

The public sector requires generalists with multidisciplinary training in various aspects of fisheries science and wider exposure to the industry to serve as managers and extension workers. Adequately trained research personnel are obviously also needed in a number of established and newly established research institutions to generate and refine fishing, aquaculture, processing and postharvest technologies.

#### **Institutions**

There is a need to look into the existing training institutions in developing nations. Are existing fishery and aquaculture curricula relevant to national and regional needs? Do existing facilities include infrastructure and training equipment sufficient for effective implementa-

tion of curricula? Are there adequate qualified fishery professional staff in the institutions to implement the curricula?

#### **Fisheries Education Systems and the Asian Fisheries Society**

Manpower training is an important part of fisheries development. Millions of dollars are devoted to fisheries development each year. External assistance alone (in the region) amounted to US\$400 million in the past three to five years. Yet, very little attention has been placed on the quality of fisheries education.

One of the major projects of the Asian Fisheries Society is to initiate a critical study of fisheries education in Asia. The Society has established a Fisheries Education Committee to solicit inputs from various educators and ex-

perts in the region; organize a workshop; prepare a fishery education statement for adoption by the Society's Council; and recommend appropriate curricula that could be used as guides for fisheries institutions in the developing nations of Asia. It is hoped that a group of about 20 fisheries scientists and educators from Asia will meet in Tokyo in 1987 to discuss various matters on fisheries education. The Committee welcomes any suggestions and ideas on this aspect. Cooperation and collaboration from national, regional and international enterprises and agencies and from individuals are welcome.

Communication can be sent to: The Chairman, Fisheries Education Committee, Asian Fisheries Society, MC P.O. Box 1501, Makati, Metro Manila, Philippines.●

## **Training for Fisheries Management in Developing Countries**

#### **A New Discipline**

**F**isheries management is still an infant discipline fighting to gain status and recognition among fishery scientists. For some, fisheries management is the "art" of inducing fishermen to fish as much as possible with the best available technology. For others it is determining optimum sustainable yield levels of fish populations and of identifying measures to restrict effort or access so that conservation principles are not violated. For others, it is the way fishing activity should be conducted in order to obtain the highest possible catch and net benefits to society over time.

This diversity of roles assigned to fisheries management implies different goals and objectives to be pursued, ranging from pure theoretical "conservationist" (fisheries management with emphasis on fish) to pure "social" (fisheries management with emphasis on people) considerations. It also reflects the infancy of fisheries management as a discipline and the pioneering nature of its practitioners.

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In most developing countries, fisheries management is still a role that traditional professionals in fisheries biology or technology feel entitled and prepared to perform when they have had enough experience, but it is not yet regarded as a discipline with theoretical foundations, methods, instruments, procedures and accumulated knowledge that can be acquired through formal and systematic training. The applicability of management principles to decisionmaking on fisheries problems is not yet well accepted or understood by most fisheries managers. Thus, fisheries management skills are still thought to be best acquired through practice rather than training.

#### **Training in Fisheries Management**

Developing countries provide half of the total world catch (FAO 1986) and are themselves greatly dependent on fisheries as a source of cheap protein,

employment and foreign exchange. But in spite of this, fisheries management is not yet found even as a degree program in Latin America or in Africa. In Asia, the first fisheries and aquaculture economics/management program leading to an M.Sc. was established only four years ago as a joint effort between Universiti Pertanian Malaysia (UPM), International Development Research Centre (IDRC) of Canada, A/D/C (now Winrock International Institute for Agricultural Development) and ICLARM. As a result of these efforts, undergraduate courses in fisheries management recently began to be offered in the Philippines (UPV), Indonesia (UNDIP) and Thailand (KU). In Latin America, only short term or semester courses were offered in this area in 1983-1985 (Universidad Catolica, Chile).

Few developed countries (Canada, Japan, USA, UK) offer training in fisheries management. Those that do usually offer it at the graduate level as a degree option of agricultural or resource economics faculties.

### Higher Degree Overseas

The lack of local training programs and appropriate funding, and the attraction of overseas training induce professionals from developing nations to pursue higher degrees in fisheries management in developed nations. There, emphasis is generally on theoretical aspects (research oriented) or national issues (national policy) but rarely on the practical concerns of developing countries. Thus, this kind of graduate training still requires a second stage of "field and practical" experience.

Because of the high status foreign degree holders immediately enjoy in developing countries upon return, the second stage of "field work" rarely takes place and is usually substituted by a high rank and attractive administrative position within the governmental or academic bureaucracy. The few willing to get exposure to field and practical experience through research or consulting work, find their way into a system with neither funding nor infrastructure. Thus the end result of this kind of training is either a bureaucrat with a high academic degree but little experience or a frustrated highly qualified researcher with scarce resources.

### Training Problems in Developing Countries

Training problems in fisheries management relate to its nature as a discipline

and to the conditions under which training is usually conducted in developing countries.

As a discipline, fisheries management integrates several sources of knowledge into a common framework in order to properly describe, understand, analyze, predict and manage the behavior of the fishery process. Fisheries biology, fisheries technology, resource economics, sociology, law, anthropology and ecology are among the important disciplines needed to provide the core scientific knowledge that fisheries management must consider. Mathematics, operations research, statistics (as applied to biological and social sciences) and computer science must provide the analytical and quantitative methods for scientific analysis.

Empirical evidence and proper explanations (theories, models, relationships, etc.) about the fishery problems in developing nations must also provide the reference information for practical reasoning.

An integrated approach in designing and implementing the curriculum of a program in fisheries management is thus a necessary condition if all relevant factors and consequences of management are to be considered.

Training conditions in developing countries also impose some severe limitations. Reference materials (books, journals, data, maps, etc.) are scarce and generally out of date. Physical facilities such as

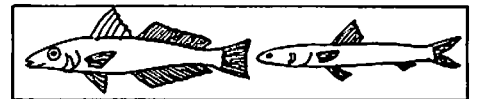
laboratories, computers, research vessels and workshops are also scarce and expensive to maintain. Well qualified personnel are forced to assume bureaucratic responsibilities or private consulting to supplement their low income at the expense of their commitment to research and training.

### The Role of International Funding Institutions

Because of the "non-traditional" nature of fisheries management as a discipline, local funding sources are difficult to find. International funding thus became popularly sought for promoting training in fisheries management. The role of IDRC, Ford Foundation, FAO and others in supporting training experiences in Latin America (Chile), Southeast Asia (UPM/AFSSRN) and recently, China, has been met with approval and enthusiasm.

### The Benefits of Local Training

Promoting local training in developing countries can lead not only to better use of foreign exchange, human resources and international assistance, but can also make these countries capable of identifying genuine strategies for managing their national resources in the best interest of their own people. ●



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