



# Partnership in Science for Food

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# ICLARM Annual Report 1998

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## Research Highlights

Available in

**French**

&

**Arabic**

translations  
upon request.

# ICLARM ANNUAL REPORT 1998



International Center for Living Aquatic  
Resources Management

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1999

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has taken people to the moon,  
but not many are aware that it can  
be used very effectively to add fish and nutrition  
to the daily meal of thousands of  
undernourished children around the world.

**ICLARM**

International Center for Living Aquatic  
Resources Management

ICLARM is one of the 16 international research centers of the  
Consultative Group on International Agricultural Research (CGIAR)  
that has initiated the public awareness campaign "Future Harvests".



# YEAR IN REVIEW

In this 1998 Annual Report we salute the importance of partnerships in our work to help the poor in developing countries achieve sustainable food security. Our many different partnerships not only expand the range of our work, they also ensure that its relevance and impact are focused on the people we seek to serve. Some examples of our successful partnerships are highlighted in this report.

A major achievement in 1998 was the submission of the final report for the Genetically Improved Farmed Tilapia (GIFT) project. For work done under this 10-year project, ICLARM was awarded the CGIAR Chairman's Science Partnership Award in October 1998 during the International Centers' Week in Washington, USA. We are extremely proud of this award because of the great importance we place on partnerships in our work.

In order to interact more directly with the beneficiaries of our work and our partners, ICLARM has become increasingly decentralized over the last few years. We now have staff at six locations, namely, the Philippines,

Solomon Islands, Bangladesh, Egypt, Malawi and in the Caribbean (Jamaica and the British Virgin Islands). In addition, ICLARM conducts projects in many other countries. In 1995, three-quarters of staff were at headquarters in Manila. By the end of 1998, only 40% were at headquarters, due to the setting up of the Regional Research Center for Africa and West Asia in Egypt, the projects in the Caribbean, and a modest growth in staff numbers in the Solomon Islands and Bangladesh. This decentralization requires a greater degree of communication and provides great opportunities for work and partnerships in many corners of the globe.

ICLARM continued to enjoy good donor support during 1998. The 1998 revenues amounted to US\$10.86 million and expenditures to \$10.42 million. We were pleased to welcome one new donor in 1998, namely, the Government of New Zealand Overseas Development Agency. Currency swings continued to cause problems as several currencies continued to devalue against the US dollar in which all budgets are denominated.

During 1998, the new Regional Research Center for Africa and West Asia at Abbassa in Egypt opened for business. At the start of

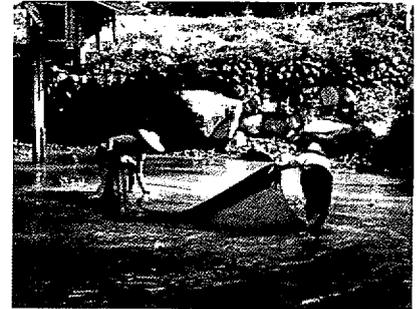


Photo: Bert Oficial



Photo: Modadugu Gupta



Photo: Bert Oficial



Photo: Bebet Meñez



Photo: Modadugu Gupta



Photo: ReelBase



Photo: Deo Resurreccion

1998, ICLARM had recruited a complement of over 80 national staff along with the international staff. On-site research on genetic improvement of tilapia, fish nutrition, fish health and hatchery and culture systems has started. In planning are studies for improving the production of the fisheries of Lake Nasser and on the supply and demand for fish in Africa.

The work in the Solomon Islands progressed very well in 1998. Early in the year, the Australian Centre for International Agricultural Research (ACIAR) commissioned a team to review ICLARM's Coastal Aquaculture Centre (CAC). The team reported that it 'was most impressed at the work being carried out at the CAC in each of its major projects (giant clams, pearl oysters, sea cucumbers and marine protected areas) and the relevance of the work to village communities in the Pacific'. Building on the encouragement of the review, ICLARM was successful in obtaining funds from New Zealand for a study on the effects of different logging practices on coastal environments. In addition, a regional aquaculture program for the Pacific is being planned with the Secretariat of the Pacific Community and national partners.

In Bangladesh, ICLARM and its partners had great success in increasing the involvement of

communities, the government and nongovernment agencies in research, development and training efforts in community-based fishery resources management. Work on these and the small-scale aquaculture studies was hampered by the severe flooding during the year, and ICLARM was called on to help mitigate the damage along with other agencies.

The Malaŵi office developed new project proposals and delivered training courses in integrated aquaculture-agriculture in collaboration with several development assistance projects and national government agencies. However, the work at the site received a serious setback from the unfortunate death in a road accident of Mr. Fredson Chikafumbwa, a research scientist in our Malaŵi Office. All of us at ICLARM were deeply saddened by the loss of Fredson, who has been an outstanding staff member and a credit to the Center.

In the Caribbean, based on early results of the work on marine protected areas (MPAs), studies are being continued in the British Virgin Islands. The value of protecting coral reefs before they become seriously damaged has been shown by the contrast between the fish recruitment patterns in the MPAs in Jamaica and the British Virgin Islands. The

latter reefs are less exploited and damaged and are still capable of good levels of recruitment of larval fish.

The ICLARM Annual Board Awards were given to Dr. Madan Dey and Dr. Roger Pullin. Dr. Dey was recognized for 'his outstanding research leadership on the Dissemination and Evaluation of Genetically Improved Tilapia in Asia Project, his innovative role in developing a unified methodology to analyze the impact of emerging technologies among scientists from different disciplines, and his success in strengthening collaborative relationships with ICLARM partners'. Dr. Pullin was given the award for 'his sustained international leadership in conceptualizing and implementing research aimed at increasing the production of freshwater species in tropical countries, with special emphasis on integrated natural resource systems, biodiversity evaluation and enhancement, and genetic resources management and improvement'.

As ICLARM celebrated its 20<sup>th</sup> anniversary during 1997, the Center reflected on its past achievements and the changes in the global setting for the management of living aquatic resources. In 1998, we had the opportunity to take stock of and document the Center's past and to look ahead

and plan for the future. Our stock-taking was greatly focused by the commencement of the second full External Program and Management Review (EPMR) in September. The Center welcomed the EPMR, one of the chief accountability processes of the Consultative Group on International Agricultural Research (CGIAR). ICLARM's first EPMR was held in 1992 and led, albeit with qualifications at the time, to the Center's admission to the CGIAR. A Mid-term Review in early 1995 reported on interim progress following entry to the CG system. The report of the second EPMR will be available in February 1999.

In preparing for the EPMR, ICLARM reviewed the evolution and impacts of its programs, its record of partnerships, the development of its research management and overall governance. The new style of EPMRs in the CGIAR, however, does not stop at reviewing past performance, impact and strategy but also provides many constructive suggestions and insights for the centers to consider. ICLARM values this new approach highly. We see this EPMR as a critical element in the assessment of ICLARM's progress and have approached the Review as an open exercise in examining that progress ourselves.



Photo: Bebet Meñez



Photo: Modadugu Gupta



Photo: ICLARM Library

At the same time, ICLARM's Board of Trustees decided that a new Strategic Plan should be developed. The present plan<sup>1</sup>, while providing an excellent base for ICLARM's research programs, needs to be updated in the light of the changes that have occurred in the management of living aquatic resources in general and within the Center in particular. Consequently, a consultative and participatory research planning process was started in 1998. The new Strategic Plan will be published in 1999. It will lead to a redesigned program structure for ICLARM, new operating modes for project development and delivery, and a radical revision of the Medium-term Plan (MTP) for the years 2001-2003.

<sup>1</sup> ICLARM's Strategy for International Research on Living Aquatic Resources Management. 1992. ICLARM.

As the year drew to a close, the Board of Trustees was approaching the final stages of its six-year long and often difficult search for a new headquarters site for ICLARM. For most of this time, ICLARM had been looking only in the Philippines for a suitable site. However, as it became increasingly difficult to obtain a suitable arrangement for an appropriate site, the Board opened up the option of a site in another country. In 1998, an offer of a site at Penang was received from the Government of Malaysia and, in late 1998, it seemed certain that a suitable offer would also be available for a site at Subic Bay in the Philippines. In early 1999, the Board will be evaluating both offers and hopes to be in a position to make a final decision.

ICLARM spent 1998 in a phase of consolidation, stabilization and preparation - consolidation through implementing decisions taken over the last several years, such as the enlargement of the program in Africa through the Regional Research Center for Africa and West Asia; stabilization of program and management gains, such as improved program and financial planning, and preparation for the major changes and challenges that lie ahead.

The year 1999 promises to be a momentous one for ICLARM. Of particular significance will be the decision on a new headquarters site and its implementation, the finalization of the EPMR and the completion of the Strategic Plan. The Center is well prepared to meet these challenges.



  
**Kurt J. Peters**

Board Chair



  
**Meryl J. Williams**

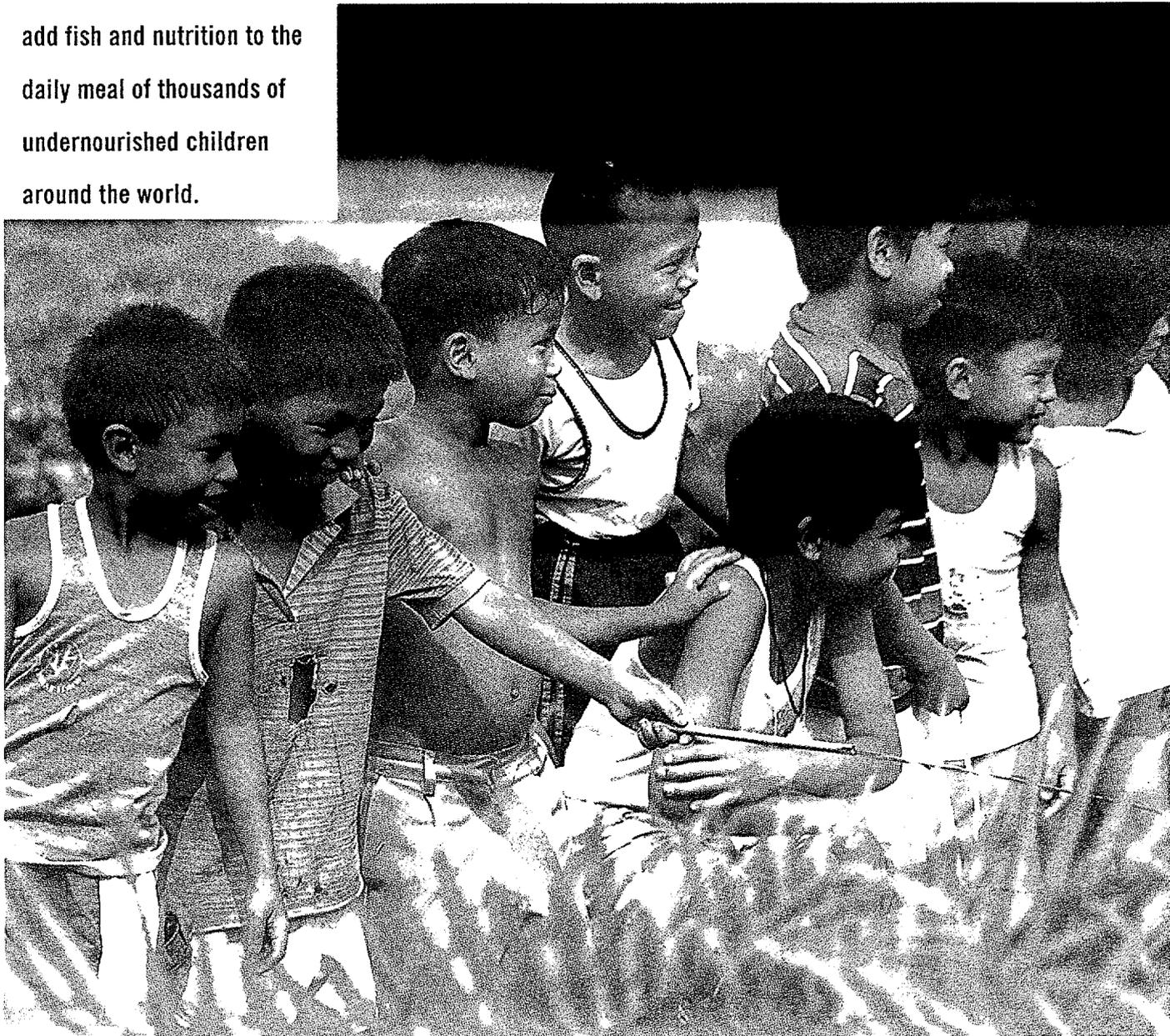
Director General

# PARTNERSHIP IN SCIENCE FOR FOOD

Research Highlights

**A**lmost every child knows that science has taken people to the moon, but not many are aware that it can be used very effectively to add fish and nutrition to the daily meal of thousands of undernourished children around the world.

Children taking turns with their home-made fishing rod to catch fish in the drainage canals of a tilapia farm in the Philippines. Photo: Joanna Kane-Potaka



In working together, the synergies and complementary strengths of ICLARM and its partners have expanded the impacts of their research well beyond their own limited resources. ICLARM assists its national partners with skills, tools and a knowledge base to support research and management.

ICLARM's commitment is "to improve the well-being of present and future generations of poor people from developing countries". Millions of people in these countries can and do depend on aquatic resources for food and income. To help conserve and use wisely the world's existing aquatic resources and to help in expanding their supply today and in the future, ICLARM has formed partnerships at many different levels – ranging from scientific institutions to policymakers to poor fishers and farmers themselves. These partnerships not only provide range, depth and focus to ICLARM's work but are also instrumental in taking its benefits to the people.

ICLARM has had collaborative undertakings in research and related activities with over 300 partners worldwide for the past 20 years. In 1998, it had collaborative links with 140 organizations and scientists from over 35 countries. The synergies and complementary strengths of its partners have been successfully harnessed through its partnerships and collaborative relations with institutions in different sectors. Thus, it has been possible to deliver high quality output despite tight financial, staff and resource constraints. In turn, ICLARM has provided its partners technical expertise and research capacity strengthening support and has shared with them the credit for the research results. The Center has extensive collaborative research activities using facilities of its partners in the Philippines, China, Vietnam, Thailand, India, Indonesia, Sri Lanka, Fiji, Malaysia, Ghana, Taiwan and Côte d'Ivoire, Malawi, Jamaica, Egypt, Ghana and many developed countries.



Cryopreservation of tilapia germplasm. ICLARM scientist working with a partner from the Bureau of Fisheries and Aquatic Resources at a laboratory in the Philippines. Photo: Deo Resurreccion

## Scientific Partnerships to Increase Productivity of Fish Farming

The 1998 CGIAR Chairman's Excellence in Science Award for Scientific Partnership was awarded to the Genetically Improved Farmed Tilapia<sup>1</sup> (GIFT) project. The GIFT project is a good example of the success of collaborative work in applied scientific research. In this case, the partners were the Philippine Bureau of Fisheries and Aquatic Resources (BFAR), the Freshwater Aquaculture Center/Central Luzon State University, Philippines (FAC/CLSU), the Aquaculture Research Institute of Norway, United Nations Development Programme (UNDP), Asian Development Bank (ADB) and partner institutions in Egypt, Ghana, Kenya, Sénégal and ICLARM. Their combined work, extending over 10 years, could well lead to a mini 'blue revolution' which will provide significantly more fish to eat and better incomes for the people of Asia.

The GIFT project is the largest fish breeding project ever carried out. It is the first systematic



Tilapia breeders are being inspected for maturity in one of the 500 net cages holding breeding groups and their progeny in the GIFT project.

Photo: Rina Velasco

attempt to apply the principles of animal breeding theory to tropical aquaculture in a developing country setting. Systematic selection over a long period has greatly increased the production of farm animals and cultivated plants and also improved the utilization of nutrients and other resources. Fish and other aquatic resources were not given this focus till recently, even though they provide a major source of food and nutrition not only to the well off but also to millions of poor people in developing countries.

The project was initiated to answer three questions. Could the application of basic principles of

**T**he GIFT Project is the first systematic attempt to apply the principles of animal breeding theory to tropical aquaculture in developing countries.

This could well lead to a 'blue revolution' which will provide significantly more fish to eat and better incomes for the people of Asia.

<sup>1</sup> UNDP Project No. GLO/90/016. Start-up funding by ADB.

**A** new strain of the Nile tilapia has been developed through selective breeding. The strain has demonstrated 18-70% higher growth and a 20-30% lower cost of production in farm trials in five countries in Asia.

genetics and applied breeding technology to the aquaculture industry, as practiced for centuries in plant and animal production, result in enhanced production efficiency? If an improved fish breed was developed, how could this be successfully taken to and adopted by the target beneficiaries? How could appropriate fish breeding programs be developed in the target countries themselves? And all this in line with sustainability, social equity and protection of biodiversity and the environment.

Tilapia was the species selected as it is a popular aquaculture species in Asia. Germplasm for eight strains was collected from wild/natural stocks in Africa and domesticated stocks in Asia. Their

relative performance was studied in 11 test environments in the Philippines. The growth performance of the different strains did not vary significantly in the different systems, so attention was focused on developing one strain to be productive in all the prevalent aquaculture systems. Complete diallel crossbreeding experiments were carried out, but the results showed that strain crossing resulted in marginal improvements in growth performance.

The alternative breeding system - selection - is simpler in design, more resource efficient and easier to implement. Selection as a breeding strategy focuses on additive genetic variance - choosing the best performing individuals as breeders in every generation. A broad genetic base was built with individuals from 25 of the best performing purebred and crossbred groups and a selection program was initiated. Over five generations of selection, the accumulated gain in relation to the base population in terms of growth (body weight) was 85%. Thus, the GIFT strain of Nile tilapia was produced.

In a related effort (the DEGITA<sup>2</sup> project), the production potential of the GIFT strain was assessed on

Measuring and documenting the growth performance of the GIFT strain in the Philippines.  
Photo: Rina Velasco

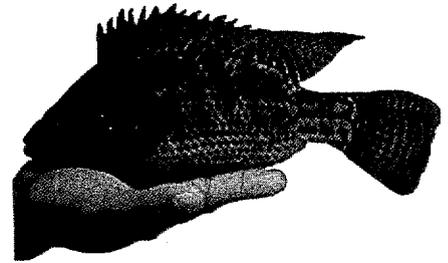


<sup>2</sup> Dissemination and Evaluation of Genetically Improved Tilapia Species in Asia. ADB-RETA No. 555B.

testing stations and on farms in a range of aquaculture systems in Bangladesh, China, the Philippines, Thailand and Vietnam. The project also analyzed the impact of dissemination of the improved genetic material on social equity, biodiversity and the environment. The GIFT strain successfully demonstrated a considerably higher yield potential in actual farm conditions. The growth and survival of the GIFT strain was studied in relation to the existing strains used in aquaculture in these countries. These comparisons indicated that overall the new strain performed between 18 to 70% better in these countries, depending on the existing level of development of tilapia culture. What was even more significant in terms of the implications for the farmers themselves was that production costs were 20 to 30% lower. The highly innovative and productive approach in both the projects (development of the strain and subsequent field trials) in actively involving tilapia farmers to carry out the comparison tests, demonstrated to the beneficiaries themselves the importance of genetic improvement in enhancing their productivity and incomes. This made it much easier to

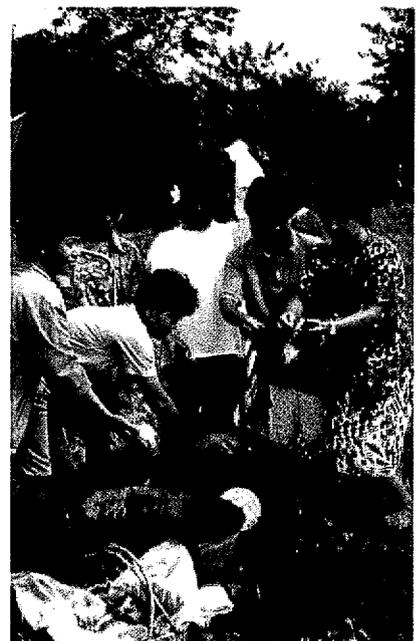
convince officials, scientists and other farmers of the potential of genetic fish improvement programs for their aquaculture systems. In several Asian countries, the GIFT strain has already been introduced into aquaculture and national breeding programs are taking up the challenge of initiating their own selection and breeding programs to develop and distribute strains suited to their specific environments.

Tilapia is a fish grown successfully by small farmers and consumed mainly by the lower income groups. The socioeconomic and equity impacts of the improved productivity are expected to be very positive for these sections of the population. Concern over the environmental impact of the development of new breeds led the project partners to examine the issue. This has resulted in the development of a common policy position on fish introductions to protect biodiversity, and stringent quarantine arrangements and transfer protocols to control the spread of disease.



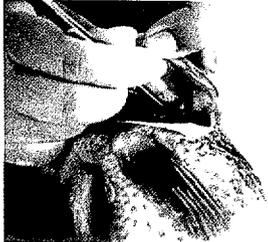
A GIFT tilapia  
Photo: GIFT Project

Weighing tilapia from ponds in on-farm trials of the GIFT strain.  
Photo: Rina Velasco





Loading PIT tag for marking breeders.



Inspecting gills for presence of parasites during quarantine.

Photos: Rina Velasco

The wider implications of this exercise are quite as important from ICLARM's point of view as the direct impacts on productivity and efficiency of tilapia aquaculture. It has created a widespread interest in breed improvement of fish and focused the interest of scientists in major tropical aquaculture countries on its potential. It has clearly demonstrated the importance of aquatic genetic biodiversity in meeting the world's growing requirements of food. It has developed a method to improve the productivity of aquaculture without negative implications for resource use and the environment.

To ensure that the impact of the GIFT project is widespread and long term, an International Network on Genetics in Aquaculture (INGA) was formed in 1993 with the assistance of the United Nations Development Programme (UNDP) to strengthen partnerships to advance the science of fish genetics and the development of national fish breeding programs. The Network covers 13 countries that account for the bulk of global aquaculture production and a wide range of important farmed species and farming systems. It also has 11

advanced research institutions as associate members. The INGA initiative is coordinated by ICLARM and will continue to promote genetic research, breeding programs, training of scientists and other partners in the member countries and thus continue to globalize the outcomes of the GIFT project.

To establish a viable commercial base for the widespread adoption of the GIFT strain, an independent, nonstock, nonprofit organization, the GIFT Foundation International Inc., was established in 1997. It will be responsible for generating financial support for sustaining the gene banks and the database gathered over the past 10 years. It operates breeding and production facilities and distributes the GIFT strain through a network of private hatcheries which have formal licensing arrangements with the Foundation.

The success story will not end with the tilapia in Asia. This experiment has led to an acceptance among scientists that systematic selection and domestication has great potential for increasing the productivity and improving the efficiency of tropical aquaculture. This work is being extended to improve tilapia culture in Africa through ICLARM's regional center in

Egypt. Food security is becoming increasingly critical in the region. ICLARM has initiated research on the Nile tilapia resources in Africa to identify the best performing populations that will be used for selective breeding to develop more productive strains for aquaculture in the region. Research is also being carried out for more efficient production of catfish and triploid grass carp.

Selective breeding techniques will also be extended to five species of carps in six Asian countries with the assistance of INGA. A project for the Genetic Improvement of Carp Species in Asia was developed in response to the requests from the carp producing countries of Asia to initiate a strategic research and training program for Asian carps similar to the GIFT program. In these countries, carps are more widely produced than the tilapia and are preferred by the consumers.

National research institutions in Bangladesh, China, India, Indonesia, Thailand and Vietnam will carry out the research and development in collaboration with ICLARM.

The unique partnership among researchers, governments, development assistance organizations, farmers and hatchery owners has

resulted in a valuable body of information and a method of participatory and localized research that can have a profound impact on the volume and efficiency of production of a primary source of protein. The GIFT project was a scientific success. The challenge now is to create mechanisms for establishing research based fish breeding projects on a commercial scale in developing countries where aquaculture is not only essential today, but can be a very important contributor to food security in the future.

Training farmers and hatchery operators in more productive hatchery practices for carp aquaculture.

Photo: Bert Oficial



## Direct Partnerships with Farmers

Not long ago, Jehanara Begum was subsisting by raising a few chickens or doing a little sewing and carving. Married at 12 years of age and abandoned by her husband soon after, she was barely managing to keep body and soul together, with little hope for her future. Today she has the self-confidence to act as an adviser to other women in her community and is hoping to increase her income from 16,000 taka (US\$350) last year to 25,000 taka (US\$550) this year. She is an entrepreneur, she raises and sells fish in the market.

Begum Jubaida was married at the age of 15 with hardly any education and skills to earn a living. Her husband died leaving her with little to bring up her children. She was

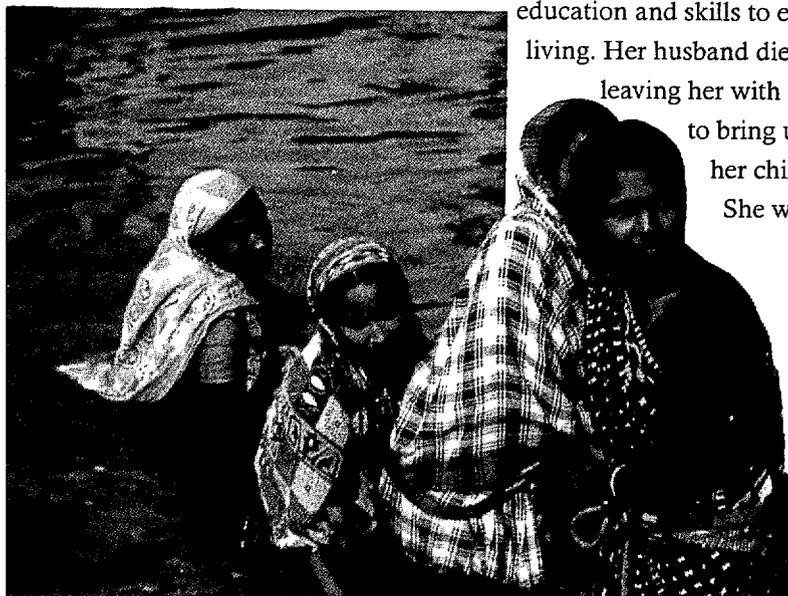
just subsisting at a very low level without adequate food for her family. Then she joined the program to develop aquaculture in household ponds and unused waterbodies. Today Begum Jubaida has dreams for her children. She wants not only her son but her daughters too to get an education and get jobs. She has a house, her children go to school and she runs an aquaculture business.

These are only two of the thousands of examples of how the lives of the poor in rural Bangladesh have been positively affected by the partnership between ICLARM, the Bangladesh Fisheries Research Institute (BFRI) and the NGO, the Bangladesh Rural Advancement Committee (BRAC)<sup>3</sup>. And this, hopefully, is only the beginning.

Working directly with poor farmers in Bangladesh, this partnership used the application of scientific methods to maximize the use of available resources to improve their lives. Eighty percent of the people of Bangladesh live in flood prone rural areas and depend on fish for protein in their

Jehanara Begum is now an entrepreneur raising and selling fish. She provides advice and stands as a shining example of how rural women in Bangladesh can take control of their livelihoods and provide a future for their children.

Photo: Marlene Bedford



<sup>3</sup> Network: Research with the Rural Women of Bangladesh. 1998. CGIAR.



Women in Jessore, Bangladesh, at a training/discussion group for introducing scientific systems for raising fish in their local waterbodies (ponds).  
Photo: Marlene Bedford

food. The land is dotted with ponds and ditches which trap flood waters and fish when the floods recede. However, there was little effort made to maintain these ponds and to use their potential to farm fish. They lay fallow and covered with weeds and were massive breeding grounds for mosquitoes. This was due to the lack of knowledge of the suitable type of fish to farm in shallow water and affordable feed for the fish, not to mention weed and disease control. Why not help the poor farmers to use the household

ponds, roadside ditches, community ponds and seasonal waterbodies productively?

Putting these waterbodies to productive use has changed the scenario completely. The widely cultured Indian carp does not grow in shallow water, so research focused on the potential of the tilapia and the silver barb which can grow to table size in three to six months in seasonal, turbid, shallow water. The challenge was to develop affordable, low external input aquaculture practices that

**T**he empowerment of women has been an important aspect of this research and development carried out with the direct participation of the beneficiaries.

**T**wo of the largest NGOs that were already working with poor farmers helped disseminate the technology to some 30,000 farmers in rural Bangladesh.

could be adopted and sustained by the majority of the poor and landless rural households. During the earlier phase from 1989 to 1993, monoculture systems using tilapia (Nile and red) and the silver barb were developed and tested with farmers. ICLARM and BFRI collaborated with BRAC to identify and train participating farmers. The results both on the research station and in the trials on farms were spectacular. Using cow manure as fertilizer and rice bran as feed, farmers were able to produce fish at a rate of 900 to 1,800 kilograms per hectare (kg/ha) of pond in less than six months. Even higher production was achieved in ponds where a mix of silver barb, silver carp and mirror carp was cultured. The economic results of the seasonal pond aquaculture were also impressive. For example, the research found that in the tilapia

monoculture system, selling just a quarter of the fish produced would cover operational costs.

Two of the largest NGOs, BRAC and Proshika, that already worked with poor farmers helped disseminate the technology on a large scale during this period, involving some 30,000 farmers in aquaculture.

The next phase was undertaken between 1993 and 1995 and placed even more emphasis on research being done directly on the farms with NGO support. Different mixed or polyculture systems, where more than one species of fish was introduced into the ponds, were evaluated for their suitability to local conditions such as market demand, farmer preferences and biological efficiency. The polyculture systems produced nearly twice as much fish per unit of pond areas as the earlier monoculture trials – 3,000 kg/ha. Unit costs were lower than in the monoculture systems, making pond aquaculture even more profitable. The results are even more spectacular when compared with typical fish yields obtained by farmers before they tried the new technologies. For example, one study<sup>4</sup> showed that fish production

Raising fish in local ponds that were earlier lying fallow give the people better nutrition and additional income from selling fish.

Photo: Marlene Bedford



<sup>4</sup> Integrat on of Aquaculture in the Farming Systems of Floodprone Ecosystems of Bangladesh: An Evaluation of Impact, 1999.

increased from 300 kg/ha to 2,500 kg/ha when the new systems were adopted. Even farmers who were not directly involved in the research and extension work began to adopt the technology without formal training or assistance and achieved yields of more than 1,000-1,500 kg/ha in the season between floods, triple what they had been able to produce before. The consumption of fish by the households quadrupled and their saleable surplus increased 10 to 20 times. They eat better and also have additional income from selling fish.

Though the project was not specifically aimed at women, it turned out that the majority of the beneficiaries were women. The socioeconomic structure in rural Bangladesh leaves women tied to their homes, with low literacy and skills to earn an income, even if there were any job opportunities available in the area. Going away from home to work has little social acceptance. What could be more appropriate in this situation than to be able to eat better and earn an income by working close to the household itself? Added to this are the gains in terms of self worth and social status for the women that are difficult to quantify, but nevertheless significant.

The women also proved to be an invaluable resource in the development of the "appropriate technology". They told the scientists what was available, feasible and affordable. A specific fertilizer may increase the productivity of a fishpond, but if it is too expensive or more valuable in other uses (e.g., cow manure used as fuel) then it is not a viable option. The scientists developed techniques for using rice bran, chicken manure, grasses and weeds to feed the fish. They are now studying the potential of using biogas, slurry, azolla and vermiculture as feed. It was the women who brought attention to the fact that input cost and availability was crucial and the techniques developed must be suitable for local conditions. They were also instrumental in pointing the research towards polyculture, which proved to be more efficient than monoculture.

The most crucial aspect of the partnership was the involvement of local NGOs that were instrumental in taking the techniques to the farmers, especially to the women. The NGO workers are known and respected in the local communities, they have access to the women, they know the conditions on the ground and they

**W**ith training and assistance in adopting new low-cost technologies in pond aquaculture farmers were able to increase fish production from 300 kg/ha to over 2,500 kg/ha. Consumption of fish by the households quadrupled and their saleable surplus increased 10 to 20 times.

Photos: Marlene Bedford



Photo: Marlene Bedford



The women proved to be an invaluable resource in the development of the “appropriate technology”. They told the scientists what was available, feasible and affordable.

administer microcredit schemes to promote income generating activities. Without them it would not have been possible to disseminate the techniques to impact such a large number of people. It was their involvement that made the whole process highly interactive. And it was this interaction that steered the researchers to experimenting with different species, culture systems, materials and low cost feeds that were available to the poor farmers and to understand the socioeconomic imperatives of the people they were aiming to help.

An important impact of the project has been the empowerment of women without the prerequisite of radical sociological change. Economic empowerment will surely lead to the educational and social empowerment of women in the next generation. Begum

Jubaida says her life is better than her mother's and is certain that her two daughters who go to school now will have a better life than hers to look forward to.

This experience in Bangladesh highlights the fact that even a well researched scientific system imposed from outside may not work if it does not take into account conditions on the ground. ICLARM is well aware of this and has been consciously emphasizing the participatory and socioeconomic aspects in all its projects through continuous two-way communication with the farmers. The recognition that success at ameliorating the situation of poor fish producers and consumers can be better achieved if they themselves are involved in the effort has led to more emphasis in ICLARM's projects on participatory and community-based approaches. ICLARM's strategy to achieve its mission is now firmly rooted in this approach.

Begum Jubaida feeds the fish in her pond. She says her life is better than her mother's. She can now afford to send her children to school and hopes to give them an even better start in life.

Photo: Marlene Bedford



## Raising Public Awareness through Partnerships

The dire predictions of Thomas Robert Malthus have not yet come to pass, largely due to the application of science to increasing the production of food. Walt Disney World highlighted the role of science in alleviating hunger and bringing this knowledge to the public at Epcot in Florida, through an annual six-week display started in 1996. "Gardening for Food Around the World" particularly illustrates the activities of the World Bank, the CGIAR and the Rodale Institute in supporting and promoting advances in global food supply.

To put these efforts into the right context for the public, the farm scene in Asia, Africa, Latin America and the USA was transported to Orlando. Integrated into these displays were research advances that promise to feed millions, as well as farming methods that have sustained populations for thousands of years. Scientists from the CGIAR centers presented these to the visitors that came to view the exhibits.

ICLARM participated in this effort in May-June 1998 as part of the Asian section. At the 1998

display, ICLARM focused attention on its research in integrated agriculture-aquaculture. Rice is the most common crop in large parts of China, Southeast Asia and the Indian subcontinent. Rice grows in a lot of water, and so does fish. In this context, the issues of effective soil and water management, the benefits of raising fish in rice paddies and the productive use of resources available on farms through recycling were communicated to the audience through interactive visual and oral presentations.

Almost every child knows that science has taken people to the moon, but not many are aware that it can be used very effectively to add a highly nutritious food to the

Over 27,000 people saw the display and heard about raising fish economically in ricefields and how scientific research can have a tremendous impact on food availability for the poor.

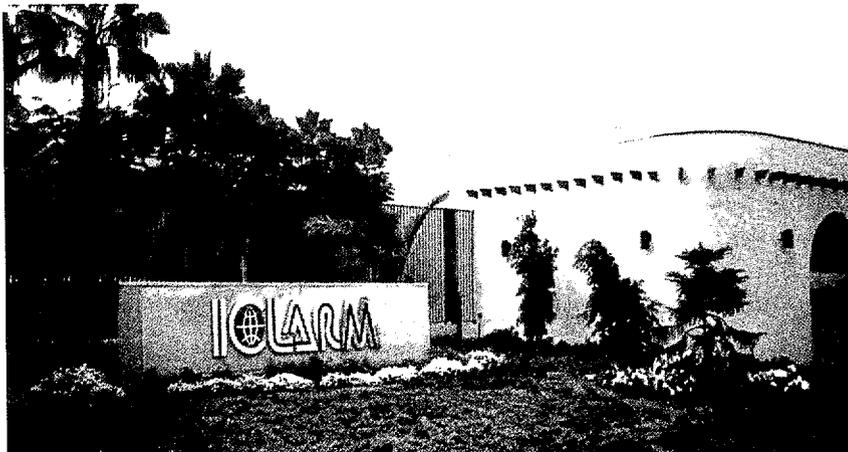
Communicators from ICLARM and ICARDA highlighting the benefits of integrating fish with rice farming to guests at Disney World in Florida. Photo: Edda Echeandia



daily meal of thousands of undernourished children around the world. Knowledge is essential to create conditions and incentives for channeling resources into harnessing the potential of aquatic resources to increase the supply of food in the future. As world population grows, science must continue to find new ways to expand the availability of affordable food while protecting the resource base from which it is produced. Only if more and more people come to understand this need will it be possible to convince them of the need to put resources into this effort as the social consequences of neglect are likely to be global – in terms of peace, prosperity, health and environmental renewal – for the rich and poor alike.

ICLARM's Regional Research Center for Africa and West Asia has been set up at Abbassa with the support of the Government of Egypt, the Government of Japan, World Bank, USAID and Arab Fund.

Photo: Brian Tierney



## Extending Our Partnerships in Africa

ICLARM's Regional Research Center for Africa and West Asia in Egypt officially opened on 25 May 1997. For the first 20 years of its existence, ICLARM's focus has been mainly on Asia and some of the Pacific islands. The regional office will be the base for extending the work to a region where food security is critical.

Most of 1997 was taken up with completing the host country agreement, evaluating and recruiting key staff and renovating the facilities. In January 1998, ICLARM assumed full management responsibility for the research facility that has been made available by the Government of the Arab Republic of Egypt. The staff now includes some 95 scientists, professionals and technical support staff. Administrative systems and procedures have been established. With the continuing improvements on the research laboratories, ponds, administrative areas, residential complex and road network, the facilities are now ready to serve as ICLARM's regional base for aquatic research for Africa and West Asia. The Government of Egypt, the Government of Japan, World Bank,



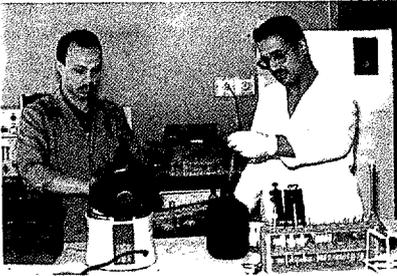
Broodfish being selected from the research ponds for genetic studies and breed improvement of the Nile tilapia at ICLARM's Abbassa site in Egypt.

Photo: Brian Tierney

USAID and Arab Fund are currently funding the operations.

ICLARM plans to focus initially on the following areas of aquatic research and development for the region:

- the development of genetically improved breeds of fish to enhance aquaculture production in the region;
- research to determine the genetic identity of different species and populations;
- research on hatchery and culture systems and fish health;
- training in the improved management of fishery resources by local communities and governments;
- testing management strategies to produce sustainable yield of fish in lakes and reservoirs in the region using an ecosystem approach and integrating it with economics and sociology; and



Scientists work on water quality factors that influence growth and production of farmed fish.

Photo: Roger Rowe

- creating an awareness among policymakers of the value of well managed aquatic resources in terms of their potential for more food and employment for low income communities.

The success of research to improve the productivity of aquaculture in Asia encouraged ICLARM to extend this work to Africa in 1998. The GIFT Project has demonstrated the potential improvements in the productivity of farming tilapia with the development of suitable strains through genetic selection techniques. The tilapia is native to Africa and only found there in its wild state. Aquaculture has not yet been widely practiced in Africa but already tilapia account for 1/3 of aquaculture production. In partnership with the Egyptian

national fisheries program, ICLARM is studying and documenting the genetic diversity of tilapia resources in Africa and testing the performance of the species under controlled conditions. The next step will be selective breeding to develop a strain which can be used to increase the productivity and profitability of aquaculture in the region, especially to benefit the low income producers and consumers. This is one of its first forays into the African region.

Experiments are also being conducted to develop improved hatchery procedures to produce catfish (*Clarias gariepinus*) fingerlings. The next step will be to determine the potential for using *Clarias* more extensively for aquaculture in Africa.

ICLARM staff have collaborated with scientists from the Channel Maintenance Research Institute to produce triploid, sterile grass carp which are used to control weeds in irrigation and drainage canals, without the fish themselves reproducing at a high rate and choking up the waterways.

Research and development of the fisheries in Lake Nasser will be used as a model for developing

Technicians taking measurements of the Nile tilapia for the genetic improvement experiments.

Photo: Roger Rowe



sustainable management practices for increasing the yield of fish from the lakes and reservoirs in the region. The first step was an international workshop on Lake Nasser Fisheries held in Aswan in June 1998. It brought together a range of people, from fisheries scientists to sociologists, economists and fisheries managers, to identify the issues that need to be studied and incorporated into a viable ecosystem approach that will be in tune with local socio-economic conditions. ICLARM's experience in Bangladesh described earlier has highlighted the importance of tailoring new technology and systems to fit in with the realities on the ground.

A beginning has also been made in establishing a library and an information center/service at the Abbassa site to serve the needs of the scientists in the region. Links are being forged with national research projects, national research institutes and universities so that networking can be extended in the region.

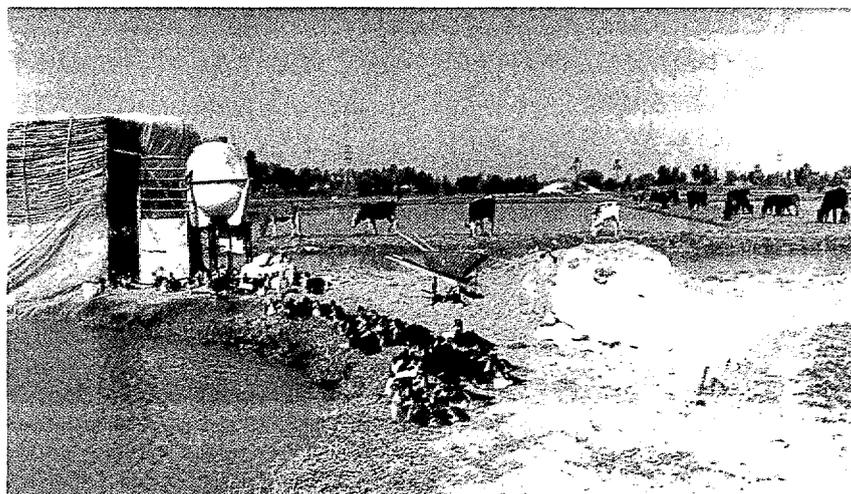
Experimenting on the potential of integrating fish farming with livestock and duck rearing in Africa. This is a common practice in Asia.

Photo: Roger Rowe

Elsewhere in Africa, ICLARM has already been working on a farmer participatory research project in Malaŵi for the last 14 years. By documenting and studying the flow of all resources on a farm it has been possible to design a system for integrating aquaculture with agriculture to maximize the output of a farm by using the wastes from one product as an input for the others and minimizing the need for purchase of inputs from outside. This way growing crops, raising animals and growing fish become mutually reinforcing activities. A fairly sophisticated ecosystem model of an integrated farming system has been developed – but partner farmers have complete ownership of the practical application as they have personally conducted the on-farm experiments and supplied the data.

Measuring tilapia, catfish and common carp at the research ponds to determine productivity.

Photo: Roger Rowe



# Together we can do it!

Selective harvesting for impact assessment of an integrated aquaculture-agriculture project in an upland buffer zone in the Philippines. Common carp, tilapia and catfish grown in this polyculture system will be studied for improving growth, size and adaptability to local conditions.

Photo: Bert Oficial



## The Way to Go

These are but a few examples from our activities in 1998 that highlight the importance of partnerships. With the finite staff and resources available to ICLARM it could not have reached thousands of small farmers raising fish in ponds and ditches in Bangladesh. ICLARM works with policymakers, scientists, farmers, fisher communities and NGOs in all its projects. The collaboration with Disney World

will hopefully be the first of many more productive partnerships with the private sector in the future.

To increase public awareness of the importance of fisheries and aquaculture and to spread the impact of its research and training activities as widely as possible, ICLARM continues to strengthen its partnerships with individuals and institutions at the national, regional and international levels. A new initiative in 1998 was the establishment of the Group of Fisheries and Aquatic Research (GoFAR) under the Asia-Pacific Association of Agricultural Research Institutes. GoFAR will promote collaborative regional research on aquatic resources and its links with other sectors such as agriculture, livestock and forestry.

ICLARM is very optimistic about being able to fulfill its mission through the strong and extensive partnership network it has created and is continuously expanding. We have partnerships at the level of the farmers, at the national level with governments and research institutions, at the regional level through associations and at the global level through INGA and all the people who recognize the importance of the world's aquatic resources.

Together we can do it!

## Major Accomplishments by Program/Division/Office

### Biodiversity and Genetic Resources Program

- Released Fishbase 98 with information on 20,000 fishes drawn from 12,000 references.
- Conducted the Second and Third Regional Training Courses on Fisheries and Biodiversity Management in Port of Spain, Trinidad and Tobago and Swakopmund, Namibia, respectively.
- Collected, documented and analyzed extensive data on the genetic diversity of *Sarotherodon melanotheron* populations in coastal lagoons and watercourses in West Africa.

### Germplasm Enhancement and Breeding Program

- Initiated work on genetic improvement of carps in Bangladesh, China, India, Indonesia, Thailand and Vietnam.
- Initiated surveys of freshwater fish farmers and consumers in Bangladesh, China, India, Indonesia, Thailand and Vietnam.
- Compared different strains of four species of tilapia for aquaculture performance in Egypt.
- Finalized funding for "Genetic Enhancement of Tropical Aquaculture Species by Combined Selection, Marker-assisted Selection and QTL Mapping" and proposed for "Transfer of

Selective Breeding (GIFT) Technology for Aquaculture Improvement from the Philippines to sub-Saharan Africa and Egypt".

### Integrated Aquaculture-Agriculture Systems Program

- Revised the RESTORE package, with expansion of data collection and analysis to obtain standard economic criteria.
- Provided technical and logistic support to private hatcheries in Bangladesh for spawning indigenous carps.
- Assisted in providing training to farmers in Malaŵi, Bangladesh and the Philippines in sustainable aquaculture technologies.
- Conducted baseline research on tilapia for pond aquaculture in Malaŵi.
- Extended the fisheries information network in Asia and Africa.
- Monitored 30 farm households to assess the impact of Integrated Aquaculture-Agriculture (IAA) adoption in the upland forest buffer zone in the Philippines.
- Initiated action research on improving productivity of fish and rice in the flood prone areas of Bangladesh and Vietnam.

### Coastal Aquaculture and Stock Enhancement Program

- Distributed 10,500 giant clam (*Tridacna squamosa*) "seed" to coastal villagers from the CAC nursery.
- Assisted a private company to take over ICLARM's role in the production and supply of giant clam seed to farmers.

- Coordinated sales to the aquarium market on behalf of village farmers.
- Maintained seeded oysters at the demonstration blacklip pearl oyster farm. The first crop is due to be harvested in April 1999.
- Sought funding to continue the operation of the demonstration farm and for dissemination of research results.
- Trained farmer groups to establish a pearl oyster farm in the Shortland Islands.
- Continued research on spawning and low cost rearing of sandfish, white teatfish and surf redfish.
- Selected sites for the study of the effects of alternative logging operations on inshore marine ecosystems in the tropical western Pacific.

### Aquatic Environments Program

- Distributed 700 ReefBase 2.0 CD-ROMs.
- Provided data from the *Reefs at Risk* report released by WRI.
- Released ReefBase 3.0.
- Selected sites for application of Rapid Assessment of Management Parameters (RAMP) in data collection for coral reefs.
- Analyzed samples sent in from the Philippines, Malaysia, the Solomon Islands, Vietnam and Taiwan for the Population Interdependencies in the South China Sea Ecosystem (PISCES) Project.
- Completed the Ninth Training Program on Coastal Management in the Philippines.

- Convened graduates of the national course on integrated coastal zone management (ICZM) and potential collaborators from Vietnam, Indonesia and Malaysia at the convention of ICZM practitioners.
- Collaborated on a workshop and the selection of research groups for the Population, Consumption and Environmental Coordination Project.

#### **Fisheries Resources Assessment and Management Program**

- Developed and distributed a test version of Ecopath with Ecosim. Incorporated Ecospace as a module.
- Conducted six international training workshops on the use of Ecopath with Ecosim and presented it at several international conferences.
- Continued to analyze patterns of settlement and recruitment in marine protected areas in the British Virgin Islands and Jamaica.
- Initiated work on the project on sustainable utilization of coastal fish stocks in Asia.
- Completed survey of the results of the three-year closure of a marine protected area in the Arnavon Islands.

#### **Policy Research and Impact Assessment Program**

- Published 11 articles in scientific journals on the socioeconomic, policy and institutional analyses of coastal fisheries management and aquaculture.

- Monitored impacts of Community-based Fisheries Management (CBFM) in inland openwater fisheries in Bangladesh.
- Developed and introduced action plans for CBFM for ten project waterbodies.
- Organized several workshops and displays on CBFM.
- Initiated work on the Socio-economic and Bioeconomic Analysis of Coastal Fish Stocks in Asia in Bangladesh, India, Indonesia, Malaysia, the Philippines, Sri Lanka, Thailand and Vietnam.
- Developed and implemented jointly with IFPRI the framework for the Policy Conference on the CGIAR System-wide Initiative on Property Rights and Collective Action.
- Completed several co-management case studies in Asia.
- Completed Phase I of the final project research report on Fisheries Co-Management in Asia: Lessons from Experience.
- Prepared the workplan for Phase II (1999-2003) of the Fisheries Co-Management Project.
- Completed the following projects:
  - Legal, Policy and Institutional Analysis of the Management of Fisheries, Coastal Resources and Coastal Environments in Bangladesh and Southeast Asia;
  - Evaluation of the Performance of Fisheries Co-Management in Indonesia and the Philippines;
  - An Institutional Analysis of the *Sasi Laut* System in Maluku Province, Indonesia;

- Valuation of Coral Reef Systems: Case Studies of Philippine Coral Reefs;
- Socioeconomic component of the Project on Strengthening the Institutional Capacity for Sustainable Aquaculture Development in the Mekong Delta (HAKI Project) of Vietnam; and
- Bangus Fry Resources Assessment.

#### **Information and Training Program**

- Provided information and reference services to 1,797 visitors. Responded to 460 queries from 82 countries under the Selective Fisheries Information Service.
- Completed 44 publications; edited and cleared 63 contributions.
- Distributed 34,464 copies of ICLARM publications.
- Achieved major efficiency gains in the Publications Unit resulting in:
  - reducing the average time for publishing from years to months;
  - clearing the backlog of five to six years of scientific manuscripts to be published;
  - timely publication of *Naga, the ICLARM Quarterly*. Seven of the *Naga* were published in 1998; and
  - savings of more than US\$25,000 in distribution and printing expenses. This amount was used to purchase some up-to-date computer hardware and software.

- Increased public awareness activities, including hosting of international journalists; organizing international and national displays (including one at Disney in USA); coordinating a video promoting ICLARM's research in Bangladesh; and developing a Focus for Research flyer series.
- Developed a training strategy for the institutionalizing of ICLARM's research related training.

#### **International Partnerships and Networks Program**

- Undertook training courses, workshops, academic and research collaboration for NARS capacity building.
- Established the Group of Fisheries and Aquatic Research (GoFAR) under APAARI to coordinate regional collaboration in research and capacity building.
- Extended international collaborations through Food and Agriculture Organization - Regional Office for Asia and the Pacific (FAO-RAP) and Strategy for International Fisheries and Aquatic Research (SIFAR).
- Developed a database on ICLARM's research partners.
- Continued collaborative genetics research in Côte d'Ivoire, Egypt, Ghana and Malawi.
- Extended INGA membership to include 11 advanced research institutions as associate members.
- Formalized national fish genetics research networks in Malaysia,

Indonesia and the Philippines.

- Coordinated exchange of germplasm among partners.

#### **CGIAR System-wide Initiatives**

- Participated in the database compilation for the System-wide Genetic Resources Program (SGRP).
- Assisted in the planning and hosting of an International Policy Conference on Property Rights, Collective Action and Devolution of Natural Resources Management.
- Collaborated in a project on Valuing the Multiple Uses of Irrigated Areas under the System-wide Initiative on Water Management.
- Participated in system-wide public awareness activities to promote the value of research on natural aquatic resources.
- Chaired the Advisory Board of the Gender and Diversity Program of the CGIAR.

#### **Corporate Services Division**

- Prepared guidelines for the recruitment of IRS.
- Conducted a Staff Attitude Survey and implemented a new database for analysis and presentation.
- Developed NRS personnel policy manuals for outreach sites.
- Negotiated a new, more comprehensive NRS medical package.
- Upgraded the computer and electronic mail systems.

- Developed the intranet pages to make communication and facilities delivery effective and cost efficient.

- Performed Y2K tests on all ICLARM PCs.
- Completed first phase of the installation of a new computerized accounting system.
- Provided additional reserve for IRS repatriation.
- Conducted a review and audit of IRS accounts, publications and overheads.
- Maximized ICLARM's privileges under the host country agreement.
- Developed budget and financial chapters for a rolling Medium-term Plan (MTP) 1999-2001.
- Developed the financing plan for 1999.
- Developed a revised budget cycle, planning and resource allocation process.
- Developed staffing patterns for all ICLARM locations to manage staff positions and related costs.
- Participated in the revision of CGIAR Accounting Standards.
- Served on Board of the Association of International Agricultural Research Centers (AIARC).

#### **Office of the Deputy Director General - Africa and West Asia**

- Assumed management of the research facilities at Abbassa according to the agreement with the Government of Egypt.

- Completed first phase of the refurbishment of the Abbassa facilities.
- Staffed the regional center with 90 locally recruited staff.
- Developed and expanded contacts with fisheries management and research organizations and scientists in Egypt and in the region.
- Completed a workshop in Aswan, Egypt, to develop a research agenda for Lake Nasser fisheries.
- Initiated work on:
  - three populations of Nile tilapia, *Oreochromis niloticus*, and one population of each of three other tilapia species; these were tested for growth in length and weight under pond conditions to determine between and within species diversity of Egyptian tilapia;
  - improved hatchery procedures for mass production of catfish (*Clarias gariepinus*) fingerlings to enhance the potential for using *Clarias* more extensively for aquaculture in Africa;
  - collaborated with scientists from the Channel Maintenance Research Institute to produce triploid, sterile grass carp to control weeds in irrigation and drainage channels;
  - supported the first phase of INGA Project on Nile tilapia being implemented by the Egyptian national fisheries research program.

#### **Office of the Deputy Director General - Programs**

- Convened ICLARM Strategic Planning Workshop.
- Drafted ICLARM's Strategic Plan for 2000-2020.
- Compiled a supplement on Aquatic Resources Research in Developing Countries, Data and Evaluation by Region and Resource System.
- Finalized (with DG and ADG) ICLARM's Medium-term Plan 2000-2002.
- Developed (with ADG) the ICLARM 1999 Financing Plan and 1998 Agenda Update.
- Convened the internally commissioned external review of AEP.
- Developed EPMR documents on ICLARM's programs, achievements and impacts.
- Monitored the ACIAR review of aquaculture in the Pacific, including ICLARM's contribution.

#### **Office of the Director General**

- Completed the 2000-2002 Medium-term Plan.
- Raised resources for the Center.
- Improved and integrated the work programs and operations of the Center across multiple sites.
- Led the Center through the ongoing EPMR.
- Supported the Board of Trustees in decisions regarding a new headquarters site.

- Worked with international, regional and national aquatic resources research and management partners to fulfill ICLARM's mandate.
- Raised public awareness of ICLARM's mission, role and achievements.
- Developed a resource mobilization strategy for ICLARM.
- Revised guidelines for submission and clearance of proposals.

## Research and Related Projects by Program

TITLE	DURATION	DONORS <sup>1,2</sup>	COLLABORATING INSTITUTIONS <sup>1</sup>
<b>Biodiversity and Genetic Resources Program</b>			
Strengthening Fisheries and Biodiversity Management in ACP Developing Countries, with Further Development of a Biological Database on Fish (FishBase)	Dec 1996 - Dec 2000	EU	FAO; AFS (American); WCMC; Musée Royal de l'Afrique Centrale, Tervuren; Museum National d'Histoire Naturelle, Paris; MRAG, Imperial College, London; California Academy of Sciences, San Francisco; British Museum, London; Ocean Voice International, Ottawa; CARICOM Fisheries Resources Assessment and Management Program, Belize; World Conservation Union, Gland; UBC, Vancouver; SPC, Noumea; National Marine Information and Research Centre, Swakopmund; national programs of 55 countries in the ACP countries; other institutions; individual researchers
Fish Biodiversity in the Coastal Zone: A Case Study on the Genetic Diversity (Process of Speciation), Conservation and Sustainable Use in Aquaculture and Fisheries of the Black-chinned Tilapia ( <i>Sarotherodon melanotheron</i> ) in West African Coastal Lagoons and Watercourses	Mar 1997 - Sep 1999	BMZ/GTZ	Zoologisches Institut und Zoologisches Museum, Germany; WRI, Accra; Universität Hamburg, Hamburg
Genetic Diversity of the Silver Barb, <i>Barbodes gonionotus</i> (Bleeker), in Southeast Asia	Oct 1997 - Sep 2000	DFID	University of Wales, Swansea
Bellagio Conference: Towards Policies for Conservation and Sustainable Use of Aquatic Genetic Resources	8 - 14 Apr 1998	FAO; Rockefeller Foundation	FAO
<b>Germplasm Enhancement and Breeding Program</b>			
Genetic Improvement of Carp in Asia	Phase 1 1997 - 1999	ADB; ICLARM unrestricted funds	Bangladesh: Department of Agricultural Finance, Bangladesh Agricultural University, FRI; China: Shanghai Fisheries University, Freshwater Fisheries Research Center; India: CIFA (ICAR), National Bureau of Fish Genetic Resources; Indonesia: Research Institute for Freshwater Fisheries, Universitas Hasanuddin; Thailand: NAGRI, DOF, Ministry of Agriculture and Cooperatives, Asian Institute of Technology; Vietnam: Research Institute for Aquaculture Nos. 1 and 2
Genetic Improvement of Tilapias	5 - 10 years	ICLARM unrestricted funds; USAID; IDRC; others to be identified	Philippines: Freshwater Aquaculture Centre/Central Luzon State University (FAC/CLSU); GIFT Foundation International, Inc.; USA: Auburn University; others to be identified

<sup>1</sup> List of acronyms on p. 75.

<sup>2</sup> All programs receive funding from ICLARM's unrestricted core funds.

TITLE	DURATION	DONORS <sup>1,2</sup>	COLLABORATING INSTITUTIONS <sup>1</sup>
<b>Integrated Aquaculture-Agriculture Systems Program</b>			
Integrated Resources Management (IRM) Group and Development of RESTORE Software	1991 - 1999	ICLARM unrestricted funds	ICLARM outreach teams and national collaborators in Bangladesh and Malawi
Research for Development of Sustainable Aquaculture Practices	Jun 1993 - Dec 1999	USAID	Bangladesh Fisheries Research Institute (BFRI), Bangladesh; various NGOs
Development of Sustainability Indicators for Integrated Agriculture-Aquaculture Farming Systems	Oct 1994 - Jun 1999	BMZ/GTZ	University of Kassel (GHK), Germany; national institutions in the Philippines; ICLARM outreach teams; national collaborators
Aquaculture Research and Development for Smallholder Farms in Southern Africa	Jan 1996 - 2000 (proposed)	DANIDA; ICLARM unrestricted funds	Malawi: Fisheries Department, Ministry of Agriculture and Livestock Development, University of Malawi, National Aquaculture Center, Aquaculture for Local Community Development Programme (FAO); Southern African Center for Cooperation in Agricultural Research and Training; FAO; Japanese International Cooperation Agency; Malawi-German Fisheries and Aquaculture Development Project
Upland Integrated Aquaculture-Agriculture Systems in Forest Buffer Zone Management	Jul 1996 - Dec 1999	CFPQ; BMZ/GTZ	Community Forestry Project-Quirino (CFPQ), DENR, People's Organizations of Baguio Village and Don Mariano Perez, Philippines
Increasing and Sustaining the Productivity of Fish and Rice in the Flood-Prone Ecosystem in South and Southeast Asia	Jun 1997 - May 2000	IFAD; Ford Foundation	Bangladesh: BFRI, Bangladesh Rice Research Institute (BRRI), Proshika Manobik Unnayan Kendra (MUK); Vietnam: Research Institute for Aquaculture No. 1 and 2, Agricultural Science Institute, IIRI
<b>Coastal Aquaculture and Stock Enhancement Program</b>			
Village Farming and Restocking of Giant Clams	Operational since 1987. This phase, from mid-1995 to Dec 1999	EU; FAO; ESCAP	MAF, Solomon Islands; JCU, Australia
Development of Village Farms for Blacklip Pearl Oysters in Solomon Islands	Operational since 1993. This phase, from early 1998 to Dec 2000	ACIAR	MAF, Solomon Islands; JCU, Australia; Cook Islands Ministry of Marine Resources; US Peace Corps
Development of Methods for the Mass-Rearing of Tropical Sea Cucumbers for the Purpose of Enhancing Wild Stocks	Since 1993; this phase, Jan 1995 - Dec 1999	ACIAR; CIDA	MAF, Solomon Islands; Advisory Panel from ASIs in Australia coordinated by ACIAR; University of Sydney

<sup>1</sup> List of acronyms on p. 75.

<sup>2</sup> All programs receive funding from ICLARM's unrestricted core funds.

TITLE	DURATION	DONORS <sup>1, 2</sup>	COLLABORATING INSTITUTIONS <sup>1</sup>
<b>Aquatic Environments Program</b>			
Improving Policies for Sustainable Management of Coral Reefs	Jan 1999 - Mar 2001	SIDA	WCMC; URI; GCRMN; WRI; NCAR; NASA-Johnson Space Center; other institutions and individuals who contribute data and pictures to the database
Population Interdependencies in the South China Sea Ecosystems	Jan 1997 - Dec 1999	John D. and Catherine T. MacArthur Foundation; World Environment and Resources Program	Malaysia: University of Malaysia, Sabah; Taiwan: Institute of Zoology Academia Sinica; Vietnam: Department of Marine Living Resources, Institute of Oceanography; Indonesia: Environmental Study Center, Universitas Pattimura, Ambon; Solomon Islands: CAC
Coastal Management Training Program in the Philippines	Five years commencing in 1997	Rockefeller Brothers Fund	PCAMRD; DA-BFAR; DENR; IIRR; Haribon Foundation; Visayas State College of Agriculture-GTZ Tropical Ecology Program; USAID Coastal Resources Management Program; UN Train-Sea-Coast Programme; British Embassy; OXFAM-UK
Coordination of the Population, Consumption and the Environment	Jan 1998 - Dec 2000	John D. and Catherine T. MacArthur Foundation	Micronesia Research Study Area: Princeton University (USA), USDA Forest Service, Stanford University (USA), Department of Agriculture and Land (Federated States of Micronesia); Goa Research Study Area: TATA Energy Research Institute (India); Madagascar Research Study Area: University of Connecticut (USA), University of Antananarivo a University Museum (Madagascar); Ghana-Zambia-Zimbabwe Research Study Area: Christian Michelsen Institute (Norway); Marine Fisheries Research Division and University of Ghana (Ghana), University of Zimbabwe (Zimbabwe), Ministry of Agriculture, Food and Fisheries (Zambia); Gulf of Fonseca Research Study Area: ICRW (USA), CODDEFAGOLF (Honduras), CEASDES (El Salvador); Galapagos Study Area: The Nature Conservancy (USA and Ecuador), Fundacion Natura (Ecuador); Palawan Research Study Area: University of Rhode Island (USA), University of the Philippines (Philippines); South Sulawesi Research Study Area: University of Indonesia (Indonesia), Indonesian Institute of Science (Indonesia); North Sulawesi Research Study Area: Nicholas School of the Environment, Duke University (USA); Bogor Agricultural University (Indonesia); Vietnam Research Study Area: University of East Anglia (UK), CERED (Vietnam); Hong Kong Research Study Area: World Wide Fund for Nature and University of Hong Kong (Hong Kong); Thailand Research Study Area: University of York (UK), Institute of Social and Economic Policy (Thailand), Kasetsart University (Thailand); Gabon Research Study Area: World Wildlife Fund (Gabon), Universite Laval (Canada), Cornell University (USA)

<sup>1</sup> List of acronyms on p. 75.

<sup>2</sup> All programs receive funding from ICLARM's unrestricted core funds.

TITLE	DURATION	DONORS <sup>1,2</sup>	COLLABORATING INSTITUTIONS <sup>1</sup>
<b>Fisheries Resources Assessment and Management Program</b>			
Caribbean Marine Protected Areas Project: The Role of Marine Protected Areas in Fisheries Management and Biodiversity Conservation in Coral Reef Ecosystems	Jan 1996 - Dec 1999	IDB (Jamaica component); UK DfID (BVI component)	Center for Marine Sciences, University of the West Indies, Kingston, Jamaica; Conservation and Fisheries Department, Tortola, BVI
Tropical Fish Stock Assessment	Indefinite	ICLARM unrestricted funds	Predominantly in-house, with informal linkages with various research institutions
Modeling of Multispecies Fisheries	Continuous since Feb 1990	DANIDA; ICLARM unrestricted funds	NSC, Fisheries Centre, UBC, Canada; Danish Institute for Fisheries Research, Denmark
Regional Technical Assistance on Sustainable Management of Coastal Fish Stocks in Tropical Asia	1998 - 2000	ADB	Developing member-countries of ADB; Bangladesh: DOF, FRI; India: CMFRI; Indonesia: Directorate General of Fisheries, Central Research Institute for Fisheries; Malaysia: DOF, FRI; Philippines: BFAR, UPV; Sri Lanka: Ministry of Fisheries and Aquatic Resources Development, National Aquatic Resources Agency; Thailand: DOF, Southern Marine Fisheries Development Center; Vietnam: MOF, Research Institute of Marine Products
Testing the Use of Marine Protected Areas to Manage Fisheries for Tropical Coral Reef Invertebrates - Arnavon Islands	Oct 1994 - Feb 1999	ACIAR	GBRMPA; MAF Solomon Islands; Solomon Islands Ministry of Forests, Environment and Conservation; TNC

### Policy Research and Impact Assessment Program

#### *Ecological Economics for Sustainable Use of Aquatic Resources*

Fisheries Co-management Project	Apr 1994 - Mar 1999	DANIDA	Denmark: North Sea Centre, Hirtshals; Vietnam MOF, National Center for Social Sciences Cantho University; Thailand: DOF, Kasetsart University, Prince of Songkla University; Malaysia: Universiti Pertanian Malaysia; Indonesia: Research Institute for Marine Fisheries, Directorate General of Fisheries, Indonesian Fisheries Socioeconomic Research Network, Universitas Pattimura Ambon, Yayasan Hualopu; Philippines: SEAFDEC - AQD, UP-College of Public Administration, DENR, Southeast Asian Ministers of Education Organization - Southeast Asian Regional Center for Graduate Study and Research in Agriculture, Tambuyog Development Center, UPV, Haribon Foundation, Palawan Council for Sustainable
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<sup>1</sup> List of acronyms on p. 75.

<sup>2</sup> All programs receive funding from ICLARM's unrestricted core funds.

TITLE	DURATION	DONORS <sup>1, 2</sup>	COLLABORATING INSTITUTIONS <sup>1</sup>
			Development; Mozambique: Institute for Development of Small-scale Fisheries; Zimbabwe: Center for Applied Social Sciences, University of Zimbabwe, Lake Kariba Fisheries Research Institute; Malawi: Fisheries Department, Chancellor College; West Africa: Programme for Integrated Development of Artisanal Fisheries; Zambia: DOF; South Africa: University of Cape Town, Sea Fisheries Research Institute; Caribbean: Caribbean Community Fisheries Resources Assessment and Management Program
Valuation of Coral Reef Systems - Case Studies of Philippine Coral Reefs	Jan 1997 - Dec 1998	ICLARM unrestricted funds	UPV (Social Sciences Department, Biological Sciences Department)
Policy Research on User-based Management: The Case of Inland Openwater Fisheries of Bangladesh	Jul 1995 - Jun 1998	Ford Foundation	Bangladesh: DOF, Caritas, Proshika Manobik Unnayan Kendra, BRAC, Banchte Shekha, CRED
Legal and Institutional Analysis of Coastal Resources Co-management	Oct 1996 - Sep 1998	SIDA	USA: WRI; Thailand: Coastal Resources Institute, Prince of Songkla University; Bangladesh: Bangladesh Environmental Lawyers Association; Philippines: DENR; Vietnam: Continental Shelf Committee, Canada Ocean Policy Project; Indonesia: Office of the State Ministry for Environment; Cambodia: Wetlands International.
Performance and Evaluation of Fisheries Co-management in Indonesia and the Philippines	Nov 1996 - Oct 1998	DGIS; IDRC	Component 1 - Yayasan Hualopu, Ambon Indonesia; Universitas Pattimura Ambon, Indonesia; Component 2 - Center for West Visayan Studies, Panay, Philippines.
An Institutional Analysis of the <i>Sasi Laut</i> System, Maluku Province, Indonesia	Jul 1997 - Dec 1998	IDRC	Universitas Pattimura Ambon, Yayasan in Hualopu, Indonesia
Institutional Capacity Building for Community-based Fisheries Management in Bangladesh	Jan 1997 - Dec 1999	Ford Foundation	Bangladesh: DOF, Caritas, Proshika Manobik Unnayan Kendra, BRAC, Banchte Shekha; CRED, CNRS; Philippines: Tambuyog Development Center (TDC)
Impact of Aquatic Resources Research: Methods and Assessment			
Impact of Giant Clam Productivity Enhancement Research	1997 - 1998	ICLARM unrestricted funds	DARE, UNE

<sup>1</sup> List of acronyms on p. 75.

<sup>2</sup> All programs receive funding from ICLARM's unrestricted core funds.

TITLE	DURATION	DONORS <sup>1, 2</sup>	COLLABORATING INSTITUTIONS <sup>1</sup>
Socioeconomic Impact of Fish Culture Extension on the Farming Systems of Bangladesh, Phase 2	Jul 1996 - Jun 1998	IFAD	Bangladesh DOF
Policy Analysis of the Contribution of Fisheries to Food Security			
Socioeconomic Component of the Project Support Strengthening the Institutional Capacity for Sustainable Aquaculture Development in the Mekong Delta of Vietnam	Sep 1994 - Dec 1997	FCRI/HAKI	Faculty of Fisheries, CTU; AFSSRN; SEAFDEC
Bangus Fry Resource Assessment Project	Mar 1996 - Mar 1998	BFAR, PCAMRD	BFAR, PCAMRD, SEAFDEC-AQD
International Consultation on Fisheries Policy Research in Developing Countries: Issues, Priorities and Needs	1997 - 1998	DANIDA	IFPRI; IFM, NSC; Royal Veterinary and Agricultural University, Denmark
Database for the Assessment of Developing Country Fisheries	1997-2000	ICLARM unrestricted funds	FAO; INFOFISH; NACA; others to be identified
Mekong River Basin Research and Capacity-Building Initiative (Assessment of the Contribution of Aquatic Resources Research in the Mekong River Basin to Food and Nutritional Security of the Fishing and Farming Population)	May 1998 - Oct 1999	OxFam America	CTU; IIRR; IDA

### Information and Training Program

Information Dissemination of ICLARM's Research and Related Activities	Ongoing	ICLARM unrestricted and project funds (Publications and Translations Units)	Various external authors contributing manuscripts; a few authors on commission; external reviewers
Information Services	Ongoing	ICLARM unrestricted funds (Library and Information Services Unit)	Exchange agreements with 146 library/institutions (89 in developing countries and 57 in developed countries)
Public Awareness	Ongoing	ICLARM unrestricted and project funds	EPCOT - Walt Disney World, IFAD, CGIAR Gender Program, The Economist, The Guardian, AFS, UPV, Future Harvest

<sup>1</sup> List of acronyms on p. 75.

<sup>2</sup> All programs receive funding from ICLARM's unrestricted core funds.

TITLE	DURATION	DONORS <sup>1, 2</sup>	COLLABORATING INSTITUTIONS <sup>1</sup>
<b>International Partnerships and Networks Program</b>			
International Partnerships	Continuous since 1996	ICLARM unrestricted funds	National, regional and international research institutions
International Network on Genetics in Aquaculture	Continuous since Aug 1993	ICLARM unrestricted funds; Norway; IDRC	Bangladesh: Fisheries Research Institute, Mymensingh; China: Department of Aquaculture, Shanghai Fisheries University, Freshwater Fisheries Research Centre, Wuxi; Côte d'Ivoire: Centre National de Recherche Agronomique Pisciculture Station, Bouake; Egypt: Central Laboratory for Aquaculture Research, Abbassa; Fiji: Ministry of Agriculture, Fisheries and Forestry, Suva; Ghana: Water Research Institute, Accra; India: Central Institute for Freshwater Aquaculture, Bhubaneswar; Indonesia: Research Institute for Freshwater Fisheries, Jawa Barat; Malaŵi: University of Malaŵi, Zomba, Fisheries Department, Lilongwe; Malaysia: Universiti Malaya, Kuala Lumpur; Philippines: Bureau of Fisheries and Aquatic Resources, Quezon City, Freshwater Aquaculture Centre/CLSU, Nueva Ecija; Thailand: National Aquaculture Genetics Research Institute, Pathumuthani; Vietnam: Research Institute for Aquaculture No. 1, Ha Bac, and Research Institute for Aquaculture No. 2, Ho Chi Minh City  Advanced Scientific Institutions: Australia: Queensland University of Technology; Hungary: Fish Culture Research Institute; Israel: Agricultural Research Organization; Japan: National Research Institute of Aquaculture; Norway: Institute of Aquaculture Research, Ltd.; Philippines: Southeast Asian Fisheries Development Center, Aquaculture Department; Rome: Food and Agriculture Organization of the United Nations; The Netherlands: Wageningen Agricultural University; UK: University of Stirling, University of Wales Swansea; USA: Auburn University
Asian Fisheries Social Science Research Network	Continuous	ICLARM unrestricted funds; AFS	Indonesia: Faculty of Economics, Universitas Diponegoro Central Research Institute for Fisheries, Research Institute for Marine Fisheries; Malaysia: Faculty of Economics and Administration, Universiti Malaya (UM), Natural Resource Economics Department, Universiti Pertanian Malaysia; Philippines: BFAR, FAC-CLSU, Economics Section, Research Division, SEAFDEC-AQD, Department of Agricultural Economics, College of Economics and Management, UPLB, Faculty of Arts and Sciences, UPV; Thailand: Fisheries Economics Research Subdivision, DOF, Department of Agricultural and Resource Economics, Faculty of Economics and Business Administration, Kasetsart University, Coastal Resources Institute, Prince of Songkla University; Vietnam - Ministry of Fisheries, Cantho University

<sup>1</sup> List of acronyms on p. 75.

<sup>2</sup> All programs receive funding from ICLARM's unrestricted core funds.

TITLE	DURATION	DONORS <sup>1, 2</sup>	COLLABORATING INSTITUTIONS <sup>1</sup>
Information Network: Network of Tropical Aquaculture and Fisheries Professionals (NTAFP)	Continuous since Apr 1982 (formerly NTFS) and Jul 1987 (formerly NTAS)	FAO; ICLARM unrestricted funds	NTFS; FAO; DANIDA

<sup>1</sup> List of acronyms on p. 75.

<sup>2</sup> All programs receive funding from ICLARM's unrestricted core funds.

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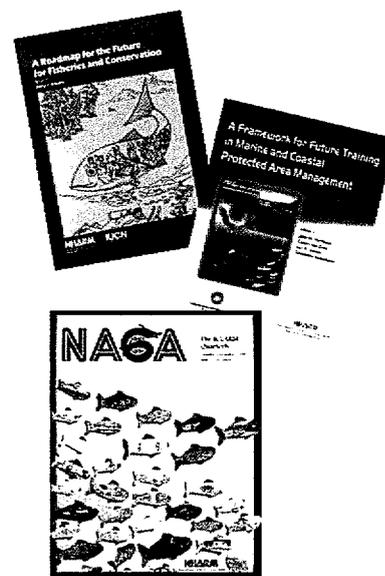
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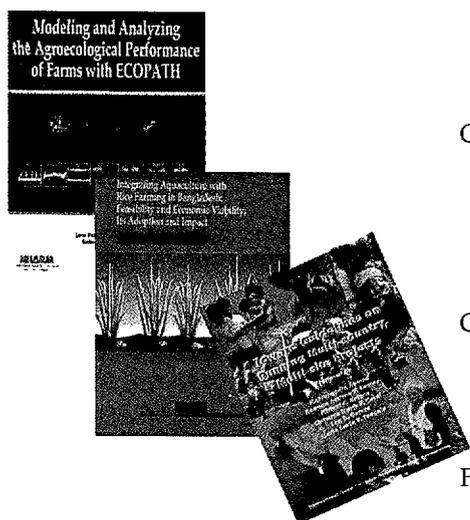
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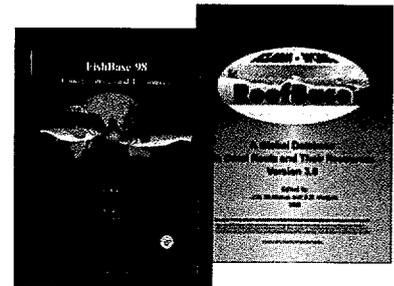
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- Thompson, P.M. and M.M. Hossain. Establishing community based management of inland fisheries: lessons from Bangladesh. Fifth Asian Fisheries Forum. Chiang Mai, Thailand, 11-14 November.
- Thompson, P.M., M.N. Islam and M.M. Kadir. Impacts of government-NGO initiatives in community based fisheries management in Bangladesh. Crossing Boundaries - Seventh International Association for the Study of Common Property. Vancouver, British Columbia, Canada, 10-14 June.
- Torell, M. Institutional, legal and policy perspectives on the management of aquatic resources (especially fish) and the aquatic environment in wetlands, floodplains, lakes and rivers in the Mekong River Basin. Crossing Boundaries - Seventh International Association for the Study of Common Property. Vancouver, British Columbia, Canada, 10-14 June.
- Tripathi, S.D. and D. Mazumder. Use of weeds/grasses for high value fish production - a low-cost aquaculture system for the resource-poor in Bangladesh. Triennial Meeting of World Aquaculture Society. National Shellfisheries Association, Fish Culture Section - American Fisheries Society. Las Vegas, USA, 15-19 February.

Vergara, S.G. Decision determinants at the population level: leads for coastal management. Convention of Integrated Coastal Management Practitioners in the Philippines. Davao City, Philippines, 10-12 November.

Vergara, S.G. The Aquanaut method: a comparison with the Atlantic and Gulf Reef Assessment (AGRA) method. Atlantic and Gulf Reef Assessment Workshop. Miami, Florida, 2-6 June.

Vergara, S.G. The Aquanaut method. Global Coral Reef Monitoring Network (GCRMN) Methodology Workshop. Orpheus Island, Australia, 27-30 November.

Watson, M. and J.L. Munro. Maximizing settlement success in depleted marine reserves. Mote International Symposium on Essential Fish Habitat and Marine Reserves. Sarasota, Florida, USA, 4-6 November.

Williams, M.J. Policy integration in oceans management: are we advancing? Keynote address. Second London Oceans Conference. London, 10-12 December.

Williams, M.J. Portunids on postage stamps (poster). International Conference on Culture of Portunid Crabs. Boracay, Philippines, 1-5 December.

Williams, M.J. and J.H. Primavera. Choosing portunid species to domesticate. International Conference on Culture of Portunid Crabs. Boracay, Philippines, 1-5 December.

Williams, M.J. and J. Kane-Potaka. Playing world dominoes - how can the aquaculture industry benefit by heeding the needs of the poor? Aquavision Conference. Stavanger, Norway, 13-15 May.

Williams, M.J. and M.A.P. Bimbao. Aquaculture: the last frontier for sustainable food security? Dean D.K. Villaluz Memorial Lecture, Twenty-fifth Anniversary of SEAFDEC Aquaculture Department. Tigbauan, Iloilo, Philippines, 8 July.

## Training

Agroecosystem Mapping and Analysis. R.A.V. Santos and Z.N. Alojado. 10 participants from Can Tho University, Vietnam. Can Tho University, Vietnam, 28 July - 1 August.

Fisheries Co-management Research Project. Access Database and Statistical Methods Training. M. Gamo-Magtalas and E.L. Genio. 8 participants from the Ministry of Fisheries, Vietnam. Ministry of Fisheries, Hanoi, Vietnam, 21-28 September.

Improved fish culture. 34-40 participants. Gopalganj and Jessore, Bangladesh, various dates in June.

Improved fish culture practices. 20-97 participants. Various locations and dates in Bangladesh.

Integrated fish farming. 25 participants. Mymensingh, Bangladesh, 23-25 June.

Ninth National Course on Integrated Coastal Management. S. Vergara, L. Garces and A.B. Serrano. 27 participants from middle level staff of the DENR, DA-FSP, academic institutions, NGOs, LGUs and the Philippine Navy. Zamboanga State College of Marine Science and Technology, Zamboanga City, Philippines, 16-27 February.

Population Genetics Techniques. M. Ablan-Lagman. Laboratory methods and data analysis of information from electrophoresis data and their application to aquaculture and fisheries management. 14 participants. PISCES Laboratory, ICLARM, Manila, Philippines, 8-26 June.

Regional Training/Workshop on Fisheries Resources Information System and Tools (FiRST). G. Silvestre, F. Gayanilo, Jr., F. Valdez and L. Garces. Penang, Malaysia, 20-24 October.

Regional Training/Workshop on Fisheries Socioeconomics and Management Policy/Planning. G. Silvestre, F. Gayanilo, Jr., E. Cabegin, L. Garces, R. Pomeroy, M. Torell and M. Ahmed. Hat Yai, Thailand, 23 November - 1 December.

Regional Training/Workshop on Methods for Analysis of Fisheries Resources. G. Silvestre, F. Gayanilo, Jr., F. Torres, Jr., L. Garces, V. Christensen, L. Lachica and K. Santos. Hat Yai, Thailand, 27 October - 6 November.

Rice-fish farming. 27 participants. Mymensingh, Bangladesh, 20 April.

Summer Internship on Communication Research Course: ICLARM's Contributions Records. R.M. Temprosa and E.B. Gonzalez. 1 participant. ICLARM, Manila, Philippines, 25 May - 5 June.

Summer Internship on Communication Research Course: ICLARM's Slide Captions and View Descriptions. R.M. Temprosa and N.I. Jhocson. 2 participants. ICLARM, Manila, Philippines, 4-22 and 25-29 May.

Technology Transfer on Blacklip Pearl Oyster Growout (in collaboration with James Cook University). K. Friedman. Participants from the Fisheries Department, Fiji, Suva, November.

Training Course for ACP Countries in Southern Africa. M. Vakily, R. Froese, M.L.D. Palomares, R. Reyes, C. Garilao, J.F. Rius. Swakopmund, Namibia, 30 November - 11 December.

Training Course for ACP Countries in the Caribbean. M. Vakily, R. Froese, D. Pauly, M.L.D. Palomares, J. Falcon, A. Torres and G.T. Pablico. Port of Spain, Trinidad and Tobago, 21 May - 3 June.

Training Course on Placing Fisheries in Their Ecosystem Context. V. Christensen. Puntarenas, Costa Rica, 1 April; Hirtshals, Denmark, 1 August; and Sao Paulo, Brazil, 30 November - 5 December.

Training for Mr. V. Ramanathan (a programmer from India) on a framework for database setup in the South Asian region in

coordination with the Global Coral Reef Monitoring Network. S. Vergara, I. Uy, M. Gorospe, K. Reyes and L. Meñez. ICLARM, Manila, Philippines. 19 February - 3 March.

Training on Quantitative Genetics and Its Application to Aquaculture. M.V. Gupta, B.O. Acosta, R. Dunham, F. Galalac and AKVAFORSK. 22 participants. CIFA, Bhubaneswar, Orissa, India, 1-20 September.

Training on Socioeconomic Research Methods. E.L. Genio. 12 participants from the WES-HAKI Project at Can Tho University. Can Tho University, Vietnam, 16-23 February.

Training/Workshop on Fisheries Socioeconomics and Management/Policy/Planning. G.T. Silvestre, M. Ahmed, E.C.A. Cabegin, L.R. Garces, F.C. Gayanilo, Jr., M. Torell and R. Pomeroy. Hat Yai, Thailand, 24 November - 1 December.

Training/Workshop on Methods for Analysis of Fisheries Resources. G. Silvestre, F. Torres, Jr., L. Lachica, K. Santos, L.R. Garces, V. Christensen, F.C. Gayanilo, Jr. and L. Arenas. Hat Yai, Thailand, 27 October - 6 November.

## Advisory Services

A Scheme for a Comprehensive, Country-wide, Fisheries Research Planning Workshop, prepared by ICLARM and ISNAR with Shilat (Iranian Fisheries Co.)

and Iranian Fisheries Research and Training Organization. J.F. Craig. 30 participants. 26 February - 5 March.

Advisory Committee on Population, Consumption and Environment Initiative of the MacArthur Foundation, USA. M.J. Williams (as Member). Chicago, USA, 16-17 September.

Advisory Services to Mr. Henning Skov Hansen, a Danish graduate student, on the effect of co-management on fishers compliance with regulations. R. Pomeroy and B.M. Katon. Philippines, 11 November - 17 December.

Australian Ballast Water Management Advisory Committee. M.J. Williams (as Chair). Australia, 6 May and 19 October.

Board of the GIFT Foundation International, Inc. (Philippines). M.J. Williams (as Chair). Several meetings. Manila and Muñoz, Philippines.

Committee Membership (as Associate Adjunct Professor) for M.S. thesis on freshwater capture fisheries of Cambodia. M. Ahmed. Supervision; joint authorship of scientific paper when thesis is completed. UP - Los Baños, Philippines, year-round.

Establishment of Giant Clam Hatchery. C. Oengpepa, CAC staff. Participants from Paruru Aquaculture. Marau Sound, Solomon Islands, ongoing since mid-1996.

Evaluation of the Philippine National Fish Stock Assessment Program of the Department of

- Agriculture - Bureau of Fisheries and Aquatic Resources (DA-BFAR). F.C. Gayanilo, Jr. Iloilo, Philippines, 16-20 November.
- Executive Committee Membership. International Institute for Fisheries Economics and Trade (IIFET). M. Ahmed. Networking with professionals in the field; Scientific Steering Committee membership for 1998 IIFET meeting; organized a panel on fisheries policy research.
- Expert Consultation on Guidelines for Routine Capture Fishery Data Collection Exercise of UN-Member Countries Leading to a Better Fish-Catch Statistics. FAO and DANIDA. F.C. Gayanilo, Jr. Bangkok, Thailand, 19-29 May.
- FAO High Level Panel of Experts on Fisheries. M.J. Williams (as Chair). Rome, 25-26 January.
- Fisheries Department of Malawi. R.E. Brummett served as Aquaculture Advisor on policy issues relating to the development of rural aquaculture and on the possible introduction of commercial aquaculture systems.
- Fisheries Resources Commission, World Humanities Action Trust, UK. M.J. Williams (as Member). Brisbane, Australia, 16-18 October.
- Follow-up of Southeast Asia Programs. M. Torell (as Regional Advisor to SIDA). Continuous reporting to Sweden.
- Global Species 2000 Project. R. Froese. Participation in Species 2000 Team Meetings and assistance with project management. ICLARM hosts the Manila office of Species 2000, which produced in 1998 the first and second prototypes of the Species 2000 CD-ROM.
- International Training Course on Extension in Rural Development. M.A.P. Bimbao. Sponsored by the German Foundation for International Development (DSE), in Feldafing, Germany, 12 February - 17 March. 26 participants from 18 countries in Africa, Asia and Middle East.
- Marine Protected Areas. S. Vergara. Discussion on the management strategies in Guiuan, Samar. 1 participant. ICLARM, Manila, Philippines, 22 June.
- Mini-workshop Trainings in Cambodia. M. Torell (as National Project Advisor). 8 people trained, a national report and a national workshop. Cambodia, January-June.
- National Study in Thailand/ CORIN. M. Torell (as National Project Advisor). National report.
- Population Genetics Techniques. M. Ablan-Lagman. Laboratory methods and data analysis of information from electrophoresis data and their application to aquaculture and fisheries management. 4 participants. ICLARM, Manila, Philippines, 8-26 June.
- Practicum Training in Graphical Design and Layout, and Database Handling to 2 high school students from the German School Manila (DSM, Eurocampus). A. Esquillon and A. Canuto.
- ICLARM, Manila, Philippines, 23-27 February.
- RAMP Training. M. Gorospe. Use of the RAMP methodology in the data collection in a study site in Palawan. 1 participant. ICLARM, Manila, Philippines, 18 April - 3 December.
- ReefBase Training. I. Uy, L. Menez and M. Gorospe. Developed a ReefBase-compatible regional coral reef database for South Asia; trained 8 database programmers from 3 countries. ICLARM, Manila, Philippines, 18 February - 11 March.
- Regional Workshop. M. Torell (as National Project Advisor, Vietnam/ Continental Shelf Committee). Vietnam, January-August.
- Remote Sensing and National Parks. M. Noordeloos and S. Vergara. Current management status of some national parks and the application of remote sensing in setting up national parks. 2 participants. ICLARM, Manila, Philippines, 14 July.
- Review of a Project of the Fish Culture Research Institute (FCRI), Hungary, in Vietnam, funded by the Government of the Netherlands. M.V. Gupta (as Mission Leader).
- Review of the Project West East South Cooperative Program: Strengthening the Institutional Capacity for Sustainable Aquaculture Development in the Southern Part of Vietnam, funded by the Government of Netherlands. M.V. Gupta (as Consultant/ Mission Leader of the three-member

Review Mission fielded by FCRI Hungary). Can Tho, Vietnam, 16 November - 6 December.

Selecting the Best Publications (on Aquaculture and Inland Fisheries, and Marine Fisheries) for the Dr. Elvira Tan Memorial Award given by the Philippine Department of Science and Technology (DOST). M.V. Gupta (as one of three judges). Los Baños, Laguna, Philippines, June.

System-wide Information Network for Genetic Resources. R.S.V. Pullin and R. Froese. Consultation on the CGIAR System-wide Information Network for Genetic Resources. 9-14 November. Contributions on aquatic genetic resources and related information systems and databases, and plans for SINGER Project Phase 2. Participated in by all IARCs and their partners in genetic resources information systems, the Convention on Biological Diversity, FAO and Species 2000.

Technical Advice on Library Computerization of the Mindanao State University, Philippines. R.M. Temprosa. 1 participant. ICLARM, Manila, Philippines, 29 October.

Technical Advice on Management of Fisheries and Aquatic Information Systems of PCAMRD. R.M. Temprosa. 2 participants. Los Baños, Laguna, Philippines, 7 April.

Technology Transfer on Blacklip Pearl Oyster Grow-out (in collaboration with James Cook University). K. Fiedman. Participants

from the Fisheries Department, Fiji. Savu, Fiji, November.

Tilapia Production Training Seminar: ICLARM-Community Forestry Project-Quirino (CFPQ) Project. R. Oficial coordinated with the National Freshwater Fisheries Technology Research Center (NFFTRC) of the Philippine BFAR. Muñoz, Nueva Ecija, Philippines, 27-31 July. 8 farmers from Quirino Province and 2 project staff participated.

Walt Disney World - Epcot's Fifth International Flower and Garden Festival. T.S. Lopez. Lake Buena Vista, Florida, USA, 17 April - 31 May. The festival featured the six-week "Gardening for Food Around the World" Exhibit which included the activities of the World Bank, CGIAR in Africa, Asia and Latin America and Rodale Institute in the USA. 12 scientists from these institutes acted as international communicators. T. Lopez provided inputs on the benefits of integrated rice-fish culture to ensure productive ricefields in Asia.

## **Workshops/ Conferences/Seminars Conducted**

APAARI Fisheries Subgroup Meeting. M.J. Williams and M. V. Gupta. Suwon, Republic of Korea, 11-12 October.

Asian Fisheries Social Science Research Network Meeting. R.S. Pomeroy and A. Trinidad-Juan. 17 participants. Chiang Mai,

Thailand, 10 November.

Assessing Impact in Natural Resource Management Research. M. Ahmed. ICRAF, Nairobi, Kenya, 27-29 April.

Assessing the Global Distribution and Abundance of Marine Organisms, Ocean Studies Board, US National Academy of Sciences. V. Christensen. Monterey, California, 13-15 January.

Bellagio Conference: Towards Policies for Conservation and Sustainable Use of Aquatic Genetic Resources. R.S.V. Pullin, M. Gupta, R. Froese and C.M.V. Casal. Bellagio, Como, North Italy, 15-17 April.

Biodiversity and Conservation Genetics Studies on Coral Reefs. M. Ablan-Lagman. ICLARM, Manila, Philippines, 13 July.

Carp Hatchery and Other Culture Systems Training. R. Oficial and 3 farmers in ICLARM-CFPQ Project. Sponsored by the National Inland Fisheries Technology Center (NIFTC) of Philippine BFAR. 30 participants from 11 regions in the Philippines. National Inland Freshwater Research Center, Tanay, Rizal, 26-31 July.

Coastal Resources Co-management Training Seminar. R.S. Pomeroy. Maputo, Mozambique, 23-26 November.

Co-management of Natural Resources in Asia: A Comparative Perspective. I. Harkes and B. Katon. IIAS/NIAS, Isabela, Philippines, 16-18 September.

- Co-management Workshop on Research Progress. I. Harkes and R.S. Pomeroy. Environmental Study Center, Pattimura University, Indonesia, 3-5 March.
- Conference on Biodiversity and Development. V. Christensen. DANIDA Research Council, Copenhagen, 21 October.
- Convention of Integrated Coastal Management Practitioners in the Philippines. S. Vergara and A. Banzon-Serrano. Davao City, Philippines, 10-12 October.
- Creating a Sea Change: Resolving the Global Fisheries Crisis. International Conference sponsored by WWF's Endangered Seas and Living Planet Campaign. G.T. Silvestre. Lisbon, Portugal, 12-15 September.
- Crossing Boundaries – Seventh Conference of the International Association for the Study of Common Property. M. Ahmed, R.S. Pomeroy, P. Thompson, M. Torell, B.M. Katon and I. Harkes. Vancouver, British Columbia, Canada, 10-14 June.
- East Asian Forum on Genetic Resources Access and Benefit Sharing Policies. M. Ablan-Lagman. Cavite, Philippines, 7-8 December.
- EC Conference on Ocean Food Webs and Economic Productivity. V. Christensen. Lisbon, Portugal, 30 June - 3 July.
- Ecopath Workshop. J.L. Munro. Puntarenas, Costa Rica, 20-28 April.
- Expert Consultation on the Regionalization of the Code of Conduct for Responsible Fisheries. Phase I: Responsible Fishing Operations. G. Silvestre. Chiang Mai, Thailand, 9-12 November.
- Fifth Asian Fisheries Forum. M. Ahmed, L. Lachica, R.S. Pomeroy, A. Salamanca, G. Silvestre and P. Thompson. Chiang Mai, Thailand, 11-14 November.
- Fifth Biennial Meeting of the International Society for Ecological Economics. Beyond Growth: Policies and Institutions for Sustainability. R.A.V. Santos. Santiago, Chile, 15-19 November.
- Fifth International Conference on Remote Sensing for Marine and Coastal Environments. J. McManus. San Diego, USA, 3-8 October.
- First Population, Consumption and Environment Workshop. J. McManus and H. Quiaoit. Chicago, Illinois, USA, 6-7 April.
- Fish and Shellfish Genetics (a special session during the Asian Fisheries Forum). M.V. Gupta. Chiang Mai, Thailand, 11-14 November.
- Forum on the New Fisheries Code of the Philippines: Issues, Impacts and Implication. L. Garces. SEARCA, Los Baños, Laguna, Philippines, 22 May.
- Genetic Markers in Aquaculture and Fisheries Management. M. Ablan-Lagman. Sabah, Malaysia, 5-11 March.
- International Conference on Exploration of the Seas Symposium on Confronting Uncertainty in the Evaluation and Implementation of Fisheries Management Systems. M. Ahmed. Cape Town, South Africa, 16-19 November.
- International Workshop on Placing Fisheries in Their Ecosystem Context. V. Christensen. North Sea Centre, Denmark, 4-8 August.
- International Workshop on Research Partnership between NGOs and Agricultural Research Institutions. P. Thompson. International Institute for Rural Reconstruction, Cavite, Philippines, 4-10 October.
- International Workshop on the Use of Ecopath with Ecosim to Evaluate Strategies for Sustainable Exploitation of Multispecies Resources. V. Christensen. Fisheries Centre, UBC, Canada, 25-27 March.
- Legal and Institutional Perspectives on the Management of Fisheries, Coastal Resources and the Coastal Environment in Southeast Asia and Bangladesh. M. Torell, R.S. Pomeroy, A. Salamanca and R.A.V. Santos. CORIN, Prince of Songkla University, Hat Yai, Thailand, 23-25 April.
- NARS-Asia Planning Meeting of the Fisheries Co-Management Project. R.S. Pomeroy, A. Trinidad-Juan, B.M. Katon, E. Genio and A. Salamanca. Chiang Mai, Thailand, 9 November.
- National Workshop on Aquaculture Genetics in the Philippines. P.R. Gardiner, M.V. Gupta, B.O.

- Acosta, N.D. Macawaris-Ele and E. Tuico. NFFTRC/BFAR, Nueva Ecija, Philippines, 27 March.
- Ninth Biennial Meeting of the International Institute of Fisheries Economics and Trade. M. Ahmed and R.S. Pomeroy. Trømsø, Norway, 9-4 July.
- Pacific Economic Cooperation Council Workshop on the Impact of Government Financial Transfers on Fisheries Management, Resource Sustainability International Trade. G. Silvestre. PRIMEX, Manila, Philippines, 17-19 August.
- Participatory Natural Resource Management in Developing Countries. I. Harkes. Mansfield College, Oxford, UK, 6-8 April.
- Planning Workshop for Phase 2 of the Fisheries Co-management Project (ICLARM and IFM). R.S. Pomeroy, B.M. Katon and I. Harkes. Institute of Fisheries Management and Coastal Community Development, Hirtshals, Denmark, 17-21 August.
- Policy Forum on Limiting Resource Access to Marine and Coastal Resources. B.M. Katon. Dumaguete City, Negros Oriental, Philippines, 29-30 April.
- Policy Forum on the New Fisheries Code of the Philippines. B.M. Katon. SEARCA, Los Baños, Laguna, Philippines, 22 May.
- Population Genetics Techniques and their Applications to Aquaculture and Fisheries Management. M. Ablan-Lagman. PISCES Laboratory, Makati City, Philippines, 17-24 June.
- Project Appraisal Committee Meeting of the Capacity Building for Integrated Coastal Management in the Philippines. G. Magnayon-Umali. Ormoc City, Leyte, 12 November.
- Record-breaking Coral Reef Bleaching Episode of 1998: Outlook - More Ahead? J. McManus and H. Quiaoit. ICLARM, Manila, Philippines, 17 November.
- Regional Workshop on Application of Ecopath with Ecosim. V. Christensen. Universidad Nacional, Puntarenas, Costa Rica, 21-28 April.
- Regional Workshop on Methods of Analysis of Fishery Resources. V. Christensen. Songkla, Thailand, 1-3 November.
- Review Workshop in Dhaka with Partners within the IFAD-funded Project on Sustaining and Increasing the Productivity of Rice and Fish Yield within the Flood Prone Ecosystem of South and Southeast Asia. M.M. Dey, M. Prein and S.D. Tripathi. Bangladesh Rice Research Institute, Joydebpur, Bangladesh, 6-7 July.
- Second South East Asia Program for Ocean Law, Policy and Management (SEAPOL) Gulf of Thailand Meeting of Experts. M. Torell and A. Salamanca, 19-22 July.
- Study Tour of African Scientists from Cote d'Ivoire, Egypt and Malawi to Aquaculture and Genetics Research Centers in Asia. M.V. Gupta and B.O. Acosta. Thailand and India, 12-25 July.
- Symposium on Women in Asian Fisheries. Asian Fisheries Forum. M.J. Williams (Co-convenor). Chiang Mai, Thailand, 13 November.
- Tenth Global Biodiversity Forum. V. Christensen. Bratislava, Slovakia, 30 April - 2 May.
- Tenth Steering Committee Meeting of the Fisheries Co-Management Project. R. Pomeroy. Maputo, Mozambique, 21-22 November.
- Tropical Fish Biology Symposium of the Fisheries Society of the British Isles. V. Christensen. Southampton, UK, 13-17 July.
- Workshop on Comparative Dynamics of Exploited Ecosystems of the Northwest Atlantic. V. Christensen. Halifax, N.S., Canada, 12-15 November.
- Workshop on the Ecological Basis and Management Policy for Sustainable Fish Production in Lake Nasser. M. Ahmed. Aswan, Egypt, 20-23 June.

## **Selected Media Coverage**

### **Print Media**

Annual Report. Central Institute of Freshwater Aquaculture (Bhubaneswar). Pictures taken at the Workshop on Genetic Improvement of Carps. Central Institute of Freshwater Aquaculture (Bhubaneswar): 16-A, 62-A.

- Business World. Leyte fisherfolk edge away from poverty. J.L. Mercado. 23 July: 13.
- BusinessWorld. Scientists' warning; Southeast Asia's coral reefs are fast declining. C. McCall, 28 May: 18.
- BusinessWorld. Studies raise hope amid declining fish catch. R.G. Offemaria. 18 March: 9.
- BusinessWorld. Women, children make undervalued contributions in fishery. 21 December: 19.
- Catch and Culture. The Mekong River basin gets its own session. Nao Thuok. 4(1): 2.
- CGIAR News. As you sow, so shall you reap. August: 4-5.
- CGIAR News. CGIAR happening, milestones. March: 3.
- CGIAR News. CGIAR science awards, outstanding scientific partnership [photo clip]. December: 13.
- CGIAR News. Highlights of CGIAR center's achievements. March: 4-5.
- CGIAR News. ICLARM/NASA collaborate. December: 15.
- CGIAR News. New book, etc.: Reefs at risk, a map-based indicator of threats to the world's coral reefs. August: 5.
- CGIAR News. The CGIAR nurtures an evaluation culture. March: 1-3.
- The Economist (special insert). The deep green sea, a survey. E. Carr. 347(8069): 18 p. Running title: Survey: the sea.
- Entwicklung und Laendlicher Raum. Towards sustainable coastal management, selected issues in fisheries and aquaculture. W. Barg, P. Martosubroto and R. Willman. 32(2): 3-7.
- FAO Aquaculture Newsletter. International conference suggests policies for the conservation and sustainable use of aquatic genetic resources. D. Bartley. (19): 8-9.
- Fish Farmer. Holmenkollen guidelines updated. M. New. 21(1): 36-39.
- FishBytes. Fishing down marine food webs... in Canada too. D. Pauly. 4(1): 4.
- FishBytes. The director in Oz, part two. T. Pitcher. 4(2): 3.
- FishBytes. The law of Ma'at, modelling and Lake Nasser. T. Pitcher. 4(5): 3.
- The Hindu. Integrated farm pond for increased productivity. 19 March: 28.
- The Hindu. Super tilapia - ideal for small farmers. 29 January: 28.
- The Journal. Subic marine center seen to boost gov't food security agenda. 17 November: 8.
- Manila Bulletin. Aquaculture complex launched. 10 August: 30.
- Manila Bulletin. Dar at SEAFDEC anniversary. Z.B. Sarian. 9 July: B-14.
- Manila Bulletin. GIFT gets award. C.S. Caoile. 18 October: 15.
- Manila Bulletin. GIFT tilapia going great, seminar this Saturday, p.m. Z.B. Sarian. 2 April: B-18.
- Manila Bulletin. GIFT tilapia seminar this Saturday. Z.B. Sarian. 30 April: 36.
- Manila Bulletin. Our plans and vision for the SBMA, a big role in national development. F.C. Payumo. 6 December: 20, 23.
- Manila Bulletin. SEAFDEC-AQD hatchery [photo clip]. 5 November: B-18.
- Manila Chronicle. Bangus fry shortage hits 1.6b, decline in Philippine milkfish population expected to persist. 13 January: 13.
- Manila Standard. Fish hatchery complex opens. 12 August: 18.
- Manila Standard. World's coral reefs in danger. (New book, etc.): Reefs at risk. 10 July (Sec. B): 15.
- National: The Philippine Journal. Aquatic research hub in Subic. 21 April: 6.
- New York Times. Man moves down the marine food chain, creating havoc. W.K. Stevens. 10 February 1998: F3.
- PCAMRD Waves. ICM training manual launched. 11(1): 8, 7.
- People's Journal. Signing for the aquaculture research headquarters, 21 April 1998, by the Department of Agriculture and Subic Bay Metropolitan Authority. 22 April: 10.
- The Philippine Journal. Top MNLF commander finds new, satisfying struggle in fish farming. 5 July: 7.
- The Philippine Star. Aklan [community news]. R.A. Fernandez. 15 November: 14.
- The Philippine Star. Interdependencies of South China coral reefs studied. 27 November: 42.

The Philippine Star. Marine research center [photo clip]. 17 November: 13.

The Philippine Star. Rizal [community news]. R.A. Fernandez. 8 November: 13.

The Philippine Star. RP milkfish fry shortage hits alarming level. 11 January: 18.

The Philippine Star. World aquaculture prod'n dominated by Asian countries. R.A. Fernandez. 9 December: 23.

The Philippine Panorama. Low-cost tilapia culture. Z.B. Sarian. 12 April: 10-11.

PIMRIS Newsletter. FishBase, the world's most comprehensive electronic encyclopedia on fish. 10(1): 6-7.

Reuters Wire Service, Singore. Interview with J. McManus. The use of diving tourism in Southeast Asia and its relationship to coral reef degradation. C. McCall.

Science. Overfishing disrupts entire ecosystems. N. Williams. 279(5352): 809.

SEAFDEC Asian Aquaculture. Food security addressed in D.K. Villaluz Memorial Lecture. M.B. Surtida. (4): 11, 27.

SEAFDEC Asian Aquaculture. Update on tilapia. W. Yap. 20(2): 18, 30.

Suara Maluku. Sasi laut di Maluku penting diteliti, Bob Pomeroy: sistem ini satu-satunya yang ada di Asia. 7 March.

Today. Tilapia breeding to be taken up in Agrilink 1998 fair. 25 August: 15.

Today. Tilapia strain may ease tight fish supply. 2 June: 15.

Viden om Informationsteknologi. Faerre fisk i havene, [Fewer fish in the seas]. K. Pauli and F. Bro. 9 February: 7.

### Nonprint Media

Earthbeat, ABC Radio; 3RN, Australia. Philippines fish market, interview by Lynne Malcolm with J. McManus. 28 and 30 March.

Earthbeat, ABC Radio; 3RN, Australia. Reefs around the Spratley Islands, interview by Lynne Malcolm with J. McManus. 8 and 30 March.

The Farming World, BBC World Service, UK. Aquaculture for small farms, interview by Michael Pickstock with M. Prein. 27-28 February; 1 March.

Guaranteeing fish stock for the next century. M.J. Williams and ICLARM research staff. For radio broadcast by Deutsche Welle (German Radio), in collaboration with Radio Veritas Asia (Philippines).

Coral reef degradation in the region, with J. McManus. Interview by Mike Ryan for the International Community Radio of Taiwan.

Radio Australia Pacific, Australia. ICLARM and giant clams. 9 October.

South China Morning Post. Interviews with J. McManus.

Trinidad and Tobago National TV Station. Training Course on Fisheries and Biodiversity Management: closing ceremony, Port of Spain, Trinidad and Tobago.

## Report of Independent Accountants

*To the Board of Trustees*

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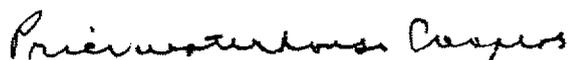
We have audited the accompanying statement of financial position of the International Center for Living Aquatic Resources Management, Inc. (a nonstock, nonprofit organization) as at December 31, 1997 and 1996 and the related statements of activities and of cash flows for the years then ended. These financial statements are the responsibility of the Center's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with generally accepted auditing standards in conformity with international audit guidelines as issued by the International Federation of Accountants. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statements presentation. We believe that our audits provide a reasonable basis for our opinion.

As explained more fully in Note 2, the Center's financial statements are prepared on the basis of accounting practices prescribed for international agricultural research centers seeking assistance from the Consultative Group on International Agricultural Research. Such practices conform with generally accepted accounting principles.

In our opinion, the financial statements referred to above present fairly the financial position of the International Center for Living Aquatic Resources Management, Inc. as at December 31, 1997 and 1996 and its activities and its cash flows for the years then ended, in conformity with generally accepted accounting principles.

Our audits were made for the purpose of forming an opinion on the basic financial statements taken as a whole. The supplementary schedules of grant revenue, restricted core and complementary funding, fixed assets, capital expenditures, capital fund movement, funds in trust and details of operating expenses for the years ended December 31, 1997 and 1996 are presented for purposes of additional analysis and are not a required part of the basic financial statements. The information in the supplementary schedules has been subjected to the auditing procedures applied in the audit of the basic financial statements and, in our opinion is fairly stated in all material respects when considered in relation to the basic financial statements taken as a whole.



Makati City, Philippines  
February 12, 1998

STATEMENT OF FINANCIAL POSITION  
(U.S. Dollar '000)

	Note	December 31	
		1998	1997
<u>A S S E T S</u>			
CURRENT ASSETS			
Cash and cash equivalents	2, 3	5,511	4,366
Accounts receivable			
Donors (Exhibit 1)	4	2,816	3,401
Employees		158	135
Others, net	5	865	634
Supplies inventory	2	10	15
Prepaid expenses		169	154
Other current assets		611	514
Total current assets		10,140	9,219
FIXED ASSETS (Exhibits 3, 3A and 3B)			
Center owned			
Property and equipment	2, 6	2,054	1,827
Accumulated depreciation		(1,315)	(1,091)
		739	736
In custody			
Property and equipment		3,606	2,694
Total fixed assets, net		4,345	3,430
Total assets		14,485	12,649
<u>LIABILITIES AND FUND BALANCES</u>			
CURRENT LIABILITIES			
Accounts payable			
Donors (Exhibit 1)	7	3,949	5,142
Employees	8	375	326
Others	9	120	248
Funds in trust (Attachment II)	10	1,025	1,032
Accrued expenses	11	1,146	407
Commitment expense payable		787	-
Reserve for contingencies		214	200
Total current liabilities		7,616	7,355
NET ASSETS			
Capital invested in fixed assets (Exhibit 3, 3A and 3B)	13	4,345	3,430
Capital fund (Attachment 1)		885	888
Operating fund		1,485	923
Total net assets		6,715	5,241
CUMULATIVE TRANSLATION ADJUSTMENT			
	2	154	53
Total liabilities and net assets		14,485	12,649

(See accompanying notes to financial statements)

STATEMENT OF ACTIVITIES  
(U.S. Dollar '000)

	Note	For the year ended December 31			
		CORE		TOTAL	
		Unrestricted	Restricted	1998	1997
<b>REVENUES</b>					
Total grants (Exhibit 1)	2	6,772	3,776	10,548	9,047
Other revenues		312		312	343
<b>Total revenues</b>		<b>7,084</b>	<b>3,776</b>	<b>10,860</b>	<b>9,390</b>
<b>OPERATING EXPENSES</b>					
Research programs		3,122	3,600	6,722	5,279
Conferences and trainings		28	157	185	145
Information services		512	19	531	657
General administration		2,786		2,786	2,509
General operations	2	528		528	793
<b>Total operating expenses</b>		<b>6,976</b>	<b>3,776</b>	<b>10,752</b>	<b>9,383</b>
Recovery of indirect costs		(333)	-	(333)	(447)
<b>Total expenses (Exhibit 2 and Attachment III)</b>		<b>6,643</b>	<b>3,776</b>	<b>10,419</b>	<b>8,936</b>
<b>EXCESS OF REVENUES OVER EXPENSES</b>					
		441		441	454
<b>ALLOCATED AS FOLLOWS:</b>					
Operating fund		441		441	454
		441		441	454
<b>MEMO ITEM</b>					
Operating expenses - By natural Classification					
Personnel		3,684	1,513	5,197	5,032
Operating costs		2,193	1,645	3,838	2,798
Travel		526	618	1,144	826
Depreciation of fixed assets		240		240	280
<b>Total operating expenses (Exhibit 2 and Attachment III)</b>		<b>6,643</b>	<b>3,776</b>	<b>10,419</b>	<b>8,936</b>

(See accompanying notes to financial statements)

STATEMENT OF CASH FLOWS  
(U.S. Dollar '000)

	For the year ended December 31	
	1998	1997
<b>CASH FLOWS FROM OPERATING ACTIVITIES</b>		
Excess of revenues over expenses	441	454
Adjustments to reconcile excess of revenue over expenses to net cash provided by operating activities:		
Depreciation	240	280
Disposal and write-off of property and equipment	17	30
Changes in:		
Accounts receivable		
Donors	585	(1,988)
Employees	(23)	43
Others	(231)	(198)
Supplies inventory	5	15
Prepaid expenses	(15)	37
Other current assets	(97)	229
Accounts payable		
Donors	(1,193)	1,108
Employees	49	(127)
Others	(128)	43
Funds in trust	(7)	1,027
Accrued expenses	739	202
Commitment expenses payable	787	-
Reserve for contingencies	14	-
Net cash provided by operating activities	1,183	1,155
<b>CASH FLOWS FROM INVESTING ACTIVITIES</b>		
Acquisition of property and equipment		
Center owned	(243)	(187)
In custody	(912)	(1,545)
Funds invested in property and equipment	898	1,422
Increase (decrease) in capital fund	(3)	123
Increase in operating fund due to transfer of funds	121	44
Cumulative translation adjustment	101	22
Net cash used in investing activities	(38)	(121)
<b>NET INCREASE IN CASH AND CASH EQUIVALENTS</b>	<b>1,145</b>	<b>1,034</b>
<b>CASH AND CASH EQUIVALENTS</b>		
Beginning	4,366	3,332
End	5,511	4,366

(See accompanying notes to financial statements)

NOTES TO FINANCIAL STATEMENTS  
DECEMBER 31, 1998 AND 1997

**Note 1 - General**

The International Center for Living Aquatic Resources Management, Inc. (ICLARM) was established in 1976 by the Rockefeller Foundation and formally incorporated under the laws of the Republic of the Philippines on January 20, 1977 as a nonstock, philanthropic and nonprofit corporation. The Center is also an autonomous, international, scientific and technical research center with a broad mandate to conduct and catalyze strategic research on all aspects of aquatic resources management which aims to improve productivity of culture and capture fisheries and small scale rural subsistence and market fisheries. It also publishes findings and recommendations and holds conferences to discuss current problems related to aquatic resources.

ICLARM is a member of the Consultative Group on International Agricultural Research (CGIAR), an informal but highly successful association of public and private sector donors supporting international agricultural research centers.

On November 28, 1995, an international agreement that recognizes the Center as an international organization was signed. The agreement grants the Center juridical status to enable it to more effectively continue its international efforts and activities in living aquatic resources management.

On October 7, 1996, Resolution No. 62 was adopted by the Philippine Senate and grants the Center certain privileges and immunities which include the following exemptions:

- a. exemption from payment of all taxes which extend to goods imported by the Center intended for its official use;
- b. exemption from payment of gift tax; all gifts, bequests, contributions and donations to the Center are considered allowable deductions for determining the income tax of the donor;

- c. exemption from payment of all customs duties and related levies of any kind;
- d. exemption from payment of income tax of non-Filipino citizens serving on the technical and scientific staff on salaries and stipends in foreign currency received solely from, and by reason of, service rendered to the Center;
- e. exemption from prohibitions and restrictions on the import or export of articles intended for its official use.

#### **Note 2 - Basis of financial statement presentation and significant accounting policies**

The accompanying financial statements, expressed in US dollars, are prepared on the basis of accounting practices prescribed for international agricultural research centers seeking assistance from the CGIAR. The CGIAR prescribed accounting practices conform with generally accepted accounting principles.

A summary of the Center's significant accounting policies is set forth to facilitate the understanding of data presented in the financial statements.

Cash equivalents - Cash equivalents are short-term, highly liquid investments that are readily convertible to known amount of cash with original maturities of three months or less.

Foreign currency transactions - Philippine peso and other foreign currency denominated transactions are translated to US dollars for reporting purposes at standard bookkeeping rates which approximate the exchange rates prevailing at the dates of the transactions. Exchange differences resulting from a) the collection of foreign currency - denominated receivables, b) the settlement of foreign currency obligations, and c) translation of balances of foreign currency - denominated accounts at rates different from which they were originally booked are credited/charged to operations. Exchange differences resulting from the translation of balances of foreign currency - denominated accounts are carried in the "Cumulative Translation Adjustment" accounts.

Revenue - Revenue from unrestricted core grants are pledged on an annual basis and are recognized in the accounts when there is probability of collection in the year the grant is pledged. If the pledge is later judged to be uncollectible, it is written off against revenue of the year in which it is determined to be uncollectible. These grants are utilized to fund core programs and the regular operating requirements of the Center.

Restricted core grants are recognized as income when funds are committed or received from the donors to the extent of expenses actually incurred. Disbursements from these sources are limited by conditions embodied in agreements with donor organizations. Excess of grants received over expenses, representing grants applicable to succeeding years, is classified as Accounts Payable - Donors in the Statement of Financial Position.

Inventory of materials and supplies - Inventory of materials and supplies is stated at cost using the moving average method.

Property and equipment - Land is stated at historical cost. Property and equipment are carried at cost less accumulated depreciation. Replacement and renovation of assets and property are financed through reserves (Capital fund) funded primarily by depreciation. Depreciation of assets owned by the Center is computed on the straight-line method over the following estimated useful lives of the related assets:

Category description	Estimated life in years
Infrastructure and leasehold improvements	5
Furnishing and equipment	5 - 10

Property and equipment acquired through restricted and complementary funding are assets in custody and remain the property of the respective donors until the expiration of the agreement/contract which disposition is made by donors. Such assets are shown as a separate item in the Statement of Financial Position. Assets in custody are not depreciated.

### Note 3 - Cash and cash equivalents

Cash and cash equivalents at December 31 consist of:

	1998	1997
	(US\$ '000)	
Unrestricted	1,485	923
Restricted	4,026	3,443
	5,511	4,366

Cash and cash equivalents include the remaining grant of \$726 (1997 - \$2,826) from Japan for the Abbassa Egypt site refurbishment.

#### **Note 4 - Accounts receivable - donors**

Accounts receivable from donors consist of unreleased balances of approved grants and expenses incurred in advance of receipt of project donor funds as at December 31 and are classified as follows:

		1998	1997
	Exhibit	(US\$ '000)	
Unrestricted core grants	I	1,548	2,762
Restricted core grants	I	1,268	639
		2,816	3,401

The Secretariat of the CGIAR assists the Center in following up the release of core grants by donors.

#### **Note 5 - Accounts receivable - others**

Other receivables at December 31 consist of:

	1998	1997
	(US\$ '000)	
Advances to projects	712	544
Others	158	90
	870	634
Allowance for probable losses	5	-
	865	634

**Note 6 - Property and equipment; leases**

Property and equipment at December 31 are classified under the following accounts:

	1998	1997
	(US\$ '000)	
Owned		
Cost		
Land	43	43
Infrastructure and leasehold	181	209
Furnishing and equipment	1,830	1,575
	2,054	1,827
Accumulated depreciation		
Infrastructure and leasehold	59	52
Furnishing and equipment	1,256	1,039
	1,315	1,091
Net book value	739	736
In custody		
Infrastructure and leasehold	2,487	1,835
Furnishing and equipment	1,119	859
	3,606	2,694
	4,345	3,430

In the event of termination of the activities of ICLARM, all of its physical assets shall become the property of the University of the Philippines System. If such system is unable or unwilling to accept all or any part of the physical assets, these shall be disposed of exclusively for charitable, educational or religious purposes, as may be determined by the Board of Trustees.

The Center leases its administrative offices, renewable on a yearly basis, at the option of ICLARM. It also leases several housing units for its Internationally Recruited Staff for a period of up to 2 years and renewable upon expiration under such terms and conditions acceptable to both parties. Annual rentals on these leases aggregate to \$417 thousand (US\$ 478 thousand in 1997). The advance deposits which the Center paid under the terms of the covering leases were shown as part of other current assets in the Statement of Financial Position.

**Note 7 - Accounts payable - donors**

Accounts payable to donors represent grants received in advance and applicable to succeeding periods and are classified as follows:

		1998	1997
	Exhibit	(US\$ '000)	
Unrestricted core grants	I	923	1,600
Restricted core grants	I	3,026	3,542
		3,949	5,142

**Note 8 - Accounts payable - employees**

Accounts payable to employees consist of accumulated contributions to employees' retirement fund less borrowings made by the employees.

**Note 9 - Accounts payable - others**

Accounts payable - others consist of liabilities to various suppliers of goods and services.

**Note 10 - Funds in trust**

Funds in trust consist of funds held in custody for donors and funds provided by donors and managed by the Center with an ultimate beneficiary other than CGIAR centers.

**Note 11 - Accruals and provisions**

Accrued expenses consist of various liabilities to suppliers and benefits due to certain employees. Accruals and provisions at December 31 consisted of:

		1998	1997
	Exhibit	(US\$ '000)	
Trade payables	I	243	107
Staff benefits	I	308	-
Other	I	595	300
		1,146	407

### **Note 12 - Provident fund (Staff Benefit Plan)**

The Center maintains a non-contributory provident fund for the benefit of its Nationally Recruited Staff. Monthly contribution to the fund is computed at 10%-15% of the employees' basic salary. The plan provides lump sum payment to qualified employees/members upon separation from the Center, under certain conditions.

Contributions to the fund amounted to US\$66 thousand (1997 - US\$79 thousand)

### **Note 13 - Changes in fund balance**

	Capital invested in fixed assets		Capital Fund	Operating Fund	Total	
	(In US\$'000)					
	Center Owned	In Custody	Total			
Balance, December 31, 1997	736	2,694	3,430	888	923	5,241
Additions/sources	243	912	1,155	240	121	1,516
Deductions/uses	(240)	-	(240)	(243)		(483)
Excess of revenue over expenses					441	441
Balance, December 31, 1998	739	3,606	4,345	885	1,485	6,715

### **Note 14 - Agreement with the Government of the Arab Republic of Egypt**

The Center and the Government of the Arab Republic of Egypt entered into an agreement on March 31, 1997 to establish a regional center in the Arab Republic of Egypt. The agreement was ratified by the Arab Republic of Egypt on December 8, 1997. As provided for in the agreement, the Egyptian government shall make available to the Center the utilization of the facilities and equipment currently operated by the Central Laboratory for Aquaculture Research at Abbassa, Abou Hammad-Sharkia Governorate, and at other research sites to be agreed upon within the Arab Republic of Egypt for the benefit of the international community and the people of Egypt.

The agreement shall remain in force for 25 years, and shall be renewed by mutual consent of the parties for an additional period of 25 years. In the event of termination or expiration of the agreement or its extensions, land and facilities thereupon as upgraded shall revert to the Arab Republic of Egypt. Other assets shall be distributed between the two parties upon their consent in consultation with the CGIAR.

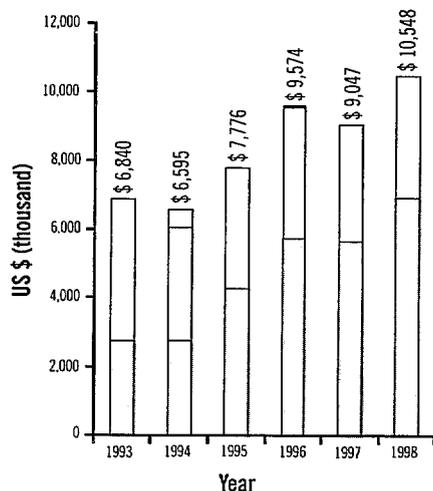
The properties in the regional center include among others, the tract of land of approximately 1,480 feddans (6,216,000 square meters), administration and laboratory buildings, 12 villas, two residential buildings, workshops and stores, as well as the different types of research ponds. The fair market value of the facilities will be estimated by an independent appraiser and recorded accordingly in the books in 1999.

**Note 15 - Reclassification of accounts**

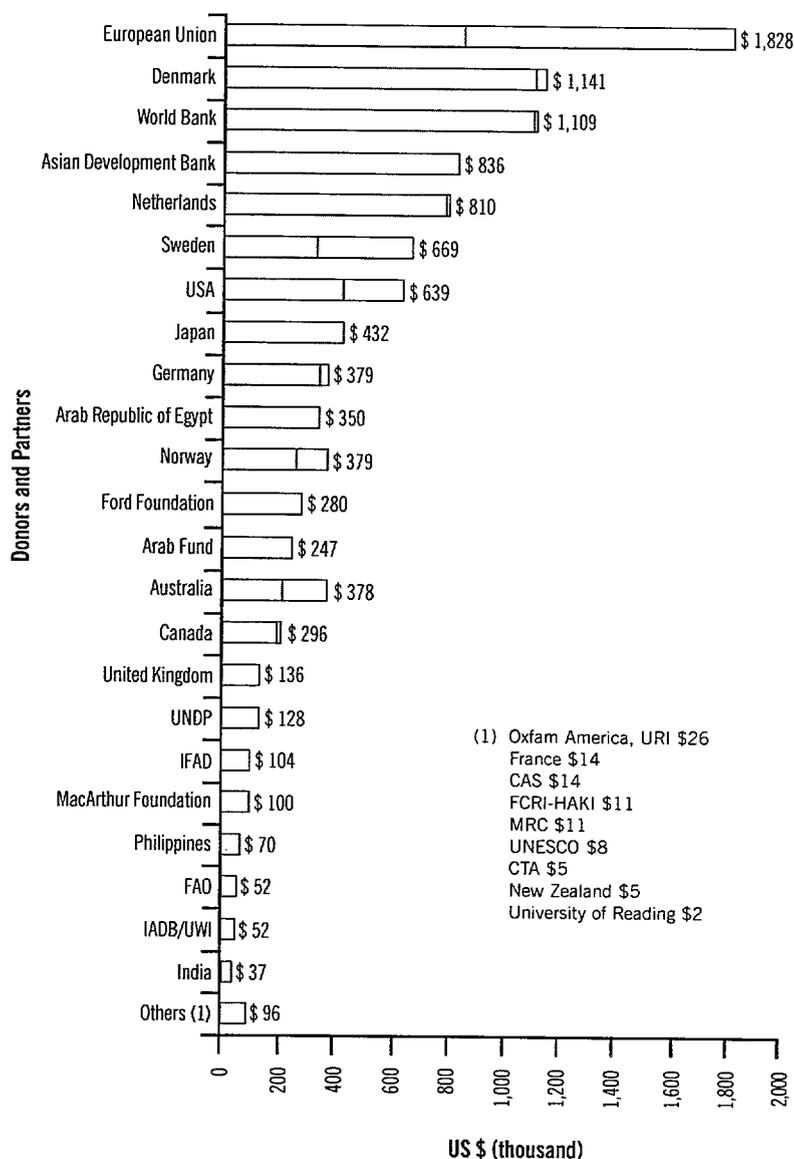
Certain accounts in the 1997 financial statements were reclassified to conform with the 1998 financial statement presentation.

# Key Financial Statistics

## Funding by Year (1993-1998)



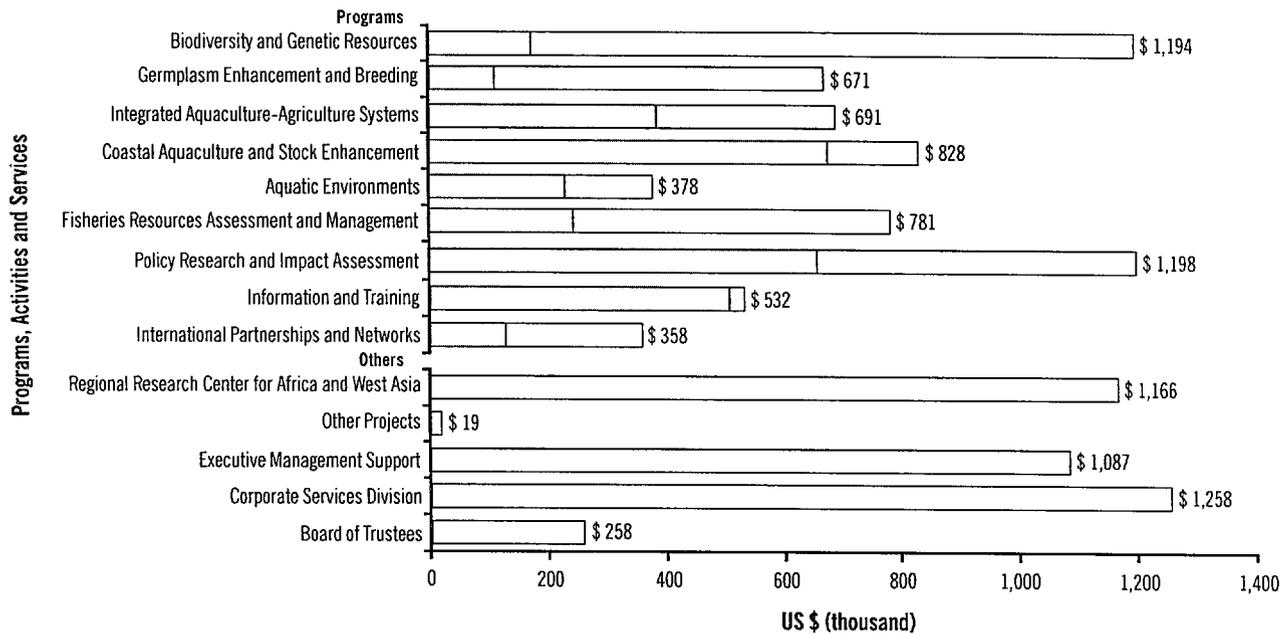
## Funding by Donors and Partners (1998)



### Legend:

- Unrestricted core** (may be allocated at the Center's discretion to support general operating costs, programs or projects)
- Restricted core** (designated by contract with donor to support specific project activities)
- Complementary** (designated by contract with donor to support specific project activities that are outside ICLARM's main programs and functions)

## Resource Allocation (1998)



### Legend:

- Unrestricted core (may be allocated at the Center's discretion to support general operating costs, programs or projects)
- Restricted core (designated by contract with donor to support specific project activities)

### Erratum

The last five bars of the above graph should show unrestricted core funding (green) instead of restricted core funding (yellow) for:

- Regional Research Center for Africa and West Asia
- Other Projects
- Executive Management Support
- Corporate Services Division
- Board of Trustees

# ICLARM AT A GLANCE

## ICLARM'S Commitment

ICLARM contributes to food security and poverty eradication in developing countries.

### What we aim for:

- poverty eradication;
- a healthier, better nourished human family;
- reduced pressure on fragile natural resources; and
- people-centered policies for sustainable development.

### How we achieve this:

Through research, partnership, capacity building and policy support, we promote sustainable development and use of living aquatic resources based on environmentally sound management.

### Our objectives are:

- raising and sustaining the productivity of fisheries and aquaculture systems;
- protecting the aquatic environment;
- saving aquatic biodiversity;
- improving policies for sustainable development of aquatic resources; and
- strengthening the capacity of national programs to support sustainable development.

We believe this work will be most successful when undertaken in partnership with national government and nongovernment institutions and with the participation of the users of the research results.

### The guiding principles for our research are:

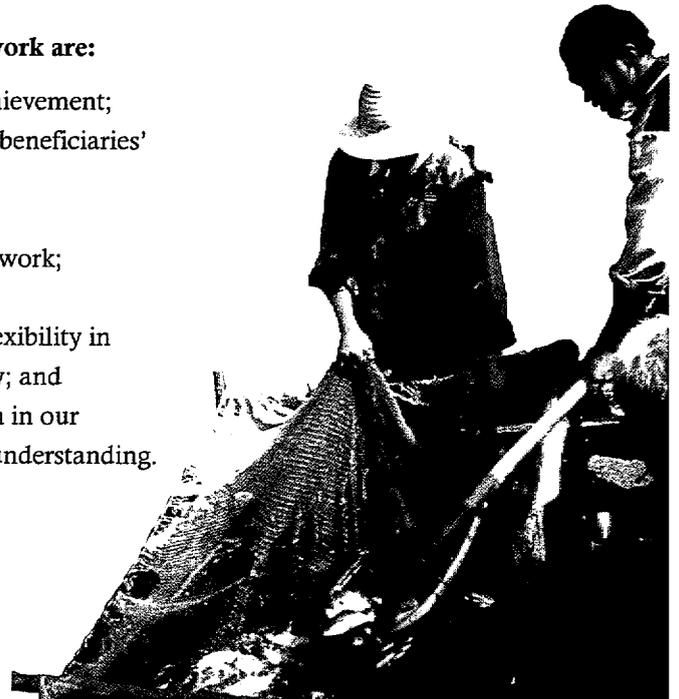
- sustainability;
- equity;
- gender role in development;
- participation;
- systems approach; and
- anticipatory research.

### The values of our work are:

- excellence in achievement;
- relevance to our beneficiaries' needs;
- partnerships;
- centerwide teamwork;
- communication;
- efficiency and flexibility in program delivery; and
- continual growth in our knowledge and understanding.

### International links:

ICLARM has its headquarters in the Philippines and research sites in Egypt, the Solomon Islands, Bangladesh, the Caribbean and Malawi. In 1992, ICLARM joined the Consultative Group on International Agricultural Research (CGIAR) which is under the umbrella of four co-sponsors: FAO, World Bank, UNDP and UNEP.



## CGIAR and ICLARM

### About the CGIAR

The CGIAR, established in 1971, is an informal association of more than 50 public and private sector donors supporting 16 research centers worldwide. Through the research generated by its participating centers, the CGIAR aims to improve food security in developing countries. Critical elements of this mission

include the alleviation of poverty, protection of the natural environment, promotion of sustainable agriculture and development, and emphasis on people-centered policies.

Partners from national governmental agencies, nongovernmental organizations, community groups, farmer associations, academic research institutions, the private sector and others contribute to decisions on research policy and programs carried out by the CGIAR centers. Members in the Consultative Group provide

voluntary grants to support the research agenda, for which programs are proposed, evaluated and agreed annually. The CGIAR's agenda is designed to evolve over time, incorporating social, ecological, economic as well as technical factors in developing new and more effective agricultural technologies and policies. The CGIAR in turn provides services to national agricultural research systems in developing countries on topics ranging from forestry and livestock to food crops, irrigation and aquatic resources.

### ICLARM's Role in the CGIAR

- ICLARM joined the CGIAR in 1992. It is the only CGIAR center with a mandate for living aquatic resources. The importance of this unique responsibility is underscored by the fact that:
  - water covers over 70% of the earth's surface;
  - about one billion people rely on fish as their primary source of animal protein;
  - nearly 50 million people are involved in small-scale fisheries through catching, processing and marketing; and
  - fish production provides some 150 million people with employment.

- ICLARM brings issues and opportunities concerning aquatic resources onto the CGIAR agenda and into the broader international, traditionally land-based agricultural arena.
- ICLARM initiates the integration of aquaculture with agriculture for improved productivity and hence increased food supply.
- Through its knowledge of aquatic environments, ICLARM helps complement the information needed for agricultural research, such as connections and interactions between aquatic and terrestrial ecosystems.

- ICLARM attends CGIAR meetings, participates in various systemwide initiatives, and interacts with the CGIAR's Technical Advisory Committee on technical reviews and other activities. Specifically, ICLARM is involved in three systemwide initiatives.

The first is the Systemwide Genetic Resources Program (SGRP). All of the 16 CGIAR centers contribute to this program through *ex situ* genebanks, germplasm distribution and research on *in situ* conservation, for which ICLARM and the Center for International Forestry Research

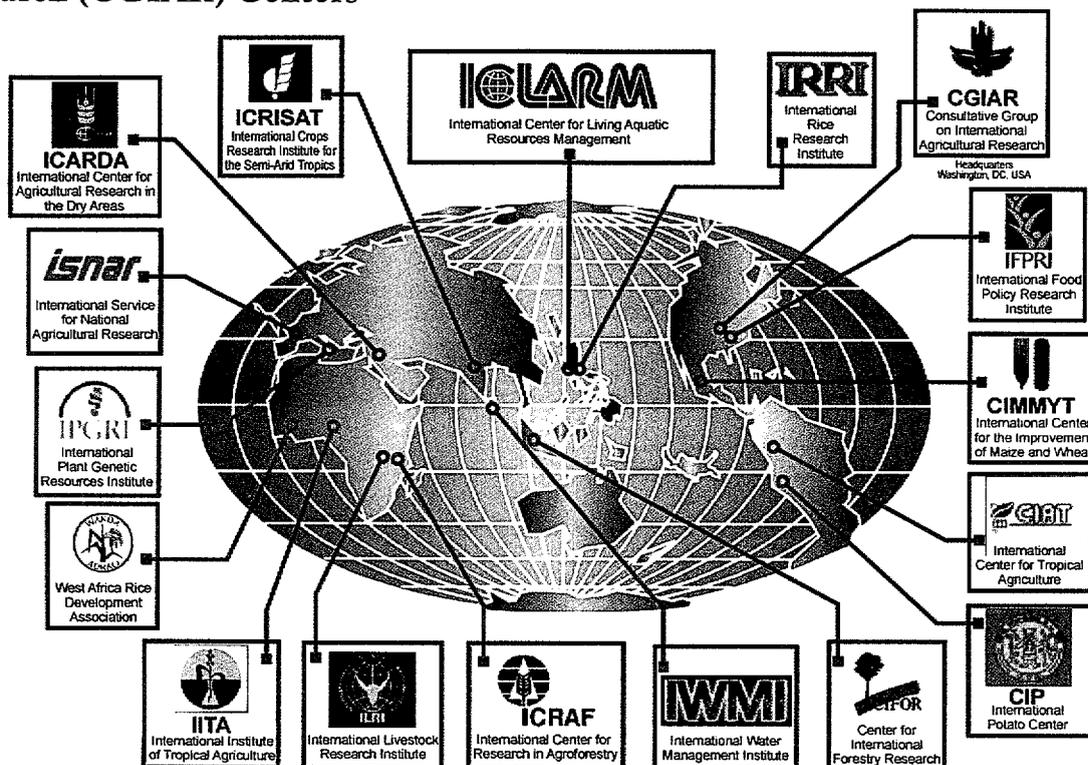
(CIFOR) have special roles with respect to genetic resources in ecosystems. ICLARM also has a lead role for some database activities in the SGRP's project that is enhancing access to genetic resources data held by the CGIAR, through a Systemwide Information Network on Genetic Resources (SINGER). In 1998, the majority of all the genetic resources data held by the various centers was made available for searching through a common user interface in the SINGER.

The second is on water management. The Systemwide Initiative on Water Management has the overall objective of enhancing the productivity of water in agriculture in an environment of growing scarcity and competition and provides an umbrella for several projects executed jointly by multidisciplinary partners. ICLARM, through its Integrated Aquaculture-Agriculture Systems Program, collaborates with one project within this umbrella, entitled "Valuing the Multiple Uses of Irrigated

Areas" which is administered jointly by the International Irrigation Management Institute and the International Food Policy Research Institute.

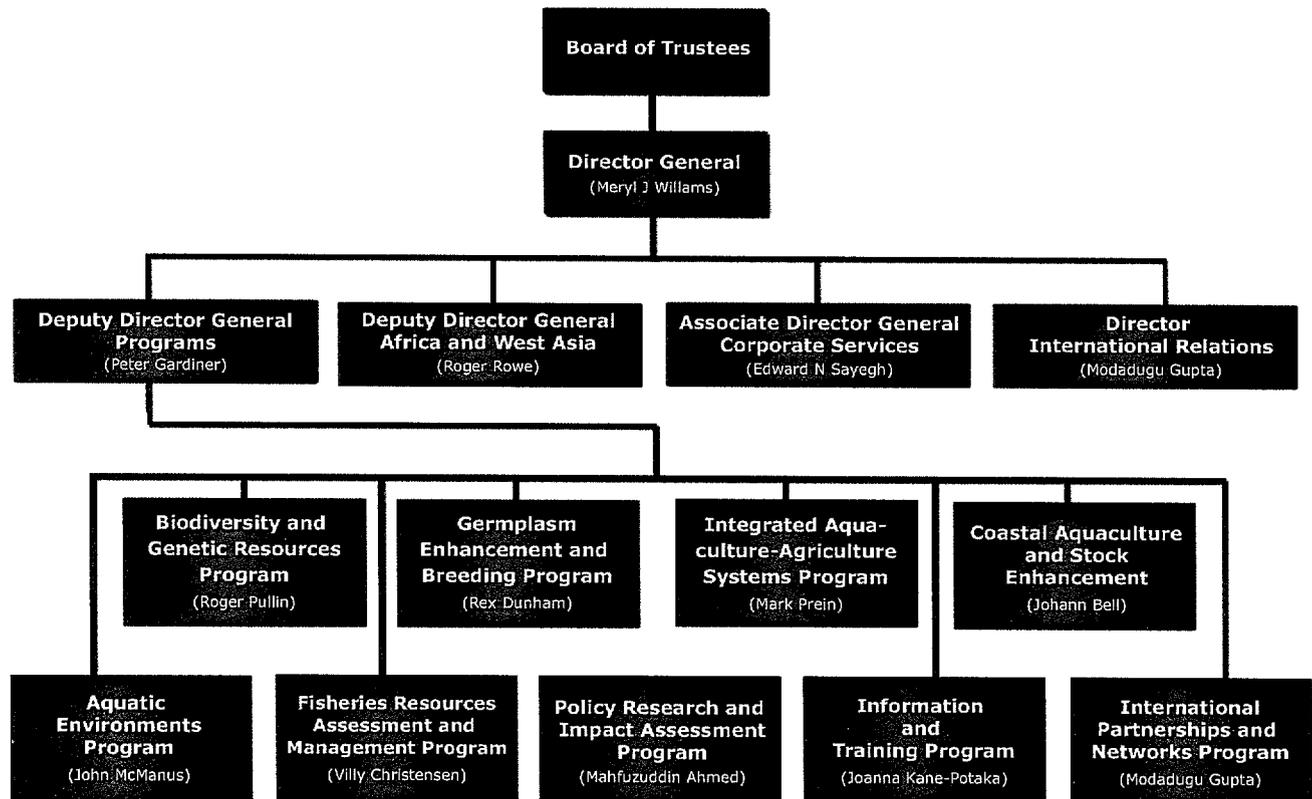
The third is working on joint public awareness activities with other CGIAR centers to disseminate knowledge of the objectives and impacts of research on agricultural and aquatic resources. The activities include meetings, presentations, displays, media releases, publications and information on the internet.

## Consultative Group on International Agricultural Research (CGIAR) Centers



# ICLARM Organization

ICLARM's executive team oversees nine programs, diversified from three large programs in early 1996. Below is the ICLARM organizational structure including the Director/Leader for each area as of the end of 1998.



## View from the Board

**Prof. Kurt J. Peters**

*Chair, Board of Trustees*

ICLARM's Board of Trustees completed another active year in 1998. The oversight functions of the Board were discharged through active participation by Trustees in its meetings, visits to ICLARM outreach sites and maintenance of an active plan for future policy development, performance and impact assessment of the Center.

### Board composition

The Board is composed of 13 members, four of whom are ex-officio, namely, the host country representatives for the Philippines and Egypt, the delegate of the Director General of FAO and ICLARM's Director General. At the end of the year, the gender composition among the elected Board members was four women and five men. The composition by country groups was five from developing countries and seven from OECD countries. By geographic region, it was three each from Asia, Africa and the Pacific Rim, and two each from Europe and North America.

The Board bid farewell to two long-time members who completed the maximum term of six years, namely, Dr. Nyle Brady and

Dr. Masaru Fujiya, and welcomed two new members, Dr. Katherine Richardson Christensen and Dr. Takeshi Nose. Dr. S.E. Escudero III, the former Secretary of the Philippine Department of Agriculture, was replaced on the Board in July by Dr. William Dar, his successor, following the induction of a new government after the Philippine national elections in May.

### 1998 meetings

Two full meetings of the Board were held in 1998, including meetings of the committees, namely the Executive, Program, Audit and Nominating Committees. The 13<sup>th</sup> Meeting was held from 9 to 13 March and the 14<sup>th</sup> from 27 September to 3 October. Both were held at ICLARM headquarters in Manila. Attendance records of Trustees are given in the table on page 70.

The Chair visited ICLARM on 3-6 January 1998 to guide preparations for the 13<sup>th</sup> Meeting and discuss the 1998 work program for the Center and conduct the annual performance assessment of the Director General.

In addition to a full program of committee meetings at each Board meeting, a number of activities were also held to provide opportunities for the Board to contribute more to ICLARM's development

and to learn more about the fisheries and aquaculture sectors and the Center's work.

The first activity was a one day workshop with the research staff of the Center, held prior to the 13<sup>th</sup> Meeting in March. The workshop was the first step in developing ICLARM's new Strategic Plan. Through structured discussions in small groups, Board and staff canvassed the main research, sectoral, environmental, socio-economic and governance issues facing ICLARM's target beneficiaries. The outputs of this workshop provided a valuable base of ideas that the staff examined in more detail in forming the first draft of the Strategic Plan by the 14<sup>th</sup> Meeting of the Board. Two Board members, Dr. Mohamed Shariff and Dr. Ellen Bortei-Doku Aryeetey, also attended the main workshop for the Strategic Plan in June 1998.

The second activity associated with the Board meetings was a field visit during the 13<sup>th</sup> Meeting to the site of the GIFT Foundation International Inc., at the Central Luzon State University (CLSU), Muñoz, Nueva Ecija. The GIFT Foundation was formed as a nonprofit, nonstock foundation to commercialize the strain of Nile tilapia, the GIFT strain, produced by the GIFT project (1988-1997). The project was a partnership

among the Philippine Bureau of Fisheries and Aquatic Resources, the CLSU, the Norwegian research agency AKVAFORSK and ICLARM. The Board was pleased to note the good progress being made in the transition from a successful research project to a business and research enterprise operating in the private sector.

The third activity was participation in an ICLARM Science Day held as part of the 14<sup>th</sup> Meeting in September. The two themes of the day were the impacts of global climate change on aquatic resources and environments and the issues surrounding genetic resources, biotechnology and intellectual property rights for aquatic resources. The day provided stimulating presentations from ICLARM staff, invited presenters and ICLARM trustees Dr. Shariff and Dr. Aprilani Soegiarto. The discussions that ensued were equally thought-provoking and contributed greatly to Board and staff understanding of the issues as they affect ICLARM's work.

And finally, as an addition to the usual Board self evaluation, the Board conducted a SWOT analysis (strengths, weaknesses, opportunities and threats), after the completion of the 14<sup>th</sup> Meeting. A professional facilitator was

brought in for the workshop. In 1999, the Board will address the results of this self-assessment process.

### **Trustee site visits**

All trustees are familiar with ICLARM's headquarters since all Board meetings are held there. Many are not familiar with the work conducted at the other sites - the outreach sites. Some years ago, therefore, the Board developed a program of site visits to ensure a certain degree of firsthand knowledge of ICLARM's work outside headquarters. In the program, each of the six sites is visited approximately every second year by one or more Board members. As far as practical, the Board matches the special knowledge and expertise of Board members with the work at the site, so as to provide professional insights to those at the site and also to enable an informed assessment of the work at the site. At the Board meeting succeeding the visit, the Board visitors report on what they saw and their impressions of performance and impact.

In 1998, the following site visits occurred: to the Regional Research Center for Africa and West Asia (Abbassa) by Dr. Bortei-Doku Aryeetey and Ms. Joan Joshi and to the Coastal Aquaculture Centre

in Solomon Islands by the Board Chair and Dr. Soegiarto.

### **CGIAR participation**

The Board Chair routinely attends the two full meetings of the CGIAR each year, namely the Mid-Term Meeting (MTM) and the International Centers Week (ICW). In 1998, the MTM was held in Brasilia, Brazil, on 25-29 May and the ICW on 26-30 October. Accompanying each meeting were meetings of the Committee of Board Chairs.

ICLARM Trustee Ms. Joan Joshi was active in several CGIAR activities during 1998, including as a panel member for the External Program and Management Reviews of the International Center for Research in Agroforestry and the International Livestock Research Institute as well as assisting the Gender Staffing Program of the CGIAR.

Professor Dillon continued to chair the CGIAR Candidate Information System.

The Board was pleased to see ICLARM's first full External Program and Management Review (EPMR) since it joined the CGIAR in 1992 get off to a solid start in September, just prior to the Board meeting.

## Headquarters site

In 1998 the Board continued its search for a more appropriate site for ICLARM's headquarters. In its 13<sup>th</sup> meeting the Board decided to follow a two track approach which enabled an intensified search within the Philippines but also opened a regional track. The headquarters search is based on a comprehensive set of criteria and a careful assessment of sites,

opportunities and uncertainties. The process for a thorough evaluation of the alternative sites has been externally reviewed and commended.

## Looking back and looking ahead

The year 1999 promises to be a momentous one due to the simultaneous completion of the new Strategic Plan, the EPMR and

the decision on a new headquarters site, with the attendant actions needed to implement the Board's decisions. The Board is confident that living aquatic resources management (LARM) will in future receive more attention. ICLARM is well positioned to continue taking a leading role in the global debate and to shoulder this task as the only CGIAR center concerned with LARM.

## Board Members 1998

Name	Board Committees	Gender	Country/ National	Discipline	Nominated by	Start of Term	End of Term
Aryeetey, E.	M-PC; M-NC	F	Ghana	Social Science	Board	1/25/97	End of 1 <sup>st</sup> meeting in 1999 <sup>1)</sup>
Brady, N.	M-PC	M	United States	Soil Science	Board	5/01/92	End of 1 <sup>st</sup> meeting in 1998
Christensen, K.R.	M-PC	F	United States (Denmark resident)	Marine Science	Board	3/14/98	End of 1 <sup>st</sup> meeting in 2001 <sup>1)</sup>
Dar, W.	M-EC	M	Philippines	Agriculture	Member Co	7/01/98	Indefinite
Dillon, J.	V-BOT; M-EC; M-NC; M-PC	M	Australia	Agricultural Economics	CGIAR	7/20/93	End of 1 <sup>st</sup> meeting in 1999 <sup>2)</sup>
Escudero, S. III	M-EC	M	Philippines	Veterinary Medicine	Member Co	2/01/96	6/30/1998
Fujiya, M.	M-NC; M-PC	M	Japan	Fisheries	Board	5/01/92	End of 1 <sup>st</sup> meeting 1998
Garcia, S.	M-PC	M	France	Fish Science	FAO	5/01/93	Indefinite
Hassan Khalil, Y.	M-EC	M	Egypt	Food Science (Fisheries)	Member Co	5/01/97	Indefinite
Joshi, J.	C-AC; M-EC	F	United States	Management	Board	1/25/97	End of 1 <sup>st</sup> meeting in 2000 <sup>1)</sup>
Muthiga, N.	M-AC	F	Kenya	Marine Science	Board	4/21/96	End of 1 <sup>st</sup> meeting in 1999 <sup>1)</sup>
Nose, T.	M-PC	M	Japan	Aquaculture	Board	3/14/98	End of 1 <sup>st</sup> meeting in 2001 <sup>1)</sup>
Peters, K.J.	C-BOT; C-EC; M-AC*; M-PC*; M-NC*	M	Germany	Agricultural Science	CGIAR	4/01/95	End of 1 <sup>st</sup> meeting in 2001 <sup>2)</sup>
Shariff, M.	C-NC; M-AC	M	Malaysia	Fisheries Science	CGIAR	11/01/94	End of 1 <sup>st</sup> meeting in 2000 <sup>2)</sup>
Soegiarto, A.	C-PC	M	Indonesia	Marine Science	Board	1/25/97	End of 1 <sup>st</sup> meeting in 2000 <sup>1)</sup>
Williams, M.	M-EC; M-PC	F	Australia	Marine Biology	Ex Officio	4/05/94	Indefinite

### Notes:

	<u>Board Committee - Acronyms</u>		<u>Nominated by:</u>	
<sup>1)</sup> First Term	C = Chair	AC = Audit Committee	Member Co = Nominated by	
<sup>2)</sup> Second Term	V = Vice Chair	EC = Executive Committee		the Host Government
*Ex Officio	M = Member	NC = Nominating Committee	Ex Officio = Director General	
	BOT = Board of Trustees	PC = Program Committee		

## List of members

### Dr. Ellen Bortei-Doku Aryeetey

Research Fellow  
Institute of Statistical, Social and Economic  
Research  
University of Ghana  
Ghana

### Dr. Nyle Brady (until March 1998)

Consultant  
USA

### Dr. Katherine Richardson Christensen (since April 1998)

Research Director  
Department of Marine and Coastal Ecology  
Danish Institute of Fisheries Research  
Denmark

### Dr. John L. Dillon

Head  
Department of Agricultural Economics and  
Business Management  
University of New England  
Australia

### Dr. William Dar (since July 1998) (ex officio)

Secretary  
Department of Agriculture  
Philippines

### Dr. Salvador Escudero (until June 1998) (ex officio)

Secretary  
Department of Agriculture  
Philippines

### Dr. Masaru Fujiya (until March 1998)

Consultant  
Towa Science Co.  
Japan

### Dr. Serge Garcia (ex officio)

Director of the Fishery Resources Division  
Food and Agriculture Organization of the United  
Nations (FAO)  
Italy

### Ms. Joan Joshi

Consultant  
USA

### Dr. Yehia Hassan Khalil (ex officio)

Professor  
Head of Food Science Department  
Faculty of Agriculture Ain Shams University  
Arab Republic of Egypt

### Dr. Nyawira Muthiga

Regional Biodiversity Coordinator  
Kenya Wildlife Service  
Kenya

### Dr. Takeshi Nose (since April 1998)

Adviser  
National Federation of Fisheries Cooperative  
Associations  
Japan

### Dr. Kurt Johannes Peters

Professor  
Department of Animal Breeding in the Tropics  
Humboldt University Berlin  
Germany

### Dr. Mohamed Shariff

Professor  
Faculty of Veterinary Medicine and Animal  
Science  
Universiti Putra  
Malaysia

### Dr. Aprilani Soegiarto

Research Professor in Oceanology  
Indonesian Institute of Sciences (LIPI)  
Indonesia

### Dr. Meryl J. Williams (ex officio)

Director General  
International Center for Living Aquatic  
Resources Management  
Philippines

## Meetings attended in 1998

Members	Board of Trustees		Executive Committee		Program Committee		Audit Committee		Nominating Committee		HQ Site Committee <sup>(a)</sup>	
	Attended	Maximum Possible	Attended	Maximum Possible	Attended	Maximum Possible	Attended	Maximum Possible	Attended	Maximum Possible	Attended	Maximum Possible
Aryeetey, E.	2	2	NM		2	2	NM		2	2		NM
Brady, N. <sup>(b)</sup>	1	1	NM		1	1	NM			NM		NM
Christensen, K. R. <sup>(c)</sup>	1	1	NM		2	2	NM			NM		NM
Dar, W. <sup>(d)</sup>	1	1	1	1		NM		NM		NM		NM
Dillon, J.	1	2	1	2	1 <sup>(b)</sup>			NM	1	2		NM
Escudero, S. III <sup>(b)</sup>	1	1	1	1		NM		NM		NM		NM
Fujiya, M. <sup>(b)</sup>	1	1	NM		1	1		NM	1	1		NM
Garcia, S.	2	2	NM		2	2		NM		NM		NM
Hassan Khalil, Y.	2	2	2	2	2 <sup>(c)</sup>			NM		NM		NM
Joshi, J.	2	2	1 <sup>(a)</sup>	1	2 <sup>(c)</sup>		2	2		NM	1	1
Muthiga, N.	2	2	NM		2	2	2	2		NM		NM
Nose, T. <sup>(c)</sup>	1	1	NM		2	2		NM		NM		NM
Peters, K. J.	2	2	2	2	2	2	2	2	2	2	1	1
Shariff, M.	2	2	1 <sup>(b)</sup>	1	2 <sup>(c)</sup>			NM	2	2	1	1
Soegiarto, A.	2	2	NM		2	2		NM		NM	1	1
Williams, M.	2	2	2	2	2	2		NM		NM		NM

<sup>(a)</sup> Ad hoc.

<sup>(b)</sup> Ended term after March 1998 meeting.

<sup>(c)</sup> Also attended the March 1998 meeting as observer.

<sup>(d)</sup> Commenced term after 1998 meeting.

<sup>(e)</sup> Attended as observer.

NM - Nonmember.

## Staff list

As of December 1998, ICLARM employed 322 regular staff from 14 countries. Regular staff are all individuals holding a full-time, budgeted position which is required by management to meet ICLARM's commitments and Board directives, and whose appointment is normally for more than one year.

### Office of the Director General

Meryl J. Williams - Director General  
Josephine Hernandez - Executive Assistant  
Violeta Corral - Science and Policy Assistant  
Fanny Haydee Llego - Senior Secretary  
Eufracia Olamit - Senior Secretary (left 22 May)

### Project Development Coordinating Unit

Rizalina Camañag - Project Development Coordinator

### Office of the Deputy Director General (Programs)

Peter Gardiner - Deputy Director General/Programs  
Ma. Lourdes Hortelano - Senior Secretary  
Josephine Gaffud - Consultant (left 18 November)

### International Relations Office

Modadugu V. Gupta - Director  
Edna Tuico - Secretary II

### Biodiversity and Genetic Resources Program

Roger S.V. Pullin - Program Leader/Principal Scientist  
Rainer Froese - Senior Research Scientist  
Jan Michael Vakily - Training Coordinator  
Daniel Pauly - Principal Science Adviser  
Ma. Lourdes Palomares - Software Development and Database Scientist  
Estelita Emily Capuli - Research Associate  
Christine Marie Casal - Research Associate

Rodolfo Reyes, Jr. - Research Associate  
Crispina Binohlan - Senior Research Assistant  
Pascualita Sa-a - Senior Research Assistant  
Armi Torres - Senior Research Assistant  
Cristina Garilao - Research Assistant  
Grace Pablico - Research Assistant  
Jose Antonio Falcon - Research Programmer (left 31 December)  
Josephine France Rius - Research Programmer  
Grace Coronado - Senior Programmer (left 31 January)  
Alice Laborte - Programmer (left 31 January)  
Rachel Atanacio - Artist  
Ma. Teresa Cruz - Secretary II  
Cynthia Villaflo - Secretary II  
Susan Luna - Consultant  
Ma. Catalina Rañola - Consultant

### Germplasm Enhancement and Breeding Program

Rex A. Dunham - Program Leader/Senior Scientist  
Madan M. Dey - Research Scientist  
Gaspar Bimbao - Research Associate  
Florabelle Gaglac - Senior Research Assistant (joined 10 March)  
Ferdinand Paraguas - Senior Research Assistant (joined 16 June)  
Perla Virly - Secretary II  
Ma. Concesa Gayanilo - Secretary

### Integrated Aquaculture-Agriculture Systems Program

Mark Prein - Program Leader/Senior Scientist  
Mary Ann Bimbao - Research Associate  
Teresita Lopez - Senior Research Assistant  
Roberto Oficial - Research Assistant  
Farilyz Felix Villanueva - Research Assistant (left 30 September)  
Estella Kasala - Secretary II (joined 2 February)  
Judith Foronda - Secretary (left 31 January)

### Malawi Office

Randall E. Brummett - Project Director  
Fredson Chikafumbwa - Research Associate (deceased)  
Patience Kananji - Project Assistant

Foster Makuwa - Station Manager  
Yusef Fulaye - Technical Assistant  
Alim Montjeza - Technical Assistant  
Silas N'sonhi - Technical Assistant  
B. Chimbanga - Field Assistant  
B. Chipire - Field Assistant  
M. Gusto - Field Assistant  
Issa Jaffari - Field Assistant  
B. Kalipalire - Field Assistant  
F. Lifa - Field Assistant  
L. Maluwa - Field Assistant  
G. Mwalabu - Field Assistant  
L. Pondiya - Field Assistant

### Bangladesh Office

Satyendra Datt Tripathi - Senior Aquaculture Specialist (left 31 July)  
Bijoy Bhushan Debnath - Administrative Officer  
Debashish Mazumder - Research Associate  
Khan Golam Rasul - Accountant  
Idris Ali - Messenger  
Rowshan Ali - Messenger  
Tapan Chandra Sarker - Messenger  
Abdur Razzak - Driver

### Aquatic Environments Program

John W. McManus - Program Leader/Senior Scientist  
Ma. Carmen Ablan-Lagman - Senior Research Associate  
Zoraida Alojado - Research Associate  
Hilly Ann Quiaoit - Research Associate (joined 2 February)  
Sheila Vergara - Research Associate  
Marco Nordeloos - Associate Expert  
Emmanuel Cayabyab - Senior Research Programmer (joined 18 May)  
Irene Uy - Senior Research Programmer (left 28 February)  
Rosenne Funk - Senior Research Assistant  
Maharlina Luz Gorospe - Senior Research Assistant (left 15 May)  
Lambert Anthony Meñez - Senior Research Assistant  
Kathleen Patricia Reyes - Senior Research Assistant  
Aileen Del Rosario - Research Assistant (left 31 December)  
Audrey Marie Banzon-Serrano - Research Assistant  
Ma. Teresa Rodriguez-Catubig - Research Aide  
Cindy Cabote - Secretary II

**Fisheries Resources Assessment  
and Management Program**

Villy Christensen - Program Leader/  
Senior Scientist  
Geronimo Silvestre - Research Scientist  
Felimon Gayanilo Jr. - Programming  
Specialist  
Len Garcés - Senior Research Associate  
Lualhati Lachica-Aliño - Research  
Associate  
Francisco Torres Jr. - Senior Research  
Assistant  
Fredelito Valdez - Research Programmer  
Kristine Santos - Research Assistant

**Caribbean/Eastern Pacific Office**

John Munro - Principal Scientist  
Marguerite Watson - Research Associate  
Robert Power - Technician III (joined 10  
March)  
Anthony Peter Roberts - Technician III  
(left 31 March)

**Policy Research and Impact Assess-  
ment Program**

Mahfuzuddin Ahmed - Program Leader/  
Senior Scientist  
Robert Pomeroy - Senior Research  
Scientist (left 31 December)  
Magnus Torell - Secondment from SIDA  
Ingvild Harkes - Associate Expert (left 18  
December)  
Brenda Katon - Consultant/Research  
Associate  
Emily Christi Cabegin - Research  
Associate (joined 12 May)  
Emmanuel Genio Jr. - Research Associate  
Mylene Lorica - Research Associate  
(joined 1 October)  
Imelda Revilla - Research Associate (left 5  
June)  
Albert Salamanca - Research Associate  
(joined 1 March)  
Rowena Andrea Santos - Research  
Associate  
Maximin Luna - Senior Research  
Assistant  
Maritess Tiongco - Senior Research  
Assistant (left 14 January)  
Maricel Gamo-Magtalas - Research  
Programmer  
Gloria Umali - Research Economist  
Anjanette Trinidad-Juan - Secretary II  
Lorna Villaflores - Secretary II

Ma. Lucia Tungala - Secretary (left 15  
March)

**Bangladesh Office**

Paul Thompson - Social Scientist  
Parvin Sultana - Consultant/Contract  
Research (joined 1 January)  
Nurul Islam - Research Associate  
Manjurul Kader - Research Associate  
Firoz Khan - Research Associate (joined 1  
March)  
Nuruzzaman - Research Associate (joined  
1 March)  
Arif Hossain - Research Assistant (joined  
1 May)  
Ishrat Jahan - Research Assistant (joined 1  
June)  
Delwar Hossain - Secretary  
Sabinoy Chakma - Computer Operator  
(joined 1 February)  
Khandker Hasib Mahbub - Computer  
Operator/Programmer (joined 1 June)  
Anwarul Islam - Computer Programmer  
(left 8 July 1998)  
Sayeed Karim - Field Investigator (joined  
24 May)  
Mizanur Rahman - Field Investigator  
(joined 24 May)  
Anwar Hossain - Driver

**Information and Training Program**

Joanna Kane-Potaka - Program Leader  
Rizalina Castañeda - Secretary II (joined  
21 November)

**Publications Unit**

Marie Sol Sadorra-Colocado - Manager  
Rita Kapadia - Senior Editor  
Sheila Siar - Assistant Editor  
Ma. Graciela Balleras - Editorial Assistant  
Alma Canuto - Publications Assistant  
Rodel Resurreccion - Distribution Clerk  
Miguel Migallos - Senior Artist (joined 1  
May)  
Albert Contemprate - Artist  
Alan Siegfried Esquillon - Artist  
Roberto Cada - Artist (left 28 February)

**Library and Information Services  
Unit**

Rosalinda Temprosa - Manager  
Norma Jhocson - Librarian  
Erlinda Gonzalez - Associate Librarian  
Adelina Mendoza - Library Assistant

Ma. Isabelita Redulla - Library Assistant  
(left 30 May)  
Rosario Yabut - Library Assistant  
Reynaldo Damalerio - Library Aide

**International Partnerships and  
Networks Program**

Modadugu V. Gupta - Program Leader  
Belen Acosta - Research Associate  
Natalie Macawaris-Ele - Senior Research  
Assistant

**Regional Research Center for Africa  
and West Asia**

**Abbassa, Egypt**

Roger Rowe - Deputy Director General/  
Africa and West Asia  
John Craig - Principal Scientist  
Brian Tierney - Facilities Manager  
Nader Hassan Ali - Administrative and  
Finance Manager  
Abdel-Rahaman El-Gamal - Senior  
Aquaculture Scientist  
Ahmed Said Deyab - Laboratory  
Manager  
Gamal Othman El-Naggar - Research Co-  
ordinator  
Mahmoud Ali Rizk - Researcher (Genetics)  
Ebtehaq Abdel-Razek Kamel - Research  
Assistant (Genetics)  
Yaser Mohamed Abdel Hadi - Research  
Technician (Aging)  
Ashraf Abdel Rahman Ramadan -  
Research Technician (Genetics)  
Ahmed Hassan Dabour - Administrative  
Officer  
Tharwat Ismael Dawood - Library Officer  
Tahany Hosny Abdou Hasoub - Personnel  
Officer  
Mohamed Ali Attiah - Accountant  
Samir Ali Zein Abdeen - Technical  
Purchasing Representative  
Ayman Ibrahim Dousok - Nontechnical  
Purchasing Representative  
Waheed Elwan Mohamed - Fish Stock  
Technician  
Khaled Hussuain Hassan - Laboratory  
Supervisor  
Dia Abdel Reheem Kenawy - Laboratory  
Technician (Equipment)  
Amr Mohamed Nagaawy - Laboratory  
Technician (Analytical)

Moustafa Abdel Mohsen Ibrahim - Laboratory Technician (Analytical)  
 Rizk Fathy Mohamed - Ponds and Grounds Supervisor  
 Mohamed Yehia Abou Zaid - Laboratory Technician (Fish Food)  
 Essam Abdel Salam Mourad - Accountant/Cashier  
 Abdel Hakeem Attia Mahmoud - Senior Engineering Technician  
 Abdel Nabbi Abbas - Ponds Services Assistant  
 Abdel-Megeed Hussien Attiah - General Worker  
 Ali Rizk Attia - General Worker  
 Mahmoud Hassan El-Naggar - Engineering Services Supervisor  
 Nasser Mohamed Darwish - Engineering Services Technician  
 Gamal Eldin Abdullah - Storekeeper  
 Mahfouz Mohamed Alzainy - Store Control Officer  
 Mohamed Al Hussainy Abdel Ghany - Storekeeper  
 Ahmed Mohamed Ali - Pickup Driver  
 Abdelnasser Mohamed - Mechanical Workshop Technician  
 Efat Ahmed Sayed Ahmed - Mechanical Workshop Supervisor  
 Mohamed Mahmoud Hassan - Bus Driver  
 Mamdouh Mohamed Deibis - Gasoline Mechanic  
 Waheed Abdel Rahman - Workshop Senior Technician  
 Abdel Aziz Radwam - Pond Worker/Tractor Driver  
 Abdullah Mohamed Hassan - Pond Worker/Tractor Driver  
 Fatehi Ahmed Abdullah - Pond Worker/Tractor Driver  
 Mohamed Hafez Alsayed - General Worker  
 Hussien Zarie Hussien - Landscaping Worker  
 Seliem Eliwah - Landscaping Foreman  
 Shawki Mohamed Abouzied - Landscaping Worker  
 Abdullah Mohamed Ibrahim - Landscaping Worker  
 Hedaia Mohamed Ahmed - Landscaping Worker  
 Haggag Hassan Haggag - Pond Worker  
 Khairy Ibrahim Mohamed - Pond Worker

Zakaria Mohamed Badawi - Pond Worker  
 Said Abdel Samie Mohamed - Pond Worker  
 Adel Hassan Darwish - Pond Worker  
 Abdel Kereem Abdel Megeed Mohd. - Pond Worker  
 Abdullah Mohamed Abdullah - Pond Worker  
 Othman Fatehi Mahdi - Pond Worker  
 Fawzi Mohamed Hassan - Pond Worker  
 Mohamed Abdel-Nabi Abdel Mahdi - Pond Worker  
 Mahmoud Abdou Mousa - Pond Worker  
 Wahba Mohamed Seliem - Pond Worker  
 Abdel Nabbi Farag Alsayed - Housekeeper  
 Ali Ibrahim Ghareeb - Housekeeper  
 Mohamed Alsayed Teialab - Storekeeper  
 Amira Mohd Ibrahim - Senior Secretary  
 Abeer Ahmed Harb - Secretary  
 Abdullah Mohamed Abdel-Aal - Diesel Mechanic  
 Gameel Abdullah Khalil - Heavy Equipment Driver  
 Ibrahim Abdel Aaty Mohmed - Pond Worker/Tractor Driver  
 Karam Ahmed Khalil - Engineering Services Technician  
 Mohamed Abdel-Aziz Attiah - Workshop Administrative Assistant  
 Mohamed Alsaïd Abdel-Hamid - Mechanical Workshop Technician  
 Mohamed Alsaïd Abdel-Rahman - Gasoline Mechanic  
 Fatehy Abdullah Mohamed - Housekeeper  
 Ibrahim Ahmed Mahmoud - Engineering Services Helper  
 Mamdouh Khalil Ibrahim - Engineering Services Helper  
 Mohamed Mahdi Khateeb - Engineering Services Helper  
 Talaat Mohamed Abdullah - Pond Worker  
 Ahmed Abdou Ahmed - Workshop Technician Helper  
 Samia Mahmoud Gommaa - Administrative Secretary  
 Heba Fouad Ayoub - Secretary/Receptionist  
 Raafat Ayad Soliman - Project Engineer  
 Mohamed Zuhair El-Koumy - Assistant Facilities Manager  
 Mohamed Ibrahim Abdel-Hadi - Engineering Services Technician

Amr Ahmed Khidr - Assistant Administrative and Finance Manager  
 Khaled Nour Eldin Basiouny - Information Technology and Computer Supervisor  
 Abdel Hai Hassan El Sobki - Assistant Ponds and Grounds Supervisor  
 Mandour Rabie - Engineering Services Technician

#### **Coastal Aquaculture and Stock Enhancement Program**

##### **Solomon Islands**

Johann Bell - Program Leader/Senior Scientist  
 Stephen Battaglone - Aquaculture Scientist  
 Annie Mercier - Senior Research Associate  
 Evizel Seymour - Research Associate  
 Stephanie Pallay - Information Officer  
 Feral Lasi - Scientific Assistant  
 Christian Ramofafia - Scientific Assistant  
 Hugo Tafea - Scientific Assistant  
 Aniel Giza - Administrative Assistant (joined 21 September)  
 Rayner Pitt - Manager  
 Idris Lane - Assistant Manager  
 Cletus Oengpepa - Assistant Manager  
 Jennifer Ago - Marketing Assistant (joined 23 February)  
 Jane Battaglone - Marketing Assistant  
 Charlie Hila - Marketing Assistant (joined 23 February)  
 Kathy Launa - Finance and Administrative Officer  
 Stenner Pitasua - Administrative Assistant (left 30 August)  
 Joseph H Boraule - Purchasing Officer/Technical Aide  
 Henry Rota - Purchasing Officer/Technical Aide  
 Andrew Peli - Foreperson  
 John Suli - Foreperson  
 Derek Kalea - Carpenter  
 Ezekiel Jones - General Mechanic  
 Fabian Matanikusika - Assistant Mechanic  
 Margaret Kosui - Secretary (joined 14 September)  
 Maxwell Sau - Senior Technical Aide  
 Jerome M Boraule - Technical Aide  
 Alfred Lau - Technical Aide  
 Paul Mercy - Technical Aide  
 Joseph Olisia - Technical Aide

Jimmy Rolland - Technical Aide  
 Mason Tauku - Technical Aide  
 Thomas Teltol - Technical Aide  
 Charles Toihere - Technical Aide  
 Tom Kavety - Trainee Technical Aide  
 Margaret Faikiri - Tour Guide (left 30 August)  
 Ribeka Manisava - Tour Guide  
 Mary Naomi - Tour Guide (left 30 August)  
 Dorothy Rossivia - Tour Guide (joined 20 June)  
 Beverly Tapu - Receptionist/Typist  
 Riko Kell - Typist (left 31 July)  
 Moana Pelu - Typist (left February)  
 Priscilla Anga - Cleaner/Gardener  
 Julia Kakau - Cleaner/Gardener  
 Asneth Kusu - Cleaner/Gardener (joined 1 February)  
 Grace Dalei - Gardener/Cleaner  
 Anna V. Mansuhuna - Gardener/Cleaner  
 Medlyn Peli - Gardener/Cleaner  
 Teabi Teitoli - Gardener  
 Rhoda Annisa - Tea Person (joined 1 March)  
 Timothy Lini - Laborer  
 George Lionel - Laborer  
 Texley Meve - Laborer  
 Solomon Saeti - Laborer  
 Victor Simi - Laborer  
 Jimson Te'esanau - Laborer

**Corporate Services Division**

Edward N. Sayegh - Associate Director General  
 Rachel C. Josue - Personal Assistant

**Finance and Management Information Unit**

Josefina Huldong - Manager (left 15 May)  
 Loriza Dagdag - Manager (joined 17 August)  
 Arlene Balane - Assistant Manager  
 Maruja Ventura - Project Accounting Supervisor  
 Edita Artates - Senior General Accountant  
 Grace Marie Batario - Senior Project Accountant  
 Napoleon M. Bulaquiño - Project Accountant  
 Mildred Pepito - Project Accountant  
 Elizabeth Jacildo - General Accountant (joined 15 June)

Abcelyn Solidum - General Accountant (left 15 May)  
 Ronabeth Icabandi - Cashier  
 Merlie Beringuel - Accounting Clerk

**Liaison and Administrative Unit**

Paulino V. Manese - Manager  
 Esperanza M. Sadiua - Management Associate  
 Ma. Gemma Calderon - Administrative Assistant  
 Cirilo Federigan Jr. - Administrative Assistant  
 Ma. Clotilde G. Alcantara - Purchasing Assistant  
 Belen R. Dagmil - Communications Clerk  
 Remedios Ugalde - Secretary I  
 Hazel Grace M. Tardo - Receptionist/Telephone Operator  
 Dominador Gomez - Mechanic/Driver  
 Benjamin Bayron - Driver  
 Norberto Cabrera - Driver  
 Florentino Paulino - Driver  
 Pedrosino Catubig - Office Aide/Messenger  
 Hermenegildo Magsino - Office Aide/Messenger  
 Emmanuel San Juan - Office Aide/Messenger

**Planning and Budget Unit**

Liz Fernandez - Planning and Budget Supervisor  
 Lorna Lou T. Arenas - Program and Budget Assistant  
 Nylofar Celia Gonzalez - Program and Budget Assistant  
 Milagros Irene Robel - Program and Budget Assistant

**Finance and Administrative Systems**

Rainelda Ampil - Assistant Manager (joined 30 March)  
 Samuel Adalia - Programmer

**Human Resources Unit**

Arnt Tore Valsvik - Manager  
 Isabelle Ma. Ambat - Management Associate (joined 2 June)  
 Susan Ballad-David - Management Associate (left 16 March)  
 Angelica Dayapan-David - Human Resources Assistant

**Computer Services Unit**

Cristina M. Carpio - Information Technology Manager  
 Allan Sesbreño - Assistant LAN Administrator  
 Romeo Oite - Computer Technician



## Acronyms

<b>ACIAR</b>	Australian Centre for International Agricultural Research	<b>BGRP</b>	Biodiversity and Genetic Resources Program		ment of the Flora and Fauna in the Gulf of Fonesca
<b>ACP</b>	African, Caribbean and Pacific	<b>BMZ</b>	Bundesministerium für Wirtschaftliche Zusammenarbeit	<b>CRED</b>	Centre for Resource and Environment Development (Bangladesh)
<b>ADB</b>	Asian Development Bank	<b>BRAC</b>	Bangladesh Rural Advancement Committee	<b>CRIFI</b>	Central Research Institute for Fisheries, Indonesia
<b>AEP</b>	Aquatic Environments Program	<b>BRII</b>	Bangladesh Rice Research Institute	<b>CTA</b>	Technical Centre for Agricultural and Rural Cooperation
<b>AFS</b>	American Fisheries Society; Asian Fisheries Society	<b>BVI</b>	British Virgin Islands	<b>CTU</b>	CanTho University (Vietnam)
<b>AFSSRN</b>	Asian Fisheries Social Science Research Network	<b>CAC</b>	Coastal Aquaculture Centre (Solomon Islands)	<b>DA</b>	Department of Agriculture
<b>AIARC</b>	Association of International Agricultural Research Centers	<b>CARICOM</b>	Caribbean Community	<b>DANIDA</b>	Danish International Development Assistance
<b>AIT</b>	Asian Institute of Technology (Thailand)	<b>CASEP</b>	Coastal Aquaculture and Stock Enhancement Program	<b>DARE</b>	Department of Agricultural and Resource Economics
<b>AKVAFORSK</b>	Institute of Aquaculture Research of Norway	<b>CBFM</b>	Community-Based Fisheries Management	<b>DEGITA</b>	Dissemination and Evaluation of Genetically Improved Tilapia in Asia
<b>ALCOM</b>	Aquaculture for Local Community Development Programme	<b>CEASDES</b>	Center for the Environment and Social Studies on Sustainable Development	<b>DENR</b>	Department of Environment and Natural Resources (Philippines)
<b>APAARI</b>	Asian-Pacific Association of Agricultural Research Institutes	<b>CEC</b>	Commission of the European Communities	<b>DfID</b>	Department for International Development (formerly ODA), UK
<b>APSF</b>	Australia and Pacific Science Foundation	<b>CERED</b>	Center for Environment Research, Education and Development	<b>DGF</b>	Directorate General of Fisheries
<b>ASI</b>	Advanced scientific institutions	<b>CFPQ</b>	Community Forestry Project Quirino (Philippines)	<b>DIFRES</b>	Danish Institute of Fisheries Research
<b>BCMELP</b>	British Columbia Ministry of Environment, Lands and Parks	<b>CGIAR</b>	Consultative Group on International Agricultural Research	<b>DMC</b>	Developing member-countries
<b>BFAR</b>	Bureau of Fisheries and Aquatic Resources (Philippines)	<b>CHC</b>	Canadian High Commission	<b>DOF</b>	Department of Fisheries
<b>BFRI</b>	Bangladesh Fisheries Research Institute	<b>CIFA</b>	Central Institute of Freshwater Aquaculture	<b>EPOMEX</b>	Program of Ecology, Fisheries and Oceanography of the Gulf of Mexico
		<b>CMFRI</b>	Central Marine Fisheries Research Institute	<b>ESCAP</b>	Economic and Social Commission for Asia and the Pacific
		<b>CNRS</b>	Center for Natural Resource Studies		
		<b>CODDEFAGOLF</b>	Committee for the Defense and Develop-		

<b>EU</b>	European Union	<b>IAB</b>	Institute of Aquatic Biology (recently renamed Water Resources Research Institute, Ghana)	<b>IRRI</b>	International Rice Research Institute (Philippines)
<b>EU-STABEX</b>	European Union Program to Stabilize Export Earnings	<b>ICAR</b>	Indian Council of Agriculture Research	<b>ISNAR</b>	International Service for National Agricultural Research
<b>FAC/CLSU</b>	Freshwater Aquaculture Center of the Central Luzon State University (Philippines)	<b>ICZM</b>	Integrated Coastal Zone Management	<b>ITP</b>	Information and Training Program
<b>FAO</b>	Food and Agriculture Organization of the United Nations	<b>IDA</b>	Institute for Development Anthropology	<b>IUCN</b>	World Conservation Union
<b>FAO-RAP</b>	Food and Agriculture Organization-Regional Office for Asia and the Pacific	<b>IDB</b>	Inter-American Development Bank	<b>JCU</b>	James Cook University
<b>FCRI/HAKI</b>	Fish Culture Research Institute (Hungary)	<b>IDPPE</b>	Institute for Development of Small-scale Fisheries	<b>JICA</b>	Japan International Cooperation Agency
<b>FRAMP</b>	Fisheries Resources Assessment and Management Program	<b>IDRC</b>	International Development Research Centre (Canada)	<b>KfW</b>	Kreditanstalt für Wiederaufbau
<b>FRI</b>	Fisheries Research Institute	<b>IFAD</b>	International Fund for Agricultural Development	<b>MacArthur Foundation</b>	John D and Catherine T MacArthur Foundation
<b>FSP</b>	Fisheries Sector Program	<b>IFM</b>	Institute for Fisheries Management and Coastal Community Development	<b>MAF</b>	Ministry of Agriculture and Fisheries
<b>GBRMPA</b>	Great Barrier Reef Marine Park Authority	<b>IFPRI</b>	International Food Policy Research Institute	<b>MAGFAD</b>	Malawi-German Fisheries and Aquaculture Development Project
<b>GCRMN</b>	Global Coral Reef Monitoring Network	<b>IIMI</b>	International Irrigation Management Institute	<b>MINCOOP</b>	French Ministry of Cooperation
<b>GEBP</b>	Germplasm Enhancement and Breeding Program	<b>IIRR</b>	International Institute for Rural Reconstruction	<b>MOF</b>	Ministry of Fisheries
<b>GHK</b>	University of Kassel	<b>INFOFISH</b>	Intergovernmental Organization for Marketing Information and Technical Advisory Services for Fishery Products in Asia and Pacific Region	<b>MOU</b>	Memorandum of Understanding
<b>GIFT</b>	Genetic Improvement of Farmed Tilapias	<b>INGA</b>	International Network on Genetics in Aquaculture	<b>MRAG</b>	Marine Resources Assessment Group (London)
<b>GoFAR</b>	Group of Fisheries and Aquatic Research	<b>IPGRI</b>	International Plant Genetic Resources Institute (Italy)	<b>MRC</b>	Mekong River Commission
<b>GTZ</b>	Deutsche Gesellschaft für Technische Zusammenarbeit, GmbH (German Agency for Technical Cooperation)	<b>IPNP</b>	International Partnerships and Networks Program	<b>MTM</b>	Mid-term Meeting
<b>IAA</b>	Integrated Agriculture-Aquaculture			<b>MTP</b>	Medium-term Plan
<b>IAASP</b>	Integrated Aquaculture-Agriculture Systems Program			<b>NACA</b>	Network of Aquaculture Centres in Asia-Pacific
				<b>NAGRI</b>	National Aquaculture Genetics Research Institute
				<b>NARS</b>	National aquatic (or agriculture) research systems

<b>NASA</b>	National Aeronautics and Space Administration	<b>RIMF</b>	Research Institute for Marine Fisheries (Indonesia)	<b>UM</b>	Universiti Malaya (Malaysia); University of Malawi
<b>NCAR</b>	National Center for Atmospheric Research	<b>RVAU</b>	Royal Veterinary and Agricultural University (Denmark)	<b>UN</b>	United Nations
<b>NFFTRC</b>	National Freshwater Fisheries Technology Research Center (Philippines)	<b>SBMA</b>	Subic Bay Metropolitan Authority	<b>UNCLOS</b>	United Nations Conference on the Law of the Sea
<b>NGO</b>	Nongovernment organization(s)	<b>SEAFDEC-AQD</b>	Southeast Asian Fisheries Development Center - Aquaculture Department	<b>UNDP</b>	United Nations Development Programme
<b>NIFTC</b>	National Inland Fisheries Technology Center	<b>SEARCA</b>	Southeast Asian Regional Center for Graduate Study and Research in Agriculture	<b>UNE</b>	University of New England
<b>NORAGRIC/ NORAD</b>	Norwegian Center for International Agricultural Development	<b>SEED</b>	Sustainable Energy and Environmental Division (UNDP)	<b>UNEP</b>	United Nations Environment Programme
<b>NRS</b>	Nationally recruited staff	<b>SGRP</b>	System-wide Genetic Resources Program	<b>UP</b>	University of the Philippines
<b>NSC</b>	North Sea Centre (Denmark)	<b>SIDA</b>	Swedish International Development Cooperation Agency	<b>UPLB</b>	University of the Philippines at Los Baños
<b>NTAS</b>	Network of Tropical Aquaculture Scientists	<b>SIFAR</b>	Strategy for International Fisheries and Aquatic Research	<b>UP-MSI</b>	University of the Philippines - Marine Science Institute
<b>NTFS</b>	Network of Tropical Fisheries Scientists	<b>SINGER</b>	System-wide Information Network on Genetic Resources	<b>UPV</b>	University of the Philippines in the Visayas
<b>OARD</b>	Office of Agriculture Research	<b>SLFSDP</b>	Sri Lanka Fisheries Sector Development Project	<b>URI</b>	University of Rhode Island
<b>PCAMRD</b>	Philippine Council for Aquatic and Marine Research and Development	<b>SP-PRCA</b>	System-wide Initiatives Rights and Collective Action	<b>USAID</b>	United States Agency for International Development
<b>PCE</b>	Population, Consumption and the Environment	<b>SWIM</b>	System-wide Initiative on Water Management	<b>USDA</b>	United States Department of Agriculture Forest Service
<b>PISCES</b>	Population Interdependencies in the South China Sea Ecosystem	<b>TDC</b>	Tambuyog Development Center	<b>USFRF</b>	University of South Florida Research Foundation Inc.
<b>P O</b>	Peoples' Organizations	<b>TNC</b>	The Nature Conservancy	<b>WCMC</b>	World Conservation Monitoring Centre
<b>PRIAP</b>	Policy Research and Impact Assessment Program	<b>UBC</b>	University of British Columbia (Canada)	<b>WRI</b>	World Resources Institute
<b>PSU</b>	Prince of Songkla University	<b>UK ODA</b>	United Kingdom Overseas Development Administration	<b>ZIM</b>	Zoological Institute and Zoological Museum (University of Hamburg)
<b>RAMP</b>	Rapid Assessment of Management Parameters				