

# **JIMAR ANNUAL REPORT FOR FY 2008**

## **Plans for the Next Year**

### **Equatorial Oceanography**

#### **ADCP Work During GASEX-II Project**

P.I.: Eric Firing

Continue assisting PMEL with ADCP observations and keeping an eye on the Ron Brown system along with all the others running UHDAS; and on a volunteer basis, we will maintain the UHDAS systems on the Hi'ialakai and the Ka'imimoana.

#### **Penetration of Anthropogenic CO<sub>2</sub> 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 [Tsung-Hung Pwng]

Study the chemistry of a dam in Taiwan as a source or sink of CO<sub>2</sub> in a subtropical environment.

#### **University of Hawaii Sea Level Center**

P.I.: Mark A. Merrifield

Actively work with host countries to bring at least ten new GCOS stations into operation during FY2009. In addition to our continued efforts in Russia, India, and Argentina, we intend to focus on the Caribbean and South America. We will install four new tide gauge stations in the Indonesian Throughflow region in collaboration with BAKOSURTANAL. We will attempt to broker the installation of CGPS at tide gauge benchmarks in at least ten stations in the GCOS network. We started an initiative through the GLOSS Group of Experts to outfit 50 stations in the GLOSS network with CGPS; a high percentage of these at GCOS locations. A planning workshop will be held at the GLOSS Group of Experts meeting in Paris 2009. In terms of research, we will submit articles to peer-reviewed journals exploring global sea level rise estimates from tide gauges and contribute an annual assessment of global sea level for the BAMS State of the Climate issue.

## **Tsunami Research**

### **Archive of Rapidly Sampled Hawaiian Sea Level**

P.I.: Douglas S. Luther

Continue collecting, processing, archiving, and disseminating (through ARSHSL) rapidly sampled Hawaiian sea level. Depending on the amount of effort needed to maintain the archive, the backlog of 1-second data processing will be eliminated and enhancements to the archive will be undertaken, including one or more of the following: (i) updating the archive's technical report; (ii) updating files of concatenated, quality-controlled, hourly-averaged sea level data for low-frequency studies; and, (iii) improving and automating the procedures for editing the 1-second data from 7 PTWC sites. Under separate NOAA funding of the Hawaii Ocean Observing and Information System (HI-OOIS) in FY08, we are beginning a program to update the ARSHSL acquisition and processing code in order to provide a continuous stream of time series of low-frequency sea level from the NOS and PTWC gauges for modeling and prediction of sea level inundation hazards in the main Hawaiian Islands.

### **Three-dimensional Model of Tsunami Generation and Near-field Characteristics**

P.I.: Thomas A. Schroeder [Kwok Fai Cheung]

We plan to apply the proposed model package to investigate the 1975 Kalapana Earthquake in Hawaii and the 2003 Tokachi-oki Earthquake in Japan. The research work complements a long-term project of the PI to update the tsunami inundation and evacuation maps for Hawaii. The improved modeling capability will allow accurate description of local tsunamis and their impacts across the state, thereby providing critical information to civil defense agencies in the development of emergency response and recovery plans.

## **Climate Research**

### **Compilation, Digitization, and Use of Hawaii State Rainfall Records**

P.I.: Pao-Shin Chu

We plan to publish reports describing station name, observer name, latitude, longitude, and elevation for each gage.

## **Development of Real-Time Percipitable Water Capability Using the Global Positioning System**

P.I.: James H. Foster

Maintain the SkyNet network of GPS receivers and upgrade equipment and processing software as necessary. In particular, the site HILO will be relocated to the grounds of the new National Weather Service office, as airport construction is planned for the location of the existing site. The latest generation of GPS receivers will be installed at the new location in order to prepare for the upcoming upgrades and extensions to the GPS satellite constellation. As hourly data from new and existing GPS sites become available these sites will be added to the SkyNet and incorporated into the processing routines. A geodetic grade GPS receiver will be installed permanently on the University of Hawaii research vessel Kilo Moana and data collected during routine cruises. The data will be processed to retrieve integrated precipitable water vapor (IPWV) to investigate the atmospheric water vapor transport processes for the area of the Pacific north of the island of Oahu, and establish the accuracy with which IPWV can be estimated from a ship-borne sensor, in preparation for more extensive deployments of GPS receivers onto ships and other floating platforms.

## **Dynamics of Pacific Decadal Climate Variability and ENSO Modulation**

P.I.: Fei-Fei Jin

We will continue the ongoing work on the impact tropical climate mean state on the ENSO and its interaction with MJO.

## **Effects of the Andes on Eastern Pacific Climate**

P.I.: Shang-Ping Xie [Yuqing Wang]

We will continue to utilize the ROAM to study coupled ocean-atmospheric processes over the eastern Pacific. In particular, ocean vertical mixing is important to maintain the sharp thermocline. We will investigate how changes in vertical mixing affect the simulation of eastern Pacific climate in a coupled model (ROAM).

## **The Effects of the Stratospheric Quasi-biennial Oscillation on Seasonal Predictability of Tropospheric Circulation in the Northern Hemisphere Extratropics**

P.I.: Kevin P. Hamilton

Characterize the response of the NCAR model to the imposed stratospheric zonal wind variations, with a focus on the Northern Hemisphere extratropical stratospheric and tropospheric response. The effect of including stratospheric wind relaxation on the skill of seasonal-mean 500 hPa height forecasts will be evaluated.

## **Enhancement of Data and Research Activities for Climate Studies at the International Pacific Research Center**

P.I.: Julian P. McCreary, Jr. [Peter W. Hacker and James T. Potemra]

The project will continue baseline activities addressing the three broad themes of the APDRC: data serving and management; applied research that leads to the development of climate-related products for researchers, decision makers, and the general public; and basic climate research in support of the IPRC and NOAA research goals. Activities in theme one include the operation and maintenance of the APDRC's web-based, integrated Data Server System, and data management for climate data and products. Activities in theme two include: completion of ongoing PRIDE activities; value-added activities that produce enhanced data products with a focus on Argo data; serving GODAE products for a broad range of users, focusing on satellite and model-derived products; and continuing implementation and evaluation of high-resolution, regional models for downscaling of operational models in Pacific Islands regions. Activities in theme three include basic research toward: development and evaluation of multi-model forecasts for Pacific-Island rainfall; development and evaluation of a Pacific upper-ocean climatology based on Argo data; and downscaling of global forecast climate models in support of IDEA Center activities. We will also coordinate closely with our national and international partners on the implementation of a distributed and linked climate data server network, and continue to assist with regional coordination in support of the GCOS and GOOS programs.

## **Impacts of Warm Pool and Extratropical Processes on ENSO**

P.I.: Bin Wang

We will study the impacts of ENSO and Pacific SST anomalies on the East Asian summer and winter monsoon variations.

## **Investigating the Transport and Transformation Mechanisms of Atmospheric Mercury in the Remote Central North Pacific Marine Free Troposphere**

P.I.: Thomas A. Schroeder [Darryl T. Kuniyuki]

Continue to collect data for all projects and improve on data collection methods if needed.

## **Pacific ENSO Applications Center**

P.I.: Thomas A. Schroeder

Our major focus for the coming year is examining the role of other atmospheric and oceanic factors influencing the sea-level rise in the USAPI. This will include retrospective examination of sea-level behavior in other major ENSO events.

## **Profiling CTD Float Array Implementation and Ocean Climate Research**

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

For FY 2009, continued collaboration with PMEL and other Argo partners with testing, deployment, and performance monitoring for more floats. Ocean climate studies will continue using Argo data, including analysis of global ocean heat, and possibly freshwater, content variations.

## **Role of Ocean-Atmosphere Interaction in Seasonal and Interannual Variations of the Atlantic ITCZ and Roles of Ocean-Atmosphere-Land Interaction in Shaping Tropical Atlantic Variability**

P.I.: Shang-Ping Xie

We will pursue research in two directions. 1) Identify the sources of biases of tropical Atlantic simulations in the GFDL coupled model in collaboration with the GFDL model development team. 2) Further study of the teleconnective dynamics induced by an AMOC shutdown.

## **Tropical Meteorology**

### **National Weather Service International Pacific Training Desk**

P.I.: Thomas A. Schroeder

Two trainees are due in the remainder of Calendar 2008 (Solomon Islands and Kiribati, respectively). Additional trainees are to be determined. NWS and JIMAR have initiated discussions concerning expanding the scope of training offered at the Pacific Desk.

## **Fisheries Oceanography**

### **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]

The research emphasis for this project in FY09 will continue to focus on the following areas: 1) the characterization of ocean “hot spots” and their utilization by marine pelagic predators; 2) understanding the impact of large-scale climate variability on mesoscale ocean structure and its consequences to marine populations; 3) developing satellite-based data products that define physical and biological attributes of ocean habitat; and 4) developing indicators of climate and environmental variability that can be incorporated into ecosystem models and resource management strategies.

## **Data Administration of Pelagic Fisheries Data**

P.I.: Thomas A. Schroeder [Samuel G. Pooley and Karen Sender]

1. Hawaii Longline Observer Data System (LODS)—Continue to maintain and enhance the Hawaii Longline Observer Data System (LODS).
  - a. Assist in LODS production support with problem diagnosis & resolution for the production and test systems
  - b. Fix critical LODS defects within 20 work days
  - c. With direction from the LODS Steering Committee, evaluate and plan for needed system requirements in support of the Hawaii and American Samoa longline observer programs
  - d. Provide high-value, low-effort LODS enhancements, if the budget allows it
  - e. Record trouble ticket/issues log for support & maintenance problems & resolution
  - f. Provide quarterly technical support reviews to PIFSC and PIRO through the LODS Steering Committee
  - g. Provide partial hardware and software license refreshment in support of LODS architecture
  
2. Hawaii Longline Logbook Data System—Develop the Hawaii Longline Logbook Data System (LLDS) to support integration of LODS, LLDS, and other data in order to enable timely and accurate estimation of protected species interactions, fish bycatch, and quota-regulated catch levels in the Hawaii longline fishery as required under the Endangered Species Act, Magnuson-Stevens Act, and/or international agreements for tuna fisheries management in the Pacific Ocean.
  - a. Design Longline Logbook database
  - b. Develop data management modules specific to LLDS
    - Data entry application
    - Data upload utilities for electronic logbook submissions
    - Website for access to applications, training resources and system documentation
  - c. Develop LLDS using packaged data management modules

## **Fisheries Oceanography: Analysis on Bycatch by U.S. Pacific Islands Fisheries**

P.I.: Thomas A. Schroeder [Samuel G. Pooley, Christofer Boggs, Marti McCracken]

Continue producing annual estimates of bycatch in the Hawaiian longline fisheries broken down by species.

## **Fisheries Oceanography: Ecosystems Observation Research Program**

P.I.: Thomas A. Schroeder [Samuel G. Pooley and Michael P. Seki]

Plans for the forthcoming fiscal year include the following.

- Continued focus on improving management of the Science Center data streams and moving forward with the vision to enable the datasets to feed and contribute to the Integrated Ocean Observing System.
- Support for ecosystem-level projects addressing fishery biology and stock assessment. Examples include projects with a focus on multi-species stock assessments, protected species-fisheries interactions, and life history and ecology studies that support the stock assessment models (e.g., age and growth, distribution and movement, etc.).
- Research aimed at understanding the relationship between the abiotic environment (including oceanographic characterization, climate, and benthic habitat) with the living marine resource inhabitants and the parameters that drive an ecosystem's dynamic (e.g., food webs and trophic flow).
- Monitoring and analyses of commercial and recreational fisheries and the impact of ecosystem-based fisheries policies (e.g., developed by the Western Pacific Fisheries Management Council).

## **Fisheries Oceanography: Methods Aimed to Reduce Sea Turtle-Longline Interactions: Tests of Modified Baits and Fishing Gear**

P.I.: Thomas A. Schroeder [Samuel G. Pooley, John H. Wang, Yonat Swimmer]

We will continue to work with the various contracted scientists, managers, and fisheries industry representatives to continue to test modified fishing gear in commercial fisheries and conduct the required data analysis. We secured funding from federal sources that will enable us to continue our field trials. We were especially pleased to generate an Access Database that will be useful for not only the contractors we work with in the field, but also other groups interested in conducting similar research. We are refining this in order to post it on the NOAA bycatch website.

## **Fisheries Oceanography: Protected Species Investigation: Marine Turtle Research Program**

P.I.: Thomas A. Schroeder [Samuel G. Pooley, Stacy A. Kubis, George Balazs]

- 1) Continue to place major emphasis on studying the pelagic ecology and movements of sea turtles to develop management strategies to reduce fisheries bycatch. We plan to continue research with colleagues in Japan, Taiwan, and New Caledonia in FY2009. Southern stock loggerhead hatchlings from nesting beaches in New Caledonia were raised at the Noumea Aquarium in FY2007 and 2008 and will be satellite tagged and released in FY2009.

Attachment of satellite transmitters, tracking, data management, and mapping expertise will be provided by NMFS and JIMAR in a joint effort with the aquarium.

- 2) JIMAR Marine Turtle Research Associate (Irene Nurzia-Humburg) will be involved with data analysis, and the planning and preparation of annual nesting beach field work at French Frigate Shoals in the Northwestern Hawaiian Islands.
- 3) Captive care and rehabilitation will also continue as an important part of the stranding and salvaging research program. JIMAR biological technicians are responsible for the care of captive rehabilitated animals and are instrumental in the administration of the stranding and salvage research program.
- 4) Necropsy of dead turtles, biological sample collection, and management of biological samples are major responsibilities of MTRP JIMAR Biological Technicians and will continue to be an important part of their routine tasks.
- 5) MTRP JIMAR staff will conduct Longline Observer Training sessions as requested by NOAA's Pacific Islands Regional Office. Training sessions include a 30 minute classroom training session on marine turtle biology and hands-on training in measurements, tagging, and biological sample collection. Approximately two training sessions will be conducted in FY2009.
- 6) MTRP JIMAR staff will participate in field captures of marine turtles on Oahu and periodically on outer islands on an as needed basis. Participation in this research includes hand-capturing turtles, performing health assessments, measuring, tagging, collecting biological samples, and releasing the turtles back into the wild.

#### **Fisheries Oceanography: Protected Species: Cetacean Research Program**

P.I.: Thomas A. Schroeder [Samuel G. Pooley and George Antonelis]

In 2009 the CRP will continue to monitor and assess population, characterize habitat use, and evaluate behavior relative to anthropogenic noise. Specific goals are as follows.

- Conduct small boat surveys for cetaceans in the waters off Oahu
- Conduct a large ship survey for cetaceans off Kauai and the Big Island of Hawaii.
- Continue involvement in the spinner dolphin photo identification project

#### **Fisheries Oceanography: Protected Species: Hawaiian Monk Seal Research Program**

P.I.: Thomas A. Schroeder [Samuel G. Pooley and George Antonelis]

The HMSRP plans to continue its core research and monitoring program but also expand its efforts on at least two fronts. The first is conducting two pilot studies to increase juvenile survival in the Northwestern Hawaiian Islands. These include a trial to relieve the parasite burdens of young seals at Laysan Island to test if it improves condition or survival, and the relocation of recently weaned seals from French Frigate Shoals, an area of extremely low

survival, to a projected safer haven at Nihoa Island. We will also work to increase our ability to estimate the MHI population of seals and better understand their foraging ecology with Crittercams and telemetry tags.

### **Fisheries Oceanography: Synthesis of Historical Data and Research Results on Sea Turtle Bycatch Reduction in Longline Fishing**

P.I.: Thomas A. Schroeder [Samuel G. Pooley, Christofer Boggs, Yonat Swimmer]

In the next fiscal year we plan to continue to work with satellite data on sea turtle movements and survivorship in an effort to determine the impact of sea turtle bycatch in longline fisheries, as well as to identify the means to reduce the interactions with fishery operations. This work has recently been expanded into the Mediterranean with Spanish colleagues. Lianne McNaughton will work with colleagues in Brazil, Uruguay, and Spain to update data files on turtles' movements, including use of Kalman filter models to identify turtles' most probable track and the associated oceanographic variables with turtle movements. Lianne will also continue to assist with the graphics associated with the telemetry work for inclusion in reports, presentations, and manuscripts. Lynne Nakamura will continue to provide administrative and logistical support for our numerous projects associated with sea turtle bycatch data from longline fisheries.

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

P.I.: Thomas A. Schroeder [Samuel G. Pooley, Michael K. Musyl, Christofer Boggs]

Project personnel plan to publish one of several manuscripts in peer-reviewed literature detailing methodology, results, and implications for bycatch reduction using the new technique. Furthermore, as other related projects mature, it is anticipated that data from this project will be incorporated into several ongoing studies investigating vertical niche partitioning and habitat preferences by JIMAR and PIFSC investigators. Other remaining funds will be used to develop collaborative research projects and partnerships with industry.

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

P.I.: Thomas A. Schroeder [Samuel G. Pooley and Minling Pan]

In FY 2009 we plan to continue the ongoing economic data collection programs in both the Hawaii-based longline and American Samoa longline fisheries. We will also explore the potential for economic data collection for small boat fleets in American Samoa, Guam, and CNMI. In the coming year, we will prepare a draft administrative report summarizing the data collected from the 2005 Hawaii Longline Cost-Earnings Study. A more detailed analysis of the data collected in the Hawaii small boat cost-earnings study will explore the economic contribution of the fishery and comment on behavioral findings that have implications for future management of the fishery. This analysis, as well as the ahi poke consumer preference study, will also be published as administrative reports. Finally, we will attempt to develop quantitative

models and methods to estimate the economic effects of reduced shoreline access for recreational fishers.

### **Marine Resource Dynamics & Assessment Program (MARDAP): Research Support**

P.I.: Thomas A. Schroeder [Samuel G. Pooley and Susan Kamei]

The maintenance assistant will continue to provide principal investigators and staff with facilities support including basic carpentry, plumbing, and general upkeep of facilities. The administrative support staffer will continue to perform a wide array of duties in support of research staff including travel coordination and administration, property administration, procurement, personnel tracking and security in-processing, and general correspondence and office administration.

### **Marine Resource Dynamics & Assessment Program (MARDAP): Research Support – Fisheries Data**

Continue fishery monitoring support at the same high level. Modify or expand duties as needed.

### **Marine Resource Dynamics & Assessment Program (MARDAP): Research Support SIS**

P.I.: Thomas A. Schroeder [Samuel G. Pooley, Susan Kamei, Jerry Wetherall]

The Webmaster will complete the redesign of the Web site to provide more direct access to topic-oriented content on current scientific issues of interest to the public and collaborating scientists. She will work with the Web Team to improve development of Web content. Particular attention will be given to improving public access to summary fishery statistics and other information products. The Webmaster will complete development of the Web-based manuscript processing system. She will continue to review and revise Web practices to ensure conformance with emerging guidelines.

The Scientific Editor will provide comprehensive professional editing services to program staff. She will implement the online manuscript submission and clearance system and provide regular reports on manuscript status to research staff and program managers. She will continue to work with other publications staff to improve the quality and technical production of in-house publications, both print and Web-based.

The Scientific Information Specialist, a new position, will provide technical support to the PIFSC Scientific Information Services group on various aspects of Data Services. He will recruit, train and oversee student workers who review, enter, and verify confidential commercial fishery statistics for input to an Oracle database. He will help in design and testing of improved data entry and editing software tools. He will also provide technical writing and editing support for SIS data products.

## **Marine Resource Dynamics & Assessment Program (MARDAP): Sociocultural Profile of Pacific Islands Region Fishing Ports**

P.I.: Thomas A. Schroeder [Samuel G. Pooley and Stewart Allen]

We plan to develop 3-4 case studies of fisheries institutions in the western Pacific.

The fishing community profiles being developed for the Pacific Islands Region have identified a number of key community-based institutions that appear to be critical to the resiliency of these fishing communities. However, these institutions have not been systematically assessed and evaluated using a common framework. Doing so would provide benefits to the institutions studied, which would then have a new perspective with which to guide their development in the context of other community-based fisheries and marine resource institutions in the Pacific Islands. An additional benefit would be to others who wish to establish new such institutions, in the Pacific and elsewhere.

## **Marine Resource Dynamics & Assessment Program (MARDAP): Stock Assessment Research Program**

P.I.: Thomas A. Schroeder [Samuel G. Pooley and Gerard DiNardo]

In FY2009, we plan to (1) continue the spiny and slipper lobster tagging experiments in the NWHI; (2) conduct the NWHI lobster resource survey in June 2009; (3) plan and participate in three ISC Billfish Working Group workshops (The first is scheduled for November 2008 in Hawaii, the second for January 2009 in Kaohsiung, Taiwan and the third for April 2009 [the venue has yet to be determined]); and (4) advance stock assessment methodologies for pelagic species in the North Pacific ocean and insular species in the Pacific Islands Region.

## **Marine Resource Dynamics & Assessment Program (MARDAP): Western Pacific Stock Assessment Review Process**

P.I.: Thomas A. Schroeder [Samuel G. Pooley and Gerard DiNardo]

In FY2009, we will (1) determine additional staffing needs for the WPSAR process; (2) develop a schedule (long-term) for WPSAR Workshops; and (3) convene the Hawaiian Archipelago Bottomfish Stock Assessment review in 2009.

## **Marine Turtle Conservation and Management Initiative**

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

- *Solomon Islands Sea Turtle-Fisheries Interaction Outreach Education Project*  
Project will continue to monitor the situation with the government and fisheries in the Solomon Islands and look into opportunities to implement the project when feasible.
- *New Caledonia Sea Turtle-Fisheries Interaction Outreach Education Project*

Project completion was delayed because of difficulties in obtaining hoop nets and turtle dehookers to distribute to fishermen. However, those difficulties have been overcome and invoices are now being processed for the project and are expected to be cleared in July 2008.

- *Loggerhead Turtle Conservation-Education and Outreach Program*

The Extension Agent will continue education-outreach activities with a focus on the primary loggerhead nesting beach in Bourail, New Caledonia to provide information to the public seeking to observe turtles on the nesting beach. Outreach efforts will also continue at the Aquarium de Nouméa, unvisited villages, and village sponsored fairs.

### **Pacific Islands Regional Observer Program**

P.I.: Thomas A. Schroeder [Kevin Busscher]

From July 2008 through June 2009, we plan to complete a minimum of 450 observed trips through the final data editing stage. These 450 observed trips include the Deep Set Hawaii Longline Fishery, the Shallow Set Hawaii Longline Fishery, and the American Samoa Longline Fishery. With our present staff fully trained we expect to meet these goals.

### **Pelagic Fisheries Research Program (PFRP): Program Management**

P.I.: John R. Sibert

1. Conduct a request for proposals and fund new projects consistent with the priorities identified in report of the 2005 research priorities workshop, "Pacific Ocean Connections: Priorities for pelagic fisheries research in the Twenty-first Century"
2. Facilitate international collaboration in research on pelagic fisheries. The PFRP will initiate a major tuna tagging project in Hawaii, *Hawaii Tuna Tagging Project II*. The goals of this project are to: update estimates of fishing mortality (F), 'natural' mortality (M) and movement parameters for skipjack, yellowfin and bigeye tuna in Hawaiian waters; investigate connectivity of "Hawaiian" skipjack, yellowfin and bigeye to the broader WCPO; and document the FAD-associated behavior of skipjack tuna. These research goals are congruent with the research and management goals of the WCPFC and WESPAC, and the HTTP II will be designed and implemented as a compatible sub-regional component of the broader-scale Pacific Tuna Tagging Programme (PTTP) currently being initiated by the Secretariat of the Pacific Community on behalf of the WCPFC.

### **PFRP: Assessment of the Impacts of Mesoscale Oceanographic Features on the Forage Base for Oceanic Predators**

P.I.: Jeffrey C. Drazen [Reka Domokos]

This project concludes fiscally in Sept 2008. However we will continue to publish our work in peer reviewed scientific journals.

## **PFRP: The Associative Dynamics of Tropical Tuna to a Large-scale Anchored FAD Array**

P.I.: Kim N. Holland [David G. Itano]

Project funding ended in FY 2008, however, we will continue to analyze sonic data to examine aspects of time-residence, inter-FAD movement, and vertical behavior of tropical tuna in close association with a large number of anchored FADs. The sonic data will be combined with results from archival tagging data for further publication and presentation at relevant meetings and conferences.

## **PFRP: Climate and Fishing Impacts on the Spatial Population Dynamics of Tunas**

P.I.: John R. Sibert [Patrick Lehodey, Olivier Maury]

Due to the delay in the production of physical-biogeochemical runs, achievement of the project will likely occur in 2010 instead of mid-2009. For the FY 2009 (July 2008-July 2009) planned activities are listed below.

1. Several physical-biogeochemical reanalyses still need to be delivered to CLS and IRD-Sète to produce the ensemble simulation with SEAPODYM and APECOSM. RM proposed to update the reanalysis using ESSIC model and to provide one more forcing data set by running offline the biogeochemical model PISCES with the physical reanalysis SODA025. For this latter task, a budget of USD 54,000 would be allocated to ESSIC (i.e., equivalent to the initial budget proposed for ESSIC, combining the six-month postdoc and four months of engineer).
2. The first version of the fishing database will be published and accessible on the web for project collaborators.
3. A computer engineer will be recruited in IRD to assist in the APECOSM model development.
4. The parameterization of SEAPODYM using optimization will be achieved for yellowfin tuna in the Pacific Ocean and tested together with skipjack and bigeye tuna at global scale using biogeophysical reanalyses provided.
5. The parameterization of APECOSM will be achieved using optimization for skipjack tuna in the Indian Ocean and tested at global scale.
6. PIs and collaborators will attend a PI meeting in Hawaii in November 2008 and/or a tuna conference in Lake Arrowhead in May 2009, the GLOBEC symposium in June 2009 (Victoria BC, Canada), and will organize a project meeting in spring 2009 in Toulouse.

## **PFRP: Comparing Sea Turtle Distributions and Fisheries Interactions in the Atlantic and Pacific**

P.I.: John R. Sibert [Selina Heppell and Molly Lutcavage]

This is the final year of this PFRP project. However, we hope to further develop these concepts during 2008 and prepare results for publication in a peer reviewed journal. At that stage, the ecological properties of predicted areas of hatchling habitat (i.e., temperature, primary

production, and bathymetry) will be examined and the estimates of areal extent of hatchling habitat will be revised to take into account potential mortality due to unfavorable conditions. We are also examining prospects for collaboration on Atlantic model runs with Dr. Raghu Murtugudde through the development of a new proposal.

**PFRP: Development of Business Card Tags: Inter-Individual Data Transfer**

P.I.: John R. Sibert [Laurent Dagorn and Kim N. Holland]

The plans for the third year of the project are to continue testing these new tags. The first objective is to try to recover the three other BCTs deployed on Galapagos and also compare data collected by the VR2 and BCT fixed on the bottom.

Because there was no change requested for Vemco's design, the last ten BCTs should be received by the end of summer 2008. The deployment strategy will then depend on the results from the analysis of the first in situ tests. Two possibilities are envisaged so far—deploying the last ten tags on Galapagos sharks, increasing our sample size of this first test, or deploying the tags on large tunas caught around Oahu FADs.

**PFRP: 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.: John R. Sibert [Jeffrey J. Polovina and Michael P. Seki]

Melanie Abecassis will work with Dr. Patrick Lehodey, CLS, to build a Sepodym spatial, multi-species pelagic ecosystem model for swordfish, loggerhead sea turtles, and pelagic longline fisheries. This model will allow us to examine impacts of various fisheries management strategies on loggerhead sea turtle bycatch in the longline fisheries targeting swordfish.

**PFRP: Distribution and Use of Seafood in the Context of the Community: A Case Study of the Main Hawaiian Islands**

P.I.: John R. Sibert [Edward W. Glazier and Stewart Allen]

Data analyses and a draft project report will be completed prior to the new fiscal year. The final report will be completed early in the new fiscal year. The report will focus on description and analysis of geographic, economic, social, and sociocultural factors associated with the distribution of seafood on Oahu, and on implications for fishery management efforts across the region.

**PFRP: Economic Fieldwork on Pelagic Fisheries in Hawaii**

P.I.: John R. Sibert [Minling Pan]

The remaining funds will be used to complete the two on-going studies. Also, a study on the impact of the fuel price and fish price/demand on the Hawaii tuna industry will be initiated.

**PFRP: Examining Latitudinal Variation in Food Webs Leading to Top Predators in the Pacific Ocean**

P.I.: John R. Sibert [Jock Young, Robert Olson, Valerie Allain, Jeffrey Dambacher]

We plan to complete the study with a comparison of the qualitative model outputs from the three regions with a regression tree analysis of the combined feeding studies data sets. We will meet in Hawaii in 2008 at the PFRP conference to plan a manuscript.

**PFRP: Fishery Dynamics in the Samoan Archipelago**

P.I.: John R. Sibert [Keith A. Bigelow, Adam Langley, John Hampton]

Plans for the last fiscal year of the project include the following. (1) Address effects of local depletion in American Samoa with various statistical models. (2) Continue analysis of longline gear depth with data collected within Fisheries Disaster Relief Project (with the ~4.3K of remaining funds). (3) Publish one paper on the spatial and temporal dynamics in the American Samoa longline fishery or incorporating south Pacific albacore targeted fisheries into a regional assessment.

**PFRP: A General Bayesian Integrated Population Dynamics Model for Protected Species**

P.I.: John R. Sibert [Mark Maunder]

This project is complete. However, further unfunded work will be carried out to update the data used in the two models and to submit two manuscripts to primary journals.

**PFRP: Incidental Catch of Non-target Fish Species and Sea Turtles: Comparing Hawaii's Pelagic Longline Fishery Against Others**

P.I.: John R. Sibert [John Kaneko and Paul Bartram]

The trip to Kaohsiung Taiwan is being planned for October 2008 coordinating with the bilingual tuna industry specialist and contacts in Taiwan. The longline fishing gear and operational profiles for the Japanese and Taiwanese ULT frozen sashimi tuna longliners will then be summarized and included in the final project report. The manuscript will be finalized and submitted for publication in an appropriate peer reviewed journal. The article will address the use of bycatch to catch ratios (for sea turtles) to differentiate Hawaii longline fishery products based on bycatch impacts.

### **PFRP: Instrumented Buoys as Autonomous Observatories of Pelagic Ecosystems**

P.I.: Kim N. Holland [Laurent Dagorn]

Budget shortfalls associated with the efforts of our collaborators at Scripps Institute of Oceanography resulted in the prototype device not being equipped with a robust housing suitable for field deployment in Hawaii. This housing will be constructed in Hawaii with remaining project funds. Remaining funds will also be used to underwrite the construction of a housing and vessel costs associated with deploying and testing the device.

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

P.I.: John R. Sibert

Continue work to implement an optimized SEAPODYM model for yellowfin tuna (*T. albacares*) across the Pacific basin. Use the variable spatial resolution capabilities of SEAPODYM to implement a model at 1/3 degree spatial resolution around the main Hawaiian islands for use in the Hawaii-Pacific Ocean Observing and Information System project at SOEST.

Begin a collaboration with scientists from the Secretariat of the Pacific Community on joint analysis of tagging data from Hawaii and the equatorial fisheries in the Pacific.

Develop statistical models of data from VR2 arrays to describe residency and exchange rates of tunas in networks of anchored FADs.

### **PFRP: Integrated Modeling for Hawaiian Albatross Populations**

P.I.: John R. Sibert [Jean-Dominique Lebreton, Dan Goodman]

Write up the Bayesian survival analysis for publication.

### **PFRP: Intra-guild Predation and Cannibalism in Pelagic Predators: Implications for the Dynamics, Assessment and Management of Pacific Tuna Populations**

P.I.: John R. Sibert [Tim Essington, Mark Maunder, Robert Olson]

Our main objective for the next year is to utilize the completed food habits database to provide a more detailed description of predation on skipjack and yellowfin tunas and estimate the sizes of tunas consumed by each predator species. We will use this information to conduct modeling exercises to determine whether it's plausible for apex predators to have an impact on the reproductive output of these tunas. Upon completion of these tasks, we will tackle the subsequent objective of modeling the responses of skipjack and yellowfin tuna populations to predation and predator depletions and exploring the implications of these interactions for fisheries management strategies. Manuscripts for peer-reviewed publication will follow shortly after the completion of each objective.

**PFRP: Investigation of Shark Bycatch in the Hawaii-based Longline Fishery, and an Extension of Analyses of Catch Data from Widely Separated Areas in the Pacific Ocean**

P.I.: John R. Sibert [William A. Walsh, Keith A. Bigelow]

The funding cycle for this project ends in September 2008. In FY 2009 we will submit two manuscripts about sharks catch data to a peer-reviewed journal, and then proceed to the catch rate comparisons for mid-sized predatory fishes.

**PFRP: Long-Term Deployment of Satellite Tags on Swordfish using the California Harpoon Fleet**

P.I.: John R. Sibert [Heidi Dewar and Jeffrey J. Polovina]

In 2008 we plan to complete satellite tag deployments. Eight tags will be deployed in the Southern California Bight for periods of six months with the help of two experienced harpooners. Additional efforts will focus on deploying both pop-up satellite tags and archival tags north of Point Conception, California where no data for swordfish are current available. Information on behaviors from this region will advance our understanding of how vertical habitat use is influenced by oceanography. This area is also known for its swordfish and leatherback sea turtle interactions and additional information on habitat use may help develop more adaptive management strategies for swordfish fisheries. In addition to the tagging efforts, data synthesis will begin for all tags deployed in this study. We will use the temperature and depth data recorded by the tags to describe the basic habitat of swordfish and examine shifts with oceanography. The same data will be used to characterize the water column in an effort to better define movement patterns between tag and release. In addition, one of Jeff Polovina's graduate students will use the data for her PhD work in a Seapodym pelagic ecosystem model focusing on swordfish, the longline fishery, and loggerhead sea turtles. Separate but complementary efforts will continue to document whether the Southern California Bight is in fact a region of mixing of swordfish of western and southern origin. Sample collection and documentation of external differences will continue throughout the season with the help of the two fleets. We will also begin analysis of otoliths for trace elements and tissues for isotope ratios in an effort to confirm reports and find a chemical signature to identify each group. This is the first step towards quantifying temporal and spatial patterns in mixing.

**PFRP: Modeling the Eco-physiology of Pelagic Fishes and Sharks with Archival and Pop-up Satellite Archival Tags (PSATs)**

P.I.: John R. Sibert [Michael K. Musyl, Christina Larsen, Hans Malte, Richard C. Brill]

Complete baseline research papers (outlined below) on horizontal and vertical movements of sharks, tunas, and billfish and performance of PSATs. Publicly post the PSAT Performance Database on the PFRP website (after paper detailing this work is submitted). Trials using sandbar sharks at VIMS are completed to map the EMF produced by PSAT and other electronic tags to document sharks' ability to perceive this EMF. It is anticipated that results from this study will provide insight into why some PSAT tags fail to report. Continue to explore and

develop new analytical methods to use on PSAT data, particularly oceanographic information comparing vertical depth variability.

Tentative PSAT papers currently coordinated by Musyl and slated to be drafted in 2007/08 are as follows.

1) Laurs, R. M., et al. Identification of large pelagic shark habitats in the central North Pacific using PSATs, satellite remote sensing, and SODA assimilation ocean models. Paper on oceanic white-tip, silky shark, blue shark and shortfin mako shark.

2) Musyl, M. K., et al. Post-release survivability and movements of blue shark (*Prionace glauca*), oceanic white-tip (*Carcharhinus longimanus*) and silky shark (*Carcharhinus falciformes*) released from longline fishing gear in the Central Pacific Ocean as Identified by Pop-up Satellite Archival Tags (PSATs).

3) Collaboration with Dave Sims examining PSAT data on white-tips, mako and silkys using advanced modeling routines such as Levy-flight.

4) Musyl, M. K., et al. Long Term Survivability of Pacific Blue Marlin (*Makaira mazara*) released from sportsfishing boats in Hawaii Determined from Pop-up Satellite Archival Tags (PSATs).

5) Bigelow, K., et al. Movements and migration corridors of Pacific Blue Marlin (*Makaira mazara*) in relation to oceanographic conditions Determined from Pop-up Satellite Archival Tags (PSATs).

### **PFRP: Nursery Origin of Yellowfin Tuna (*Thunnus albacares*) in the Hawaiian Islands**

P.I.: John R. Sibert [Jay R. Rooker and David Itano]

Efforts over the next year will be devoted toward developing our baseline data set for yellowfin tuna from all nursery areas using both stable isotopes and trace elements over a 2-year period (2007/2008 and 2008/2009). In addition, we will initiate work on a similar baseline for bigeye tuna nursery areas. To date, all samples of yellowfin tuna and bigeye tuna have been obtained for the first year baseline data, and the remaining otolith analyses (stable isotope and trace element) are currently being performed. In addition to analyzing year 1 samples, year 2 will involve additional collections of age-0 yellowfin tuna and age-0 bigeye tuna from similar nursery areas and subsequent otolith analyses. A significant effort will also involve collections of age-1 and age-2 yellowfin tuna and bigeye tuna from the Hawaii-based fisheries in the next year and isolate core material from these otoliths. The origin of unknown tuna (age-1 and age-2 yellowfin tuna and bigeye tuna) will be determined with mix-stock analyses that include our age-0 signatures of each species as baseline data.

**PFRP: Oceanographic Characterization of the American Samoa Longline Fishing Grounds for Albacore, *Thunnus Alalunga***

P.I.: John R. Sibert [Michael P. Seki and Jeffrey J. Polovina]

Final report to be completed.

**PFRP: Performance of Longline Catchability Models in Assessments of Pacific Highly Migratory Species**

P.I.: John R. Sibert [Keith A. Bigelow, Mark Maunder, Adam Langley, Pascal Bach]

We will concentrate on three aspects during the next fiscal year: 1) continuation of a multispecies approach in a statistical framework to predict longline gear depth and standardized CPUE; 2) conducting fish population simulations and applying various CPUE standardization techniques; and 3) investigating the parameterization of the deep-scattering layer for bigeye tuna as an alternative to ambient temperature and oxygen in habitat-based approaches.

**PFRP: Rescue, Compilation, and Statistical Characterization of Historic Longline Data, Pacific Oceanic Fisheries Investigation 1951-73.**

P.I.: John R. Sibert [Bert Kikkawa]

With the retirement of Robert Skillman, the Statistical Characterization of Historic Longline Data section of the project will be addressed with a temporary JIMAR hire. Following some informal discussions with Arthur Betts, former JIMAR database programmer at PIFSC, and Dodie Lau concluded that Arthur's past experience with the ESDIM sponsored PIFSC historical data rescue project would make him a suitable candidate to complete the final section of the project. Remaining grant funds will be used as payment for his work.

**PFRP: Scaling Up: Linking FAD-associated Local Behavior of Tuna to Regional Scale Movements and Distribution**

P.I.: Kim N. Holland [Laurent Dagorn]

The next year's work will see continuation of extensive field work to release additional double tagged fish and maintain the network of receivers mounted on coastal FADs and other locations. These efforts will be assisted by piggybacking electronic tagging efforts with a new tag-and-release (spaghetti tag) project that will incorporate the use of a commercial pole-and-line vessel.

**PFRP: Sociological Baseline of Hawaii Longline Industry**

P.I.: John R. Sibert [Stewart Allen]

Currently we are working on the final project report, which will provide an overview of all key study findings. That report, which will be published as a NOAA Fisheries Technical

Memorandum, is 80% complete. The report will incorporate some aspects of the recently completed study of bycatch reduction techniques from the fishermen's perspectives that serve as an update to the findings of sociological baseline study as well as sociocultural aspects of the distribution chain. A draft ready for peer review will be completed this fiscal year, with the publication also expected during the fiscal year.

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

P.I.: John R. Sibert [Minling Pan and Shichao Li]

The project has been completed and the associate P.I., Dr. Shichao Li, has left the position. The final effort of the project will be revisions of the reports/manuscripts, and distribution of the papers for peer review and publication.

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

P.I.: John R. Sibert [Yonat Swimmer, Christofer Boggs, Richard Brill]

We have no more PFRP funds to continue work in 2008-2009 for this project. However, we secured some federal funding in collaboration with other in-kind support to continue this work. Specifically, we plan to tag loggerheads post-release of fisheries interactions, working with Spanish vessels in the Southern Mediterranean Sea. These data will be correlated with biochemical correlates to determine stress levels associated with these interactions and in comparison with other types of fisheries interactions (e.g., gill nets vs. longline stress levels).

**PFRP: Synchronous Assessment of Bigeye Tuna (*Thunnus obesus*) and Micronekton Biomass, Distribution, and Movement Patterns at Cross Seamount, and the Effects of the Seamount Environment**

P.I.: John R. Sibert [Réka Domokos, Kim N. Holland, Jeffrey J. Polovina]

Analysis of data obtained during the FY07 and FY08 cruises will be continued during FY09, and the results prepared for publication in a peer review journal. The remaining funds for the project will be spent on the salary of Eric Cruz, a research associate hired to help with data crunching and some analyses, and on some of his equipment (i.e., a computer).

**PFRP: Trophic Ecology and Structure-Associated Aggregation Behavior in Bigeye and Yellowfin Tuna in Hawaiian Waters**

P.I.: Kim N. Holland [Laurent Dagorn and David G. Itano]

We will acquire additional telemetry equipment to maintain existing levels of coverage of FAD-associated behavior, especially that of bigeye tuna that are currently underrepresented in

telemetry samples. We will also conduct field trials of an autonomous echo sounder, which has been constructed and completed initial testing, in Hawaiian waters.

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

P.I: John R. Sibert [Valerie Allain, Robert Olson, Felipe Galván-Magaña, Brian Popp]

The project was completed on December 31, 2007. A number of submitted papers will require revision according to reviewer's comments before publication. Another five papers are currently being prepared. We acquired a large dataset during this project and though the project terminated in Dec. 2007, further data analysis will be conducted in 2008 to extract and publish more information.

### **Protected Resources Environmental Compliance Initiative**

P.I.: Thomas A. Schroeder [Chris Yates]

During the next fiscal year activities under the PRECI project will continue to develop and implement strategies to further recover marine species protected under the Endangered Species Act (ESA) and/or the Marine Mammal Protection Act (MMPA). Staff will be involved in several high profile Section 7 consultations under the ESA. We plan to hire an Assistant Marine Mammal Response Coordinator who will lead marine mammal stranding and monk seal response efforts. We will further develop and deliver outreach and education campaigns for the public concerning protected resources issues, advancing the conservation of sea turtles, dolphins, whales, and monk seals in Hawaii.

### **Satellite Remote Sensing Research Program**

P.I.: Thomas A. Schroeder [Samuel G. Pooley and Jeffrey J. Polovina]

Continue improving TurtleWatch based on longline observer and logbook data. Evaluate a new algorithm to estimate phytoplankton functional groups from SeaWiFS data.

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

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

In addition to maintaining the existing data services, this project has three key priorities for the coming year:

#### *(1) High Resolution Satellite Data for Coastal Applications*

As marine scientists increasingly focus on coastal issues, data providers are called upon to produce and distribute data sets capable of resolving the faster/smaller scales typical of the

near-shore marine environment. CoastWatch seeks to meet these needs and will develop a number of high-resolution data products, as well as the means to distribute these effectively.

(2) *Test experimental, “gap-free”, high-resolution, sea surface temperature products*

This is the second phase of a collaborative attempt to generate high-quality sea surface temperature data for coastal applications. Partners include the NOAA National Oceanographic Data Center, NASA’s Jet Propulsion Laboratory and Remote Sensing Systems Inc., Santa Rosa, CA. CoastWatch will soon begin serving the various data sets developed during FY08 to allow for user feedback.

(3) *Continue to publish results of integration efforts*

A number of collaborative projects with fisheries biologists from NOAA and various academic institutions were initiated in FY2007, with two manuscripts published, four in review, and six in preparation at the end of FY08. The work covers a variety of protected and managed species including green sea turtles, Laysan albatross, swordfish, salmon sharks, and a number of cetaceans.

### **Sustainable Fisheries Initiative (SFI)**

P.I.: Thomas A. Schroeder [Alvin Katekaru]

1. Implement fisheries conservation and management processes as part of a national regulatory streamlining initiative under the Magnuson-Stevens Act and National Environmental Policy Act. Conservation and management initiatives include proposals for: Hawaii shallow-set longline fishery amendment; Guam and Northern Marianas pelagic fishery modifications to tuna purse seine and longline fishing; American Samoa pelagic fishery modifications to purse seine and longline fishing; modifications to the Northwestern Hawaiian Islands commercial fishery; main Hawaiian Islands Bottomfish fishery adjustments; precious coral management of gold and black precious corals; deep water shrimp harvest management measures; deep water squid fishery management measures; and implementation of community development opportunities.
2. Continue to develop and evaluate conservation and management measures and disseminate the results of research information to constituents and public informing them on fishery sustainability while preventing overfishing of stocks. Implement an expanded web-based permits program that includes the main Hawaiian Islands recreational bottomfish fishery and pelagics (non-longline) commercial small boats. Other permits that may come online in this timeframe include permits for pelagic squid.
3. Continue to compile, evaluate, and disseminate data collected from logbooks and other data sources (e.g., State or territorial creel surveys). This program will augment data for fishery monitoring and evaluation, in particular to facilitate the development of annual catch limits to prevent overfishing. In the 2008-09 timeframe, additional logbooks will be submitted from bottomfish fishermen in the MHI.

4. Develop and test a pilot web-based interactive course work to facilitate fishermen's understanding of NOAA's goal in ecosystem-based resource management.
5. Implement an enhanced Sustainable Fisheries web site to provide outreach to the public.

### **Western Pacific Fisheries Information Network Project**

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

In FY 2009, in addition to its wide range of support and maintenance tasks, the main objectives are as follows.

1. Continue to provide vital technical and data request support to all participating agencies and fisheries;
2. Improve the data reconciliation and integration system for the State of Hawaii Division of Aquatic Resources' (HDAR) fisherman and dealer data;
3. Work closely with HDAR to increase Hawaii fish dealer data collection coverage;
4. Design and implement a new fish dealer data processing application, which will be used by fish dealers to process fish purchasing and enable them to submit electronic data to HDAR to meet data submission requirements;
5. Continue to improve the existing Main Hawaiian Islands deep 7 bottomfish (MHI BF) data summary reporting applications;
6. Expand the American Samoa Tutuila-based creel systems to incorporate Manu'a data collection (carried over from last year);
7. Develop applications and a database to store fishery-independent (ecosystem monitoring) data for American Samoa, Guam and possibly CNMI (carried over from last year); and
8. Create applications for the Coral Reef Ecosystem Plan Team (CREPT) Fishery Management Plan (FMP) to produce annual reports in Word document format for all islands (carried over from last year).

## **Coastal Research**

### **Coral Reef Management Initiative**

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

Guam staff will continue with standard duties, in addition to a substantial amount of work involved with the Guam Military Buildup (site assessments, impact analysis, EIS review) and Guam Year of the Reef. Staff will also continue to support the local agencies with the fisheries management LAS, coral reef monitoring, coral reef response team, and marine mammal issues. The fishery extension agent plans to continue strategic planning activities, explore ideas to develop an extension program, and research how communication takes place between the recreational shoreline fishing community and the fisheries management community and work to improve it. American Samoa plans to hold additional PLA workshops, various outreach events and to finalize the revised fishery management LAS. Other staff plan to continue and build on last year's accomplishments.

## **National Environmental Policy Act (NEPA) Initiative**

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

The NEPA analysis to support promulgation of the initial implementing regulations will be finalized and made available to interested parties and members of the public. The final EA will be utilized as a support document and initial preparation steps for preparation of the Programmatic Analysis will be undertaken.

Research and preparation for and development of appropriate NEPA analyses required to implement decisions of the WCPF Commission will proceed as required.

## **Ocean Remote Sensing/Ocean Watch**

P.I.: Thomas A. Schroeder [Samuel G. Pooley and Jeffrey J. Polovina]

During FY09 we propose to expand the collaboration efforts with regional research agencies and/or consortiums (e.g., PacIOOS) for furthering the mission statement of OWCP. In addition, we plan to assess user input and provide improved satellite remote sensing products to users via the THREDDS/LAS infrastructure.

## **Sustaining Healthy Coastal Ecosystems**

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

Continued coral reef assessment and monitoring efforts are scheduled for FY 2009 on board the NOAA Ships Oscar Elton Sette and Hi`ialakai. There will be CRED research cruises to the MHI, NWHI, Guam, CNMI, and Wake Atoll. Benthic habitat mapping and characterization efforts will be conducted off the R/V 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.

Marine debris plans for FY 2009 include continuation of removal efforts in the NWHI on the NOAA Ship Oscar Elton Sette as well as continued collaboration with potential U.S. Coast Guard deployments in the NWHI. There are also plans for continuation of the ongoing MHI marine debris cleanup that is based on helicopter surveys conducted in 2006-2008.