4.1 Education Development

Marion McNamara
Office of International Research and Development
Oregon State University
Corvallis, OR, USA

Background

The Education Development Component (EDC) was established in response to the need to improve human capacity development, one of the constraints to aquaculture to be addressed by the CRSP during this grant. The goal of the EDC is to complement the research activities of all CRSP projects by strengthening human capacity in participating countries and regions. EDC began its first year of operation during this reporting period.

The EDC works with CRSP projects to design and implement appropriate training and education activities that support the research themes at each site. In addition to supporting site-specific activities, the EDC maintains a centralized clearinghouse for training and education opportunities in the fields of aquaculture, aquaculture development, aquatic ecology, fisheries, and natural resource management.

Education Advisory Panel—Honduras

The five-year plan for the EDC training program calls for concentration on one CRSP host country during each year, beginning with Honduras during 1997-98. In each participating CRSP country, an Education Advisory Panel will be organized to advise the EDC coordinator about education and training priorities in their country. During this period, an Education Advisory Panel was organized in Honduras, with representatives from the institutions most involved in aquaculture development in the region, including representatives of government, educational institutions, and private businesses. The EDC will use the Honduras panel as a model in establishing similar panels in the other countries where the PD/A CRSP collaborates and where human capacity development is a limiting factor in the growth of aquaculture.

At its first meeting in April 1997, the advisory panel identified long- and short-term education and training needs in Honduras. The panel agreed that in the long run, the Honduras aquaculture industry needs to develop the human capacity for research and research administration so that future aquaculture research stations can operate under the direction of Hondurans. The panel also identified short-term needs, such as technical training in production management and techniques and business management. The panel agreed that the short courses and workshops should eventually be self-supporting, using registration fees charged to participants.

Honduras panel members include:

Francisco Avalos, Executive Director, Asociacion Nacional de Acuicultores de Honduras (ANDAH),
Marco Polo Micheletti Bain, Vice-Minister, Secretaria de Agricultura y Ganaderia,
Medardo Galindo, Gerente General of the Federacion de Agroexportadores de Honduras (FPX),
Rosa Garcia, Director, Direccion General de Pesca y Acuacultura (DIGEPESCA),
Daniel Meyer, Head, Animal Sciences Department of Escuela Agricola Panamericana (EAP),
Marco Tulio Sarmiento, Chief, Aquaculture Department, DIGEPESCA,
Luis Morales, Chief, Research Department, DIGEPESCA,
Bartholomew Green, Co-Principal Investigator, PD/A CRSP Honduras project,
Alberto Zelaya, Gerente General, Asociacion Nacional de Acuicultores de Honduras (ANDAH).

The panel recommended that the EDC support a Honduran graduate student to study at a CRSP-affiliated university; during the next reporting period the first master's level student to be supported by the EDC will enter Auburn University. In response to short-term training needs, a workshop that addresses business plan development, aquacultural economics, and marketing of aquaculture products has been planned during this reporting period, and will be implemented in the fall of 1997. The Education Advisory Panel for the Philippines will be the next to be convened, with preliminary meetings taking place in the fall of 1997.

Educational Opportunities Network (EdOp Net)

In addition to supporting activities that address specific needs in CRSP host countries, the EDC works to facilitate communication about educational opportunities worldwide in aquaculture and related fields. During this reporting period, the EDC began publishing EdOp Net, a free monthly newsletter that summarizes educational and employment opportunities available in the field of aquaculture, aquatic ecology, fisheries, fisheries biology, and natural resource management. EdOp Net is disseminated through the mail and through the Internet by email and the World Wide Web. In less than a year, the number of subscriptions has climbed to over 200, and continues to grow each month. Reader surveys indicate that EdOp Net is considered useful to very useful by those who read it, who also indicate that they share their copy with an average of four other colleagues. During this reporting period, ten issues of EdOp Net were published.

ISTA IV

The PD/A CRSP is one of the sponsors of ISTA IV, the Fourth International Symposium on Tilapia in Aquaculture. During this reporting period, the EDC has served as the CRSP link to the Planning Committee ISTA IV, providing assistance in organizing and publicizing the meeting.

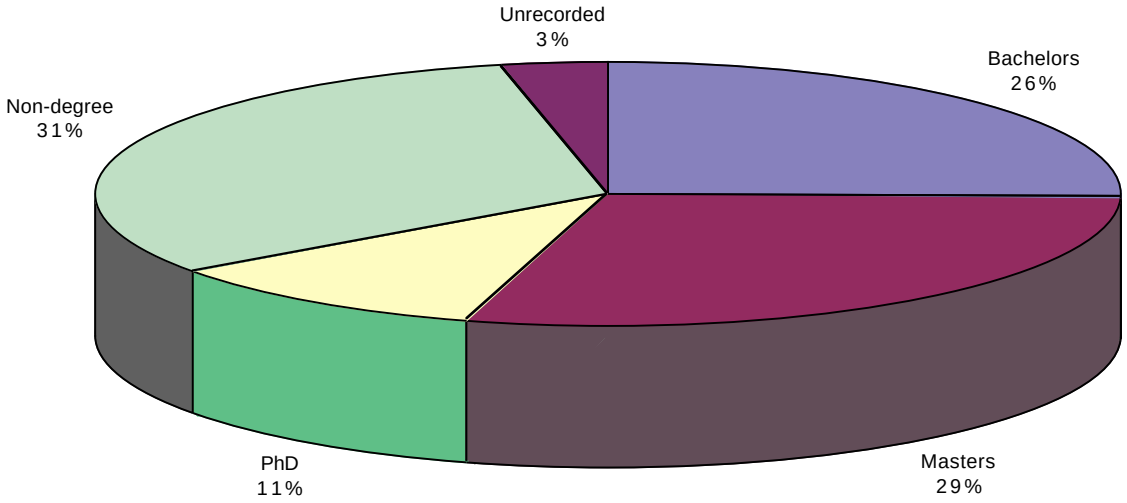
Eneida Ramírez, an Assistant Chemist at the La Lujosa Water Quality Laboratory in Choluteca, Honduras, was among the host country participants sponsored in part by the EDC to attend training courses and ISTA IV during a visit to the US.

Formal and Informal Training

The EDC maintains records of formal and informal training efforts conducted by CRSP researchers, and makes this information available to CRSP researchers as needed. CRSP researchers have long recognized that education and training help to address the constraints to sustainable aquaculture development, and take advantage of opportunities to conduct formal and informal training activities. They conduct short courses and workshops, teach courses at host country institutions, and advise and mentor graduate students. Even without formal financial support in the past, CRSP researchers have made significant contributions in the area of education and training.

Since the inception of the PD/A CRSP, over 500 individuals have participated in some form of CRSP education and training activities. Of those, 298 have been recorded officially as participants, and data has been collected. Figure 1 shows the distribution of degree and non-degree training among those officially registered as CRSP participants. This figure does not include students of CRSP researchers who teach post-secondary courses in aquaculture at their home institutions. During this reporting period, CRSP researchers taught the post-secondary aquaculture courses to almost 100 students at institutions in the US and Peru. Figure 2 shows the gender distribution of CRSP training participants since the inception of the program.

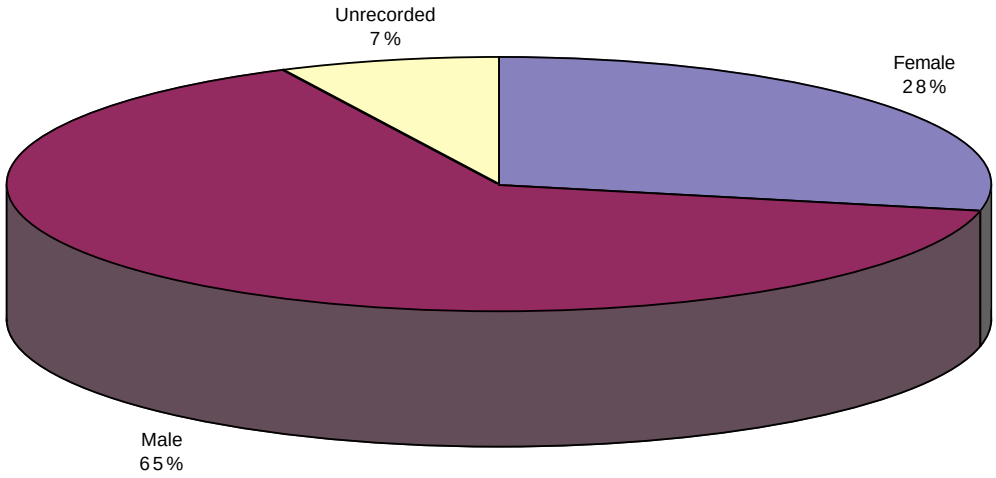
FIGURE 1. DISTRIBUTION OF PD/A CRSP DEGREE AND NON-DEGREE TRAINING, 1984-1997.



Even without dedicated education and training funds, CRSP researchers have found ways to support students who are pursuing higher education degrees in aquaculture and related fields. Support has included providing graduate research assistantships for Ph.D. students, hiring undergraduate work-study students, providing research materials, and advising students working on research projects. Prior to this reporting period, over 150 degrees (B.S., M.S., and Ph.D.) had been awarded to students receiving some level of CRSP support. During this reporting period, 11 formal degree programs were completed, and 42 were in progress. Since 1990, over 40 theses have been completed, including 8 senior theses, 30 Masters theses, and 3 Ph.D. theses. The following theses were completed this year with assistance from CRSP researchers:

Arifin, Z. 1996. Efficacy of liming and uses of liming materials for shrimp pond management. M.Sc. thesis, Asian Institute of Technology, Bangkok, Thailand.

Figure 2. Gender distribution of PD/A CRSP training participants, 1984-1997.



Barte, M. 1996. Effect of aeration on water quality and fish growth in intensive culture of Nile tilapia. M.Sc. thesis, Asian Institute of Technology, Bangkok, Thailand.

Gross, A. 1996. Effects of five phosphorus levels in "all plant" diets for channel catfish on water quality in ponds. M.S. thesis, Auburn University, Auburn, Alabama.

Nath, S. 1996. Development of a Decision Support System for Pond Aquaculture. Ph.D. dissertation, Oregon State University, Corvallis, Oregon.

Nguyen, P.H. 1996. Effects of salinity on fertilization for tilapia culture. M.Sc. thesis, Asian Institute of Technology, Bangkok, Thailand.

Ruttanagosrigit, W. 1997. Organic matter dynamics in a closed intensive culture system for black tiger prawn *(Penaeus monodon*). Ph.D. dissertation, Asian Institute of Technology, Bangkok, Thailand.

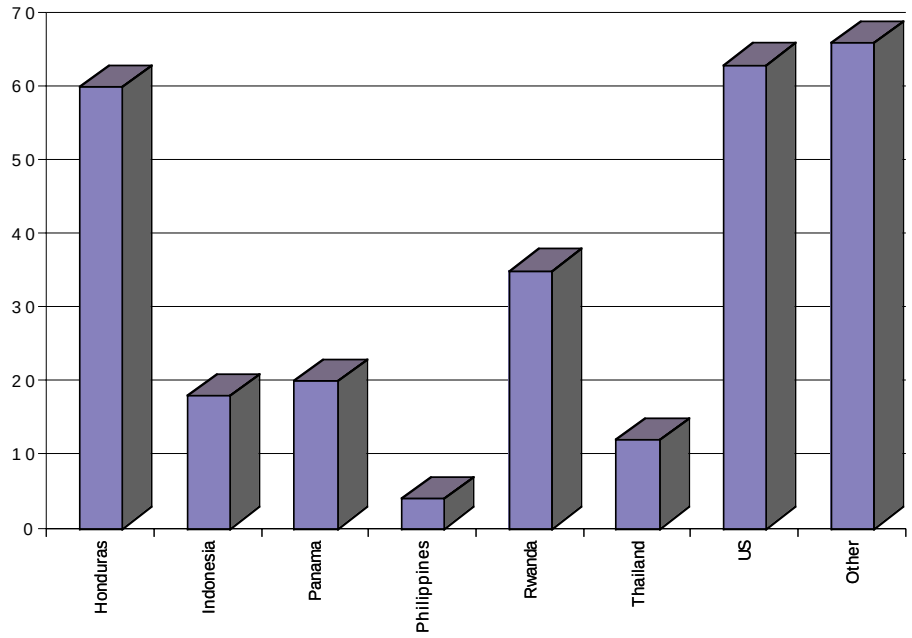
Sampson, M.H. 1997. Physico-chemical comparison of water from two estuaries in southern Honduras during the dry season. Senior thesis, Escuela Agricola Panamericana.

Thakur, D.P. 1996. Water quality and nutrient budget in closed intensive shrimp culture systems. M.Sc. thesis, Asian Institute of Technology, Bangkok, Thailand.

Most participants in CRSP education and training activities are from current or past CRSP host countries–Egypt, Honduras, Indonesia, Panama, the Philippines, Rwanda, Thailand, and the US; however, the benefits of CRSP training activities extend well beyond the borders

of these countries. Participants have been drawn from 33 countries over the course of the program, representing every region of the world (see Figure 3). Figure 4 represents the distribution of training participants at PD/A CRSP institutions, including PD/A CRSP research sites in host countries, since 1984.

FIGURE 3. HOME COUNTRIES OF PD/A CRSP TRAINING PARTICIPANTS, 1984-1997.



The interdisciplinary nature of aquacultural research attracts participants from a wide range of academic disciplines and professional positions. Many participants are able to apply their CRSP education or training directly to their work, or use the training they receive from the CRSP to begin new businesses. Luis Lopez, a former CRSP Research Assistant, currently works as a manager for Granjas Marinas in southern Honduras. Marco Iván Rodríguez, another former CRSP Research Assistant, started his own business, Palillos Fish Farm, to produce tilapia fingerlings and broodstock. In 1996 he produced half a million fingerlings, and expects to hit the one million mark in 1997. In addition to receiving high quality fingerlings and broodstock from Rodríguez, farmers also receive fish culture advice based on CRSP techniques. Other CRSP training participants have returned to positions in schools, agricultural research institutes, development projects, and agricultural extension services, where they are able to increase public awareness of aquaculture's importance in the food system.

In addition to degree training, post-secondary courses, short courses and workshops, CRSP researchers serve as a resource to a variety of governmental and non-governmental

organizations. In Thailand, CRSP researcher C. Kwei Lin provides advice on backyard catfish-tilapia integrated culture to the Christian Happy Home in Chiang Rai, and works with the Udorn Development Foundation and the FAO/Belgium project in Cambodia. He presented a workshop on the development and problems of marine shrimp culture in Asia for 50 people at the University of Agriculture and Forestry, Research Institute for Aquaculture in Ho Chi Minh City, Vietnam, and conducted a seminar sponsored by the Royal Thai Department of Fisheries for fisheries officers on trends of development and water use in freshwater aquaculture.

Figure 4. Distribution of training (degree and non-degree) participants at PD/A CRSP institutions, 1984-1997. (Please see Appendix A for an explanation of acronyms.)