Plans for Fiscal Year 2006

Equatorial Oceanography

JASMINE, The Joint Air-Sea Monsoon Interaction Experiment: Upper Ocean Survey

P.I.: Peter Hacker, Roger Lukas, and Eric Firing

Plans for the Next Year

With the limited remaining resources, we plan to continue to use the JASMINE and recent NOAA observations to continue the planning and implementation of the moored array for the Indian Ocean via participation in the CLIVAR Indian Ocean Panel.

Penetration of Anthropogenic CO_2 in the Oceans Based on Analysis of Recent WOCE/JGOFS/OACES Carbon Data Using the Remineralization Ratios Obtained by the New Three-End-Member Mixing Model

P.I.: Yuan-Hui Li and Tsung-Hung Peng

Plans for the Next Year

To expand the similar studies into Pacific and Atlantic Oceans.

University of Hawaii Sea Level Center

P.I.: Mark Merrifield

Plans for the Next Year

The University of Hawaii Sea Level Center (UHSLC) is working to raise the number of GCOS stations reporting in real-time. In collaboration with international partners, the UHSLC plans to install or upgrade ~7 GCOS stations during FY06 (e.g., in Indonesia, the Philippines, South Korea, Thailand, Oman, Seychelles, and the Maldives). We had intended to publish an annual sea level retrospective but this was delayed because of our attention to the Indian Ocean tsunami. We hope to revive that effort for FY06. In addition, we are analyzing GPS land motion measurements at various stations for an assessment of absolute sea level rise rates.

Tsunami Research

Archiving and Analysis of High-Resolution Sea Level Data from the Hawaiian Islands

P.I.: Douglas S. Luther

Plans for the Next Year

Collection, processing, and dissemination (through ARSHSL) of rapidly sampled Hawaiian sea level will continue. We hope to re-establish, and even increase, archiving of 1-minute data from the NOS gauges. Depending on the amount of effort needed to maintain the archive, enhancements to the archive will continue, including updating files of concatenated, quality-controlled, hourly-averaged sea level data for low-frequency studies and improving and automating the procedures for editing the 1-second data from 8 PTWC gauges.

Climate Research

Climate Change and Ecosystem Variability in the North Pacific Ocean and the Dynamics of Marine Resource Populations

P.I.: Thomas A. Schroeder Franklin B. Schwing)

Plans for the Next Year

The research emphasis for this project in FY06 will focus on the following areas: the characterization of ocean "hot spots" and their utilization by marine pelagic fish and mammals; understanding the impact of large-scale climate variability on mesoscale ocean structure and its consequences to marine populations; developing satellite-based data products that define physical and biological attributes of ocean habitat; and developing indicators of climate and environmental variability that can be incorporated into ecosystem models and resource management strategies.

Dynamics of Pacific Decadal Climate Variability and ENSO Modulation

P.I.: Fei-Fei Jin

Plans for the Next Year

We will further examine ENSO predictability and its decadal changes, and how quasi-quadrennial (QQ) and quasi-biennial (QB) variability will affect the predictability of ENSO. Work will continue on coupling the new linear global atmospheric model with eddy feedback to the MOM ocean model.

Effects of the Andes on Eastern Pacific Climate

P.I.: Shang-Ping Xie and Yuqing Wang

Plans for the Next Year

We will continue improving this regional coupled model and use it to study factors that affect the above climatic asymmetry and equatorial annual cycle.

Enhancement of Data and Research Activities for Climate Studies at the International Pacific Research Center (IPRC)

P.I.: Julian P. McCreary, Jr., Peter Hacker

Plans for the Next Year

Plans for the next fiscal year focus on the six, base activities described above, namely, the Data Server System operation, archive building and data management, value-added product development, GODAE Product Server enhancement, high-resolution model development and evaluation, and Atmospheric Brown Cloud data management. In addition, four new thrusts for the coming year include: enhancement of PRIDE activities to develop integrated data products for the Pacific region; initiation of pilot observations in support of assimilation-based, regional high-resolution ocean models; enhancement of data rescue and historic data quality control activities; and assistance with regional coordination in support of GCOS (Global Climate Observing System) and GOOS (Global Ocean Observing System) programs.

Impacts of Warm Pool and Extratropical Processes on ENSO

P.I.: Bin Wang

Plans for the Next Year

We will continue working on the impacts of ENSO on midlatitude intraseasonal and interannual variability and expect a manuscript will be completed next year. We will also focus on the origin of the tropical biennial oscillation and the mechanism of ENSO-monsoon interaction. I expect that this work will be completed next year.

Mechanisms of Atmospheric Mercury in Transport and Transformation of the Remote Pacific Marine Free Troposphere Measured in Hawaii

P.I.: Thomas A. Schroeder [John E. Barnes]

Plans for the Next Year

The mercury program will expand further with analysis of rain samples from several locations. Also new instrumentation will be installed both at the sampling site and the Hilo analysis laboratory. The lidar program is also expanding to include the development of a polar nephelometer based on the camera lidar techinique. The polar nephelometer measures the light scattering properties of particulates in the air. The technician will continue preparations for the 50th anniversary and help with the move to new office space in Hilo.

Profiling CTD Float Array Implementation, Delayed-Mode Salinity Adjustments, and Ocean Climate Research

P.I.: Thomas A. Schroeder [Gregory C. Johnson]

Plans for the Next Year

In FY 2006 collaboration with PMEL and other Argo partners will continue with testing, deployment, and performance monitoring for more floats. Delayed-mode salinity quality control of U.S. data will also continue, as will work with the international Argo data management team. Ocean climate studies will also continue using Argo data, including analysis of global ocean heat content variations.

Role of Ocean-Atmosphere Interaction in Seasonal and Interannual Variations of the Atlantic ITCZ

P.I.: Shang-Ping Xie

Plans for the Next Year

We will conduct hindcast experiments to see if the inclusion of this new equatorial mode increases the skills in predicting Nordest rainfall one season ahead. We will also investigate the origin of the acceleration of the easterly winds in the equatorial Atlantic, a feature important for the abovementioned mode of equatorial variability.

Temporal Variability in Surface pCO2 at the Hawaii Ocean Time-Series Station ALOHA

P.I.: David M. Karl

Plans for the Next Year

To continue to support the pCO2 effort with cruises in Nov 2005 and May 2006.

Transition from Experimental Climate Prediction to Operational Climate Forecasting and Information Services for the U.S.-Affiliated Pacific Islands

P.I.: Thomas A. Schroeder

Plans for the Next Year

A downscaled consolidated ensemble forecast for thirteen island stations will be incorporated in the monthly Pacific Audio Conferences. We anticipate completion of the review of the experimental sea-level forecast paper and appropriate refinements of our technique based on this review. We look forward to the continuing merger of PEAC and the NWS Pacific Region.

Warm Pool Dynamics in the Interaction Between Asian Summer Monsoon and ENSO

P.I.: H. Annamalai

Plans for the Next Year

Not applicable.

Tropical Meteorology

Compilation, Digitization, and Use of Hawaii State Rainfall Records

P.I.: Pao-Shin Chu

Plans for the Next Year

To continue the updating phase for other three counties in Hawaii.

National Weather Service Pacific International Training Desk

P.I.: Thomas A. Schroeder

Plans for the Next Year

In addition to placing a new recruitment announcement, we have interns en route from Malaysia and Tonga.

Fisheries Oceanography

A General Model for Protected Species

P.I.: Mark Maunder (Simon Hoyle)

Plans for the Next Year

- Albatross: We intend to continue our collaboration with Jean-Dominique Lebreton's group on analyzing mark-recapture data for the Tern Island population of black footed albatross and development of integrated models. In a comparative analysis, we will also apply MULTIFAN-CL to the data for the Tern Island population of black footed albatross. Meetings will be held between our group, Jean-Dominique Lebreton's, and other albatross researchers.
- Turtles: We will further develop our links with sea turtle researchers and apply the general framework to a sea turtle population. We will meet with turtle researchers to form collaborative research projects.
- General model: The general framework will be further developed and applied to the Tern Island population of black footed albatross and other species. Presentation of results at a modeling conference will be desirable.
- Methodological development: We will carry out further investigation into appropriate methods to include information in models of protected species and to estimate uncertainty. We will continue collaborations with Panagiotis T. Besbeas to develop method to integrate data into models. MM and SH will attend the AFS Conference, teach a course based on the general framework and give a presentation in the Bayesian section of the conference. MM will attend the objective Bayes conference in Missouri and give a poster based on an aspect of the general framework.
- Collaborations: MM will collaborate with Tore Schweder at the Centre for Ecological and Evolutionary Synthesis, University of Oslo, who has been funded for the project "Integrated statistical analysis based on likelihood and confidence: applications to the hare-lynx population cycles and the status and structure of bowhead whales".
- PFRP: SH will attend the tuna conference and attend the PI meeting.

Addition of Multi-Species Capability, Sex Structure and Other Enhancements to the Length-Based, Age Structured Modeling Software MULTIFAN-CL

P.I.: John Hampton and Pierre Kleiber

Plans for the Next Year

This PFRP project lives for only one year, and it's funds are now spent. However, it is part of a wider collaboration from which funds are in place for next fiscal year. During the remainder of FY 2005 and FY 2006 the enhancements already achieved will be carefully evaluated and modified as needed. We view these items as a foundation for further enhancements. We expect these items to be difficult computer programming exercises, but we anticipate that they will have big payoffs, first for improving assessments of fishes, such as marlins, with pronounced sexual dimorphism in growth and behavior, and then for moving into the realm of multi-species assessments which may form a bridge between traditional single-species assessments and ecosystem-level models such as ECOSYM.

An Analysis of Archaeological and Historical Data on Fisheries for Pelagic Species in Guam and the Northern Mariana Islands

P.I.: John Sibert, Judith R. Amesbury, and Rosalind Hunter-Anderson

Plans for the Next Year

We have written a Year 2 proposal to include two additional bodies of data. One is the analysis of the archaeological

fishbone from the recent Ylig River excavation, and the other is the fisheries data directly from Japan, which will be obtained for us by a Japanese speaker. The Japanese data pertain to the pre-war tuna fishery in Saipan and also to the long-liners of the 1960s and 1970s.

Comparing Sea Turtle Distributions and Fisheries Interactions in the Atlantic and Pacific

P.I.: Selina Heppell, Molly Lutcavage, and John Sibert

Plans for the Next Year

Following a 3-day workshop with sea turtle biologists, fishery modelers, and oceanographers (planned for September 2005), we will evaluate alternative hypotheses for population declines through analyses of potential habitat quality shifts, fishery impacts, and impacts at nesting beaches. This will require additional modeling. We will hold a follow-up workshop in Year 2 to share our results and to complete a report on the project. This follow-up workshop may be held in Honolulu to accommodate project collaborators and interested participants residing in New Caledonia, Hawaii, and the southeast Asian and Pacific regions. We will present our Year 1 results at the PFRP investigator's meeting in November 2005 and at the International Sea Turtle Symposium in April 2006. Ms. McCarthy will submit two manuscripts from her thesis by June 2006; Lewison and Heppell will complete and submit their manuscript on age-structured models and time lags in September 2005. We anticipate at least one other major publication from this effort. Kirby, Lutcavage and Heppell will examine movements and conduct analyses of oceanographic dispersal patterns of juveniles and adults. This may include additional collaborators with expertise in habitat choice and optimal foraging applications.

Comparisons of Catch Rates for Target and Incidentally Taken Fishes in Widely Separated Areas of the Pacific Ocean

P.I.: William Walsh and Keith A. Bigelow

Plans for the Next Year

Four types of work are planned for FY 2006. The first set of tasks will consist of evaluation and correction as necessary of the logbook catch data for striped marlin, shortbill spearfish, sailfish, and black marlin for the 10-year period March 1994-February 2004 (the earlier date corresponds to the establishment of the NMFS Observer Program in Hawaii). Results so obtained will then be described for publication in a peer-reviewed journal. Because the methodology to be employed is largely identical to that used previously with blue marlin, it is expected that citations and cross-referencing should permit brevity in this section of a paper. This, in turn, may permit writing a paper that is of a reasonable length but contains a substantial results section and a comparative discussion of biases and other aspects of the catch data. The third set of tasks will consist of evaluation and correction of logbook data for target species. This is expected to be relatively easy because experience has shown that logbook data for the tunas, in particular, are much more accurate than billfishes catch data. The final set of tasks will entail using the corrected data sets in inter- and intraspecific comparisons of catch per unit of effort.

Describing the Vertical Habitat of Bigeye and Albacore Tunas and Post Release Survival for Marlins in the Central Pacific Longline Fisheries with Pop-up Archival Transmitting Tags

P.I.: Jeffrey Polovina and Michael Seki

Plans for the Next Year

Conduct more tagging of bigeye and albacore in waters around both American Samoa and Hawaii. Write manuscripts on the results for publication.

Development of a Hierarchical Model to Estimate Sea Turtle Rookery Contributions to Mixed Stocks in Foraging Habitats

P.I.: Benjamin Bolker

Plans for the Next Year

We will continue to work to make the procedures we have developed robust and incorporate them into a relatively user-friendly package running on top of the R programming environment (and possibly tying in the BUGS statistical estimation package as well; an initial version of the package is available at http://www.zoo.ufl.edu/bolker/turtle) We will also continue to develop and support our R package for stock analysis, available from http://www.zoo.ufl.edu/bolker/R/windows.

Development of Oceanographic Atlases for Pelagic and Insular Fisheries and Resource Management of the Pacific Basin

P.I.: Russell E. Brainard, John Sibert and Dave Foley

Plans for the Next Year

The Atlas Coordinator will continue building the web interface and back end web-services, aiming for a public release early in the year. When the software is stable, the Atlas data holdings will be rounded out with data sets deemed desirable by various PFPR PI's and other potential users. Work will also need to be done with the project Principal Investigators to produce regional "hard copy" atlases at a level appropriate for scientific publications as well as documentation for the web interface and data holdings.

Numerous tools and add-ons will be developed for the atlas, enabling a higher level of control over data dimensioning, querying, and visualization. The ability to upload custom data sets to the Atlas may also be a useful tool for researchers wishing to compare their own data with the oceanographic parameters available through the Atlas, but enabling users to download subsets of Atlas data to their own computer is a higher priority.

There has been further discussion with NODC/CORIS about hosting the Atlas on their operational web servers while maintaining a development machine in Hawaii. This possibility will be more rigorously assessed now that most of the Atlas software is coming online.

Diet Dynamics and Trophic Relations of Laysan and Black-Footed Albatrosses

P.I.: Thomas A. Schroeder [Stewart Allen]

Plans for the Next Year

N/A

Distributions, Histories, and Recent Catch Trends with Six Fish Taxa Taken as Incidental Catch by the Hawaii-Based Commercial Longline Fishery

P.I.: William Walsh and Keith A. Bigelow

Plans for the Next Year

The scheduled duration of this project has elapsed and its principal output has been accepted for publication in a peer-reviewed journal. As such, the project is seen as completed. Because the data QC and linkage activities are ongoing and involve some of the species listed under this project, results with them are likely to be mentioned in future reports for other projects (being conducted by Walsh).

Economic Fieldwork on Pelagic Fisheries in Hawaii

P.I.: Minling Pan

Plans for the Next Year

- Task A. The main activity of this task is to conduct the fleet-wide of cost-earnings study in the Hawaii longline fishery during 2005-2006. This would be the third cost-earnings study of this fleet, which is one of the main pelagic fisheries in the Pacific Islands area. The first cost-earnings study of the Hawaii longline fleet was conducted during 1993-1994 and the second in 2000.
- Task C. Research activities include inventorying all possible changes of fishing technology in the Hawaii longline fishery in past 20 year. We also plan to design and field test questionnaires to investigate fishing technological changes in individual vessels and complete the field work.

Economic Value of Pacific Blue Marlin in the Hawaii Recreational Fishery

P.I.: Thomas A. Schroeder [Stewart Allen]

Plans for the Next Year

In the first quarter of FY2006 we plan to issue the RFP, evaluate bids, and select a contractor. Specific tasks include determining the method of administering the survey instrument (e.g., via HMRFSS or via an independent survey) and identifying the sampling protocol for survey administration.

Evaluation of Data Quality for Catches of Several Pelagic Management Unit Species by Hawaii-based Longline Vessels and Exploratory Analyses of Historical Catch Records from Japanese Longline Vessels

P.I.: William Walsh and Keith A. Bigelow

Plans for the Next Year

The plan for FY 2006 is to complete the evaluation and correction of the logbook catch data for sailfish and black marlin for the 10-year period March 1994-February 2004. The results so obtained will be included in a manuscript for publication in a peer-reviewed journal. The manuscript will be comparative, with additional results for striped marlin and sailfish. Additional logbook quality control work and the exploratory analyses of historical Japanese catch data will follow the billfishes work and manuscript preparation.

Fisheries Oceanography: Marine Mammal Research Program

P.I.: Thomas A. Schroeder [George A. Antonelis]

Plans for the Next Year

In FY2006, objectives of monk seal studies in the NWHI will include population monitoring and assessment, characterization of foraging ecology, and evaluation of health and disease. Monk seal assessment studies will also expand in the main Hawaiian Islands due an apparent increase in their numbers within this portion of their range. Further, a high priority objective will be to complete a comprehensive cetacean research plan for PIR based on the results from the FY2005 cetacean workshop. Research objectives for cetacean studies will focus on information sharing and collaboration with other stakeholders, and the initiation of high priority studies with scientists from the Southwest Fisheries Science Center, Humpback Whale National Marine Sanctuary, and non-government organizations.

Fisheries Oceanography—Protected Species—Marine Turtle Research Program

P.I.: Thomas A. Schroeder [George H. Balazs]

Plans for the Next Year

Currently, the MTRP is recruiting through JIMAR for a junior sea turtle biologist who will act as a liaison between the Principal Investigator, program contacts, and other agencies. This individual will be involved in and/or conduct all aspects of marine turtle biological research including salvage, rehabilitation, and necropsy of stranded animals. Major emphasis will continue to be placed on the research of the pelagic ecology and movements of sea turtles to develop management strategies to reduce fisheries bycatch. Continuing research will be conducted on fibropapillomatosis disease with emphasis on specimens obtained from the Hawaii sea turtle stranding and salvage program. Research and training will continue with Pacific island and Pacific Rim scientists to promote understanding of the biology, migrations, life history, and conservation of sea turtle populations in order to promote population recovery of these threatened and endangered species.

Fisheries Oceanography: Research Aimed to Reduce Sea Turtle-Longline Interactions

P.I.: Thomas A. Schroeder [Yonat Swimmer]

Plans for the Next Year

- Future olfaction research on captive turtles to identify potentially repellent baits is currently in planning or underway. Work will continue in collaboration with scientists in Baja, California, Mexico (with Aquatic Adventures), Brazil (Projeto TAMAR), Texas (NOAA Sea Turtle Facility/SharkDefenses), and Florida (Florida Atlantic University).
- Work will continue on identifying a visual deterrent that would effectively reduce sea turtle bycatch by conducting electrophysiological and behavioral studies with scientists from Duke University, University of North Carolina, University of Queensland, and University of Hawaii.
- Collaborative research will continue with Costa Rican, Brazilian, and Ecuadorian scientists to conduct field trials to determine the efficacy of a proposed mitigation measures (e.g., large circle hooks). Additionally, blood samples will be collected from incidentally-caught turtles in order to analyze biochemical parameters associated with stress. This information will be useful in determining the impact of the hooking interaction on turtles' post-hooking survivorship.

Fisheries Oceanography—Swordfish Research

P.I.: Thomas A. Schroeder [Karen Sender]

Plans for the Next Year

The first two metadata collection efforts using InPort will commence—a high level inventory of all NOAA Fisheries' fisheries-dependent data holdings, and detailed inventory and documentation of fisheries permits systems. The second year of InPort development also will include enhancements to metadata inporting and exporting tools, additional metadata modules, and enhancement to user and librarian support tools. Additional data management tools will be packaged and made available to PIFSC and other fisheries offices. Continued development of LODS will include further integration of economic data and enhanced reporting tools to further support the assessment of Pacific swordfish and highly migratory species.

Fishery Dynamics in the Samoan Archipelago

P.I.: Keith Bigelow, Adam Langley, John Hampton, and John Sibert

Plans for the Next Year

Quantifying the spatial and temporal dynamics of longline fisheries in the Samoan archipelago will commence with the recruitment of the JIMAR scientist. Research will continue on comparing catch rates in American Samoa with neighboring Pacific Island fisheries and conducting project collaboration with SPC staff in Noumea. Refinements to the south Pacific albacore assessment will be presented in August 2005 at the Scientific Committee of the Western and Central Pacific Fisheries Commission. Project presentations may also be presented at the 57th annual Tuna Conference to be held at Lake Arrowhead, CA in May 2006 (exact meeting dates to be determined).

Human Dimensions Analysis of Hawaii's Ika-Shibi Fishery

P.I.: Edward W. Glazier

Plans for the Next Year

Plans for the upcoming period of performance prioritize focused and intensive fieldwork on the Big Island. The social network methodology will be undertaken in full to identify a valid sample of persons highly knowledgeable of the fishery and relevant environmental/ecosystem factors. These persons subsequently will be interviewed for various purposes, as described in the proposal. A series of interviews will also be conducted with ocean and fisheries scientists on Oahu and the Big Island in order to better understand and describe environmental factors associated with ika-shibi fishing and tuna stocks in the study area and larger Pacific region. Archival research will continue, but with increasing attention to historic and current fisheries data and analysis (e.g., NOAA Fisheries and HDAR data), and review of oceanographic and climatologic studies that may shed light on trends in fisheries production. Participant observation research will be conducted on the Big Island, focused on ika-shibi and other bigeye and yellowfin methods, market and distribution processes, and other factors of relevance to project goals and objectives. This work will occur during the upcoming summer months, and later in 2005. Data analysis will be ongoing, with draft report preparation beginning during the fall months.

Incorporating Oceanographic Data in Stock Assessments of Blue Sharks and Other Species Incidentally Caught in the Hawaii-Based Longline Fishery

P.I.: Pierre Kleiber and Hideki Nakano

Plans for the Next Year

FY05 is the final year of this project. Therefore there are no formal plans for it in the next, or ensuing fiscal years. However, its spirit will live on in other PFRP and non-PFRP projects such as the North Pacific blue shark assessment under way this year and a striped marlin assessment being planned to follow that as well as the annual tuna assessments conducted under the aegis of the Western and Central Pacific Fisheries Commission.

Instrumented Buoys as Autonomous Observatories of Pelagic Ecosystems

P.I.: Kim Holland, Laurent Dagorn, David Itano

Plans for the Next Year

- Deploy and test "Smart FAD" prototype in collaboration with SIO
- Continued laboratory testing of various "ecology tags" (tuna and sharks)
- Deployment and testing of a Simrad prototype instrumented FAD
- Analysis and publication of stable isotope data

Integrated Modeling for Hawaiian Albatross Populations

P.I.: Dan Goodman and Jean-Dominique Lebreton

Plans for the Next Year

We will finalize all the analyses, which include the following.

- Complete the estimation of demographic parameters by adding analysis of juveniles, and establishing more complex capture-recapture models accounting for heterogeneity (time and age dependent…).
- Estimate by-catch rates with recapture-recoveries models and compare with the figures obtained with the former method based on direct count.
- Finalize the integrated modeling, using census information and compare the results we obtain using the Kalman Filter method with those obtained by Mark Maunder and Simon Hoyle using Bayesian method.
- Evaluate the impact of by-catch on the demography of the specie.
- Compare our analysis and results with the case of southern hemisphere albatrosses submitted to the same pressure of longline fishing.
- Run the same analysis for LAAL and compare the results

Integrative Modeling in Support of the Pelagic Fisheries Research Program: Spatially Disaggregated Population Dynamics Models for Pelagic Fisheries

P.I. John Sibert

Plans for the Next Year

- Analyze currently-used light-based geolocation algorithms to identify and correct the source of the autocorrelated latitude bias. A state-space model statistical model will be applied to the problem of estimating geographic position from light intensity,
- Refine the inclusion of temperature in the Kalman filter model. Automate the retrieval of SST data from the World Wide Web and improve the R wrapper for the kftrackSST software.
- Creation of electronic tagging data repository. In cooperation with the KNB the user interface to the data repository will be enhanced, data entry will be streamlined, and new users will be recruited.
- Collaboration on the "Mixed-resolution models for investigating individual to population spatial dynamics of large pelagics" project. Complete work on parameter optimzaion in SEAPODYM.

Investigation of Aggregation Behavior of FAD-Associated Small Yellowfin Tuna and Size-Dependant Vertical Stratification

P.I.: Kim Holland

Plans for the Next Year

To expand the sample size by releasing more tagged tuna and to analyze this and next year's data. Project activities and results collected to-date will be presented at the 57th Tuna Conference in Lake Arrowhead, CA, May 2006 (exact meeting dates to be determined), at the annual PFRP PI meeting and other appropriate fishery science meetings where appropriate.

Marine Resource Dynamics and Assessment Program (MARDAP): Cooperative Research

P.I.: Thomas A. Schroeder [Christofer H. Boggs]

Plans for the Next Year

A solicitation for commercial longline boats to submit bids to participate in experimental field trials is being developed and should be issued by September 2005. Commercial fishing vessels involved in normally permitted commercial fishing operations will alternate between setting using the style developed by Beverly and Robinson (2004) as the treatment sample versus using their normal deep-set style of fishing on alternate days (control sample). This enables half of the sets to serve as controls. An observer on board participating boats will collect and collate detailed information from the catch. The observer will collect gear deployment and configuration data using Time-Depth-Recorders (TDRs) provided by NMFS. Steve Beverly (Secretariat of the Pacific Community) has agreed to participate in monitoring the execution of the experiments and analyzing the results. The trials will be conducted sometime during the next prime bigeye tuna fishing season which extends from Novemeber 2005 through April 2006. A preliminary review of the results will be presented at the Tuna Conference in May 2006.

Marine Resource Dynamics and Assessment Program (MARDAP): Economics of Fisheries Initiative

P.I.: Thomas A. Schroeder [Minling Pan]

Plans for the Next Year

1) Complete two on-going studies: Economic Evaluation of Hawaii Fishing Tournaments and the cost-earning study of NWHI bottomfish vessels. 2) Continue projects funded in FY2005: a) investigate technological changes and their impact on fishing capacity in the Hawaii-based longline fishery, b) study the costs of transshipping tuna and swordfish to the US mainland and foreign countries, and c) maintain the continuous economic data collection system developed in conjunction with the PIRO observer program.

Marine Resource Dynamics and Assessment Program (MARDAP): Lobster Research Program

P.I.: Thomas A. Schroeder [Gerard DiNardo]

Plans for the Next Year

We will continue spiny and slipper lobster tagging experiments at Necker Island and Maro Reef. Conduct the NWHI lobster resource survey in June 2006. If feasible, expand the spatial scope of the NWHI lobster resource survey and tagging experiments to archipelago wide. Plan and participate in the American Fisheries Society 136th Annual Meeting, scheduled for September 2005 in Anchorage, AK. Complete pelagic (blue shark and striped marlin) and insular (NWHI lobster and bottomfish) stock assessments and advance population model development.

Marine Resource Dynamics and Assessment Program (MARDAP): Pelagic Fisheries EFH Research Program

P.I.: Thomas A. Schroeder [Michael Parke]

Plans for the Next Year

A temporary programmer will be hired to develop user interface to integrated data. Data will be used to model pelagic fishery and endangered species interactions as well as economic catch variations related to environmental variables.

Marine Resource Dynamics and Assessment Program (MARDAP): Research Support

P.I.: Thomas A. Schroeder [Susan Kamei]

Plans for the Next Year

The project has an ongoing need that justifies the continued support of the maintenance assistant, administrative secretary, webmaster, and fishery specialist positions. Work for these positions will be a continuation of ongoing duties including the following.

- **Maintenance Assistant:** Ongoing upkeep of facilities and vehicles and coordination and oversight of the transfer of various materials into a consolidated storage facility.
- **Administrative Secretary:** Ongoing administrative support to project staff and support of the in-house digital document archiving project.
- **Webmaster:** Website maintenance and upgrades; and completion of projects, including the implementation of an IT support service request tracking system, the implementation of an editorial publication management system, the

upgrade of library web applications, and the implementation of an employee tracking system.

- **Fisheries Specialist:** Continuation of logbook collection, vessel monitoring, maintenance of the current vessel inventory, and liaison duties. In addition, the specialist anticipates that international management of highly migratory species in the Inter-American Tropical Tuna Commission (IATTC) area of jurisdiction will affect the monitoring of the Hawaii pelagic longline fleet. The changes to monitoring will require the fast tracking of all longline trips fishing east of 150 degrees longitude to monitor and manage US quota compliance set by the IATTC. Other alternatives to allow for more timely reporting of catch may also be researched and tried.

In FY2006, a Scientific Editor position will be added to the project. The recruitment/selection process is nearing completion, and a start date of October 2005 is anticipated. The editor will play a key role in working with research staff to produce documents for publication including progress reports, peer-reviewed publications, and web content.

Marine Resource Dynamics and Assessment Program (MARDAP): Sociocultural Profile of Pacific Island Fishing Communities

P.I.: Thomas A. Schroeder [Stewart Allen]

Plans for the Next Year

A draft of a NOAA technical memorandum providing profiles of fishing communities is being developed and will be available in October 2005. The project will then continue with fieldwork in Guam under a contract between NOAA and a consultant with experience working with Guam fishermen and communities. The contract is currently being finalized but calls for a report describing Guam fishing communities by July 1, 2006. The third activity projected for the next fiscal year is to seek funding for additional fieldwork in CNMI and/or American Samoa.

Mixed-Resolution Models for Investigating Individual to Population Spatial Dynamics of Large Pelagics

P.I.: Patrick Lehodey

Plans for the Next Year

Research activities will include the following.

- Final test phase of the "mixed-resolution" SEAPODYM version.
- Evaluation of the predicted biomass distribution of the three forage components in SEAPODYM, particularly against acoustic data from Hawaii region.
- Development of a web site for this model with documentation, software executables, and input and output simulations.
- Completion of the bigeye archival tagging data analysis. A similar approach to the one used for vertical movements will also be applied to horizontal movements: the changes in physical parameters and forage biomass estimations between two successive 10-day periods will be investigated in order to understand the motivations of horizontal movements. These results together will constitute the basis for the definition of a rule-based IBM of bigeye tuna movements in relation to their environment. Tag records from Hawaii (archival) and Tonga (PSAT) will be integrated to the analyses as far as possible.
- Preparation of articles.

Modeling Longline Effort Dynamics and Protected Species Interaction

P.I.: PingSun Leung, Naresh Pradhan, and Sam Pooley

Plans for the Next Year

- Seasonal and spatial extension of the modified and improved fleet effort dynamics model that focuses on welfare measures and protected species interactions with the longline fishery.
- Finalize the manuscript on modeling protected species as an undesirable output using the distance function approach.
- Finalize the analysis of multi-species and multi-trip-type catch-effort relationship and stock indices estimation.
- Analyze the factors, rate, and degree of sea bird interactions with the longline fishery if time permits.
- Prepare manuscripts summarizing results from (1) through (4) above for possible conference presentations and journal publications.

Oceanographic Characterization of the American Samoa Longline Fishing Grounds for Albacore, *Thunnus alalunga*

P.I.: Michael P. Seki and Jeffrey J. Polovina

Plans for the Next Year

In FY 2006, a second shipboard survey will be conducted during the month of April to further examine the dynamic variability within the EEZ. Emphasis of the survey will be on the characterization of the SECC, which peaks in strength yearly during the months of March and April, and to further assess its effects on the American Samoa longline fishing grounds and longline performance in genreral and the distribution of albacore in particular.

Ocean Remote Sensing

P.I.: Thomas A. Schroeder [Jeffrey Polovina]

Plans for the Next Year

Provide timely satellite remotely sensed oceanographic data for our expanded Pacific basin area. Expand the suite of ocean indicators based on satellite data. Provide satellite remotely sensed oceanographic data for the NOAA oceanographic cruise to American Samoa in February 2006.

Pelagic Fisheries Research Program—Management

P.I.: John Sibert

Plans for the Next Year

- Convene a workshop to identify new research priotities for the PFRP. The original PFRP research priorities were established in a 1992 workshop. Most of the topics identified during that workshop were addressed in the first few years of PFRP operations. In the intervening years, fishery management concerns, governance arrangements, and the fisheries themselves have changed drastically. A second workshop to identify new research priorities for the PFRP would be very helpful in formulating future Request for Proposals. Other fishery agencies such as the Inter-American Tropical Tuna Commission (IATTC) and the Secretariat of the Pacific Community's Oceanic Fisheries Program (SPC/OFP, New Caledonia) have indicated willingness to participate.
- Work closely with the PIFSC to improve budgetary arrangements and coordination of research programming.The

latest NOAA grants and applications procedures are proving onerous. The PFRP Program Manager will work closely with PIFSC staff to try to streamline the process.

- Facilitate international collaboration in research on pelagic fisheries. The SCTB has been supplanted by the Scientific Committee and Specialist Working Groups of the WCPFC. PFRP staff and researchers will be participating in these groups. The PFRP Program Manager will participate fully in the CLIOTOP Steering Committee.
- Education and training. The PFRP will continue to promote graduate education at UH and will work closely with SOEST administration to assist in implementation of the CMR.

Protected Resources Environmental Compliance Initiative

P.I.: Thomas A. Schroeder [Charles Karnella/Tamra Faris]

Plans for the Next Year

In FY2006 we hope to recruit up to three additional staff with marine mammal or sea turtle biological backgrounds to augment federal staff administering the Endangered Species Act and Marine Mammal Protection Act. They will develop outreach materials, predict impacts of development actions on protected species, follow procedural regulations to issue act specific permits including an ESA incidental take permit to the State of Hawaii, and perform analyses that support MMPA negligible impact determinations for commercial fisheries.

The Resource Management Specialist Five position will be retained and related administrative and technical support of marine turtle related projects continued. Marine turtle subcontracts mentioned above will continue and objectives completed by the end of FY 2006.

Regulatory Impact Analysis Framework for Hawaii Pelagic Fishery Management: A Multilevel and Multiobjective Programming Model

P.I.: Minling Pan and Keiichi Nemoto

Plans for the Next Year

Project was completed.

The Role of Oceanography in Aggregation and Vulnerability of Bigeye Tuna in the Hawaii Longline Fishery from Satellite, Moored and Shipboard Time Series

P.I.: Russell E. Brainard, Jeffrey J. Polovina, Michael P. Seki, Bo Qiu, and Pierre Flament

Plans for the Next Year

During the next fiscal year, analysis of the 3 years of bigeye mooring data will be completed and a manuscript summarizing the data and the most important findings will be submitted.

Satellite Remote Sensing

P.I.: Thomas A. Schroeder [Jeffrey Polovina]

Plans for the Next Year

More high-frequency tags will be deployed on pelagic fishes to collect data on their fine-scale vertical dynamics. A manuscript on bigeye tuna spatial dynamics will be prepared. Analyses of whale shark tag data will be undertaken. Research results will be present at scientific meetings.

Satellite Remote Sensing Research Related to the West Coast Integrated Ocean Observing System

P.I.: Thomas A. Schroeder [Franklin B. Schwing]

Plans for the Next Year

Efforts to support the IOOS regional associations will continue in FY06 with an emphasis on providing highly-derived data products for targeted applications such as the establishment and monitoring of Federal and State Marine Protected areas, the surveys and possible interdiction activities of the Ghostnet project, and the development of the OceanWatch server to provide seamless access to near real-time data and long term science-quality time series.

Sociological Baseline of Hawaii-Based Longline Fishery: Extension and Expansion of Scope

P.I.: Stewart Allen and John Sibert

Plans for the Next Year

We plan to continue analyzing the extensive data and producing a series of management/policy issue reports. Planned report topics include impacts of the swordfish closure on Vietnamese-American fishermen, attitudes toward and beliefs about industry management and regulations, and issues associated with observers.

We also plan to extend our interviews to shoreside supply businesses and begin interviewing fish distributors. The additional interviews will include an estimated 30-40 individuals in the distribution chain for longline-caught pelagic fish, including representatives of the auction, wholesalers, and retailers.

Spatial Modeling Spatial Modeling of the Tradeoff between Sea Turtle Take Reduction and Economic Returns to the Hawaii Longline Fishery

P.I.: Minling Pan and Michael Parke

Plans for the Next Year

Develop a comprehensive model and a user-friendly framework on the application of economic optimization-theory to natural resource management. This involves evaluating the existing multi-objective and multi-level programming model (MMPM), identifying means for modification to improve the model to better reflect the reality of fisheries industry, including interaction between fisheries and protected species, and to construct the model in a user friendly and short time turn-around framework for regulatory analysis such as trade-off between protected species (sea turtles) reduction and economic returns to the fisheries.

Develop data processors to generate updated parameters from various databases, including the longline logbook data,

the data collected by the Hawaii Longline Observer Program, and auction data from United Fishing Agency (UFA) and the State of Hawaii Division of Aquatic Resources (HDAR). Links data processors to the MMPM model, which allows for prompt updating of model parameters and applications.

Survivorship, Migrations, and Diving Patterns of Sea Turtles Released from Commercial Longline Fishing Gear, Determined with Pop-Up Satellite Archival Transmitters

P.I.: Yonat Swimmer, Mike Musyl, Lianne McNaughton, Rich Brill

Plans for the Next Year

We plan to purchase platform terminal transmitters (PTTs) in order to get better estimates of turtles' post-release movements short term survivorship. These tags will be deployed on longline-caught and released turtles in the Hawaii-based swordfish and tuna fisheries, Brazil's swordfish fishery, as well as other fisheries in South and Central America where we are also concurrently conducting sea turtle by-catch fishing experiments. Mike Laurs and colleagues at NOAA/PFEL have designed and constructed a "Live Access Server" whereby tracks estimated by the Kalman filter can be overlaid with a suite of oceanographic parameters to look for patterns and correlation in the various species.

Project personnel will continue to prepare draft manuscripts and disseminate preliminary findings to various venues such as those provided by scientific conferences and through the popular press.

Sustainable Fisheries Initiative

P.I.: Thomas A. Schroeder [Alvin Katekaru/John Kelly/Charles Karnella]

Plans for the Next Year

Fisheries-marine turtle interaction outreach education subcontracts will be continued and completed by the end of FY 2006 in PNG, the Marshall Islands and the Solomon Islands.

- **Sustainable fisheries.** A limited entry longline program will begin in American Samoa in FY 2006, in which we will educate fishermen in protected species (sea turtle and seabird) handling and mitigation techniques.
- **Observer program.** From July 2005 through June 2006, we plan to complete a minimum of 420 observed trips through the final data editing stage. In addition, we will be expanding the observer program to cover the American Samoan Longline Fishery. We anticipate the American Samoa fishery to add an additional 80 observed trips. This will bring our total to 500 observed trips that need to be debriefed and edited. With our present staff fully trained we expect to meet these goals.

Trophic Structure and Tuna Movement in the Cold Tongue-Warm Pool Pelagic Ecosystem of the Equatorial Pacific

P.I.: Valerie Allain, Robert Olson, Felipe Galván-Magaña, and Brian Popp (Brian Fry, Brittany Graham)

Plans for the Next Year

This 3-year project is finishing at the end of 2005. Sampling in all regions of the equatorial Pacific will continue during the remainder of the project to increase the numbers of predator stomachs, muscle, and liver samples collected. More samples from all three regions will be analyzed isotopically to fill-in the gaps of the isotope-biogeography maps for the most important species, and to address other scientific questions that we have developed. Sampling efforts throughout the project have been very successful and the samples remaining to be analyzed will be chosen carefully to provide the most information possible with the remaining funds. More opportunistic sampling on research vessels will

be undertaken. A marine mammal survey cruise on a NOAA vessel will transit the eastern Pacific this summer, and spend 120 sea days in the triangle between Hawaii, Palmyra, and Johnston Atoll. Samples of POM, zooplankton, forage species, and predator fishes will be collected for our project by NOAA scientists. In the western/central Pacific, the focus will be on stomach examination and data analysis. A comparison of trophic structure of the western and eastern Pacific will be continued for the major predator species. A new EwE model for the western Pacific will be formulated with the diet matrix based on prey groups classified according to their vertical distribution and behavior. CICIMAR personnel will continue to analyze the stomach contents of predators caught by purse seine in the eastern Pacific. The PIs and collaborators of this project plan to meet before the end of the year to draft a final report and to work on publications.

Western Pacific Fisheries Information Network

P.I.: Thomas A. Schroeder [David Hamm]

Plans for the Next Year

In addition to the wide array of maintenance and routine functions that will be performed by JIMAR staff to keep the Western Pacific Fisheries Information Network (WPacFIN) operational we will also provide up-to-date documentation and summary reports, and fill adhoc data requests. The following are a few specific activities and goals to strive for next year: 1) develop an application and database to store fishery-independent (ecosystem monitoring) data for American Samoa; 2) develop reporting specifications and create automated applications to output a Coral Reef Ecosystem Plan Team (CREPT) FMP annual report for American Samoa and Hawai‘i (this is a substantial undertaking requiring considerable input and feedback from several external sources and will likely take longer than one year to complete); 3) continue to improve the production of “Fisheries of the United States” and “Fishery Statistics of the Western Pacific”; 4) continue to design, program, and implement the American Samoa Tutuila-based inshore creel survey system for the DMWR; 5) expand the Tutuila-based inshore design to incorporate Manu‘a data collection; 6) continue to update WPacFIN Website with current data; and 7) develop an improved data reconciliation and integration system for HDAR’s fisherman and dealer data systems to create the “best available” commercial landings data set. Item 7 is a significant undertaking that has been identified, in general, in previous proposals as a line item, but no specific resources have been available to assign to this task. WPacFIN has obtained approval for additional funds through the National Fisheries Information System (FIS) program in NMFS HQ, which will be used to obtain additional resources for this project. The nature of work will include analyzing collected data sets, developing integration and reconciliation algorithms, conveying data methodologies to gain approval from scientific data users, designing, testing, and debugging to ensure the system functions correctly, implementing the system and training users, and creating appropriate user and technical documentation.

Coastal Research

Coral Reef Management Initiative

P.I.: Thomas A. Schroeder [Alan Everson/John Naughton]

Plans for the Next Year

Plans are to continue to work with the various Federal, State, and local agencies to enhance the management of coral reef ecosystems throughout the Pacific.

National Environmental Policy Act (NEPA) Initiative

P.I.: Thomas A. Schroeder [Charles Karnella]

Plans for the Next Year

In FY 2006, objectives are to complete recruitments and initiate preparation of environmental analysis.

Sustaining Healthy Coastal Ecosystems

P.I.: Thomas A. Schroeder [Russell E. Brainard]

Plans for the Next Year

Continued coral reef assessment and monitoring efforts are scheduled for FY 2006 on board the NOAA ships *Oscar Elton Sette* and *Hi'ialakai*. There will be CRED research cruises to the Northwestern Hawaiian Islands, Guam, Commonwealth of the Northern Mariana Islands (CNMI), Territory of American Samoa, remote U.S. Line and Phoenix Islands, and the Main Hawaiian Islands (MHI). Benthic habitat mapping and characterization efforts will be conducted off the small boat AHI and the NOAA Ship *Hi'ialakai*, and are scheduled for all locations. Replacement and deployment of various oceanographic and meteorological monitoring platforms are also scheduled for all locations next fiscal year.

Plans for marine debris removal efforts in FY2006 include resuming the 2005 NWHI field season aboard an unidentified vessel on September 1, 2005. This second effort will focus at completing surveys at French Frigate Shoals from September through October with 16 JIMAR marine ecosystem specialists and marine debris technicians. The Coast Guard will collaborate with marine debris removal efforts this year by deploying two Coast Guard cutters at different times from August 22-September 19, 2005. The cutters and Coast Guard divers will focus on removing nets at Pearl and Hermes Atoll and Maro Reef that are deeper than the Marine Debris Program's operational limit of 30 feet. Two JIMAR divers will be aboard the Coast Guard cutters to assist and advise in marine debris removal efforts. Plans for a MHI marine debris cleanup have already begun this year and will focus on the islands of Hawaii and Kauai. The MHI cleanup will begin with aerial helicopter surveys throughout November and December to determine the amount of debris and priority of focus for the MHI cleanup. Actual marine debris cleanup efforts in the MHI will begin in 2006.