

Regional/Program Profiles

REGIONAL PROFILE: NORTHEAST

REGIONAL OVERVIEW:

Maine, MIT (MA), New Hampshire, Rhode Island, Connecticut, New York

REGIONAL INTEGRATION/COORDINATION ACTIVITIES:

Topic oriented

- Fishermen-led Fishing Gear Workshop for the Non-fishermen –RI and NH Sea Grant collaborated to provide gear design theory to participants.
- 2007 Western Gulf of Maine Closure Area Conference – Collaborative effort between ME Sea Grant, Northeast Consortium and UNH Zoology Department.
- 2007 Haddock Separation Technology Workshop – Collaborative effort between ME Sea Grant, RI Sea Grant and MIT Sea Grant as well as MA Division of Marine Fisheries, Memorial University (Newfoundland), Gulf of ME Research Institute and UCONN SMAST.
- 2007 International Haddock Symposium – Collaborative effort between RI Sea Grant, UCONN SMAST, Memorial University (Newfoundland), MA Division of Marine Fisheries and the Gulf of ME Research Institute.
- 2006 ME Fishermen's Forum, Fish Conservation Gear Session – Collaborative effort between ME Sea Grant, MIT Sea Grant, RI Sea Grant, MA Division of Marine Fisheries and the Gulf of ME Research Institute.
- 2004 Shrimp Selectivity Workshop – Collaborated with ME Sea Grant to provide outreach on innovate fishing gear design.
- Sea Grant Publication (UNHMP-IS-SG-06-31) on fish handling – Collaboration between ME Sea Grant and NH Sea Grant.

Coordination

- Northeast Regional Fisheries Extension Meetings (Every 2 years)
- Regional NMFS/SG meeting (1) and National NMFS/SG Meeting (2)
- National Coordination meetings (3 plus national extension meeting)
- Facilitator training (All NE Programs)
- Regional fisheries extension web site (seagrant.gso.uri.edu/reg_fish/)
- National fisheries extension web site portal (seagrant.gso.uri.edu/fisheries/extension/index.html)

FEE-FUNDED PROPOSALS:

Round 1:

Fishing Gear Mapping Project (Led by MIT, all programs participated except NY)

NE FEE Regional Coordination (RI)

Using Collaborative Workshops to Develop New Approaches to the Management of the Northern Shrimp (*Pandalus borealis*) Fishery in New England (ME)

Fee: fisheries facilitation fund (NH)

Better Information for Better Management: Fisheries Educational Workshops (RI)

National Collaboration in Fishing Technology (MIT, VIMS,GA,TX,WA,AK)

Reallocated funds from core

Extension support of Maine's Lobster Zone Co-Management Process (ME)

Extension Support for effort to identify and eliminate non-point source pollution affecting clam flats (ME)

Fisheries Models for Laymen (NH)
 National Fisheries Law Symposium (RI)
 User participation in Resource Management: An analysis of multi-modal communication effectiveness between fishermen, managers and academics (RI)
 Fisheries Policy: Licensing and Management (RI)
 Extension Support for position in MPA's (CT)
 Hudson River Fisheries Extension Project: Tributary Stewardship (NY)

Round 2

NE FEE Regional Coordination (RI)
 Developing Partnerships to Support Sustainable Fisheries and Regional Coordination (RI)
 Enhancing the Involvement of Fishermen in Marine Protected Area Activity within Maine State Waters and the Gulf of Maine (ME),
 Technology Transfer From Cooperative Fisheries Research Projects (NH)

FEE FUNDS (ANNUAL ALLOCATION): ROUND 1: not counted in total ROUND 2: \$215,866

TOTAL FEDERAL FUNDS (4 YEARS): \$863,464

LEVERAGED FUNDING: \$1,451,133

LEVERAGED/FEE RATIO: \$1.68/\$1 (only includes RI, NH, ME dollars)

REPORTED REGIONAL IMPACTS:

FEE Agent Boards and Committee Participation	24
FEE Agent Collaborating Partners	35
Products Produced by FEE agents	15
State and National Awards	2
Education Programs Sponsored/Conducted by FEE agents	23
New Hires	2 (NH, 1; RI, 1)
Number of graduate and undergraduate students supported, including fellowships and internships	3
Publications (Peer-reviewed, reports, symposia, etc.	15

PROGRAM PROFILE: MAINE

PROGRAM OVERVIEW:

The first round of FEE funding supported a Maine Sea Grant and University of Maine Cooperative Extension Associate, Sherman Hoyt, for the following projects:

- Fisheries Educational Workshops on bycatch reduction in the groundfish industry, the use of marine protected areas as a fisheries management tool, and rights-based fisheries management
- Extension Support of Maine's Lobster Zone Co-Management Process
- Using Collaborative Workshops to Develop New Approaches to the Management of the Northern Shrimp (*Pandalus borealis*) Fishery in New England

The second round of funding supported "Enhancing the Involvement of Fishermen in Marine Protected Area Activity within Maine State Waters and in the Gulf of Maine." This project runs through 2009. Its objectives are:

- Provide a forum for Marine fisheries constituents and other stakeholders to learn about and provide input to the Federal Marine Protected Area (MPA) Advisory Committee, the National MPA Center, fisheries management councils, and other regulatory and non-regulatory entities on the role and use of MPAs in fisheries management.

Support state and local processes to evaluate the current and potential roles for MPAs as tools for fisheries and other marine management in Maine state waters.

Support efforts to develop science-based information on the value and purpose of MPAs o Minimize conflict among and between fisheries constituents and other stakeholders by promoting dialogue and disseminating science-based information.

Establish Maine Sea Grant as a trusted source for clear, locally accessible, and up-to-date information about MPAs.

NOTEWORTHY ACTIVITIES/ACCOMPLISHMENTS:

MPA Education and Outreach Workshops

In 2005, Maine Sea Grant FEE team contributed funding and helped facilitate the NEFMC's public stakeholder MPA Education and Outreach Workshops in Southern Maine and Rhode Island.

Increased Stakeholder Dialogue

Maine Sea Grant FEE team assisted the NOAA MPA Center in hosting a public participatory dialogue in 2005 in Portland, Maine, to solicit input on the development of a national system of MPAs

Marine Managed Area (MMA)

In 2005, the Maine Sea Grant FEE Team worked as a primary partner with the Maine Coastal Program to coordinate the compilation of a Marine Managed Area (MMA) Inventory for Maine. The Maine inventory will be part of a national MMA inventory that was compiled by the NOAA MPA Center and Department of the Interior to "inform federal, state, commonwealth, territorial, local, and tribal agencies of the locations and characteristics of existing MPAs," required by the Federal MPA Executive Order 13158.

Enhancement of Regional Shrimp Management

Maine Sea Grant led a regional effort in 2005-06 to convene scientist, managers, and industry members to formulate innovative strategies for the management of northern shrimp (*Pandalus borealis*) in the Gulf of Maine.

Essential Fish Habitat Omnibus Amendment

Maine Sea Grant FEE staff worked with NEFMC staff in 2007 to plan for another round of public meetings related to Phase II of the Essential Fish Habitat Omnibus Amendment 2 (these meetings have since been delayed to 2008, due to a change in staffing at the NEFMC and other factors).

PROGRAM IMPACTS:

As a result of the northern shrimp workshops, fishery management was able to rely on industry and scientific input in order to better conserve the fishery.

Engagement of the lobster industry in the zone process has resulted in better engagement and stewardship by the industry members resulting in arguably the best managed fishery in the region.

EXPANDING PARTNERSHIPS:

Maine Sea Grant FEE team has built and maintained strong working relationships with representatives of the New England Fishery Management Council MPA Subcommittee; the NOAA MPA Center; the Coastal States Organization; the Maine Department of Resources, a Maine representative on the National MPA Advisory Committee; other Maine state agency personnel involved in MPA processes; and other organizations engaged in MPA-related processes in Maine.

Maine Sea Grant FEE team collaborated with the Maine Department of Marine Resources (DMR) Commissioner and other DMR staff to develop a three-tiered and sequential approach for assessing and addressing existing needs for MPA-related extension in Maine.

Maine Sea Grant has established itself as a dependable and unbiased resource to the state's legislative committee that deals with marine resource management (Joint Standing Committee on Marine Resources).

As a trusted convener, Maine Sea Grant has helped to legitimize the participation of industry members in policy development in several fisheries in Maine. Through these FEE projects and other related activities, Maine Sea Grant has provided forums to engage University-based researchers in contemporary fisheries research.

PROGRAM PROFILE: NEW HAMPSHIRE

PROGRAM OVERVIEW:

New Hampshire Sea Grant utilized FEE funds to develop a comprehensive publication that explains in layman terms how scientists use fisheries stock assessment models to make recommendations to managers concerning stock sizes, catch limits and closures. Funds were also applied to the NHSG Technology Transfer from Cooperative Fisheries Research Projects (NH), which transferred conservation gear technology that will reduce bycatch and minimize the impact of fishing gear on benthic habitats. In short, the program objectives center on promoting and facilitating the development of selective and lower impact “soft-bottom” gear that can then be transferred to industry stakeholders through extension programs.

Extension activities include:

Promoting cooperative research.

Engaging new industry members with the collaborative research process.

Educating the general public, industry, management, and science communities of the tangible benefits of cooperative research.

In addition to these objectives, the NH FEE program seeks to be responsive to industry needs, which has led to the development of the Safety-at-Sea program and the Industry-led Fishing Gear Workshop for Non-fishermen.

NOTEWORTHY ACTIVITIES/ACCOMPLISHMENTS:

Safety-at-Sea Program

Fishing continues to rank among the most hazardous professions in the world, outranking other high-casualty industries such as timber cutting and logging, firefighting, and law enforcement. The list of casualties, injuries, sinkings, and rescues goes on with each passing year. To promote safe operations of fishing vessels and the individuals who operate them, NH Sea Grant established the Safety-at-Sea program.

Fishermen-led Fishing Gear Workshop

For the Non-fishermen, fisheries management in the U.S. has become very complicated. Restrictions on fishing gears and operations have become key components in fisheries management plans. Increasingly, people without fishing gear backgrounds are involved in fisheries management processes and debates. Such gaps can be filled with training workshops that utilize the experience of fishermen in fishing gears and knowledge of their operation and knowledge. In 2004, NH Sea Grant began the Fishermen-led Fishing Gear Workshop for Non-fishermen. Since this time, fifty-nine (59) participants representing congressional /senatorial staffers, State and Government regulators, and marine educators have completed the workshop.

Increasing Industry Participation and Awareness of Cooperative Research

Awareness within the fishing industry of cooperative research and the benefits of partnering with the science community has increased regionally as the result of NH FEE programming, websites, and industry and Sea Grant publications. Since 2004, twenty five (25) articles were published in the Commercial Fisheries News (CFN), highlighting cooperative research funded by the Northeast Consortium. CFN readership is estimated at more than 10,000 individuals. In addition, eight (8) Sea Grant publications have been published on topics such as selecting safe seafood, shrimp selectivity, haddock trawl separation technology, dogfish biology, conservation engineering, and yellow-tail flounder.

Increasing Size Selectivity in the Northern Shrimp Fishery

The reappearance of robust northern shrimp stocks, believed to be the result of strong 2003 and 2004 shrimp year-classes, has resulted in significant harvesting opportunities for the commercial fishing industry that could translate into increased economic benefits and stability for harvesters and processors. However, due to the prolonged period of intense management and reduced New England shrimp landings, the shore side infrastructure (i.e. processing facilities) was reduced and regional markets were forced to import northern shrimp to maintain their markets. To compete in such a diluted market, fishermen have tried to improve quality and consistency to both increase local demand for fresh product and obtain higher prices for their catch. Since 2004, NH Sea Grant has worked collaboratively with fishing industry members and researchers to enhance the selectivity and reduce bycatch in the northern shrimp fishery. During the 2007 Northern shrimp fishery three (3) commercial fishermen used size selectivity gear developed through cooperative research and transferred by the NH FEE program instead of the traditional Nordmore grate. A total of five (5) industry adopters are expected for the 2008 season.

Proactive Resource Management

To assist with the proactive management of the haddock resource, a regional haddock gear workshop was held to discuss bycatch reduction and separation technologies in the haddock fishery. This discussion led to recommendations on potential conservation gear for inclusion into the fishery. Also, an International Symposium on haddock biology, management and gear technologies was offered with more than ninety (90) participants from US, Sweden, Scotland, Norway, Denmark, England, and Canadian provinces attending. A dedicated symposium evaluating the Western Gulf of Maine Closure Area and the impacts of fishing gear on the seafloor was also organized by the NH FEE program. Over ninety (90) participants from New England participated in the conference, which included fishermen, scientists, conservationist and regulators.

PROGRAM IMPACTS:

During the 2007 Northern shrimp fishery three (3) commercial fishermen used size selectivity gear developed through cooperative research and transferred by the NH FEE program instead of the traditional Nordmore grate. A total of five (5) industry adopters are expected for the 2008 season.

Since 2004, sixty-one (61) industry members participated in weather interpretation and marine welding safety workshops under the Safety at Sea Project. Sixty-two (62) NH commercial fishermen obtained certification as Vessel Safety Drill Conductors. Of these participants 80% have received their US Coast Guard safety accreditation.

Interest and participation in cooperative research has increased through extension FEE contacts with fishermen and researchers region wide (MA, NH and ME). Since 2004, a total of (22) fisheries related cooperative research proposals were submitted to the Northeast Consortium, NMFS CRPP, and NOAA. Ten projects have been funded. A total of twenty (36) fishermen and twelve(12) scientists partnered in the development of these proposals and research.

PROGRAM PROFILE: RHODE ISLAND

PROGRAM OVERVIEW:

Currently, there are two (2) FTEs employed with Sea Grant funding in the RI Sustainable Fisheries Extension Program. However, using supplemental grants including the FEE position, this has expanded to four (4) full-time, two (2) part-time and several undergraduate and graduate students serving as staff. As a result of the accomplishments of this group of dedicated professionals, RI Sea Grant has had a continued presence in regional and national fisheries issues far beyond the Sea Grant investment. RI Sea Grant is continually stretched beyond its means as the need for expertise and service exceeds the program's ability to provide them. FEE has allowed RI Sea Grant to keep up its current level of fisheries involvement and expand into a greater role with the NE Fisheries Management Council and other stakeholder groups (some new).

NOTEWORTHY ACTIVITIES/ACCOMPLISHMENTS:

Changing the Game: Transformative Leadership Workshop

Participants in the Transformative Leadership Workshop included fishermen from the RI Shellfishermen's Association, RI Lobstermen's Association, Ocean State Fishermen's Association, Commercial Fishermen's Association, RI Saltwater Anglers, RI Commercial Rod and Reel Angler's Association, East Coast Fishermen's Foundation, Atlantic Offshore Lobstermen's Association, and representatives from the RI Marine Fisheries Council and the NE Fisheries Management Council. The sessions were led by David Gershon from the Empowerment Institute, a leader in transformative change. The transformative strategy is surprisingly simple with its 5 steps: 1) Create a positive vision of what you want, 2) Empower individuals to develop personally through participation in vision, 3) Implement vision through social diffusion, 4) Support individuals in implementing transformative change, and 5) Continually refine based on feedback.

RI Commercial Fisheries Center and Commercial Fishermen's Research Foundation

The partnering of industry with researchers and managers is a vital part of the code of conduct for responsible fisheries. A concrete manifestation of these partnerships was created with the establishment of the RI Commercial Fisheries Center located at the University of Rhode Island. The members of the center are all non-profit organizations and include the RI Commercial Fishermen's Association, Ocean State Fisherman's Association, RI Shellfishermen's Association, RI Lobstermen's Association, RI Charterboat Association, Atlantic Offshore Lobstermen's Association, East Bay Gillnet Association, Pt Judith Fishermen's Memorial Foundation, Pt Judith Scholarship Fund and the Commercial Fisheries Research Foundation of Rhode Island. Fishermen in RI have gone further than agreeing to be just partners in research projects and have developed the Commercial Fisheries Research Foundation that will allow them to fund and participate in prioritizing research.

Bycatch Reduction through Gear Development

RI Sea Grant won the World Wildlife Fund Annual Smart Gear award for 2007 in conjunction with the RI fishermen who collaboratively designed and tested a modified trawl net design for selectively catching haddock (Eliminator Trawl). This net design eliminated the catches of cod and other regulated groundfish species without affecting the catch of the target haddock. This net design will allow fishermen to use "B" days to target abundant species without having to use their groundfish "A" days and without damaging stock undergoing rebuilding.

Better Information for Management

Two strategic educational workshops were held in 2007 and 2008: 1) A joint workshop on Menhaden Science and Policy was held between RI SG and RI DEM. It was attended by 70 people including legislators. The outcome was a "truce" in the menhaden war between the commercial, recreational, and environmental sectors. Flaxen Conway from Oregon SG assisted in the facilitation and design of the workshop, and 2) A NE regional workshop entitled Sector Allocation as a Management Tool convened in conjunction with the NEFMC and the NOAA Fisheries Regional Office and Science Center. Attended by over 100 people, this workshop was designed to provide information about sector management and find where more information is needed and how to obtain it.

PROGRAM IMPACTS:

The Eliminator Trawl will allow for the harvest of underutilized haddock translating to an economic impact of \$30 million dollar for the industry.

The Commercial Fishermen's Research Foundation was awarded \$1.3 million to design and administer the Southern New England Collaborative Research Initiative

LOCAL, STATE, AND NATIONAL AWARDS:

World Wildlife Fund Annual Smart Gear award (2007) in conjunction with the RI fishermen who collaboratively designed and tested a modified trawl net design for selectively catching haddock (Eliminator Trawl).

University of Rhode Island, College of Environment and Life Sciences Outstanding Outreach Award
Ocean State Fishermen's Association Award for dedication and commitment for the betterment of the RI Commercial Fishing Industry

EXPANDING PARTNERSHIPS:

RISG has developed three Memorandums of Understanding (MOUs) with a state agency (RI Department of Environmental Management) and two federal agency (NOAA/NMFS Fisheries Science Center, and NOAA/NMFS Fisheries Regional office).

RISG helped establish the RI Commercial Fisheries Center based at the University of Rhode Island, and assisted with the strategic planning for the RI Commercial Fishermen's Research Foundation.

REGIONAL PROFILE: GULF OF MEXICO

REGIONAL OVERVIEW:

Florida, Louisiana, Mississippi/Alabama, and Texas

With the support of FEE-funding, Gulf programs have held two national conferences focusing on fisheries recovery and transition, developed more than 30 extension and applied research publications and presentations, gained a fisheries extension representative on the Socioeconomic Panel of the Gulf of Mexico Fisheries Management Council, and is currently negotiating the expansion of fisheries extension capacity at an 1890 institution. Annual FEE-sponsored regional Gulf of Mexico fisheries meetings are also held in conjunction with the Gulf States Marine Fisheries Commission (GSMFC) to provide for an exchange of information and programming ideas to address the economic and environmental challenges facing Gulf of Mexico fisheries.

REGIONAL INTEGRATION/COORDINATION ACTIVITIES

Gulf programs have held two national conferences focusing on fisheries recovery and transition gained a fisheries extension representative on the Socioeconomic Panel of the Gulf of Mexico Fisheries Management Council

FEE-FUNDED PROPOSALS:

Gulf of Mexico and Caribbean Regional Project and Fisheries Socioeconomic Assessment & Outreach
Gulf of Mexico and Caribbean Regional Fisheries Extension Initiative
Fisheries Extension Enhancement: An Educational Program Regarding
Methylmercury in the Gulf of Mexico
Regional Fisheries Extension Regional gear technology transfer & Sustainable Gulf of Mexico Shrimp
Fisheries Summit
Sharks in Perspective
FEE: Taking Fisheries Extension/Outreach to the People of Florida
Fisheries Socioeconomic Assessment and Outreach

FEE FUNDS (ANNUAL ALLOCATION): \$350611

TOTAL FEDERAL FUNDS (4 YEARS): \$1,402,444

LEVERAGED FUNDING (4 YEARS): \$700,298

LEVERAGED/FEE RATIO: \$0.50/\$1

REPORTED REGIONAL IMPACTS:

- Applied research developed with the support of FEE-sponsored faculty has resulted in a new technique for estimating the economic impacts of hurricanes to coastal fishing infrastructure. The new method - which utilizes field level surveying, revenue and market data, and biophysical data on storm surge height – allows for a more rapid and spatially precise estimate of damages to fisheries infrastructure.
- FEE – supported socioeconomic assessments provided the basis for more than \$53 million in fisheries habitat conservation and restoration in the wake of Hurricanes Katrina and Rita. The 2006 Emergency Supplemental Act is currently being distributed by NOAA to coastal states of the Northern Gulf via the Gulf States Marine Fisheries Commission. Louisiana will receive \$53 million under the Act, nearly two-thirds of which will be available for the rehabilitation of private and public oyster reef through reseeding and other restoration activities

FEE Agent Boards and Committee Participation	5
FEE Agent Collaborating Partners	10
Products Produced by FEE agents	8
State and National Awards	4
Education Programs Sponsored/Conducted by FEE agents	5
New Hires	5
Number of graduate and undergraduate students supported, including fellowships and internships	4
Publications (Peer-reviewed, reports, symposia, etc.	30

PROGRAM PROFILE: FLORIDA

PROGRAM OVERVIEW:

In the first round of funding, a national conference and several state educational events and activities were developed by FSG that provided science-based information on shark biology and conservation, debunked common myths about shark attacks, and provided useful information on “shark smart” beach behavior and safety precautions that individuals could take to lessen their risk of shark bites or attacks while visiting the beach. This FEE project was developed as a result of media hysteria in the 2002 that declared 2002 the Year of the Shark, in response to a series of shark attacks and several deaths that occurred off Florida’s shore.

During round two of FEE funding, a comprehensive extension program was developed that focuses on recreational anglers. Two (2) county-based FEE agents were hired and placed in two (2) Florida Counties (Collier County and Bay County). Educational projects and activities under this project center on providing science-based information to recreational anglers, charter boat operators and affiliated marine businesses to enable them to make more informed decisions on critical issues concerning fisheries stocks, aquatic habitats, and socio-economic issues. A major focus of this program centered on the reduction of fishing mortality through use of sound fish handling techniques, practicing catch-and-release, and use of fishing gear (circle hooks, dehookers, fish venting tools).

NOTEWORTHY ACTIVITIES/ACCOMPLISHMENTS:

Shark Awareness

FSG coordinated a national conference on “Sharks: From Fear to Fascination” in June 2002 with more than 110 individuals in attendance. The diverse participants included extension agents and specialists from 16 states, as well as the Puerto Rico and Bermuda, scientists, shark fishers, radio, television and print media reporters. A shark information network was established within the 16 Sea Grant states that were represented. More than 20 members of the media covered the two-day conference, leading to responsible, science-based coverage on sharks in print and video media immediately following the conference, as well as throughout the summer tourist season. Specific to Florida, FSG extension agents in the following counties have continued to provide educational programs on sharks (Miami-Dade, Broward, Brevard, St. Johns, Duvall, Monroe, Pinellas, Escambia, Santa Rosa, Okaloosa, Walton). FEE funds were also provided to the Florida Museum of Natural History (FMNH) to develop a shark awareness kit and teacher training programs and to upgrade their shark website: <http://www.flmnh.ufl.edu/fish/Sharks/sharks.htm>. FMNH scientists and staff have also continued to provide science-based lectures on sharks at numerous FSG-sponsored local, state and national conferences and workshops.

Recreational Fishing Anglers Program

FSG developed a comprehensive recreational fishing anglers program that consisted of agents conducting hands-on workshops, speaking at local, regional, and national conferences, developing educational brochures, videos, websites, and the creation of new, and/or improved tools such as the fish venting device. This tool, founded on science-based information and research, was turned over to a private sector entity that is now selling and distributing it nationally. For more

information, see: <http://dehooker4arc.com/>. In 2008, FSG received \$12,000 from the University of Florida Extension to redesign the website to include a specific webpage on recreational fish angling resources, which will include downloadable fact sheets, video clips and demonstrations.

EXPANDING PARTNERSHIPS:

FEE funds provided opportunity for FSG Extension specialists to attend fish management council meetings where they provided science-based information to council staff. They also provided better awareness of FSG recreational fishing activities, utilized council staff on ongoing FSG programs, and provided council with the benefits of leveraging their funds with FSG funds for development and delivery of programs.

FSG participated in a South Atlantic Regional Sea Grant Facilitation and Planning Workshop with representatives from NC, SC, GA, and FL Sea Grant Programs, State Fishery Management Agencies, as well as Federal Agencies and Regional Council. As a result of the meeting, existing education and outreach programs were identified, an email listserv for Sea Grant FEE representatives, and federal/state management agency staff was created, a master list of existing staff working in fish extension and outreach activities was developed and distributed through the region. Also, a regional South Atlantic Sea Grant regional meeting was conducted for all Sea Grant extension agents in 2005, with FEE programs being a focal point of the meeting.

FSG provided assistance to the for-hire charter boat industry in developing a proposal being submitted to the National Marine Fisheries Service to conduct a Gulf-wide “for-hire sector” survey and participated in inaugural meeting of the Gulf of Mexico Recreational Fisheries Implementation Team, held by National Marine fisheries Service.

The FSG Bay County agent has developed a strong relationship with the Gulf of Mexico Fisheries Management Council and NOAA Fisheries Office in Panama City. He participated in the 200th anniversary open house where he provided several seminars and demonstration activities on proper recreational angling. He also facilitated several meetings between recreational angling groups and the Council on regulation discussions.

New relationships were developed with the Florida Museum of Natural History (FMNH), as co-sponsors of the Sharks: From Fear to Fascination National Conference.

PROGRAM PROFILE: LOUISIANA

PROGRAM OVERVIEW:

In Louisiana, competitive FEE funds were awarded for the establishment of a non-tenured, assistant professor/specialist position in marine resource economics. Fisheries economist Dr. Hamady Diop was hired by the LSCGP in June 2005. This position provides extension programming and applied research to address the many socioeconomic challenges facing Louisiana’s coastal fishing sectors. Shortly after his appointment, the northern Gulf of Mexico was devastated by Hurricanes Katrina and Rita. In conjunction LSGCP field agents and FEE investigators (Michael Liffmann and Rex Caffey), Dr. Diop developed and delivered a series of rapid economic assessments and timely extension programs in support of fishing industry recovery in Louisiana and the northern Gulf of Mexico.

NOTEWORTHY ACTIVITIES/ACCOMPLISHMENTS:

Hurricane Response

With the help of FEE funding, the LSG has played a key advisory role for the coastal fishing industry in the wake of Hurricanes Katrina and Rita in 2005. In the initial period following the storms, fisheries extension faculty worked through the Communications office of LSG to develop a Hurricane Recovery Resources website. The site contained answers and information linkages to more than 100 Frequently Asked Questions (FAQs), most of which pertained to fisheries-related issues.

This information has been frequently cited by state and national media, and LSG fisheries agents and specialists have been featured in numerous hurricane-related media reports during the past two years, including reports on: National Public Radio, CNN, MSNBC, the Weather Channel, the New York Times, the Boston Globe, the Washington Post, the New Orleans Times Picayune, the Baton Rouge Advocate, the Houma Courier, and the Lafourche Gazette.

Supporting the Louisiana Fisheries Community Recovery Coalition

For the past two years, the FEE program has provided applied research in support of the LSG's economic advisory role with the Louisiana Fisheries Community Recovery Coalition (LFCRC), of which LSG is a founding member. This coalition of 25 commercial and recreational fishing organizations was established in January 2006 for the purpose of:

- Developing objective economic assessments of damages to coastal Louisiana fisheries infrastructure from the 2005 hurricane season.
- Securing state and federal disaster aid funding.
- Providing guidance on the appropriate allocation of disaster funding amongst coastal fisheries interests.

In the first year after the storms, FEE faculty worked with LSG field agents to develop a geographically-specific damage model for coastal fisheries infrastructure. The \$582 million in damages estimated by this model has been widely cited by the LFCRC to obtain more than \$150 million in recovery funding from Congress and the Louisiana Recovery Authority. As the principal economic advisors to the coalition, Drs. Caffey and Diop provided numerous economic assessments that were necessary for the acquisition and allocation of recovery funding.

Using the Caffey and Diop work, the LFCRC developed aid requests and determined financial assistance allocation formulas. Their work also was used in a \$50 million Community Development Block Grant (CDBG) application and in an additional \$150 million federal aid request.

Technical Assistance to the Louisiana Recovery Authority (LRA)

Louisiana set aside \$19 million of Community Development Block Grant Funds to rebuild and build new fisheries infrastructure. The FEE principal investigators' projects assisted LRA leaders throughout the RFP and project's selection and identification process. Several other FEE investigators from throughout the country helped select the project.

PROGRAM IMPACTS:

Applied research developed with the support of FEE-sponsored faculty has resulted in a new technique for estimating the economic impacts of hurricanes to coastal fishing infrastructure. The new method - which utilizes field level surveying, revenue and market data, and biophysical data on storm surge height - allows for a more rapid and spatially precise estimate of damages to fisheries infrastructure.

FEE - supported socioeconomic assessments provided the basis for more than \$53 million in fisheries habitat conservation and restoration in the wake of Hurricanes Katrina and Rita. The 2006 Emergency Supplemental Act is currently being distributed by NOAA to coastal states of the Northern Gulf via the Gulf States Marine Fisheries Commission. Louisiana will receive \$53 million under the Act, nearly two-thirds of which will be available for the rehabilitation of private and public oyster reef through reseeding and other restoration activities

In addition to addressing short-term recovery issues, FEE-supported faculty have recently begun working with commercial fishing organizations to address many of the long-term economic and environmental challenges that had been largely prior to the 2005 hurricane season. State fisheries managers and commercial sector industry leaders have since participated in several FEE-supported venues (recovery coalitions, scientific symposia, regional extension meetings) dealing with the topics of fisheries overcapitalization, resource depletion, and incidental bycatch.

LOCAL, STATE, AND NATIONAL AWARDS:

APEX Award of Excellence for One-of-a-Kind Crisis and Emergency Communications (2006).

Excellence in Extension Programming Award from the Louisiana State University Agricultural Center (2006).

Superior Outreach Award from the national Assembly of Sea Grant Extension Program Leaders (ASGEPL) for response and continuing recovery work following Hurricanes Katrina and Rita (2007)

EXPANDING PARTNERSHIPS:

FEE programming dollars allowed LSG to have increased representation on regional fisheries issues. Annual FEE-sponsored regional fisheries meetings provide for exchange of information and programming ideas to address the economic and environmental challenges facing Gulf of Mexico fisheries. In December 2006 the FEE-supported faculty member in LSG was appointed to the Socioeconomic Advisory Panel of the Gulf of Mexico Marine Fisheries Council.

The post-disaster economic assessments conducted via FEE-supported faculty have greatly increased and enhanced LSG's visibility and working relationships with the industry and fisheries managers. LSG's work as a co-founder and source for science-based information for the Louisiana Fisheries Community Recovery Coalition has established or renewed LSG's working relationships with more than 25 commercial and recreational fishing organizations coastal Louisiana.

FEE-funding provided LSG with critically-needed economic expertise to assist coastal fisheries in the wake of Hurricanes Katrina and Rita. To date FEE-based faculty have provided more than 120 action items (e.g. presentations, publications, meetings, conference calls, site visits, etc.) in support of fisheries recovery in coastal Louisiana. The applied research assessments developed by FEE researchers provided the foundation for more than \$150 million in fisheries-related disaster funds allocated to Louisiana in the wake of the 2005 storms.

PROGRAM PROFILE: MISSISSIPPI/ALABAMA

PROGRAM OVERVIEW:

The primary focus of Mississippi/Alabama Sea Grant FEE efforts focused on a regional effort to provide information on methylmercury in seafood to Sea Grant Extension and clientele. Other efforts included programs in bycatch reduction, fishing business management, and recreational fishing outreach. FEE funding also allowed for travel to other Gulf Sea Grant Programs and to the Shrimp Summit (see Texas report) and provided materials for informational notebooks and netting for shrimp trawl.

NOTEWORTHY ACTIVITIES/ACCOMPLISHMENTS:

Methylmercury Awareness

Methylmercury information was presented to 62 Sea Grant Extension Agents and Specialists in the Gulf Region who were provided with in-depth written materials to help answer questions or to develop their own products. Presentations were made to a number of fishing and environmental groups as well as on radio and television. Constituents became better informed on seafood safety and appropriate consumption with regards to methylmercury. Constituents learned the problems surrounding derelict crab traps and avoided further regulation. Marine resources were enhanced through reduction of "ghost fishing" and potential negative marine mammal interactions.

Derelict Crab Traps Removal

Derelict crab traps were removed from bays and bayous and fishermen became more aware of the problems with such traps. The effort in each Gulf state resulted in NOAA Fisheries not elevating the blue crab fishery to a Category II (increased reporting and possible regulation due to fishing interactions with marine mammals.).

PROGRAM IMPACTS:

Constituents became better informed on seafood safety and appropriate consumption with regards to methylmercury and learned about the problems surrounding derelict crab traps and avoided further regulation.

Marine resources were enhanced through reduction of “ghost fishing” and potential negative marine mammal interactions. Fishermen learned the possibility of alternate shrimp net material reducing fuel costs.

EXPANDING PARTNERSHIPS:

The methylmercury project increased MS/AL Sea Grant’s interaction with elements of NOAA Fisheries and with state public health agencies through increased and new contacts. Similarly, derelict crab trap project increased their visibility with state management agencies, Gulf States Marine Fisheries Commission, and NOAA Fisheries.

MS/AL projects also provided increased opportunities for interactions with fisheries extension programs in the region. These interactions strengthened and renewed existing ties and communications. As a result regular regional Sea Grant Extension meetings are now being held in conjunction with the Gulf States Marine Fisheries Commission.

PROGRAM OVERVIEW: TEXAS

PROGRAM OVERVIEW:

Texas Sea Grant utilized funding from the first round of the FEE to conduct gear technology transfer work on bycatch reduction devices and turtle excluder devices to the Gulf of Mexico shrimp fishery and host a summit with approximately 50 representatives from key elements of the Gulf of Mexico shrimp fishery (including both U.S. and Mexico) to consider opportunities for a sustainable industry.

NOTEWORTHY ACTIVITIES/ACCOMPLISHMENTS:

Shrimp Summit
Bycatch Reduction Workshops

REGIONAL PROFILE: SOUTH ATLANTIC

REGIONAL OVERVIEW:

North Carolina, South Carolina, Georgia

The South Atlantic regional FEE coordination committee developed and delivered five projects ranging from hands-on outreach projects, such as facilitating state/federal fishery management outreach planning and species specific fishery management workshops, to communication projects, such as establishing a list-serve for communication between fishery management staff and a listing of Sea Grant fisheries extension staff for the region.

On a national level, the first ever national Fisheries Extension and Enhancement conference was held in October 2006. This meeting allowed invaluable opportunities to network with Sea Grant fisheries extension staff from across the nation and to learn about current issues, tools, and resources in fisheries extension. Also, several intra- and inter-regional fisheries extension projects have developed as a result of the interaction at the conference. One such project is in the planning stages in SC that will develop a fishermen exchange program between SC shrimp fishermen and Alaska shrimp/salmon fishermen focused on seafood quality, value-added processing, and direct marketing options.

REGIONAL INTEGRATION/COORDINATION ACTIVITIES:

The South Atlantic regional FEE coordination committee has developed and delivered five projects ranging from hands-on outreach projects, such as facilitating state/federal fishery management outreach planning and species specific fishery management workshops, to communication projects, such as establishing a list-serve for communication between fishery management staff and a listing of Sea Grant fisheries extension staff for the region

Sea Grant representatives from North Carolina, South Carolina, and Florida helped design and facilitate a regional workshop for 15 blue crab managers.

- Identification and creation of database of current fisheries related extension and outreach efforts in South Atlantic Sea grant Programs (NC,SC, GA, FL)
- South Atlantic Regional Fisheries Extension Facilitation and Planning Workshop (NC,SC, GA, FL)
- Compiled list of SG Fisheries Extension agents and specialists in the South Atlantic region
- FEE email listserve of all SG, SAFMC,NMFS-SERO, ASMFC, and fisheries extension staff

FEE-FUNDED PROPOSALS:

- South Atlantic Regional Fisheries Extension Facilitation and Planning (GA)
- South Carolina Fisheries at a Crossroads: The SCSG Fisheries Extension Enhancement Program

FEE FUNDS (ANNUAL ALLOCATION): \$140,101

TOTAL FEDERAL FUNDS(4 YEARS): \$560,404

LEVERAGED FUNDING(4 YEARS): \$856,274

LEVERAGED/FEE RATIO:\$1.53/\$1.00

REPORTED REGIONAL IMPACTS:

The regional fisheries extension workshop allowed agencies to prioritize emerging fisheries extension issues, increase communication between agencies and develop appropriate outreach strategies that could be shared across the region.

As a result of the fishery managers workshop, state blue crab fishery managers are networking about issues as they arise and solutions to some of the issues are being developed through collaboration with regional Sea Grant programs on targeted outreach publications on bycatch in crab traps, limited entry, harvest of female crabs and the peeler crab fishery.

FEE Agent Boards and Committee Participation	5
FEE Agent Collaborating Partners	10
Products Produced by FEE agents	8
State and National Awards	0
Education Programs Sponsored/Conducted by FEE agents	2 (1200 attendees)
New Hires	1 (SC, 1)
Number of graduate and undergraduate students supported, including fellowships and internships	4
Publications (Peer-reviewed, reports, symposia, etc.	30

PROGRAM PROFILE: NORTH CAROLINA

PROGRAM OVERVIEW:

North Carolina Sea Grant received funding under both FEE cycles for partners on three one-year regional projects initially, and a five-year project for enhancing fisheries biology in round two, resulting in expanded fisheries biology in the bycatch extension efforts.

Regional FEE projects with South Atlantic States (NC, SC, GA, FL):

- **Marine Protected Areas (MPAs):** Promote reasoned dialogue and decisions about MPAs by increasing awareness and knowledge of their purpose, identification, design, declaration, management, and costs/benefits among key stakeholder, including marine industries, resource managers, extension educators and the general public.
- **Essential Fish Habitat (EFH):** Promote dialogue about EFH by increasing awareness and knowledge of its definition, purpose, identification, declaration, management, potential costs, and potential benefits among key stakeholders, including marine industries, resource managers, extension educators and the general public through cooperative efforts of South Atlantic Sea Grant programs.
- **Fisheries Extension Facilitation and Planning:** Established a facilitation/planning process that assisted in the development and evaluation of fisheries extension education programs and projects by Sea Grant programs in the South Atlantic region.

and

Regional FEE projects with mid-Atlantic states (NC, VA, MD, NJ, DE and NY) include:

- **Enhance Education and Outreach to the Mid-Atlantic Charter Boat Fisheries:** Improved the understanding of the fishery management complex by the “for hire” fishing industry and provide better understanding of this sector by federal, regional and state managers. Additionally, enhanced cooperation among the industry and the government will be fostered with the educational outreach. Such an educational focus on the for-hire fishing industry may improve industry’s willing cooperation with various management agencies; providing feedback and involvement that is increasingly vital both in the formulation of fishery management options and the ultimate implementation of management measures.
- **Exploring the Collaborative Learning Process for Management of Mid-Atlantic Fisheries:** Enhance fisheries extension activities in the Mid-Atlantic region by introducing a “collaborative learning” approach in efforts with Sea Grant staff and key fisheries management personnel in the

region. Maryland Sea Grant has used this approach in the ongoing blue crab debates, and can evaluate the applicability of the process to other state and regional fisheries management issues.

Round 2 FFE funding from the national sea grant office has allowed Dr. Jeff Buckel, North Carolina State University's Center for Marine Sciences and Technology, to enhance his efforts in fisheries extension for NC Sea Grant. Buckel has been involved in several Fishery Resource Grant projects in which his laboratory has cooperated with commercial or recreational fishermen to design field sampling or experiments, collect the appropriate data, analyze and interpret data, present results to user groups, state and federal agencies, and produce publications for the fisheries and public. Furthermore, results have been utilized by state and federal fishery management agencies. Specific projects have addressed issues related to time/area closures of flounder gill netting; hook type effects, discard rate, and discard mortality in snapper-grouper fishery; age, growth, and reproduction of dolphin fish; historical and present day CPUE comparisons for deep sea grouper; and bluefin tuna feeding ecology.

NOTEWORTHY ACTIVITIES/ACCOMPLISHMENTS:

Round 2:

2007 and 2008 annual North Carolina Fisheries Forums. A joint project with North Carolina Division of Marine Fisheries where results from the studies described above and other Fishery Resource Grant projects are presented. Approximately 80 commercial fishers, recreational anglers and fisheries managers have attended each year.

Completed two North Carolina Fisheries Resource Grant (FRG) projects and started three new FRG projects (river herring hydroacoustics, relative survival of reef fish through tagging, and a novel approach to monitor deepwater reef fish).

Conducted state Circle Hook Workshop. Nov. 2, 2007 where 30 charter boat captains, billfish tournament directors, federal and state regulators met to identify a defensible approach to compare circle and J hooks in bluewater troll fishery.

IMPACTS:

Round 2 FEE allowed Dr. Buckel to participate in the following six applied fisheries research projects. The projects impacted and enhanced NC fisheries by providing much-needed information for management decisions:

1. Buckel, J.A., R.J. Hines, and T.A. McArthur, Jr. 2003. Large mesh bycatch potential and discard mortality of red drum. Fishery Resource Grant Project 02-FEG-13.

IMPACT: It was determined that, at densities of age-0-3 red drum present during the study, bycatch of red drum in the large mesh flounder fishery in North Carolina was not a significant source of mortality. Time/area closures to reduce discard mortality of red drum were not deemed necessary.

2. Alex Ng, Anthony Ng, Nathan Bacheler, and Jeffrey Buckel. 2004. Effects of hook treatment and water depth in a commercial hook-and-line grouper fishery, Onslow Bay, NC. Fishery Resource Grant Project 03-FEG-10.

IMPACT: We found that moderate changes made to hook sizes or type within the ranges used here will have very little noticeable effect on the catch and size of grouper. Therefore, larger hooks did not reduce catch of sublegal grouper. Circle hooks had drastically fewer gut hookings in grouper and minimized the catch rates of non-target species (e.g., red porgy). We found that grouper fishermen in North Carolina face a tradeoff between fishing in shallow water to reduce depth-related injuries to grouper (from swim bladder expansion) and fishing in deeper water to minimize the catch of sublegal grouper. The presence of such a tradeoff implies an optimum depth that can be fished where fishermen could simultaneously reduce injuries

to grouper and minimize the sublegal catch. Thus, managing the grouper fishery with the use of no-take zones and regulation of hook type or size may prevent more unnecessary losses of grouper than traditional management actions such as size or bag limits.

Our work has been communicated to managers, scientists, and the general public in various ways. This work has been shared with the North Carolina Division of Marine Fisheries and the NOAA laboratory in Beaufort, North Carolina, so that managers could better manage the grouper fishery in North Carolina in a sustainable way.

Our work is also being used to educate grouper fishermen in North Carolina about the potentially destructive impacts of fishing with certain hook types in deep waters for grouper. Published in the summer of 2004 in Blueprints by North Carolina Sea Grant, Circle hooks: a way to reduce injury and mortality in grouper? described our research project in an accessible way to the general public. This publication was distributed to recreational anglers and NC tackle shops. Last, we published aspects of our work in the scientific journal Fisheries Research in 2004 so that these results could be communicated to the international scientific community.

3. Schwenke, K.L., J. Gay, and J.A. Buckel. 2004. Age, growth, and reproduction of dolphin *Coryphaena hippurus* caught in North Carolina waters. Fishery Resource Grant Project 02-EP-01.

IMPACT: This study provides an updated age-length function for dolphin caught off the coast of North Carolina using both scale annuli and daily growth increments and provides some of the first comprehensive data on North Carolina dolphin reproduction. Data will be useful to stock assessment modelers that require age and growth information to determine future sustainable fishing mortality rates for dolphin fish stocks.

4. Rudershausen, P.J., A. Ng, A. Ng., and J. A. Buckel. 2005. By-catch, discard composition, and fate in the snapper/grouper commercial fishery, North Carolina. Final Report for Fishery Resource Grant Project 04-FEG-08.

IMPACT: While released reef fishes may experience delayed post-release mortality from predation or barotrauma, low rates of gastric distention, gut hooking, and bleeding for these species, along with mostly favorable observed post-release outcomes, suggest that minimum size limits help reduce rates of fishing mortality for some reef species over depths common in the North Carolina fishery.

5. Rudershausen, P.J., A. Ng, A. Ng., and J. A. Buckel. 2007. The Effects of Repetitive Commercial Fishing Pressures on Specific Sites/Comparison of Historical and Present Day Landings of Reef Fish Species in Onslow Bay, North Carolina. NC Fishery Resource Grant Project 05-FEG-11.

IMPACT: Overall, results indicate that fishing pressure, as well as environmental factors, have impacted abundance and mortality of major reef fish species in this fishery; importantly, these data provide support for the stock assessments of reef fish in the southeast US.

6. Butler, C.M., and J.A. Buckel. 2007. Atlantic bluefin tuna (*Thunnus thynnus*) feeding ecology and potential ecosystem effects during winter in North Carolina. Fishery Resource Grant Project Fishery Resource Grant Project 04-EP-04

IMPACT: Bluefin tuna appear to occupy coastal waters in North Carolina to prey upon Atlantic menhaden; thus, changes in the Atlantic menhaden stock status or distribution could alter winter foraging locations of bluefin tuna. This study has helped fill a gap in the knowledge of bluefin tuna natural history and provided data necessary for implementing multispecies fisheries management.

EXPANDING PARTNERSHIPS:

NC Sea Grant participated in a South Atlantic Regional Sea Grant Facilitation and Planning Workshop with representatives from SC, GA, and FL Sea Grant Programs, State Fishery Management Agencies, as well as Federal Agencies and Regional Council. As a result of the meeting, existing education and outreach programs were identified, an email listserv for Sea Grant FEE representatives, and federal/state management agency staff was created, a master list of existing staff working in fish extension and outreach activities was developed and distributed through the region. Also, a regional South Atlantic Sea Grant regional meeting was conducted for all Sea Grant extension agents in 2005, with FEE programs being a focal point of the meeting.

PROGRAM PROFILE: SOUTH CAROLINA

PROGRAM OVERVIEW:

Prior to FEE, the SC Sea Grant Extension Program had not had a fisheries extension sub-program since the mid-1980s. Due to increasing demand and requests for assistance by the commercial fishing industries in the state, the SCSG Consortium developed a proposal to re-establish a formal fisheries extension sub-program. In January 2004, the SCSG Extension program, a joint program with the SCSG Consortium and Clemson University Cooperative Extension Service, hired a Fisheries Extension Specialist utilizing awarded FEE funds. Since that time, the Fisheries Extension sub-program has been operating under the SCSG Extension program with a specific emphasis on working directly with commercial and recreational fishing industries, state and federal fishery managers, and research scientists to identify, develop, and deliver scientifically based information on critical fisheries-related issues, through an enhancement of information, research, and technology exchange, productive interactions and program coordination among Sea Grant programs, fisheries managers, and the fishing industry in state and federal waters off of SC and the region. Some specific program focus areas include, but are not limited to, commercial fishing industry assistance (shrimp quality/marketing, trade adjustment assistance, tariff programs, etc.); cooperative fisheries research; coastal waterfront access and fisheries management strategies.

NOTEWORTHY ACTIVITIES/ACCOMPLISHMENTS:

Shrimp Industry Economic Assistance/Technical Training

SCSG assisted the SC shrimp industry with acquiring funding and technical training through economic assistance programs. The two major programs include the U.S. Department of Agriculture's, Trade Adjustment Assistance (TAA) Program and the Continued Dumping and Subsidy Offset Act (CDSOA) offered to industries that are economically injured from the dumping of imported goods into the U.S. The TAA program qualified shrimp industry members for up to \$10,000 in economic assistance and technical training on business development, shrimp quality and alternative careers. Over eighty (80) shrimpers received technical training and twenty-one (21) shrimpers qualified for the economic assistance. The CDSOA program, administered through U.S. Customs and Border Protection, required a lengthy application process that included detailed financial information for each shrimp fisherman or business. Technical training workshops and one-on-one sessions on the CDSOA program and application requirements were held (75 shrimpers each for three consecutive years, 2005-2007). As a result of the training, all shrimpers that applied for assistance received some payout under the CDSOA. It is estimated that over \$1 million were distributed to SC shrimp fishermen under this program.

Cooperative Fisheries Research Grant Program

In partnership with the SC Department of Natural Resources, a grant program was developed that enabled fishermen, both recreational and commercial, to create and carryout scientific research projects that assisted in answering fisheries management questions, providing historical summaries of SC fisheries, developing new fishing gear/technology, and other innovative fisheries projects. The two year competitive grant program awarded approximately \$270,000/year to fishermen to investigate new fisheries development strategies, fuel efficient shrimping gear, fisheries management strategies for finfish and blue crab, and development of single oyster culture using a variety of techniques. As a result thirty (30) projects were funded, some of which are still

in progress in 2007-2008. The grant program provided technical training to grant applicants and recipients on grant writing, preparing applications, experimental design, connecting fishermen with scientists and assistance with sampling and technical writing. Results from the program are anticipated to be presented in a technical symposium in which fishermen will present their research results to other fishermen and fishery scientists.

Fisheries Management Strategies and Techniques

The South Atlantic Fisheries Management Council developed a workgroup to explore the use of Limited Access Privilege Programs (LAPPs) for the snapper grouper fishery in the region. The FEE-funded fisheries extension specialist from the SCSGC was selected to serve on the workgroup as a non-voting member. The workgroup consists of fishermen from all gear sectors with at least one representative from each of the four states in the region, a representative from an environmental NGO, fish dealers, NOAA Fisheries, NOAA Fisheries Law Enforcement, and two other Sea Grant fisheries extension staff. The workgroup continues to extensively study LAPPs, their use in other fisheries, design elements, initial allocation strategies and how these items may work for the snapper grouper fishery in the region. One of the biggest concerns of the workgroup was the dissemination of accurate, non-biased information to fishermen in the region. The SCSG Consortium fisheries specialist was selected to spearhead an outreach subcommittee to address this concern. As a result, the subcommittee developed four (4) informative fact sheets with basic information about LAPPs, Top 10 Questions about LAPPs, LAPP Definitions, and LAPP Resources. Additionally, the Sea Grant workgroup members, including South Carolina Sea Grant extension will take the lead in organizing and hosting a series of “Fishermen Forums” in the region that will provide an opportunity for fishermen to hear information about LAPPs, the activities of the workgroup and to speak with a fisherman-member of the workgroup to provide feedback.

PROGRAM IMPACTS:

Through the Cooperative Fisheries Research Grant Program, fishermen have contributed valid scientific data to supplement existing data on specific fisheries management issues. The results from some of the research projects have significantly contributed to:

- The knowledge of migration and movement patterns of dolphin fish and cobia (some of the first type of data of this nature in the nation) using microsatellite tags.
- Increased fuel efficiency through the development of new slotted shrimp trawl doors and testing of cambered trawl doors.
- Potential for the development of new small-scale commercial fisheries for octopus, toadfish and stone crabs in SC

Additionally, fishermen now have confidence in the data collected and used to make management decisions because they assisted in the data collection and became more aware of how experimental design, sampling and data analysis plays into management decisions.

Shrimp fishermen and crew have increased the quality of their shrimp through better on-board handling practices and dockside handling practices. The use of best management practices (ice, proper use of preservatives, etc.) delivered through technical training has led to increased shrimp quality and ultimately led to a slight increase in price through the option of shrimp being certified as Wild American Shrimp

Technical training on the availability and application requirements of economic assistance programs has assisted shrimp fishermen in better managing the financial aspects of their businesses through expenditure tracking and other cost-benefit analyses.

The outreach activities of the LAPP workgroup have helped fishermen understand the management process as it relates to stock assessments and the available harvest of certain fish

species. This is important to understanding resource conservation as well as how different management strategies can affect (positively or negatively) finfish stocks.

LOCAL, STATE, AND NATIONAL AWARDS:

2005 Clemson University, Public Service Activities Conference, Poster Award, “Best response to Emerging Needs”. Poster Title: The SC Shrimp Industry Crisis: An extension response.

EXPANDING PARTNERSHIPS:

Often times, regional level fisheries management information comes in the form of lengthy technical publications and scoping documents. This leaves an information gap between the decisions being made by managers and the fishermen affected by the management decisions. To bridge this gap, the FEE-funded staff has worked with the South Atlantic Fishery Management Council (SAFMC) staff on developing effective outreach strategies to inform fishermen of management decisions and to allow fishermen the opportunity to engage in the management process. Outreach strategies developed include an educational forum between council staff and shrimp fishermen on a pending amendment to the shrimp fishery management plan; development of two outreach documents (pamphlet and booklet) on the pending deepwater Marine Protected Areas in the region; and development of outreach fact sheets for fishermen on Limited Access Privilege Programs for the snapper grouper fishery.

The South Atlantic regional FEE coordination committee hosted and facilitated a regional meeting of state fishery managers from NC, SC, GA, and FL to discuss blue crab management in each state. Participants discussed current blue crab management strategies in each state, identified current management issues, prioritized these issues and developed preliminary solutions to addressing the issues on a regional basis. The dialogue during the meeting allowed state fishery managers a forum for sharing ideas about successful management strategies and common concerns for blue crab management in the future. All managers that participated requested that this type of meeting be held again in the future with a new fishery management topic for each subsequent meeting.

In 2005, regional Sea Grant programs from NC, SC, GA, and FL convened a meeting with outreach staff from each state fishery management agency as well as NOAA Fisheries, Atlantic States Marine Fisheries Commission (ASMFC) and the SAFMC to discuss current fisheries outreach programs for each agency and the potential for joint fisheries outreach programs on specific topics. The discussion identified four topics of fisheries outreach to include bycatch, fisheries management, working waterfronts, and general fisheries outreach. The meeting increased communication among agencies and helped establish a network of regional fisheries outreach staff that could exchange information on important fisheries topics.

REGIONAL PROFILE: MID-ATLANTIC

REGIONAL OVERVIEW:

Maryland, Virginia

REGIONAL INTEGRATION/COORDINATION ACTIVITIES:

FEE-FUNDED PROPOSALS:

- A Proposal to Increase the Capacity for Fisheries Extension in the Area of Bycatch Including Fishing Interactions with Protected Species (VA)
- Plan to Enhance Education and Outreach to the Mid-Atlantic Charter Boat Fisheries (Virginia)
- National Histamine Education Project Fisheries Anthropology (MD)
- South Carolina Fisheries at a Crossroads: The SCSG Fisheries Extension Enhancement Program
- Development of a Guide for Fishermen and the general Public to Understand Fisheries Stock Assessment Models (NH)
- Technology Transfer From Cooperative Fisheries Research Projects (NH)
- Plan to Enhance Education and Outreach to the Mid-Atlantic Charter Boat Fisheries (Virginia, Lead)
- Collaborative Learning (Maryland, Lead)
- Horseshoe Crab Website (Delaware, Lead)
- A proposal to Increase the Capacity for Fisheries Extension in the Area of Bycatch Including Interactions with Protected Species (VA, Lead?) (only includes VA dollars)

FEE FUNDS: \$144,598

TOTAL FEDERAL FUNDS: \$578,392

LEVERAGED FUNDING: \$824,230

LEVERAGED/FEE RATIO: \$1.43/\$1

REPORTED REGIONAL IMPACTS:

FEE Agent Boards and Committee Participation	14
FEE Agent Collaborating Partners	85
Products Produced by FEE agents	0
State and National Awards	2
Education Programs Sponsored/Conducted by FEE agents	8
New Hires	1 .5(VA, 1)
Number of graduate and undergraduate students supported, including fellowships and internships	1
Publications (Peer-reviewed, reports, symposia, etc.	32

PROGRAM PROFILE: MARYLAND

PROGRAM OVERVIEW:

NOTEWORTHY ACTIVITIES/ACCOMPLISHMENTS:

National Histamine Education Project Fisheries Anthropology Collaborative Learning Project

The National Histamine Education Project Fisheries Anthropology Collaborative Learning Project incorporates cultural anthropology into the Chesapeake Bay fisheries management process for species such as oysters and blue crabs and provides managers with a better understanding of the cultural issues involved in fisheries management. The project brought together managers, scientists and fishermen in a series of workshops and workplace exchanges.

Blue crab management in the region has become a much more collaborative process thanks to the FEE work. Particularly in regard to the BiState Blue Crab Advisory Committee.

PROGRAM IMPACTS:

Blue crab management in the region has become a much more collaborative process thanks to the FEE work. Particularly in regard to the BiState Blue Crab Advisory Committee.

PROGRAM PROFILE: VIRGINIA

PROGRAM OVERVIEW:

Virginia Sea Grant received funding under both FEE cycles for three one-year projects initially, and a five-year project for fisheries bycatch issues in round two, resulting expanded fisheries bycatch extension efforts. Research now not only focuses on cooperative scallop fishery research but also on evaluating and engineering solutions to bycatch challenges facing anchored gill net fisheries, which are documented for high rates of interaction with protected species. Proactive cooperative research and timely reporting of data from such efforts to management has provided critical lines of information exchange between the industry, academics, and management that previously did not exist. Due to this cooperative approach trust has been established and/or strengthened between parties and the pathway to future collaborative efforts eased.

Knowledge obtained through various cooperative (industry), academic and state and federal projects, linked through the FEE program, has also established new lines of information exchange. This exchange has greatly advanced the sustainability of marine resources by providing a means of gaining best available science in an unbiased manner and applying this information to mutually acceptable solutions.

NOTEWORTHY ACTIVITIES/ACCOMPLISHMENTS:

Bycatch Reduction

VASG's bycatch reduction program has proactively gathered data on gill net bycatch in state waters through an observer program and identified protected Atlantic sturgeon as the primary protected species taken in Virginia's anchored gill nets. This program provided Virginia's marine resource managers (VMRC) with basic but crucial gill net selectivity studies at a time when the state needed such information for alterations to its ITQ based striped bass fishery. Perhaps one of the greatest achievements with respect to preservation of marine resources that has thus far resulted from FEE funding is the success of gear engineering developed through cooperative research efforts. Engineering alterations to anchored gill nets has resulted in various methods of hanging and fishing anchored gill nets, which can significantly reduce the retention of Atlantic sturgeon and avoid negatively affecting CPUEs of targeted species (striped bass). Since most inshore bycatch mortalities of Atlantics occurs in the striped bass fishery (NMFS northeast region bycatch data), this finding is extremely important to preserving the fishery and the soon to be listed sturgeon. Similar gear alterations will be tested in the offshore monkfishery in 2008, the fishery documented for the highest sturgeon bycatch mortality by NMFS observers.

In addition, great strides forward were taken in the valuable scallop dredge fishery through research efforts funded by the TAC Set Aside Program and cooperative partnerships between the industry, NMFS, Virginia Sea Grant and Fisheries' Survival Fund. "Industry trials of a Modified Sea Scallop Dredge to minimize the Catch of Sea Turtles" were so successful that federal regulations based on gear modifications resulted that will significantly improve the conservation of sea turtles through reducing their bycatch and simultaneously allow the fishery to continue to operate during warmer water periods when previous interactions rates would have closed the fishery. In 2006, NMFS issued regulation 71 FR 50361, which

requires sea turtle chain use for all sea scallop dredge vessels fishing south of 41[deg] 9.0' N. latitude from May 1 through November 30 each year, based upon these research efforts.

PROGRAM IMPACTS:

The FEE has allowed cooperative research to be taken to a new level in Virginia and coastally. Atlantic sturgeon collected during cooperative research efforts determined that a genetically unique stock of these fish is still breeding in the James River, a stock previously believe to be extirpated. This discovery has and will have permanent ramifications for the conservation of the species in the region and coastally. Because the project was proactive (in that data on the species was collected before the species was listed under the ESA) and involved a far reaching grassroots reward program for fishers from around the bay region, fisher behavior could be discussed and influenced in a educational manner without fear of draconian federal reprisal, the type that will likely follow listing. Due to this approach, researchers were viewed in a very different light by fishers and fisher behavior and attitudes easily altered. Due to the large number and diversity of cooperative projects dependent upon proactive fishers' active collection of specimens, attitudes of research constituents towards fishers were also altered in a positive manner. Most scientists, managers and agency reps. were greatly encouraged by fisher cooperation and their general attitude toward species conservation. Some even began their own projects with fishers met through the FEE extension work. Altering attitudes and encouraging trust and a cooperative approach to solving bycatch and ecological problems are advancements that will pay dividends far into the future.

Through the Fisheries Bycatch Specialist hired under the FEE, Virginia Sea Grant was able to implement Virginia's first observer program. This program proactively collected data on bycatch of protected species in Virginia's inshore anchored gill net fisheries and examined gill net and ecological attributes that may contribute to interactions. It determined a CPUE and mortality estimates for the protected Atlantic sturgeon and collected DNA that proved that a genetically unique stock of James River fish still exists. This and other selected coastal stocks with depressed populations will be protected under the Endangered Species Act in summer of 2008. Gear engineering research based on gear parameters observed in the commercial fishery and other congruent fishery independent research resulted in experiments to test the effect of various gill net attributes on Atlantic sturgeon retention. Test under controlled conditions suggest that anchored gill nets can be altered in numerous ways to significantly reduce their ability to retain sturgeon. Similar gear alterations were tested in the striped bass fishery without negative impact on targeted species CPUE. Gear alterations will be tested in the offshore monkfish fishery in 2008, the anchored gill net fishery documented as having the largest bycatch of Atlantic sturgeon.

EXPANDING PARTNERSHIPS:

Partnerships between academics and Federal and state managers and agencies stemming from cooperative investigations with the industry have been numerous and have improved management of both stat and Federal fisheries.

During the TAC set aside sea turtle scallop dredge interaction research project entitled "Industry trials of a Modified Sea Scallop Dredge to minimize the Catch of Sea Turtles" numerous industry participants partnered with NMFS, NEFMC and the Fisheries Survival Fund. This highly successful project resulted in dredge modification that significantly reduced the sea turtle capture by dredges. In response, Federal regulations that will not only conserve sea turtles but will allow the industry to continue to operate during warm water seasons were enacted.

Interest in sturgeon conservation and outreach efforts by the FEE hire has solidified a plethora of diverse constituents, researchers and managers, who rarely cooperate, into a cohesive and functional team. Though partners include numerous watermen, the Antiquities Preservation Society of Virginia (Jamestown archeologist), Maryland Sea Grant, Maryland Division of Natural Resources, Virginia Commonwealth University, United States Fish and Wildlife Service, Virginia Institute of Marine Science, the James River

Foundation and the Army Corp of Engineers; FEE funding has allowed the new hire to organize these constituents into a cohesive research unit. The research projects that have evolved through these partnerships have been as unique as the groups participating. Project focus has ranged from investigations into comparison between age and growth of sturgeon harvested by Jamestown settlers in the 1600's and those residing in the James River today and gear modifications to reduce sturgeon bycatch in modern fisheries. An ongoing ecological project worth mentioning focuses on the identification essential sturgeon habitat with the intent of improving and expanding spawning and nurseries grounds. Understanding habitat use in the river by this protected species is essential for preservation and expansion of the species because it is currently suffering mortality and reproductive limitation by various anthropogenic factors including boat strikes, bycatch, dredging and habitat degradation and alterations due to continued expansion of human populations coastally. The tracking efforts, used to delineate habitat use, have recently been greatly augmented by information exchange partnership with Delaware and NY researchers. The Hudson, Delaware and Chesapeake estuaries are crucially important to Atlantic sturgeon, and this new cooperative agreement establishes the use of compatible tracking equipment and free exchanging of information. With ESA listing looming such a coastal approach will greatly improve what is known about the species and its habitat use. In addition, partnerships with regional managerial agencies have been augmented by active participation by the fee hire on various NMFS and ASMFC workgroups including NMFS Atlantic Sturgeon Bycatch Workshop, NMFS Atlantic Sturgeon Protocol Workgroup and the ASMFC Fisheries Gear Technology Workgroup for which the FEE hire is the co-chairman.

REGIONAL PROFILE: GREAT LAKES

REGIONAL OVERVIEW:

Michigan, Ohio, Pennsylvania, Minnesota, New York, Illinois-Indiana, Wisconsin, Lake Champlain

REGIONAL INTEGRATION/COORDINATION ACTIVITIES:

- Great Lakes Fisheries Leadership Institute - <http://www.glerl.noaa.gov/seagrant/GLFLI/GLFLIHome.html>
- The Life of the Lakes: A Guide to the Great Lakes Fishery (booklet and Great Lakes Basin ecosystem poster)
- 2002 Great Lakes Charter Fishing Survey - <http://www.glerl.noaa.gov/seagrant/GLFLI/Notebook/Curriculum/Projects.html>
- Development and dissemination of Great Lakes FEE Themes - <http://www.glerl.noaa.gov/seagrant/FEE/FEEInventoryStrategic.html>
- Great Lakes FEE Resources Inventory - <http://www.glerl.noaa.gov/seagrant/FEE/FEEInventoryOrganization.html>
- Fisheries Breakouts at the Great Lakes Sea Grant Network Meetings (June 2006 Put-in-Bay; September 2007 Chicago)
- Participation in the National Sea Grant Fisheries Extension Meeting, FECEC, and other national coordination/representation.

FEE-FUNDED PROPOSALS:

- Great Lakes Fishery Leadership Institute (MI, with subcontracts to all other states in the network, first round)
- Fisheries Extension Enhancement - Ohio Sea Grant Fisheries Extension Agent (OH)
- Fisheries Extension Enhancement: Commercial Fishery Assistance (MI, second round)

ANNUALLY ALLOCATED FEE FUNDS: Round 2: \$218,574

TOTAL FEDERAL FUNDS: \$872,296

LEVERAGED FUNDING: \$796,207

LEVERAGED/FEE RATIO: \$0.91/\$1

REPORTED REGIONAL IMPACTS:

FEE Agent Boards and Committee Participation	8 -OH
FEE Agent Collaborating Partners	47 - GLFLI 23 - OH
Products Produced by FEE agents	17 (GLFLI) 11 (Regional Coordination) 7 - OH
State and National Awards	1
Education Programs Sponsored/Conducted by FEE agents	16 (145 participants) - GLFLI 56 (4297 att) - OH
New Hires	1 – OH 2 temporary (GLFLI)
Number of graduate and undergraduate students supported, including fellowships and internships	1 - GLFLI
Publications (Peer-reviewed, reports, symposia, etc.)	1 MS Thesis – GLFLI 1 peer-reviewed science - GLFLI 3 - OH

PROGRAM PROFILE: MICHIGAN

PROGRAM OVERVIEW:

Michigan Sea Grant received funding from both FEE competitions. In the first phase, the program focused on two major areas: (1) producing materials for and participating in organizing, conducting and evaluating the Great Lakes Fisheries Leadership Institute (GLFLI) and (2) initial phases of a sustainable marketing initiative with Michigan's commercial fishing/processing industry. During the second phase, the program facilitated the development of a comprehensive marketing approach with Michigan commercial fishing/processing operations.

NOTEWORTHY ACTIVITIES/ACCOMPLISHMENTS:

Great Lakes Fisheries Leadership Institute

- More than 20 people representing dozens of fishing, conservation and education organizations learned about the fishery of four Great Lakes—Superior, Michigan, Huron and Erie—and the state's fishery management, as well as leadership strategies they could employ. Several GLFLI alumni were subsequently appointed to the state's fishery stakeholder committees and are otherwise engaged in to fishery leadership efforts.

Commercial Fishing Assistance

- Through Phase 1 efforts, Michigan fish producers learned about how coordinated marketing might provide a sustainable path for a fishery whose traditional markets were changing, even as fishing grounds were re-allocated between tribal- and state-licensed operations.
- With the funding provided through Phase 2, the program has addressed several facets of marketing:
 - (1) developed a common understanding of marketing and a vision of a sustainable fishery across the industry and formed a project steering committee.
 - (2) conducted consumer preference tests--(Michigan-caught fresh whitefish compared to frozen; Michigan-caught Great Lakes whitefish compared to competing Canadian product; Great Lakes whitefish compared to farm raised salmon, and catfish and tilapia), through which preference for the Michigan-caught fish was expressed
 - (3) stakeholders developed stringent standards for fish processing to ensure product quality.
 - (4) four HACCP-certified stakeholders developed a branded premium whitefish fillet product—Legends of the Lakes—and are marketing it through a cooperative to high end food retailers;
 - (5) the Michigan industry developed a comprehensive Web site—www.greatlakeswhitefish.com—to help increase awareness of its history, its product and its people.
 - (6) developing curricula to be used by culinary institutes in introducing chefs to quality whitefish.
 - (7) continued Seafood HACCP training with commercial fishing employees
 - (8) educated member tribes of the Great Lakes Indian Fish and Wildlife Commission in marketing principles and practices, enabling them to compete successfully for more than \$565,000 in grants to support the development of tribal fishing enterprises that are using new means and methods of marketing their products.

PROGRAM IMPACTS:

Tribal- and state-licensed commercial fishing enterprises collaborate, for the first time, on marketing their product to enhance its sustainability.

Michigan fish producers establish stringent product standards and explore new markets and marketing strategies.

State fishery regulators recognize that economic sustainability is entwined with resource sustainability.

LOCAL, STATE, AND NATIONAL AWARDS:

EXPANDING PARTNERSHIPS:

Leaders of Great Lakes Indian Tribes – Sault Tribe of Ottawa Indians, Bay Mills Indian Community, Little Traverse Band of Ottawa Indians, Great Lakes Indian Fish and Wildlife Commission, Chippewa-Ottawa Resource Authority, Little River Band of Ottawa Indians
Michigan Fish Producers Association
MSU Product Center for Agriculture and Natural Resources
C.S. Mott Center for Sustainable Agriculture
Michigan Department of Natural Resources
Northern Michigan University

PROGRAM PROFILE: OHIO

PROGRAM OVERVIEW:

Ohio Sea Grant received funding under both FEE cycles; a one-year project in round one and then a five-year project establishing a fisheries extension agent during round two. The one-year project included the redirection of 2.9 months of time from non-fisheries related work into fisheries projects and began the development of a Lake Erie Steelhead Tributary Angler Survey; the Lake Erie Discussion Board Web site; a Lake Erie Great Lakes Fisheries Leadership Institute; ANS-HACCP education to live bait handlers; and an increase in fisheries-related presentations and meetings.

Ohio's five-year FEE project is entitled, "Fisheries Extension Enhancement - Ohio Sea Grant Fisheries Extension Agent." Funding allowed for the hiring of a full-time fisheries extension agent with goals of increasing fishing participation by underrepresented audiences (women, minorities, and youth), addressing the statewide decline in fishing-related revenues, mitigating dissension among the public and fishery managers, and expanding the programs initiated in year one. A fully supported office for the new hire and program support and promotion were contributed by cooperating program partners.

NOTEWORTHY ACTIVITIES/ACCOMPLISHMENTS:

- **Consolidated Fisheries Information**
An Ohio Sea Grant-coordinated effort to consolidate fisheries information into a form usable by the general public now has the participation of the Great Lakes Fisheries Commission, U.S. Geological Survey (Lake Erie Biological Station), Ohio Division of Wildlife, the Great Lakes Sport Fishing Council and the Lake Erie Charter Boat Association.
- **Great Lakes Fisheries Leadership Institute Training**
Thirty-two (32) emerging leaders in Lake Erie fisheries-related organizations received training at the Great Lakes Fisheries Leadership Institute in fisheries science, the roles of regulatory agencies, management issues, research methodology, and leadership style.
- **Increased Programming for Women and Youth**
Women are the most underrepresented audience within the fishing community. The Ohio FEE effort has developed special women's program to increase female participation through seminars, publications, and hands-on training programs. Special programs to recruit youth into fishing have also become one of Ohio Sea Grant's most popular FEE program areas and are receiving praise from fishery agencies and fishing organizations.
- **Lake Erie Discussion Board**
The Lake Erie Discussion Board is an interactive web-based forum allowing Sea Grant clientele to get fast, personal answers to their Lake Erie and Great Lakes questions, regardless of their

locations. The board also serves as an effective teaching tool, allowing thousands of people to read and learn from the questions and answers of others. Between 2005-2007, the Lake Erie Discussion Board averaged over 750,000 Internet hits per year.

- **Lake Erie Sport Fishing Courses**

Fisheries Extension Enhancement has allowed The Ohio State University to add a new course that trains students in fishing skills to its physical education curriculum. Since 2005, 32 college students have earned three undergraduate credit hours during the annual offering of *PAES 140.05 – Lake Erie Sport Fishing*, taught at the F.T. Stone Laboratory. The new course diversifies Stone Laboratory's curriculum and draws a new demographic of students to the laboratory. In addition to fishing skills, students are trained in fisheries biology, marine electronics and tackle making. The success of this credit course led to the development of an additional three-day, non-credit adult education workshop in Lake Erie sport fishing which allows ten adults per summer to receive formal training in fishing skills.

- **VHS Disease Control**

Ohio Sea Grant assisted the Ohio Dept. of Agriculture in developing a VHS disease quarantine zone, restricting the transportation of VHS susceptible fish species out of Lake Erie's VHS infection zone, protecting uninfected watersheds.

- **Fisheries Extension Scholarly Publications and Presentations**

Kelch, D., Lichtkoppler, F., Sohngen, B., and Daigneault, A. (2006) The Value of Steelhead (*Onchorhynchus mykiss*) angling in Lake Erie tributaries. *Journal of Great Lakes Research*. 32 (3) 424-433.

Kuehn, D., Lichtkoppler, F., and Pistis, C. 2005. The Great Lakes charter fishing industry: 1973 to 2002. *Fisheries* 30 (3) 10-17.

Snyder, F.L., Lichtkoppler, F.R., Reutter, J.M., Kelch, D.O. and K. E. Riesen. 2006. Revitalizing Ohio's Lake Erie sport fishery through fisheries extension enhancement (FEE). American Fisheries Society, 136th Annual Meeting, Sept. 10-13, 2006, Lake Placid, New York.

Riesen, K.E. 2005. Women: sport fishing's untapped market. American Fisheries Society, 135th Annual Meeting, Sept. 11-15, 2005, Anchorage, Alaska.

Kelch, D. F., Lichtkoppler, B., Sohngen and K. Riesen. 2005. Social and environmental factors impacting preferences and expenditures of Ohio's Lake Erie tributary steelhead anglers. American Fisheries Society, 135th Annual Meeting, Sept. 11-15, 2005, Anchorage, Alaska.

Snyder, F.L. 2005. Lake Erie sport fishery alterations by non-native species. 114th Annual Meeting of the Ohio Academy of Science, Bowling Green, Ohio.

Kelch, D. O., Lichtkoppler, F. R., Sohngen, B. L., and Riesen, K.E. 2005. Evaluating the economic contribution of Ohio's Lake Erie tributary steelhead fishery, 2002-2003. 114th Annual Meeting of the Ohio Academy of Science, Bowling Green, Ohio.

Snyder, F.L. 2004. Aquatic invasive species impacts upon the Lake Erie sport fishery. 13th International Conference on Aquatic Invasive Species, Ennis, Ireland.

- **Powerpoint Presentations**

Women: Sport Fishing's Untapped Market
Ladies: Let's Go Fishing
Taking the Kids Fishing
Steelhead Fishing Tips

Fly Fishing for Steelhead
Lake Erie Classroom Jeopardy
Fly Fishing for Bluegill
Live Bait Markets, VHS Disease, and Basic Baitfish Culture
Managing Your Farm Pond
Using the Internet to Catch More Fish
Aquatic Invasive Species in Lake Erie: Pathways and Impacts
Drifting and Casting for Walleyes
Lake Erie Sport Fishes and Regulations
Seasonal Fish Movements on Lake Erie and Fishing Tips
Using GPS
Using Sonar
Changing Tactics for Lake Erie Anglers
Lake Erie Sport Fishery Alterations by Non-native Species
Fishing Smarter – Tips for Finding Fish
The Federal Order on VHS – Fisheries Implications
Intro to Ice Fishing
Fish Parasites, Diseases, and Consumption Advisories
Fishes in the Aquatic Environment

- **Fact Sheets**

Where to Take Kids Fishing in Northern Ohio
Taking Kids Fishing
Websites for Lake Erie Anglers
The Federal Order on VHS – Implications for Ohio's Fisheries

PROGRAM IMPACTS:

- Fisheries Extension Enhancement allowed Ohio Sea Grant to expand its Charter Captains Conference to encompass marketing programs aimed at bringing underrepresented audiences (women and minorities) into the Lake Erie fishery. Among captains attending this conference over the past three years, 68 % said the conference information has increased their profits. Over 84% of the captains said they have used the conference information to modify their business or fishing practices. Over 95% said conference information has been used in some aspect of their businesses.
- Women anglers have organized clubs to further their education and participation in fishing. Inner city schools have adopted fishing education programs as wholesome alternative activities for youth. Organization leaders trained through FEE's GLFLI program are involving their organizations more effectively in fisheries management issues.
- Lake Erie charter boat captains are using marketing concepts aimed at women to bring more women into the clientele pool of their industry, which also increases the participation rate of this underrepresented audience. These marketing concepts were developed in the Ohio FEE program's initiative, "*Women: sport fishing's untapped market.*"
- ***Kelly's Catch***, a monthly fishing column highlighting Lake Erie fishing opportunities is now published by nineteen (19) newspapers, magazines, and outdoor websites throughout Ohio and in some neighboring states, with an estimated audience of over 600,000 persons.
- Research documented the value of the Ohio Lake Erie tributary steelhead fishery at \$12-14 million annually providing significant economic benefits to coastal communities at a modest cost of \$600,000 for the ODNR, Division of Wildlife stocking program.

- Over 2,250 youth (about 15 percent minority) have received personalized education in sportfishing and fishery science at organized events.
- About 80 women have gained hands-on experience fishing for walleye during *Women's Fishing Day on Lake Erie*, a program hosted in partnership between Ohio Sea Grant's FEE program, the Lake Erie Charter Boat Association, and Ohio Division of Wildlife.

Sponsorship of education programs and target audience participation

Type of Program	No. of times offered	Total participation
Recruiting Youth into Fishing	15	602
Fishing Information and Training	22	1,788
Recruiting Women into Fishing	5	341
Lake Erie Environmental Issues	7	556
Youth Aquatic Science Training	6	969
Handicapped Fishing Opportunities	1	41

LOCAL, STATE, AND NATIONAL AWARDS:

- **Distinguished Service in Conservation Award**, presented by the Ohio Division of Wildlife, Dept. of Natural Resources, to Fred L. Snyder, 2007.
- **Epsilon Sigma Phi Tools for Teaching First Place Award**, awarded to Ohio Sea Grant for the Lake Erie Discussion Board, 2007.
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EXPANDING PARTNERSHIPS:

- Ohio Sea Grant formed a partnership with the international, federal and state agencies managing Lake Erie fisheries to deliver fisheries management and research education to the public in a non-technical form that will encourage participation and support of these agencies' activities by private individuals and organizations. This led to the formation of the **Ohio Sea Grant Fisheries Extension Advisory Committee** which coordinates these efforts. Organizational committee members include the:

Great Lakes Fisheries Commission
 U.S. Geological Survey – Lake Erie Biological Station
 Ohio Department of Natural Resources, Division of Wildlife
 Recreational Boating and Fishing Foundation
 Great Lakes Sport Fishing Council
 Lake Erie Nature and Science Center
 Lake Erie Charter Boat Association
 Lake Erie Marine Trades Association
 Western Basin Sportfishing Association

Public activities performed in partnership with these organizations are:

	Information Dissemination	Teaching/Training	Field Research	FEE Advisory Committee
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Great Lakes Fishery Commission	X			X
U.S. Geological Survey—Lake Erie Biological Station	X		X	X
Ohio Dept. Of Natural Resources— Division of Wildlife	X	X	X	X
Lake Erie Marine Trades Association	X	X		X
Lake Erie Charter Boat Association		X		X
Great Lakes Science Center— Cleveland		X		
Lake Erie Nature and Science Center	X	X		X
Great Sport Fishing Council	X			X

- The National Wild Turkey Federation’s *Women in the Outdoors* program partnered with Ohio’s FEE program to include fishing education and opportunities for women into their annually scheduled events. Over 200 women have received training in sportfishing methodology through this effort.

REGIONAL PROFILE: PACIFIC

REGIONAL OVERVIEW:

Alaska, California, Oregon, Washington

The Pacific region received support for regional fisheries extension programming through phase one and two of the FEE initiative. Phase one competitive FEE funding supported a regional collaborative study of juvenile rockfish, cabezon, and kelp greenling habitat associations between Morro Bay, California and Newport, Oregon to assess habitat utilization by these important recreational and commercial species. This work was conducted with fishermen in Morro Bay, Monterey Bay, Bodega Bay, Fort Bragg, Eureka and Crescent City, California, and Charleston, Port Orford, and Newport, Oregon. Principal investigators Susan Schlosser and Jennifer Bloeser engaged 29 collaborators and leveraged funding to extend this one year Sea Grant supported endeavor into a three year project. Funding for this project was provided in 2003 by the National Sea Grant Fisheries Extension Enhancement Program with continuation through 2004 and 2005 supported by \$240,000 from the Pacific States Marine Fisheries Commission. Cooperating agencies included NOAA Fisheries, California Department of Fish and Game, Oregon Department of Fish and Wildlife, and the South Slough Estuarine Research Reserve.

The phase two FEE initiative substantially increased fisheries extension in the Pacific region through the addition of seven FTEs. This resulted in many regional collaborations and projects having significant impacts. Some of the highlights of these regional collaborations are briefly mentioned here and additional details can be found in the state profiles sections.

Direct Fisheries Marketing

Information was provided to fishermen on direct fishery marketing through workshops, presentations, and publications covering critical issues to address in order to succeed and benefit fishermen, coastal ports and ancillary businesses. This project was closely coordinated with a similar project in Washington State conducted by Washington Sea Grant, and with the assistance of Alaska Sea Grant.

Trade Adjustment Assistance

As a result of salmon prices significantly decreasing throughout the Pacific region since the late 1990's, two major government initiatives were undertaken to help revitalize the industry and strengthen coastal economies. Both FEE agents play significant leadership roles in these programs. As part of the USDA's Trade Adjustment Assistance program for Alaska, Washington, Oregon and California salmon fishermen, FEE fisheries personnel provided over 330 mandatory general technical assistance workshops to 4,900 Pacific region salmon limited entry permit holders and crewmembers in 2004 and 2005. Alaska FEE agent Torie Baker coordinated this ambitious program, leading eight faculty and three staff in curriculum development, workshop coordination and program delivery and evaluation. FEE personnel in Washington, Oregon and California adapted these materials and conducted workshops for eligible fishermen in their respective states.

The Port Liaison Project (PLP)

The Port Liaison Project supports cooperative ocean or fisheries research. The PLP has supported or is currently supporting over 25 ocean or fisheries research projects. These projects take place all along the West Coast. Topics include, but are not limited to, species life history; contaminants in seafood; traceability; near shore planning; marine reserves; gear specifications; whale research; port sampling; rockfish photography; hook and line surveys; and footrope effort. The PLP has a list of over 150 industry cooperators, from ports in coastal communities ranging from central California to northwest Washington.

Seabird Bycatch Prevention

WSG utilized FEE funding and collaborated with Alaska Sea Grant to develop a regional seabird bycatch prevention technique - streamer lines - that are now required on all offshore longline operations in the Bering Sea and Gulf of Alaska by the North Pacific Fisheries Management Council. Longline fishermen's organizations have been quoted as saying that this applied research technique developed by WSG kept their fishery from shutting down due to chances of taking endangered albatross species

REGIONAL INTEGRATION/COORDINATION ACTIVITIES:

- Pacific region agents attended the first fee regional meeting in California in 2004.
- Pacific Region FEE agents attended a FEE regional meeting in Astoria in 2005 which developed closer partnerships with other west coast agents.
- Alaska Sea Grant's FEE funded agent, Torie Baker, served on the steering committee for the National Fisheries Extension Meeting in Jacksonville, FL, and attended the National Sea Grant Academy which resulted in routine contacts with agents in New Hampshire, North and South Carolina, Louisiana, Texas and California.
- Alaska, California and New Hampshire committed FEE agents to serve as co-chairs of last year's National Sea Grant/American Fisheries Society annual meeting symposium on national extension initiatives in support of ecosystem based science and management.
- Alaska and Washington Sea Grant extension agents collaborated on seabird avoidance gear resulting in new regulations exempting small boat fishermen and developing gear more useful for larger vessels. Torie Baker jointly presented the seabird deterrent research with Ed Melvin WSG at NSGO Beltway Brownbag Seminar series in Washington, D.C. in March 2006.
- Specific projects conducted by California FEE supported advisors are serving as model programs that others may include in their fisheries programs. For example, there are plans to apply the study of the Santa Barbara Channel Fisheries and Associated Infrastructure to the Mississippi/Louisiana area (funding pending). The survey tool has been shared with Fisheries Extension folks and will be adapted to fit that region (pending funding). This project also required discussions among several extension agents along the west coast, as we identified and described 'model' harbor facilities for west coast fishing communities.

FEE-FUNDED PROPOSALS:

- Fisheries in Transition - Responding to and Facilitating Change in Alaska's Coastal Fisheries
- Collaborative study of juvenile rockfish, cabezon, and kelp greenling habitat associations between Morro Bay, California and Newport, Oregon (CA, round one)
- Three fishery extension advisor positions addressing California's critical marine fisheries issues and needs (CA, round two)
- The Future of the Commercial Salmon Industry and Direct Marketing Alternative for Commercial Fishermen (WA, round one)
- Solving the bycatch of seabirds in commercial longline fisheries (WA, round two)
- Enhanced Fisheries Communication Extension Plan (OR)
- Linking Management and Seafood Technology to Promote Sustainable Fisheries and Communities (OR)

ANNUALLY ALLOCATED FEE FUNDS: \$804,813

TOTAL FEDERAL FUNDS: \$3,219,252

LEVERAGED FUNDING: \$3,942,771

LEVERAGED/FEE RATIO: \$1.22

REPORTED REGIONAL IMPACTS:

FEE Agent Boards and Committee Participation	12
FEE Agent Collaborating Partners	170
Products Produced by FEE agents	16
State and National Awards	2 (AK received region's extension award) also BMP from AK PAT
Education Programs Sponsored/Conducted by FEE agents	34 (3200 attendees)
New Hires	7.5 (AK, 2; CA, 3; OR, 1.5; WA, 1)
Number of graduate and undergraduate students supported, including fellowships and internships	2
Publications (Peer-reviewed, reports, symposia, etc.	40

PROGRAM PROFILE: ALASKA

PROGRAM OVERVIEW:

ASG FEE agents respond to local issues as well as statewide priorities within the Alaskan fishing and seafood industry as it reflects changing markets, a dynamic regulatory climate and environmental and habitat issues. These include:

- Collaborative research and outreach among gear groups and fishermen to mitigate seabird bycatch and whale/gear entanglement.
- Training and support of Alaska seafood direct marketing, onboard quality handling, and regional marketing.
- Leadership capacity building in both the Alaska processing and harvesting sectors.
- Supporting fishing communities facing changes as one generation of fishermen retires and another enters the business.
- Onboard marine safety training.

Alaska Sea Grant Marine Advisory Program has a 40-year relationship with all sectors of the seafood industry, and FEE agents have significantly increased the effectiveness and capacity of programs to be innovative and relevant to ASG clients. Both FEE agents bring strong team leadership, energized participation, and passionate belief in the clients, the industry, and the communities they serve.

NOTEWORTHY ACTIVITIES/ACCOMPLISHMENTS:

- **Field Evaluation of Seabird Deterrent Gear and Alternatives for Alaska Small Longline Vessels**
ASG FEE agents worked with Ed Melvin and Kim Dietrich from Washington Sea Grant and several longline fleet fishermen on the "Field Evaluation of Seabird Deterrent Gear and Alternatives for Alaska Small Longline Vessels" project. Funding for this project was extended by the U.S. Fish and Wildlife Service to include coordination and distribution of lightweight streamer lines for smaller vessels. This collaborative project was chosen by the PAT review team for Alaska Sea Grant as a "Best Management Practice."
- **Trade Adjustment Assistance**
As a result of salmon prices significantly decreasing throughout Alaska since the late 1990's, two major government initiatives were undertaken to help revitalize the industry and strengthen coastal economies. Both FEE agents play significant leadership roles in these programs. As part of the USDA's Trade Adjustment Assistance program for Alaska salmon fishermen, Alaska Sea Grant Marine Advisory Program provided over 320 mandatory general technical assistance workshops to 4,800 Alaska salmon limited entry permit holders and crewmembers in 2004 and 2005. FEE agent Torie Baker coordinated this ambitious program, leading eight (8) faculty and three (3) staff in curriculum development, workshop coordination, delivery and evaluation. Baker also supported

the national TAA program by supplying Alaska-specific trainer curriculum via web-based distance delivery. Alaska workshops focused on increasing value from salmon fishing through decreasing costs, retaining more of the value of the fish, and/or diversifying into other occupations to either supplement or replace fishing.

- **Fishbiz: Alaska Fishing Business Assistance Project**

The state of Alaska awarded \$500,000 of federal disaster fund to the ASG Marine Advisory Program to provide the salmon industry with business, quality improvement and processing technical assistance through training, seminars, workshops and materials development and distribution. Entitled “Alaska Fisheries Business Assistance Project”, or “FishBiz”, both ASG FEE agents are key collaborators and instructors in this ongoing educational program. Due to the high quality of this program, subsequent funding was awarded to Alaska Sea Grant by USDA in 2006 for follow up intensive technical assistance for salmon fishermen. Both FEE agents are co-principle investigators in the current program which continues to develop and deliver fishing and processing training materials in web-based and workshop settings around Alaska.

- **Alaska Young Fishermen’s Summit I and II**

FEE agents Sunny Rice and Torie Baker worked with a steering committee of SeaGrant and industry members (including the Chairman of the North Pacific Fishery Management Council) to develop and offer a statewide leadership summit for the next generation of Alaska fishermen. The Alaska Young Fishermen’s Summit provides policy and business skills needed to ensure the continued success of the industry. The two summits have, over the last 18 months, brought together 140 young fishermen to connect with established fishermen, along with experts in financing, marketing, safety, and policy for two days of intensive lectures, panels, networking exercises, and small group discussions. The Summits are supported by fishermen’s associations around the state and were covered on the front page of the state’s three largest newspapers.

- **Fishermen’s Direct Marketing Manual**

Written in conjunction with Washington and Oregon Sea Grant in the mid-1990’s, the Fishermen’s Direct Marketing Manual is the most comprehensive guide for west coast and Alaska fishermen who wish to evaluate direct marketing their catch as a business option. Funded initially under WSG’s year-one FEE award, over 4,000 copies have been distributed and a fourth edition was just released with new sections on accounting, e-commerce, working with custom processors, direct marketing shrimp, avoiding HACCP problems, and more. Both FEE agents were technical contributors to the publication, and each makes extensive use of the document in workshops and consultations.

PROGRAM IMPACTS:

- During ASG’s work with small vessel longliners on the seabird avoidance project, it was determined that heavy streamer lines being distributed at that time were ineffective on smaller longline vessels. As a result, funding was provided for construction and distribution of a lighter line designed by one of our collaborating longline fishermen. Over 500 of these lightweight lines have been distributed to the longline fleet since 2006. In addition, a final rule incorporating the research on lightweight lines was just approved by the North Pacific Fishery Management Council as was a waiver for inshore vessels showing no bird contact.
- AYFS – At both Alaska Young Fishermen Summits, participants understood and acted upon the message of the importance of quality seafood handling. As a result of their exposure to Summit information, several attendees surveyed indicate they had instituted quality handling procedures aboard their vessels the following season, added insulated fish holds, and some cases, purchased refrigeration systems. A group of AYFS participants participated in the next North Pacific Fishery Management Council meeting concerning halibut quota allocation.

- FEE agent Baker’s “The Onboard DEC Inspection” has been widely distributed, and behavior change has been noted in comments received from Robert Pressley, Alaska Department of Environmental Conservation inspector.
- Fatalities in the Alaska commercial fleet have been steadily declining over the last 10 years due to increased onboard USCG safety inspections and ongoing community-based safety training. Both FEE agents are USCG-certified safety drills instructors which doubles MAP’s training capacity in this important area. Both conduct local marine safety classes under the auspices of the Alaska Marine Safety Education Association. Since 2003, Baker has provided 67 commercial fishermen with safety training and certification.
- Behavior change as a result of technical training is at the heart of extension education, and FEE agents coordinate, facilitate and instruct in many MAP workshops for hundreds of participants. For example, in 2007, six HACCP classes were held in five communities, and three sanitation classes along with the Better Process Control School and Quality Assurance/Quality Control class were held in Anchorage. The International Smoked Seafood Conference held in March 2007 provided information to over 100 participants and was followed by a hands-on "Smoked Seafood Workshop" held at a local processing facility – 29 participants received in-depth instruction on smoking seafood at a local processing facility. In 2006, Better Process Control School and Quality Assurance/Quality Control were again taught in Anchorage. Thirteen HACCP classes were held in 10 communities and eight sanitation classes were held in seven communities for 120 fishermen and processing workers. Other quality and processing workshops in 2006 included an "Onboard Freezing Workshop" in Petersburg, "Commercial Smoked Seafood Products" in King Salmon and Dillingham, and “Onboard Quality Handling” in Petersburg, Wrangell and Cordova. In workshop evaluations in Petersburg and Wrangell, participants expressed their intention to change product handling methods by chilling fish more quickly, adapting or revising a bleeding technique known as “pressure bleeding, and using other techniques.

LOCAL, STATE, AND NATIONAL AWARDS:

- ASG “Fishbiz” program was nominated in by the Western Region Sea Grant Extension Leaders for the National Sea Grant Extension Program award (2007).
- The seabird bycatch deterrent work was nominated as a Best Management Practice by the Alaska Sea Grant PAT.

EXPANDING PARTNERSHIPS:

- The seabird bycatch deterrent work is ongoing through a partnership with the US Fish and Wildlife Service and the Pacific States Marine Fisheries Commission to build and distribute lightweight streamer lines to small longline vessels.

An ongoing partnership with USDA funds through the Western Center for Risk Management Education at Washington State University Cooperative Extension Service is supporting with FEE the Fisheries Business Assistance Program at Alaska Sea Grant.

PROGRAM PROFILE: CALIFORNIA

PROGRAM OVERVIEW:

The California Sea Grant Extension Program recruited three fishery extension academic advisors to address priority issues and problems facing the state’s fishery resources and the communities that use and manage them. One position targeted fisheries of the Santa Barbara channel and another focused on fishery issues in northern California around Humboldt Bay. A third, with statewide responsibilities based in Santa Cruz addressed the socioeconomic and human dimensions of changing fisheries and their management. Redirected program effort as match involved the marine fisheries specialist being reassigned from administrative to programmatic responsibilities assisting the state in developing a peer review process for newly created fishery management plans for high priority species.

NOTEWORTHY ACTIVITIES/ACCOMPLISHMENTS:

Santa Barbara Channel Region Fisheries & Associated Infrastructure Needs Assessment

CASG developed a regional project to describe the local commercial fisheries, associated infrastructure needs, and the current and future challenges facing fishing communities at three commercial harbors in the Santa Barbara channel. These characterizations of the local commercial fisheries and infrastructure needs (both current and future) resulted in the following outcomes:

- Increased support for maintaining local working waterfronts
- Improved assistance with addressing fishing-related facility and service needs
- Increased demand for educational materials regarding local fisheries
- Improved understanding of the status of local commercial fisheries
- Heightened awareness of the complexities of the local fisheries
- Enhanced knowledge of the challenges facing local fishing communities

The report has been used as a resource at 1) fishery management meetings, 2) harbor meetings, 3) fisheries educational settings, 4) meetings regarding marine protected areas, and 5) community meetings. In addition, several groups outside the state and region are using this study as a model for conducting a similar study in their area.

Fisheries Youth Journalism Academy

To help educate citizens about local commercial fisheries one of the CASG FEE supported Marine Advisors teamed up with the 4-H Program and offered an intensive fisheries journalism academy for a select group of middle and high school students. The goal of the project was to improve fisheries and ocean literacy and stewardship among the participants and others through the academy and development of a newspaper supplement produced by the students.

Human and Biophysical Dimensions of the Santa Cruz Wharf Recreational Fishery

This study documented risks to shore-based anglers of exposure to naturally occurring and anthropogenic toxins in recreationally caught fish. The goal was to sustain and enhance the benefits of anglers consuming their catch while minimizing the risks of toxin exposure.

California Fishing Communities Project

State and federal fishery and broader ocean management measures have heightened and highlighted the need for accurate, up-to-date information on fisheries and fishing communities in larger state and regional contexts. This project analyzed existing data on fishing and processing activities over the past 25+ years working with fishing community members to interpret changes in California fishing ports; identify factors associated with changes in processing and infrastructure; and determine whether those factors can be used to predict the effects of changing regulations on fishing communities, as required by state and federal policy (e.g., California's Marine Life Management Act and the Magnuson Act's National Standard 8).

Project results provided insights into socioeconomic features of fisheries and fishing communities such as engagement, dependence, and mobility, that community members and managers use for planning and problem-solving. This knowledge increased awareness among state and federal agencies, non-governmental organizations, resource users and the public of the dynamics of West Coast fisheries and fishing communities and how different management decisions may affect them

Marine Life Protection Act (MLPA) Initiative Baseline Science Management Panel

Under California's 1999 Marine Life Protection Act (MLPA), the state is developing a network of marine protected areas (MPAs) through a public-private partnership referred to as the MLPA Initiative. The FEE-funded marine advisor served on the MLPA Baseline Science Management Panel (BSMP) of 11 scientists with experience and knowledge of MPA assessment to develop a prioritized list of baseline data needs to support monitoring and adaptive management of the proposed Central Coast MPAs. The BSMP provided managers clear criteria and an objective process for prioritizing scientific data collection, including feasibility, importance/benefits, options, and costs.

Endangered Coho Salmon Tag Assessment and Telemetry

The ecological importance of estuarine resources for outmigrating salmon remains one of the major knowledge gaps in the study of salmonid biology. The dramatic loss and alteration of estuarine habitats could be a critical factor in the continuing decline of salmon from Washington to California. This study identified detailed information on how individual fish used different portions of the Freshwater Creek system in California, and this knowledge will guide investments in conservation and habitat restoration.

Razor Clam Recreational Fishery Study

Humboldt and Del Norte Counties supported a locally important recreational fishery for razor clams which collapsed circa 1983 following a strong El Niño event, possibly exacerbated by disease and over-fishing. Recently, clam populations have rebounded and with it the fishery. There is a critical need to develop a rational management plan and this project collected essential data on seasonal take, catch per unit effort and population structure to inform this effort. Data will be used to develop a management model for a sustainable local fishery.

Juvenile Groundfish Trap Design & Survey Methods

Groundfish include species of particular concern on the Pacific coast, including a suite of rockfish species, lingcod and cabezon. Critical to management of these stocks is an improved understanding of the importance of juvenile recruitment and an understanding of what habitats are important. In the past, trawls with limited access to several critical habitat types or underwater surveys which are dependent upon SCUBA depth limits and reasonable underwater visibility have been used to monitor habitat use, but several potential habitat types are inaccessible using these methods. This project refined available methods for monitoring juvenile groundfish recruitment using trap gear, effective in a variety of habitat types and presumably unaffected by poor visibility. The new design was highly effective at capturing juvenile groundfish and other small fish species, out-performing the next best commercial design by nine to one. The traps are inexpensive; easy to construct and to fish.

Coastal Observation and Seabird Survey Team - COASST

COASST trains volunteers to monitor marine ecosystem health by identifying seabird carcasses on select beaches. These data are used to create a baseline for tracking populations of marine birds, and by extension such ecosystem effects as changing oceanographic conditions, fluctuations in prey abundance, biotoxin levels or pollution events. CA COASST provides northern California communities with a unique marine science partnership. In a region with unusually close economic and cultural ties to coastal resources, this is an excellent opportunity to invest the public in ecological monitoring, provide public education about how science works and what it can offer, and generate locally and regionally relevant outreach materials.

EXPANDING PARTNERSHIPS:

The FEE program in California has been extraordinarily successful at expanding partnerships to improve fisheries management, seafood safety and technology, marine resource conservation, management of aquatic invasive species, management of newly emerging fisheries, and better understand social science and how communities are affected by changing fisheries and their management.

Collaborative programming with Federal Agencies included the Centers for Disease Control and Prevention, Channel Islands National Marine Sanctuary, Channel Islands National Parks Service, Monterey Bay National Marine Sanctuary, NOAA Center for Coastal Ocean Studies, NOAA Fisheries, NOAA MPA Science Center, and the U.S. Fish & Wildlife Service. Regional management agencies involved in collaborative work with FEE advisors included the Pacific Fishery Management Council and the Pacific States Marine Fisheries Commission. Local and state agencies included the California Department of Fish & Game, California Department of Health Services, Monterey County Office of Education, and the Washington State Department of Fish and Wildlife. In addition to agency collaborators FEE advisors engaged NGOs with interests in improved fisheries management including the Alliance of Communities for Sustainable Fisheries, California Fisheries Coalition, Friends of Moss Landing Marine Laboratories Joint Oil/Fisheries Liaison Office, and the Marine Science Institute in Redwood City. Expansive collaborations

took place with 43 industry and business groups, 15 academic institutions and six other Sea Grant programs in the network.

PROGRAM IMPACTS:

FEE advisors in California have been successful in leveraging more than \$1 million in extramural funds to further expand fisheries extension programming in the state and region. CASG advisors have laid the groundwork for improving resource conservation and/or constituent behavior. While some impacts are already evident, many more are expected as information generated is extended to user groups and managers and incorporated into policy and management. A number of impacts include the following:

- The development and implementation of the “Fisheries Youth Journalism Academy” recorded measurable improvement among youth of the understanding of resource conservation and the actions necessary for conserving ocean resources among academy participants.
- Prior to the Fisheries Academy only one of the students was able to name a single local commercial fishery and gear type. By the end of the class they were all able to name five fisheries and the associated gear used in those fisheries.
- A supplemental newspaper describing local fisheries has been distributed to more than 90,000 local newspaper subscribers, as well as over 500 Ventura County public school teachers and their 5,000 plus students.
- The Santa Barbara Channel Region Fisheries & Associated Infrastructure Needs Assessment provided harbor managers and commissioners with improved knowledge of the current and future needs of the fishing industry to better manage and improve infrastructure and guide investments in excess of \$1 million.
- The Santa Cruz Wharf recreational fishing project enabled local health officials to provide more accurate and balanced seafood advisories in a time of heightened interest about seafood safety and health risks.
- Improved resource management will result because MPA managers have a prioritized list of baseline data needs to support monitoring and adaptive management of MPAs in California.
- Improved survival of outmigrating coho salmon should result as new knowledge is used to guide conservation and restoration of critical estuarine habitat.
- Data collected on the razor clam fishery will populate a management model for a sustainable local razor clam fishery in Northern California
- Creation of a new inexpensive rockfish trap design that is highly effective at capturing juvenile groundfish and other small fish species and out-performs the next best commercial design by nine to one will contribute valuable information to better understand habitat requirements, improve fisheries management, and design more effective MPAs..
- The Coastal Observation and Seabird Survey Team project creates an important data base to better understand ecosystem based changes and inform the public about ecosystem function.
- The California Fishing Communities project data on local fisheries improved the PFMC and NOAA Fisheries ability to make decisions on West Coast groundfish fishery management decisions and helped guide salmon fishery disaster support in California.
- FEE supported advisors involved in several collaborative research projects and fisherman’s forums have dramatically improved the level of trust between the fishing community, scientists, and managers, particularly in regards to MPAs.

PROGRAM PROFILE: OREGON

PROGRAM OVERVIEW:

The FEE funding provided Oregon Sea Grant with a remarkable opportunity to create and strengthen communication and develop relationships between and among fishing communities, industry, and research. Partnerships born through FEE efforts led OSG to initiate several small projects and, by helping fund a position, allowed the program to help lead a major innovative collaborative research project in association with the state's salmon commodity commission, the Northwest Fisheries Science Center of NMFS, the Oregon Department of Fish and Wildlife, researchers at Oregon State, extension faculty in California, and the fishing industry. Longer-term capacity development through competitive programs such as FEE, plays a significant role in the network's ability to focus on critical thematic issues based on state and regional needs.

NOTEWORTHY ACTIVITIES/ACCOMPLISHMENTS:

Direct Fisheries Marketing

Through a feasibility study of direct fishery marketing at the Port of Newport, and through workshops, presentations, publications and other means, direct marketing provided critical information on issues (problems and opportunities) to the fishing industry (fishermen and processors), coastal ports, and ancillary businesses. This project was closely coordinated with a similar project in Washington State conducted by Washington Sea Grant, and with the assistance of Alaska Sea Grant. Sea Grant Extension embarked on a concept study/fact-finding to research the presence, nature, characteristics, and other relevant elements of fishermen's markets, public markets, farmers' markets and/or other similar ventures in other locations. It examined the preliminary suitability of Newport for a fishermen's market, or similar direct marketing venture, and defined the scope and nature of potential conceptual alternatives based on factors such as organization, facility, business model, product variety, participants, and other relevant characteristics. A library of information on the study was developed and is housed at the Port of Newport and open to share with all other ports in Oregon. The study in Oregon resulted in four alternatives being proposed as potentially suitable fishermen's type markets for Newport. The interest of the community followed and Sea Grant's initiating of this feasibility study in 2004 led the Lincoln County Board of Commissioners to award \$20,000 in community economic development funds to conduct a second phase feasibility study for this project.

SAFE: Scientists and Fishermen Exchange

SAFE: Scientists and Fishermen Exchange has proven that scientists and fishermen can share ideas and information in a safe environment and that through this exchange, relationships can be built that result in opportunities for learning and discovery. These relationships have led to several outstanding and very successful projects -- the Port Liaison Project (PLP) and Fishermen Involved in Natural Energy (FINE) -- as well as the wave energy explosion.

Zero Waste Project

This is a relatively new project, in conjunction with the Oregon Coast Community College Small Business Development Center (SBDC), to create a small local business to convert fish carcass waste into saleable frozen crab bait.

Cooperative Research on Oregon Ocean Salmon (CROOS) Project.

OSG's FEE agents worked as partners with the Coastal Oregon Marine Experiment Station (COMES) on what is known as the Cooperative Research on Oregon Ocean Salmon or CROOS project. COMES, the salmon industry, Sea Grant, NMFS, CSI, and others have partnered to form a unique collaboration in conducting fishery and genetic science. OSG partnered with COMES to find a way to track salmon over time as they make their way through the ocean with the hope of gaining insights into where fish from different streams travel and feed, and whether they mix or stay with others from their parent stream. The results might let future regulators close fishing only along a certain path or location in the ocean. With state funding running through the Oregon

Salmon Commission, salmon vessels collected tissue samples, oceanographic, and vessel data. (See: www.projectCROOS.com)

PROGRAM IMPACTS:

The community was “hooked” on moving further with direct marketing. Sea Grant kicked off the initial study; the county funded the second phase study. Phase III was funded by the county- and Sea Grant-partnered efforts with Shorebank/Seafood Lab. The feasibility research showed that for such a facility to be cost effective, it would require creation of what was called a Fisheries Center, where a facility with office space would be built and would include anchor tenants (connected directly with services, research, and education for the fishing industry) who would ultimately cover the cost of the facility while providing a venue for seafood sales and education. The Port and Shorebank are in the process of identifying the anchor tenants and the Seafood Lab and Newport Fishermen's Wives Association are developing a business plan for seafood sales and education.

Scientists and Fishermen Exchange (SAFE) meetings have been an “incubator” for cooperative research projects. Probably the biggest to date is the Port Liaison Project (PLP), which gained funding from NOAA Fisheries Northwest Fisheries Science Center via the Cooperative Institute for Marine Resources Studies (CIMRS). Administered by Oregon Sea Grant, the goal of the Port Liaison Project is to initiate truly collaborative research by supporting cooperative ocean or fisheries research. The PLP has supported or is currently supporting over 25 ocean or fisheries research projects. These projects take place all along the West Coast. Topics include, but are not limited to, species life history; contaminants in seafood; traceability; near shore planning; marine reserves; gear specifications; whale research; port sampling; rockfish photography; hook and line surveys; and footrope effort. The PLP has a list of over 150 Industry Cooperators, from ports in coastal communities ranging from central California to northwest Washington, who together possess a combined experience of over 2,000 years of experience in hook & line, long line, trawl, seine, pot and trap gears, and groundfish, whiting, shrimp, crab salmon, albacore, and sardine fisheries. A list of projects can be found at: <http://65.36.237.245/plp/resources/main.php>. The fact that scientists and fishermen in another Oregon geographic region have asked for SAFE meetings in their area really is a testament to behavioral changes -- scientists and fisherman never used to exchange nor respect each other's ideas. Another important impact is the fact that, for each meeting, roughly 25% are new fishing community or science community members. This means that 75% keep coming back -- an indicator that these relationships are important to people and that they find this worth their time. SAFE is also a precursor to the creation of Fishermen Involved in Natural Energy (FINE). The keen interest in wave energy development from around the world is bringing many issues to Oregon's shores. The relationships and trust established through SAFE easily pulled this group together on wave energy related issues in important coastal communities. As the momentum builds toward establishing wave energy parks, marine scientists and fishers are working together to explore the positive and negative effects wave areas may have on the environment, resource, industry, and community.

In 2005-2006, new techniques developed by the CROOS project significantly benefited both the fish and fisheries that depend on them by allowing faster, more accurate responses to stock-specific marine distribution and migration patterns. Out-of-work-fishers were contracted and paid to gather samples for analysis from the CROOS grant, which was \$350,000. Fishermen and scientists are working in unison to problem-solve. Early benefits indicate federal fisheries managers are optimistic that these new techniques can significantly benefit both the fish and fisheries. Small companies are being assisted with adding value as well as enhancing and expanding markets. In 2007, over 120 captains of vessels were trained. Of the 115 vessels with signed contracts, 93 vessels participated in the 2007 CROOS project (93 operators, 62 crew). Over 3,800 fish were sampled which represented almost 11 percent of the Oregon commercial salmon harvest in 2007 (ODFW report as of 11/4/07). A total of approximately \$183,000 was distributed to operators and crew. Project managers developed detailed protocols for biological sampling, data collection, fleet management, fishermen training, and project coordination. The more than 3,800 tissue samples were delivered to the Coastal Oregon Marine Experiment Station

(COMES) genetics laboratory, along with associated digital or manual data. Forty of these fish have Coded Wire Tags. A total of 3,000 samples have been genotyped.

LOCAL, STATE, AND NATIONAL AWARDS:

EXPANDING PARTNERSHIPS:

For the direct marketing project, OSG worked with county, city, port, and the U.S. Small Business Development Centers as well as with Shorebank Enterprises and state and federal agencies—both in natural resource and economic development.

The SAFE project was specifically targeted at working with university and agency—particularly federal—scientists. Similarly, our Port Liaison Project was a project that the regional NMFS center sought out OSG to conduct following our successful and nationally recognized Groundfish Disaster Outreach Program (GDOP).

PROGRAM PROFILE: WASHINGTON

PROGRAM OVERVIEW:

FEE funding enabled Washington Sea Grant to carry out work on two very specific problems and funded one FTE that otherwise could not be hired due to lack of funding. In response to record low dock prices for local salmon and spot prawns, WSG coordinated the establishment of a dedicated dock at Port of Bellingham where fishermen can sell their catch direct to the public off their boats. Dubbed “Fishermens Wharf”, local fishermen utilized the dock during 2002 and 2003 summer fishing seasons and sold spot prawns, salmon and other locally caught at prices that were 2-3 times the amount they would have received from their traditional markets (“The Future of the Commercial Salmon Industry and Direct Marketing Alternative for Commercial Fishermen Project”). During the second round of funding, WSG initiated its “Solving the Bycatch of Seabirds in Commercial Longline Fisheries Project,” which enhances and extends the research, methods, education and outreach programs and capabilities of WGS to reduce the bycatch of seabirds in US and international fisheries.

NOTEWORTHY ACTIVITIES/ACCOMPLISHMENTS:

Seabird Bycatch Prevention

WSG utilized FEE funding to develop a seabird bycatch prevention technique - streamer lines - that are now required on all offshore longline operations in the Bering Sea and Gulf of Alaska by the North Pacific Fisheries Management Council. Longline fishermen's organizations have been quoted that this applied research technique kept their fishery from shutting down due to chances of taking endangered albatross species. International NGO's (World Wildlife Fund and Packard Foundation) have consulted with our seabird bycatch specialists to adapt WSG's mitigation techniques to longline fisheries in the Russian Far East and in southern hemisphere fisheries.

Direct Marketing Alternatives for Commercial Fishermen

In 2005, ten (10) fishermen in Port of Bellingham, WA increased the value of their salmon, crab, prawns, and bottomfish catch by \$24,500 by selling directly to local consumers.

PROGRAM IMPACTS:

Seabird bycatch has been significantly reduced in longline fisheries in Bering Sea and Gulf of Alaska.

The longline industry was a partner throughout the testing of the streamer line technology and its ultimate deployment on their vessels as they knew lack of cooperation would mean possible limitations on fishing time.

Direct marketing education and assistance has enabled several fishermen in Washington state to raise the value of their catch beyond what they would receive from traditional markets.

EXPANDING PARTNERSHIPS:

WSG partnered closely with two regulatory agencies, US Fish & Wildlife and NOAA Fisheries, on the seabird bycatch work. These agencies partially funded and assisted in the amendments before the NPFMC that resulted in new regulations.

Washington State Department of Agriculture provided an additional \$15,000 toward the direct marketing work in 2004-06 for Bellingham, WA activities from their Farm to Market grants program. The Port of Bellingham was also a very close partner in this effort as they willingly provided dockspace and signage for this effort.

The seabird bycatch work has migrated to significant interactions with international agencies such as CCAMLR and Agreement for the Conservation of Albatrosses and Petrels (ACAP) and the Australian Antarctic Division of Australian fisheries agency.