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ICLARM: a catalyst to accelerate applied research on aquatic resources

This article is based on an interview with Dr. Shehadeh by Bernie Quimpo, editor and publisher of *Farming Today*. The interview appeared in the November 1979 issue of that journal.

What is ICLARM? and what are its objectives?

The International Center for Living Aquatic Resources Management (ICLARM) is an autonomous non-profit, international research center similar in many ways to the international agricultural research centers. It has been organized to conduct, stimulate and accelerate research on all aspects of fisheries and other living aquatic resources.

ICLARM is an operational organization, not a granting or funding entity. Its program of work is aimed to resolve critical technical and socio-economic constraints to increased production, improved resource management, and equitable distribution of benefits in economically developing countries. It pursues these objectives in the fields of aquaculture, traditional fisheries, resource development and management, fisheries affairs, and education and training through cooperative research with institutions in developing and developed countries.

How did ICLARM come about?

ICLARM is the brainchild of the Rockefeller Foundation which, as you know, made substantial contributions to the establishment of an international infrastructure for research on agricul-

ture, to bring about increased food production. It was felt that similar effort and infrastructure should be put together to accelerate food production from aquatic resources and to improve management of these resources.

The idea was considered for a number of years before ICLARM was formed.

ICLARM started out in 1975 as an experiment with built-in flexibility to modify its basic infrastructure and reorient program emphasis and mode of operation as necessary. It was a project of the Research Corporation of the University of Hawaii until it was incorporated in the Philippines as an independent entity two years later.

What research facilities does ICLARM have?

A unique feature of the organization is that it has no research laboratories of its own. Instead it undertakes cooperative programs with existing institutions when research facilities are required.

Because of the diversity of aquatic resources and related research and development needs, as well as differences in national priorities in respect of these resources, most research efforts have to be site-specific. That is, the problems cannot all be addressed in one location.

This, together with the need to strengthen existing research institutions in developing countries resulted in ICLARM's policy to pursue site-specific objectives in collaboration with existing institutions and various bilateral assistance agencies. That is, a network approach was selected as the operational mechanism.

A strong case can be made, however, for centralizing efforts to generate key basic knowledge (which does not exist now) and to collate into usable technology certain scattered knowledge which would have substantial regional, if not international, impact on development. A case in point would be the establishment of a centralized laboratory for research on controlled reproduction, seed production and improvement, and nutrition of major cultivated and/or cultivable species. Centraliza-

tion may be called for in this case because of the urgency to develop this knowledge and the investment in research and specialized laboratory facilities which are required.

Could you elaborate on the network concept?

The network concept is a means of bringing together a critical mass of manpower and other resources, which are scattered in many institutions or countries, to bear on a specific research problem of common interest without centralizing these resources in one spot. Provisions are made, in the concept, for strengthening the network units through provision of equipment, research funds, specialized consultants, etc. to accelerate the research effort. Provision is also made for increasing contact between research workers through periodic meetings and/or exchange of staff, as well as collation and dissemination of information on the problem under study.

Does ICLARM have any other unique features?

Yes. First, ICLARM is the first non-governmental, international center for aquatic research. Its policies and programs are determined not by an inter-governmental council, but by a board of trustees and a scientific program advisory committee. The members of both these bodies are drawn from the international community and serve in their personal capacities. This infrastructure favors operational flexibility.

Second, we are research-oriented. ICLARM is intended to find solutions to key problems of regional or international importance. This often calls for long-term research which governments are unable to support because priorities are given to national development problems of a more immediate nature.

The key to the resolution of these problems lies in insuring continuity of a critical research effort.

How big is your staff?

ICLARM's permanent core staff will be limited to twelve internationally recruited scientists with expertise in

various fields of fisheries and aquaculture, economics, sociology and resource management. At present we have seven permanent professional staff from the U.S.A., France, Lebanon, the Philippines and Australia. In addition, we have six professionals on fixed-term appointments, one affiliate scientist and two graduates in our internship training program. We also employ consultants (10 in the past two years) and visiting fellows, contributing to breadth of competence and flexibility.

Our staff are continuously in touch with developments in their fields through participation in projects and regional meetings, communications with colleagues and collaboration with outside consultants.

What are some of the important research problems which you intend to address?

ICLARM's research efforts must focus on major problems so that when these are resolved the impact can be felt outside national boundaries—on a regional or international scale.

In aquaculture, research emphasis is given to:

- (a) controlled reproduction of cultivated species, mass production of seed and improvement of stocks,
- (b) nutrition,
- (c) pathology,
- (d) the development of energy efficient systems which are least likely to collapse as resources become more scarce and therefore more expensive,
- (e) economics of production systems.

In capture fisheries the present focus is on:

- (a) management of tropical fisheries,
- (b) fisheries affairs—the impact of extended zones of economic jurisdiction on fisheries management, problems of open access in relation to the coastal zone and inland waters and possible conflicts between agriculture and aquaculture,
- (c) waste reduction through improved post-harvest technology and marketing infrastructure.

The problems of traditional (municipal or smallscale) fisheries are of an interdisciplinary nature and involve stock assessment and management, postharvest technology and marketing, community structure, conflict with commercial fisheries, etc. which overlap

SUMMARY OF ICLARM PROGRAMS

Project Title	Cooperating Institution(s)	Duration
1. AQUACULTURE		
Development of a Seed Production System for <i>Mugil cephalus</i> The Southern Ocean Salmon Project	Oceanic Institute, Hawaii Oceanic Institute, Hawaii; Division Proteccion Pesquera, Ministeria de Agricultura, Chile	Jan 1976-Apr 1977 2 yr, 1975-1976
Conference on Physiological and Behavioral Manipulation of Food Fish as Production and Management Tools Applied Research in Integrated Animal-Fish Farming	Rockefeller Foundation, U.S.A. (RF); Hawaii Institute of Marine Biology	2-7 Nov 1977
Conference on Integrated Agriculture-Aquaculture Farming Systems	Freshwater Aquaculture Center (FAC) of Central Luzon State University (CLSU), Philippines	3 yr, from Jan 1978
The Genetic Improvement of Tilapia Broodstock in the Philippines	Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA), Philippines and RF	6-9 Aug 1979
Conference on the Biology and Culture of Tilapias	FAC of CLSU, Philippines and RF	2 yr, from 1 June 1977 1-6 Sept 1980
Cooperative Program of Research and Training in Aquaculture and Inland Fisheries	FAC and College of Inland Fisheries (CIF) of CLSU, Philippines	5 yr, from July 1979
Graduate Study Program in Aquatic Resources	Philippine Council for Agriculture and Resources Research (PCARR), Philippines	2 yr initially, from 1 Oct 1979
Milkfish Production Economics (Philippines)	Fishery Industry Development Council (FIDC) and Bureau of Agricultural Economics (BAECON), Philippines	1 yr, from June 1979
Catfish Production Economics (Thailand)	Institute of Research and Development, Kasetsart University, Bangkok, Thailand	8 mo, from Aug 1979
Assessment of Integrated Rice-Fish Farming Technology for Rural Development in the Philippines	FAC of CLSU	18 mo, from 1980 (under negotiation)
Technical Assistance for Applied Research on Coastal Aquaculture in Thailand	Department of Fisheries, Thailand; German Agency for Economic Cooperation (BMZ)/German Agency for Technical Cooperation (GTZ)	3 yr, from 1980 (under negotiation)
2. TRADITIONAL FISHERIES		
Conference on Small Boat Design Improvement of Small-Scale Fisheries in Malaysia	South Pacific Commission, Noumea UNDP/FAO South China Sea Fisheries Development Coordinating Programme (SCSP)	27-28 Oct 1975 Oct 1976-Oct 1977
Philippine Traditional Fisheries: Research Review	FIDC, Ministry of Natural Resources, Philippines	6 mo, from Jan 1979
Skipjack and Traditional Fisheries: Solomon Islands	RF, funding for pre-doctoral fellow	2 yr, from Nov 1978
Malaysian Traditional Fisheries: Research Review	Faculty Members from Universiti Sains Malaysia, and Universiti Malaya, Kuala Lumpur	6 mo, from Aug 1979
San Miguel Bay Municipal Fisheries: A Multidisciplinary Analysis	Institute of Fisheries and Development Research (IFDR), University of the Philippines College of Fisheries (UPCF), Philippines; United Nations University, Tokyo	2 yr, from July 1979
Workshop on Appropriate Technology and Alternative Energy Sources for Fisheries	(Under negotiation)	10 d, 1981
3. RESOURCE DEVELOPMENT AND MANAGEMENT		
Skipjack Tuna Assessment in the Central and Western Tropical Pacific	South Pacific Commission	Sept 1975-Dec 1976
Management of Tropical Multispecies Stocks	In-house study by ICLARM	Continuing Program, from July 1979
Workshop on the Theory and Management of Tropical Multispecies Stocks	CSIRO, Division of Fisheries and Oceanography, Australia; Australian Development Assistance Bureau (ADAB)	12-23 Jan 1981
4. FISHERIES AFFAIRS		
Changes in the Law of the Sea and Their Effects on Fishery Development and Management	Resources for the Future (RFF)	9 mo, 1977
Workshop on the Law of the Sea	Institute of Southeast Asian Studies (ISEAS), Singapore	26-29 Nov 1978
5. EDUCATION AND TRAINING		
Assistance in Development of the Institute of Marine Resources, University of the South Pacific	University of the South Pacific, Fiji; University of Rhode Island, U.S.A.	July 1976-Jan 1977
Internship Training population dynamics aquaculture	IFDR, Philippines State Agricultural University, Wageningen, Netherlands	(Continuous) 2 yr, from April 1980 6 mo, from April 1980



Above. ICLARM staff discussing projects. L to R: Daniel Pauly (stock assessment), Roger Pullin (aquaculture), Linda Temprosa (librarian), Ian Smith (economics), Angelito del Mundo (administration).

Right. Kee-Chai Chong (economics). Other staff appear on pp. 2-4.



with areas identified for capture fisheries. They are being addressed by ICLARM through interdisciplinary teams.

The development and management of inland fisheries has received little attention compared to marine fisheries and aquaculture. Here, research must focus on:

- (a) stock assessment and management,
- (b) productivity and ecology,
- (c) artificial stocking,
- (d) open access problems.

It is clear that research on capture fisheries, whether marine or freshwater, must focus on the generation of management guidelines.

Can you give us an overview of ICLARM project activities?

Here is a table (p. 6) listing all our completed and current projects to date. In summary there are 13 in the field of aquaculture, 7 in traditional fisheries, 3 in resource development and management, and 2 each in marine affairs and education. They include 3 major conferences already held with 3 more upcoming in the

next 9 months. We have current projects in 4 countries. Not shown in the table are a number of other studies in these fields being carried out for ICLARM by our consultants and research associates.

It's really quite a large list for a young, small organization. However, the achievements already apparent from these projects have enabled us to gain increasing support from bilateral funding agencies and we are confident of making even greater progress in our program areas over the next few years.

What are ICLARM's future plans?

We have two urgent tasks for the immediate future: to complete staffing of ICLARM headquarters and to expand the impact of our programs by increasing the number of active projects and expanding existing projects into regional or international efforts. Both tasks are predicated on increasing ICLARM's core budget. In view of the

track record we have established in the past three years, I am optimistic that these objectives are within reach.

To give some specific examples, we would like to expand the successful ICLARM-FAC (Philippines) project on integrated agriculture-aquaculture farming systems into an international network. We need about US\$50,000/yr per new network unit to do this excluding cost of expatriate staff (if they are needed).

The centralized aquaculture laboratory I mentioned earlier, would involve even greater investments in time, research staff, research facilities and, therefore, funding. In the meantime, we are negotiating a cooperative research program on coastal aquaculture with the Fisheries Department of Thailand. We have also developed a proposal for the establishment of a research hatchery for brackishwater/marine fishes in Egypt and submitted this to USAID for funding.

The tropical stock assessment research project will be expanded according to guidelines which will be defined by the ICLARM/CSIRO workshop on this subject to be held in January 1981.

The traditional fisheries program is off to a strong start and will be expanded within SE Asia and other regions as funding permits.

In our fisheries affairs program, we intend to build on the foundations established by Dr. Francis Christy and the Law of the Sea Workshop which was convened in cooperation with ISEAS.

We also plan to strengthen our program on fisheries and aquaculture economics and to initiate a program of research on tropical inland fisheries. All these programs require additional permanent staff.

In information services we are in the process of developing a proposal for the retrieval and dissemination of "unconventional" fisheries literature from developing countries which is currently either not disseminated or locked in local languages.

There is much to be done and we look forward to contributing to the needed research effort.