The Network of Tropical Aquaculture Scientists (NTAS): Past, Present and Future

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Background

ICLARM launched the Network of Tropical Aquaculture Scientists (NTAS) in July 1987 as an information network for individual scientists working on tropical aquaculture, especially on genetics, integrated agriculture-aquaculture farming systems and coastal aquaculture of tropical molluscs. The NTAS provides a mechanism for exchange of research results and ideas among its members through correspondence and through its newsletter *Aquabyte*: formerly a separate publication and incorporated in *Naga, the ICLARM Quarterly* from 1992. This merger expanded the information sources provided to NTAS members, keeping them abreast of research and development advances in aquaculture and fisheries. Eleven issues of *Aquabyte* have been published, with a complete index.

After six years, the NTAS membership stands at 642 scientists from 90 countries (Table 1). This growth has been very rapid. At the end of 1987, the Network's membership was only 23 scientists working in 11 countries. The regional distribution of members has remained more or less stable through the years with the largest proportions in Asia (42%) and Africa (24%). This signifies the importance of aquaculture and/or aquaculture research and the need for the services of the NTAS in these developing regions.

The NTAS Questionnaire

Recognizing the need for NTAS to reexamine itself after five years of operation, a questionnaire was sent out to 579 members in April 1992. The general objective was to solicit members' views on the NTAS and on how to improve its services. There were four specific objectives.

1. To compile a list of still active and interested members who wish to continue their membership.

This was felt necessary because the NTAS was becoming relatively large, but with some passive members who scarcely communicate with each other or with ICLARM.

2. To reclassify members' fields of interest.

The former system for classification of members' interest used 'warmwater aquaculture' as a catch-all term and employed a very heterogeneous list of other descriptors that was far from satisfactory: broad fields of interest, based on membership nomination forms and curricula vitae. For new members, we published these in *Aquabyte*.

We felt that a more detailed description of research interests would help members to identify common interests and would enhance communication. Thus, members were asked in the questionnaire to select at least three major and minor fields from 90 descriptors. For simplicity of presentation, we grouped these as: Biology and Ecology, Inland Aquatic Systems, Methods and Tools, Coastal and Coral Reef Systems, and Social Science (Table 2).

3. To ascertain the extent of communications among members as a result of their NTAS membership and receipt of *Aquabyte*.

We had earlier requested members to provide us with copies of their correspondence with other NTAS

Table 1. Regional distribution of NTAS members, July 1987-May 1993.

	1987	1988	1989	1990	1991	1992	1993	Total	% to Total
East and Southeast Asia	13	53	37	18	22	18	6	167	26
Africa	1	50	35	19	20	21	5	151	24
South and West Asia	1	22	29	13	23	12	6	106	16
Europe and USSR	2	25	21	16	17	5	6	92	14
USA and Canada	4	19	12	8	8	0	5	56	9
Oceania	2	16	11	3	4	2	1	39	6
Central America	0	8	2	4	3	1	0	18	3
South America	0	4	4	2	2	0	1	13	2
Total members	23	197	151	83	99	59	30	642	100
Total countries (cumulative)	11	58	70	81	88	88	90	NA	NA

NA = Not applicable.

Table 2. Fields of research interest of NTAS members. Members were asked to list up to three major and three minor interests.

	Major		Minor	
	Count	%	Count	%
Biology and Ecology[a]	621	50	521	49
Inland Aquatic Systems[b]	262	21	146	14
Methods and Tools[c]	165	13	241	22
Coastal and Coral Reef Systems[d]	131	10	80	7
Social Science[e]	69	6	89	8

[a]Includes behavior, biochemistry, bioenergetics, biotechnology, bivalves, broodstock, carps, catfishes, conservation, crustaceans, cryopreservation, detritus, diseases, ecology, ecophysiology, endocrinology, environmental impact, environmental studies, feed technology, finfish, foodchains, genetic resources, genetics, giant clams, growth, habitat restoration, immunology, induced spawning, limnology, meiofauna, microbiology, milkfish, nutrition, parasites, pathology, pesticides, physiology, phytoplankton, pollution, pond dynamics, population genetics, quantitative genetics, reproductive physiology, seaweeds, taxonomy, tilapias and zooloplankton.
[b]Includes farming systems research, freshwater aquaculture, integrated farming systems, reservoirs, rice-fish farming systems, seed production, site selection, waste-fed and wastewater (sewage) reuse.
[c]Includes cages, computer methods, depuration, engineering, farming management, hatchery technology, modelling, pens, pond management, post-harvest technology, production systems, software, statistics, stock assessment, water quality and water systems.
[d]Includes brackishwater aquaculture, coral reefs, lagoons and marine aquaculture.
[e]Includes curriculum development, development, economics, extension, information, marketing, policy, public health, resource economics, rural sociology, socioeconomics, trade and training.

members. The response to this was only a handful of letters. We wanted to seek ways to encourage more communication.

4. To identify ways to improve the services of the NTAS and *Aquabyte* to members.

We wanted to have suggestions on how the NTAS could answer more effectively and efficiently the needs of members; e.g., information needs.

Response

The response was good. Out of 579 members who were sent questionnaires, 421 (73%) responded, 418 of whom indicated their desire to continue membership.

Regarding communication among members, a majority of respondents (65% or 273 members) said that they had contacted some fellow members, one-third said they had not, whereas 12 gave no answer to the question.

The responses on classification of members' interests were very useful (Table 2). We will be publishing these soon in an NTAS membership directory.

Suggestions for Improvements

We appreciate very much the efforts of members who reflected and wrote down their suggestions and views on the NTAS and *Aquabyte*. We have classified these as relating to technical and structural aspects of *Aquabyte*, and the general services of the NTAS (Table 3).

Technical Aspects of Aquabyte

Many members would like to read more about breakthroughs in aquaculture research and development in terms of simple, practical techniques and methods. Some members feel that *Aquabyte* needs to expand its scope of subject matter and its number of articles; e.g., in crustacean culture, diseases/parasites, economics, genetics and marine aquaculture.

Structural Aspects of Aquabyte

There is a general feeling that NTAS members should be more active in contributing articles for *Aquabyte*, corresponding through *Aquabyte* with fellow members, and answering reliably and promptly reprint requests from fellow members. We agree.

Some members also think it appropriate to transform *Aquabyte* into a journal covering more scientific articles: 27 respondents suggested publishing more items in *Aquabyte*, 21 of whom specified that these should be scientific papers. One member stated that *Aquabyte* should not be a journal. We agree with the latter suggestion - there are many journals already.

Some felt that *Aquabyte* should expand its number of pages and produce more issues per year. This would be difficult for financial and logistical reasons.

There were also some suggestions on publishing in languages other than English, particularly asking members whether they would prefer an English or French version. Again this would need more financial resources. We have stopped duplicating articles in French and English in the same issue, in favor of publishing separate French translations of selected articles from *Naga* as a whole. However, ICLARM will have to reexamine all its translation activities as it expands within the Consultative Group for International Agricultural Research.

General Services of NTAS

Many respondents expressed satisfaction with the NTAS and *Aquabyte*. Some suggested publishing a directory of the continuing NTAS members. We

Table 3. Members' views and suggestions on how to improve NTAS and *Aquabyte*.

	No. of responses
Technical Aspects of *Aquabyte*	
Publish breakthroughs in aquaculture	43
Cover diversified subject areas	38
Include more reviews (books, research sector, country-specific)	13
Structural Aspects of *Aquabyte*	
More active participation of members	31
Publish more papers/articles	27
More issues of *Aquabyte*	13
Transform newsletter to a journal	11
Create new sections (social acience, India Section, job announcements)	4
Extend coverage in languages other than English	4
General Services of NTAS	
Excellent	28
Good	22
NTAS should organize conferences/workshops among members	21
Publish a directory	11
Promote research project collaboration among members	7
Aid members/Provide funds	7

will do this soon, with detailed information on members' fields of interest, and listing all contact addresses and numbers (telephone, fax, telex and e-mail, if available).

Another suggestion was that the NTAS should organize conferences and workshops to bring members together and provide them opportunities to interact in these gatherings. Members felt that NTAS should be able to provide a mechanism to promote research collaboration among themselves. Moveover, some members commented that the services of NTAS should include seeking and providing financial support for projects and attendance in workshops and conferences. This would be difficult for the small NTAS Secretariat at a small center like ICLARM.

The Future

The NTAS has a bright future provided that its members are active and responsive to each others' needs. The questionnaire has been a useful exercise and will help ICLARM tailor the NTAS to address members' needs. ICLARM cannot, however, cover the whole field of aquaculture research to the same extent and must focus on its own comparative advantage to help NTAS members, based on its research programs in Inland Aquatic and Coastal/Coral Reef Resource Systems and on its information services. NTAS members who wish to read about ICLARM's future research focus can request a copy of the Center's Medium-Term Plan (1994-98). Finally, although the questionnaire exercise has now been completed, we welcome feedback and constructive criticism on the NTAS and *Aquabyte* at any time, so as to continue to be responsive to members' views.

M.P. Bimbao *and* **R.S.V. Pullin** *are ICLARM's NTAS Secretary and Coordinator, respectively.*

ICLARM Contribution No. 949.

News Items

How to Induce Wild-Caught *Scorpaena scrofa* to Feed in Tanks, Soon After Capture

Wild-caught fish, especially carnivorous species that take live prey, can be reluctant to feed in captivity. Some will starve to death even in the presence of fresh-killed prey. This was the position with *Scorpaena scrofa* (20-25 cm standard length), caught in hoop nets and stocked (6-10 fish) in a tank (1.5 m diameter, 1.0 m deep). Feed pellets, pieces of fish flesh and dead shrimps thrown into the tank were refused. This species usually feeds on live shrimp.

The problem was solved by suspending fresh dead shrimps by threads, passing a thread with two to three knots under the cepholathorax and suspending each shrimp about 30 cm from the tank bottom using a stick across the tank. When shrimps were hung in the tank in the afternoon, one fish usually fed that night. Daily replacement with fresh shrimps induced more fish to feed until all were feeding within four to five days. The threaded shrimps were strongly attacked and some fish that could not pull them off the threads, ate the threads as well. These were later pulled from their mouths.

Once having fed on hanging shrimps, for about 10 days, the fish fed readily at the tank bottom on shrimps that were just thrown in daily. *Source: Yves Siau, Department of Biology, Faculty of Sciences, C.A. Diop University of Dakar, Dakar, Senegal. This information was also published in the* EC Fisheries Bulletin 5(4):16.

Rice-Fish-Azolla — A Sustainable Farming System

An investigation was carried out to evaluate the suitability and economics of a rice-fish-Azolla system in lowlying wetlands of Lower Bhavani Project, Agricultural Research Station, Bhavanisagar, Tamil Nadu, India. The soil was a sandy loam of neutral pH, low in available nitrogen, but with average available phosphorus and potassium. The study area was 0.25 ha. Field trenches of 1.0 m depth and width occupied 10% of the ricefield area to shelter the fish. Treatments consisted of rice alone, rice-fish and rice-fish-Azolla farming. *Azolla microphylla* was applied twice at 2.0 t/ha. The experiment was continued for two rice seasons with a total duration of eight months. Irrigation was scheduled to maintain 5 cm water depth. Plant protection was by treatment with 5% Neem seed kernel extract, according to needs. Fingerlings of catla (*Catla catla*), rohu (*Labeo rohita*) and mrigal (*Cirrhinus mrigala*) were stocked at 3,000/ha with a 1:1:1 ratio. Feed was prepared by mixing banana pseudostem and cowdung (1:1) and incubating this overnight. This feed along with rice bran was fed 5% of the fish body weight per day. Minimum field disturbances were made during and between crop operations.

From this study, it was found that fish rearing in lowlying wetlands is possible. This rice-fish-Azolla system was more remunerative than rice-fish and rice farming alone as is summarized in the table below.

Yields, returns and benefit:cost ratios for rice, rice-fish and rice-fish-Azolla experimenting farming systems. (US$1 = 32 Indian rupees).

Further details may be obtained from V.S. Shanmugasundaram and M. Balusamy at the Department of Agronomy, Tamil Nadu Agricultural University, Coimbatore 641 003, Tamil Nadu, India. See also their news item Rice-Fish-Azolla Integration, using *Oreochromis niloticus* [*Naga* 15(2):29].

Treatment	Rice yield (kg/ha) 1st crop	2nd crop	Total	Fish yield (kg/ha)	Gross returns (Rs/ha)	Net returns (Rs/ha)	Benefit: cost ratio
Rice alone	4,475	4,290	8,765	-	26,295	11,295	1.75
Rice-fish	4,050	3,763	7,813	98.5	25,971	9,491	1.57
Rice-fish-Azolla	4,908	4,318	9,226	154.0	31,528	14,828	1.88