

AQUANEWS

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InterCRSP – A Natural Resource Management Program for West Africa

By Jim Bowman with D. Clair

Implementation of an InterCRSP natural resource management (NRM) program in West Africa continues to gain momentum as members of West African agencies and CRSPs hold planning workshops in Africa and the US. Joint workshops have already been held in Niamey, Niger, and Bamako, Mali.

Hillary Egna and Jim Bowman, Oregon State University, and Pierre-Justin Kouka, University of Arkansas, Pine Bluff, represented the PD/A CRSP at a meeting of CRSP Principal Investigators in St. Louis, Missouri, on July 2 and 3. The purpose of the St. Louis meeting was to lay the groundwork for a workplan development meeting for West African stakeholders, to be held in Dakar, Senegal, in mid-September.

The concept for an InterCRSP Program draws on the idea that host countries and CRSP participants alike can benefit by pooling experiences and applicable technologies developed by the CRSPs and elsewhere into a common well. The role of CRSPs is envisioned as providing leadership and technical expertise in setting up additional integrated projects in the region.

For the past two years the Soil Management, Peanut and Sorghum/Millet (INTSORMIL) CRSPs have operated an InterCRSP pilot project located near Niamey, Niger, at the site of an earlier project undertaken by Niger's National Institute for Agronomic Research and the Soil Management CRSP.

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The FAO, The PD/A CRSP, GIS, and POND™ – A Story of Collaboration, Acronyms, and Aquaculture Potential in Latin America

By Danielle Clair

The United Nations Food and Agriculture Organization (FAO) in Rome and the PD/A CRSP have been collaborating on a regional assessment of warmwater and temperate water aquaculture potential in Central and South America. "Modest but integral," is the way Shree Nath of Oregon State University describes the CRSP role in this continental-scale project.

In the early 1990s Jim Kapetsky of FAO's Inland Water Resources and Aquaculture Service conducted a GIS (Geographic Information System) study for Africa to assess aquaculture potential by developing some very basic estimates of water temperature and establishing corresponding thresholds of fish production in terms of crops-per-year possible for Nile tilapia. Afterwards they tied in other factors, such as water availability, soil suitability, agricultural by-products as production inputs and market demand.

Kapetsky later found out about CRSP work related to the development of the decision support software POND™ and its associated simulation models. John Bolte and Shree Nath of the

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Participants in a 1995
InterCRSP planning
workshop in Niamey,
Niger, visit the Mali
Fish Culture Station
near Kollo following
the workshop.

From the

DIRECTOR'S DESK

We have been notified by USAID that the Pond Dynamics/Aquaculture Collaborative Research Support Program has been awarded a five-year grant, beginning 1 August 1996. The continuation plan that was reviewed by an external committee this past winter and accepted by USAID was authorized at a level close to the request of 13.7 million over five years. Obligations of funds are made on an annual basis, so the actual funding level will likely differ from the authorization level.

We are delighted by the approval of our continuation plan, which contains many new components for our CRSP. In addition to the research focus of the program, we have added a research support component consisting of three elements:

- Education development
- Information management, networking, and capacity building
- CRSP Central Data Base management

Also, in keeping with advice from our External Evaluation Panel and USAID provisions, we have added several new clauses to subcontracts. These clauses formalize the use of regional plans, indicators for measuring impact, and data submission to the Central Data Base. These improvements to the oversight of our program will make for greater collaboration across a geographic region, results that are easier to understand and report, and a more complete and reliable data base.



PondDynamics/Aquaculture CollaborativeResearch SupportProgram



Sustainable Aquaculture for a Secure Future

Greetings and welcome to the Summer 1996 issue of Aquanews - a true grab-bag of updates on a range of CRSP activities: the new Education Development component based here at Oregon State University, the Africa InterCRSP Natural Resource Management project, the impact indicators work which will serve to measure CRSP effectiveness at the local level and others. Also included is a sneak preview of a study on aquaculture potential in Latin America, a project of the United Nations Food and Agriculture Organization on which a CRSP member has been collaborating. And Fishellaneous Items, of course, to keep you abreast of aquaculture and tilapia news from sources far and wide.

It has been most quiet here on the receiving end of readers' comments. (As in completely SILENT.)

Write, call or e-mail and tell us what you're thinking - about aquaculture, the CRSP, Aquanews, what-have-you. Start a controversy. Settle a long-standing grievance. We're here for you.

Direct your comments, letters, changes of address, and so on to:
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PD/A CRSP Internet Web Site:
<http://www.orst.edu/Dept/crsp/homepage.html>

This issue of Aquanews is dedicated to prize horses everywhere.

Chic Fish

According to an article in the June 18, 1996, Wall Street Journal, Brazilian tambaqui is fast becoming gourmet restaurant menu fare in New York and other cosmopolitan North American cities. Restaurant goers appear to like the taste of the fish - "like pork or veal."

But the real draw seems to be the fact that restaurants advertise the fish as originating in the rain forest. Michele Gaw, an executive chef at Cleveland's Watermark Restaurant, is quoted as commenting, "when you put the word 'Amazon' on your menu, it almost doesn't matter what the fish is - it's going to attract attention." ☺

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FAO and the CRSP in Latin America

CRSP met with Kapetsky in Atlanta last September to discuss a partnership. In October Nath met with Kapetsky's GIS group in Rome to work out questions regarding some of the modeling requirements and computer compatibility issues involved in long distance collaboration, or as Nath poses it, "What types of POND™ models would be appropriate for the study, and how could the associated output be integrated within GIS?" After the success of a pilot study which used the POND™ bioenergetics and water temperature models to predict crops-per-year output for Nile tilapia (*Oreochromis niloticus*) and tambaquí (*Colossoma macropomum*), they decided to extend the analysis to include pacu (*Piaractus mesopotamicus*) and common carp (*Cyprinus carpio*) in the overall study. This was because the latter two species are more tolerant of colder waters and may be of interest to producers and local markets.

Nath and Bolte began by using existing meteorological data to generate water temperature profiles for the Latin American region. They then developed mechanisms for predicting fish growth and associated yields based primarily on water temperature and feed/fertilizer practices. Bioenergetic model parameters were established for the four fish species. In the case of tilapia, model parameters were estimated using data from the PD/A CRSP Central Data Base; literature data and information from FAO contacts in Latin America were used to develop parameters for the other species.

FAO is interested in aquaculture in Latin America for two principal reasons. One is to provide national planners with projections of aquaculture for better planning of aquaculture development. To date, estimates have been done only on the national or province level. The current study

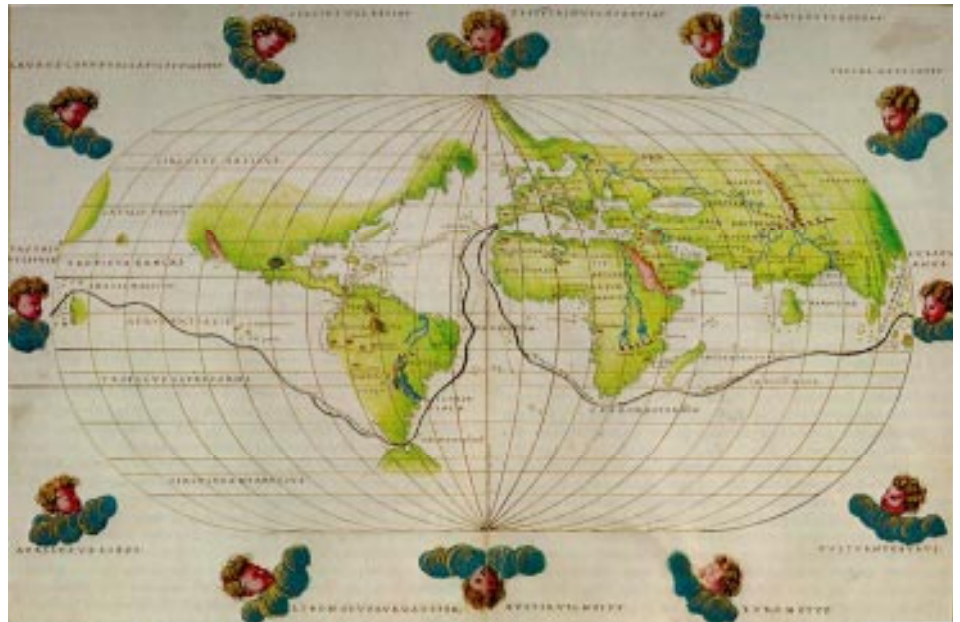
will be the first overall estimate of what type of production can be expected in different regions, what species are most suitable, and what constraints exist to aquacul-

ture development.

The information will also be valuable to economists or social scientists interested in comparing the benefits of aquaculture to some other agricultural commodity. Questions they might ask include, "How important is aquaculture in terms of its potential?" "Will it be economically viable to practice aquaculture in a particular area?" and "Will people actually eat fish in that region?" Clearly, there is no point in doing aquaculture in a region if there is

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Science has led to many advances in cartography – and in our understanding of the forces that control the dynamics of weather generation...



(From p. 1)

InterCRSP

West African country representatives have been enthusiastic about both the pilot project and the InterCRSP NRM concept.

Not all CRSPs will be involved in each project – rather, each new project will include those CRSPs (and the appropriate national counterparts in West Africa) whose expertise is suited to the agro-ecosystem in question.

Initial projects will likely be established in the semi-arid zone, and may not include the PD/A

CRSP. Still, future sites may be established in semi-humid or humid agro-ecological zones, thus providing opportunities for the PD/A CRSP to contribute.

The CRSP Council appointed the Integrated Pest Management (IPM) CRSP as the lead in organizing this effort on behalf of all CRSPs. The InterCRSP program is funded by USAID independently of the individual CRSPs although some cost-sharing is required. ☺

CRSP Education Coordination

by Marion McNamara

Among the new CRSP activities coming on-line with the new grant (1996-2001 Continuation Plan) will be Education Development, a new research support component. The creation of the Education Development component grew out of a need identified by the External Evaluation Panel (EEP) and other outside reviewers that the CRSP help build human capacity in host countries to insure program sustainability.

The Education Development component will support CRSP efforts in all countries where we work. My job will demand close contact with Principal Investigators (PIs) at all sites to determine what support they need to extend CRSP information. Assistance will include help in locating funding resources as well as in training program logistics.

During the next year, our office will coordinate CRSP participation in conferences and workshops, look for graduate student funding opportunities, and organize short-term training courses as requested by project PIs, host country collaborators, and donor agencies.

In response to the EEP recommendation to increase intra-CRSP communication, plans are underway to conduct an orientation session for new CRSP participants, and a session on improving communication among CRSP researchers working in different disciplines.

Currently, our office is searching for funding to sponsor participant travel to the ISTA IV (Fourth International Symposium on Tilapia Aquaculture) conference, to be held in Orlando, Florida, in November 1997. (The PD/A CRSP is a co-sponsor of this event.)

We are also updating CRSP education and training records. If you are an alumni of any CRSP program - whether short-term training or a graduate program - we would like to hear about what you are doing, and what kind of contact you now have with the CRSP.

This column will be a regular feature of Aquanews to keep readers apprised of education and training activities in the CRSP and informed of the whereabouts of CRSP education and training alumni. As coordinator for the Education Development component, I look forward to hearing from CRSP participants about education and training success stories and future needs. ☺

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The Big One That Didn't Get Away

by Brigitte Goetze and Danielle Clair

While angling for a tongue-tripping slogan that would firmly imbed the Pond Dynamics/Aquaculture CRSP in global consciousness, early catches had to be released. Returned to the wilds were: Just Research It; Head for the Pond; and Over 13 Billion Sex-Reversed.

In order to improve fishing success, a PD/A CRSP-wide slogan-off was inaugurated. Friends and family of participants were especially encouraged to contribute. Luring competitors to vie for the winning slogan was a pair of silk boxer shorts prominently featuring a pair of colorful kissing angel fish of indeterminate species.

This bait proved highly attractive to many, as we received a total of 52 entries. However, a considerable number, despite great brilliance, did not qualify as keepers. These included members of the following species: *Dictus humerosus*, *D. obnoxious*, *D. obscenicus*, and *D. perdidus-completus*. Several members of *D. snappicus* fell within the size limit. However, our species of preference was *D. slogan-worthyus*, of which we caught several attractive specimens. Unfortunately, the bag limit was one.

As all alert readers of Aquanews have already noted, "Sustainable Aquaculture for a Secure Future," proved to be several inches longer than all competitors. We did not let it get away. ☺

A Measure of Impact in Honduras

By Bart Green with D. Clair

Ricardo Hernandez Paz started work in aquaculture as a laborer at El Carao National Fish Culture Research Center, Comayagua, Honduras in 1980. Hernandez Paz was involved actively with PD/A CRSP research activities since its inception at El Carao in 1983. Through participation in PD/A CRSP research and production of both tilapia fingerlings and food fish, he learned the gamut of production aquaculture – from production of all-male tilapia fingerlings by sex inversion to production of food-sized tilapia. In 1990 he was promoted to foreman at El Carao.

Hernandez Paz moved to the private sector in 1994, taking a job as farm manager at a private tilapia farm in northern Honduras near San Pedro Sula. In 1996 he became manager at the only private fingerling production farm located in southern Honduras near the city of Choluteca. Here's an example of the farm's successes: from February through April 1996 Finca La Primavera de los Hermanos Maradiaga was selling about 500,000 sex-inversed tilapia fingerlings on a weekly basis.

Hernandez Paz recently was offered an excellent opportunity to take his skills and expertise to Nicaragua, but he says that for now he is happy to remain in Honduras. 🍷

Le aplaudimos
su éxito y le
deseamos
otro suceso en
el futuro.

Ricardo Hernandez Paz, shown here against a background of tilapia ponds.



Progress on CRSP Impact Indicators

By D. Clair

If it looks like a crater and meets the geologic definition of a crater, it must be a crater. No, not that kind of *impact* . . .

USAID earlier this year asked the CRSP Program Management Office (PMO) to develop a template for CRSP researchers to use in documenting how the program's presence at its various sites affects a host of processes at the local level. Areas of impact include research, outreach, and policy development. The indicators were to be substantial measures of

success and would become incorporated into the CRSP research subcontracts.

Brigitte Goetze, CRSP Deputy Director, coordinated the effort to design clear, understandable "Impact Indicators" that are both quantifiable and broad enough to serve as benchmarks for measuring program success in a more general sense. Candace Buzzard, who's worked for many years with USAID in other programs, got the ball rolling by developing a first draft that was distributed to CRSP

participants and USAID for comment.

Since then Goetze and Buzzard have worked with participants and USAID to revise the document. We are close to having a final set of indicators mutually agreed to by CRSP participants, the PMO, and USAID. The Impact Indicators template is truly a composite product based on the input of many people. It meets USAID requirements and will also be useful for CRSP project tracking. 🍷

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FAO and the CRSP in Latin America

no existing or potential market. The results of the study may also be useful to assess the potential contribution of fish farming to food security.

The second reason for FAO's effort in the study is to provide a framework for donor organizations like the World Bank or others to better plan their technical and financial assistance activities. For example, the present project could be used to identify regions where there is a lot of potential but little current activity. Such regions may therefore benefit from an infusion of resources to promote aquaculture.

INTERVIEW

I spoke with Nath about this project in his office in Gilmore Hall at OSU in late July.

What were some of the parameters of the FAO study?

Jim Kapetsky and some of the other FAO experts developed models for a variety of on-the-ground situations in Latin America. One was subsistence or small-scale farming, where the inputs would be very minimal. Here we worked with smaller sizes of tilapia and carp because the other two species [tambaquí and pacu] do fine on the good quality feed, but they don't do very well in fertilized ponds. The second scenario was low end or medium level commercial farming where there might already be agricultural practices going and they wanted to add aquaculture on as an additional activity, or for the small fish farmer looking at the production and marketing of fish as a full-time activity. And the third was medium to high intensity commercial farming.

Shree Nath is a doctoral candidate in Bioresource Engineering and Fisheries at Oregon State University. He expects to complete his degree this Fall. Shree has been involved with research activities of the Data Analysis and Synthesis Team of the CRSP since 1989, primarily focusing on the development of decision support software, pond ecosystem modeling, and GIS applications in aquaculture.

Jim and other FAO people also came up with a list of factors to be considered in the development of fish farming: water requirements for ponds using rainfall data and estimates of evaporation; soil characteristics to determine whether the soil is suitable for pond construction; estimates for potential markets taking into account information like roads, urban population densities, and the potential for farm gate sales for smaller operations; and the availability of agricultural by-products for feed or fertilizer input.

Weighting parameters were then developed for each of the

above factors to come up with small- and commercial-scale models. The final step was to link crops-per-year output for each species with these models to get an idea of which are the most suitable areas at the different levels of farming intensity. In some situations you might have regions that are very suitable because of the markets but you simply couldn't grow fish there because water temperature wasn't suitable for the species, or some other factor limited production capabilities.

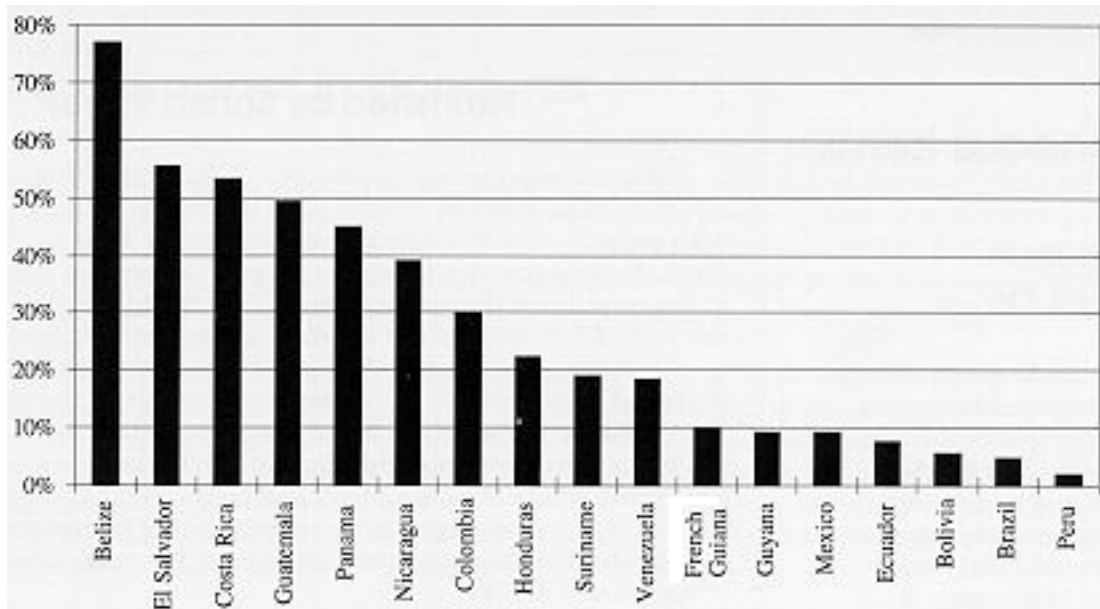
How has the work progressed and where are you now in the process?

The project has involved generating numerous individual maps containing specific data sets. The individual layers don't take into account any of the other constraints. As more layers are added and constraints specified, the final GIS output [aquaculture potential, in this case] becomes better defined and more specific.

The maps include information relating to environmental factors - protected and environmentally sensitive areas are masked out from the work.

We have completed the basic work and have laid out the methodology formally. We need to complete analysis and discussion of the results, and put together an FAO report, due to be out shortly. The FAO is in the process of collecting information from some locations that will be used to make some benchmark comparisons to our overall predictions.

James McDaid Kapetsky, Ph.D., is Senior Fishery Resources Officer for the Inland Water Resources and Aquaculture Service, FAO, in Rome, Italy. He has visited some 50 countries in conjunction with fishery research and more than 20 for work relating specifically to aquaculture. In addition, he has worked with GIS applications in the field of aquaculture since the mid-80s.



The graph above is an example of the output obtained by synthesizing results generated from the GIS study. The figure shows areas (%) by country that rated very suitable for commercial fish farming with up to 1.4 crops per year of Nile tilapia (fed to 75% satiation and harvested at 600g).

There will be a presentation of the work at next year's World Aquaculture Society meeting. Also, the FAO will produce a Spanish version of the report later in the year.

How did POND™ [decision support software] fare in this project?

This work was an interesting spin-off from the CRSP-funded POND™ project. The models were developed within POND™, but POND™ is a free standing software. It's really not geographically designed in the sense that it cannot automatically generate geographic estimates of fish yields - you would have to go in and manually change the locations. So, we took out POND™ models that were relevant to this work, simplified them a fair amount, and coded them as free standing applications that we passed on to FAO.

How does the CRSP benefit from this type of collaboration?

Well, it is one thing to sit in a corner and develop mathematical models, and it's another to take it out in the real world and actually apply them. That's when it starts

to get a lot more interesting. It points out some of the constraints in models and the potential for future refinements.

That makes sense. Can you provide some examples of the constraints you've uncovered?

One of the biggest problems we've had is in predicting yields in fertilized, low intensity ponds. Predictions appear to be much better when feeds are being used because you know what you are putting into the system. With fertilizers it's not that straightforward because there is so much variability in types of fertilizers. Still, we feel relatively confident that we're on the right track, given the general assumptions that you would have with any type of model, that there are the limits of predictability.

We also didn't take into account water quality to predict fish growth because we didn't have that kind of information. That is where the in-country, more detailed, studies start to get important because you can identify water sources, different types of water quality, and try to tie in how fertilizers would be more effectively used and what types of feeds

you might use with different types of fertilizers.

Another limitation is that this study addresses only inland pond aquaculture - other aquaculture production systems and coastal aquaculture are not addressed. When you look at coastal regions you might be talking about different species - the first thing that comes to mind is the shrimp. And there, the interactions with the environment become much more important. *(Please see p. 11)*

John Bolte, Ph.D., has conducted research and taught in the area of Biosystems Modeling and Analysis for the past 11 years. His research activities include developing mathematical models for warm and cool water aquaculture, agricultural crop production, climate change impacts on agriculture, and water and wastewater treatment systems. Currently he is an Associate Professor in the Bioresource Engineering Department of Oregon State University.

Fishellaneous Items

Aquaculture . . . Catches On ~

"The world is expecting aquaculture production to help bridge the supply-demand gap," writes Meryl Williams in a recent report on global aquaculture for the International Food Policy Research Institution, a Washington think tank.

Hopeful signs include world aquaculture production that more than doubled between 1984 and 1993, reaching 16.3 million tons, reports the United Nations Food and Agriculture Organization (FAO). Growing at 10 to 15 percent annually, aquaculture is expected to rise between 22 million and 40 million tons by 2010.

Overfished ocean fisheries, meanwhile, will struggle to maintain today's 80 million-ton level, the FAO says.

Because of the growth in aquaculture, the output of ocean fisheries and aquaculture together will grow 10 to 30 percent by 2010, helping feed a world population 36 percent larger than today's 5 billion plus people, the FAO predicts.

"Global agriculture production can't keep pace with demand for protein, so people are going to the waterways," says Cyr Couturier, past president of the Aquaculture Association of Canada. "Historically, that's the way people have derived the additional protein they need." (*Christian Science Monitor*, June 19, 1996) ☺

Fi(ni)shed by Spring Water

Tilapia reared commercially by P T Aquafarm Nusantara start out in natural lakes in central Java where the water is saturated with oxygen. The fish reach a market size of 900g in 10 months. Then the fish spend a month in 10 acres of cement race-ways built at the mouths of the springs which feed the lakes. Water flowing at the rate of 500 gallons per second "purges" or "flushes" the fish.

According to a company official, keeping the fish off the bottom of the lakes standardizes the texture and taste of the fish, making them cleaner tasting than wild or pond raised tilapia.

Harvest involves sending the fish live to the processing plant in Semarang where they are killed and bled. Two hundred and ninety tonnes of fish (liveweight) are currently being harvested each month and production is consistent throughout the year. (*Seafood International*, June 1996) ☺

Fisheries in Honduras: Then and Now

In his excavations near Trujillo, [Honduras,] Canadian archaeologist Paul Healy has uncovered round weights used by ancient fishermen on their nets. Although the relics date back to between 600 and 900 AD, they are much like the weights North Coast fishermen continue to use today.

Early Hondurans used more than nets to catch their fish. Tawahka and Miskito Indians even today occasionally use bows and arrows to fish. Spear fishing is also common in the Bay Islands and La Mosquitia . . .

~ ~ ~ ~ ~
The Pech Indians believe the sirena is the mother of all fish. The sirena is not a regular mermaid because she has nine eyes. It was the Pech hero Patakako who verified that there were, in fact, sirenas living in each river. The Pech used to have special ceremonies before fishing to ask the sirena for permission to take some of her fish. They offered guacales, or gourd bowls, full of cacao and sacred wine to thank her for giving the Pech fish to eat.

Pre-Columbian pottery that has been found in streams, like Peroles Calientes, Olancho, probably once contained food gifts for the spirits who controlled the fish. . .

Although some might say the river spirits are hiding fish today, there are other more mundane reasons for the decline of fish populations in Olancho and La Mosquitia. Overfishing is one cause. Destructive methods like poisoning and dynamite have also caused the loss of river fish. Gold mining La Miskito, which uses dredges, stirs up the water and is killing the "cuyamel" fish, which can survive only in clear water. It is also killing the nutria, a kind of river otter . . .

~ ~ ~ ~ ~
Having lost fish in their area, Indians must either invade the Rio Platano Biosphere to get fish from there (something that is not legal, but is done) or learn to raise tilapia fish in fishponds.

Although in Honduras fish in non-protected streams is under the authority of the Ministry of Natural Resources and fish in protected area is under the Honduran Forest Development Corporation (COHDEFOR), there is no program to restock fish except tilapia and fishponds . . .

(From "Fishing has long history but faces short future in Honduras," by Wendy Griffin, in *Honduras This Week*, June 29, 1996) ☺

USAID's Guide to Managing for Results: The Strategic Framework

By Laurie Denton, Project Manager for Conwal Inc.

(Reprinted from "Front Lines," Jan-Feb 1996, Vol 36, no 1)

"Are we there yet? Are we there yet?" This is an all-too-familiar refrain to traveling parents. But it is a question that has merit for any goal-oriented task. To determine where USAID is going, and how we will know when we get there, Administrator Brian Atwood last spring requested a road map, a graphic depiction of agency goals and objectives drawn from the Strategies for Sustainable Development.

The road map, known as the agency's Strategic Framework, will be used to review missions' strategic plans, examine agency performance and report on results to Congress and the Office of Management and Budget. It was developed by the Center for Development Information and Evaluation (CDIE) with input from a large number of staff throughout the agency, then distributed to all USAID employees in November 1995.

The framework is a keystone of the agency's reengineering effort because it facilitates managing for results. It is a conceptual diagram that presents USAID's sustainable development strategies. The hierarchical framework depicts five levels: U.S. national interests, USAID's mission of sustainable development, its goals, objectives, and the program approached employed to achieve these objectives.

In a cover letter released with the document, Colin Bradford, assistant administrator for the Bureau for Policy and Program Coordination, wrote: "These goals and objectives help us to focus our resources in those areas most critical for sustainable development, develop shared visions and plans with our development partners, and report on the state of the development world and how we are contributing to its improvement."

More than 200 staff and many development partners helped develop the framework and the indicators that will be used to measure performance. Beginning last spring, CDIE ran four workshops to develop indicators for the five agency goals: achieving broad-based economic growth; building sustainable democracies; stabilizing population and protecting health; managing the environment; and humanitarian assistance. Under each goal, the framework outlines three to five objectives. Technical representatives from Washington, the field, non-governmental organizations, other federal agencies and donors came together to work on the framework and propose candidate indicators. Sector working groups drawn from regional and central bureaus met last summer in Washington to fine-tune the candidate indicators.

As countries cross thresholds for goal indicators in each sector, the agency will consider graduating them from assistance in that sector. When they cross the threshold in several sectors, the agency will consider graduating them from the entire program.

The framework is also a tool for all operating units to focus

their own plans on the agency's principal objectives. The Strategic Framework becomes the common frame of reference for analyzing and reporting on results.

"Its strength comes from its simplicity," notes Graham Kerr, acting chief, division of Performance Management and Evaluation at CDIE, in a report on the framework, "but it has its limitations. Additional tools are needed to analyze cross-cutting concerns, such as integration, sustainability and participation."

The Strategic Framework is a work in progress. Next summer, CDIE will coordinate revision of the framework incorporating suggestions from bureaus and field missions. CDIE is looking for suggestions, which can be submitted via the PME Hotline. Type "hotline" in the USAID E-mail address list and choose "PME Hotline @CDIE.PME@AIDW" from the list of hotlines. The Internet address is ph hotline@usaid.gov.

"Strategic Framework and Indicators, 1995-96" was distributed agencywide at the end of 1995. To order, call the Distribution Information Services Center at 703-351-4006. ☎

All-Israeli Male Tilapia

Nir David, a tilapia production farm in Israel, offers customers a female tilapia that naturally breeds a genetically all-male brood stock. According to Nir David founder Eran Lahav, he isolated a strain of *Oreochromis aureus* from a few remote Israeli springs before it cross-bred with other strains of tilapia and disrupted its unique breeding ability; female *aureus* caught in those same streams today no longer produce male-only offspring. Nir David is also working on an all-male brood stock of red tilapia as well as a tilapia that withstands colder-than-normal-for-tilapia water temperatures. (*Fish Farmer, International File, July/August 1996*) ☎

Upcoming Conferences and Expositions

Date	Topic/Title	Event Location	Contact Information
Sept 1-5	Intl Conf on Eastern Europe, European Aquaculture Society	Budapest, Hungary	European Aquaculture Society, Coupure Rechts 168, B-9000 Gent, Belgium; Fax 32 9 2237604
Sept 4-6	British Trout Farming Conference	Winchester, England	Shaun Leonard, Dept. of Fish, Game and Wildlife Management, Sparsholt College Hampshire, Winchester S021 2NF, England, Fax +01962776587
Sept 12-13	Drug Availability for Minor Species in the 21st Century	Bethesda, MD, USA	Dr. Alistair I. Webb, College of Veterinary Medicine, P.O. Box 110925, Gainesville, FL, 32611-0925
Sept 12-13	The Importance of Marine Gastropods for Aquaculture	Cork, Ireland	Dr. R. O'Riordan/ Dr. G. Burnell, Dept. of Zoology, University College cork, Lee Maltings, Prospect Row, Cork City, Ireland
Sept 19-23	Fish Delta '96	Tulcea, Romania	Romexpo, 65-67 Marasti Blvd, Bucharest, Romania, Fax +40 1 312 8400
Sept 25-27 Sept 26-28	Infofish-Aquatech '96 Aquaculture Asia '96 Exhibition	Kuala Lumpur, Malaysia	Clare Northcott, EMAP Heighway, MEED House, 21 John St, London WC1N England; Tel 44 0 171 404 5513; Fax 44 0 831 9362
Sept 26-27	Sea Fare International	Las Vegas, Nevada	Sea Fare Expositions, Tel (206) 789-6506, Fax (206) 789-9193, Email 102154.2523@compuserve.com
Sept. 26-28	Fish Expo Seattle	Seattle, Washington, USA	Diversified Expositions, Tel (207) 842-5508, Fax (207) 842-5503
Oct 1-3	Scottish Fish Farming Conf & Exhibition	Aviemore, Scotland	Peter Landless, 3a Querns Lane, Cirencester GL7 1RL, England; Fax 44 1285 650729
Oct 13-15	Marketing & Shipping Live Aquatic Products '96	Seattle, Washington, USA	John Peters, Nor'Westerly Food Tech Services, 2743 56th Ave SW, Seattle WA 98116; Tel 206 938 0676; Fax 206 933 7937; Email 103243.675 @compuserve.com
Oct 16-18	Seabass and Seabream Culture	Verona, Italy	EAS Secretariat, Courpure Rechts 168, B-9000 Gent, Belgium, Fax +31 9 2237604
Oct 17-19	Fish Expo Boston	Boston, USA	Diversified Expositions, Tel (207) 842-5509
Oct 28-30	IVth Intl Cephalopod Trade Conference	New Orleans, USA	Agra Europe Ltd, 25 Franton Road, Tunbridge Wells, Kent TN2 5JT, Tel 01892 511 807, Fax 01892 527 758
Oct 29- Nov 1	'96 China Fisheries & Seafood Expo	Qingdao, China	Sea Fare Expositions, Inc, 5305 Shilshole Ave NW, Ste 200, Seattle WA 98107; Tel 206 789 6506; Fax 206 789 9193; Email 102154.2623 @compuserve.com
Nov 13-14	AquaVision '96	Stavanger, Norway	Forum Conference Centre, Stavanger, AquaVision 96, Postboks 410, N-4001 Stavanger, Norway, Fax +47 51 551015
Nov 14-16	Victam-Asia '96 & VIV Aquaculture '96	Bangkok, Thailand	Piet Schrama, Victam Intl, PO Box 1103, 2302 BC Leiden, The Netherlands; Tel 31 71 576 8603; Fax 31 71 531 7554
Nov 20-23	International Conf on Shellfish Restoration	Hilton Head, South Carolina, USA	Rick DeVoe, ICSR '96, c/o Sea Grant Consortium, 287 Meeting Street, Charleston, SC, 29401, USA
Nov 27-30	ExpoPesca '96	Santiago, Chile	EMAP Heighway, 21 John St, London WC1N England; Fax 44 0 171 831 9362
Feb 20-23, 1997	World Aquaculture Society, 1997 Annual Conf and Expo	Seattle, Wash, USA	WAS '97 Conference Manager, 21710 7th Place West, Bothell, WA 98821; Tel 206-485-6682; Fax 206 483 6319
March 19-21, 1997	Temporal Variability of Plankton and Their Physico-Chem Env	Kiel, Germany	Professor F. Colijn, FTZ, Hafentörn, 25671 Büsum, Germany
Oct 5-11, 1997	3rd Intl Abalone Symposium	Monterey, California, USA	Catherine Ashley, California Sea Grant College, 9500 Gilman Dr, La Jolla CA 92093-0232; Fax 619 534 2231; Email: cashley@ucsd.edu

Workshops and Short Courses

Date	Title/Topic/Site	Contacts
Year-round	Work Experience in Hatcheries Techniques/ Asian Institute of Technology, Thailand	Aquaculture Short Course Unit, Ag & Aquatic Systems, School of Env, Resources & Development, GPO Box 2754, Bangkok 10501 Thailand; Fax 66 2 524 5484; Email: somchai@ait.ac.th
Year-round	Training & Research in Fisheries & Stock Mgmt/Wageningen Agricultural University, the Netherlands	G. van Eck, Dept of Fish Culture & Fisheries, PO Box 338, 6700 AH Wageningen, The Netherlands; Tel 31 8370 8330; Fax 31 8370 83937; Email: gerrie.va.eck@alg.venv.wau.nl
Oct 6 (6 wks)	Food Fortification Management / International Agricultural Centre, the Netherlands	R. van Agen, Head, Student Affairs Section, P.O. Box 88, 6700 AB Wageningen, The Netherlands; Tel +31 (317) 490111; Fax +31 (317) 418552; Email iac@iac.agro.nl
Oct 7-9	Prescription of Aquaculture Therapeutants/ Canadian Aquaculture Institute, Canada	Bob Johnston, 550 Univ Ave, Charlottetown, Prince Edward Island, Canada C1A 4P3; Tel 902 628 4226; Fax 902 566 0420; Email bojohnston@upepei.ca
Oct 10-12	Applied Aquaculture Epidemiology/ Canadian Aquaculture Institute, Canada	Bob Johnston, 550 Univ Ave, Charlottetown, Prince Edward Island, Canada C1A 4P3; Tel 902 628 4226; Fax 902 566 0420; Email bojohnston@upepei.ca

(From p. 7)

FAO and the CRSP in Latin America

How do you go about testing the models with real life situations?

We would do model validation. One of the biggest problems is that many of the researchers or extension agents collect information, but it's not reported in a form that can be used very easily for model validation. To do model validation, you need to have information on water temperature, periodic fish samplings, feed information, any other management practice that you could tie into the model one way or the other. And that has been very difficult to identify, so we've had to strain the available information and throw out things that had a lot of potentially useful information.

You met with the FAO folks in Rome last year, but since then you've been in Oregon and they've been there. How has the distance

affected the project?

Actually, it's worked out very well. We've been passing information back and forth via e-mail, via FTP, using the Web. It seems to be a very viable option for this kind of collaborative work. Even big data sets can be downloaded from the Web quite efficiently. For example, when we want others to look at our work to get their views, we put the maps and documents on the Web and just have them read over them. The problems of operating systems go away.

I think that this type of collaboration is an effective mechanism for these organizations to work together. There is always a tendency for each of the organizations to proceed at their own momentum but where the bridges are built between individual personnel is where the synergy starts to pay off.

Also, I think that the time difference actually is sometimes

beneficial because Jim could send me something towards the end of the day in Rome and I would get it in the morning here while he's at home. I'd work on it here and send it back for him to look at it first thing the next morning.

You worked that closely on a day-to-day basis?

We invariably exchange several e-mail messages a week. When you're dealing with data anytime - especially large, spatial data sets - it's easy for errors to slip through the cracks. We spotted something recently that shouldn't have been there, and I just got e-mail from Jim [Kapetsky] saying that he also saw it. He found that it was an error that happened in the last phase of map overlay. We've interacted with Len Lovshin at Auburn University on the fish growth work, too. With this type of work, it's nice to have a couple people looking at the output. ☺

~ Website Information ~

• Bioresource Engineering Department Homepage, Oregon State University, Corvallis, Oregon:
<http://biosys.bre.orst.edu/biosys.htm>

• POND™ Software, Oregon State University, Corvallis, Oregon:
<http://biosys.bre.orst.edu/pond/pond.htm>

• United Nations Food and Agriculture Organization, Rome, Italy:
<http://www.fao.org/>



A fry in the hand is worth two in the pond . . .
Jim Rakocy, University of the Virgin Islands, snaps a picture of tilapia fry held by Dan Meyers of Zamorano Escuela Agricola Panamericana, while touring aquaculture facilities at Zamorano. The tour was part of the 35th annual Caribbean Food Crops Society Conference held in Honduras in July. CRSP Education Development Coordinator Marion McNamara was one of more than 80 conference participants from 15 countries.

Goings-on in the Pond . . .

Please welcome **Antonio Circa**, the new Host Country Principal Investigator at the Freshwater Aquaculture Center, Central Luzon State University, in Munoz, Nueva Ecija, the Philippines. Prof. Circa has worked at CLSU since 1980 as a researcher and instructor. He received an M.S. in aquaculture at the Asian Institute of Technology, Thailand, in 1987.

We are happy to announce that Dr. **Bryan Duncan**, Auburn University, is now a member of the PD/A CRSP Board of Directors. Prof. Duncan has worked with the CRSP for many years as principal investigator and, most recently, as Co-Chair (with Raul Piedrahita) of the Technical Committee.

Eduardo Lopez leaves the CRSP as Host Country Principal Investigator at the Freshwater Aquaculture Center, Central Luzon State University, to focus on doctoral studies at the University of the Philippines in the Visayas, Iloilo. We wish him well and look forward to the possibility of working with him again in the future.

Congratulations to **Marco Polo Micheletti Bain**, Host Country Principal Investigator in Honduras, who was named Vice Minister of the Secretaría de Recursos Naturales, the Honduran natural resource management agency. We are pleased to note that he will remain in his capacity as CRSP PI for work carried out at El Carao Station and in the Choluteca area.

AQUANEWS

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