National Marine Fisheries Service
National Cooperative Research Program

FY2005 Funded Projects

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Project Objective

This program is structured on regionally-identified cooperative research priorities and relate to internal (*Managing the Nation's Bycatch* 1998; *NOAA Fisheries Data Acquisition Plan* 1998; *Marine Fisheries Stock Assessment Improvement Plan* 2001; *Strategic Plan for Fisheries Research* 2004) and external (Kammer Report 2000; National Research Council Reports–*Improve Fish Stock Assessments*, *Effects of Trawling & Dredging on Sea Floor Habitat,* and *Cooperative Research in the National Marine Fisheries Service*) reviews. The National Marine Fisheries Service (NMFS) proposes a continuation of strategic investments in fishery stock assessment augmentation and the general collection of data through cooperative research including additional charter vessel days-at-sea, development of gear modifications and fishing practices to reduce bycatch, study of the effects of fishing gear on sea floor habitats, and identification of essential fish habitat (EFH). All allocations are routed through the appropriate Science Center.

AOP Elements

Objective 2: Recover Protected Species
Objective 3: Rebuild and Maintain Sustainable Fisheries

External Recipients

A broad range of external recipients are identified in this spending plan, including fishery constituencies in every NMFS region across the country as well as state, private, and university participants.

Funding History

FY 2001 = $2,993,000.00
FY 2002 = $2,750,000.00
FY 2003 = $1,043,000.00
FY 2004 = $2,626,000.00
FY 2005 = (President's Request) $2,750,000.00, (Enacted) $2,710,306.00

Office of Science and Technology

Project Title: National Cooperative Research Coordination and Outreach

Overview: The Office of Science and Technology will support a full-time National Cooperative Research Coordinator to work closely with the NMFS regional cooperative research programs to improve communication and enhance the scientific quality of cooperative research results for use in stock assessment and fisheries management. The national program will be supported by the Cooperative Research Working Group, which will provide input and recommendations to the development of annual budgets for the NCRP, develop strategies for outreach and education, and develop national guidelines to improve consistency.

The National Cooperative Research Coordinator will provide support for the following objectives:

(1) Provide a forum to coordinate regional cooperative research programs.
(2) Develop national guidelines to enhance regional cooperative research programs and improve consistency, where possible.
(3) Assist the NMFS regional cooperative research programs in addressing issues of regional and/or national concern.
(4) Facilitate the compilation and communication of information on cooperative research activities to fisheries scientists, managers, fishermen, the fishing industry, and the general public.
(5) Enhance the use of cooperative research results in stock assessment and fisheries management decision-making.
(6) Provide national awareness of the successes of cooperative research activities to Congressional and constituent groups.
(7) Conduct national outreach activities to showcase the benefits of cooperative research.

Research Description: The National Cooperative Research Coordinator, in coordination with the Cooperative Research Working Group, will conduct the following activities during FY2005:

- Provide input into the design of the 2005 AFS cooperative research symposium and begin planning an annual national cooperative research workshop for FY2006 to showcase successes of NMFS regional programs.
- Develop an annual compilation of cooperative research activities to be published in FY2006.
- Coordinate annual Congressional briefings to include NMFS regional and industry representatives.
- Develop national guidelines to enhance regional cooperative research activities.
- Develop a cooperative research website in conjunction with existing websites.
- Provide support to the NMFS regional cooperative research programs on specific issues of relevance.

- Coordinate input on national initiatives to ensure cooperative research issues and concerns are addressed (e.g. exempted fishing permits, charter vessel safety, and confidentiality).

Pacific Islands Region Cooperative Research Program

Project Title: Northwestern Hawaiian Islands Lobster Tagging Program

Overview: The FY05 Pacific Islands Region programmatic funding from the National Cooperative Research Program will be used to support the Northwestern Hawaiian Islands (NWHI) lobster tagging program. This is an ongoing cooperative research project that uses chartered commercial fishing vessels as scientific platforms for the tagging and releasing of spiny and slipper lobsters. The scientific objectives of the tagging program are to (1) collect essential life history and distributional data for spiny lobster and slipper lobster, (2) continue the lobster tagging experiment to advance population dynamics model development, (3) document habitat degradation and associated bycatch (vertebrates and invertebrates) stemming from lobster fishing in the NWHI, and (4) provide marine vertebrate and invertebrate samples for fatty acid analyses to elucidate trophic linkages and dependencies in monk seals. The use of chartered commercial fishing vessels is pivotal to the success of this program as the annual research survey aboard the NOAA research vessel *Oscar Sette* lacks sufficient fishing effort to provide adequate tag recoveries for parameter estimation (as well as samples for tagging).

Lobster biological data and population dynamics models from the 1980s form the basis of present assessments of lobster stocks in the NWHI. Lobster populations in the NWHI have undergone significant changes in abundance and distribution since then, and recent hypotheses suggest that fluctuations in monk seal populations in the NWHI may be linked to population fluctuations of lobsters in the NWHI. During a technical review of the NWHI lobster assessment models it was recommended that collaborative research programs between industry and the NMFS Pacific Islands Fishery Science Center (PIFSC) be developed to provide independent estimates of population size and updated estimates of population dynamics.

In accordance with these recommendations the PIFSC lobster research team, with wide support from industry and the Western Pacific Regional Fishery Management Council, implemented a collaborative lobster tagging program. A series of lobster tagging and recapture cruises, using both research and chartered commercial fishing vessels, have already occurred at Necker Island and Maro Reef, and additional cruises (research and charter) are required to complete the studies, and to recapture animals tagged on previous cruises. The initial cruises provided some data on habitat degradation and bycatch levels stemming from commercial lobster fishing operations in the NWHI, and preliminary samples for fatty acid analyses. Additional data and samples are required to assess fishery impacts on the environment and on trophic interactions.

Research Description: Two commercial fishing vessels are chartered for 30 sea-days each in September to conduct lobster tagging research at two banks in the NWHI, Necker

Island and Maro Reef. One vessel is assigned to Necker Island, the other to Maro Reef. Sampling sites are selected using a stratified random design and site locations are provided to each captain prior to departure. Each vessel sets fifteen strings of 20 traps daily, one string per sampling site. Traps are baited with approximately 2 lbs. of mackerel and fished overnight. A standardized protocol is followed for the handling of lobsters and biological data, including species, carapace length, sex, reproductive condition, and tag number, collected for each lobster. Location data (latitude and longitude) of caught and released lobsters is also collected at the string level. All lobster and bycatch are released on the bottom using a tethered release cage device.

Alaska Fisheries Science Center, Industry Cooperative Research

Project Title: Bering Sea Fisheries Research Foundation Cooperative Research

Overview: The management of the Alaskan crab fisheries in the Eastern Bering Sea is undertaken jointly by the Alaska Board of Fisheries and the North Pacific Fishery Management Council. Implementation of the management is the responsibility of Alaska Department of Fish and Game in consultation with NOAA Fisheries. Scientists from AFSC are responsible for conducting the annual eastern Bering Sea bottom trawl survey and research to estimate various population parameters, e.g. growth, mortality, recruitment, reproductive potential. These parameters are used to estimate the abundance of juvenile, mature female, and legal male crab stocks and the productivity of the stock for modeling to derive annual harvest levels consistent with sustainability goals. Representatives from the Alaska crab industry have formed a non-profit Bering Sea Fisheries Research Foundation to support a cooperative research program with NOAA Fisheries to improve the data base for managing Bering Sea crab resources. The goal for 2005 is for the Foundation and the AFSC to establish a second MOA for summer of 2005 and to engage in cooperative joint research projects of mutual interest where costs will be shared equitability.

Research Description: In consultation with AFSC scientists, BSFRF Board of Directors will identify a priority list of research projects to address the uncertainty of the crab assessment to improve management models for the traditional crab resource in the eastern Bering Sea. Because many of these crab stocks are near or below Bmsy, the rate of exploitation is set at a conservative level to encourage further rebuilding. Given the relative uncertainty in the estimates of resource productivity and acceptable levels of harvest, scientists from NOAA and ADFG will participate in a BSFRF workshop in the fall of 2004 to identify research needs for crab. The Foundation will use the results of this workshop to identify their research priorities for 2005 and the following four years. The BSFRF will charter a research vessel in 2005 to conduct the cooperative research effort using funds the Foundation raises from the industry. AFSC will provide staff and will supply the vessel to meet NOAA's share.

Project Title: Sablefish Logbook Program

Overview: Alaska Fisheries Science Center scientists in cooperation with Alaska's longline industry have been conducting a sablefish logbook program to index sablefish abundance based on commercial fishery data. The time series for this logbook program dates back to 1997. Unfortunately, NMFS does not have a dockside program to collect logbooks and verify information from fishermen. In contrast, the International Pacific Halibut Commission (IPHC) has an active dockside program for the halibut fishery. We propose to use IPHC port samplers to collect sablefish logbooks from fishermen. Using their experienced samplers will increase data quality and increase the visibility of the sablefish logbook program. Using an existing dockside program also will be cheaper than an independent dockside program administered by NMFS.

Research Description: We propose to support IPHC for the collection of sablefish logbooks, data editing based on interviews, and entering the edited data into a database. The IPHC has requested they enter the edited data to protect confidentiality of fishery records they handle.

Project Title: Development of seabird mitigation measures for pollock catcher processor trawl vessels in Alaska

Overview: Seabird incidental take due to interactions with trawl cables (main cables and third wire cables) has been documented through anecdotal notes from fisheries observers. Because there has been no direct systematic monitoring of these interactions, the degree and temporal/spatial nature of the interactions is unknown. However, Laysan albatross (*Diomedea immutabilis*) mortalities have been recorded. This resulted in a "Likely to Adversely Affect" determination for the short-tailed albatross (*Phoebastria albatrus*) followed by a U.S. Fish and Wildlife Service Biological Opinion that provides an incidental take of 2 birds over a 5-year period for the Alaska groundfish trawl fleet (no short-tailed albatross incidental takes have been recorded for trawl gear).

The Biological Opinion requires NOAA Fisheries to assess the risk to short-tailed albatross from trawl fisheries. Discretionary conservation measures ask NOAA Fisheries to characterize seabird interactions with trawl vessels and develop mitigation measures to reduce or eliminate seabird mortalities. While the AFSC is currently engaged in characterizing seabird interactions with this gear, we are also exploring means to mitigate seabird/trawl interactions so as to reduce risk to seabirds and the trawl fleet. The AFSC has partnered with the at-sea pollock catcher-processor component of the trawl fleet through the Pollock Conservation Cooperative. An additional partner is Washington Sea Grant, the global leader in developing seabird mitigation measures.

Together we have engaged in efforts to develop and test measures that would mitigate seabird interactions with trawl gear. Overall plans call for a three-phase project that (1) relies on vessel operators and other industry participants to develop seabird-trawl mitigation measures, (2) completes some pilot testing of this gear on two vessels with different capabilities to process fish and fish products, and (3) completes a rigorous

scientific test of industry-recommended measures. Completion of this work would be followed by implementing the measures in appropriate components of the trawl fleet.

Phase one has already been supported by Cooperative Research Funds and will be conducted from November 2004 through April 2005. Funds to manage a rigorous field experiment, phase three, have already been awarded to Washington Sea Grant by the U.S. Fish and Wildlife Service. This proposal bridges those two phases by supporting important work to outfit two catcher-processor vessels during the 2005 pollock B season (August to October). The work is critical to the overall success of this important collaborative partnership between the Pollock Conservation Cooperative, Washington Sea Grant, the USFWS, and NOAA Fisheries.

Successful completion of this proposal will facilitate the reduction of seabird bycatch on pollock catcher-processor vessels and assist NOAA Fisheries in meeting required and discretionary elements of a Biological Opinion. Further, should regulations be required to implement the measures in some components of the fleet, this work will support NEPA requirements.

Research Description: We will refine the mitigation measures tested under phase one (January through April 2005) and outfit two catcher processors for the commercial pollock B season, August through October 2005. Vessels will be selected that have different capacities to process all fish coming on board, thus presenting different levels of attractions to seabirds. The project will simply be to make these vessels as "bird-proof" as possible, and then evaluate the effectiveness of those measures during the commercial season. Upon completion of phase one (April 2005), we will meet with industry representatives to discuss what modifications or additional measures should be further tested. Vessels will be selected based on agreed-upon criteria and outfitted in July 2005. The measures will be used during the commercial season, so no charter is necessary.

Monitoring of the performance of these measures will address crew safety, ease of use, durability, and a general sense of the effectiveness in reducing or eliminating seabird interactions with the trawl gear. After completion of the field season, participants will again meet to discuss attributes of the gear and how to conduct phase three. A final report will be prepared that addresses research and development, fabrication, specifications of the gear, effectiveness as determined by the categories noted above, and overall costs.

Project Title: Fishing Technology and Conservation Engineering to Reduce Trawl Bycatch

Overview: The Conservation Engineering project of the AFSC has experience, equipment and a number of willing industry partners to pursue cooperative research to improve fishing gear and methods for bycatch reduction and addressing the effects of fishing gear on seafloor habitats. Funding is needed for fishing vessel costs and small amounts of travel and supplies to pursue these opportunities. Potential project partners

from the fishing industry include The Groundfish Forum, Alaska Draggers Association, Lummi Fisheries Systems, Trident Seafoods, and United Catcher Boats.

Research Description: In consultation with partners, several of the following projects will be carried out. Some are continuation of prior year's cooperative studies and others are new initiatives. The main project will be further modifications and improvements to reduce salmon bycatch of a trawl prototype system developed last year in cooperation with the United Catcher Boat and J. Gauvin and Assoc, with support from several other fishing companies and organizations. The list of other potential projects include; fishing for cod and rockfish with semi-pelagic trawls, detecting areas of vulnerable habitats to avoid when trawling, measuring the width and consequences of "pelagic" trawl bottom contact, determining injury rates for crabs contacting trawl sweeps and bridles, and determining distances of cross-seafloor movements by longlines and pots.

Project Title: Providing Access to Technology for Observing Gear Performance and Information on Bycatch Reduction Devices to Improve Selectivity of Fishing Gear

Overview: AFSC gear specialists working with the north Pacific trawl fleet and their representatives have developed and tested a number of gear devices to reduce the bycatch of salmon, halibut, and other non-target species. Fishermen though lack access to direct observation on the installation and engineering performance of these devises. As a result, they are forced to infer critical fish behavior and gear configuration based on catches and other indirect data. This can slow or misdirect attempts to improve gear selectivity. We propose to make available gear mounted camera and sonar systems to fishermen to speed the development and application of methods to reduce bycatch. The Conservation Engineering project of the AFSC has developed the necessary experience and equipment and applied them in cooperative research to improve fishing gear.

Research Description: The proposed project would provide access to this equipment and a channel for communication with researchers to all commercial fishermen working to reduce bycatch. Industry partners will arrange for agents to maintain one or more camera systems in Alaska ports, provide it to participating vessels and train vessel crew in its operation. NMFS will provide materials for distribution describing bycatch reduction methods and the agents will assist fishermen in understanding and applying this information to their gear, as well as documenting how devices are installed. This is important for interpreting bycatch data from the fishery to help industry assess effectiveness between vessels and further improve bycatch reduction. The agent will know fishing gear construction methods and be trained by NMFS in the maintenance and deployment of the camera systems.

Project Title: Collection of Genetic and Biological Samples from Pacific Cod Spawning Grounds in the Aleutian Islands

Overview: Studies already underway at AFSC have included collection of biological specimen samples of Pacific cod in the western GOA near Kodiak and in the eastern

Bering Sea near Unimak Pass. This proposal is to obtain a similar set of high-quality voucher specimens from the AI, so that biological characteristics for the species can be compared across the three major regions. An opportunity exists to collect samples at minimal cost through cooperative research with a commercial cod fishing vessel.

The first goal of the proposed sampling is to provide tissue samples from cod spawning in the AI. These samples would allow estimates of genetic differentiation among spawning grounds in the AI, eastern BS, and GOA. The AI samples would be analyzed as part of a Sea Grant-funded study of Pacific cod genetic population structure being conducted at the Molecular Ecology Research Laboratory (MERL) at AFSC and at the University of Washington. The genetic stock structure of Alaskan cod has not been evaluated since the advent of new microsatellite DNA techniques and analyses of Pacific cod samples are planned across broad and narrow geographic scales over most of the species range. Determining if spawning aggregations of cod in the Aleutians are genetically distinct from BS or GOA stocks may be important for management of this species, particularly in light of discussions already underway in the NPFMC about splitting catch allocations between the BS and AI. Ideally, samples for genetic analyses should be collected during the active spawning season, when the potential for stock admixture is lowest. Thus, samples cannot be obtained through routine survey collections.

The second goal of sampling is to compare biological characteristics of cod spawning in the AI to similar samples collected in the eastern BS and western GOA. AFSC biologists have observed that the size distribution of cod in the AI is substantially different from that in the BS. This difference in length frequencies suggests either a differential in growth of cod at age in the western AI (as has been observed for other species), or a different age frequency structure. Since methods for aging of cod have been fairly recently developed, there are no data in the AFSC database on cod ages from the central and western AI. A differential in age structure between the AI and eastern BS might suggest an indirect effect of commercial fishing pressure on the population and ecosystem. If development of the port at Adak increases the size of the AI fishing fleet over the next decade, we may have the opportunity for a long-term 'natural experiment' on ecosystem effect of fishing. Biological samples will also allow comparison of such characteristics as length-weight relationships, sex ratios, age at 50% maturity, and fecundity at age between the AI and existing samples from the BS and GOA.

Research Description: The proposed approach is to place an AFSC scientist aboard a commercial vessel fishing cod in the central and/or western AI. Managers of the F/V *Seafisher* have indicated that they would be willing to take an extra scientist aboard during their normal winter AI cod fishing. This vessel regularly fishes cod in the central and western AI during the spawning season (Feb-March). The vessel will notify AFSC of their planned fishing schedule and pick up and drop off the scientist during regular calls at Adak. The vessel will provide room and board for the scientist and allow cod to be removed from their catch for sampling. A small fee will be paid to the vessel to defray expenses. The scientist will be AFSC personnel familiar with sample collection procedures. Sampling will include biological data on individual lengths, weights, GS

index, and sexual maturity. Tissue samples will include fin clips for genetic analysis, age structures (otoliths), gonad samples, and stomachs. Procedures will be the same as currently in use for FIT cod pot studies.

There are several reasons why it is desirable to collect these samples directly, rather than through an observer program special project. The most important is that the samples need to be collected specifically from a vessel fishing the central or western AI during cod spawning season, and it is difficult for the observer program to place special projects on particular vessels or trips. In order to collect an adequate sample size during a fairly brief season, it is also more reliable to send a separate scientist than to rely on samples collected secondary to the regular schedule of observer duties. Finally, the proposed approach would provide better consistency of methodology with other cod samples and more prompt and reliable return of samples and data to Seattle, with proper sample preservation ensured. The F/V *Seafisher* is a known platform whose managers are very interested in cooperative research.

Project Title: Determination of the Appropriate Scope Ratio for the Eastern Bering Sea Bottom Trawl Survey

Overview: Standardization of the AFSC bottom trawl surveys conducted aboard chartered industry fishing vessels requires constant sampling efficiency among stations over time. The current survey protocols, however, allow sampling efficiency to vary considerably. Scope ratio (i.e. the length of warp used at each depth) is one of the survey protocols under examination that could be changed to increase standardization. The scope ratios currently used in the EBS survey are such that the door spread increases with increasing depth which, in turn, leads to an increase in the distance of the footrope from the bottom. Bottom tending fish such as flatfish therefore have an increased probability of escaping under the trawl in deeper water. The AFSC scope ratios were determined empirically without considering the effects on spatial variability in efficiency or the change in efficiency that occurs with varying bottom types or sea state.

Research Description: This study will consist of two phases. First, trawl manufacturers, fishing gear designers, and personnel from other bottom trawl surveys will be contacted to determine the factors that should be considered in the determination of scope ratio. Second, a 15 day experiment will then be conducted near the time of the EBS bottom trawl survey to determine the appropriate amount of scope to use at each sampling depth in order to both minimize between station difference in gear geometry (i.e. footrope distance off bottom and wing spread) and increase robustness to varying surface and bottom conditions.

Project Title: Cooperative Research to Improve Catch Sampling and Discard Monitoring on At-Sea Processing Vessels Engaged in Multi-species Trawl Fisheries

Overview: Observer sampling is particularly difficult aboard the multi-species factory trawlers of the so-called head and gut (H&G) fleet. This is due to the complex nature of the catch, and the often cramped working conditions on the vessels. As science,

management and industry information needs grow, and inseason management requires increasingly finer scale temporal and spatial catch data, the need to better understand factors that influence catch composition and sampling variability, and to develop and implement sampling methods and technologies that address current and likely future concerns has become critical. Through ongoing discussions with Groundfish Forum, the industry group that represents most vessels in the H&G fleet, and the AFSC Observer Program, the need to conduct fieldwork to address these concerns has become apparent.

Research Description: In this first year of a multi-year cooperation, we intend to conduct fieldwork to evaluate catch and sampling variability, evaluate potential factory and flowscale modifications to facilitate sampling, and evaluate use of video to monitor for potential presorting and catch handling practices which may impede observer sampling. Fieldwork will involve extensive whole-hauls and subsampling for selecting target and bycatch species. Experimental design will be developed during the first phase of the project. This will provide the basis for determining the number of hauls which will be sampled, and detailed haul-specific sampling strategies.

NWFSC Groundfish Cooperative Research

Project Title: Personnel and Associated Management Costs

Overview: NRCP funds will be allocated to support staff members that are coordinating the groundfish cooperative research program at the NWFSC. Overall objectives of the NWFSC Program are:

- To enhance the collection of information on groundfish species and their associated ecosystems by working cooperatively with fishers on the West Coast of the United States to collect information.
- To improve the understanding and credibility of fisheries information used for fisheries management on the West Coast.
- To increase the trust and empathy between fishers and fisheries scientists.

Research Description: Funds will support the associated costs for travel and incidental supplies. The goal will be to provide personnel to support the continuing multi-faceted program which in the past has included a port liaison project to compensate fishers that participate in research planning and data collection. Each of these cooperative efforts has effectively leveraged resources and created important opportunities and benefits for NOAA Fisheries research and the fishing community. Personnel supported by this funding will ensure the broadest participation in cooperative research, monitor the quality of research, provide guidance on research planning and budget, and conduct outreach to constituents about the program.

Project Title: Development of Cooperative NMFS/Industry Surveys

Overview: Since 1998, the NWFSC has conducted resource surveys in cooperation with commercial fishing vessels. These surveys provide important information about

distribution, abundance, and age structure of groundfish populations. The industry and the NWFSC have been working cooperatively to develop several surveys for species that are not well surveyed by existing trawl surveys. Notably, widow rockfish, canary rockfish, and a suite of recreationally important fishes are the focus of these cooperative efforts. Both widow and canary rockfish are classified as overfished. A joint NMFS/Industry effort has been initiated for the development of a survey for widow rockfish, and in a parallel effort, industry collaborators have begun a similar process for developing a survey for canary rockfish. The objective of these surveys is to improve the tracking of the status of these populations. The funds requested will allow the full development and review of final survey plans for these cooperative surveys and will support implementation of initial tests of the proposed survey designs.

Southeast Fisheries Science Center Cooperative Research Program

Project Title: Supplementation of the Southeast Cooperative Research Program

Overview: The objective of the Southeast Cooperative Research Program is to conduct high priority research projects which have been identified in concert with the regional councils and industry, and which will address critical research needs. This program is consistent with GAO recommendations to heighten working relations with stakeholders. The spending plan reflects the Region's highest priorities for cooperative research and supports both ongoing and new project proposals selected through the FY04 competitive process advertised through Federal Register publication. A broad range of external recipients are identified in the spending plan, including commercial and recreational fishers involved in the HMS, Gulf of Mexico, and Southeastern US Atlantic fisheries, and southeastern region state, private, and university researchers.

Congressional funds are appropriated to conduct the Southeast Cooperative Research Program in addition to funds provided by the national program. The Southeast plan provides funding for a broad array of external recipients. The plan includes projects started in earlier fiscal years for which there is a need to continue the activity, seed investments to demonstrate/test feasibility of future potential projects, and projects which will be selected based on the competitive solicitation process for funds advertised in the Federal Register. Due to funding limitations, the full range of high priority cooperative research demands within the region could not be fully met in FY2005 and a process for prioritizing competitive requests for funding is underway. Specific projects that may be supported with National Cooperative Research Program funding in FY2005 include the following:

Cooperative research on BRD effectiveness in finfish reduction and shrimp retention during commercial shrimping operations in the southeastern US Atlantic**.** Minimizing bycatch continues to be a very high priority for NOAA Fisheries in the Southeast. Outreach and education are critical components of reducing bycatch, and the agency has worked closely with industry to develop new gear, and to promote clean fishing practices in all of the fishing sectors. This research continues a cooperative effort between the shrimping industry and the Southeast Fisheries Science Center Galveston Laboratory.

The primary objective of this research is to collect observer data on bycatch during commercial shrimping. Observer data will be used to further refine catch rate estimates of finfish and shrimp by area and season for this fishery. Vessel compensation is a critical aspect of this activity and these funds will be used for that purpose. This activity is a carry-over from prior years' commitments under the CRP.

Cooperative Statistics Data Collection. Fishery dependent statistics are collected by various organizations throughout the southeastern U.S. It is critical that standards and procedures be established and followed for the collection and (data) management of fishery statistics. The purpose of this cooperative data collection is to assure that all statistics are collected with similar procedures, and that all statistics are compatible and can be combined into a comprehensive database for stock assessment and other scientific or management analyses. This is accomplished through grants to the SE Region states. This is a carry-over of prior years' commitments to this cooperative research activity.

Cooperative Shark Research. The Cooperative Center for Shark Research (CSR), based at the Mote Marine Laboratory (MML) conducts cooperative research with the National Marine Fisheries Service, Southeast Fisheries Science Center through a Memorandum of Understanding in place since 1994. The focus of the cooperative research program involves the following activities: (1) Field studies of shark nursery areas and shark fisheries, including tagging studies of shark migration, ageing and growth; (2) Advanced studies of shark behavioral ecology and population biology using acoustic telemetry, satellite remote sensing and laboratory molecular biology; (3) Conservation biology of depleted species of sharks and rays, including the sawfish; (4) Studies of the population dynamics, stock structure and abundance of shark species; (5) Surveys of commercial and recreational shark fisheries; (6) Field and laboratory studies of shark food habits and feeding mechanisms; and (7) Investigations of the reproduction and endocrinology of sharks in the field and laboratory. Funding will enhance ongoing research on population dynamics of coastal shark resources in the region, through application of PAT on blacktip sharks and involvement of the charter sector in cooperative tagging of this species to determine elements of blacktip critical habitat and migratory pathways.

Extending a Swordfish Longline Recruitment Index Along the Florida East Coast. This project was a successful proposal in the FY03 CRP competition. However, because of lags in permitting required for this activity, it was not possible to fund the work in FY03 or FY04. FY05 funds will be used for this project.

Potential projects based on FY05 Competition for Funds: Requests for FY05 funds amount to $4.2M. Selection of the awards to be made in FY05 will follow the procedures outlined in the Federal Register Notice for the FY05 competition. Projects are eligible for funding subject to technical review and recommendations received from the CRP Panel.

Northeast Fisheries Science Center Cooperative Research

Project Title: Study Fleet Expansion, Monitoring, and Analysis

Overview: Stock assessments routinely use data that describe the performance of fishing vessels as indices of relative abundance (e.g. catch per unit of fishing effort). Data on fishing effort (e.g. fishing method/tow speed and haul duration, mesh size, area fished), catch and landings characteristics (e.g. species/size/sex age composition), disposition of the catch (e.g. discards vs. landings), and environmental factors affecting catches (e.g. water temperature, depth, habitat type) are critically important in stock assessments. These data are usually collected by: (1) observers at sea; (2) self-reporting by the fishing industry in logbooks; or (3) via dockside interviews. All of these methods have limitations (e.g. observers are expensive; dockside interviews are limited in scope).

A study fleet is a group of cooperating fishing vessels/operations that provide more accurate, more detailed (temporal and spatial), and more comprehensive data than would be obtained without deploying expensive observers. The study fleet concept focuses on supporting electronic reporting mechanisms for haul-based data as compared to trip or sub-trip level records typical of logbooks in the northeast. The study fleet participants helped design the program and are trained as necessary. Three fishery organizations are subcontracted to help implement the program and to acquire/record data and procure biological samples. Special equipment (such as computerized data loggers and instrumentation for environmental measurements) has been tested and 25 vessels are currently participating in the evaluation and field testing of electronic data acquisition systems. Existing funds from NERO have supported the involved fishery organizations as well as a contract for system development, equipment acquisition and deployment.

Experienced stock assessment staff work with the industry/extramural partners in planning for study fleet expansion, in continuously interacting with industry participants during implementation, and in collaboratively managing, analyzing, and distributing the acquired data. Existing senior stock assessment staff supported these activities during the pilot stage, but cannot adequately support full implementation and ongoing analysis planned for FY05 and beyond. This applies particularly to finalizing the processes necessary to ensure timely availability of these records to the stock assessment workshop (SAW) process.

Research Description: The NEFSC will support a senior analyst position within the Population Dynamics Branch to complete the staff plan required to support full implementation of the study fleet program. The position will be responsible for ensuring that the expansion of participating vessels in the study fleet provides an appropriate statistical sample of haul-based records to complement the trip records submitted under other monitoring programs. This position will also support the full integration of study fleet data into the NEFSC SAW/SARC process.

Project Title: Equipment and Operating Costs to Support Cooperative Research Projects

Overview: Cooperative research projects between 2000 and early 2004 have provided greater experience with vessel charter costs, field costs and the associated base labor, deployment and post-deployment support, data processing, and final information dissemination. The FY05 NEFSC Cooperative Research spending plan will fill positions that partially address these infrastructure support needs, but experience has indicated that the early estimates of infrastructure support for field operations were under-valued. Additional funds are required to support cooperative research projects that are of ongoing importance to the NEFSC, NERO, the Councils and fishery constituencies.

Research Description: The projects that will be supported by the requested funds include: 1) yellowtail flounder tag-recapture study, 2) mark-recapture priority experiments identified by the SARC, 3) IT contract for software upgrades to the survey database auditing routines to reflect FSCS data feeds and detailed gear logs for industry-based surveys, and 4) equipment, travel, and overtime to support field work including industry-based surveys (Gulf of Maine cod, Southern New England yellowtail flounder, and the mid-Atlantic transect surveys). The requested funds will also cover commercial and recreational vessel contracts, contracts for data entry, conventional and lotek data-storage tags, tag rewards, and expendable field equipment.

Additionally, NEFSC conducts cooperative research with the commercial fishing industry in an environment that requires rugged and water-proof computers to collect mission critical digital data. Additionally, equipment is needed for the expansion of electronic reporting and enhanced data processing, storage, and final information dissemination.

- Portable Fisheries Scientific Computing System (FSCS) Upgrade – This system that will be deployed aboard commercial fishing vessels used in Industry Based Surveys, gear studies and other projects. FSCS supports the electronic capture of catch weight and length frequency data directly on deck while survey catches are being processed. Operations have been limited in the past due to computers that are restricted in their ability to connect to peripheral devices that digitally capture various measurements of the biota caught during cooperative research surveys. A rugged system that can provide wet-pluggable connectors to the various measurement devices would eliminate much of the complexity and potential equipment failure that is inherent in the current system.

- Expansion of Study Fleet Electronic Logbook System – With the development of an electronic logbook system that is laptop-based and deployable on commercial fishing vessels, the study fleet is now capable of capturing finer scale temporal and spatial data (tow by tow) compared against sub-trip, area-gear VTR reports in the current mandatory reporting program. Systems have been deployed on 30 vessels for several months and planning for a phase III expansion is underway. Expansion of this system will initially be targeted to include fleets of the Southern New England Mid Atlantic yellowtail flounder fishery, and/or Mid-Atlantic

tilefish.

- Data archiving – Field data from a number of cooperative research activities; including gear studies, industry based surveys, and tagging programs, exist on paper forms that need to be electronically accessible. Additionally, there are historical longline survey cruise reports, station logs, deck records, and tagging cards that date to the mid-1950's that are starting to deteriorate. The tagging cards, in particular, are of concern since many were filled out at sea and have been stored for more than 20 years. Electronically capturing images of these original forms will assist in data recovery and provide capabilities for data quality control and assurance and documentation that would satisfy information quality act requirements. These funds will allow the processing and storage images before transfer to the NEFSC mainframe.

Northeast Regional Office Cooperative Research

Project Title: Oversight and Outreach Activities to Support the Northeast Cooperative Research Partnership Initiative

Overview: The Northeast Cooperative Research Program goals are to enhance communication and collaboration among agency scientists, managers, commercial and recreational fishermen, and associated community constituents to improve the data upon which fishery management decisions are based. The confidence of the fishing industry in the scientific basis for management decisions -- and confidence in the management process itself -- will be a key measure of the success of the program. A portion of these funds will contribute to the leadership costs and an outreach effort to "put a face on the agency," to encourage constituents to become involved in the program, and to communicate program results.

Research Description: New projects will evaluate specialized gear to harvest abundant species of fish while avoiding non-target, low-abundant species through the New England Fishery Management Council's Special Access Programs approach to the Northeast Multispecies Fishery Management Plan. Industry-based surveys, specifically for cod in the Gulf of Maine and for yellowtail flounder in Southern New England, are being continued into FY05. The cod tagging effort will be winding down in FY05, and software for effective data presentation will be developed. Three workshops will be held in FY05, one testing the analytical robustness of tagging data (October 2004), one on tagging mortality, and one on the status of the study fleet. The latter two workshops are tentatively scheduled for late FY05. The tagging workshops will serve as intermediary steps in determining whether tagging data for cod and perhaps for a variety of groundfish species in the Northeast can effectively serve as a valuable information base for use in developing fishery management strategies on a continuing basis. A key element of the outreach effort will be to expedite the release of the final results of cooperative research through media outlets as well as by electronic means, such as including summaries on the Northeast Region's website.

Southwest Fisheries Science Center Cooperative Research

Project Title: Albacore Tagging with AFRF

Overview: The American Fishermen's Research Foundation (AFRF) has been working with scientists from the Southwest Fisheries Science Center (SWFSC) since 2001 on a five-year research study to determine movement patterns and general life history strategies of North Pacific albacore. Albacore are targeted by various fisheries of the North Pacific Ocean in any given year, including fleets from the United States, Japan, Taiwan, and Canada. The project is supported in part through funding provided by the AFRF, which serves as a research-based organization spearheaded by the troll fishery and canning industries of the United States. The objectives of the long-term study are to deploy 500 archival tags in albacore over the period 2001-05. To date, 278 archival tags have been deployed and 16 have been recovered. These returns represent the only recoveries of archival tags for this species in the eastern Pacific (Japanese scientists recently recaptured a fish in the western Pacific that was at liberty for nearly a year).

Research Description: In 2005, we propose to deploy 120 tags during 2 tagging trips. Deployments are made on vessels chartered through the parent organization of the AFRF, namely the Western Fishboat Owners' Association (WFOA).

Project Title: Acoustic/ROV Survey of Hard Bottom Rockfish in the Southern California Bight

Overview: Sportfishing in Southern California near coastal waters is a popular activity that supports a large industry. A key element to this industry is the Commercial Passenger Fishing Vessel (CPFV) fleet. Most of the revenue from this business is generated in the California Bight area. An additional factor to the state fiscal equation is the financial implication of the recreational private boater. Both the CPFV fleet and private recreational boat fleet target both pelagic and benthic fish during their fishing expeditions. Proper management through assessment of this resource is critical to the sportfishing industry.

Over 80 species of marine fish are managed under the Pacific Coast Groundfish Fishery Management Plan (FMP) that was adopted by the Pacific Fishery Management Council (PFMC) in 1982. In general, the FMP provides for management of bottom dwelling finfish species (including all rockfish and whiting) that are found in U.S. EEZ waters off Washington, Oregon and California. Of these, fewer than 20 of the commercially and recreationally most important have ever been comprehensively assessed. Currently, stock assessments of four species (canary rockfish, yelloweye rockfish, bocaccio, and cowcod) have resulted in reduced fishing opportunities for recreational fishers.

Monitoring the recovery of these stocks is problematic in that conventional sampling methods (trawling, hook and line surveys, etc.) are either not effective on hard bottom or further deplete overfished stocks. New technology is needed to monitor these stocks without impacts to recovery.

Research Description: In FY 2005, we propose to work cooperatively with the CPFV fleet to develop acoustic/ROV technology to survey demersal fishes associated with hard bottom and to establish a baseline biomass which will allow NMFS and PFMC to monitor the recovery of overfished stocks in these habitats.

Project Title: Exempted Fishery Bigeye Tuna/Swordfish Bycatch-Reduction Experiment for Longline

Overview: The California-based swordfish longline fishery was closed down in April 2004 by a NMFS action to protect loggerhead sea turtles. Recently, information on safer fishing gear, turtle dynamics, and turtle hooking survival rates has indicated that improved fishing practices might be developed to allow the fishery to re-open, or at least to allow experimental fishing to be conducted to establish the safety of new, strategically deployed gear with regard to sea turtles. This study would be carried out under a NMFS qualified exempted fishing permit (EFP), by a vessel fishing on three trips, setting a total of 50,000 hooks. The focus would be on how bigeye tuna and swordfish can be caught with minimal impact on associated, non-target species, including protected species, seabirds and also fish bycatch. The biology, fishery potential, and effects of fishing, including effects on any protected or vulnerable species incidentally caught, are to be studied. Procedures for reducing the bycatch and mortalities to incidental and protected species will be an integral part of the study. In this first year, fishing would be conducted only east of 140°W longitude outside the EEZ, only during cool-water months from mid-November through mid-March, and only using long leaders. The area and fishing time is to avoid the waters inhabited by sea turtles, as indicated by NMFS analyses of longline observer data. The longer leaders will be used to reduce the chance of mortality if a turtle is hooked (allowing it to surface and breathe), and also to access deeper waters for bigeye tuna. All sets will be made with blue-dyed bait to minimize bird bycatch. Prior to the experiment, protected species and seabird caps would be established; if reached, fishing would cease. To reduce blue shark bycatch, an initial set of 400-800 hooks would be deployed, and if sharks are taken, the vessel would move to another area. Once in a low shark area, an average number of 1200 hooks/set would be deployed. There would be a trained observer placed on all trips.

Research Description: In FY 2005, we propose to work cooperatively with a displaced longline fisherman to develop an experimental plan and fishing protocol, and place an observer on each vessel trip to closely monitor fishing operations, incidental catch, bycatch and protected species interactions.