AQUANEWS

THE NEWSLETTER OF THE POND DYNAMICS / AQUACULTURE COLLABORATIVE RESEARCH SUPPORT PROGRAM

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USAID Missions Respond Favorably to The CRSP

The United States Agency for International Development (USAID) Missions were given an opportunity to comment on the proposed changes in the Pond Dynamics/Aquaculture CRSP. In light of recent budget cuts, it will be necessary to reduce the number of CRSP projects. In the course of planning, the USAID Bureau of Science and Technology polled the Missions to find out how important the CRSP projects are to the development of fisheries and aquaculture in their countries. These are some of the Mission's responses:

The Kigali, Rwanda Mission responded that "this program (the CRSP) along with our bilateral fish culture program has been making significant technical progress in demonstrating the possible benefits of fish culture in Rwanda...We have repeatedly reported on the high quality of work being carried out by Dr. Hanson (CRSP Researcher) and how important his relations with the National University are to our (fish culture) program."

The Mission in Bangkok, Thailand wrote that "close collaboration between the Department of Fisheries (and) private fish farmers has resulted in an effective research program for tilapia and freshwater prawn culture." The Mission also encouraged the continuation of the Thailand CRSP project by offering financial support.

The Jakarta, Indonesia Mission commended the Management Entity "for the efforts that have been made over the past two years to utilize CRSP resources to the maximum extent possible in Indonesia." The Mission noted the benefits of the Indonesia CRSP project. Institut Pertanian Bogor (IPB), "Indonesia's largest agricultural university, now has the basics of a good fisheries research site...A number of technical staff have been trained in research methodology and laboratory practices...CRSP-funded advisors have helped plan and coordinate special research projects. Finally, a major input to fisheries research planning was provided under the CRSP."

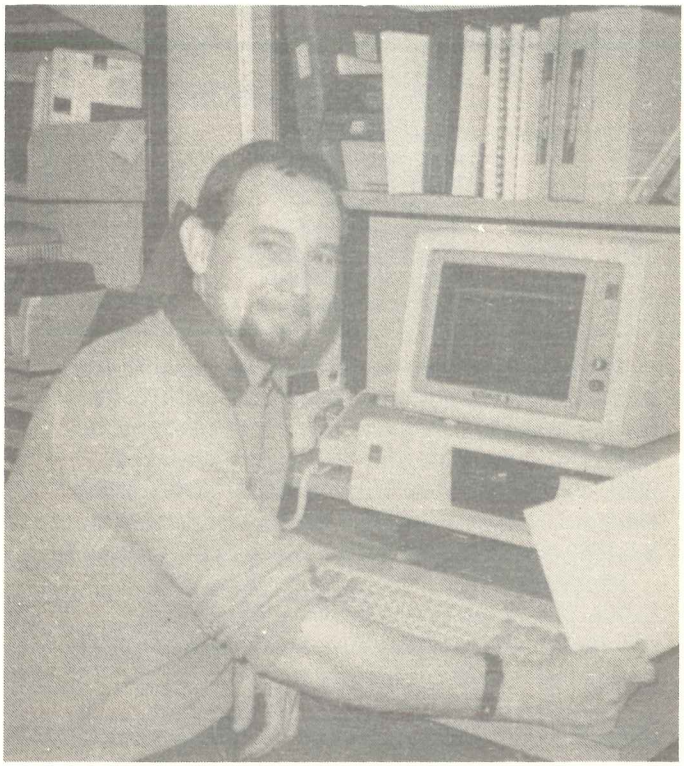
The Manila, Philippines Mission wrote that "USAID recommends that CRSP Philippine-based activities continue since they are supportive of USAID program objectives."

The Mission in Panama noted that "the CRSP has developed a good relationship with the Mission, the GOP (Government of Panama) and other agencies and institutions...Host Country officials also view the implicit on-the-job training as very beneficial for their institutions and for Panama."

The Tegucialpa, Honduras Mission responded that "The CRSP activity in Honduras, as managed by Mr. Bart Green (CRSP Researcher), has resulted in an awakening of interest in aquaculture on the part of the GOH (Government of Honduras) Ministry of Natural Resources...The CRSP activity in Pond Dynamics has constituted one of the most active efforts of the GOH in the area of aquaculture, and has served as the focal point for expanding such activities and energizing an improved extension effort."

The CRSP takes pride in these testimonies and regrets that it will not be possible to continue operations in all of the countries. The next issue of Aquanews will describe the new CRSP plan.

.....Jim Lannan and Hillary Egna, CRSP Management Office



Jim Bowman, Oregon State University graduate student, assists in managing the CRSP Central Data Base.

CRSP UPDATE: DATA MANAGEMENT

The CRSP Data Synthesis Team met on December 19, 1986 at the Hatfield Marine Science Center in Newport, Oregon. Official members of the Data Synthesis Team are Dr. Raul Piedrahita, adjunct lecturer at the University of California, Davis, and Dr. William Chang, of the Great Lakes Research Division, University of Michigan. Dr. James Lannan, CRSP Director, Dr. Kevin Hopkins, Assistant Director for Data Management, and Graduate Assistant Jim Bowman also participated in the meeting. The group reviewed progress in data collection and management and discussed how to synthesize the CRSP data into meaningful guidelines for tropical aquaculturists.

Steady but slow progress has been made toward establishing the CRSP Aquaculture Data Base. Decisions reached at the March 1986 CRSP Annual Meeting at Lake Arrowhead, California, resulted in

extensive revisions to the CRSP data entry templates and to the "Instructions for Data Entry". These changes were made by Kevin Hopkins and Jim Bowman. Copies of the new materials were distributed to CRSP participants by the end of April. Data sets were transferred onto the new templates and sent back to the project for verification during May and June. The Data Management Office began receiving verified files in September. To date, files for the following experiments and sites have been verified:

Cycle	Season	Site
I	Wet	Bogor, Indonesia
		Nong Sua/Ayutthaya, Thailand
		Iloilo, Philippines
I	Dry	Bogor, Indonesia
		Nong Sua, Thailand
		Iloilo, Philippines
		Butare, Rwanda
II	Wet	Bogor, Indonesia
II	Dry	Ayutthaya, Thailand
		Iloilo, Philippines
III	Wet	Butare, Rwanda

The major portion of the December meeting was devoted to a discussion of the primary goal of the Data Synthesis Team--synthesizing the data into a meaningful product--and the steps to attain the goal. The product will be a manual of practices for the tropical aquaculturist. It will take shape not as a single, one-time manual but as a series of manuals.

The production of the manual will require development of a pond classification scheme, development of preliminary models (or adaptation of existing models), testing of models, and derivation from the models of management guidelines for each pond class. The Data Synthesis Team agreed that its immediate goals would be to complete the first three of these steps, as far as the existing data sets will allow, by early September 1987.

.....*Jim Bowman, Oregon State University*

LARGE-SCALE PRODUCTION OF SAND GOBY FRY IN THAILAND

The sand goby (*Oxyeleotris marmoratus* Blk.) is known as the largest fish among the goby species. In Thailand, it has been cultured in cages with an annual production of about 600 tons. However, the shortage of fingerlings for stocking imposes a bottleneck on sand goby production. A collaborative project with the Pond Dynamics/Aquaculture CRSP and the Royal Thai Department of Fisheries is attempting to increase the production of sand goby fingerlings.

Sand goby fry were produced on a large scale for one year at the Nong Sua Fisheries Station. Approximately 1,000 egg nests containing 25 million eggs were collected from January through October under semi-natural breeding conditions. The hatching rate of fertilized eggs reached 80%.

Fry were reared in two stages. In Stage I, the fry, with average total body length of 4 mm, were fed with a combination of chicken-egg slurry and live rotifers. The survival rate at Stage I varied from 7 to 55% with an average of 20% among batches of eggs collected during the year. During Stage II, the older fry (30-60 days) were fed with live *Moina* sp., Chironomid larvae and ground "trash" fish. Fry grew to an average of 4 cm and had 60 to 90% survival. Growth rate was inversely related to stocking density at this stage. Over 150,000 juvenile fish were produced in the one-year effort. Further research will hopefully lead to methods for increasing fry survival and for producing fry to a size suitable for stocking.

.....*C. Kwei Lin, University of Michigan*

SPOTTED SCAT CULTURE IN THE PHILIPPINES

The University of the Philippines in the Visayas (UPV) and the University of Hawaii (UH) were awarded a USAID Program on Science and Technology Cooperation (PSTC) grant to study culture techniques for the spotted scat (*Scatophagus argus*). The goals of the project are to achieve induced maturation, spawning, larviculture and pond grow-out of the spotted scat.

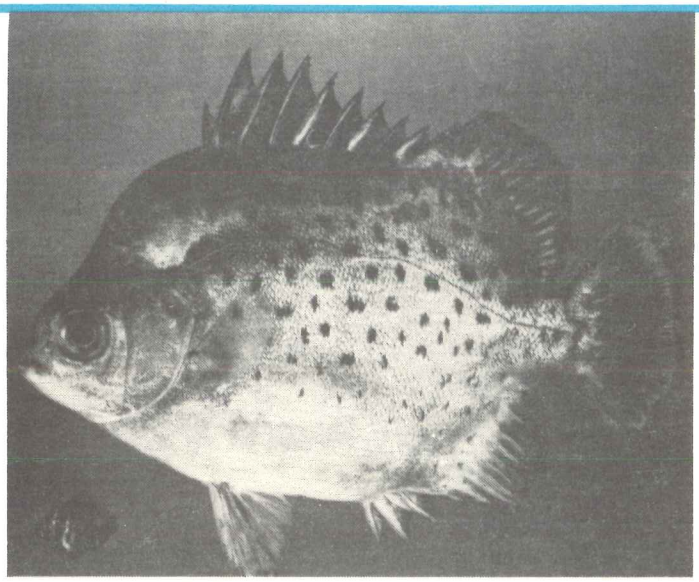
The PSTC project will conduct experiments on seed production and alternative pond grow-out strategies. These experiments will assess stocking densities, hormone feed additives, effect of feeding, and stock rotation in polyculture with milkfish.

The spotted scat is a very popular food fish in the Philippines and commands a market value equal to that of sea bass. Large scat commonly is served barbequed; smaller scat is used in soup.

Although the spotted scat is not usually cultured in ponds, it has several attributes that make it a likely candidate for aquaculture. It is tolerant to a wide range of salinities and is found in fresh water and seawater. It is omnivorous and it is tolerant to low oxygen and poor water quality, a characteristic associated with the most successfully cultured fish species.

The scat has not been widely cultured, perhaps due to the lack of seed to stock ponds, a slow growth rate, and its poisonous pectoral spines.

The PSTC is closely linked with the University of Hawaii Pond Dynamics/Aquaculture CRSP. Dr. Jose Carreon, UPV, and Dr. Arlo Fast, UH, were Co-Principal Investigators for the first year of the project, which was conducted at the Brackishwater Aquaculture Center of UPV in 1986. The project will



Adult male spotted scat and juvenile collected from the wild. (Kent Carpenter, photo credit)

be continued in 1987 at the Iloilo State College of Fisheries. The Co-Principal Investigators are the same on both projects, and the CRSP Research Associate, Dr. Kent Carpenter, will actively participate in the PSTC project. Terrence Barry, a UH Research Associate, will be responsible for conducting on-site experiments. Barry is a student of endocrinology at the UH, an East-West Center grantee, and the recent recipient of a Fulbright Fellowship to study endocrinology in Japan. Dr. Lamarr Trott is the project monitor for USAID. Both the CRSP and the PSTC projects will share equipment, personnel and other resources. The project is funded at US $150,000 for two years.

.....*Arlo Fast, University of Hawaii*

CRSP NEWS

Honduras. Honduras TV Channel 5 visited the CRSP Project site, El Carao Station, for a segment of its weekly agriculture show.

Indonesia. Dr. Norbert Zonneveld of the Faculty of Fisheries, Universitas Brawijaya, Indonesia, visited the CRSP project in Bogor in October. His visit was followed by a visit in December from Dr. Robin Viveen, also of the Faculty of Fisheries. Both are conducting research on Clarias culture. Dr. Chris Knud-Hansen, U.S. Research Associate from Michigan State University, visited the Universitas Brawijaya in November, and conducted a 5-day workshop on field and laboratory techniques for water quality analyses of aquaculture ponds. The workshop enhanced the capabilities of the University's technical staff and strengthened the relationship between the Universitas Brawijaya and the Institut Pertanian Bogor, the only two universities in Indonesia studying Clarias culture. CRSP researchers had a lead role in writing a research plan for the Faculty of Fisheries, Institut Pertanian Bogor; the plan was submitted to the USAID Mission in Jakarta on 15 December 1986.

Panama. Dr. David Hughes, U.S. Research Associate from Auburn University, Mr. Orlando Garcia, Host Country Research Associate, and Mr. Emilio Santamaria, Chief of the Brackish Water Station (BES), presented papers at the Third National Scientific Congress in Panama City on 5 November 1986. Dr. Richard Pretto, Host Country Principal Investigator, Hughes and the technical staff at the BES assisted Mr. George Garcelon, Agribusiness Consultant to the USAID/Panama Mission, in a review of the marine shrimp-culture industry in Panama.

Rwanda. Mr. Felicien Rwangano, Host Country Research Associate, helped plan activities for the Sixth Annual World Food Day in October 1986, which had as its theme, "Fishermen and Their Communities." The CRSP research team in Rwanda collaborated with the National Fish Culture Project in developing displays and seminars to encourage the use of fish in the Rwandan diet.

Thailand. Dr. John Erickson, USAID/Thailand, visited the CRSP experimental station in Ayutthaya and discussed the role of the CRSP project in Thailand. He expressed enthusiasm and support for the Pond Dynamics/Aquaculture Collaborative Research Support Program.

MILESTONES

Dr. Muhammed Eidman stepped down as Dean of the Faculty of Fisheries at the Institut Pertanian Bogor, Indonesia last July. He was succeeded by **Dr. Muchsin Ismudi.** Dr. Eidman continues as the Host Country Principal Investigator in the Michigan State University-Indonesia CRSP Project.

Dr. Wardana Ismail, Agency for Agriculture, Jakarta, Indonesia spent 8 weeks with **Dr. Ted Batterson** and **Dr. Cal McNabb,** CRSP Co-Principal Investigators from Michigan State University (MSU), at the Limnology Research Laboratory at MSU. Ismail made arrangements for one of his staff, **Mr. Ondara,** to begin a doctoral program in limnology at MSU.

Pipih Suptijah and **Odang Carman,** the two principal research assistants responsible for water quality analysis for the CRSP project in Indonesia,

resigned from the CRSP to pursue graduate training abroad. **Ella Salameh** and **Dedi Yusadi** have been hired in their place.

Marquisela Arreve de Friedman, Brackish Water Station (BES) researcher in charge of the special topics study on substitution of inorganic fertilizers for water flow, has been assigned the additional responsibility of coordinating research at the BES in Panama. The new Chief of the BES is **Mr. Emilio L. Santamaria**. **Mr. Jorge Garcia**, former BES Chief, attended a 2-month training course on penaeid shrimp hatchery technology in the Philippines. He will head the new Penaeid Hatchery Training and Research Center in Panama.

The appointment of **Mr. Eugene Rurangwa** by the National University of Rwanda (UNR) as a researcher at the UNR Fish Culture Research Station shows the continuing commitment of UNR to fish culture research and to the CRSP.

Dr. Thiraphan Bhukaswan, Host Country Principal Investigator of the Thailand CRSP, was promoted to assist the Director of the Department of Fisheries. **Mr. Sompong Hiranyawat**, Host Country Research Associate of the Thailand CRSP, was promoted to Head of the Fisheries Development and Planning Division of the Department of Fisheries in Thailand.

MEETINGS and TRAINING PROGRAMS

26 March-16 July 1987. Aquaculture Training Program at the International Center for Aquaculture, Auburn University. Topics include principles of aquaculture, water quality, hatchery management, fish reproduction, pond construction, fish production, economics of aquaculture, fish disease, fish nutrition and extension. Write to: Aquaculture Training Program, Auburn University, Alabama 36849-4201, USA.

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3-5 May 1987. Librarians and International Development, a national conference hosted by Washington State University. Topics will include training of host country personnel, networking, automation, and project design, implementation and evaluation. Direct inquiries to: Mary Nofsinger, Holland Library, Washington State Univ., Pullman, Washington 99164-5610, USA.

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22 June-10 July and 13-31 July 1987. Fisheries Data Management Using Microcomputers, a training program for fisheries and aquaculture managers and researchers. Offered by the Consortium for International Fisheries and Aquaculture Development (CIFAD) and Oregon State University (OSU) at OSU. Session I: Introduction to computers and the design of fisheries data bases. Session II: Analysis of fisheries data. Write to: CIFAD Training Programs, Office of International Agriculture, Oregon State University, Corvallis, Oregon 97331, USA.

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2-7 August 1987. International Conference on Biomanipulation of Natural and Artificial Freshwater Ecosystems, Lake Kinneret, Tiberias, Israel. Write to: The Organizing Committee, International Conference on Biomanipulation of Natural and Artificial Freshwater Ecosystems, P.O. Box 3190, Tel Aviv 61031, Israel.

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11-14 August 1987. Third International Conference on Warmwater Aquaculture, at Brigham Young University-Hawaii. Direct inquiries to: Aquaculture Conference, BYU-Hawaii Continuing Education, Box 1963 BYU-HC, Laie, Hawaii 96762, USA.

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17 August-18 September 1987. Fisheries Economics, a training program for administrators and faculty involved with curricula development. Economics of aquaculture will be given the week of 17-21 August and can be taken separately. Offered by the Consortium for International Fisheries and Aquaculture Development (CIFAD), the International Institute of Fisheries Economics and Trade (IIFET) and Oregon State University at OSU, Corvallis, Oregon. Direct inquiries to CIFAD Training Programs, see address above.

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