



# aquaculture

live reef fish

## Regional cooperation in grouper aquaculture research moves forward - A new research network formed

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### Introduction

The groupers (Family Serranidae) are an economically important group of marine fishes widely distributed in tropical and subtropical areas throughout the world. There is increasing interest in grouper aquaculture throughout the world, but particularly in the Asia-Pacific region, because of the high demand for groupers in local and export markets, and the high value that groupers bring in these markets. Currently, much of the supply is provided by capture fisheries, but in some areas this has been associated with environmentally damaging techniques, particularly the use of cyanide to capture fishes for the high-value live markets in Hong Kong and China. There is considerable potential for aquaculture production of groupers to replace wild-caught product, and to assist in alleviating environmental damage and overfishing.

The development of sustainable commercial grouper aquaculture has been constrained by a range of factors, but principally by the limited availability of seed (fry or fingerlings). Throughout most of the Asia-Pacific region, grouper culture is highly dependent on the capture of juvenile fish from the wild to supply seed stock for aquaculture. At the Regional Workshop on Sustainable Aquaculture of Grouper and Coral Reef Fishes organised by the Department of Fisheries, Sabah, Malaysia and the Network of Aquaculture Centres in Asia-Pacific (NACA) and held in Sabah, Malaysia, in December 1996, the Working Group on Technical Aquaculture Issues examined the status of aquaculture technology for a range of high-value reef fish species. There was widespread recognition from workshop participants that further research is necessary to develop reliable culture techniques for grouper. Moreover, it was clear

that research progress was constrained by the lack of effective communication of research results among the various research groups involved in grouper aquaculture.

Specific recommendations from the Working Group in Sabah were:

1. Similar workshops should be held in the future to allow follow-up and examination of research progress achieved.
2. Research coordination at national and international levels should be strengthened to fill gaps in knowledge in need-based areas.
3. The system of exchange and dissemination of information should be improved. It was generally agreed that NACA was in a position to undertake this role.

The last of these recommendations has been addressed by the development of a World Wide Web site by NACA and AIT, which is dedicated to grouper aquaculture:

<http://www.agri-aqua.ait.ac.th/grouper/>

In response to the other two recommendations, the Australian Centre for International Agricultural Research (ACIAR) has agreed to fund a research project to develop improved grouper aquaculture techniques in conjunction with the Queensland Department of Primary Industries (QDPI), the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and NACA. A central component of this project will be the facilitation of improved collaboration and coordination of grouper aquaculture research within the Asia-Pacific region. The initial activity associated with

this project was the Grouper Aquaculture Workshop held in Bangkok on 7–8 April 1998, which was attended by researchers from Australia, Hong Kong, Indonesia, Israel, Malaysia, the Philippines, and Thailand.

The objectives of the Bangkok workshop were to:

1. Identify constraints to the successful development of grouper production technology.
2. Identify research in progress in the region and how improved collaboration and information exchange can enhance the progress of this research.
3. Establish a mechanism to foster cooperative research and to facilitate information exchange among grouper aquaculture researchers in the Asia-Pacific region.

These objectives were achieved over the two days of the workshop, and further details will be provided in the workshop proceedings to be published later this year. This is an important achievement, and it is entirely due to the enthusiastic cooperation of all the workshop participants.

The workshop showed that there is a large research effort being undertaken in the Asia-Pacific region on the development of aquaculture technology for groupers, and that progress will likely be obtained more rapidly if duplication of research is reduced and a wider collaborative approach to research is undertaken.

Expansion of grouper aquaculture in the Asia-Pacific region would provide increased employment opportunities for local people in the aquaculture industry, as production of groupers increases to meet the growing demand for live and fresh-chilled product in the region. In addition, increased employment opportunities could be created in associated industry sectors, such as feed and equipment manufacturing and distribution. Provision of greater quantities of aquacultured grouper product would also help reduce the exploitation of wild grouper stocks.

The targeting of spawning aggregations by commercial fishers contributes strongly to the unsustainable nature of much of the wild fishery for groupers in the Asia-Pacific region. Similarly, the use of cyanide and dynamite for capturing coral reef fish species, particularly the highly valued groupers, has caused widespread damage to coral reefs in the region as emphasised at several recent meetings, including the recent APEC workshop in Hong Kong on the Impacts of Destructive Fishing Practices on the Marine Environment.

## Workshop recommendations

During the final session of the grouper research workshop, there was considerable discussion on how to progress grouper aquaculture research and development in the region, and how to facilitate the continued development of an Asia-Pacific Grouper Network. The following recommendations were agreed upon by workshop participants:

1. There is a need for further research to address the constraints to grouper aquaculture technology. Research is needed to address specific topics, under the following general headings:
  - broodstock management and nutrition,
  - improved larviculture technology,
  - definition of nutritional requirements for grow-out diets,
  - development of low-pollution grow-out diets,
  - disease and health issues.

The outcomes of this research should where possible be incorporated into 'best practice' guidelines for grouper aquaculture and efforts should be given to incorporating such guidelines into practical aquaculture extension activities.

Grouper diseases already cause substantial economic losses during grow-out. The regional capacity for marine fish disease control should be improved, and development of a regional diagnostic centre, particularly for viral diseases, is considered a high priority.

2. There is a need to establish a coordinated grouper research programme in the Asia-Pacific region. This could be facilitated by:
  - establishment of a research programme comprising institutional or collaborative projects to address the key issues identified in this workshop - facilitated by NACA in cooperation with other organisations and institutes such as APEC, AIT, and SEAFDEC,
  - agreements by institutions to participate in a regional coordinated research programme on grouper aquaculture technology development, and
  - additional training opportunities, for example through staff exchanges and short-term attachments at participating institutions.
3. There is a need for improved exchange and dissemination of grouper research findings. This could be facilitated by:
  - institutional support for researchers to attend grouper aquaculture sessions at

- regional conferences and workshops,
- focussed technical workshops on aspects of grouper aquaculture such as breeding and larviculture, grow-out diet development, and fish health issues,
- reporting of research findings in regional aquaculture magazines (*Asian Aquaculture* and *Aquaculture Asia*) and journals, and on the NACA grouper web site.

#### 4. Implementation

- NACA in cooperation with other institutes will prepare a cooperative grouper aquaculture research and development programme based on the above recommendations and specific research needs detailed in this workshop,
- the research programme will be circulated to respective institutes seeking institutional support and commitment,
- seeking of funding support for specific projects under the grouper aquaculture research and development programme.

#### Where to now?

To be successful, this Asia-Pacific Grouper Network will rely heavily on the active cooperation of all participants. While NACA will continue to coordinate activities within the network, the active participation of researchers and research institutes will be vital to the research network achieving its objectives. Already this collaborative approach has generated a lot of interest, and further research cooperation is being planned, with ACIAR and APEC.

Anyone involved in, or interested in, grouper aquaculture is invited to contact the people below

and participate in its activities—or alternatively log on to:

<http://www.agri-aqua.ait.ac.th/grouper/>

#### Further information

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## Grouper aquaculture news and abstracts

As one of the initiatives of the Asia-Pacific Grouper Network (see article above), current news and research outcomes on the development of aquaculture technology for groupers and other high-value reef fish species will be published in a number of regional magazines and bulletins, including the *SPC Live Reef Fish Bulletin*. Any contributions to this section would be greatly appreciated. Contact Mike Rimmer (see contact in previous article) for further details.

#### Research outcomes

The following abstracts on various aspects of grouper culture are from papers and posters presented at the Fifth Asian Fisheries Forum—International Conference on Fisheries and Food Security Beyond the Year 2000—held in Chiang Mai, Thailand, from 11–14 November 1998.