

## Brief Note on Effective Management of Fisheries

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### Description

The goal of fisheries management is to produce sustainable biological, environmental and socioeconomic benefits from renewable aquatic resources. Wild fisheries are classified as renewable when the organisms of interest produce an annual biological surplus that with judicious management can be harvested without reducing future productivity. Fishery management employs activities that protect fishery resources so sustainable exploitation is possible, drawing on fisheries science and possibly including the precautionary principle.

### Fisheries Management

Modern fisheries management is often referred to as a governmental system of appropriate environmental management rules based on defined objectives and a mix of management means to implement the rules, which are put in place by a system of monitoring control and surveillance. A popular approach is the ecosystem approach to fisheries management. According to the food and agriculture organization of the United Nations, there are "no clear and generally accepted definitions of fisheries management". The integrated process of information gathering, analysis, planning, consultation, decision-making, allocation of resources and formulation and implementation, with necessary law enforcement to ensure environmental compliance, of regulations or rules which govern fisheries activities in order to ensure the continued productivity of the resources and the accomplishment of other fisheries objectives.

For the most recent several decades, the political goals in fisheries management of commercially important species have been rapidly evolving, primarily driven by a recognition of the response of fish and other target animals to changing climate, new technologies for fishing particularly on the high seas, development of competing policy priorities for aquatic environments leading to a more ecosystem-based approach to fisheries management, and new scientific insights about the processes affecting fish population size and recruitment. The political objectives operative in recreational fisheries management is often substantially different from those prevalent in commercial fisheries management. For example, catch-and-release regulations are common in some types of recreational fisheries. Thus, biological yield is of less important.

A Fishery Manager's Guidebook issued in 2002 by the FAO advises that a set of working principles should be applied to "highlight the underlying key issues" of fisheries management. There are 8 principles that should be considered as a whole in order to best manage a fishery. The first principle focuses on the finite nature of fish stocks and how potential yields must be estimated based on the biological constraints of the population.

In a paper published in 2007, Shertzer and Prager suggested that there can be significant benefits to stock biomass and fishery yield if management is stricter and more prompt. This is supported by recent work on the management of North Sea fisheries in accordance with ranges of acceptable fishing, where fishing at the top of the "acceptable" ranges is many times more risky than fishing near the bottom, but delivers only 20% more yield. In addition there is growing evidence and growing recognition by both fishery scientists and small-scale fishermen that coastal marine protected areas do favor the biodiversity and resilience of ecosystems nearby, significantly enhancing the density, biomass and size of commercially exploited species in local waters

Managing fisheries is about managing people and businesses, and not about managing fish. Fish populations are managed by regulating the actions of people. If fisheries management is to be successful, then associated human factors, such as the reactions of fishermen, are of key importance, and need to be understood.

Management regulations must also consider the implications for stakeholders. Commercial fishermen rely on catches to provide for their families just as farmers rely on crops. Commercial fishing can be a traditional trade passed down from generation to generation. Most commercial fishing is based in towns built around the fishing industry; regulation changes can impact an entire town's economy. Cuts in harvest quotas can have adverse effects on the ability of fishermen to compete with the tourism industry.

### Effective Management of Fisheries

Effective management of fisheries includes involving all stakeholders in the fishery. To do this successfully, stakeholders need to feel empowered enough to make meaningful contributions to the management process. Empowerment has a wide application but in this context it refers to a tool that gives people within the fishing communities an opportunity to shape

their own future in order to cope with the impacts from large-scale commercial fishing, competition of resources, and other threats that impact fishing communities. However, there are limits to empowerment in the fisheries management process. Empowerment maintains an involvement on the part of the state in fisheries management and no matter how empowered the other stakeholders are, the success of fisheries isn't possible without the legislative powers, financial resources, educational support, and research the government provides.

This concept is not accepted by all; as some communities and individuals argue that the state should withdraw completely and let the local communities handle their own fishery management based on cultural traditions and established practices. Additionally, others have argued that co-management only empowers the wealthy and powerful which in turn solidifies and validates the already existing inequalities of fisheries management.

Empowerment working as a function of co-management, carried out correctly, will not only enable but it will authorize

individuals and communities to make meaningful contributions to fisheries management. It is a mechanism that works in a loop, where an individual gains empowerment and encouragement from being a part of the group and the collective action is only successful because of its empowered individuals. In order to effectively and successfully use empowerment as co-management, it is imperative that study programs, guidelines, reading materials, manuals, and checklists are developed and incorporated into all fisheries management.

In the past, changing climate has affected inland and offshore fisheries and such changes are likely to continue. From a fisheries perspective, the specific driving factors of climate change include rising water temperature, alterations in the hydrologic cycle, changes in nutrient fluxes, and relocation of spawning and nursery habitat. Further, changes in such factors would affect resources at all levels of biological organization, including the genetic, organism, population, and ecosystem levels.