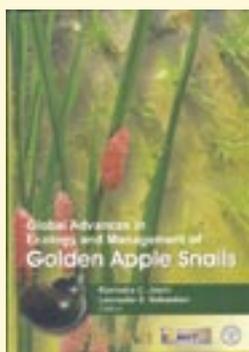


New FAO Publications

Joshi, R.C. & L.S. Sebastian (eds.) 2006. Global advances in ecology and management of golden apple snails. Philippine Rice Research Institute, Nueva Ecija, Philippines. 588 pp.



[FAO supported publication.](#)

The golden apple snail (GAS), *Pomacea canaliculata*, was intentionally introduced from its original floodplain habitats in South America to Asia in the late 1970s and early 1980s in an attempt to capture a conjectured demand for snail meat as a delicacy in major Asian and European

markets. It was claimed that the snail could become an important species for aquaculture both for export as well as to provide cheap protein to poor farmers since the snails were easy to breed and plant feeds were going to be cheap and readily available. What happened instead is that it became the first major exotic pest of flooded rice to invade tropical and subtropical Asia since the Green Revolution and is in the top 100 list of the world's most invasive alien species.

Significantly, GAS spread throughout the world's most rice-dependent region only a few years before the adoption of a number of multilateral environmental agreements that provide a practical regulatory framework to reduce and eliminate such invasions. Under the provisions of the Convention on Biological Diversity (1992), the FAO Code of Conduct on Responsible Fisheries (1995) or the revised International Plant Protection Convention (1997), the GAS would have been subject to a rigorous risk analysis which would have assessed the potential environmental impact on local ecosystems. Had the global framework built on these agreements been in force before 1980, instead of more than 15 years later, GAS would have faced much greater difficulty in being spread to new countries.

These historical events make this book a doubly important case study of global significance. First, it presents in depth the ecology and economic impact of an aquatic alien invasive species in the world's single largest food-producing agroecosystem. Second, it demonstrates the stunning scope and growing impact of the multilateral trade and environmental agreements that have been adopted since GAS arrived in Asia.

This book is critically important because it provides a compendium of the fundamental science required to reform policies, design strategies, and implement management, and because it sets before the global audience a thoroughly convincing case for the vital and ongoing role of international agreements that facilitate international trade while protecting human health and the environment.

Chapter contributions by FIMA staff include:

Halwart, M. 2006. Fish as biological control agents of golden apple snails in Philippine rice fields, p. 363-374.

Halwart, M., H.J. Poethke & G. Kaule. Golden snail population ecology in rice-fish culture and rice monoculture: a modeling approach, p. 375-392.

Halwart, M. & D.M. Bartley. International mechanisms for the control and responsible use of alien species in aquatic ecosystems, with special reference to the golden apple snail, p. 449-458.

For further information please contact: joshiraviph@gmail.com.



THE FAO AQUACULTURE TRAINING MANUAL: VERSION 2 - TRILINGUAL

The FAO Fisheries and Aquaculture Department has published the second version of the CD-ROM of the *FAO Training Series: Simple methods for aquaculture*. The first version of the CD-ROM was released in 2003 in English and French. This second release has been revised, improved and includes also all manuals in Spanish. The Internet version of the CD-ROM is also available on the FAO Web site ftp://ftp.fao.org/FI/CDrom/FAO_Training/Start.htm.

The following manuals have been published in the *FAO Training Series*:

Volume 4 - Coche, A.G. & H. Van der Wal. Water for freshwater fish culture. 1981. 111 p.

Volume 6 - Coche, A.G. Soil and freshwater fish culture. 1986. 174 p.

Volume 16 - Coche, A.G. Topography for freshwater fish culture.



1. Topographical tools. 1988. 328 pp.
2. Topographical surveys. 1989. 266 pp.

Volume 20 - Coche, A.G. & J.F. Muir. Pond construction for freshwater fish culture.

1. Building earthen ponds. 1995. 355 pp.
2. Pond-farm structures and layouts. 1992. 214 pp.

Volume 21 - Coche, A.G. & J.F. Muir. Management for freshwater fish culture.

1. Ponds and water practices. 1996. 233 pp.
2. Farms and fish stocks. 1998. 341 pp.

Volume 24 - Gopalakrishnan, V. & A.G. Coche (comp.). Handbook on small-scale freshwater fish farming. 1994. 205 pp.

The five training manuals on *Simple methods for aquaculture and the Handbook on small-scale freshwater fish farming* presented in this CD-ROM have been produced by the now Aquaculture Management and Conservation Service (FIMA) of the Fisheries and Aquaculture Management Division, FAO Fisheries and Aquaculture Department. These manuals are written in simple language and focus on the practical aspects of semi-intensive fish culture in freshwater, from site selection and fish farm construction to the raising, final harvesting and marketing of the fish. They are primarily intended for extension workers, technicians and teachers, to help them present the practical aspects of freshwater fish farming to small-scale farmers in developing countries.

Copies of the CD-ROM can be ordered from: Publications-Sales@fao.org

Further details can be obtained by writing to Mr Valerio Crespi at FAO/HQ - E-mail: Valerio.Crespi@fao.org.

Halwart, M.; Kumar, D. & Bondad-Reantaso, M.G. (comps). 2005. Papers presented at the FAO/NACA Consultation on Aquaculture for Sustainable Rural Development. Chiang Rai, Thailand, 29–31 March 1999. *FAO Fisheries Report*. No. 611, Suppl. Rome, FAO. 282 pp.

The Consultation took an overview of the role of small-scale aquaculture in providing livelihoods for rural communities and discussed various related issues including its future potential, constraints that impede development, government policies and priorities, and strategies that can be employed for using small-scale aquaculture as an entry point for satisfying the basic human development needs. From the country statements, lessons drawn from field projects, experiences of regional and international development organizations and donor agencies, and the thematic reviews it was implied that small-scale rural aquaculture contributes significantly to supplementing family income, enhancing food security, generation of gainful employment opportunities in rural areas, improving social equity and environmental well being. It was also expressed that the majority of smallholders and landless families in rural areas still practice low input – low output methods relying on family labour and depending largely upon indigenous knowledge and as such there is great scope for improving productivity, but a range of obstacles impede this development. Issues related to the weak institutional support for small-scale rural aquaculture were also pointed out. There was general agreement that there is a need to have a positive shift from technology-led production-oriented interventions to people-centred sustainable livelihood approach.

A growing awareness towards holistic and participatory approach to development to enhance the quality of life of rural poor communities was clearly noted. This is beginning to happen with the formation of farmers' groups or associations that empower the small farmers to have access to resources, technology and support services. Credit and other services become more accessible to small farmers through participatory micro-finance programme with the establishment of the group-based micro-credit/savings schemes. Participatory approaches were considered as a requisite criteria for the planning and implementation of aquaculture projects. Recognizing the role of rural women in various

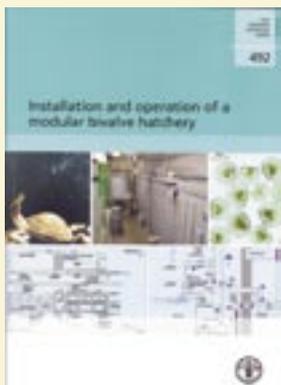
farming activities it was clearly emphasized that women should be involved in planning and implementing development activities. They should be given equal rights and opportunities through capacity building so as to gain more access to resources for development.

It was also realized that there has been little coordinated attempt within the region to harness the potential of small-scale aquaculture in rural livelihood development and as such there is a need to develop a programme with a specific focus on small-scale aquaculture within an overall farming system context and to demonstrate improved forms of aquatic resources management in practice at the level of the community. Rural development would be enhanced through improved coordination and cooperation between organizations focusing on sustainable rural development through aquaculture programmes. This needs a clear national policy and well-defined institutional framework. Lessons and experiences of a series of field projects would be fed into policy through wider national structures and institutions. Exchange of information about lessons, experiences and policies through regional network would enhance the quality and pace of rural development through small-scale aquaculture. In the background of these emerging issues the draft Sustainable Aquaculture Rural Development programme concept was thoroughly discussed in the subsequent sessions through parallel working group discussions and a revised framework was developed through consensus to serve as guiding principles for the formulation of a regional programme "Aquaculture for Sustainable Rural Livelihood Development (ASRLD)."



Sarkis, S. & Lovatelli, A. (comp./ed.). 2006. Installation and operation of a modular bivalve hatchery. *FAO Fisheries Technical Paper*. No. 492. Rome, FAO. 2006. 173 pp.

Limiting factors such as minimal capital investment, lack of technical support or expertise, and available physical space, may put severe restrictions on setting up a hatchery. Not all investors have the means or the will to take the risk to support a large commercial aquaculture operation without substantial proof of its production capacity. For these reasons, the



setup of an inexpensive modular hatchery may be a simpler option to the start-up of a large commercial operation, or maybe sufficient to the needs of a smaller operation. This manual was written for those interested in establishing a bivalve hatchery, with minimal experience in this activity and limited

technical support and restricted access to information. The manual stands as an entity, providing not only the technicalities of setting up and operating a hatchery, but also makes some of the scientific background, deemed useful to the aquaculturist, readily accessible. The manual is divided into chapters for each stage of rearing: broodstock conditioning, algal culture, hatchery, nursery, growout and economic considerations. Every chapter is an entity, the first five include both the physical requirements and culture considerations and procedures for the relevant rearing stage. The final chapter on economic considerations provides an insight into the labour involved for each stage of production, along with a list of equipment and supplies, which may be used as a template for a new installation.

This new publication is part of three FAO technical publications dedicated to bivalve aquaculture. The first volume of this series entitled "Hatchery culture of bivalves: A practical manual" (FAO Fisheries Technical Paper. No. 471) was published in 2004 and is now available in Chinese, English, French and Spanish. The Arabic version is under preparation and will be available in the second quarter of 2007. The third publication of this series deals with bivalve depuration. This volume will be available towards the end of 2007.

Further details can be obtained by writing to Mr Alessandro Lovatelli at FAO/HQ (E-mail: Alessandro.Lovatelli@fao.org).

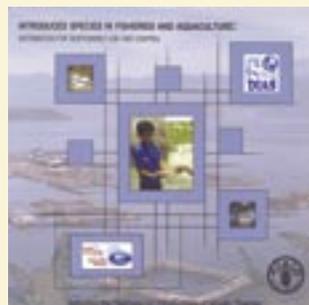


Inland Water Resources and Aquaculture Service, Fishery Resources Division, Fisheries Department. 2006. *State of World Aquaculture: 2006. FAO Fisheries Technical Paper. No. 500.* Rome, FAO. 134 pp.

Aquaculture is developing, expanding and intensifying in almost all regions of the world. Increasing global population demand for aquatic food products and it is expected that lion's share of this future demand will come from aquaculture. This document analyses the past trends that have led the aquaculture sector to its current status and describes its current status globally.



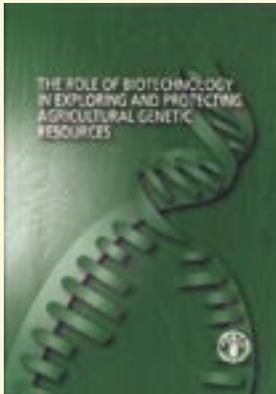
Bartley, D.M. (ed./comp). 2006. *Introduced species in fisheries and aquaculture. Information for responsible use and control [CD-ROM].* Rome, FAO.



Introduced species in fisheries and aquaculture: information for responsible use and control. Introduced species, also known as alien or exotic species, are a proven means to increase production and value from aquatic ecosystems.

They are also recognized as a significant threat to aquatic biodiversity. Resource managers, the fishery and aquaculture sectors and policy-makers must balance the benefits versus the risks of using introduced species; accurate information is essential. This CD-ROM contains a variety of information, including guidelines, codes of practice, international instruments, publications and considerations that will facilitate responsible use and control of introduced species. A main feature is the Database on Introductions of Aquatic Species (DIAS) that contains over 5 000 records of international introductions of aquatic species.

Ruane J. & Sonnino A. (eds). 2006. The role of biotechnology in exploring and protecting agricultural genetic resources. Rome, FAO. 187 pp.



This publication provides an up-to-date overview of the current status of the world's genetic resources for food and agriculture; of the use of biotechnology tools for characterizing and conserving these genetic resources, and of the many specific issues involved in using them for these purposes in developing countries. It brings together papers from an international workshop held on 5-7 March 2005 in Turin, Italy, on the role of biotechnology for the characterization and conservation of crop, forest, animal and fishery genetic resources as well as the background and summary documents from an e-mail conference on the same subject that was held three months afterwards.

Specific reference is made to the article "Status of the world's fishery genetic resources" by Devin Bartley.



Josupeit, H. 2006. The Market for Nile Perch FAO GLOBEFISH Research Programme, Vol. 84. Rome, FAO. 94 pp.



This report examines the international and regional trade of Nile perch from the Lake Victoria area. It mainly focuses on the production and product types, on international markets in the EU, Africa, Australia, Japan, and the Americas. It is quite a difficult moment for Nile perch on the world market. The only market

left for Nile perch is the EU market, where the species is well established since a long time. The study also gives some recommendations for future promotion of Nile perch in the world market.

van Anrooy, R.; Secretan, P.A.D.; Lou, Y.; Roberts, R. & Upare, M. 2006. Review of the current state of the world aquaculture insurance. *FAO Fisheries Technical Paper No. 493*. Rome, FAO. 92 pp.

Risk management is increasingly gaining attention within the aquaculture sector, as reflected in the development and increasing implementation of better management practices, codes of conduct and codes of good practice, standard operational procedures, certification and traceability. Aquaculture insurance is one of the tools used in the management of risks in aquaculture. This publication provides an overview of the current status of aquaculture stock insurance in the world. Seven syntheses covering Asia, China, Europe, North America, Oceania, South America and sub-Saharan Africa show the specificities of the situation with regard to aquaculture stock insurance. The publication also presents a summary of these syntheses, together with conclusions and clear recommendations at various levels to increase the contribution of aquaculture stock insurance to the sustainable management and development of the aquaculture sector.



This publication can be downloaded in pdf at the following website:

<ftp://ftp.fao.org/docrep/fao/009/a0583e/a0583e00.pdf>



The FAO project TCP/LAT/3001 "Improving aquatic animal health and quality and safety of aquatic products", which is being implemented together with the National Board of Fisheries (NBF) of the Ministry of Agriculture of Latvia and the Latvian Fish Resources Agency, recently published the following titles in Latvian language:

Review of the Current Status of Aquaculture in Latvia

Strategy for sustainable development and management of aquaculture in Latvia



The same project also funded the translation and publication of the Code of Conduct for Responsible Fisheries.

More information on the project and its outputs can be obtained through the website of the NBF (<http://www.vzp.gov.lv/>), from Mr Normunds Riekstins, Director NBF, (Normunds.vzp@latnet.lv), or from the following staff of FAO, Ms Melba Reantas, Mr Raymon van Anrooy and/or Mr Rohana Subasinghe.



Tacon, A.G.J.; Hasan, M.R. & Subasinghe, R.P. 2006. Use of fishery resources as feed inputs for aquaculture development: trends and policy implications. *FAO Fisheries Circular*. No. 1018. Rome, FAO. 99 pp.

Although aquaculture's contribution to total world fisheries landings has increased ten-fold from 0.64 million tonnes in 1950 to 54.78 tonnes in 2003, the finfish and crustacean aquaculture sectors are still highly dependent upon marine capture fisheries for sourcing key dietary nutrient inputs, including fishmeal, fish oil and low value trash fish. This dependency is particularly strong within aquafeeds for farmed carnivorous finfish species and marine shrimp. On the basis of the information presented within this fisheries circular, it is estimated that in 2003 the aquaculture sector consumed 2.94 million tonnes of fishmeal and 0.80 million tonnes of fish oil, or the equivalent of 14.95 to 18.69 million tonnes of pelagics (using a dry meal plus oil to wet fish weight equivalents conversion factor of 4 to 5). Moreover, coupled with the current estimated use of 5 to 6 million tonnes of trash fish as a direct food source for farmed fish, it is estimated that the aquaculture sector consumed the equivalent of

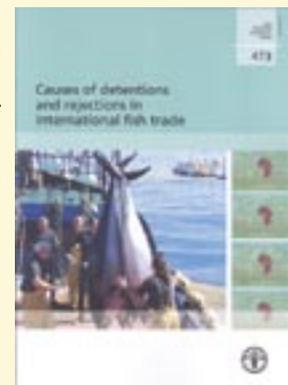
20-25 million tonnes of fish as feed in 2003 for the total production of about 30 million tonnes of farmed finfish and crustaceans (fed finfish and crustaceans 22.79 million tonnes and filter feeding finfish 7.04 million tonnes). At a species-group level, net fish-consuming species in 2003 (calculated on current pelagic input per unit of output using a 4-5 pelagic: meal conversion factor) included river eels, 3.14-3.93; salmon, 3.12-3.90; marine fish, 2.54-3.18; trout, 2.47-3.09 and marine shrimp, 1.61-2.02; whereas net fish producers included freshwater crustaceans, 0.89-1.11; milkfish, 0.30-0.37; tilapia, 0.23-0.28; catfish, 0.22-0.28; and feeding carp, 0.19-0.24.

Particular emphasis within the report is placed on the need for the aquaculture sector to reduce its current dependence upon potentially food-grade marine capture-fishery resources for sourcing its major dietary protein and lipid nutrient inputs. Results are presented on the efforts to date concerning the search for cost-effective dietary fishmeal and fish oil replacers, and policy guidelines are given for the use of fishery resources as feed inputs by the emerging aquaculture sector.



Ababouch, L.; Gandini, G. & Ryder, J. 2005. Detentions and rejections in international fish trade. *FAO Fisheries Technical Paper*. No. 473. Rome, FAO. 110 pp.

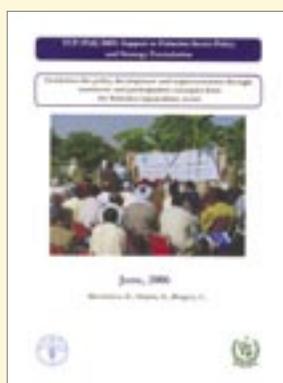
This paper is based on a study that identifies the major causes of detentions and rejections of fishery products in international trade and also assesses control procedures used by the main importing countries/regions, namely Canada, the European Union, Japan and the United States of America. Developing a good understanding of these control procedures and the causes of detentions/rejections is very useful for FAO, which can use the gained insights in its work on the issues facing international harmonization and promotion of equivalence among seafood trading partners.



It can also be beneficial for trading partners in their quest to reduce seafood wastages and fishborne illnesses, as well as for donors in their assistance programmes. Accessing essential data proved a major difficulty in compiling the study. This report makes several recommendations for improving the data and their dissemination that would promote transparency and enable FAO to monitor the situation on a regular basis and adapt its international programme in fish safety and quality accordingly.



Macfadyen, G.; Haylor, G. & Brugere, C. 2006. Guidelines for policy development and implementation through consensus and participation: examples from the fisheries/aquaculture sector. FAO/Government of Pakistan. 48 pp.



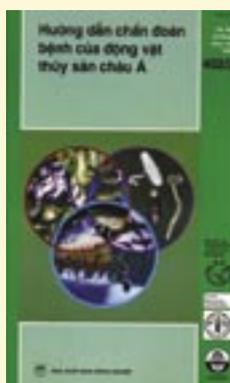
These guidelines are the result of a 'stand-alone' activity (Activity 3) undertaken as part of the FAO Technical Co-operation Project (TCP/PAK/3005) "Support to Fisheries Sector Policy and Strategy Formulation in Pakistan". The guidelines provide practical advice, presented in an easily understand-

able format, on a) methods of reaching policy consensus, and b) subsequent implementation of agreed policy. Planning for policy development and its implementation is important because it can assist with increasing the contribution of the fisheries and aquaculture sectors to local and national development, through poverty alleviation, food security and economic growth.

The principal beneficiaries of these guidelines are intended to be those stakeholders in the fisheries sector who implement policy change processes as well as those who define and then implement fisheries policy. However, it is hoped that much of the content of the guidelines will be equally applicable and useful for policy planners and implementers in other sectors.

The guidelines are divided into three main sections. The first section (Section 1) deals with policy development and focuses in particular on a consensus-building technique, which has been successfully used in India. The second section (Section 2) focuses more specifically on a number of requirements for successful policy implementation. The third section (Section 3) describes the process used in Pakistan to agree fisheries/aquaculture policy and implementation mechanisms. This process built on learning from the elements described in sections 1 and 2 and elsewhere.

These guidelines have been published in both English and Urdu.



The FAO Fisheries Technical Paper No. 402/2 Asia Diagnostic Guide to Aquatic Animal has been translated into Vietnamese.

Snapshots of FAO Aquaculture Newsletters

The FAO Aquaculture Bulletin (1968-1977) and the "ÄDCP Aquaculture Minutes" (1988-1990) are the antecedents of the FAO Aquaculture Newsletter or FAN, the first issue of which was released in June 1992 under the leadership of Michael New.

The design of FAN went to several changes from its original design (Issue nos. 1-13, June 1992 to August 1996), to a second slightly revised design (Issue nos. 14-19, December 1996 to August 1998), and to its third (full color and magazine type) and current design (Issue nos. 20-36, December 1998 to December 2006). Issue nos. 20-23 were lead by Chief Editor Z H Shehadeh, with Editorial Board members J Jia, M Pedini, I Feidi, R Subasinghe and D Bartley; supported by Layout and Production team of S Borghesi and J L Castilla. D Bartley and R Subasinghe jointly took charge of the editorship of Issue no. 24. From Issue nos. 25 to 28, R Subasinghe took over as Chief Editor with Editorial Board members J Jia, M Pedini, D Bartley and A Van Houtte. Issue nos. 29 to 36, R Subasinghe continued as Chief Editor with some changes in the members of the Editorial Board – A Van Houtte remained as member until Issue no. 31 (July 2004), and M Reantaso joined the Editorial Board beginning Issue no. 32 (December 2004). In 2000, the first CD ROM of FAN was released containing Issue nos. 15 to 25 (1997 to 2000), a second CD ROM was released in 2006 containing Issue nos. 26 to 35.

