

Overview of Current Extramural Projects

Calendar Year 2002 to Date

PROJECT TITLE: “Mississippi Evaluation and Restoration of the Brown Shrimp Fishery Impacted by the 1997 Opening of the Bonnet Carre’ Spillway,” Mississippi Department of Marine Resources, Principal investigator, \$148,361, September 1, 1999- May 31, 2002.

SCIENTIST: David D. Burrage

OBJECTIVE(S): The major objectives of this project were to: 1) implement a pilot logbook program in order to gather data relevant to developing a fishery effort profile of Mississippi inshore shrimpers; 2) evaluate the shrimp retention and bycatch reduction characteristics of BRDs in small inshore shrimp trawls; and 3) train inshore fishermen to assist other Mississippi shrimpers in choosing, installing and using BRDs correctly.

RATIONALE: Although there have been a number of bycatch studies in the offshore Gulf of Mexico shrimp fishery, very little work has been done to document the shrimp retention and bycatch exclusion rates of BRD designs used in small inshore shrimp trawls. Mississippi does not currently require the use of BRDs in state waters. Some Mississippi inshore fishermen use “fisheye” type BRDs during certain times of the year in areas of high finfish concentrations. One major reason that BRDs are not being used by more inshore fishermen is the lack of trained individuals to assist them in selecting, installing and utilizing BRDs. Incorrectly installed BRDs can cause substantial shrimp loss. Even correctly installed BRDs must be used in conjunction with special operating procedures in order to minimize the potential for shrimp loss. While there are many fishermen with the expertise to develop inshore BRD technology, few, if any, have the resources to evaluate new ideas on their own. Additionally, fishermen as a rule do not possess the necessary mathematical and biological training to determine whether or not observed test results are statistically significant. There is a notable gap in information regarding shrimp trawl bycatch in inshore waters where the fishery is managed by the various Gulf and South Atlantic states. Some of the non-target species captured in shrimp trawls are important in recreational fisheries and/or targeted in other commercial fishing operations.

EXPERIMENTAL DESIGN: BRD performance was evaluated on two vessels during inshore shrimping operations in the northern Gulf of Mexico by comparing catch rates with control nets in twin-trawl configurations using 25-foot headrope nets. These are the most common nets used in the inshore fishery in the northern Gulf due to gear restrictions imposed by the various state resource management agencies. Two research cruises were taken during the 2001 summer brown shrimp season and two cruises were made during the 2001 fall white shrimp season for a total of 43 days at sea. BRD evaluations were conducted in both the brown and white shrimp seasons to determine differences in catch profiles related to different shrimp species and different gear types. Shrimp catch rates and bycatch quantity and species composition were documented by the principal investigator and project technicians according to protocol and report forms established

by NMFS for BRD testing.. This will facilitate data sharing among various university researchers as well as state and federal fishery management agencies because most BRD researchers have followed this protocol.

DATA COLLECTED: A Shrimp Vessel Logbook was developed and printed on waterproof paper for use on cooperative boats. The logbook was modeled after the one being used by LGL Ecological Research Associates, Inc. in their Gulf-wide effort survey of the offshore shrimp fleet so that data could be incorporated and shared by other researchers. Information provided by cooperating vessels included date, vessel position, length of tows, shrimp catch, and comments related to gear problems and unusual environmental conditions. The logbook program was initiated in May of 2000 at the beginning of the inshore brown shrimp season. The cooperating captains provided logbook information for the months of May through November of 2000 and February through December of 2001. Thus, information was gathered for the brown and white shrimp seasons in 2000 and the pink, brown and white shrimp seasons in 2001.

For BRD evaluations, the experimental and control nets were pulled from both sides of the vessel (positions swapped after 15 useable tows) in order to minimize any variations in door settings, bridle arrangements, try net influences and operational tendencies (for example, some captains always turn to starboard). Gear measurements and descriptions were performed following the protocol developed by NMFS for the bycatch observer program and a log was kept on vessel position, vessel speed, water depth, bottom composition, weather conditions, tow duration, time of day, time of year, etc.. Any gear failures such as fouled tickler chains, clogged TEDs, or hangs were noted but not included in statistical analyses. Statistical evaluations were performed using a paired t-test at an alpha of 10 percent as stipulated in the protocol contained in the *Gulf of Mexico Bycatch Reduction Device Testing Protocol Manual*. After each tow, the control and experimental catch were weighed for total biomass and shrimp. Every other tow (tows 1, 3, 5, etc.) was sampled by taking one five-gallon bucket (approximately 15-17 kilograms or 33-37 pounds) from the control and experimental nets. These samples were separated into the 19 categories/species of interest outlined in the BRD protocol and count/weight data were obtained for individuals within each species present in the catch.

OUTCOMES: Prior to this research, the Mississippi Commission on Marine Resources was planning to require the use of BRDs in Mississippi inshore waters because the commissioners felt it was “the right thing to do” from a conservation standpoint. In a presentation made to the Commission regarding the results of this project, the PI was able to demonstrate that most of the finfish caught as bycatch in the inshore fishery are short-lived non-game species which have shown no long-term declines. Therefore, there is no pressing need to make BRD use mandatory in the inshore fishery. About 600 Mississippi vessels would have been affected by mandatory inshore BRD requirements. Because each boat would have had to purchase and install at least three BRDs (one for each net and a spare), the direct savings to Mississippi inshore shrimpers resulting from this project was in excess of \$30,000. This figure only represents equipment costs and does not take into account potential lost production due to incorrect installation and unfamiliarity with the devices. Proper installation is critical in maximizing bycatch reduction and preserving the shrimp catch. As determined by the PI, the recommended distance to install the “fisheye” BRD in front of the tie off rings is 8 feet 6 inches. Using the “fisheye” BRD resulted in

substantial reductions for finfish bycatch with no shrimp loss in three out of the four evaluations. The theory that moving the BRD closer to the tie off rings would result in better performance seemed to be supported. Other inshore fishermen were trained to use BRDs properly. Many fishermen contacted the principal investigator and the cooperating captains for help with BRD installations, particularly in the fall of 2001 when butterfish became numerous on the inshore shrimp grounds. Other fishermen have seen the value of using BRDs all the time due to the reduced labor required to sort the catch and the better quality shrimp produced. Although most BRDs were installed in standard otter trawls, they have also been installed in skimmer nets with good results.

PROJECT TITLE: “Mississippi-Alabama Sea Grant Extension Program Service-Mississippi Component,” NOAA/Mississippi-Alabama Sea Grant Consortium, Co-investigator, \$189,999 , February 1, 2002-January 31, 2003.

SCIENTIST(S): C. David Veal, David D. Burrage, Mark LaSalle, Benedict Posadas

OBJECTIVE(S): The Mississippi-Alabama Sea Grant Extension Program is committed to providing research-based information to the coastal community and the broader community of citizens with an interest in marine resources and coastal issues. This commitment is pursued by establishing objectives based on elements of the Mississippi-Alabama Sea Grant Strategic Plan, input from the Auburn University Marine Extension and Research Center Advisory Committee, Mississippi State University Extension Service and informal feedback from constituents. The long-term objectives of the Mississippi /Alabama Sea Grant Extension Program are to:

- 1) Support and complement the Sea Grant Program by familiarizing a wider segment of the educational community and the general public with the Sea Grant Program concept;
- 2) Carry out intensive educational programs for specific audiences, including but not limited to, commercial fisheries, seafood processing, resource utilization and management, community/industry/government relations, and youth education;
- 3) Seek out means for developing stronger working relationships with government and non-government groups and/or agencies; including Sea Grant researchers and potentials users of Sea Grant applied research.
- 4) Develop more efficient program planning and program and audience identification procedures;
- 5) Establish a team of experts to assist the MASGC in meeting stated priorities.

RATIONALE: Marine-related resources support a variety of enterprises along the Mississippi-Alabama coast ranging from the seafood industry to eco-tourism and contribute significantly to an intangible, but highly valued, quality of life. The Mississippi-Alabama Sea Grant Extension

Program proposes to conduct outreach programs that assist the coastal community and the region in understanding problems that confront the wise use of marine related resources and the options for achieving solutions. In addition some elements of the coastal community have specific needs for technical assistance in food safety, mandated fishing gear, best management practices, water quality monitoring ,etc. Diverse stakeholders in the coastal area such as commercial and recreational fishers , seafood processors, conservation interests, non-consumptive businesses and policy makers need the information to make informed decisions on issues affecting their economic well-being as well as their marine environment. Similarly, clients need specific information on technology that is mandated by environment and health concerns or is needed to improve conditions in the coastal area.

MATERIALS AND METHODS: The Mississippi-Alabama Sea Grant Extension Program meets its objectives by using a three-step approach. First the Principal Investigators (over 75 years experience with Sea Grant Extension) gather and assimilate the latest research and regulatory findings in their areas of expertise. Second, applicable information is evaluated and integrated with existing information. Existing information includes regular input from constituents through normal informal contacts or through more formal meetings with concerned parties. Members of the Advisory Committee generally are representative of the areas covered in the sub-programs. Third, outreach programs are conducted that will transfer information to the general public, agencies, elected officials, and special interest groups. The PIs use their experience to guide and mentor the new personnel in extension techniques and encourage them to seek innovative methods for conducting outreach programs. Education of user groups is essential to ensure that exploitation of the state's marine resources does not bring about destruction of these resources. Constant monitoring, management, and replenishment are required if we are to maintain healthy environmental levels, and assure that these resources remain healthy and available to marine interests. The investigators use meetings, workshops, newsletters, newspaper columns, presentations to civic groups, and written materials such as pamphlets, circulars, and booklets to convey marine-related information to the coastal community. New methods of information delivery will be utilized where appropriate such as computer-generated presentations and satellite downlinks of appropriate programs. The recent addition of teleconferencing equipment suggests new opportunities for program delivery. Just as important are the many personal contacts through office visits, telephone calls, and letters. These contacts are most often initiated by a broad range of people who, over a 20-year period, have come to rely on the Mississippi-Alabama Sea Grant Extension Program for unbiased information on a variety of subjects.

EXPECTED OUTCOMES: Based on the experience of the PI's, the following are representative of expected results over the next year:

GENERAL

- A more knowledgeable citizenry that better understands marine resource related issues and the options available for addressing those issues.
- A better informed fishing industry (commercial & recreational) that can address harvesting, processing and conservation issues while sustaining economic values important to the state, region and nation.

SEAFOOD TECHNOLOGY

- The Mississippi and Alabama seafood industry will have a trained, knowledgeable workforce in regards to HACCP, NSSP and other product safety issues.
- The Mississippi and Alabama seafood industry will have improved its ability to address environment issues relating to waste water treatment and disposal.

MARINE FISHERIES

- The fishing industry will be well informed on conservation issues such as marine reserves, essential fish habitat, bycatch reduction , limited entry etc.
- Coordination and cooperation with the Sea Grant Director, and other Sea Grant Programs will be maintained and improved. Existing program efforts will be improved and expansion of programs made possible through the attainment of additional resources.

AQUACULTURE

- The public and marine related businesses will have a greater appreciation for the opportunities and problems facing offshore aquaculture and will be able to better assess the costs and benefits.
- High school students, instructors and a traditional fishing community will have an enhanced educational experience in science and aquaculture that will improve the education process and enhance decisions about the role of aquaculture in coastal communities.

ECONOMICS

- Marine related businesses and the public will increase their knowledge of the value of coastal resources to the economy.

ENVIRONMENTAL

- Citizen watershed organizations will improve their programs to inform citizens and policy makers of the impacts that various activities have on water quality, marine life and the quality of life.
 - Citizens and policymakers will be more aware of specific activities and actions that can be taken to reduce non-point source pollution.
 - Special interest groups such as Realtors and educators, as well as schoolchildren and the general public will gain a better understanding of issues pertaining to wetlands and water quality in the coastal region.
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PROJECT TITLE: “An Educational Program Regarding Methylmercury in Gulf of Mexico Marine Fish-Mississippi Component,” National Sea Grant Program-Fisheries Extension Initiative, Principal investigator, \$27,106, September 1, 2002-September 30, 2003.

SCIENTIST: David D. Burrage

OBJECTIVE(S): 1) Develop and foster a close working relationship with the National Marine Fisheries Service National Seafood Inspection Laboratory and the Gulf States Marine Fisheries Commission in order to provide appropriate clientele with the latest science-based information relating to methylmercury in Gulf of Mexico fishery resources.

2) Provide Gulf-wide training for Sea Grant extension personnel to enable them to provide their constituents answers to the following questions:

- What is the mercury level in humans and what is the variability of reaction to different levels in different people?
- Are mercury levels in humans directly related to fish consumption?
- What are the mercury levels of fish in the Gulf?
- What are the sources of mercury?
- Do we have an understanding of the atmospheric, oceanic and biological transport processes of mercury?

3) Serve as an “honest broker” to provide science-based information on exactly what is and is not known about mercury in Gulf of Mexico marine fish to Gulf of Mexico recreational fishers and other interested parties.

RATIONALE: Mercury is the most frequent basis for fish advisories in the U.S., constituting 60 percent of all advisories. Advisories for mercury are increasing faster than for any other pollutant. Thirty-nine states have advisories for mercury in one or more water bodies, and nine states have issued statewide mercury advisories. The magnitude of exposure to mercury (especially methylmercury) and degree of risk from fish consumption depends on two things: the level of mercury in the fish consumed and the amount of fish an individual consumes. People who consume average amounts of a variety of commercially available fish as part of a balanced diet are not likely to consume harmful amounts of mercury. However, certain species of fish which are present in the Gulf of Mexico have been identified by the FDA for non-consumption by pregnant women and women of childbearing age who may become pregnant. These species are shark, swordfish, king mackerel and tilefish. In addition, public health agencies in all five Gulf of Mexico states have issued advisories on the consumption of king mackerel. A series of articles published by a Mobile, Alabama newspaper in late 2001 was the fuel that really launched the issue of mercury in Gulf of Mexico into a position of prominence with many stakeholders including the offshore oil industry, power companies, the seafood industry, seafood consumers,

recreational fishers and various state and federal fishery management agencies. The newspaper had hair samples tested from 18 people in the Mobile area who had indicated that they ate seafood at least once a week. The paper reported that “seven of those tested would rank among the five percent of the U.S. population with the most severe mercury exposure.” Other related articles said that Gulf oil and gas rigs “appear to be an unusually dangerous source of mercury pollution in the Gulf of Mexico, one largely overlooked by regulators.” The potential impacts to human health and the socio-economic implications for the Gulf seafood and recreational fishing industries became issues of prime concerns to many coastal residents, some of whom went so far as to contact their national congressional representatives. In March, 2002 nationwide newspapers ran a story about the Environmental Working Group charging that FDA was “putting developing fetuses at risk” by not including tuna in their fish mercury advisory.

MATERIALS AND METHODS: Objective 1) - The principal investigators will track the incipient National Marine Fisheries Service (NMFS) mercury research program through personal contact with Tony Lowery, Program Coordinator. Over the course of the next year, samples from highly migratory species from the western and eastern Gulf will be analyzed for mercury content by the NMFS National Seafood Inspection Laboratory located in Pascagoula, Mississippi. In addition, five different life stages of ten different estuarine species from four Gulf of Mexico estuaries will be tested for the presence and amount of mercury. The sites chosen will be based on data obtained through NOAA’s Mussel Watch Program in order to provide statistical comparisons among areas known to contain higher concentrations of mercury and those with relatively low background levels. Ronald Lukens, Gulf States Marine Fisheries Commission (GSMFC) Assistant Director, is a co-investigator on this project. Mr. Lukens’ activities related to mercury education will consist chiefly with working with the GSMFC Commissioners and appropriate state and federal agencies to help establish standardized action levels and advisory language for mercury in Gulf of Mexico fish.

Objective 2) - Mississippi-Alabama Sea Grant Extension Program Leaders Richard Wallace and Dave Burrage from Alabama and Mississippi, respectively, will conduct Gulf-wide agent training sessions for Sea Grant Extension Agents and Specialists. Using the Gulf Sea Grant Extension network and taking advantage of previously-scheduled activities such as advisory council meetings, planning sessions, fishery workshops, Sea Grant Assembly meetings as well as one-on-one contact, training will be provided so that local Sea Grant extension personnel can, in turn, provide this information to the appropriate clientele groups within their respective states at their discretion. This approach will take advantage of the credibility already established by the local agents and specialists and avoid the perception of “those out-of-state folks coming in here and telling us what we should be doing,” particularly by those who are the ultimate targets of this educational effort (i.e. recreational fishers). Training activities will be conducted face-to-face, via e-mail using the Gulf Sea Grant list serve, and through distance education programming such as satellite downlinks, web conferences and videos.

Objective 3) - The principal investigators, working in conjunction with their counterparts in other Gulf states, will compile a current and comprehensive list of all sportfishing organizations, charter boat associations, outdoor sportswriters, magazines and other publications for recreational fishers in the Gulf of Mexico. In Mississippi and Alabama, educational presentations will be made

directly to these organizations. In the other three Gulf of Mexico states, the investigators will be available to assist the resident Sea Grant agents/specialists on a request basis with any efforts they decide to undertake in regards to mercury education. Three thousand copies of a brochure containing facts about mercury in Gulf of Mexico fish will be produced and distributed on request throughout the Gulf of Mexico region.

EXPECTED OUTCOMES: This project will: 1) help protect the health of at-risk seafood consumers; 2) provide the Gulf seafood industry with science-based information about the methylmercury content in many popular species of Gulf fish; and 3) forge new partnerships with other agencies and groups with the common interest of protecting the Gulf of Mexico environment and its inhabitants.

PROJECT TITLE: “Gulf of Mexico and Caribbean Regional Fisheries Extension Initiative - Mississippi Component,” National Sea Grant Program-Fisheries Extension Initiative, Principal investigator, \$35,305, June 1, 2002-May 31, 2003.

SCIENTIST: David D. Burrage

OBJECTIVE(S): The Sea Grant Extension Program Leaders in the Gulf of Mexico and Caribbean region recognize the importance of fisheries extension efforts. To capitalize on projects and programs, in some cases, already underway by partners outside the Sea Grant network as well as critical issues to the fishery community and the general public within the region, the projects of this initiative are focused in the following areas:

- Conducting educational efforts to reduce impacts of derelict crab, fish, and lobster traps on essential fish habitat in the Gulf of Mexico and Caribbean regions.
- Conducting result demonstrations on modifications to trawls aboard Gulf of Mexico shrimp vessels.
- Conducting educational activities concerning methyl-mercury in Gulf of Mexico marine fish and ciguatera poisoning in the southeastern Gulf of Mexico and the Caribbean fish.
- Developing issues associated with the sustainability of the Gulf of Mexico shrimp industry.
- Conducting the regional coordination for the fisheries extension program.

RATIONALE: The Gulf of Mexico and Caribbean regions represent areas of intense fisheries interest. With fisheries in the Gulf of Mexico representing both the tradition highest volume and highest value fisheries in the nation, the Sea Grant programs in this area have continued to maintain a strong fisheries extension focus. By adding the Puerto Rico Sea Grant Extension Program into the regional initiative, the region has taken on a broader potential to consider both domestic Caribbean and international fisheries extension opportunities. The Gulf of Mexico and Caribbean Regional Fisheries Extension Initiative will focus on fishing gear impact on essential fish habitat, gear development, seafood health hazards, and efforts to sustain a major fisheries in

the region. Within the Sea Grant network regional structure, the Gulf of Mexico Sea Grant Extension Programs have been traditionally linked with the South Atlantic into a Southeast Region. During recent consideration by the Assembly of Sea Grant Extension Program Leaders, it was determined that for efficiency and economy of meetings, the South Atlantic and Gulf of Mexico should be separated. This new alignment was consummated with the first meeting of the Gulf of Mexico Sea Grant Extension Program in the Fall of 2001. Based on geography and international interests the Sea Grant Extension Program of Puerto Rico was invited to participate in the regional fisheries extension initiatives with the Gulf of Mexico. The current alignment of Sea Grant Extension Programs in the Gulf of Mexico and Caribbean are reflected in this project initiative.

MATERIALS AND METHODS:

1) Educational efforts directed toward the impact of derelict fishing traps on essential fish habitat –

While a recognized problem for many years, the issue of derelict crab traps has been reinvigorated by efforts of the Gulf States Marine Fisheries Commission through its Blue Crab Technical Committee. A task force to gather data on the extent of this issue was developed within the Commission's organization with representation from the regional Sea Grant Extension network. While information has been collected and in the case of Texas, regulations passed to mitigate the derelict crab trap issue, there continues to be a need for a region wide education effort on this issue. In conversation with the Gulf States Marine Fisheries Commission leadership relative to this issue it was recognized that the education component of the efforts undertaken was positioned for the interjection of Sea Grant Extension Program knowledge and expertise. The Mississippi-Alabama Sea Grant Program will provide a Sea Grant Communicator to coordinate with both the Sea Grant liaison and the Commission to develop educational publications in support of efforts to minimize impacts of derelict traps. In Puerto Rico the issue is primarily focus on fish traps and the need for materials in Spanish while in southern Florida, the issue of derelict traps is more closely related to lobster traps with stone crab traps a significant along its Gulf coast. In each case; however, the same education principals can be applied. The Louisiana Sea Grant Extension Program will serve as the lead program on this effort. Official liaison will be established between this program and the Gulf States Marine Fisheries Commission's Derelict Trap Task Force. The liaison will provide the communication channel with the other regional Sea Grant programs within the region in coordination with the Commission.

2) Result demonstrations on trawls utilized in the Gulf of Mexico shrimp fishery –

Over the last 30 years, the Gulf of Mexico Sea Grant Fisheries Extension Program has been a significant factor in technology transfer to the Gulf of Mexico shrimp fishery, traditionally the most valuable fisheries in the nation. In the mid-70s the focus was a modification from a double rig to quad-rig arrangements of trawls that would harvest more efficiently with less bycatch. During the mid-80s the focus was on modifications to the trawls that would eliminate the incidental catch of sea turtles. Then in the mid-90s up to the present the emphasis has been reduction of bycatch especially juvenile red snapper. In each case, Sea Grant Fisheries Extension has been on the front lines with the industry, fisheries managers and conservation interests to

establish and maintain an innovative approach to resolution of harvest technology issues. The challenge to meet the regulatory and public interest demands in harvest technology has been an arduous task. This element of the regional initiative will focus on tapping the creative spirit of industry innovators to improve harvesting methodology by trawl modifications. The objectives include both enhancing harvesting technology for operating efficiency and reducing impacts on essential fish habitat and non-targeted marine resources. Initially the effort will focus on using high tensile strength rope in lieu of the traditional steel cable. It has been experienced that in attempts to strengthen critical areas of the trawl array, the fishermen have turned to utilizing non-compatible metals that expedite the corrosion process. This in turn leads to a higher replacement frequency and safety concerns. Other innovations will focus on the use of high tensile strength materials in the webbing of the trawl to reduce drag, and variation in webbing size to reduce bycatch of juvenile fish. With the synergy created through this regional approach by the Sea Grant Extension network, opportunities to integrate other innovative ideas generated by the Sea Grant cadre, the shrimp industry and the Harvest Technology Lab of the National Marine Fisheries Service and the Gulf and South Atlantic Fisheries Foundation will be evaluated. The Texas Sea Grant Extension Program will be the lead program in this element of the initiative. Funds available to other states will focus on support efforts for result demonstrations within the individual states. Puerto Rico is not involved in this element of the initiative due to the focus on the Gulf of Mexico shrimp harvesting industry.

3) Educational initiatives on methyl-mercury in the Gulf of Mexico and ciguatera poisoning in Southern Florida and Puerto Rico –

The issue of methyl-mercury in the Gulf of Mexico, principally in association with offshore oil and gas operations has reached a high level of media attention. While full understanding of the system involved with the presence of high methyl mercury levels in fish taken near oil and gas platforms is yet to be realized, there are clear indications that educational efforts should focus primarily on the recreational fishing community that frequent the platforms in the Gulf of Mexico. The Gulf States Marine Fisheries Commission recognized the significant nature of this issue and designated a substantial amount of its Fall 2001 meeting to a workshop dealing with the issue. The allocation of funds to this element of the regional initiative is to support a proposal being made within the competitive portion of the National Sea Grant Fisheries Extension Initiative. Because of the critical nature of the effort and the time delays to implement a successful competitive project immediate funding would allow activity to take place during the summer fishing season. Both this element of the regional initiative and the competitive proposal to be submitted, build on the issue reflected by the Gulf State Marine Fisheries Commission, the recreational fishing community and public health authorities. Within the focus of seafood health issues, educational efforts on ciguatera poisoning remain a perpetual need in the tropical areas. Funds directed to Puerto Rico and a portion of the funds to Florida are to support educational efforts on this continuing issue. The Mississippi/Alabama Sea Grant Extension Program will be the lead program on the methyl-mercury portion of this element .

4) Developing issues associated with the sustainability of the Gulf of Mexico shrimp industry –

The Gulf of Mexico shrimp industry has traditionally been the nation's most valuable fisheries. Over the past 25 years, the industry has been the focus of regulatory measures resulting from

statutes such as the Endangered Species Act, Magnuson/Stevens Fisheries Conservation and Management Act, state regulations, a growing consciousness of harvesting gear impacts, increasing levels of imported products and many other factors. Through the years, the Gulf of Mexico Sea Grant Extension Program has worked closely with the industry in harvesting technology, product handling, economic evaluation and market development. While the industry remains viable, its long term sustainability is in doubt. The allocation of funds into this element of the regional initiative is to support a proposal being made within the competitive portion of the National Sea Grant Fisheries Extension Initiative to conduct a “Summit on the Sustainability of the Gulf of Mexico Shrimp Industry.” The challenge of taking on such a complex issue involving all significant stakeholders will require extensive efforts by each of the regional programs. The talents and abilities of the Puerto Rico Sea Grant Program will be utilized to assist with engaging the Gulf of Mexico shrimp industry of Mexico. Identification of significant stakeholders, elements of a sustainable shrimp industry, format to address these elements and expertise available to consider these issues will be determined. The Texas Sea Grant Extension Program will be the lead program on this element of the initiative.

5) Regional coordination –

The Texas Sea Grant Extension Program has been designated the coordinator for the regional fisheries extension effort. The principal contact will be the Texas Extension Program Leader. Funds used in this element of the initiative will support the coordination of this initiative through communication with the participating programs, the National Sea Grant Office, and other partners in the Sea Grant Fisheries Extension Initiative.

EXPECTED OUTCOMES: The proposed elements of this initiative build on critical fisheries extension issues identified within the Gulf of Mexico and Caribbean Regions. By undertaking this regional program it is anticipated that:

- The impact of derelict fishing traps on essential fish habitat will be reduced.
- New harvesting technologies will be transferred into the Gulf of Mexico shrimp fishery yielding greater harvesting efficiency and reduced ecosystem impact.
- Target audiences and the public at large will be more aware of seafood health issues and fisheries will be consumed wisely and safely.
- The Gulf of Mexico shrimp industry and its substantial stakeholders will identify the critical elements of the industry’s sustainability and options for resolution.