

Sampling Book article..... 33



President's Byte Fred Janssen

I can't believe that this is my last President's column. It seems like I took over for Stu Shipman only yesterday. During my term, a lot of things happened. A lot of things I expected to happen didn't (stuff that I thought I would do as President). It was a growing experience for me. Many of my perceptions about fisheries, technology, and the American Fisheries Society have changed during the last two years. While those perceptions changed both positively and negatively, the overall experience has been positive due to working with the wonderful volunteers of the Section and Society, Data Summit Steering Committee, and Section officers. Alright, that's enough about me. For the rest of the column I'd like to cover some of the things that happened over the past two years and look forward into the future. Sitting here looking at the chronology of events, I'd call being Section President a roller coaster! Read on and you'll see why!

I took over at the 2005 Annual Meeting in Anchorage. CUS hosted a symposium during the meeting titled "Geographic Information System and Geospatial Analyses in Fisheries Research and Management". We had 23 outstanding presentations that including topics ranging from field data collection to analysis to Internet mapping. Mick Porter taught basic and advanced GIS continuing education courses that were full as usual. Attendees at the Section meeting also approved free CUS membership for interested students beginning in the 2006 membership year.

We judged almost 200 posters in Anchorage, and awarded our Best Use of Technology

Student Poster Award to Bradley Harris. Tom Lang received the award last year at the Lake Placid meeting. While we began discussions last year to improve our award process, I haven't followed through on that item. I'm confident we will have a new, improved system for the Technology Award for the 2008 meeting in Ottawa.

The officers got word in September 2005 that a CUS Multistate Conservation Grant application was accepted by the Association of Fish and Wildlife Agencies. That was the good news. The bad news was that we had an extremely short timeline to prepare for a meeting with a national scope. This kicked off the planning process for the National Fisheries Data Summit II. Stu Shipman put together an all-star steering committee that made it all happen. From October 31-November 2, 2006, eighty-six professionals involved with the management of fisheries information programs in their organization convened to address topics pertinent to improving fisheries information systems and the ability to share data between organizations. The Summit focused on the application of such sharing capabilities to the National Fish Habitat Action Plan, recognizing that measuring the impact of such large scale initiatives would rely on the ability to compile data from multiple jurisdictions. I think everyone involved learned a lot from the Summit, and hopefully participants went back to their respective organizations and utilized some of the concepts that were thrown around and the contacts that they made during the Summit.



President's Byte Fred Janssen

After long days of discussing databases, data sharing, and the National Fish Habitat Action Plan, I spent the evenings in the hospitality suite contemplating the future role of the Computer User Section pertaining to AFS, aquatic data, and technology. I polled many of the CUS officers and Data Summit Steering Committee about a roadmap of the future for CUS, and the relevance of the Section seems to have changed through the years. While the CUS was established in 1985 to foster communications among fisheries computer users, the current group considers focusing on aquatic data, standards, and information sharing as the principal role for the Section. It would not be a complete change; we would continue to be a Society leader for technology and GIS. With the new focus, a new name and mission would be required. Bill Fisher has an article in this newsletter to dive into the subject a little deeper (page 6).

At the 2006 AFS Governing Board Mid-Year Meeting, I expressed my concern to the group that many of the electronic-based services provided by the Society were unacceptable. I was frustrated because the membership database was still nonexistent and the web site was out of date, but I also wanted to move forward with items like online voting. At that time, none of the other Governing Board members appeared to share my frustration. I went home thinking I was just being a troublemaker, and then the Great Server Crash of 2006 happened over Labor Day weekend. Many on the Governing Board were now affected. Web sites were lost. List serves were lost. The CUS lost our site, and webmaster Mark Rogers quickly got the important stuff back up. Other AFS services

got up and running, but they didn't necessarily work the same as prior to The Crash. Needless to say, at the Annual Meeting in Lake Placid, the main topic for discussion was how/when to fix the Society's technology issues. Incoming AFS President Jennifer Nielsen and Executive Director Gus Rassam vowed that fixing the problems would be their highest priority. I left another Governing Board feeling fairly negative about what the final outcome would be. There was a lot to fix and many unhappy members. Then Mark told me I should start looking for a new webmaster. He only did it for five or six years; we should have gotten a few more out of him!

There was a positive side to the 2006 annual meeting. We were proud to have Mick Porter win the AFS Distinguished Service Award for his annual contribution of GIS workshops for Society members. Mick is a Past-President of the Section and has contributed much to our profession through the years. Due to scheduling constraints, Mick was only able to teach one course in 2006, but he is scheduled for two classes in San Francisco. The courses always receive rave reviews, so sign up today!

Things really started looking up in 2007. My request for a new webmaster was answered almost immediately. Kevin Kayle came on board in January and has done a fantastic job updating the site (page 7). Kevin is with the Ohio Department of Natural Resources, and has previously helped redesign their web site and continues to maintain the Ohio Chapter's web site as well. The webmaster request went so well last time that I'll throw out another one in this newsletter. Secretary-Treasurer-



President's Byte Fred Janssen

Software Librarian Andy Loftus would like to hand off the Software Librarian duties to an energetic volunteer. Andy has been busy running the Section while I have been excogitating (got that from my word-of-the-day) at the hospitality suite, so he would like to hand off one of his many duties. If you would like more details about the job, Andy would be happy to fill you in.

I was unable to attend the 2007 AFS Governing Board Mid-Year Meeting, but from what I heard, the Governing Board really turned up the heat on the electronic services issue. They approved spending tens of thousands of dollars for whatever it took to improve services such as the web site, list serves, membership databases, meeting registration and abstract submission, and a number of other things. Gus and Jennifer organized a task force to identify problems or improvements with AFS electronic services. The task force, led by Joel Carlin, met in May at AFS headquarters in Bethesda. CUS members Doug Beard and Bill Fisher joined me at the meeting. I'm very glad that the meeting was at HQ because we were able to meet the staff, see the facility and hardware, and get a better feel for how things were done and why. We were able to develop lists of needs and priorities, and individuals are already investigating some of our options. I can honestly say I feel confident that not only

will many of the problems get fixed, but in the future the electronic services provided by AFS will exceed many members' expectations.

One of the immediate products coming out of the task force will be a workshop in San Francisco. The goal is to bring together AFS unit leaders and their webmasters to present some technical details that they may not know (running list serves, guidance in webpage software, publishing newsletters, etc). Electronic Services Task Force members and one of the AFS IT staff will be there to present and answer questions.

I would like to close by thanking everyone for the opportunity to ride this roller coaster. I hope to continue to be an active contributor to the Section. It's a lot easier to contribute when I'm not required to do it! I look forward to having Bill Fisher take the helm as President in September. Bill seems excited to take on the many challenges and half-completed projects that I left him. Bill has also recruited two talented candidates to run for President-Elect of the Section. We have Jeff Kopaska of the Iowa Department of Natural Resources and Steve Hurst of the New York State Department of Environmental Conservation running this year. The CUS will be in great hands no matter who wins this election. Vote today!



AFS ELECTRONIC SERVICES TASK FORCE

On May 16-17, 2007, a newly-formed Electronic Services Task Force met to develop a common strategy and commonly-defined services and needs for the American Fisheries Society. Joel Carlin was appointed the Chair of the Task Force by President Jennifer Nielsen. Others on the Task Force or meeting attendees include: Lou Reynolds (not in attendance), Andy Goodwin, Fred Janssen, Bill Fisher, Marcin Whitman, Bob Hughes, Mary Fabrizio, Gus Rassam, Jennifer Nielsen, Doug Beard, Jay Nelson, Aron Mbowe, Jennifer Gallivan, Joe Euker, Myja Merritt, and Alan Kolok.

The group first brainstormed the electronic services and issues faced by the group. After lengthy discussions, a list of action items was developed. I will summarize the long-term vision of the group, and then include a select list of actions to be taken, understanding that this is a very dynamic list.

Vision (from Joel Carlin)

“In the tradition of the Maoists, “Our People’s Glorious Five-Year Plan” is a massive (and expensive) effort to try to coordinate membership, publications and other databases. Picture coming to an AFS website with a pretty page for the public and logging in. Then you would be taken to a “myAFS” style website, much like Amazon.com and other sites. In theory, your email address, shipping address, purchasing record of AFS books, section memberships, manuscript review history (incl. current deadlines), etc. would all be listed right there.”

Immediate Actions

- Electronic services articles by Jennifer and Gus
- Formalize Electronic Services Task Force (or Committee) for approval
- Search for additional Task Force members
- Arrange Technology/Electronic Services Workshop for San Francisco Meeting
- Add IT comment page to AFS website

Quick Actions

- Member-driven email validation
- Search for and choose abstract management software
- Build unit leadership database
- Develop technology/electronic services FAQ pages on AFS website
- Obtain cost estimates for online voting
- Contact Allen Press about possibility of interaction between AFS and Allen Press servers
- Arrange workshop in San Francisco and acquire presenters
- Personal invitations to unit webmasters, etc.

Medium-Term Actions

- beta testing of online voting
- feasibility study of developing in-house membership database
- test abstract management software and meeting registration software

If you are interested in serving on the Task Force, or have a comment or question, please contact Fred Janssen fred.janssen@tpwd.state.tx.us or Joel Carlin jcarlin@gustavus.edu.



CUS Business News

Steve Hurst

New York State Department of Environmental Conservation
Bureau of Fisheries
Biological Survey Unit Leader

Steve Hurst has worked for the New York State Department of Environmental Conservation for almost 20 years. The first 10 years of his career were spent in the field in Central New York after which time he traded in his boat for a desk and took a position in central office to, among other things, resurrect the Bureau of Fisheries dying statewide fisheries database. While he is well versed in database design, Steve is not an IT guy by trade and states that “he knows just enough to get himself into trouble and that the technical aspects are best left to the experts.” He operates on the mantra that for any system to work you must develop a vision that is collective and rooted in reality. Ten years after initial development, Steve and other members of the Bureau are re-evaluating the database they originally built. Reality has shifted and the original vision must be re-examined. Steve feels that the same holds true for the CUS and while the section does an outstanding job in areas such as software review and sponsoring workshops it should re-evaluate its vision for the next decade to ensure that we are doing our part to advance the profession. As identified at the last Database Summit, the need for sharing information is becoming increasingly important. Many agencies are only now beginning to develop comprehensive systems to capture fisheries data. Steve feels that a one of the goals of the CUS should be to serve as a clearinghouse where agencies can share ideas and learn from each other to better their systems.

Steve received an A.A.S. in Fish and Wildlife Technology from SUNY Cobleskill, a BS in Natural Resources from Cornell University and a MPA from The Rockefeller School of Government where he studied the development of simulation models for policy analysis and decision making. He, his wife Lori and four children reside outside of Albany NY where they are currently building a handcrafted log cabin. Besides hunting and fishing, his interests are working with wood, green building technology and his children’s baseball endeavors.

Please select a candidate and email Bill Fisher wfisher@okstate.edu with your choice. **The election ends Tuesday, July 31st.**

CUS President-Elect Candidates

_____ Jeff Kopaska

_____ Steve Hurst



Web Tools and Websites

The **Geospatial Imaging and Informatics Facility** (<http://giif.cnr.berkeley.edu/>) supports research & outreach activities of those interested in geospatial analysis utilizing remote sensing, Geographical Information Systems, spatial analysis, landscape ecology, visualization, and Global Positioning Systems technology. The Facility supports multi-scale natural resource research through training and collaboration; undergraduate recruitment; support graduate research; generate quality spatial data for analysis; and a meeting-place for those interested in the technology.

They have a couple of guides for handheld computers and GPS units.

http://giif.cnr.berkeley.edu/documents/Field_PDA_Buyers_Guide.pdf

http://giif.cnr.berkeley.edu/documents/Handheld_GPS_Buyers_Guide.pdf

The **Open Source Geospatial Foundation** (<http://www.osgeo.org/>) promotes interaction between users, developers, and community participants. It provides links to events, documentation, websites, and other information of interest to the open source web mapping community. The Open Source Geospatial Foundation has been created to support and build the highest-quality open source geospatial software to encourage the use and collaborative development of community-led projects. This website serves as a portal for users and developers to share their ideas and contribute to project development. The OSGeo Journal (<http://www.osgeo.org/journal/volume1>) is a digital publication containing case studies, news, tutorials, and project updates for promoting and educating readers about open source geospatial applications in general.

Ecosystem-Based Management Tools (www.ebmtools.org) relevant to coastal, ocean, and watershed management including the Great Lakes. Ecosystem-Based Management is an innovative management approach to address these challenges. It considers all ecosystem components, including humans and the environment, rather than managing one issue or resource in isolation. The objectives of the EBM Tools Network are to increase awareness of existing EBM tools, promote the development and maintenance of EBM tools, and promote the effective use of EBM tools. They have numerous international meetings scheduled (<http://www.ebmtools.org/meetings.html>) along with a directory for data sources (http://www.ebmtools.org/find_data.html) and a software search engine.

Quantum GIS (QGIS: www.qgis.org) is a user friendly Open Source Geographic Information System (GIS) that runs on Linux, Unix, Mac OSX, and Windows. QGIS supports vector, raster, and database formats.

Major features include: Support for spatially enabled PostGIS tables, shapefiles, ArcInfo coverages, Mapinfo, a large number of raster formats. You can identify features, Display attribute tables, Select and label features, and use GRASS Digitizing. QGIS can export Minn Mapfiles (<http://mapserver.gis.umn.edu/>) facilitating publishing



PostGIS vector sets and large raster files out of GRASS as well.

QGIS is licensed under the GNU Public License with users around the world.



Web Tools and Websites

PostGIS (www.postgis.org) adds support for geographic objects to the [PostgreSQL](#) object-relational database allowing seamless management with vector, and other relational datasets. PostGIS spatially enables the PostgreSQL server, allowing it to be used as a backend spatial database for geographic information systems (GIS), much like ESRI's SDE or Oracle's Spatial extension. PostGIS follows the [OpenGIS "Simple Features Specification for SQL"](#).

The **Conservation Geoportal** is a collaborative effort by and for the conservation community to facilitate the discovery and publishing of [geographic information systems \(GIS\)](#) data and maps, to support conservation decision making and education. It is primarily a data catalog, intended to provide a comprehensive listing of GIS data sets and map services relevant to biodiversity conservation. The Conservation Geoportal does not actually store maps and data, but rather the descriptions and links to those resources, known as "[metadata](#)". The Geoportal was created for finding, evaluating, and sharing data and maps for conservation.

For further reading see the article in ESRI's ArcWatch magazine:

<http://www.esri.com/news/arcwatch/0507/feature.html>.

The **Center for Biodiversity and Conservation** (CBC) is a leader in making vast, diverse sets of data available to researchers and planners in an easily accessible way. [In 1998, the CBC established the Remote Sensing and Geographical Information Systems \(RS/GIS\) Facility](#). CBC scientists use remote sensing to quantify and record variations in reflected energy across the electromagnetic spectrum. The resulting digital images are tied to coordinates on the ground, allowing analysts to monitor many living and non-living parameters, such as sea-surface temperature, vegetation cover, vegetation health, soil moisture, and location of roads, towns, and cities.

The **American Museum of Natural History's Center for Biodiversity and Conservation** runs a week-long training workshop titled: Species Distribution Modeling Methods for Conservation Biologists. The course will be held 14-19 October 2007 at the American Museum of Natural History's [Southwestern Research Station](#) in the Chiricahua Mountains of southeastern Arizona. The course will be taught by Drs. Richard Pearson (AMNH) and Steven Phillips (AT&T) with Kevin Koy (AMNH) providing GIS support. The \$1,000 course fee includes accommodation and meals for the week. Participants need to provide their own transportation to and from the Research Station. The course is limited to 15 participants. The application deadline is July 20th 2007. Applications will be acknowledged on receipt and you will be notified if a place is available by August 3rd 2007.

The **Freshwater Resources** website (<https://gaia-staging.amnh.org/freshwatertest/>) is designed to provide information on using geospatial tools in freshwater conservation. The site has online resources with tutorials and how-to guides developed by the Center for Biodiversity and Conservation and other organizations.

Creative Commons (<http://creativecommons.org/>) provides free tools for authors, scientists, artists, and educators to label their creative work with the freedoms they want it to carry. You can use CC to change your copyright terms from "All Rights Reserved" to "Some Rights Reserved."

Tools for creating cartograms creation can be found at:

<http://people.cas.sc.edu/hardistf/cartograms/>

<http://www.santafe.edu/~mgastner/>

<http://www.jatrigis.com/cartogram/cartogram.htm> (windows version)



Web Tools and Websites

Climate change models

The **Earth System Grid II** (ESG: <http://www.earthsystemgrid.org/>) is a project under the auspices of the [Scientific Discovery through Advanced Computing](#) program (SciDAC). The primary goal of ESG is to enable analysis and development of global Earth System models for the next generation of climate research.

The WCRP CMIP3 multi-model database (<https://esg.llnl.gov:8443/>) provides a search engine for Earth System Grid data holdings.

EOS Webster (<http://eos-webster.sr.unh.edu/>) at the University of New Hampshire has a collection of earth science data for historical and future climate projections produced by the National Center for Atmospheric Research ([NCAR](#)) for the Intergovernmental Panel on Climate Change ([IPCC](#)) Fourth Assessment Report.

Software Utility

Lsfilelist (<http://www.snapfiles.com/get/lfilelist.html>) is a Windows utility for exporting the folder / file names into a table or database. It creates a text listing of the folder structure and file names that can be imported into Excel or Word.

Software Utility

Utilities for converting Garmin GDB Files to Shapefiles

There is the GPSi toolbar from ESRI: <http://arcscripts.esri.com/details.asp?dbid=12749>

The DNR Garmin add-on is a free download available at www.dnr.state.mn.us/mis/gis/tools/arcview/extensions/DNRGarmin/DNRGarmin.html

The data can then be exported to a text file and imported into Excel.

GeoBase is a government initiative by the [Canadian Council on Geomatics](#) (CCOG) to provide access to a current, quality geospatial data for all of Canada. GeoBase portal users have access to quality geospatial information at no cost and with unrestricted use.

The **Southeast Alaska Wilderness Exploration, Analysis and Discovery** (SEAWEAD: www.seawead.org/) is with detailed information about Southeast Alaska's wildlife and habitats in support of resource management and public education. Their goals include conducting ecological research and cooperative planning to encourage a balance of ecological integrity by integrating scientific and natural history with ecological patterns and processes. They provide technical support for affiliated organizations (including GIS and web page development).

The **Marine Geospatial Ecology Lab** (<http://mgel.env.duke.edu/>) has a variety of resources.

The website includes the OBIS-SEAMAP (Ocean Biogeographic Information System - Spatial Ecological Analysis of Megavertebrate Populations) project, a spatially referenced marine mammal, seabird and sea turtle database.



Web Tools and Websites

The Marine Mammal Habitat Modeling Project is looking develop and test spatio-temporal models of marine mammal distribution, as predicted by physical conditions of the marine environment; design a hierarchical framework for analyzing marine mammal distributions across annual, seasonal and synoptic timeframes; and assemble a spatial decision support system that allows Navy users to analyze model outputs and ancillary oceanographic data across multiple forecasting timescales.

The lab has a two year initiative to stimulate the development and dissemination of creative software tools for Marine Ecosystem-Based Management (M-EBM). The fund seeks to expand the network of M-EBM tool developers through the establishment of targeted small grants and an associated technical support program. The initiative will include innovative, interoperable and freely disseminated tools developed by the grantees.

The **African Marine Atlas** (iodeweb2.vliz.be/omap/OMAP/index.htm) has maps, images, data and other information for coastal resource managers It has over 800 data products derived from the fields of marine geo-sphere, hydrosphere, atmosphere, biosphere, geopolitical and the human socio-economic dimensions.



Technology in the Field

Fishery Agencies Begin Major New Tagging Program for Fall-run Chinook Salmon at Central Valley Hatcheries



The fish sorter and counter inside an Autofish trailer.

PSMFC's Constant Fractional Marking crew has quickly made a mark in California's Central Valley! Led by Tagging Coordinator Braden Buttars, the three trailer operators and crew of five worked their way through more than 30 million hatchery fish in roughly three months time. Using Autofish trailers, 25% of those fall-run Chinook had their adipose fins clipped, and were tagged with coded wire tags at an impressive 99.9-100% tag retention rate! The following press release was put out by CDFG:

The California Department of Fish and Game, U.S. Fish and Wildlife Service, and the Pacific States Marine Fisheries Commission have recently embarked on a major new marking and tagging program for fall-run Chinook salmon raised at Central Valley hatcheries. Over 8 million fish, 25% of the production releases of fall-run Chinook salmon from Central Valley hatcheries, will be marked and tagged beginning this spring. More than \$6.7 million is being provided by the CALFED Ecosystem Restoration Program over the next two years to implement this project. Cooperating agencies include the California Department of Water Resources, U.S. Bureau of Reclamation, and East Bay Municipal Utility District.

Central Valley hatcheries release more than 32 million fall-run Chinook salmon annually, which contribute substantially to commercial and sport fisheries. For many years, releases of fall-run Chinook salmon from Central Valley hatcheries have been sporadically marked and tagged, providing fishery biologists with sparse and inconsistent data with which to manage these populations. This new tagging program will provide a consistent rate of marking and tagging at all of the Central Valley hatcheries, generating important data on harvest rates in the ocean and inland fisheries, and the proportion of hatchery and natural fish returning to the Central Valley to spawn.

The tags being used in this project are called coded-wire tags. The tag is a microscopic length of stainless steel wire, marked with rows of numbers denoting the agency, hatchery, and year of a fish's release. Tags are implanted into the nasal area of the young hatchery salmon, and the adipose fin is removed on all tagged fish to allow external identification. Upon harvest, or return to the hatchery or stream as an adult, the coded-wire tag will be extracted from Chinook salmon that are identified by a missing adipose fin. The tag will be decoded, and the data sent to a centralized West Coast database.



Braden Buttars, tagging coordinator

Four state-of-the-art automated tagging trailers have been purchased for this program from Northwest Marine Technology in Washington. The trailers, costing \$1.1 million each, incorporate the latest advanced technology for marking and tagging fish. The AutoFish system marks and implants coded-wire tags very rapidly without any use of anesthetic or human contact. These systems have been in use for many years in the Pacific Northwest, but the Central Valley trailers are the first to be purchased for use in California. Just after the start of the project this spring, the California crew quickly set a new speed record for use of the AutoFish system, processing over 350,000 fish in one day in two eight-hour shifts.



Technology in the Field

Over 5 million fish have been marked and tagged by the project so far at the Feather River, Mokelumne River, and Coleman National Fish hatcheries. Currently, one of these trailers is operating at the Department of Fish and Game's Nimbus Fish Hatchery in Rancho Cordova. "After many years of planning, we are pleased to see this important project on the ground this spring", said DFG Director Ryan Broddrick, "This collaborative project will yield critical data for improving the long-term management of fall-run Chinook salmon in the Central Valley."

(Information courtesy of Alice Low, CDFG)

GISFish

"GISFish" is a Global Gateway to Geographic Information Systems (GIS), Remote Sensing and Mapping for Aquaculture and Inland Fisheries. GISFish is a brand new Web site of the Aquaculture Conservation and Management Service (FIMA) of the Food and Agriculture Organization of the UN (FAO) and a number of collaborating institutions. It is evident there are many opportunities to use GIS, remote sensing and mapping to improve the sustainability of aquaculture and inland fisheries, but the more widespread use of these tools is impeded by a limited awareness of their benefits and a lack of access to experience on how they can be deployed. GISFish was created to overcome these impediments. It is aimed at GIS practitioners and fisheries and aquaculture professionals in developing countries. GISFish makes the global experience on GIS, remote sensing and mapping as applied to aquaculture and inland fisheries issues easily accessible. Past experience is packaged as searchable data bases of applications published in the mainstream and gray literature. Applications are in the form of case studies, abstracts, and often, downloadable full publications. Sharing of current experience is promoted through discussions and posting of on-going projects. Additionally, case studies, training opportunities, data sources, tools and freeware, news and events are featured. Material in GISFish is constantly updated and expanded. Near future improvements will include increased coverage of abstracts and of full papers. Additional links to Cultured Aquatic Species fact sheets will also be made available for each GISFish publication record in which scientific names of plants and animals are mentioned. Click here to access the GISFish Web site: <http://www.fao.org/fi/gisfish/index.jsp>. FAO's FIMA continuously seeks opportunities to actively cooperate with other organizations in the realm of GIS, remote sensing and mapping, particularly for training to improve the sustainability of aquaculture and inland fisheries. To explore cooperative activities please contact GISFish Programme Coordinators: Jose Aguilar-Manjarrez (FIMA) or James McDaid Kapetsky (FIMA-Retired).

José Aguilar-Manjarrez, Ph.D.

Fishery Resources Officer

Aquaculture Management and Conservation Service

Fisheries and Aquaculture Department

Food and Agriculture Organization of the UN

Viale delle Terme di Caracalla, 00153 Rome, Italy

Tel. (39) 06 570 55452

Fax: (39) 06 570 53020

email: Jose.AguilarManjarrez@fao.org

James McDaid Kapetsky, Ph.D.

C-FAST, Inc.

[Consultants in Fisheries and Aquaculture Sciences and Technologies, Inc.]

109 Brookhaven Trail

Leland NC 28451

Tel.: 910-371-0012

email: cfastinc@bellsouth.net & cfast@sigmaxi.net



Meetings and Workshops

The **Fourth International Symposium** on GIS/Spatial Analyses in Fishery and Aquatic Sciences is scheduled for August 25-29, 2008 in South America <http://www.esl.co.jp/Sympo/4th/index.htm>.

The **Coastal Manager's Toolkit for Ecosystem-Based Management Workshop** at the Coastal Zone 07 Conference in Portland, Oregon, on Sunday, July 22, 2007.

Date and Time: Sunday, July 22, 2007, 1:00 to 4:00 p.m.

Cost: \$25 per person (includes workshop materials and refreshment break)

Participants: Minimum 10, maximum 30

Registration for the conference and workshop at: <http://www.csc.noaa.gov/cz/registration.html>.

Ecosystem-based management (EBM) of coastal and marine environments requires the integration of information about a vast array of environmental and human systems. The objectives of this workshop are to provide an overview of existing tools that can be used for EBM in coastal and marine environments, describe projects which have used these tools, provide guidance on what a coastal manager needs to consider when selecting a tool for his or her project, and point managers in the direction of additional resources to find out more about tools.

American Fisheries Society's 137th Annual Meeting at San Francisco, CA – September 2-6, 2007

1. Basic/Intermediate GIS Techniques for Fisheries Biologists

Date: Saturday, September 1, 2007

Time: 8:00 A.M. to 5:00 P.M.

CEU's: 0.8

Note: This is an off-site training

The course will teach participants basic GIS skills using examples common to fisheries problems. These skills include importing a base map and other map layers; creating data tables and importing data from other sources; creating point, line, and polygon themes; and an overview of map projections and map coordinate systems.

Instructor's Name: Mickey Porter, e-mail: mporter@uc.usbr.gov, Phone No. (505) 462-3596

2. Hydroacoustic Tools for Fish and Habitat Assessment

Date: Saturday, September 1 and Sunday, September 2, 2007

Time: 8:00 A.M. to 5:00 P.M. on Saturday

9:00 A.M. to 1:00 P.M. on Sunday

CEU: 1.2

Note: Sunday's training is off-site

This course will provide background in hydroacoustic (SONAR) theory for use in fisheries and marine/aquatic habitat applications. The course will introduce state-of-the-art techniques for assessing the distribution and abundance of fish and aquatic plants, classifying sediments, and monitoring fish behavior. Considerations for exporting your underwater information to GIS will also be discussed. Examples of applications include fish counting, fish behavior, fish response to anthropogenic and natural environmental variables, analysis of submersed aquatic vegetation, classification of bottom sediments, and utilization of hydroacoustic data with GIS. A field demonstration is planned for the morning of the second day.

Instructor's Name: Bob McClure, e-mail: bmclure@biosonicsinc.com, Phone No. (206) 782-2211



Meetings and Workshops

3. Advanced GIS Techniques for Fisheries Biologists

Date: Sunday, September 2, 2007

Time: 8:00 A.M. to 5:00 P.M.

CEU's: 0.8

Note: This is an off-site training

For those who are comfortable in their basic skills in GIS or for those who have taken "Basic GIS Techniques for Fisheries Biologists" the previous day, this course will build on basic skills to include advanced techniques such as manipulating themes using intersect, union and merge; converting spatial analyses; importing aerial/satellite photos; and learning about overlay DEMs.

Instructor's Name: Mickey Porter, e-mail: mporter@uc.usbr.gov, Phone No. (505) 462-3596

4. Meta-Analysis in Fisheries Science

Date: Saturday, September 1 and Sunday, September 2, 2007

Time: 8:00 A.M. to 4:30 P.M. both days

CEU's: 1.2

The body of scientific literature in fisheries has grown to the extent that findings on management issues may be contradictive (e.g., optimal size of marine protected areas). Meta-analysis is a quantitative method for resolution of conflicting results on a topic in the scientific literature. This course provides participants with knowledge and skill needed to cope with conflicting information when required to make a management decision or science-based recommendation.

Journey-level managers and researchers are targeted for this course. Proficiency in basic statistical analysis and use of Excel spreadsheets is required.

For satisfactory completion, each participant will fully participate (100% attendance), including involvement in meta-analysis of the case study analysis of the importance of hooking mortality (magnitude and causes) in a catch-release fishery. Each participant should bring a personal laptop computer with Word, and Excel software. In case of unavoidable absence from lecture sessions, participants can "make up" through an arranged interview with the instructor before the course ends. Absence from case study participation will result in unsatisfactory completion.

Instructor's Name: James B. Reynolds, e-mail: ffjbr@uaf.edu, Phone No. (775) 777-9104

5. River 2-D Modeling Short Course and Workshop

Date: Saturday, September 1 and Sunday, September 2, 2007

Time: 8:00 A.M. to 5:00 P.M. Both days

CEU: 1.6

An introductory short course and workshop covering use of the River 2D model and its application in habitat modeling will be conducted on September 1–2, 2007, prior to the 2007 American Fisheries Society conference. The instructors will be Dr. Terry Waddle, US Geological Survey, and Dr. Peter Steffler, University of Alberta.

By the end of the first day, participants will be familiar with the model fundamentals and basic use of the model. By the end of the second day, participants will have experience working through the essential steps involved in using the River2D model for a habitat simulation. You will be expected to provide your own laptop computer. Minimum requirements are: Windows 2000 or XP and 256 Mb of RAM (however, the more RAM the better). The River2D software should be downloaded prior to the class from <http://www.river2d.ca/>. This package includes tutorials that new users would be highly advised to work through before the workshop. A full program set will be available at the class on CD ROM and on USB key.

Instructor's Names: Mark Gard: mark_gard@fws.gov, Terry Waddle: waddlet@usgs.gov, Peter Steffler: peter.steffler@ualberta.ca, Phone No. (916) 414-6589



Awards

MINNESOTA 2006 GOVERNMENT IT RECOGNITION AWARD (6 pgs)

Innovative Use of Technology



Minnesota Department of Natural Resources

Lake Survey Project

Rick Lorenzen Fisheries IT Supervisor
Minnesota Department of Natural Resources
Division of Fish and Wildlife
500 Lafayette Road, Box 20
St. Paul, MN 55155-4020
Rick.Lorenzen@dnr.state.mn.us
Phone: (651) 259-5216
Fax: (651) 297-4916



Awards

Minnesota Department of Natural Resources Lake Survey Project

Executive Summary

Minnesota's Department of Natural Resources developed and implemented a robust mobile Fisheries Lake Survey system. This new system saves thousands of hours annually, ensures better quality data, and allows easier sharing with the public.

We now use rugged tablets in the survey boats and validate data entry with fish in-hand to eliminate redundant data entry and reduce errors. Our 1993 survey system required handwriting information onto paper forms and then typing the same information in offices across Minnesota. Dozens of Fisheries Area databases were methodically analyzed for errors and consolidated in a process that took months every year. We can now capture more valid data with less effort and provide quicker analysis reports.

Additional innovative uses of technology with this system include; designing the application to work on any hardware platform, using open source software, using the same data entry screens in the office and on the lake, automated delivery of updated drop-down menu lists, customizable short lists of drop-down menus, and reference links to geographic information allowing spatial mapping of fisheries data.



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Minnesota Department of Natural Resources Lake Survey Project

Project Profile

Description of Project

This new Java client Lake Survey application is delivered to rugged tablets and desktop workstations over the DNR intranet and provides statewide access to a single database and dozens of reports. Data captured, stored, and analyzed by this system includes current and historic physical, chemical, and biological information regarding habitat, water quality, and fish population characteristics. This information is used to manage Minnesota's fisheries.

This system was deployed to seven pilot test areas June 5, 2006 for acceptance and performance testing before releasing it to over 200 staff in DNR Fisheries Area offices across the state on August 21, 2006. Rugged tablets now capture relevant fish data while they are still in their boats on the water. Immediate validation of data at the point of capture ensures more accurate data.

The main database is an Oracle 10g instance. By default, the application references the Oracle database. When performing fieldwork, the application connects to a local HSQLDB database. The data stored in the local database is replicated to the main database when convenient. We used HSQLDB to easily embed a relational database within the application as well as to save ongoing expenses for software-licensing fees.

The Minnesota Department of Natural Resources software development process followed [project management best practices](#) from the [Minnesota Office of Enterprise Technology](#).

Software: [Java \(J2SE\)](#), [Java Web Start](#), and [Hibernate \(open source\)](#), [Crystal Reports](#)

Databases: [Oracle](#) 10g online and [HSQLDB \(open source\)](#) offline

Hardware: [Xplore X104C2 rugged tablets](#) and [Corvallis Micro Technology handhelds](#)



Awards

Minnesota Department of Natural Resources Lake Survey Project

Significant Effort Involved

Over forty people worked on this project during the past three years to define the requirements, select the hardware, determine appropriate data validation values, design and load the database, develop the entry screens, and rigorously test screens and reports.

Some of the contributions include:

A system architect and two database analysts worked for many months with over a dozen Fisheries subject matter experts from around the state of Minnesota. They also consulted with other state agencies from Wisconsin, Michigan, and Alaska. The result was a completely new relational data structure to store the data with standardized data names.

A data manager spent several weeks designating all the possible data validation business rules for over 75 drop-down menu lists. A geographic information systems coordinator spent several additional weeks working with the data manager to populate the new data structure with lake and geographic location information.

Three developers used Java (J2SE), Hibernate, and Crystal Reports to develop the custom application over the course of the past year. Hibernate was used for mapping Oracle relational tables to Java objects.

Seven hardware testers evaluated over a dozen potential field hardware options. Nine software testers evaluated the application.



Awards

Minnesota Department of Natural Resources Lake Survey Project

Improved Services Realized

This application significantly improves efficiency while capturing fisheries data, speed of data retrieval, quality of data stored, and enhanced ability to share the data with the public and other agencies.

Project accomplishments include:

1. Eliminating 27 separate copies of lake survey databases that previously required weeks of data consolidation annually.
2. Ensuring better data quality by providing validation when the fish is still in-hand instead of doing the data entry from paper over the winter when the fish was no longer available to recheck.
3. Providing immediate reporting once the data is entered; where as previously reports were only published once a year after winter data entry and consolidation of multiple databases.
4. Improving connectivity with other agency databases because common data formats increase effectiveness by eliminating redundant versions of the same data on various platforms.
5. Automating network-delivered updates of new software versions, which will eliminate creating, distributing, and installing dozens of CD copies for every new software update release.
6. Providing intuitive screens with complete drop-down selection values that shorten the data entry learning curve for staff and eliminate the need to memorize 3 digit codes for dozens of fish and plant species.
7. Including data from Minnesota's largest lakes in our new data structure design provides a wealth of additional research possibilities for our research biologists and other agencies as well.
8. Adding flexibility for future hardware purchases because this application runs on any hardware device with a Java-compatible operating system.
9. Designing a modular data structure allows for handling future business needs.



Awards

Minnesota Department of Natural Resources Lake Survey Project

Measurable Benefits

Estimated cost benefits from implementing this application are \$216,170 each year. This includes annual savings of \$195,250 for redundant data entry, \$8,640 for validating and consolidating data, \$7,560 for training, \$2,560 for updated version distribution, and \$2,160 for generating and publishing reports. These are described further below.

1. Eliminating redundant office data entry from paper forms by using rugged tablets while doing the actual surveys saves an estimated \$195,250 per year.

Annually, Minnesota Department of Natural Resources does on average:

- 150 Full Surveys estimated at 40 hours of office data entry per survey 6,000 hours
- 250 Population Assessments estimated at 8 hours of data entry per survey . . . 2,000 hours
- 350 Special Assessments estimated at 2.5 hours of data entry per survey . . . 875 hours

Using this new application to enter the data on rugged tablets while doing the actual surveys will eliminate the in-the-office data entry task and provide more accurate data in a much faster timeframe. Using our overall average of about 12 data entry hours for 750 surveys per year totals 8,875 hours saved. This adds up to \$195,250 of savings annually.

2. Updating a single database eliminates an estimated 320 hours of data validation and consolidation effort for 27 individual Fisheries Area databases annually. It takes about 8 hours on average per Area. This is an additional \$8,640 saved per year.
3. Providing intuitive data entry screens saves an estimated 280 hours of training annually. With staff turnover and work reassignments, 10 staff need approximately 24 hours of training each year plus 4 hours of mentor/instructor per year. This is an additional \$7,560 saved per year.
4. Automated delivery of new application updates via the Internet instead of electronic media saves an estimated 80 hours annually in software copy preparation and distribution. This is an additional \$2,560 saved per year.
5. Generating reports automatically eliminates an estimated 80 hours of work producing and publishing these reports annually. This is an additional \$2,160 saved per year.



Awards





Meta-Analysis Article

META-ANALYSIS FOR LESSONS LEARNED IN LOCALLY-MANAGED MARINE AREAS OF THE INDO-PACIFIC

James B. Reynolds, Professor Emeritus
School of Fisheries and Ocean Sciences
University of Alaska Fairbanks
ffjbr@uaf.edu

Author's note: During 2003-2005, I served as a Peace Corps Volunteer for the University of the South Pacific, Fiji Islands. My work was primarily in support of the Locally-Managed Marine Area Network (LMMA), a coalition of marine conservation organizations in the South Pacific and Southeast Asia. In 2003, the LMMA was in a difficult situation: LMMA-member countries had collected a large amount of data but there was no system to manage the data. My main assignment was to lead an effort to develop a Data Management and Analysis (DMA) system. By 2005, the DMA system had been developed and tested for effectiveness to meet LMMA goals. Since that time, the DMA system has been further refined and is now in use by LMMA members in Fiji, Papua New Guinea, Indonesia, Palau and Philippines; other LMMA-member countries are preparing to adopt it. The following article summarizes the first test of the DMA in 2005: a comparison of the effectiveness of marine protected areas (MPA) in Fiji and Papua New Guinea.

Abstract – Countries in the Indo-Pacific region have formed a Locally-Managed Marine Area (LMMA) network to share information and lessons learned. Management targets (response variables) for measuring success vary widely among LMMA projects; this presents a challenge for direct comparison of results. Meta-analysis (comparison of standardized mean differences, SMD) was chosen by the LMMA network as the method for measuring success among projects. We compared the results of two marine protected areas, one for fish abundance and species richness in the Sinub Wildlife Management Area, Papua New Guinea, the other for density and average size of clams in the Verata District, Fiji Islands. In 1997, when MPAs at both projects were established, there were few differences in clams or fish between respective MPA and adjacent harvest areas. In 2003, after six years of protection, fish abundance and species richness were significantly higher in both the MPA and harvest areas of the Sinub project, as were the density and average size of clams in the Verata project.



Meta-Analysis Article

Comparison of SMDs showed that both projects were successful in terms of all response variables. Both projects succeeded because of excellent local support in terms of awareness, participation and compliance.

Introduction – The purpose of the analysis, summarized herein, was to compare two measures of success (density of all fishes and density of all fish species) for the Sinub MPA and adjacent harvest area in Madang Lagoon, Papua New Guinea, with two measures of success (density and average size of clams, *Anadara sp.*) for the Ucuivanua MPA and adjacent harvest area in the Verata District, Fiji Islands. The LMMA chose meta-analysis as the method to compare success between these two projects because different response variables were used.

Meta-analysis was developed in the 1970s as a technique for resolving contradictory findings on a topic in the scientific literature. Although originally used in the social sciences, it is also now widely used in the medical and natural sciences. Meta-analysis includes a statistical protocol for comparing effect of intervention among projects and sites when the measures of success (response variable) vary among those projects and sites. Meta-analysis employs a wide variety of statistics, but the one appropriate for the purposes of the LMMA was the Standardized Mean Difference (SMD). Basically, SMD is the difference between intervention and control means divided by pooled standard deviation, like the t-value but not the same. [For more information about meta-analysis, I recommend *How Science Takes Stock: The Story of Meta-Analysis* by Morton Hunt (1997, Russell Sage Foundation, New York, NY) and *Practical Meta-Analysis* by Mark Lipsey and David Wilson (2001, SAGE Publications, Thousand Oaks, CA).]

Methods – In Madang Lagoon, Papua New Guinea, the Sinub reserve area, created in 1997, is a 12-km² MPA in a 1330-km² fishing ground including the Wongad harvest area adjacent to the MPA. Annual diver surveys were taken in 1997-2003, except 1998. During each survey, counts were made along four to ten transects, depending on the year, in both the Sinub MPA and Wongad harvest areas; each transect was 5 m x 50 m. Fish density (all species, number/m²) and fish species richness (number of species/250 m²) were compared between reserve and harvest areas for each year; all comparisons were based on the one-tailed t-test, $p < 0.05$.

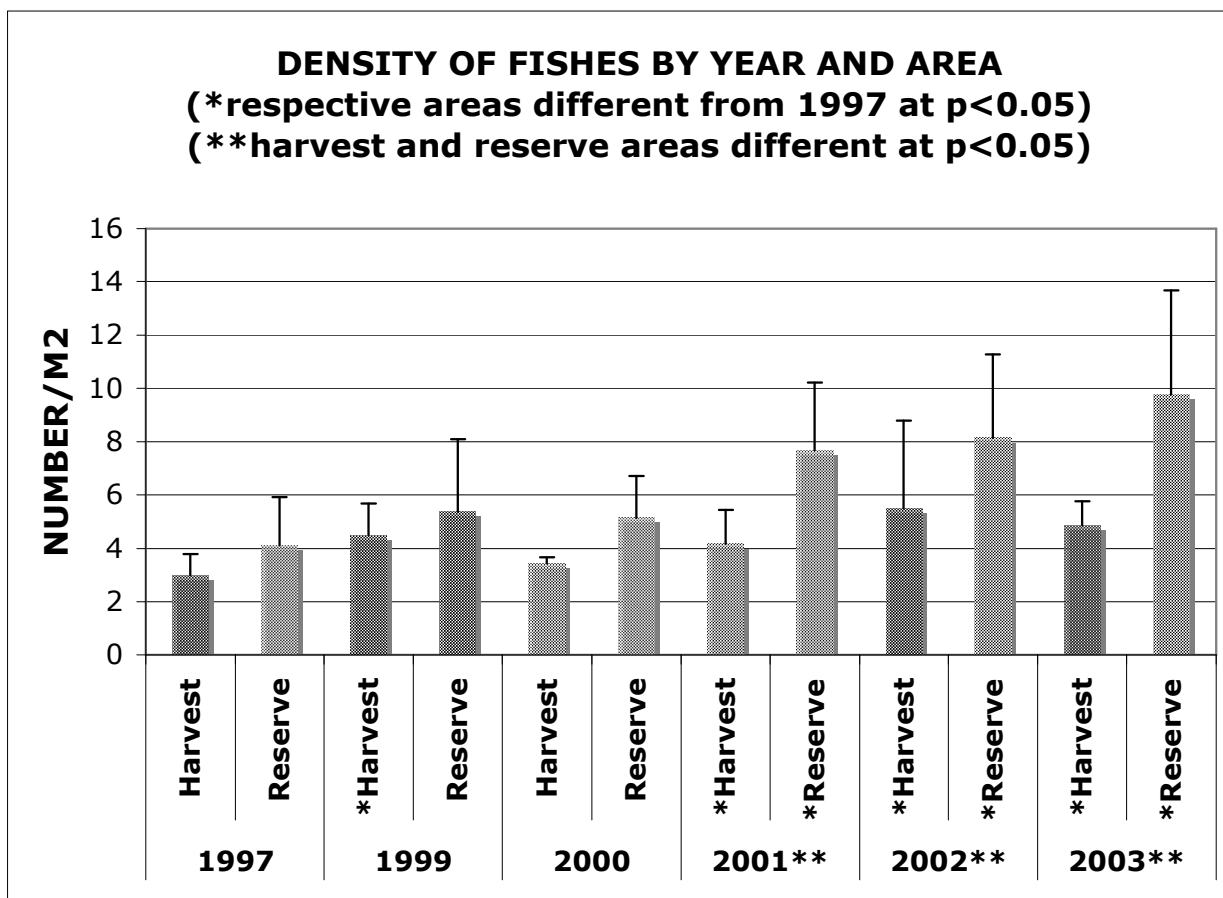
In the Verata District, Fiji Islands, the Ucuivanua MPA is a 1-km² reserve, created in 1997, in a 95-km² fishing ground, including an adjacent harvest area. Annual diver surveys were taken during 1997-2003. Clams were counted and measured (shell diameter, cm) in each of 50 1-m² quadrants (ten quadrants along each of five 50-m

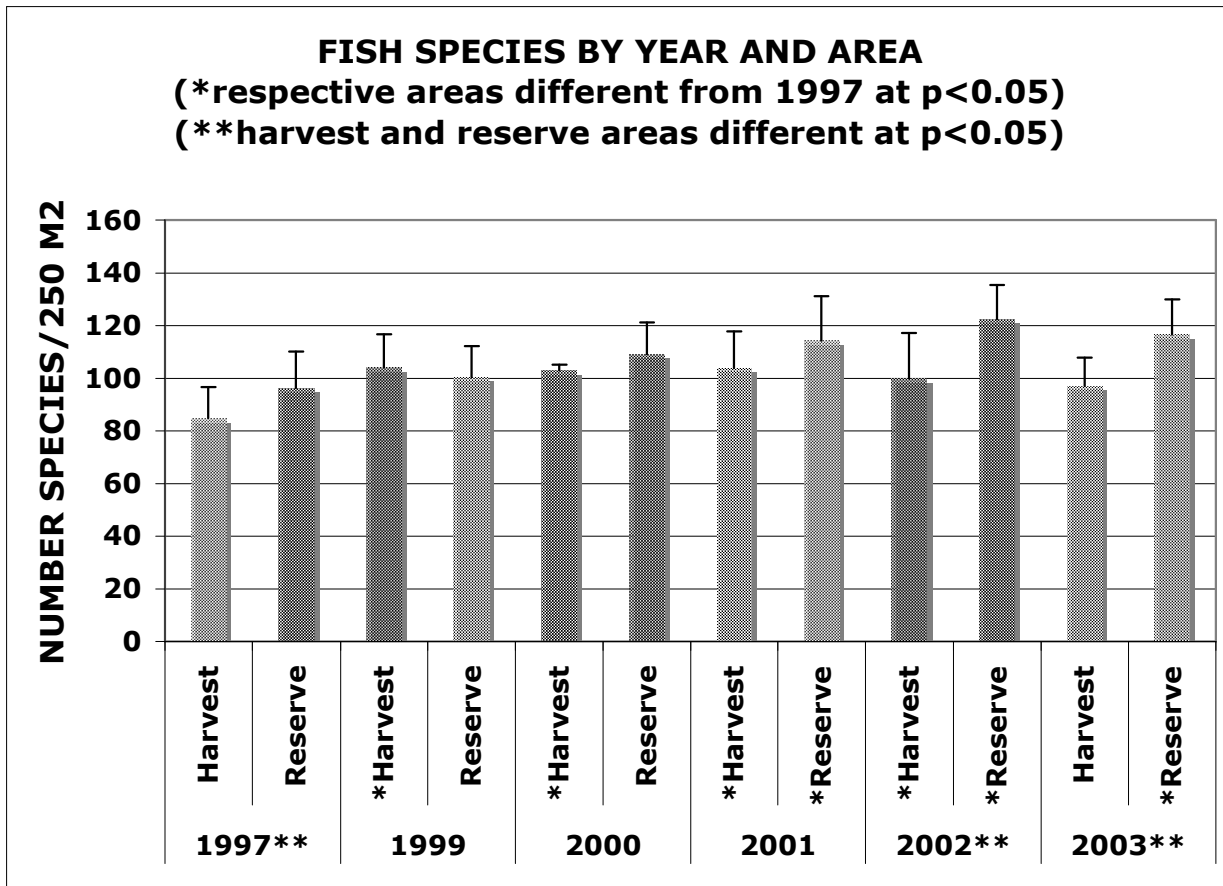


Meta-Analysis Article

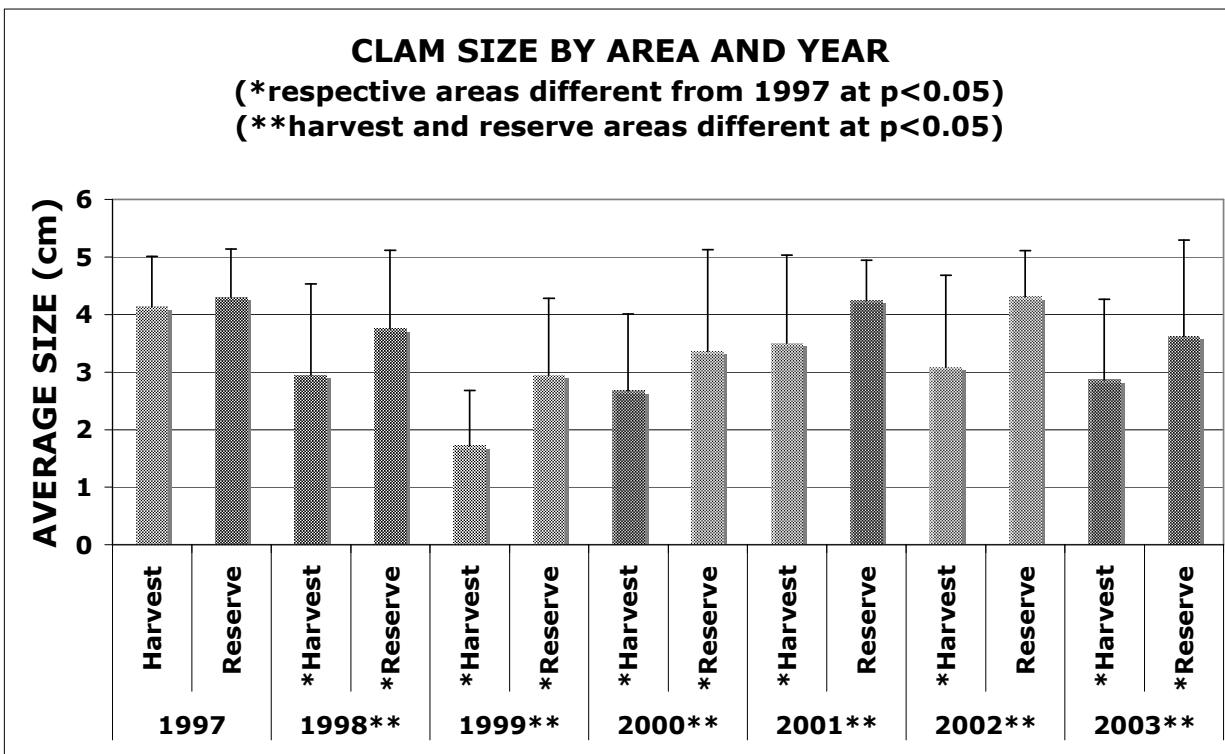
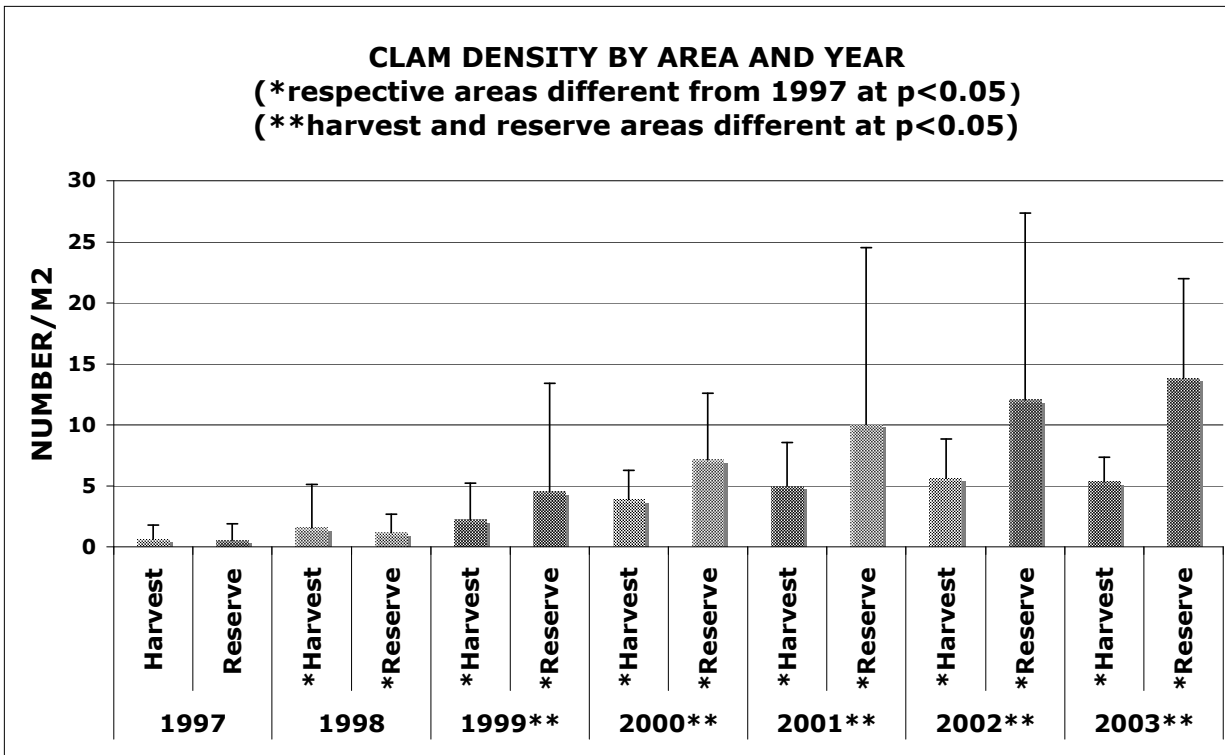
transects) in both the reserve and harvest areas. All comparisons of clam density and average size were based on the one-tailed t-test $p < 0.05$.

Results – Data for the Sinub MPA are summarized in the two following figures. Density of fishes made essentially no gains during 1997-2000 but during 2001-2003, significant gains were realized in both the harvest and reserve areas, compared to 1997; significant gains were also made in the MPA compared to the harvest area. In 1997, the reserve area had more fish species than the harvest area and only the harvest area had significant gains in 1999 and 2000. However, during 2001-2003, significant gains in species richness were realized in both harvest and reserve areas compared to 1997; significant gains were also made in the MPA compared to the harvest area.





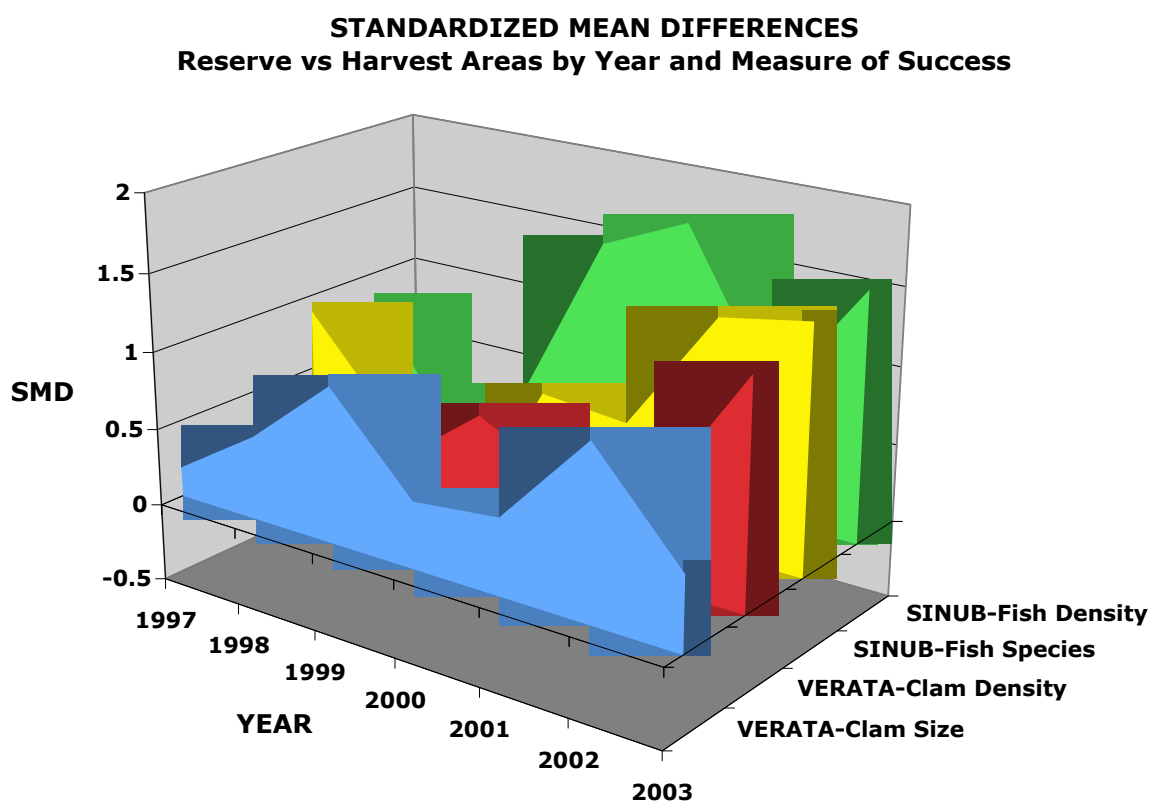
Results for the Ucnivanua MPA are summarized in the two following figures. Compared to 1997, clam densities in both the reserve and harvest areas were higher 1998 and every survey year thereafter. Although clam densities were no different between reserve and harvest areas in 1997, densities were significantly higher in the MPA thereafter. During 1997-1999, average size of clams decreased as density of recruits increased in the reserve area and “spilled” into the harvest area. During 2000-2003, average size increased back to that of 1997 as recruits matured in both areas. Clams were larger in the MPA due to increased harvest of clams in the harvest area.





Meta-Analysis Article

Results of meta-analysis were summarized as SMDs plotted for four measures of success, reserve versus harvest areas, for each year (see following figure). Missing 1998 data for Sinub was estimated by interpolation between 1997 and 1999 SMDs. In this case, SMDs were used as an index to evaluate success of intervention: SMDs < 0.0 or those 0.0-0.1 indicate no intervention effect; 0.1-0.3, a small effect; 0.4-0.8, a medium effect; and > 0.8, a large effect (Lipsey and Wilson 2001). SMDs for fish density, fish species and clam density reached 1.5 from lower values during 1997-2003. SMD for average clam size reached 0.5 to 1.0 during 1998-2003 from a low of 0.2 in 1997.



Conclusions – Meta-analysis demonstrated that both projects were successful. These projects succeeded because of excellent local support in terms of awareness, participation and compliance (personal communications with project personnel). Standardized mean differences (SMD) were useful for comparing gains due to intervention for four measures of success at two sites, one using fish and the other clams. Significant gains due to intervention were documented for the four measures of success through use of meta-analysis. SMDs reflected the gains seen in conventional analysis of data (t-test) with the same units of measure



Meta-Analysis Article

(e.g., N/m^2). Time for response to intervention must be considered when evaluating SMDs among different units of measure (e.g., N/m^2 of fish and N/m^2 of clams). More evaluation is needed to understand the limits of meta-analysis for comparing measures of success in fisheries management projects.

Acknowledgments – I thank the following colleagues for their contributions to the meta-analysis of data from Fiji and Papua New Guinea: Alifereti Tawake and Pio Radikedike, Institute of Applied Sciences, University of the South Pacific, Suva, Fiji Islands; Aaron Jenkins, Wetlands International – Oceania, Suva; and Paul Led, Locally-Managed Marine Areas Network, Madang, Papua New Guinea.



Job Announcement

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Field Experience: Minimum of 6 mo of field experience is required.
Independent: All candidates must be able to demonstrate experience collecting, analyzing and reporting field data independently, reliably, and on schedule.
Other: Desirable is experience conducting acoustic tag and/or hydroacoustic studies, extended field experience, fisheries research experience, international travel.

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Job Announcement

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