

Bondad-Reantaso, M.G., McGladdery, S.E., East, L & Subasinghe, R.P. (eds.) 2001. *Asia Diagnostic Guide to Aquatic Animal Diseases*. *FAO Fisheries Technical Paper* No. 402, Supplement 2. Rome, FAO. 2001. 240p.



The Asia Diagnostic Guide to Aquatic Animal Diseases or 'Asia Diagnostic Guide' is a comprehensive, up to date diagnostic guide for the pathogens and diseases listed in the NACA/FAO/OIE Quarterly Aquatic Animal Disease Reporting System including a number of other diseases which are significant in

the Asia region. It was developed from technical contributions of members of the Regional Working Group (RWG) and Technical Support Services (TSS) and other aquatic animal health scientists in the Asia Pacific region who supported the Asia Pacific Regional Aquatic Animal Health Management Programme. The objective was to produce an Asia diagnostic guide, that could be of specific use in the region, for both farm and laboratory level diagnostics, to complement the Manual of Procedures for the implementation of the "Asia Regional Technical Guidelines on Health Management for the Responsible Movement of Live Aquatic Animals". This Asia Diagnostic Guide could then be used to expand national and regional aquatic animal health diagnostic capabilities that will assist countries in upgrading technical capacities to meet the requirements in the OIE International Aquatic Animal Code (Third Edition) and the OIE Diagnostic Manual for Aquatic Animal Diseases (Third Edition) and WTO's Sanitary and Phytosanitary Agreement (SPS), and in support of relevant provisions in the FAO's Code of Conduct for Responsible Fisheries. The information in the Asia Diagnostic Guide is presented in a format that spans from gross observations at the pond or farm site (Level 1), to guidance for information on technologically advanced molecular or ultrastructural diagnostics and

laboratory analyses (Levels II and III, and OIE aquatic animal health standards), thus, taking into account international, regional, and national variations in disease concerns, as well as varying levels of diagnostic capability between countries of the Asia Pacific region.



This CD on Health Management for the Responsible Movement of Live Aquatic Animals in Asia contains the 3 following technical papers in pdf.

FAO/NACA. 2000. Asia Regional Guidelines on Health Management for the Responsible Movement of Live Aquatic Animals and The Beijing Consensus and Implementation Strategy. *FAO Fisheries Technical Paper* No. 402.

FAO/NACA. 2001. Manual of procedures for the implementation of the Asia Regional Technical guidelines on Health Management for the Responsible Movement of Live Aquatic Animals *FAO Fisheries Technical Paper* No. 402/1.

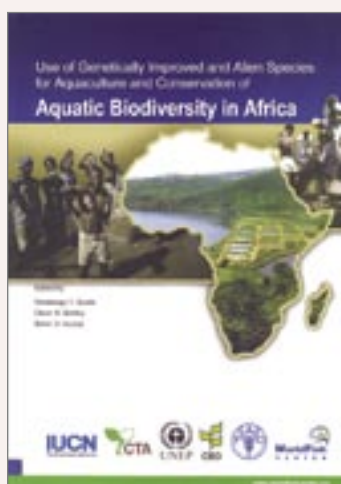
FAO/NACA. 2001. Asia Diagnostic Guide to Aquatic Animal Diseases. *FAO Fisheries Technical Paper* No. 402/2. (see left column).



Gupta, M.V., Bartley, D.M. & Acosta, B.O. (eds). 2004. Use of genetically improved and alien species for aquaculture and conservation of aquatic biodiversity in Africa. WorldFish Center Conference Proceedings 68, 113p.

Aquaculture species are being domesticated and improved through genetic enhancement. Despite the benefits of improved fish in terms of increased production, there are risks associated with conservation of biodiversity when the introduced strains/species escape in natural waters. This is especially important in Africa which is one of the world's repository of diverse freshwater fish fauna and home to native tilapias. Thus, this proceedings is a useful tool in bringing awareness among African institutions, agencies, planners of the issues involved in improving production through introductions of improved strains/alien species while sustaining the biodiversity.

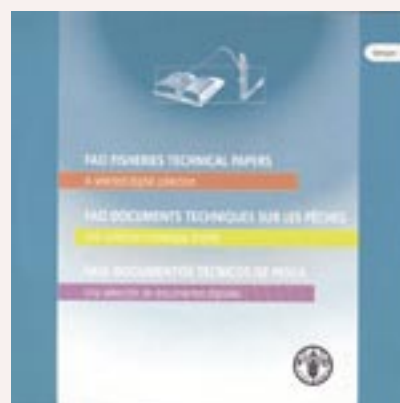
See article on Quarantine procedures and their implementation by R. Subasinghe and Introduction of alien/Strains and their impact on biodiversity by D. Bartley and F. Martin.



FAO Fisheries Technical Papers. A selected digital collection. Version 2 (CD-ROM) Rome, 2004, Trilingual (En/Fr/Es) ISBN 92-5-005140-9 TC/C/Y5435/Tri

The FAO Fisheries Technical Papers form one of the main regular series publications of the FAO Fisheries Department. The first volume was published in 1958 and more than 400 volumes in this series have now been published. In order for the FAO Fisheries publications to reach a wider audience, particularly those titles which are no longer available in print and are still frequently requested, the Department has started work on retrospective digitization. This second release of the CD ROM includes the full-text of 180 FAO Fisheries Technical Papers in English, French and Spanish, depending upon the language/s of the original publication.

A copy of the CD may be requested from FAO Fisheries Library, V.le delle Terme di Caracalla, 00100 Rome - Italy, e-mail: fi-library@fao.org





Arthur, J.R. & Bondad-Reantaso M.G. (eds). 2004. *Capacity and Awareness Building on Import Risk Analysis (IRA) for Aquatic Animals. Proceedings of the Workshops held 1-6 April 2002 in Bangkok, Thailand and 12-17 August 2002 in Mazatlan, Mexico. APEC FWG 01/2002. NACA, Bangkok, Thailand. 203p.*

The Asia-Pacific Economic Cooperation, Fisheries Working Group project APEC FWG 01/2002 "Capacity and Awareness Building on Import Risk Analysis (IRA) for Aquatic Animals", proposed in 2000 during the 12th Meeting of the APEC FWG, was successfully implemented in 2002-2004. The two training/workshops were successfully conducted in Bangkok, Thailand (1-6 April 2002) and Mazatlan, Mexico (12-17 August 2002). A total of 130 participants comprised of regulatory authorities, administrators and aquatic animal health specialists responsible for trade of live aquatic animals participated in the two training/workshops. The participants represented 37 countries in the Asia-Pacific (i.e., Australia, Bangladesh, Cambodia, Canada, China, Taiwan Province of China, Hong Kong China, India, Indonesia, Japan, Korea RO, Malaysia, Myanmar, Nepal, New Zealand, Pakistan, Philippines, Singapore, Sri Lanka, Thailand and Vietnam) and the Americas (i.e., Belize, Brazil, Chile, Colombia, Costa Rica, Cuba, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Peru, the United States of America and Venezuela). These training/workshops not only provided a venue to raise awareness and enable better understanding of the concepts of IRA, they also fostered better communication between government representatives and aquatic animal health specialists on issues related to aquatic animal movement, and enhanced subregional, regional and international cooperation on issues related to aquaculture health and trade of aquatic animals.

The number of economies taking part in the two workshops and the participation of non-APEC economies, FAO and NACA member governments and collaborating partner organizations such as OIE, MRC, SPC, DANIDA, OIRSA and private-sector representatives demonstrate the great value of this APEC initiated activity and APEC's important role in supporting responsible aquaculture, trade and health management practices for better productivity, increased and stable contribution to food security, promotion of sustainable aquaculture and preservation of biodiversity.

This report, which contains 26 technical presentations, is divided into four parts: (a) Background for Risk Analysis, (b) The Risk Analysis Process, (c) Risk Analysis and the World Trade Organization: Country Experiences and (d) National Strategies for Aquatic Animal Health. Four annexes are also included containing the (a) Workshop Programs, (b) Lists of Participants, (c) Working Group Recommendations and (d) List of Acronyms and Abbreviations.

See articles by R. P. Subasinghe and D.M. Bartley on Risks of Species Introduction; R.P. Subasinghe on Risks of Chemical Usage in Aquaculture and M.G. Bondad-Reantaso on Transboundary Aquatic Animal Diseases/Pathogens and Development of National Strategies on Aquatic Animal Health in Asia-Pacific.



Arthur, J.R., Bondad-Reantaso, M.G., Baldock F.C. & Rodgers C.J. 2004. *Manual on pathogen risk analysis for the safe movement of aquatic animals (FWG/01/2002). APEC/DoF/NACA/FAO, 59p.*

Risk analysis for pathogens of aquatic animals is a relatively new field, and only a few countries have much experience in this area. The purpose of this manual is to provide a simplified overview of the risk analysis process to assist responsible individuals in developing countries to begin formulating national policies and approaches to conducting risk analyses. This manual should thus be useful to Competent Authorities, senior policy and management staff, and members of the private sector involved in regulating or conducting international and domestic trade in live aquatic animals and their products.



The initial sections of the manual provide information and guidance on how risk analysis facilitates trade while protecting national biological, social and economic resources; a brief review of pertinent international agreements and responsibilities; and a discussion of the issues surrounding the development of national policy and legislation. Following sections then provide a general overview of the process and the mechanisms needed (expertise, procedures, scoping an analysis, etc.) to begin a risk analysis. The individual components are then discussed in detail. These include risk communication, hazard identification, risk assessment and risk management. The remaining sections address some other important considerations, such as the use of "in house" vs more extensive risk analysis, the importance of good scientific review, qualitative and quantitative approaches to risk analysis, the precautionary approach, developing countries and risk analysis, and the role of politics and science in the risk analysis process. A list of the Literature Cited is given, and finally, two annexes provide a list of Internet resources related to risk analysis for aquatic animals (Annex I) and a list of national agencies with responsibilities for implementing risk analysis and other related aquatic animal health activities within participating Asia Pacific Economic Cooperation (APEC) Economies and Network of Aquaculture Centres in Asia Pacific (NACA) and FAO Member Countries (Annex II). Throughout the manual, hypothetical examples of various risk analysis scenarios are presented, with the primary goal of encouraging readers to consider how these scenarios might apply to their particular country situations.

These publications are available for free download at the Publication section at the NACA website at <http://www.enaca.org>



FAO Yearbook of fishery statistics: Aquaculture production. Vol.94/2. 2002. *FAO Fisheries Series No. 67. FAO Statistics Series No. 181.*

The FAO Yearbook of fisheries statistics: Aquaculture production is a compilation of statistics on world production of fish, crustaceans, molluscs and other aquatic animals and plants produced from all culture practices. The data were formerly published yearly in FAO Fishery Circular No. 815 (and following revisions up to



No. 11). The Statistics, in quantity and value, are presented by country or territory, species, culture environment and year, and for various aggregations. In order to provide complete coverage of aquaculture production statistics throughout the world, where officially reported national statistics are lacking or are considered unreliable, FAO makes estimates based on the best information available. FAO gratefully acknowledges the cooperation received from national authorities and others providing statistics and information, and welcomes comments, suggestions and additional information from users of the statistics.



A CD Fishstat Plus (v. 2.30) is now available.

Fishstat Plus provides access to Fishery Statistics of various sorts. In this disk, the following datasets are available:

- Aquaculture production (quantities, tons) 1950-2002
- Aquaculture production (values, thousands US\$) 1984-2002
- Capture production 1950-2002
- Total production 1950-2002
- Commodities trade and production 1976-2002
- GFCM (Mediterranean and Black Sea) capture production 1970-2002
- CECAF (Eastern Central Atlantic) capture production 1970-2002
- Southeast Atlantic capture production 1975-2002.

Sugiyama, S., Staples, D. & Funge-Smith, S.J. 2004. Status and potential of fisheries and aquaculture in Asia and the Pacific. FAO Regional Office for Asia and the Pacific. RAP Publication 2004/25. 53p.

The fisheries and aquaculture sector is of fundamental importance to the Asia-Pacific region providing opportunities for revenue generation and employment, and contributing to food security. This document reviews the current status of inland and marine fisheries resources and their contribution to national economies



and food security. Regional fishery data and information stored in FAO databases are analysed to provide a comprehensive picture of production trends of fisheries and aquaculture in the Asia-Pacific region, which is further illustrated by a detailed view of sub-regions and aquaculture production by species groups. It also touches upon issues that require closer attention in order for the fisheries resources to be managed in a responsive and sustainable manner.

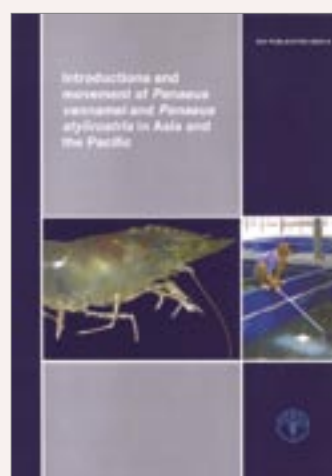


Introductions and movement of *Penaeus vannamei* and *Penaeus stylirostris* in Asia and the Pacific. RAP publication 2004/10. 92p.

Beginning in 1996, *P. vannamei* was introduced into Asia on a commercial scale. This started in Mainland China and Taiwan Province of China and subsequently spread to the Philippines, Indonesia, Viet Nam, Thailand, Malaysia and India. These introductions, their advantages and disadvantages and potential problems are the focus of this report. China now has a large and flourishing industry for *P. vannamei*, with Mainland China producing more than 270 000

metric tonnes in 2002 and an estimated 300 000 metric tonnes (71 percent of the country's total shrimp production) in 2003, which is higher than the current production of the whole of the Americas. Other Asian countries with developing industries for this species include Thailand (120 000 metric tonnes estimated production for 2003), Viet Nam and Indonesia (30 000 metric tonnes estimated for 2003 each), with Taiwan Province of China, the Philippines, Malaysia and India together producing several thousand tonnes. Total production of *P. vannamei* in Asia was approximately 316 000 metric tonnes in 2002, and it has been estimated that this has increased to nearly 500 000 metric tonnes in 2003, which is worth approximately US\$ 4 billion in terms of export income. However, not all the product is exported and a large local demand exists in some Asian countries. This report has attempted to gather all of the currently available data on the extent of *P. vannamei* and *P. stylirostris* importation and culture in Asia, its potential problems and benefits, and in this way serve as a source document from which to investigate further the means by which control over this issue might be re-established. Recommendations aimed at controlling the importation, testing and culture of these species have been made for all levels and are included in this report.

For further information please contact: The Aquaculture Officer, RAPI, FAO Regional Office for Asia and the Pacific, Maliwan Mansion, 39 Pra At hit Road, Bangkok, 10200 Thailand; e-mail: FAO-RAP@fao.org



FAO-ASEAN strategic planning workshop on harmonization of standards for shrimp export-import. Bangkok, Thailand, 4 to 6 November 2003. RAP publication 2004/07. 43p.



Owing to the increasing concerns regarding disparities in quality control and inspections standards among ASEAN countries and their ability to export seafood commodities (especially shrimp) to other regions, the ASEAN Sectoral Working Group on Fisheries (ASWGFi)

meeting in Lao PDR in May 2003 formed an ASEAN Sectoral Task Force to harmonize quality and inspection standards for shrimp export and imports in the region. The first strategic planning workshop of the task force was held in Bangkok, Thailand from 4 to 6 November 2003. This document contains the report of the workshop as well as selected parts of the presentations. RAP 2004/07

For further information please contact: The Aquaculture Officer, RAPI, FAO Regional Office for Asia and the Pacific, Maliwan Mansion, 39 Pra At hit Road, Bangkok, 10200 Thailand; e-mail: FAO-RAP@fao.org



*The FAO Fisheries Technical Paper No. 450 advertised in FAN 31 is now available in Spanish. Manejo sanitario y mantenimiento de la bioseguridad de los laboratorios de postlarvas de camarón blanco (*Penaeus vannamei*) en América Latina.*



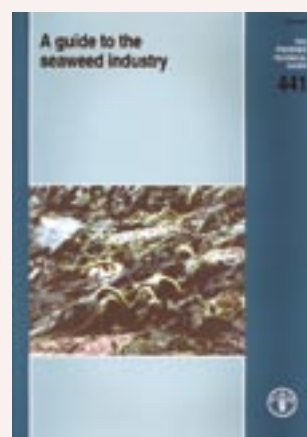
McHugh, D.J. A guide to the seaweed industry. *FAO Fisheries Technical Paper*. No. 441. Rome, FAO. 2003. 105p.

Seaweed can be collected from the wild but is now increasingly cultivated. It falls into three broad groups based on pigmentation; brown, red and green seaweed.

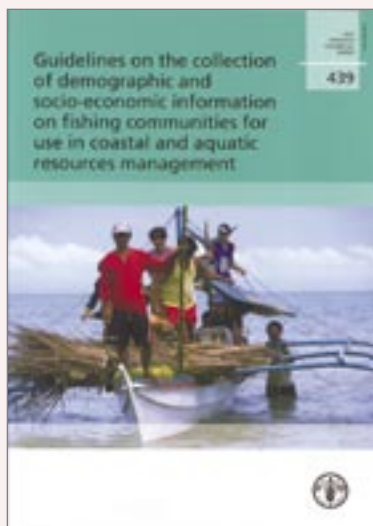
Use of seaweed as food has strong roots in Asian countries such as China, Japan and the Republic of Korea, but demand for seaweed as food has now also spread to North America, South America and Europe. China is by far the largest seaweed producer followed by the Republic of Korea and Japan but seaweeds are today produced in all continents.

Red and brown seaweeds are also used to produce hydrocolloids; alginate, agar and carrageenan, which are used as thickening and gelling agents. Today, approximately 1 million tonnes of wet seaweed are harvested and extracted to produce about 55 000 tonnes of hydrocolloids, valued at almost US\$ 600 million.

This publication also includes the Resources Bank, a CD-ROM, which provides a large amount of additional information for the would-be risk assessor.



Villareal, L.V., Kelleher, V. & Tietze, U. (ed.). 2004. Guidelines on the collection of demographic and socio-economic information on fishing communities for use in coastal and aquatic resources management. *FAO Fisheries Technical Paper*. No. 439. Rome, FAO. 2004. 120p.



Article 10 of the *Code of Conduct for Responsible Fisheries* (CCRF) sets out principles and standards for the integration of fisheries in coastal management. Article 10.2.4 of the CCRF states: "States, in accordance with their capacities, should establish or promote the establishment of

systems to monitor the coastal environment as part of the coastal management process using physical, chemical, biological, economic and social parameters."

The guidelines presented in Part 1 of this Fisheries Technical Paper attempt to identify empirically verifiable key indicators for the identification of socio-economic and demographic issues, problems and opportunities in coastal and aquatic resources management and for monitoring the impact of management measures on the socio-economic well-being of coastal and fishing communities. The guidelines also identify data sources and methods for the collection of data.

Part 2 contains a summary of the proceedings and recommendations of the *Regional Workshop on the Use of Demographic Data in Fisheries and Coastal Development and Management in the Philippines and other Southeast and South Asian Countries* held at the University of the Philippines in the Visayas, Miag-ao, Iloilo, Philippines from 18 to 21 March 2002, as well as selected papers from the workshop. In Part 3, two case studies, one from the United States of America and the other from Italy, describe how socio-economic and demographic indicators are actually used in coastal and aquatic resources management.

Tietze U. & Villareal, L.V. 2003. Microfinance in fisheries and aquaculture. Guidelines and cases studies. *FAO Fisheries Technical Paper* No. 440. Rome, FAO. 2003. 103p.

These guidelines provide general principles and basic considerations for those involved in providing microfinance services to fisheries and aquaculture and for those who intend to include fishing and fish farming communities as part of the client base of their operation. The guidelines further elaborate on lending models, methodologies and policies that have applicability to fisheries and address concerns that are particular to the sector, while adhering to best practices in the microfinance field.

The publication also contains a summary of the proceedings and recommendations of the Report of the Regional Workshop on Microfinance Programmes in Support of Responsible Aquaculture and Marine Capture Fisheries in Asia. The workshop was held in Chiang Mai, Thailand from 16 to 20 December 2002. An overview of recent experiences with microfinance programmes in fisheries and aquaculture in Asia is given and conclusions are drawn regarding future directions and initiatives in this field. The workshop was attended by 31 participants from eight South and Southeast Asian countries: Bangladesh, India, Malaysia, Nepal, the Philippines, Sri Lanka, Thailand and Viet Nam. It brought together experts representing fisheries government institutions, financial institutions, academic and research institutions, NGOs, cooperatives, women's unions, fishermen's associations and technical staff of foreign-assisted projects in aquaculture in the region.

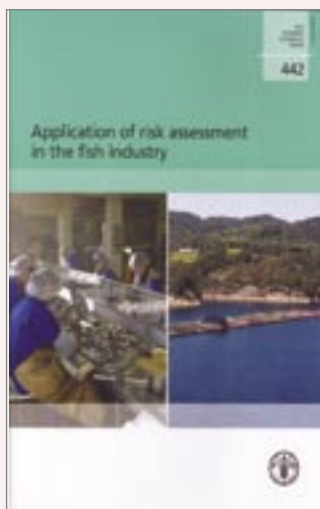
The publication concludes with two examples of successful FAO-executed projects that incorporated microfinance programmes in fishing community development in the Philippines and in small-scale aquaculture development in Viet Nam, with a special focus on gender and poverty alleviation. The case studies provide practical examples of how microcredit can contribute to the empowerment of



women in fishing and fish farming communities, help alleviate poverty and contribute to the socio-economic wellbeing and food security of fishers and fish farmers



Sumner, J., Ross, T. & Ababouch, L. Application of risk assessment in the fish industry. *FAO Fisheries Technical Paper. No. 442. Rome, FAO. 2004. 78p.*



In recent years, the concept of risk has become paramount in international food regulation. Industries are increasingly required to undertake product risk assessment, particularly in the export arena. This publication has been developed as a complete "How to" package on risk assessment for seafood technologists, regulators and health professionals.

It is designed in five parts and takes the user from a basic knowledge to being able to conduct credible risk assessments:

1. The basics of risk assessment: definitions and language of the discipline
2. How to perform risk assessments: stepwise progression
3. How to use risk assessments: risk management, Hazard Analysis Critical Control Point (HACCP), risk profiling
4. Risk Ranger - how to use it
5. Examples of risk assessments: an interactive setting for the reader

Seaweed is a very versatile product widely used for food in direct human consumption. It is also an ingredient for the global food and cosmetics industries and is used as fertilizer and as an animal feed additive. Total annual value of production is estimated at almost US\$ 6 billion of which food products for human consumption represent US\$ 5 billion. Total annual use by the global seaweed industry is about 8 million tonnes of wet seaweed.

Huss, H.H, Ababouch, L & Gram, L. Assessment and management of seafood safety and quality *FAO Fisheries Technical Paper. No. 444. Rome, FAO. 2003. 230p.*

This paper compiles the state of knowledge on fish safety and quality with the view to provide a succinct yet comprehensive resource book to risk and fish quality managers. After an introduction about world fish production and consumption and the developments in safety and quality systems, it provides a detailed review of the hazards causing public health concerns in fish and fish products. It devotes several Chapters to risk mitigation and management tools, with a detailed description of the requirements for the implementation of Good Hygienic and Manufacturing Practices (GHP/GMP), of the Hazard Analysis and Critical Control Point (HACCP) system and of the monitoring programmes to control biotoxins, pathogenic bacteria and viruses and chemical pollutants. Chapters on the use of microbiological criteria, the use of the HACCP approach to target quality aspects other than safety matters, predictive microbiology, traceability and examples of food safety objectives complete the document.



Lovatelli, A. (comp./ed.), Conand, C., Purcell, S., Uthicke, S., Hamel, J.F. & Mercier, A. (eds.). *Advances in sea cucumber aquaculture and management*. *FAO Fisheries Technical Paper*. No. 463. Rome, FAO. 2004. 425p.

The December 2003 issue of the FAO Aquaculture Newsletter (FAN No. 30) reported on the organization and outcome of the international workshop on the "Advances in Sea Cucumber Aquaculture and Management" (ASCAM) organized by the FAO Fisheries Department and the Chinese Ministry of Fisheries. The proceedings of this activity has now been available for a few months and includes all the technical papers presented on the status of the resources and their utilization, on resource management and the on major aquaculture advances achieved in this specific aquaculture field. The recommendations concerning sea cucumber resource management and aquaculture deliberated by the participants appear in the introductory part of the report.

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



Helm, M.M., Bourne, N., & Lovatelli, A. (comp./ed.). *Hatchery culture of bivalves: a practical manual*. *FAO Fisheries Technical Paper*. No. 471. Rome, FAO. 2004. 177p.

Bivalve mollusc culture is an important and rapidly expanding area of world aquaculture production. The majority of production is from natural populations although increasingly stocks are approaching or have exceeded maximum sustainable yields. Stock enhancement through the capture and relaying of natural

seed in both extensive and intensive forms of culture is common practice worldwide but the reliability of natural recruitment can never be guaranteed. A solution to meeting the seed requirements of the bivalve industry, applicable to the production of high unit value species such as clams, oysters and scallops, is hatchery culture. The production of seed through hatchery propagation accounts at the present time for only a small percentage of the total seed requirement but it is likely to become increasingly important.

This manual is a synthesis of the current methodologies applicable to the intensive hatchery culture of bivalve molluscs covering similarities and differences in approach in rearing clams, oysters and scallops in different climatic regions. All aspects of the culture process are described, together with considerations in choosing a site for hatchery development and in the design of suitable facilities. The manual also includes the post-hatchery handling of "seed" bivalves in land- and sea-based nursery culture preparatory to on-growing. This publication is intended to assist both technicians entering this field as well as investors interested in evaluating the complexity of intensive hatchery production. The authors bring together a combined 80 years of experience in the biology, management and operation of hatcheries encompassing a range of the more commonly cultured bivalve species in different parts of the world.

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

