

**Responsible fisheries management  
in large rivers and reservoirs of Latin America:  
Seminar report**



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## FOREWORD

This document reports on the Seminar on Responsible Fisheries Management in Large Rivers and Reservoirs in Latin America (San Salvador, El Salvador, 29 January 2003). The event was held in association with the ninth session of the Commission for Inland Fisheries of Latin America (COPESCAL), and featured technical presentations by the Secretariat as well as a selection of national reports by participants. Support for the seminar was provided under the FAO FishCode Programme through component project GCP/INT/648/NOR, "Management for Responsible Fisheries."

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#### **ABSTRACT**

The Seminar on Responsible Fisheries Management in Large Rivers and Reservoirs in Latin America was held in San Salvador, El Salvador, on 29 January 2003, in association with the ninth session of the Commission for Inland Fisheries of Latin America (COPESCAL). The event was attended by experts from Member countries of the Commission, observers from other regional bodies, and representatives from local fishing communities in El Salvador. Discussions were supported by two documents on the principles of responsible fishery management in large rivers and reservoirs in Latin America, both prepared by the Secretariat, in addition to a selection of national reports submitted by participants.

The Seminar recommended, *inter alia*, that national fishery policies within the region should be reviewed and that due attention should be paid, as appropriate, to revision of national fishery legislation, use of the watershed management approach, and inter-institutional coordination in fishery and aquaculture research. It was further concluded that more effective cooperation at regional and international levels was essential for fishery management in large rivers and reservoirs of Latin America. The seminar also recommended that training and technical assistance activities for the implementation of the Code of Conduct for Responsible Fisheries in large rivers and reservoirs and other inland water bodies in the region be intensified, along with efforts to disseminate information on the Code.

**Keywords:** *Inland fisheries; aquaculture; fishery management; Latin America and the Caribbean.*

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## ABBREVIATIONS AND ACRONYMS

APEC	Asia-Pacific Economic Cooperation
BID	Banco Interamericano de Desarrollo
CARP	Río de la Plata Management Commission (Argentina-Uruguay)
CARU	Uruguay River Management Commission
CENDEPESCA	Centro de Desarrollo Pesquero
CIPP	Fisheries and Pisciculture Research Centre Centro de Investigaciones Pesqueras y Piscicultura)
CLM	Laguna Merín Commission (Uruguay-Brazil)
COPEANG	San Gregorio de Polanco Fishers Cooperative
COPESCAL	Commission for Inland Fisheries of Latin America (Comisión de Pesca Continental para América Latina)
CPUE	Catch per unit of effort
CTMSG	Salto Grande Mixed Technical Commission (Argentina-Uruguay)
DINARA	Dirección nacional de recursos acuáticos)
DIPRODE	Directorate for Development Projects (Dirección de Proyectos de Desarrollo)
EEZ	Exclusive Economic Zone
FAO	Food and Agriculture Organization of the United Nations
FONAGRO	Programa de Fomento Nacional Agropecuario
GDP	Gross domestic product
GRW	Gross registered weight
IICA	Instituto Interamericano de Cooperación para la Agricultura
INAPE)	Instituto Nacional de Pesca
INIDEP	Instituto Nacional de Investigación y Desarrollo Pesquero
MAGA	Ministry of Agriculture, Livestock and Food (Ministerio de Agricultura, Ganadería y Alimentación)
MCS	Monitoring, control and surveillance
MIDA	Ministerio de Desarrollo Agropecuario
MSY	Maximum Sustainable Yield
NACA	Red de Centros de Acuicultura Asiáticos
OLDEPESCA	Organización Latinoamericana de Desarrollo Pesquero
OSPESCA	Organización del Sector Pesquero y Acuícola del Istmo Centroamericano
PCT	Technical Cooperation Project (Proyecto de Cooperación Técnica)
PRADEPESCA	Programa Regional de Apoyo al Desarrollo de la Pesca en el Istmo Centroamericano
SICA	Sistema de la Integración Centroamericana
SAGPyA	Secretariat of Agriculture, Livestock, Fisheries and Food
TAC	Total allowable catch
TCDC	Technical cooperation between developing countries
TCP	FAO Technical Cooperation Programme
UNIPESCA	Fisheries and Aquaculture Management Unit (Unidad de Manejo de la Pesca y Acuicultura)
VMS	Vessel Monitoring System



## **PART I. REPORT OF THE SEMINAR ON RESPONSIBLE FISHERIES MANAGEMENT IN LARGE RIVERS AND RESERVOIRS OF LATIN AMERICA**

1. The Seminar on Responsible Fisheries Management in Large Rivers and Reservoirs in Latin America was held in San Salvador, El Salvador, on 29 January 2003. The event was attended by experts from 12 countries of the Region, observers from the Instituto Interamericano de Cooperación para la Agricultura (IICA), Organización Latinoamericana de Desarrollo Pesquero (OLDEPESCA) and Organización del Sector Pesquero y Acuícola del Istmo Centroamericano (OSPESCA), and representatives from fishery communities of El Salvador. The list of participants is shown in Appendix 1.
2. The meeting was chaired by the Chief of the Technical Support Unit of OSPESCA - MIDA, Panama, Ms Vielka Morales Quintero.
3. The Seminar was funded by the FAO Programme of Global Partnerships for Implementation of the Code of Conduct on Responsible Fisheries (FishCode), through component project GCP/INT/648/NOR, "Management for Responsible Fisheries."
4. The purposes of the Seminar were the following:
  - Provide a forum for experts from the Region to review the basic principles of responsible fisheries management in large rivers and reservoirs, in the light of the Code of Conduct for Responsible Fisheries and the state of inland fisheries in Latin America.
  - Promote a better understanding of and awareness of the importance of responsible fisheries management for the sustainable development of fisheries in large rivers and reservoirs.
  - Contribute to improved management, conservation and recovery of fishery resources in large rivers and reservoirs.
5. The Programme of the Seminar appears in Appendix 2.
6. Discussions were supported by two documents on the principles of responsible fishery management in large rivers and reservoirs in Latin America, both prepared by the Secretariat, in addition to a selection of national reports submitted by participants. The document related to management in large rivers is reproduced as Part II of this report, while the one related to reservoirs is reproduced as Part III. National reports are presented in Part IV.<sup>1</sup> A combined bibliography is provided as Part V.<sup>2</sup>
7. A summary of the technical and institutional features of a project on integrated management of fishery and aquaculture in lakes, ponds, and reservoirs in the Central-American Isthmus was also presented.

### **RESPONSIBLE FISHERY MANAGEMENT IN LARGE RIVERS OF LATIN AMERICA**

8. The presentation on principles of fishery management in inland waters was based on the Code of Conduct for Responsible Fisheries and guidelines for implementation of the precautionary approach to capture fisheries and introduced species, as developed by FAO.
9. In the course of the last 15 – 20 years, fisheries in large rivers of the Region also experienced great changes. Large catfish fisheries have developed throughout the Amazon

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<sup>1</sup> The national reports are of varying scope and content and are presented as submitted to the Secretariat, except for minor editing to achieve consistency in format and style.

<sup>2</sup> References cited in the individual papers are listed in Part V if full bibliographical information was provided by the respective authors.

watershed and there has been widespread expansion of *Colossoma* harvesting areas as well as a greater exploitation of historical harvesting areas. In the case of fisheries in the lower side of the Del Plata River watershed, captures of *Prochilodus sp.* and *Leporinus sp.* have shown a substantial growth, whereas large catfish and other favoured species have continued decreasing both in terms of output and average size. River segments close to the Parana-Paraguay rivers confluence are principally managed for sport fisheries, as is also the case of the Paraguay River. Regulation in the higher watershed has been increasing and industrial and agricultural development has been intensified. Fisheries along the Orinoco River have maintained moderate to intensive exploitation levels, and those of the Magdalena River experienced an environmental and fishery collapse from which it will be difficult to recover.

10. The problems that are occurring in large river fisheries in Latin America illustrate the obstacles encountered in large river fisheries generally, and show the need to introduce responsible management. Problems of overfishing most favoured species, environmental damage caused by agricultural, industrial and mining operations and the indiscriminate felling of forests are identified as possible causes of fisheries deterioration in practically all public and private descriptions of fisheries in large rivers of the Region.

11. Several of the mechanisms that should be implemented in order to address responsible fisheries management in large rivers have already been reviewed by COPESCAL. The following recommendations *inter alia* were brought to the attention of FAO and governments.

- Encourage the adoption of inland fishery resource management plans for each watershed, so that ecological and production factors can be incorporated in an integrated manner.
- Promote formulation and implementation of management approaches favouring decentralization of decision-making and the transfer of relevant material resources to local administrative bodies.
- Assign fishers and their communities appropriate rights for the exploitation of fishery resources and support fishers' efforts to associate and to improve their access to the benefits derived from their activity.
- Promote harmonization of activities in inland and recreational fisheries, with a view to maximizing social benefits and ensuring food security.
- Take the necessary steps to improve institutional cooperation at national level and to ensure a healthy environment capable of sustaining inland fishery production and promoting aquaculture development.
- When implementing the Code of Conduct on Responsible Fisheries, special attention should be paid to introductions and transfers and the potential for disease transmission they entail.

### **Experiences in Fishery Management in the Amazon Basin**

12. The Secretariat presented a summary of the studies carried out by COPESCAL/FAO on fishery management in the Amazon basin. It also stated that fishery exploitation takes place in a fragmentary manner in an area covering almost 7 million km<sup>2</sup>, with greatest concentration around the main cities. Reported captures amount to roughly 200 000 tonnes per year. Fish constitutes the main source of protein and income generation for a large population living in the Region. With the exception of one industrial fishery in the Amazon delta, capturing large migratory catfish, artisanal fisheries prevail in the Basin. Artisanal

fisheries provide fish for local consumption and ornamental fish for exports. Migratory catfish are fully exploited in basin segments where fishery activity is intensive, whereas the capture of fish for human consumption or for ornamental exports is estimated as under-exploited.

13. Efforts made by countries sharing the basin have not been sufficient to achieve efficient fishery management. Fishery policies are usually unspecified. There are modern research centres endowed with qualified staff, but fishery research is of little consequence for fishery management as a result of the weakness of fishery policies. Information supporting fishery management is also deficient. Regulatory measures, such as closed seasons, minimum sizes and fishing gear regulations have been put in place. However, they vary from one country to another, although they may address the same species in shared fishing grounds. Fishery monitoring, control and surveillance practices are deficient. Fishery management authorities are sparsely distributed and the dialogue between them and fishers is weak. The participation of fishers in fishery management could be increased, provided policies and programmes to this effect are formulated.

14. The Secretariat also reported on several fishery cooperation efforts made in the basin, such as the Treaty for Cooperation in the Amazon (a Bilateral Cooperation Agreement between Colombia and Peru in their border areas) and several other cooperation activities carried out by FAO through COPESCAL. When considering the options available to strengthen fishery cooperation in the Amazon Basin, it was proposed that the purposes of any project or agreement should incorporate measures for hunger and poverty alleviation. Suggested options included exchanges between scientific institutions and fishery authorities, bilateral or multilateral agreements for the conduct of specific activities and regional projects properly designed to address complex issues.

15. Experts from Brazil and Peru expressed their agreement with the Secretariat's statement on the state of fishery management in the Amazon region. They reported on the interest within their respective countries for strengthening cooperation in fishery management and development with countries sharing the Amazon watershed. Several participants also said that the characterization of the state of fishery management in the Amazon region was very similar to that found in other inland fisheries and even in many coastal fisheries in Latin America and the Caribbean.

## **RESPONSIBLE FISHERY MANAGEMENT IN RESERVOIRS OF LATIN AMERICA**

16. The goal to be sought through fishery management of reservoirs should be clearly established from the outset. Two groups of strategies can be implemented in reservoir management for fishery purposes: conservation approaches associated with recreational fisheries, which prevail in the more economically developed areas; and management for fish production mainly intended for human consumption, which is common in reservoirs located in less economically developed areas.

17. Due to the different features found among different reservoirs, it is not advisable to implement the same management plan for all of them. The advisability of implementing one or several fishery intensification tools presently available should be analyzed within the framework of the kind of exploitation envisaged and the reservoir size. Very small or small reservoirs, besides being naturally more productive, are generally more suitable in cost-benefit terms for intensification techniques. Such techniques include the extermination of unwanted species and stocking, harvesting and re-stocking of desired species. Fertilization and external feeding in these reservoirs may bring about high yields. Certain medium-size reservoirs in the Region are used in culture-based fisheries, particularly in Cuba and North-East Brazil. The most common enhancement tool is stocking of desired species, such as

tilapias and carps. The use of fertilization with natural fertilizers is also used to improve yields.

18. In the case of fisheries in extensive reservoirs located in large rivers, it is advisable to implement other supplementary management tools. These include stocking of fish ensembles through the introduction of species thriving in open water areas, the practice of fish culture in floating cages and the intensive use of shallow bays through fencing and other enclosures. The use of cages aimed at increasing yields in reservoirs is an enhancement applied in countries such as Brazil, Mexico, Chile, Colombia and Costa Rica, and their use is rapidly extending to reservoirs located in other countries of the Region.

## **CONCLUSIONS AND RECOMMENDATIONS OF THE SEMINAR**

19. Experts arrived at the general conclusion that inland fisheries did not rank high as governmental priorities in most countries of the Region. In this connection, the Seminar recommended that national fishery policies should be reviewed and that due attention should be paid to inland fisheries in accordance with the specific conditions prevailing in each country. It was also recommended that policies for improved inland fishery management should aim to promote: revision of fishery legislation, as appropriate; use of the watershed management approach, with due attention to environmental problems; and greater inter-institutional coordination in fishery and aquaculture research, collection, processing and exchange of fishery statistical data, and the implementation of fishery regulatory measures.

20. The meeting also concluded that fishery management policies and projects in large rivers, reservoirs and other inland water bodies should pay particular attention to the following: social and anthropological aspects; continuing and effective communication between fishery authorities and users of fishery resources; allocation of resource use rights to fishers; and participatory and co-management approaches (including relevant training). It was also stressed that more effort should be put into the search for alternative means to improve living conditions of fishers as well as the conservation of fishery resources, including, among others: diversification of fishery production; resettlement of fishers in aquaculture development projects; greater participation of fishers in fish marketing and greater involvement of local communities in rural, service and tourist activities. It was noted that, in order to achieve a more effective participation of fishers in inland fishery management and development, it was necessary to facilitate their access to credit and to other sources of financing as well as to training and technical assistance.

21. It was further concluded that more effective cooperation at regional and international levels was essential for fishery management in large rivers and reservoirs of Latin America. In this connection, the call was made for consultations among governments and the creation of bilateral or multilateral agreements, as required, for the management of water bodies and shared resources and the operation of research, management and development projects.

22. Finally, the seminar recommended that training and technical assistance activities for the implementation of the Code of Conduct for Responsible Fisheries in large rivers and reservoirs and other inland water bodies in the region be intensified, along with efforts to disseminate information on the Code.