

REVIEW OF THE STATE OF WORLD AQUACULTURE



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REVIEW OF THE STATE OF WORLD AQUACULTURE

by

Inland Water Resources and Aquaculture Service
Fishery Resources Division
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FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
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PREPARATION OF THIS DOCUMENT

The state of the world's fish stocks and aquaculture is reviewed by the Fishery Resources Division every two years for FAO's Committee on Fisheries (COFI). The review formerly included all capture fisheries, but for the Twentieth Session of COFI it was separated into two parts: the world's marine resources, and inland fisheries and aquaculture, identified respectively as Part 1 and Part 2 of the *FAO Fisheries Circular* No. 710. Due to the increased importance of aquaculture production, the review was produced in three parts for the Twenty-first Session of COFI, March 1995. Each part was a separate document, published under the same title: "*Review of the State of World Fishery Resources*". The document dealing with aquaculture was issued in 1995 as *FAO Fisheries Circular* No. 886, and was revised/updated in 1997 as *FAO Fisheries Circular* No. 886, Revision 1. The present document is Revision 2 of the *FAO Fisheries Circular* No.886, and is part of the FAO Fisheries Department's ongoing commitment to provide updated and enhanced information as it becomes available.

The various sections of this review have been produced by the authors indicated in the appropriate sections. Dr Rohana Subasinghe was responsible for the general co-ordination and final editing of this document, with assistance from Dr. Sharon McGladdery of the Department of Fisheries and Oceans, Canada. Mr Felix Marttin and Mr J. Carlos Trabucco provided valuable assistance in graphic design.

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ABSTRACT

This document is the second review of the Fisheries Circular 886 – Review of the State of World Aquaculture. Taking into consideration various reviews and analyses of aquaculture production, development and management published by FAO over the past few years, the format of the present revision of the Circular deviates slightly from the previous format. It includes a global review of aquaculture production and production trends, brief regional production profiles based on national aquaculture statistics received from FAO member countries up to 2000, an outlook for aquaculture development (major issues, opportunities and challenges), and a section discussing issues of current importance to global aquaculture development and management. The latter include inland fisheries and aquaculture: a synergy for sustainable food fish production, the role of aquaculture in rural development, recent technological innovations in aquaculture, and producer association and farmer societies' contribution to aquaculture development. Future revisions will address more issues of interest for sustainable development and management of aquaculture, where appropriate.

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Introduction

FAO Fisheries Circular 886 is a document which regularly updates and analyses aquaculture production statistics and trends, and discusses the issues related to global aquaculture development and management. The first issue of the Fisheries Circular 886 entitled "*Review of the State of World Fishery Resources: Aquaculture*" was published in 1995 (FAO, 1995). It was revised in 1997 (FAO, 1997) and the present document is the second revision of that Circular.

The purpose of the publication is to provide policy makers, aquaculture planners and managers, producers and other stakeholders, as well as the public at large, a comprehensive, objective and global review of aquaculture, including major development trends, issues and prospects. In view of its narrow focus, the Circular provides much more detailed coverage of aquaculture than FAO State of Fisheries and Aquaculture (SOFIA), where capture fisheries usually outweigh aquaculture.

Over the past decade, aquaculture's increasing contribution to global food security, poverty alleviation, rural livelihoods, employment and income generation has been duly recognised and one of the most significant endorsements of this recognition is the establishment of a Sub-Committee on Aquaculture under the Committee on Fisheries in 2001 (FAO, 2000 and 2001a). The first meeting of the Sub-Committee will be held in Beijing, China, in April 2002. While recognising the potential of aquaculture for human well-being, concerns have been raised by various sectors over negative environmental, social and economic impacts of certain types of aquaculture practices in certain parts of the world. It is, therefore, considered timely to revisit the broad issues essential for sustainable development of the aquaculture food-producing sector.

Over the past few years, particularly during 1999-2000, there have been several efforts to analyse and review the status of world aquaculture. Many were aimed at generating an up-to-date overview of the status of world aquaculture for presentation and discussion at the *Conference on Aquaculture in the Third Millennium*, held in Bangkok, Thailand, from 20-25 February 2000. Among these activities, the following are of major importance:

- A regional workshop to formulate the Asian aquaculture development strategy for 2000-2020, conducted by the Network of Aquaculture Centres in Asia-Pacific (NACA) in Kanchanaburi, Thailand in September 1999 (NACA, 1999);
- A review of South Pacific aquaculture conducted by the Secretariat of the Pacific Community (SPC) with the assistance of the World Fish Centre (ICLARM);
- Africa regional aquaculture review (CIFA/OP24, 2000);
- The reviews on the state of, and trends in, aquaculture development in five other regions, namely, Sub-Saharan Africa, Latin America and the Caribbean, Europe, the former Soviet Republics, the Near East and North America, that were facilitated and supervised by FAO;
- Fourteen thematic reviews, led by specialised expertise in policy, legal and technological issues, related to sustainable aquaculture development; and
- A global synthesis workshop, held at the FAO Regional Office in Asia-Pacific in October 1999, that discussed the regional reviews of aquaculture development trends and synthesized these, along with other information, into a global review on the state of, and prospects for, sustainable aquaculture development.

The information generated through the above activities was presented and discussed at the *Conference on Aquaculture in the Third Millennium*, which was jointly organised by NACA, FAO and the Thailand Department of Fisheries. The Conference produced three major reports:

- Bangkok Declaration and Strategy for Aquaculture Development Beyond 2000 (NACA/FAO, 2000).

- Report of the Conference on Aquaculture in the Third Millennium (FAO, 2001a) and
- Aquaculture in the Third Millennium, the Technical Proceedings of the Conference on Aquaculture in the Third Millennium (NACA/FAO, 2001).

The above three reports provide a wealth of knowledge on the past, present and future status of aquaculture, in-depth discussion of experiences and ideas on achieving the goals and aspirations for the future of aquaculture.

Besides the above, four working documents have also been prepared recently by the FAO Department of Fisheries, for the first meeting of the COFI Sub-Committee on Aquaculture. These working documents briefly discuss the current status and future prospects for aquaculture production and development trends, contribution of rural aquaculture to poverty alleviation and livelihoods, efforts in implementing the relevant provisions of the Code of Conduct for Responsible Fisheries, and aquaculture information, statistics and reporting¹.

Since all above-mentioned recent reports, documents and reviews have been widely distributed among the FAO member countries, as well as to other interested parties, FAO Fisheries Department decided to update the previous format, for this second revision of the Fisheries Circular 886. A Draft was made available to the First Session of the COFI Sub-Committee on Aquaculture, which was held in Beijing, China from 18-22 April 2002. The final version of the Revision 2 of the Circular 886 comprises of four main sections:

- A global review of aquaculture production and production trends, based on national aquaculture statistics received from the FAO member countries until the year 2000;
- An outlook for aquaculture development: major issues, opportunities and challenges;
- Section discussing the synergies and interactions between aquaculture and inland fisheries and their contribution to sustainable food fish production; and
- Issues spanning three thematic areas of current importance to global aquaculture development and management.

The production and trends review provides a global perspective of production and production trends, and the contribution of the aquaculture sector to food fish supply. It also analyses regional aquaculture production trends, providing a brief profile on each region. The outlook section consists of an overview of the important thematic areas pertaining to future aquaculture development and management. The last section discusses several issues of significance for sustainable aquaculture development, including: the role of aquaculture in rural development, recent technological innovations in aquaculture, and support from producer associations and farmer societies for sustainable development and management of aquaculture. Future revisions will address and discuss more issues of relevance to sustainable aquaculture development and management, as they emerge.

The complexity of the aquaculture sector, and increasing needs for interdisciplinary and inter-sectoral efforts to ensure its effective development and management, have been fully recognised. During Revision 1 of Circular 886, efforts were made to incorporate both FAO information and that from outside sources in its preparation. The same efforts have been pursued for the preparation of this document. In some instances, professional colleagues from outside FAO, with specialised expertise in selected subject matter covered in the review, were invited to participate and prepare relevant sections of this document. FAO believes that this will enhance the comprehensive scope, accuracy and value of the review.

Data on production (volume in metric tons, mt, and value in US dollars) are derived exclusively from the most recent FAO Aquaculture Production Statistics (FAO, 2001b), consisting of national

¹ <http://www.fao.org/fi/body/cofi/cofiq/cofiq.asp>

data received from the reporting of FAO member governments. The Circular also draws upon, and cites information from, other FAO publications, unpublished FAO information and non-FAO information from conference proceedings, journals and books. Production and trends are covered for the period 1970-1999, however, attempts have been made to concentrate on more recent developments.

It is worth mentioning that there have been considerable improvements in the statistical data base since the first publication of this circular in 1995. As mentioned in Revision 1, delivery of data from many countries has now being expedited by use of electronic media, greatly enhancing the overall quality and comprehensive nature of the reports contained (fewer gaps). The complete separation of the aquaculture and capture fisheries components of the data base has been completed for 1970 – 200 and disaggregation of statistics for the remaining period, 1950 – 1969, is near completion. The time series of aquaculture statistics has been extended backwards to 1950. In addition, guidelines for the collection of quantitative structural data on aquaculture have been prepared as a supplement to the “*FAO World Census of Agriculture Programme*”. However, many of the limitations discussed in Revision 1 of the Circular 886 remain and their investigations into mechanisms for their resolution is ongoing.

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