

JIMAR – PFRP ANNUAL REPORT FOR FY 2005

P.I Name: John Sibert

Project Title: **Pelagic Fisheries Research Program - Management**

Funding Agency: NOAA

NOAA Goal (Check those that apply):

- To protect, restore, and manage the use of coastal and ocean resources through ecosystem-base management
- To understand climate variability and change to enhance society's ability to plan and respond
- To serve society's needs for weather and water information
- To support the nation's commerce with information for safe, efficient, and environmentally sound transportation

1. Purpose of the Project (one paragraph)

Manage the activities of the PFRP, solicit and implement new research proposal, and promote science based management of fisheries for highly migratory fisheries in the western Pacific Ocean.

2. Progress during FY 2005:

- Work closely with the PIFSC to improve budgetary arrangements and coordination of research programming.

Communications with PIFSC have greatly improved. For the first time in its history the PFRP has received notification in advance of the budget for the new appropriation and a detailed briefing on new NOAA contracting and online application procedures. The NEPA requirements may be overly strict.

- Facilitate international collaboration in research on pelagic fisheries.

The PFRP remains active in international tuna research and management. The PFRP Program Manager was a member of the United States Delegation to the third (and final) meeting of the Science Coordinating Group of Preparatory Conference for the Commission for the Conservation and Management of Highly Migratory Fish Stocks in Western and Central Pacific (WCPFC). Several PFRP scientists made presentations to the seventeenth (and final) meeting of the Standing committee on Tuna and Billfish in

Majuro, Republic of Marshall Islands, August 9-18, 2004. The PFRP Program Manager is Chair of the SCTB Methods Working Group and has completed evaluation of stock assessment methods and specific stock assessment results. PFRP Researcher David Itano is Chair of the SCTB Fishing Technology Working Group. The PFRP hosted meetings of three working groups of the new GLOBEC project, CLIOTOP(Climate Impacts on Oceanic Top Predators) in conjunction with annual PFRP Principal Investigators workshop. The first meetings of CLIOTOP working groups 2 (Physiology, behavior and distribution), 4 (Synthesis and modeling) and 5 (Socio-economic aspects and management strategies) in December 1-3 in Honolulu. GLOBEC invited the PFRP Program Manager to serve on the CLIOTOP Steering Committee.

- Education and training

The PFRP actively promotes graduate education in fisheries. The PFRP Program Manager assisted in creating the proposal for a new Coastal and Marine Resources (CMR) graduate degree program. Unfortunately, the University of Hawaii's Graduate Division did not see fit to approve the proposal and asked for revisions. The CMR curriculum coordinator, funded from the PFRP Management budget, suffered serious health problems which interfered with his ability to perform his duties. It is not clear when the CMR program will accept its first students.

The PFRP currently supports one graduate research assistants. Brittany Graham, a PhD candidate in the Oceanography Department, continues to be a productive member of the pelagic food web project, "Trophic structure and tuna movement in the cold tongue-warm pool pelagic ecosystem of the equatorial Pacific". Richard Hall, a Masters candidate in the Geography Department, has completed his tenure with the PFRP.

3. Plans for the next fiscal year (one paragraph):

- Convene a workshop to identify new research priorities 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.

4. List of papers published in refereed journals during FY 2005.

See attached publications list.

5. Other papers, technical reports, meeting presentations, etc.

See attached publications list.

6. Graduates (Names of students graduating with MS or PhD degrees during FY 2005. Provide titles of their thesis or dissertation):

None

7. Awards (List awards given to JIMAR employees or to the project itself during the period): None

8. Publication Count (Total count of publications for the reporting period and previous periods categorized by NOAA lead author and Institute (or subgrantee) lead author and whether it was peer-reviewed or non peer-reviewed (not including presentations):

	JL Lead Author			NOAA Lead Author			Other Lead Author		
	FY03	FY04	FY05	FY03	FY04	FY05	FY03	FY04	FY05
Peer-reviewed									
Non-peer reviewed									

9. Students and Post-docs (Number of students and post-docs that were associated with NOAA funded research. Please indicate if they received any NOAA funding. For institutes that award subcontracts, please include information from your subgrantees):

Brittany Graham (Oceanography graduate assistant) and Richard Hall (Geography graduate assistant). Both received NOAA funding

10. Personnel:

- (i) Number of employees by job title and terminal degree that received more than 50% support from NOAA, including visiting scientists (this information is not required from subgrantees): Program Manager (PhD), Administrative Coordinator (Masters Library Studies),

(ii) Number of employees/students that received 100% of their funding from an OAR laboratory and/or are located within that laboratory. None

(iii) Number of employees/students that were hired by NOAA during the past year:
None

11. Images and Captions (JIMAR will be including images in the annual report. Please send two of your best high-resolution, color images (photo, graphic, schematic) as a JPEG or TIFF with a caption for each image. Hardcopies of images can be dropped off at the JIMAR office if no electronic versions are available.

Budget – see attached budget sheet

FY 2005 PFRP Publications, Manuscripts, Presentations

Published in Refereed Journals

Bowen, B.W., et al., 2004. Natal homing in juvenile loggerhead turtles (*Caretta caretta*). *Molecular Ecology*, 13:3797-3808. doi:10.1111/j.1365-294x.2004.02356x.

Bolker, Benjamin M., and Toshinori Okuyama, 2005. Combining genetic and ecological data to estimate sea turtle origins. *Ecological Applications*, 15(1): 315-325.

Hoyle, Simon D.; and Maunder, Mark N., 2004. A Bayesian integrated population dynamics model to analyze data for protected species. *Animal Biology and Conservation*, 27: 247-266.

Hyde, Lynn, Humphreys Jr., Musyl, West and Vetter, 2005. Shipboard identification of fish eggs and larvae by multiples PCR and description of fertilized eggs of blue marlin, shortbill spearfish and wahoo. 286:269-277 *Marine Ecology Progress Series*

Maunder M.N., 2004. Population Viability Analysis, Based on Combining Integrated, Bayesian, and Hierarchical Analyses. *Acta Oecologica* 26: 85-94.

McCarthy, M.A., Keith, D., Tietjen, J., Burgman, M.A., Maunder M.N., Master, L., Brook, B.W., Mace, G., Possingham, H.P., Medellin, R., Andelman, S., Regan, H., Regan, T., and Ruckelshaus, M., 2004. Comparing predictions of extinction risk using models and subjective judgment. *Acta Oecologica* 26: 67-74.

Manuscripts

Allen, Stewart D. and Amy Gough, 2005. Impacts of the Hawaii Swordfish Closure on Vietnamese-American Longline Fishing Community. Forthcoming in *Human Organization*.

Bigelow, Keith, Michael K. Musyl, Francois Poisson and Pierre Kleiber. 2005. Pelagic Longline Gear Depth and Shoaling: How Deep is Deep? (*submitted to Fisheries Research*).

Burgess, George H., Lawrence R. Beerkircher, Gregor M. Cailliet, John K. Carlson, Enric Cortés, Kenneth J. Goldman, R. Dean Grubbs, John A. Musick, Michael K. Musyl, and Colin A. Simpfendorfer. 2005. The decline of shark populations in the Northwest Atlantic Ocean and Gulf of Mexico: Fact or Fiction? (*submitted to Fisheries Research*)

Cai, J., P.S. Leung, M. Pan and S. Pooley. 2005. Economic linkage impacts of Hawaii's longline fishing regulations?'. *Fisheries Research*, in press.

Graham, B., D. Grubbs, K. Holland, B. Popp. Rapid ontogenic dietary shift in juvenile yellowfin tuna. In prep.

Graham, B., B. Popp, K. Holland, and B. Fry. Tissue turnover rates measured in captive and wild yellowfin tuna, *Thunnus albacares*: implications for using chemical tags in migration studies. In prep.

Howell, Evan A., and Donald R. Kobayashi. El Niño Effects at Palmyra Atoll: Oceanographic Changes and bigeye tuna *Thunnus obesus* catch rate variability. Submitted to *Fisheries Oceanography*

Huang, H. and P.S. Leung. 2005. Modeling protected species as an undesirable output: The case of sea turtle interactions in Hawaii's longline fishery. In prep.

Leung, P.S. 2005. Multiple-criteria decision making (MCDM) applications in fishery management. Invited paper in a special issue on Planning Support Systems for Environmental Management, *International Journal of Environmental Technology and Management*. In press.

Nielsen A., K. Bigelow, M. Musyl, and J. Sibert. 2005. Improving light-based geolocation by including sea surface temperature. Submitted to *Fisheries Oceanography*.

Pradhan, N.C. and P.S. Leung. 2005. A Poisson and negative binomial regression model of sea turtle interactions in Hawaii's longline fishery. *Fisheries Research (In Review)*. [Paper presented at the PFRP PI Meeting in December, 2003].

Pradhan, N.C. and P.S. Leung. 2005. Incorporating sea turtle interactions in a multi-objective programming model for Hawaii longline fishery. *Ecological Modeling (In Review)*.

Southwood, A.L., Higgins, B., Brill, R.W., Vogt, R., and J.Y. Swimmer. Aquatic chemoreception in loggerhead sea turtles: behavioral responses to food and a novel chemical. *Marine Ecology Progress Series*. Submitted.

Swimmer Y, Arauz, R, Higgins B, McNaughton L, McCracken M, Ballesterero J, and R. Brill. Food Color and Marine Turtle Feeding Behavior: Can Blue Bait Reduce Turtle Bycatch in Commercial Fisheries? *Marine Ecology Progress Series*. In press.

Swimmer, Y, McNaughton, L., Moyes C., and R. Brill. Metabolic biochemistry of cardiac muscle in three tuna species (bigeye, *Thunnus obesus*; yellowfin, *T. albacres*; and skipjack, *Katsuwonus pelamis*) with divergent ambient temperature and oxygen tolerances. *Fish Physiology and Biochemistry*. In press

Swimmer, Y. Relationship Between Atmospheric Basking and Disease in Captive Green Turtles (*Chelonia mydas*). *Chelonian Conservation and Biology*. Submitted.

Swimmer, Y., Brill, R., Sales, G., Arauz, R., McCracken, M, Marcovaldi, N, Musyl, M., Ballesterero, J., McNaughton, L. and C. Boggs. Mitigation measures to reduce sea turtle interactions with longline fishing gear: from the lab to the ocean. [Abstr] Oral presentation at the 25th Annual Symposium on Sea Turtle Conservation and Biology 16-22 January 2005, Savannah, Georgia, USA. In press.

Other Publications

Allain G., Lehodey P., Kirby S., 2005. The influence of the environment on horizontal and vertical bigeye tuna movements investigated by analysis of archival tag records and ecosystem model outputs. Working Paper, PFRP project: Mixed-resolution models for investigating individual to population scale spatial dynamics: 9 pp

Allain, V. 2004. Ecopath model of the pelagic ecosystem of the WCPO and related projects. INF-ECO-1. SCTB17 Information Paper. Majuro, Marshall Islands. 9-18 August 2004. 11 pp.

Allain, V. 2004. Diet of yellowfin tuna in different areas of the western and central Pacific Ocean. BIO-1. SCTB17 Working Paper. Majuro, Marshall Islands. 9-18 August 2004. 20 pp.

Allen, Stewart and Amy Gough, 2004. A Sociological baseline of the Hawaii longline fishery. Article in the PFRP Newsletter (9)2, April - June 2004.

Allen, Stewart and Amy Gough, 2004. Sociological Baseline of the Hawaii Longline Fishery: 2004 Update, November 30, 2004.

Brill, Richard W., Keith A. Bigelow, Michael K. Musyl, Kerstin A. Fritsches, Eric J. Warrant. Bigeye Tuna (*Thunnus obesus*) behavior and physiology and their relevance to stock assessments and fishery biology. SCRS/2004/062 Col. Vol. Sci. Pap. ICCAT, 57(2): (2005)

Cai, Junning, Mingling Pan, PingSun Leung, and Samuel Pooley. Linkage of Fisheries Sectors to Hawaii's Economy and Economic Impacts of Longline Fishing Regulations. To be published as PFRP technical report in 2005.

Gunn, J., J. Hampton, K. Evans, N. Clear, T. Patterson, K. Bigelow, A. Langley, B. Leroy, P. Williams, N. Miyabe, J. Sibert, S. Bestley, and K. Hartmann. 2004. Migration and habitat preferences of bigeye tuna, *Thunnus obesus*, on the east coast of Australia. FRDC Report 1999/109, Australia.

Musyl, Michael K., Lianne M. McNaughton, J. Yonat Swimmer and Richard W. Brill. 2004. Convergent Evolution of vertical movement behaviour in swordfish, bigeye tuna, and bigeye thresher sharks. *PFRP Newsletter, October-December 2004, 1-4.*

Olson R., J. Young, V. Allain and F. Galván-Magaña. 2005. OFCCP workshop on the application of stable isotopes in pelagic ecosystems, La Paz, B.C.S., Mexico, 31 May–1 June 2004. GLOBEC Newsletter 11(1): 42-44.

Olson R., J. Young, V. Allain and F. Galván-Magaña. 2005. CLIOTOP Working Group 3 meeting report: La Paz, B.C.S., Mexico, 31 May–1 June 2004. GLOBEC-CLIOTOP Regional Programme, 8 pp.

Olson R., J. Young, V. Allain and F. Galván-Magaña. 2005. GLOBEC-OFCCP workshop on the application of stable isotopes in pelagic ecosystems La Paz, B.C.S., Mexico, 31 May–1 June 2004. GLOBEC-OFCCP Multinational Programme, 8 pp.

Pan, Minling and Timothy Ming. Working Paper, A pilot study on imported frozen tunas treated with tasteless smoke (CO) and its impact to Hawaii fresh tuna market.

Swimmer, Y., Musyl, M., McNaughton, L., Arauz, R., Ballester, J., Nielson, A. and R. Brill. In Press. Sea Turtles and Longline Fishing in the Pacific Ocean. [Abstr]

Conference Presentations

Allain, Gwenhael. The influence of the environment on vertical and horizontal bigeye tuna movements investigated by analysis of archival tag records and ecosystem model outputs. Presentation at the PFRP Principal Investigators Meeting, Honolulu, Hawaii, Nov. 29 – Dec. 1, 2004.

Allain, Valerie, Brittany Graham, Robert Olson, Brian Popp, Felipe Galvan-Magana, and Brian Fry. Trophic Structure and Tuna Movements in the Cold Tongue-Warm Pool Pelagic Ecosystem of the Equatorial Pacific. Presentation at the 55th Annual Tuna Conference Lake Arrowhead, California, May 24-27, 2004.

Allain, V. Regional differences in stable C and N isotopes in predator and prey taxa in the equatorial Pacific: recent results. GLOBEC OFCCP and CLIOTOP Workshop on the Application of Stable Isotopes in Pelagic Ecosystems, La Paz, B.C.S., Mexico, 31 May–1 June 2004.

Allain, V. Diet of yellowfin tuna in different areas of the western and central Pacific Ocean. 17th Meeting of the Standing Committee on Tuna and Billfish. Majuro, Marshall Islands. 9-18 August 2004.

Allain, V., B. Graham, R. Olson, B. Popp, F. Galvan-Magana, and B. Fry. 2004. Diet of the yellowfin tuna in the Pacific Ocean. Presentation at the PFRP Principal Investigators Meeting, Honolulu, Hawaii, Nov. 29 – Dec. 1, 2004.

Allain, V., B. Graham, R. Olson, B. Popp, F. Galvan-Magana, and B. Fry. Stable isotopes as tracers of trophic structure and tuna movement in the equatorial Pacific pelagic ecosystem. Poster. Fourth International Conference on Applications of Stable Isotope Techniques to Ecological Studies. Wellington. April 19-23 2004.

Allain, V., B. Graham, R. Olson, B. Popp, F. Galvan-Magana, and B. Fry. Trophic structure and tuna movement in the warm pool – cold tongue pelagic ecosystem of the equatorial Pacific. GLOBEC OFCCP and CLIOTOP Workshop on the Application of Stable Isotopes in Pelagic Ecosystems, La Paz, B.C.S., Mexico, 31 May–1 June 2004.

Allen, Stewart, and Amy Gough. Sociological Baseline of Hawaii Longline Fishery: 2004 Update. Presentation at the PFRP Principal Investigators Meeting, Honolulu, Hawaii, Nov. 29 – Dec. 1, 2004.

Arnold, Geoff, Richard Brill, Michael Domeier, Molly Lutcavage, Michael Musyl, Yonat Swimmer and Steven Wilson. PSAT Performance Database: Initial Results. Presentation at the PFRP Principal Investigators Meeting, Honolulu, Hawaii, Nov. 29 – Dec. 1, 2004.

Bartram, Paul, and John Kaneko. Comparison of Fish Waste ('True Bycatch') in Pacific Pelagic Longline Fisheries. Presentation at the PFRP Principal Investigators Meeting, Honolulu, Hawaii, Nov. 29 – Dec. 1, 2004.

Bartram, Paul, and John Kaneko. Size-Frequencies and life status of fish catch in American Samoa's alia longline fishery. Presentation at the PFRP Principal Investigators Meeting, Honolulu, Hawaii, Nov. 29 – Dec. 1, 2004.

Bisson, Jeremy. The Diet Dynamics of Laysan and Black-footed albatrosses: an inside view. Presentation at the PFRP Principal Investigators Meeting, Honolulu, Hawaii, Nov. 29 – Dec. 1, 2004.

Dagorn, Laurent, and Kim Holland. An update of the European project FADIO: Fish Aggregating Devices as Instrumented observatories of pelagic ecosystems. Presentation at the PFRP Principal Investigators Meeting, Honolulu, Hawaii, Nov. 29 – Dec. 1, 2004.

Domokos, R., D. R. Hawn, J. J. Polovina, and M. P. Seki. American Samoa albacore tuna habitat and oceanographic characterization of the American Samoa fishing grounds. Presented at Tuna Conference, May 23-26, 2005, Lake Arrowhead, CA.

Glazier, Edward W. Hawaii's Ika-Shibi Fishery: Project Overview and Research Design. Presentation at the PFRP Principal Investigators Meeting, Honolulu, Hawaii, Nov. 29 – Dec. 1, 2004.

Graham, B., B. Fry. Lipid effects on stable isotope analyses. GLOBEC OFCCP and CLIOTOP Workshop on the Application of Stable Isotopes in Pelagic Ecosystems, La Paz, B.C.S., Mexico, 31 May–1 June 2004.

Graham, B., K. Holland, D. Grubbs, B. Popp, and B. Fry. Tuna trophic dynamics in Hawaiian waters: Are there differences in the $\delta^{15}\text{N}$ of mesopelagic and epipelagic food webs? Poster. Fourth International Conference on Applications of Stable Isotope Techniques to Ecological Studies. Wellington. April 19-23 2004.

Graham, B., K. Holland, D. Grubbs, B. Popp, B. Fry, V. Allain, R. Olson, F. Galvan, and D. Itano. Natural and experimental diet shifts in yellowfin tuna as tracked by stable isotope analysis. Presentation at the 55th Annual Tuna Conference Lake Arrowhead, California, May 24-27, 2004.

Hawn, Donald, Michael Seki, and Robert Nishimoto. Status of Research on the Biology and Ecology of Opah (*Lampris guttatus*) and Monchong (*Taractichthys steindachneri*) in the North Pacific. Presentation at the 55th Annual Tuna Conference Lake Arrowhead, California, May 24-27, 2004.

Hawn, Donald, and Michael Seki. Life history of opah (*Lampris guttatus*) and monchong (*Taractichthys steindachneri*). Presentation at the PFRP Principal Investigators Meeting, Honolulu, Hawaii, Nov. 29 – Dec. 1, 2004.

Heppell, Selina and Molly Lutcavage. Comparing sea turtle trends in the Pacific and Atlantic: an integrative approach to determine the relative role of fishing mortality. Presentation at the PFRP Principal Investigators Meeting, Honolulu, Hawaii, Nov. 29 – Dec. 1, 2004.

Holland, Kim, Laurent Dagorn, Carl Meyer, Tim Clarke, and Yannis Papastamatio. Pelagic Ecosystem Observing Systems: Update on “Smart Fad”, FADIO and HULA Programs. Presentation at the 55th Annual Tuna Conference Lake Arrowhead, California, May 24-27, 2004.

Holland, Kim, Carl Meyer, Yannis Papastamatio and Laurent Dagorn. Update on Research Activities in the "Smart FAD" Program - Ecology Tags. Presentation at the PFRP Principal Investigators Meeting, Honolulu, Hawaii, Nov. 29 – Dec. 1, 2004.

Hoyle, S. D. and Maunder M.N. (2004). Integrated modeling for protected species. PFRP [Pelagic Fisheries Research Program, Joint Institute for Marine and Atmospheric Research, University of Hawaii at Manoa], 9(4): 6-8.

Hoyle, S. D. and Maunder M.N. (presentation) Integrated Population modeling for the northeastern offshore spotted dolphin (*Stenella attenuata*). Tuna Conference.

Howell, Evan. El Niño effects in the Palmyra Atoll region: Oceanographic changes and bigeye tuna (*Thunnus obesus*) catch rate variability. Presentation at the PFRP Principal Investigators Meeting, Honolulu, Hawaii, Nov. 29 – Dec. 1, 2004.

Huang, Hui and PingSun Leung. Derivation of Shadow Price for Sea Turtle Bycatch in Hawaii's Longline Fishery: An Input Distance Function Approach. Presentation at the PFRP Principal Investigators Meeting, Honolulu, Hawaii, Nov. 29 – Dec. 1, 2004.

Hyder, P., and K. Bigelow. Migration and abundances of BIGEYE tuna (*Thunnus Obesus*) inferred from catch rates and their relation to variations in the ocean environment. Talk presented at the ASLO/TOS 2004 Ocean Research Conference, Honolulu, Hawaii.

Itano, David, Kim Holland, Laurent Dagorn, and Dean Grubbs. Monitoring Pelagics within a Network of Anchored FADs. Presentation at the 55th Annual Tuna Conference Lake Arrowhead, California, May 24-27, 2004.

Itano, David, Kim Holland, Laurent Dagorn, and Dean Grubbs. Movements and residence times of yellowfin and bigeye tuna in a network of anchored FADs. Presentation at the PFRP Principal Investigators Meeting, Honolulu, Hawaii, Nov. 29 – Dec. 1, 2004.

Kirby, David. Individual-based models on a mixed resolution grid. Presentation at the PFRP Principal Investigators Meeting, Honolulu, Hawaii, Nov. 29 – Dec. 1, 2004.

Kirby, David. Size matters, but how? Presentation at the PFRP Principal Investigators Meeting, Honolulu, Hawaii, Nov. 29 – Dec. 1, 2004.

Kirby, David, Valerie Allain, Patrick Lehodey, and John Hampton. Fisher Information as an Indicator of Regime Change in Marine Ecological Systems. Poster presented at the 55th Annual Tuna Conference Lake Arrowhead, California, May 24-27, 2004.

Kirby, David, and Patrick Lehodey. Regime Shifts in the WCPO. Presentation at the PFRP Principal Investigators Meeting, Honolulu, Hawaii, Nov. 29 – Dec. 1, 2004.

Lebreton, Jean-Dominique, Sophie Veran and V. Henaux. Towards integrated modeling of Black Footed Albatross populations. Presentation at the PFRP Principal Investigators Meeting, Honolulu, Hawaii, Nov. 29 – Dec. 1, 2004.

Lehodey, Patrick. Tuna and tuna forage: reconciling modeling and observation in a spatial mixed-resolution ecosystem model. Presentation at the PFRP Principal Investigators Meeting, Honolulu, Hawaii, Nov. 29 – Dec. 1, 2004.

Leung, PingSun, et al. Modeling entry, stay, and exit decisions of the longline fishers in Hawaii. Paper presented at the International Fishery Economics and Trade conference held in Tokyo, Japan, July 21-30, 2004.

López-Ibarra, G. Trophic structure of the pelagic copepods in the eastern tropical Pacific Ocean. GLOBEC OFCCP and CLIOTOP Workshop on the Application of Stable Isotopes in Pelagic Ecosystems, La Paz, B.C.S., Mexico, 31 May–1 June 2004.

Maunder M.N. and Hoyle, S. D. (presentation) A general model for protected species: information and uncertainty. Tuna Conference.

Maunder M.N. (presentation) Computationally-intensive methods in natural resource management and software for parameter estimation. Invited presentation: Statistics for Natural Resources section, ICSA 2004 Applied Statistics Symposium, University of San Diego, June 6-9 2004.

Maunder M.N. (presentation) Ecological modelling: information and uncertainty. University of Otago, Dunedin, March 30, 2004.

Maunder M.N. (presentation) Ecological Modeling: Information and Uncertainty. IBC 2004 XXIInd International Biometric Conference in parallel with ASC 2004 Australian Statistical Conference, Cairns, Queensland, Australia, 11-16 July, 2004.

Maunder M.N. (presentation) Ecological modelling: information and uncertainty. University of Auckland, Auckland, March 17, 2004.

Maunder M.N. (presentation) Ecological modelling: information and uncertainty. Centre Halieutique Méditerranéen et Tropical, Institut de Recherche, Sete, March 11, 2004.

Maunder M.N. (presentation) A general framework for ecological modeling. Conference on New Developments of Statistical Analysis in Wildlife, Fisheries, and Ecological Research (The Fifth Winemiller Symposium), Columbia, Missouri, USA, 13-16 October, 2004.

Maunder, M. N., J. Sibert, A. Fonteneau, J. Hampton, P. Kleiber, and S. Harley. 2004. Problems with interpreting catch-per-unit-of-effort data to assess the status of individual stocks and communities: Is integrated stock assessment, ecosystem modeling, management strategy evaluation, or adaptive management the solution? Fourth World Fisheries Congress, Vancouver, BC, Canada May 2-6, 2004.

Ménard, F., V. Allain, F.X. Bard, B. Fry, B. Graham, F. Marsac, R. Olson, B. Popp, M. Potier, R. Sabatie. Stable isotope as tracers of trophic structure in open-sea ecosystems. Poster. 55th Tuna Conference. Lake Arrowhead, California. 24-27 May 2004.

Moffitt, Russell, Russell Brainard, Ronald Hoeke, Alan Strong, William Skirving, John Sibert, and David Foley. Oceanographic Atlas of the Pacific: An Accessible Interface to Marine Environmental Data. Presentation at the 55th Annual Tuna Conference Lake Arrowhead, California, May 24-27, 2004.

Moffitt, R.A., R.E. Brainard, A.E. Strong, W. Skirving, J. Sibert, and D. Foley. Oceanographic Atlas of the Hawaiian Archipelago: A Tool for Marine Resource Management. Presentation at the Northwestern Hawaiian Islands 3rd Scientific Symposium, Honolulu, HI, Nov 2-4, 2004.

Moffitt, R.A., R. Brainard, W. Skirving, and J. Sibert. Oceanographic Atlas prototype demonstration. Presentation at the PFRP Principal Investigators Meeting, Honolulu, Hawaii, Nov. 29 – Dec. 1, 2004.

Moffitt, R.A. The Oceanographic Atlas and Integrated Observing System Data Management. Presentation at the 2nd Coral Reef Ecosystem Integrated Observing System meeting, Honolulu, HI, Feb 15-17, 2005.

Musyl, Michael, Richard Brill, Chris Moyes, Andrew West, Lianne McNaughton. Post-Release Mortality and Movements of Pacific Blue Marlin as Determined by PSATs. Presentation at the PFRP Principal Investigators Meeting, Honolulu, Hawaii, Nov. 29 – Dec. 1, 2004.

Meyer, Carl and Kim Holland. The Tying One On Tagging Techniques Archive, TOOTTA. Presentation at the PFRP Principal Investigators Meeting, Honolulu, Hawaii, Nov. 29 – Dec. 1, 2004.

Nemoto, Keiichi. Evaluating cost-earnings structure of the Hawaii-based longline fleet in the last decade: a step toward improved prediction. Presentation at the PFRP Principal Investigators Meeting, Honolulu, Hawaii, Nov. 29 – Dec. 1, 2004.

Olson, R., B. Graham, V. Allain, F. Galván-Magaña, B. Popp, and B. Fry. Key pelagic prey and their tuna predators: Isotope ecology in the eastern tropical Pacific Ocean. Presentation at the PFRP Principal Investigators Meeting, Honolulu, Hawaii, Nov. 29 – Dec. 1, 2004.

Olson, R. Sample-size considerations. GLOBEC OFCCP and CLIOTOP Workshop on the Application of Stable Isotopes in Pelagic Ecosystems, La Paz, B.C.S., Mexico, 31 May–1 June 2004.

Pan, Minling. Imported Tunas and Pilot Study on Impact to Hawaii Fresh Tuna Market. Presentation to the mid-year Pelagic Plan Team of the WPRFM Council, September 29, 2004, Honolulu, Hawaii.

Pan, Minling. Excess capacity measurement and implication to fishery management. Presentation at the PFRP Principal Investigators Meeting, Honolulu, Hawaii, Nov. 29 – Dec. 1, 2004.

Pan, Minling. Importation of cold smoked treated-tuna and its impact to Hawaii fish market. Presentation at the PFRP Principal Investigators Meeting, Honolulu, Hawaii, Nov. 29 – Dec. 1, 2004.

Pradhan, Naresh and PingSun Leung. Incorporating Sea Turtle Interactions in an Extended Multi-objective Programming Model for Hawaii's Longline Fishery. Presentation at the PFRP Principal Investigators Meeting, Honolulu, Hawaii, Nov. 29 – Dec. 1, 2004.

Seki, Michael, Jeffrey Polovina, Daniel Curran, Donald Hawn, and Evan Howell. An Oceanographic Characterization of the Longline Fishing Grounds for Albacore, *Thunnus alalunga*, around American Samoa. Poster presented at the 55th Annual Tuna Conference Lake Arrowhead, California, May 24-27, 2004.

Seki, Michael. Micronekton in the North Pacific: What do we know? Presentation at the PFRP Principal Investigators Meeting, Honolulu, Hawaii, Nov. 29 – Dec. 1, 2004.

Senina, Inna. Clustering due to acceleration in the response to population gradient: a simple self-organization model. Presentation at the PFRP Principal Investigators Meeting, Honolulu, Hawaii, Nov. 29 – Dec. 1, 2004.

Senina, Inna. Introducing non-uniform grids into the Seapodym software. Presentation at the PFRP Principal Investigators Meeting, Honolulu, Hawaii, Nov. 29 – Dec. 1, 2004.

Sibert, J. 2004. Comparison of stock assessment methods using an operational model. Seventeenth Meeting Of The Standing Committee On Tuna And Billfish, Majuro, Republic of Marshall Islands, August 9-18, 2004. SCTB17/MWG-4.

Sibert, John, and Johnnoel Ancheta. Progress in PFRP Electronic Tagging Data Repository. Presentation at the PFRP Principal Investigators Meeting, Honolulu, Hawaii, Nov. 29 – Dec. 1, 2004.

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