroughly tested for its effectiveness in catching petrale and minimizing bycatch of overfished species of rockfish.

AQUACULTURE

Grantee: Capricorn Products, Incorporated, Scarborough, Maine
Grant No.: NA03NMF4270174 *NMFS Contact*: F/NER
Project Title: Development of Three Rapid, Sensitive, Reproducible Blood Tests for the Detection of Infectious Salmon Anemia Virus
Funding: *Federal*: $333,748 *Recipient*: $57,275

Description: To develop three assay formats for the detection of ISAV for the aquaculture industry. These assays are designed to accommodate both laboratory and pen-side testing. The tests offer improved sensitivity, speed, and reproducibility over currently used assays.

Grantee: Texas A&M Research Foundation, College Station, Texas
Grant No.: NA16FD2295 *NMFS Contact*: F/NER
Project Title: Estimation of Wave Conditions Influencing Distribution of Fish Farm Wastes and Structural Integrity of Aquaculture Units
Funding: *Federal*: $145,059 *Recipient*: $28,768

Description: To develop appropriate wave modeling methodology and determine wave conditions in four bays in Maine for aquaculture applications. A dynamic wave environment enhances the dispersal of net pen wastes. However, it also causes damage to fish farms, allowing escape of aquacultured fish. This project will use field data and models to estimate the frequency of various wave conditions in Maine.

Grantee: University of West Florida, Pensacola, Florida
Grant No.: NA03NMF4270089 *NMFS Contact*: F/SER
Project Title: Evaluation of Ciliate Protozoans as a First Food for Red Snapper *(Lutjanus campechanus)* Larvae
Funding: *Federal*: $87,151 *Recipient*: $14,426

Description: To isolate microzooplankton protozoans from Gulf of Mexico waters and establish culture techniques. The species most practical to culture will be offered as a first food to red snapper larvae, and the fish survival and growth compared to that obtained using only copepod *nauplii*. Microzooplankton enrichments will be evaluated as a less-intensive alternative to culturing, and assessed for larval survival and any prey preference by snapper larvae among microzooplankton organisms.

IV. 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.

PRODUCT QUALITY AND SAFETY

Grantee: Gulf and South Atlantic Fisheries Foundation, Inc., Tampa, Florida
Grant No.: NA03NMF4270393 *NMFS Contact*: F/SER
Project Title: At-Risk *Vibrio vulnificus* Educational Program Targeting the Medical/Professional Community
Funding: *Federal:* $1,473,800 *Recipient:* $0

Description: To evaluate the success or failure of past at-risk consumer education efforts and to identify and develop appropriate strategies, programs, and educational materials aimed at reducing *V. vulnificus*–related illnesses among the at-risk segment of the population. The target audience is the *V. vulnificus* at-risk segment and the medical and health care professionals who diagnose and provide medical advice to such patients and clients. The core states of Florida, Louisiana, and Texas will be targeted for a multifaceted educational campaign regarding the dangers to at-risk individuals of *V. vulnificus* illness from raw oyster consumption. Direct mailing to health care professionals will be made to educate and warn them of symptoms and treatments and the risks of raw oyster consumption, and to characterize the at-risk consumer. Radio and television advertisements will be created to educate the general public. In addition, a website will be developed that will focus on educating the public at-large.

Grantee: Wild American Shrimp, Inc., Tarpon Springs, Florida
Grant No.: NA05NMF4271149 *NMFS Contact*: F/SER
Project Title: Wild American Shrimp Certification Program
Funding: *Federal:* $1 million *Recipient:* $0

Description: To develop a certification program to ensure all shrimp branded as "Wild American Shrimp" meet quality standards developed in cooperation with the NMFS Seafood Inspection Program. This will be accomplished with assistance from Sea Grant College participants in the Southeast United States.

AQUACULTURE

Project No.: 05-HQ-AQ *NMFS Contact*: F/MB5
Project Title: Development of a Permitting System for Marine Aquaculture
Funding: *Federal:* $300,000 *Recipient:* $0

Description: $300,000 in Saltonstall-Kennedy funds will be used to prepare background environmental and economic studies and outreach and education materials to implement the National Offshore Aquaculture Bill. The funding will cover contracts for environmental and economic studies needed to develop a regulatory system and for education and outreach tools and materials to inform the public on issues associated with offshore aquaculture. The proposed work was not considered for funding under the competitive S-K Grant Program because we did not have a competitive program in FY 2006, due to insufficient funding. We consider a "critical mass" of at least $1 million as the minimum needed to conduct the competitive program. Furthermore, the Administration's budget request and congressional action to date indicate the funding allocation will be insufficient for the competitive program in FY 2007.

V. COMPLETED GRANT PROGRAM PROJECTS

This section contains an assessment of each S-K Grant Program project completed during the period June 1, 2006, through May 31, 2007, 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 the NMFS contact.

FISHERIES UTILIZATION

Grantee: Kake Foods, Inc., Kake, Alaska
Grant No.: NA03NMF4270111 *NMFS Contact*: F/AKR
Project Title: Economic and Resource Full Utilization of the Seafood Processing Waste Stream: Discards, Underutilized Species, Byproducts and Carcasses through Conversion into High Value Organic Composts on an Industrial Scale Operation
Funding: *Federal*: $180,634 *Recipient*: $180,633

Assessment: The site was located where it would not have water runoff into local streams and where the soil was stable and capable of being a solid bed for compost operations. The selected site was sufficiently rocked in order to ensure that a solid bed was located near the transportation hub for incoming supplies and outgoing freight. The selection and procurement of key equipment was made after thorough research of compost equipment which is best suited for southeast Alaska. All logistical requirements were performed for movement of non-local equipment and supplies, and were tested for the production of composting operations in order to dial in an optimum quality formula. Results included mass production of compost to known industry specifications and obtaining an independent third party testing of composted product. Submitted an organic certification, nutrient content, packaging, and bag cover to known buyers. Custom packaging for known brands was formulated based on quality standards determined in a previous milestone. Outbound freight rates and a sales price were finalized in order to ship to various customers based on quality, market conditions, and consummate sales.

Grantee: University of Washington, Seattle, Washington
Grant No.: NA03NMF4270156 *NMFS Contact*: F/NWR
Project Title: Potential for Sustainable Expansion of the Dogfish *(Squalus acanthias)* Fishery in the Northeast Pacific
Funding: *Federal*: $157,431 *Recipient*: $25,958

Assessment: A broad scale phylogeographic study was carried out, which demonstrated genetic differentiation between Atlantic/South Pacific and North Pacific dogfish. The effect of differences in life history characteristics on sensitivity to fishing pressure was evaluated. Both of these results are of great importance to the management of north east Pacific, because they demonstrate (1) that Atlantic dogfish are sufficiently differentiated from their Pacific counterparts as not be to usable as predictor for reaction to fishing pressure and (2) that Pacific

dogfish are indeed more vulnerable to fishing than Atlantic dogfish, a cautionary result given plans to expand this fishery.

MANAGEMENT ALTERNATIVES AND FISHERIES USER CONFLICTS

Grantee: Massachusetts Fishermen's Partnership, Inc., Gloucester, Massachusetts
Grant No.: NA16FD2302 *NMFS Contact*: F/NER
Project Title: Institutionalizing Social Science Data Collection: A Pilot Project
Funding: *Federal*: $136,250 *Recipient*: $17,900

Assessment: This project explored the potential for community-based data collection and analysis to help address the scarcity of social science data on the fishing industry and fishing communities. Community panels were established for Portland, Maine; New Bedford, Massachusetts; and Point Judith, Rhode Island. Each panel was composed of 10 to 12 individuals, a cross-section of harvesters, processors, shore-side businesses, and other members of the fishing communities. The groups identified issues of concern to their ports, and with the help of coordinators and the PIs, gathered data through interviews and focus groups meetings, then drafted and reviewed reports. A major goal of the project was to provide management agencies with information about the potential impacts of regulatory changes on fishing communities so that adverse impacts could be mitigated. Another goal was to establish a community-based, participatory, and ongoing research platform in each of the communities. The panels can be and have been reconvened for special topics and the coordinators have been asked to report to town committees and boards to present summaries of the results. These opportunities have led to decisions benefiting the fishing industry.

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

Assessment: This project investigated environmental and ecological mechanisms influencing recruitment of Gulf of Maine northern shrimp and considered the implications of these for fishery management. Three specific goals were identified, the first of which was to investigate the influence of physical factors on recruitment. It was found that while sea surface temperature anomalies do have an effect on reproductive capacity, river flow variables did not.

The second goal was to investigate the match–mismatch hypothesis as a potential explanation for a previously demonstrated temperature effect on shrimp recruitment. It was found that shrimp larvae grow and survive better on a diet that contains significant amounts of zooplankton than a diet composed entirely of phytoplankton.

The final goal was to evaluate the effects of changes in predator community composition on shrimp recruitment. Five predators were found to have the highest frequencies of northern shrimp in their stomachs. These are Atlantic cod, little skate, red hake, smooth skate, and white

hake. Some species (e.g. Atlantic cod) showed little seasonal variation in percent frequency of occurrence of shrimp, while others show greater seasonal and interannual variation (e.g., smooth skate).

Grantee: University of Maryland, Cambridge, Maryland
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

Assessment: This project examined evidence for density dependence in growth and reproductive potential of Chesapeake Bay striped bass. The first objective was to estimate age and year-class-specific growth rates for juvenile and post-juvenile, and examine evidence for density dependence in growth. It was found that none of the dependent variables (mean and variance in length, change in mean length from July to September) were significantly affected by density of young of the year. There was, however, some suggestion of slower growth by the 1989 year-class at ages 1–3.

The second objective was to estimate fecundity and age at first maturation for females of year-class varying in initial abundance and test for density effects on these parameters. After 2 years of extensive sampling, it was found that fecundity and age at first maturation is not density-dependent.

Grantee: Gulf & South Atlantic Fisheries Foundation, Inc., Tampa, Florida
Grant No.: NA17FD2367 *NMFS Contact*: F/SER
Project Title: Development of a Vessel Buyout Business Plan for the Southeastern U.S. Commercial Shark Fishery
Funding: *Federal*: $366,560 *Recipient*: $43,999

Assessment: To assess the socio-economic impact of a buyout, primary (industry survey) and secondary (permit, landings, and U.S. Census) data were utilized. Baseline community profiles, derived through secondary data, were created for each of the major communities where shark is landed. These profiles were used to assess the context for considering a buyout of the shark fishing industry. Using an index of vulnerability composed of various measures of socio-economic well-being, the selected communities were rated in terms of their ability to withstand adverse impacts from a buyout. Most of the selected communities would be considered vulnerable to adverse impacts that might accrue from a buyout. Although permitted vessels are scattered throughout both the Gulf and Atlantic coasts (Maine to Texas), most landings are reported from the State of Florida. Therefore, a buyback within the shark fishery would have a disproportionate effect on Florida fishing communities.

Grantee: Texas A&M Research Foundation, College Station, Texas
Grant No.: NA03NMF4270091 *NMFS Contact*: F/SER
Project Title: Characterization of Atlantic Bluefin Tuna Stock Structure Using Stable 13C and 18O Isotopes in Otolith
Funding: *Federal*: $112,779 *Recipient*: $19,946

Assessment: Results presented here indicate stable isotopes appear to hold considerable promise as a tool to discriminate stocks of bluefin tuna and appear to be more useful predictors of nursery origin than trace elements in otoliths. Stable isotopes are much less likely to be contaminated by the drilling procedure than are trace elements, and thus contamination effects that often complicate trace element interpretation may not apply to stable isotope analysis. Still, caution must be exercised when interpreting these data and a conservative approach is warranted, particularly because the reference data set (signatures of yearlings) may not include all possible signatures for eastern and western nurseries. Further, there is a need to fine-tune the core isolation procedure to minimize the observed variability in the core signatures to improve assignment procedures.

FISHERIES BYCATCH

Grantee: Washington Department of Fish and Wildlife, Olympia, Washington
Grant No.: NA03NMF4270133 *NMFS Contact*: F/NWR
Project Title: Evaluate Selective Fishing Methods
Funding: *Federal*: $174,370 *Recipient*: $35,910

Assessment: A reproductive success study to evaluate the progeny of fish captured in fishing gears showed a significant difference between tangle net and gill net captured adults. The eyed egg to fry and fry abnormality rates were highest for tangle net captured fish. However, this imparted a 5.5 percent survival advantage, which from a biological perspective seems negligible.

Too few fish were captured in sport gear for analysis. A modified purse seine was used as a control. Because the purse seine could not fish in the same locations as the commercial and sport gears and too few fish were captured for survival estimation, this gear is not useful as a control for the Willapa system. However, all coho and Chinook captured in this manner were in excellent condition and, consequently, this gear should be further analyzed as a live capture selective harvest method.

Grantee: University of North Florida, Jacksonville, Florida
Grant No.: NA03NMF4270084 *NMFS Contact*: F/SER
Project Title: The Effectiveness of Bycatch Reduction Devices on Crab Pots on Reducing Capture and Mortality of Diamondback Terrapins and Enhancing Capture of Blue Crabs
Funding: *Federal*: $51,733 *Recipient*: $9,512

Assessment: We tested the efficacy of a bycatch reduction device (BRD) to prevent diamondback terrapins from entering and drowning in crab pots. We tested the devices in eight Florida counties over a period of 4 years. We used 15 unaltered crab pots (controls) and 15 crab pots with the BRDs (experimentals). We found that 73.2 percent of terrapins in our study could have been prevented from entering crab pots if BRDs were in use. In comparing crab catch between control and experimental pots, we found no statistically significant difference in the number, size, or sex of crabs captured. We recommend to the Florida Fish and Wildlife Conservation Commission that BRDs be required on all crab pots fished in Florida waters.

PRODUCT QUALITY AND SAFETY

Grantee: Louisiana State University, New Orleans, Louisiana
Grant No.: NA03NMF4270085 *NMFS Contact*: F/SER
Project Title: Anti–*V. vulnificus* Oyster Defensin: Its Synthesis and Use to Reduce the *V. vulnificus* Load in Oysters that Are to be Eaten Raw
Funding: *Federal*: $190,189 *Recipient*: $94,029

Assessment: This project represents a simultaneous effort to solve problems associated with public health and to explore the production of these peptides by hemocytes in the hemolymph of oysters in response to exposure to *V. vulnificus* with information and data obtained from ongoing research. It is accepted that a function of defensin is to protect a host lacking humoral immunity against invasion of its tissues by a would-be pathogen. We found that the threat of contamination of infection by *V. vulnificus* is not restricted to oysters—*V. vulnificus* is also a threat to other marine species that inhabit the same ecological niche as does *V. vulnificus*. We have detected AVvOD activity in tissue extracts from a number of marine species that have same ecological requirements. In contrast, when those marine species harvested from marine environments known to be unfavorable for *V. vulnificus* (cold temperatures, excessive salinity, deep waters, etc.) were examined, AVvOD could not be detected. Although contamination or infection of other species by *V. vulnificus* do occur as evidenced by the presence of AVvOD in extracts from their tissues, it has not received the attention given to oysters. Human infections have not been reported from these sources because, as a rule, these animals are not consumed raw.

Grantee: South Carolina Department of Natural Resources, Charleston, South Carolina
Grant No.: NA03NMF4270090 *NMFS Contact*: F/SER
Project Title: Evaluation of Ecological and Commercial Impact of White Spot Syndrome Virus (WSSV) Infection in the White Shrimp *(Litopenaeus setiferus)* and the Blue Crab *(Callinectes sapidus)* in Southeastern United States Using an Immunoassay Technique
Funding: *Federal*: $175,631 *Recipient*: $24,884

Assessment: The results of the present study indicate that although WSSV persists in the region, levels of infection in shrimp and crab populations are low, even during the physiologically rigorous reproductive cycles, and its occurrence does not pose a threat to the shrimp industry. The education/outreach program established and implemented through the course of this project provided educational opportunities to members of the commercial fisheries industry. The program shared the objectives and methodology of the study and built cooperative relationships that will afford collaborative researchers opportunities in the future. Scientific and technical reporting of research results in ongoing and follow-up efforts to disseminate research findings among cooperators and key stakeholders are planned.

Grantee: University of Florida, Gainesville, Florida
Grant No.: NA03NMF4270088 *NMFS Contact*: F/SER
Project Title: Effect of High-Pressure Treatment on Omega-3 Fatty Acids in Fish Muscle
Funding: *Federal*: $51,759 *Recipient*: $16,273

Assessment: High-pressure processing (HPP) may extend the shelf life of seafood while maintaining the fresh-like characteristics consumers demand. However, HPP may promote the oxidation of omega-3 fatty acids, thereby losing seafood's nutritional and market advantage. This research was to establish the effect of high-pressure conditions on fatty acid profile, to evaluate high pressure on fish lipid from freshwater and saltwater fish species, to study high-pressure treatment on a purified fish lipid system, and to investigate high-pressure treatment on the activities of endogenous muscle pro- and antioxidants. HPP reduced bacterial numbers and improved shelf life of seafood. Reductions of 3–6 logs were achieved with HPP and shelf life could be extended. Lipid oxidation increased as pressure increased, especially during storage over 3–6 days for all species tested. After HPP, fillets appeared as if they were cooked, although temperature during processing never went above 35 °C. This cooked appearance affected the surface color of the fillet with L-value and b-value increasing with pressure, while a-value decreased. Overall, HPP shows promise in extending the shelf life of seafood; however, further research is needed to control and understand lipid oxidation and color/appearance changes resulting from this process.

AQUACULTURE

Grantee: Pisces Molecular LLC, Boulder, Colorado
Grant No.: NA03NMF4270132 *NMFS Contact*: F/NER
Project Title: Development of a Reverse Genetics System to Produce Live, Attenuated Infectious Salmon Anemia Virus (ISAV) Vaccine Candidates
Funding: *Federal*: $252,834 *Recipient*: $33,129

Assessment: The goal of this project was to develop a reverse genetics for infectious salmon anemia virus (ISVA) to construct live viral particles from plasmid DNA molecules, with attenuated or reduced virulence that could induce a protective immune response in salmon and vaccinate against subsequent infection by ISVA in the environment. Although not complete, significant accomplishments toward this goal include: (1) identification of errors in published ISVA genomic sequences; (2) development of procedures for high-efficiency plasmid transfection into salmonid cells; (3) identification and cloning of a *Salmonid* Pol I promoter; (4) construction of dual-functional plasmids capable of promoting both mRNA and protein expression, as well as expression of negative strand viral, non-mRNA molecules in salmonid cells; and (5) demonstration of protein, mRNA, and viral mRNA production in salmonid cells and incorporation of a plasmid-encoded viral into extracellular viral particles.

Grantee: Maine BioTek, Inc., Winterport, Maine
Grant No.: NA03NMF4270119 *NMFS Contact*: F/NER
Project Title: Whole Killed ISA Virus Vaccine
Funding: *Federal*: $157,591 *Recipient*: $31,326

Assessment: The inactivation dynamics of infectious salmon anemia virus (ISAV) by β-propiolactone (BPL), binary ethylenimine (BEI), formaldehyde, or heat and the antigenic and immunogenic properties of the inactivated vaccines were evaluated. Chemical treatment of ISAV with 1:6000 BPL, 1.5 percent BEI of 50 mM formaldehyde abolished virus infectivity within 48 hours whereas heat treatment at 50 °C rendered the virus innocuous within 60 minutes. The inactivated ISAV vaccines were recognized by Atlantic salmon (*Salmo salar*) ISAV-specific antibodies and were differentially recognized by an ISAV HA-specific monoclonal antibody. The inactivated whole virus vaccines were not efficacious in vaccinated Atlantic salmon challenged by intraperitoneal injection with ISAV 700–800 degree days (12 °C) after immunization and did not elicit a measurable binding antibody response in immunized Atlantic salmon. In contrast, sera collected from convalescent fish and passively transferred to naïve fish provided 31 to 68 percent protection and Atlantic salmon that survived lethal challenge with ISA virus were 100 percent protected upon re-exposure to the virus. Live ISA virus was not cultured from convalescent Atlantic salmon, yet cohabitation studies with naïve Atlantic salmon indicated that live virus was still being shed from the convalescent fish.

Grantee: University of Southern Maine, Portland, Maine
Grant No.: NA03NMF4270123 *NMFS Contact*: F/NER
Project Title: Atlantic Salmon Aquaculture Considering Endangered Status of Atlantic Salmon and Clean Water Act
Funding: *Federal*: $76,204 *Recipient*: $13,413

Assessment: This project examined the effects of the Endangered Species Act and Clean Water Act application and enforcement on salmon aquaculture operations in Maine. In support of this objective, four reviews/assessments were conducted: (1) a review of land, riparian, and ocean use implications of ESA listing of certain pacific salmon stocks on the West Coast in an effort to address Atlantic salmon ESA listing impacts in Maine; (2) an assessment of Clean Water Act litigation impacting Maine aquaculture operations; (3) an assessment of legal concerns of NGOs and other in regards to net pen aquaculture to determine what steps might be taken to avoid litigation; and (4) a review of legal regimes that govern Atlantic salmon fishing outside U.S. waters that could imperil ESA-listed stocks of Atlantic salmon.

The results of the project's research was used to create guides to identify opportunities for state and federal legal and regulatory action that will mitigate negative impacts on wild salmon. Guides were also produced to inform aquaculture operators of measures sought by NGOs that, if implemented voluntarily, could reduce the likelihood of litigation. These guides are listed below:

- J. Duff, *Salmon Aquaculture Struggles in Maine*, 26:4 The Coastal Society Bulletin 1 (2004) (Summary of Clean Water Act and Endangered Species Act related legal and regulatory constraints on net pen salmon aquaculture operators)

- J. Duff, *Aquaculture Laws and Regulations: Answering the Questions You've Been Asking About Maine Atlantic Salmon Aquaculture.* (Question and answer monograph)

- J. Duff, *Atlantic Salmon Aquaculture: Constraints and Influences of Implementation of the Clean Water Act and the Endangered Species Act.* (Research white paper)

Grantee: Advanced BioNutrition Corporation, Columbia, Maryland
Grant No.: NA03NMF4270163 *NMFS Contact*: F/NER
Project Title: Novel Oral Vaccine for Infectious Salmon Anemia
Funding: *Federal*: $190,400 *Recipient*: $56,290

Assessment: This project was initiated with an overall goal to developing an oral vaccine against infectious salmon anemia virus (ISAV) of salmon using virus-like particle (VLP) as a platform. Development of oral vaccine against viral diseases in salmonids will be valuable for aquaculture industries in the United States and elsewhere.

Several milestones were achieved toward that overall goal of developing oral vaccine for fish. Infectious pancreatic necrosis virus (IPNV) capsid gene, VP2, was successfully cloned and expressed using a yeast expression vector. Transmission electron microscopy showed that the recombinant VP2 protein forms sub virus-like particle (sVLP), 20 nm in diameter. IPNV VP2

sVLPs, when delivered into rainbow trout via injection or oral route, elicited anti-IPNV antibody response. Rainbow trout immunized with IPNV sVLPs, via injection or oral route, were challenged with infectious IPNV. A real-time RT-PCR assay was developed to quantify IPNV load in the virus challenged rainbow trout. Immunized fish showed significant reduction in viral load compared to unimmunized fish, indicating that IPNV VP2 sVLPs could be used as oral vaccine.

To evaluate the potential of using the IPNV sVLP platform to express foreign epitope, human oncogene *c-myc* epitope was inserted into IPNV VP2 capsid gene and expressed in yeast. The chimeric IPNV-*c-myc* sVLPs, when injected in rainbow trout (*Onorhynchus mykiss*), resulted in positive seroconversions not only against the IPNV VP2 sVLP backbone, but also against the human oncogene epitope *c-myc* epitope) in the injected fish. This demonstrated that IPNV VP2 sVLP can accommodate heterologous epitope (e.g., *c-myc* epitope in our study) without destroying the tertiary structure of the backbone and the antigenicity of the sVLPs, and the foreign epitope retains immunogenecity. Our data indicate that *c-myc* epitope could potentially be replaced with ISAV epitope, and oral vaccine against both ISAV and IPNV could be developed. These findings open up a possibility of developing multivalent vaccine using IPNV VP2 sVLPs platform.

Grantee: University of New Hampshire, Durham, New Hampshire
Grant No.: NA03NMF4270183 *NMFS Contact*: F/NER
Project Title: Engineering Design and Analysis for More Secure Salmon Net Pen Systems
Funding: *Federal*: $472,662 *Recipient*: $61,648

Assessment: This project was conducted at a 20-unit net pen fish farm located in Broad Cove in Eastport Maine near the Bay of Fundy. Using the field data collected by both current and load meters, a numerical model was developed to calculate mooring system tension and determine stresses in net pen structural components. Once completed, this model considered both velocity reduction and load characteristics that occur through the net pen system for both clean and fouled net conditions. The numerical model was validated using measured current velocity values obtained outside the farm, and mooring line tensions calculated with the numerical model were compared with load-cell field data.

The model was used to create a conceptual design of a large offshore fish farm. Mooring system and cage structural modeling simulations were performed to specify net pen components necessary for safe operation and to minimize potential escapement events.

Grantee: University of Maine, Orono, Maine
Grant No.: NA03NMF4270167 *NMFS Contact*: F/NER
Project Title: Demonstration of Sustainable Cod Farming from Egg to Grow-out in Maine
Funding: *Federal*: $358,022 *Recipient*: $187,883

Assessment: This project explored the potential for grow-out of farm-raised Atlantic cod, the quality evaluation of the marketable product, and the development of a supply of disease free cod eggs. Although the project was able to raise cod in a net pen environment, there were significant reductions in growth due to cataracts developing in the eyes of the juvenile fish. This eye damage reduced the affected cod's ability to feed and lowered the overall efficiency of the venture. It was found that steps need to be taken to reduce the cataract problem in order to effectively farm cod, and that juvenile Atlantic cod with cataracts are not worth stocking in a net pen environment.

After a series of tests at the University of Maine Food Science laboratories in Orono, it was concluded that the overall quality of the farm-raised cod was comparable to wild-caught product. Two important positive attributes of the farm-raised cod included its lack of parasitic worms and its excellent nutritional profile.

The establishment of a disease-free industry source of Atlantic cod eggs consisted of two components. The first involved a new method of disinfecting cod eggs using ozonated water, and the second consisted of a 20,000-gallon recirculation system for brood stock which serves as a quarantine system. These combine to form a system that can supply disease-free eggs on an industrial scale.

Grantee: University of Washington, Seattle, Washington
Grant No.: NA03NMF4270112 *NMFS Contact*: F/NWR
Project Title: Restoration and Aquaculture of Northern Abalone *(Haliotis kamtschatkana)* in Washington State: Status of the Resource, Population Genetics, Habitat and Culture of Captive Abalone
Funding: *Federal*: $274,418 *Recipient*: $80,776

Assessment: An examination of length frequency of resident abalone was quantified over time, and a significant increase in mean abalone size was observed between 1996 and 2003 ($p<0.0001$), indicating that new recruits were not entering the measured populations. These trends have continued into 2006.

Grantee: Florida Fish and Wildlife Conservation Commission, Port Charlotte, Florida
Grant No.: NA03NMF4270093 *NMFS Contact*: F/SER
Project Title: Restoration of Bay Scallop *(Argopecten irradians)* Populations on the West Coast of Florida
Funding: *Federal*: $251,979 *Recipient*: $44,361

Assessment: Bay scallops (*Argopecten irradians*) support a culturally and economically important recreational fishery along the west coast of Florida, but many of the local scallop populations that support this fishery have been severely stressed in recent decades. This project was designed to implement and test aquaculture-based strategies to rebuild bay scallop populations that occupy coastal waters in or near Crystal River, Homosassa, Anclote, and Sarasota Bay, Florida.

Adult scallops were harvested from wild populations and induced to spawn in the laboratory. Offspring were raised in a commercial hatchery to at least one-mm SH. They were then planted into mesh bags that were deployed in local waters (generally Bayboro Harbor in downtown St. Petersburg or Anclote Harborage near Tarpon Springs) until they reached at least 18 mm SH, at which time they were planted into cages at the targeted restoration sites during spring 2005. Planted scallops grew to adult size throughout the following summer and spawned during fall. Growth, mortality, reproductive development, and biochemical composition were monitored during the grow-out phase, and those results were compared with similar data obtained from wild bay scallops that were harvested from the vicinity of the restoration sites. Following complete loss of the stock targeted for planting in Sarasota Bay, we implemented a novel restoration strategy that utilized the larval stage and did not require supervised laboratory or field grow-out.

Scallops planted at the Anclote study site grew more slowly and never achieved a size as large as sympatric wild scallops, suggesting that fewer energetic reserves were available for gamete production. But caged scallops experienced a lower rate of mortality than their wild conspecifics and may have experienced a more protracted spawning period. Reproductive analyses of both cultured and wild scallops indicate that the cultured scallops did successfully spawn, thus contributing larvae for replenishment of local populations. Planting of pediveligers in Sarasota Bay did not result in detectable quantities of adult bay scallops at the restoration site. We received anecdotal reports from bay shrimpers of increased scallop abundance in Sarasota Bay, and we also found concentrations of scallops in the bay where in previous years we found few if any scallops. However, despite the apparent increase in scallop abundance in Sarasota Bay, no clear genetic link could be identified. It is apparent from the results of this study and our previous bay scallop restoration studies that additional work is needed to better understand and quantify the contribution of planted scallops to the success of future year classes.

Grantee: Florida Marine Research Institute, St. Petersburg, Florida
Grant No.: NA17FD2368 *NMFS Contact*: F/SER
Project Title: Bay Scallop *(Argopecten irradians)* Population Restoration on the West Coast of Florida
Funding: *Federal*: $206,753 *Recipient*: $41,798

Assessment: This study was undertaken to support the restoration of bay scallop populations in the Sarasota Bay estuarine system. After reviewing the historical wind and precipitation data in the region, it was decided that 2001 represents a "typical" year. Using a three-dimensional circulation model CH3D, a 1-year simulation of the Sarasota Bay system in 2001 was conducted. Results of the 1-year simulation, including simulated versus measured water level and simulated residual flow and salinity fields for each month of 2001, are first presented in this report. The

CH3D model was then coupled to a three-dimensional particle tracking model to simulate the fate and dispersion of particles released from three locations in Sarasota Bay during November 1 to November 14, 2004. Based on detailed comparison of model results, release site #3 is found to be the best, as most of the particles remained in the estuary after 14 days. Digital results of the model have been provided to the Florida Fish and Wildlife Commission.

Grantee: University of Georgia Research Foundation, Inc., Athens, Georgia
Grant No.: NA03NMF4270087 *NMFS Contact*: F/SER
Project Title: Examination of Coastal Aquaculture Effluent and Receiving Water Quality throughout the Tidal Cycle
Funding: *Federal*: $94,094 *Recipient*: $10,470

Assessment: The primary goal of assessing water quality in aquaculture discharge and in tidal receiving waters throughout the tidal cycle was achieved. The final report provides an introduction and purpose for this study to evaluate changes in both facility effluent and receiving water quality throughout the tidal cycle. A detailed description of sampling sites at the two facilities in this study is provided, in addition to detailed descriptions of sample collections and analyses for TSS, TN, TAN, BOD, and Chlorophyll, and semi-continuous (every 10 minutes) measurements of DO, temperature, and salinity. None of the PSF sites exhibited a strong correlation between TSS and the tide cycle (i.e., relative depth). The discharge and connector correlate well with each other for TAN and TN, and correlate moderately with the tide cycle, but do not correlate with TAN and TN in the receiving waters. The BOD range observed in the receiving water (i.e., 2 to 6 mg/L) is substantially lower than the BOD range observed in the discharge (i.e., 6 to 16 mg/L).

Grantee: Texas Agricultural Experiment Station, College Station, Texas
Grant No.: NA17FD2371 *NMFS Contact*: F/SER
Project Title: Development of DNA Microsatellites for Genetic Applications in Cobia *(Rachycentron canadum)*
Funding: *Federal*: $120,627 *Recipient*: $40,542

Assessment: Polymerase chain reaction (PCR) primers for 35 nuclear-encoded microsatellites were developed from a genomic library of cobia (*Rachycentron canadum*). All 35 microsatellites were tested for reproducibility and polymorphism, using 24 cobia sampled offshore of Ocean Springs, Mississippi. Thirty-three of the microsatellites were found to be polymorphic; genotypes at seven of these differed significantly from Hardy-Weinberg (HW) expectations, possibly due to the presence of null alleles. Levels of allele and gene diversity (expected heterozygosity) were lower, on average, than values reported previously for other marine fishes. All 35 microsatellites should provide useful tools in progeny tests to estimate genetic contributions to a variety of aquaculture production traits. The 26 microsatellites whose genotypes were in HW equilibrium should provide useful tools for future studies of cobia relating to both stock assessment and aquaculture. Five multiplex panels were developed to facilitate and reduce expenses of using the microsatellites for both applications. Development of the multiplex panels was in addition to proposed objectives.

VI. COMPLETED NATIONAL PROGRAM PROJECTS

This section contains an assessment of each S-K Grant Program project completed during the period June 1, 2006, through May 31, 2007, 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 the NMFS contact.

TRAINING AND EDUCATION

Grantee: City of New Bedford, New Bedford, Massachusetts
Grant No.: NA05NMF4271296 NMFS Contact: F/NER
Project Title: Safety Training for Commercial Fishermen
Funding: Federal: $99,960 Recipient: $ 46,494

Assessment: This project conducted a total of 17 Phase 1 Basic Safety Training workshops that provided, on a voluntary basis, hands-on safety and survival skills, which gave fishermen enough knowledge and experience to have confidence about what to do in the face of a real emergency at sea. The half-day program provided instruction in firefighting, emergency communications, damage control, life rafts and equipment, emergency flares, donning of immersion suits, and helicopter hoist procedures. A total of 649 fishermen received this training during 2005 and 2006.

Five Phase 2 Certified Fishing Vessel Drill Conductor Training workshops were also conducted. These consisted of a full-day course of classroom instruction plus a half-day of onboard drill. At the end of the course each participant is presented with a certificate that has been approved by the Coast Guard indicating they meet the legal requirements of a Certified Commercial Fishing Vessel Drill Conductor.

There have already been several reports of fishermen who attributed their survival during an actual emergency at sea directly to the training provided by these workshops.

Grantee: Herring Gut Learning Center, Port Clyde, Maine
Grant No.: NA05NMF4721128 *NMFS Contact*: F/NEC
Project Title: Aquaculture and Marine Science Program Expansion Project
Funding: *Federal*: $100,000

Assessment: Curriculum was developed that covered all required topics by incorporating classroom study with real-life application in a program called "Science for a Sustainable Future." Each student was responsible for the care and maintenance of a recirculating tank in a hatchery or aquaponic greenhouse, learning water-quality testing, general husbandry, and aquaponic techniques. The ongoing care of the tanks was part of the student's grade, and they were held accountable if they were absent and unable to fulfill this requirement. By January, students earned the necessary science credit for high school graduation, something they may not have been able to achieve in a traditional classroom.

APPENDIX:
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:

NMFS Headquarters
Steve Aguzin
National Marine Fisheries Service
Financial Services Division
1315 East-West Highway
Silver Spring, MD 20910
Telephone: (301) 713-2358
E-mail: stephen.aguzin@noaa.gov

Northeast Region
Joyce Lacerda
National Marine Fisheries Service
State, Federal & Constituent Programs Division
One Blackburn Drive
Gloucester, MA 01930
Telephone: (978) 281-9256
E-mail: joyce.lacerda@noaa.gov

Southeast Region
Ellie F. Roche
National Marine Fisheries Service
Cooperative Programs Division
263 13th Avenue, South
St. Petersburg, FL 33701
Telephone: (727) 824-5324
E-mail: ellie.roche@noaa.gov

Southwest Region
Trisha Culver
National Marine Fisheries Service
Fisheries Management Division
501 West Ocean Boulevard, Suite 4200
Long Beach, CA 90808
Telephone: (562) 980-4239
E-mail: trisha.culver@noaa.gov

Pacific Islands Region
Scott Bloom
National Marine Fisheries Service
Fisheries Management Division
1601 Kapiolani Boulevard, Suite 1110
Honolulu, HI 96814-4704
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E-mail: scott.bloom@noaa.gov

Northwest Region
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National Marine Fisheries Service
Trade and Industry Services Division
7600 Sand Point Way, N.E.
BIN C15700, Building 1
Seattle, WA 98115
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Alaska Region
Shawn Carey
National Marine Fisheries Service
Office of Management and Information
Federal Building
709 West 9th Street, 4th Floor
Juneau, AK 99801
Telephone: (907) 586-7845
E-mail: shawn.carey@noaa.gov