

RECREATIONAL SPORT FISHING IN FRESH WATERS

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Summary

Recreational fishing in fresh waters has a long tradition and is now enjoyed by millions of people worldwide. It is defined as: “Fisheries conducted by individuals primarily for sport but with a possible secondary objective of capturing fish for domestic consumption but not for onward sale.” Despite the importance of recreational fisheries worldwide, there is a general perception that natural freshwater fisheries have undergone major, often adverse, changes in the past twenty years. These changes are related to numerous anthropogenic perturbations, such as over fishing, pollution, eutrophication, acidification, afforestation, river engineering works, and hydropower development, and loss of access to waters. The problems have resulted in a shift from exploiting traditional natural fisheries towards put-and-take and put and release fisheries based on intensive stocking.

The primary management measures operated in recreational fisheries are stock enhancement, increase in fishing diversity through species introductions, habitat improvements, elimination of unwanted pest species, and control of piscivorous avian, and fish predators. Fisheries regulations are also imposed mainly to regulate fishing effort, including closed seasons, closed areas; catch limits, gear restrictions, and size restrictions on harvest.

The main methods of stock assessment in recreational fisheries are event recall and site intercept methods, conducted through interviews and questionnaires.

The development of recreational fisheries is constrained by conflicts with commercial fisheries, other water-based recreational users, water resource development schemes and habitat and water quality degradation. If the status of recreational fisheries is to be maintained it is essential that more appropriate techniques are developed to provide sound economic valuation of the fisheries and an integrated approach to aquatic resource management is promoted.

1. Introduction

“Angling,” defined by the Oxford English Dictionary as “the action or art of fishing with a rod,” is defined even more exactly by Webster as “the art of fishing with hook and line especially for sport or recreation”. Fishing hooks over 5000 years old have been unearthed in the basin of the Euphrates. Egyptians used barbed hooks in about 1200 B.C., and their wall paintings from an earlier time depicted fishing with rod and line. The ancient Greeks angled; as can be gleaned from the writings of Theocritus in the third century B.C., “the bait fallacious suspended from the rod”. Metal hooks and silk lines were used in fourth century China, and a lure of wool and feathers used in Macedonia in the third century is the world’s oldest known artificial fly.

It is likely that angling, like hunting, began, as means of obtaining food, and it is probable these historical depictions reflect this scenario. It was not until 1496 that angling as a true sport or recreation can be interpreted from the literature. In that year, the *Treatyse Of Fysshynge Wyth An Angle*, attributed to Dame Juliana Berners, a sportswoman and nun, was published in the second *Book Of St. Albans*, a treatise on hawking, hunting, and heraldry. These were major interests of nobility and the publisher, Wynkyn de Worde, emphasized that the book was intended for “gentylnen” and “noble men,” and the *Treatyse* was intended to be kept away from those who were not gentlemen, and who, through immoderation in angling, might “utterly destroye it”.

The halcyon days of recreational fishing emanate from the sixteenth and seventeenth centuries when two important events in angling history occurred. The first was the printing in 1577 of *The Arte Of Angling*, a little known book important beyond its content in that it was the progenitor or model for the most honored of angling books of all time. It is from this slight volume by William Samuel, Vicar of Godmanchester, that Izaak Walton borrowed the general plan and structure of his own: *The Compleat Angler, Or Contemplative Man’s Recreation* published 9 May 1653. This volume fixed for all time the position of the angler who loves fishing for the sake of fishing; and summarized as “recreational fishing is the ritual pursuit of pleasure associated with the experience”. This, however, is considered an over-simplification of what is now a highly developed sport pursued by large numbers of people around the world.

This paper examines the status of recreational fishing around the world, some of the issues, and problems facing recreational fisheries, mechanisms for assessing the status of recreational fisheries, current management methods for recreational fisheries, and future needs for maintaining the status of the sub-sector.

2. Status of Recreational Fisheries

Recreational fisheries in this chapter follow the FAO definition: “Fisheries conducted by individuals primarily for sport but with a possible secondary objective of capturing fish for domestic consumption but not for onward sale.” Thus recreational fisheries involves both subsistence fishing, where the catch is consumed, and leisure fishing, where the fish are returned live to the water. Both types of recreational fishing are not only extremely important activities, but also are valuable resources contributing significantly to national economies. This is highlighted by the following summary statistics:

- Amongst 22 European countries there are an estimated 21.3 million anglers, with an estimated expenditure on recreational fishing in 10 of the countries in Western Europe where data were available in excess of \$US10 billion
- In the USA, 29.9 million anglers paid \$US447 million for fishing licenses in 1996, down from \$US30.4 million in 1995
- In 1996 in the USA, 18% of the population 16 years year of age and older, i.e. 35 million persons, exerted 514 million angler-days in fresh waters expending \$US38.0 billion
- In Canada, 4.2 million anglers exerted 55.5 million days and caught over 254 million fishes while spending \$US 5.1 billion of which \$US3.4 billion was

directly associated with the sport in 1995. Of these fishes some 113 million were retained

- It is estimated that the total recreational catch worldwide is of the order of 2 million tonnes, and represents an important source of animal protein in many developing countries

Despite the importance of recreational fisheries worldwide, there is a general perception that natural freshwater fisheries have undergone major, often adverse, changes in the past twenty years. These are related to ongoing restructuring in post-socialist countries, changing relationships between commercial and recreational fishermen, and deficiencies and confusion in fisheries legislation, administration, and access to waters. The resources are also subject to numerous anthropogenic perturbations, such as pollution, eutrophication, acidification, afforestation, river engineering works, and hydropower development, which have resulted in a shift in the status of the fisheries, and a general decline in the yield (see Figure 1).

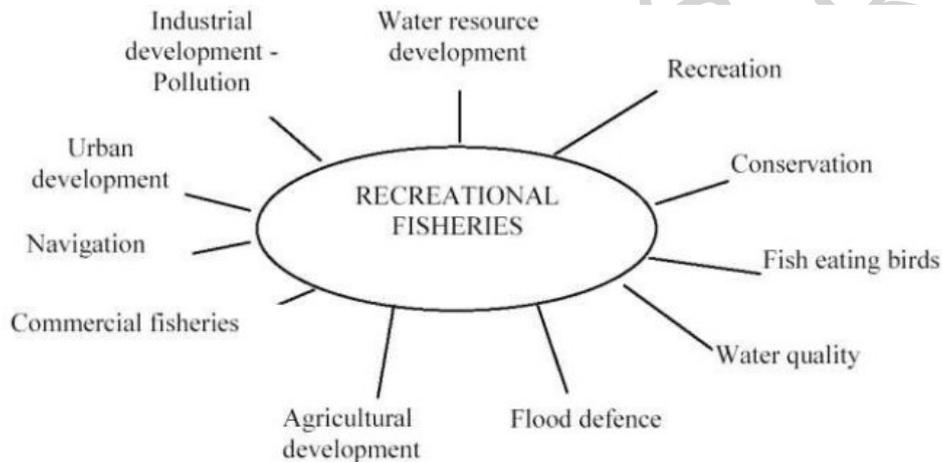


Figure 1. Factors affecting recreational fisheries development.

In these circumstances, fisheries are usually not considered of sufficiently high priority or value, and thus suffer in the face of economically and socially higher priorities, e.g. agriculture, hydroelectric power production or flood prevention. As a consequence, ones that are sustained through stock enhancement strategies are replacing natural fisheries. Furthermore, anglers are moving towards intensively stocked fisheries because the quality of sport based on natural fisheries is considered to be inadequate. Perhaps the greatest, short-term problems arise from conflict with other local user groups, especially commercial fishermen, other water-based recreational activities, and those involved with the wider aspects of conservation. If this situation is not to deteriorate further the reasons behind the general demise of the stocks need to be identified, and mechanisms to ameliorate problems, and enhance the fisheries are required.

3. Types of Recreational Fishing

Recreational fisheries have long represented the major use of living aquatic resources in temperate countries. However, more recently recreational fishing is now becoming common in some tropical countries. Brazil and Southeast Asia, for instance, have witnessed an explosion of interest in recreational fishing to satisfy the needs of the

growing urban populations. This is mirrored in other tropical regions by expansion of ecotourism to enhance sport fishing. Many people are now targeting some of the major rivers and lakes of the world for large-sized fish (Nile perch, *Lates niloticus*, in Lake Victoria), or those species that put up a good fight, e.g. mahseer (*Tor* species) in the Himalayan Rivers of the Indian sub-continent or tiger fish (*Hydrocynus vittatus*) in East African lakes. Recreational fishing, however, comprises a diverse array of approaches, which can be broken down into exploitation of natural and enhanced fisheries for pleasure, competition or supplementing domestic food supply.

3.1 Fishing Gear

Most recreational fishing is carried out using rod and line, or a variation on the theme. The line used nowadays is almost exclusively monofilament nylon, and hooks are baited with a diverse range of foods, both natural and artificial. The natural baits include maggots, meal paste, fish, worms or freshwater shrimp, although the more sophisticated anglers use a concoction of ingredients to improve the chances of catching fish. They may also use artificial flies and lures, particularly in game fisheries for salmon and trout. Fishing is carried out from the bank, from small boats or wading in rivers or shallow lakes.

The gear used is now becoming highly sophisticated and expensive. Use is made of modern materials and technology to both detect (e.g. echo sounding gears) and catch (e.g. carbon fiber rods) fish. Expenditure on a quality rod, for example, can exceed US\$1000.

In some countries (e.g. Canada, Finland, and Sweden), especially where fish are removed for domestic consumption, the gears used are more inline with those operated by commercial fishermen, e.g. gill nets and traps. Exploitation levels can be high and have contributed towards the demise in some fisheries. There is much debate as to whether this type of fishing should be classed as recreational because it has more in common with commercial practices, and regulations are now being imposed on these fisheries, e.g. total allowable catch (TACs), which suggest this is the case.

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Biographical Sketch

Ian Cowx graduated from the University of Liverpool, UK with a B.Sc. in Zoology specializing in Freshwater Fisheries and from The University of Exeter UK with a Ph.D. in Freshwater Fisheries Management. He started his career as a Fisheries Scientist with Severn-Trent Water Authority but moved into education to lecture in Inland Fisheries, first at the Humberside College of Higher Education and later at the University of Hull. He is a founder member of the University of Hull International Fisheries Institute and is now Director of the Institute. He has worked on freshwater fishery-related topics throughout the world for international organizations such as FAO, Department for International Development and the European Union. His research topics mainly focus on the management and ecology of freshwater fish and fisheries, especially conservation, stock assessment, stock enhancement and rehabilitation of fresh waters. Ian Cowx is a Fellow of the Institute of Fisheries Management and a member of the Fisheries Society of the British Isles and American Fisheries Society. He has published extensively on topics related to freshwater fisheries, including editing nine books, and is Editor of the journal *Fisheries Management and Ecology*.