



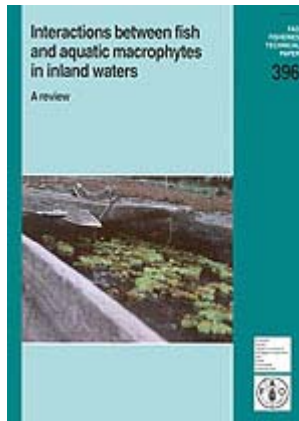
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FAO FISHERIES TECHNICAL PAPER 396



Interactions between fish and aquatic macrophytes in inland waters

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by
T. Petr
Toowoomba
Queensland 4350
Australia

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PREPARATION OF THIS DOCUMENT

In 1987, FAO published a document addressing the concern about the decrease in aquatic vegetation in Europe and its consequences for fish populations (De Nie, 1987). The Fifth and the Sixth Sessions of the Indo-Pacific Fishery Commission Working Party of Experts on Inland Fisheries, held in 1991 and 1994 respectively, highlighted the need to place more emphasis on better understanding the significance of aquatic macrophytes for freshwater fish and fisheries. The continuing expansion of noxious aquatic weeds, especially water hyacinth and salvinia, in tropical countries, requires development of better control strategies, and this topic was discussed at the Panel of Experts Meeting in 1995 in Florida, USA, jointly organized by FAO and the University of Florida.

The present review has been compiled in response to requests for an update on interactions between aquatic macrophytes and fish, and aims to assist fishery planners, managers, field specialists, and any other persons interested in this topic.

Acknowledgements

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Credits

The source of each figure used in this publication is given in form of the author or authors. The sources are listed in full in References.

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Interactions between fish and aquatic macrophytes in inland waters. A review.
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ABSTRACT

Thirteen major chapters deal with the following: aquatic macrophytes as fish habitat (spawning, nesting, nursery and feeding habitat, and the significance of structural complexity and density of aquatic macrophytes for fish); fish and other vertebrates of fishery significance that feed on aquatic macrophytes (such as grass carp,

several species of tilapia, *Collossoma*, *Puntius*, turtles, some birds, manatees, nutria, muskrat); aquatic macrophytes, water quality and fish (includes considerations of the impact of eutrophication and biomanipulation on aquatic macrophytes, wastewater treatment systems, and the impact in temperate climate of intensified fishpond production on aquatic macrophytes); aquatic macrophytes as a link in the food chain (fish grazing impact on nutrient release, and aquatic macrophytes versus phytoplankton, zooplankton, aquatic macroinvertebrates, and crayfish); piscivorous fish - prey relationships in and at the water-aquatic macrophyte interface; invasive and nuisance aquatic plants (water hyacinth, water lettuce, salvinia, papyrus, hydrilla, *Myriophyllum*) and their impact on fish and fisheries; special floating plant communities, i.e. sudd, varzea and igapo, and their significance for fish stocks and fisheries; inundated forests, submersed trees in reservoirs, and their significance for fish production; the impact of aquatic macrophytes on fish densities, standing crop and production in various types of water bodies; impact of recreation on fish through damage to aquatic plants, and how the recreational fishery is affected by aquatic macrophytes. Further chapters deal with fish capture methods in vegetated water bodies, with the impact of aquatic plant control on fish stocks and fisheries, and with aquatic macrophytes as an obstacle to fishery. The final chapter covers briefly the aspect of aquatic macrophytes as a habitat for vectors and hosts of tropical diseases, and how fish can assist with their control.

This publication does not cover interrelationships between fish and mangroves, fish in salt marshes and tidal flats, use of aquatic macrophytes as food or fish feed additives in aquaculture, fish in ricefields, use of macrophytes for the removal of aquaculture effluents and in recirculating fish culture systems. Several topics are covered only briefly: water-borne disease control (only those larvivorous and molluscivorous fish, which also serve as food, are discussed); biomanipulation (the section dealing with this subject focuses largely on the function of fish versus macrophytes); floodplains (the reader is directed to major publications on this topic). Control of aquatic macrophytes is limited to the use of fish, and to the impact on fish of chemical and mechanical control measures.

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