Abstract

Marine fisheries around the world remain seriously threatened from fishing overcapacity plus a range of environmental problems. As a result, the rising demand for fish products is largely being supported from increased aquaculture output. Changes in the sourcing of fish will continue to cause significant spatially variable effects on the marine and other aquatic environments, effects that are best managed through the application of geographic information systems (GIS) and remote sensing methods. Furthermore, changes need to take into account wider approaches to addressing aquatic problems, i.e. via marine spatial planning and/or ecosystem approaches to both fisheries and to aquaculture. This publication is an essential guide to understanding the role of spatial analysis in the sustainable development and management of fisheries and aquaculture. The publication is an easy-to-understand publication that emphasizes the fundamental skills and processes associated with geographic information systems (GIS) and remote sensing. The first chapter initially puts the array of spatially related problems into perspective and discusses the earlier applications of GIS and remote sensing. Chapters, 2, 3 and 4 outline what are considered to be the basics on which GIS can function, i.e. hardware and software; spatial data; and how GIS systems themselves are best implemented. Chapter 5 looks at preparing the data for GIS use and Chapter 6 explores what remote sensing consists of and the main purposes for its use. Chapter 7 discusses the functional tools and techniques offered by typical GIS software packages. Chapters 8, 9 and 10 examine respectively, the current issues and status, including extensive case studies, of the application of GIS and remote sensing to aquaculture, to inland fisheries and to marine fisheries. The final two chapters examine the emerging thematic issues that will be faced by fisheries and aquaculture in the near future, and then provides useful clues as to how challenges in accomplishing GIS work might best be overcome. The paper concludes with a series of recommendations underlining the paramount need to recognize that it is mainly through the application of a spatial perspective and approach that problems in fisheries and aquaculture will be better addressed. This technical paper is an update of previous FAO publications.

This publication is organized in two parts to inform readers who may be at varying levels of familiarity with GIS and remote sensing. One part is a summary and is addressed to administrators and managers, while the other is the full document and is intended for professionals in technical fields and for university students and teachers. The latter part is available in this CD–ROM.

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