

# SECTION 4

## THE ASIA-PACIFIC GROUPEL NETWORK

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The Asia-Pacific Marine Finfish Aquaculture Network, which was established (as the Asia-Pacific Grouper Network) in 1998, has grown rapidly. Network activities have contributed to improving the overall progress of developing sustainable grouper aquaculture in the Asia-Pacific region by supporting improved communication and providing opportunities for enhanced cooperation between participating agencies. Technology transfer has been a major focus for the network, with innovative use of modern electronic communication strategies and direct technology transfer through technical training. The outcome of these activities has been improved information access for researchers and industry and the development of mechanisms to spread project impacts widely throughout the Asia-Pacific region, beyond the agencies directly involved in projects.

### Introduction

One of the constraints to the development of sustainable grouper aquaculture in the Asia-Pacific region has been the uncoordinated nature of the substantial regional research effort that has taken place over the last two decades. Researchers and practitioners felt they were working in isolation and were unaware of the many similar lines of research being undertaken by other laboratories.

In response to the identified need to improve communication and coordination of research effort, the Asia-Pacific Grouper Network was

established in 1998 at a grouper aquaculture workshop held in Bangkok, Thailand. The network is coordinated by the Network of Aquaculture Centres in Asia-Pacific (NACA) and has received support from the Australian Centre for International Agricultural Research (ACIAR) and the Asia-Pacific Economic Cooperation (APEC), through its Fisheries Working Group.

Recognising the importance of marine fish farming in the Asia-Pacific region, senior government representatives at the NACA 13th Governing Council Meeting in 2002 absorbed the grouper network into NACA's core program, to ensure its long-term sustainability. The coverage of the network was also expanded to include other species such as sea bass, snapper,



Students in the Gondol grouper hatchery training course being shown broodstock management techniques.

cobia, tuna and marine ornamentals and the name was changed to the Asia-Pacific Marine Finfish Aquaculture Network (APMFAN).



Demonstration of tank management and feeding techniques.

The overall objective of the network is to promote cooperation to support responsible development of marine finfish aquaculture within the Asia-Pacific region. Network activities are particularly directed at development of marine finfish aquaculture that:

- provides an alternative source of income and employment for coastal people, especially those currently engaging in destructive fishing practices;
- provides a quality alternative source of fish to wild-caught species, including fish fingerlings, that may be captured using destructive fishing techniques;
- contributes to protection of endangered reefs and reef fish from the pressures of illegal fishing practices through responsible aquaculture development;
- promotes environmentally sustainable marine fish culture practices by addressing

environmental constraints to marine fish culture associated with present practices, such as feed and fingerling supply; and

- promotes diversification of marine fish culture species appropriate to local economies and markets.

With such diverse and complex problems there is a need to share knowledge and experience to assist in finding solutions. The network provides the platform for cooperation in the Asia-Pacific region where aquaculture specialists can work with government agencies, non-government organisations, the private sector, communities and markets to ensure that aquaculture is integrated into broader objectives of conservation and poverty alleviation in coastal areas.

## Communication

Facilitating communication between researchers, managers and industry is a central platform for the APMFAN.

## Electronic communication

The communication strategies adopted by the network reflect the rise of internet-based communication methods, particularly e-mail and the World Wide Web. The use of electronic communication strategies allows rapid and widespread dissemination of information at relatively low cost.

The network produces two e-newsletters:

- A fortnightly e-news service with brief items on recent developments in marine finfish aquaculture; and
- A quarterly e-magazine that covers research and development issues in more depth, including invited contributions from network participants.

The APMFAN web site ([www.enaca.org/grouper/](http://www.enaca.org/grouper/)) provide an information resource on marine finfish aquaculture, including archived articles from technical experts throughout the Asia-Pacific region, workshop proceedings and presentations, and contact details for those wishing to obtain more information about the subject.



Course participants observe the preparation of live feeds culture.



Students obtain 'hands-on' experience in the grading and sorting of juveniles.

## Workshops

Workshops have proven to be an ideal forum for facilitating an exchange of ideas and experiences between grouper aquaculture researchers, aquaculture managers and industry. The high level of regional interest in marine finfish aquaculture has supported workshops at various centres throughout the region, including Thailand, Australia, Indonesia, the Philippines and Vietnam. This ability to utilise network resources to hold workshops in different locations has allowed many local representatives to participate, who would otherwise find it difficult to attend.

A major feature of the workshops has been the development of individual projects to support the network's research, development and extension program (see below). For example, the network workshop held in Hat Yai, Thailand, in April 1999 identified a number of needs for enhancing the sustainability of grouper aquaculture in the region with particular emphasis on grouper viral diseases. Based on these recommendations, network participants developed several projects that were subsequently funded by APEC, including:

- the publication of a husbandry and health manual for grouper, coordinated by the Southeast Fisheries Development Centre's Aquaculture Department; and
- the development of a regional research program on grouper virus transmission and vaccine development, assisted by the fish health section of the Asian Fisheries Society and the Aquatic Animal Health Research Institute, Thailand.



On completion of the course participants were presented with an official certificate of accomplishment.

## Publications

Publications developed by the network are listed in Appendix 2. An excellent example of the strength of the networking approach to developing extension information is the Husbandry and Health Manual for Grouper. Access to network participants provided the coordinating agency, SEAFDEC AQD, with information and

experience from grouper aquaculture researchers and practitioners throughout the Asia-Pacific region. Following publication of the original English version, network participants provided translation into local languages: Filipino, Indonesian, Mandarin, Thai and Vietnamese. The result was a high-quality publication of direct application to farmers in the major grouper farming countries of Southeast Asia.

## Staff exchanges

To encourage cooperation and information exchange amongst APMFAN partners, the network has supported staff exchanges between participating institutions (funded by both ACIAR and APEC). These exchanges have supported the development of human resources, provided a basis for capacity building, and ensured the transfer of new technology on various aspects of grouper culture to participating economies.

## Research, development and extension coordination

A major focus of APMFAN has been to provide a structure to help coordinate the overall research effort within the region. This approach has been used to minimise overlap and prevent duplication of research effort on marine finfish aquaculture.

To achieve this, APMFAN has developed a program/project structure, where individual projects contribute to a program of activities. The structure of the APMFAN program is:

- 1 Production technology
  - 1.1 Broodstock
  - 1.2 Larviculture
  - 1.3 Nursery
  - 1.4 Grow-out
  - 1.5 Post-harvest
- 2 Environment
- 3 Marketing and Trade
- 4 Food safety and certification
- 5 Socio-economics and coastal livelihoods
- 6 Fish health
- 7 Training and extension

The network works with institutions and projects operating throughout the region undertaking research, development and extension activities on these different components in

a complementary and structured way, sharing experiences through the network, and, where possible, integrating activities between network partners.

The program structure facilitates gap analyses to identify research needs. For example, while there was a relatively high level of effort focussed on developing production technology for groupers and other high-value marine finfish, there had been relatively little work done on the socio-economic aspects of marine finfish aquaculture. Identification of this gap in the program allowed the development of a socio-economic study of Indonesian marine finfish hatcheries carried out by staff of SEAFDEC AQD, QDPI and NACA and funded by APEC and ACIAR (Siar et al. 2002). This socio-economic assessment indicated that these hatcheries are an important source of employment and economic benefits in northern Bali, and that the continued development of the marine finfish hatchery sector can provide valuable livelihoods for coastal communities.

## Technology uptake

APMFAN has a strong focus on 'hands-on' training to facilitate technology uptake by farmers. An example of this is the Regional Grouper Hatchery Production Course, run at the Gondol Research Institute for Mariculture, Bali, Indonesia, for the last two years. The Gondol course provides hands-on training for a limited number (~15) of participants at a centre renowned for its excellence in developing production technology for marine finfish, particularly groupers.

The success of the course is evident from the results that have been achieved by course participants. In Thailand, Indonesia, Vietnam, Malaysia and Australia course graduates have been able to apply the techniques learnt from the training and have successfully produced grouper fingerlings, including *Epinephelus coioides*, *E. fuscoguttatus* and *Cromileptes altivelis*. Further courses are planned based on these successes.

Other network partners have also incorporated recent research results into their training courses. For example, SEAFDEC AQD has incorporated recent technological improvements

in grouper hatchery production into their regular Marine Finfish Hatchery course, and the Department of Primary Industries and Fisheries, Queensland, has run a series of workshops for farmers interested in grouper aquaculture in Australia. The Gondol Research Institute for Mariculture has run several courses in Indonesia for local farmers and fisheries officers.

Through these training courses, APMFAN has spread the impact of the network's research outcomes, including those of the ACIAR project, beyond the agencies that are formally involved in the project, and has provided direct technology transfer to farmers.

## Conclusion

The coordinated and structured approach adopted by the network has proved to be effective in supporting research in marine finfish aquaculture, and in translating some of the research outcomes to development activities. APMFAN will continue to share knowledge and experience across the region. It is presently building its scope of activities to cover a wide range of marine fish and other species. Further work is also being undertaken on formalising

the participation of institutes within the network. The model is also being considered for other mariculture species and commodities, thus providing a wide range of mariculture options for coastal development in the region.

The building of further partnerships with government, the private sector and NGOs will be essential to continue the success of the network, as part of a concerted Asia-Pacific regional collaborative effort to address unsustainable fishing practices and poverty in coral reef and other coastal areas through responsible marine fish aquaculture development.

## References

Siar, S.V., Johnston, W.L. and Sim, S.Y. 2002. Study on Economics and Socio-economics of Small-scale Marine Fish Hatcheries and Nurseries, with Special Reference to Grouper Systems in Bali, Indonesia. 36pp. Report prepared under APEC Project FWG 01/2001 — 'Collaborative APEC Grouper Research and Development Network'. Asia-Pacific Marine Finfish Aquaculture Network Publication 2/2002. Network of Aquaculture Centres in Asia-Pacific, Bangkok, Thailand.