

Ecosystem approach in fisheries governance in the arctic



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A social science perspective on fisheries management and development

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Abstract

The ecosystem approach to fisheries is a highly topical issue at present. The aim of current analysis was to reveal the historical development of the ecosystem approach to fisheries in the Arctic. The Arctic has natural resources and a rich wildlife is important to the inhabitants. The Arctic is undergoing major environmental changes including decrease in sea ice cover, increase in river runoff and precipitation, accelerated warming, and permafrost and glacier melt. This changes, along with new opportunities for economic development create more stress and pressure on the Arctic marine ecosystem.

Introduction

Arctic biodiversity isn't only valuable in itself, but it is extremely important for use in various fields of human activity. Arctic is the habitat of species with striking adaptations to survive in the extreme cold and highly variable climatic conditions. More than ten percent of the global fish catch accounts for the Arctic Sea and the Arctic. More and more tourists are heading north. Growing worldwide interest in Arctic species and ecosystems as an increasingly rare example of primordial biological diversity.

Warming and economic potential will cause health problems and welfare in the Arctic. Effects of pollutants on the environment and human health in the Arctic remains one of the highest priorities. Sources and pathways of these

pollutants are found both inside and outside the region. In the Arctic marine and terrestrial animals, which are eaten by indigenous ethnic groups and other inhabitants of the North, accumulate many persistent organic pollutants and heavy metals resulting from industrial and agricultural activities carried much further south, but transferred and accumulated in the food chain. Moreover, many existing and abandoned military and industrial facilities left in the Arctic region pollutants and pollution. These objects can represent significant problems and potentially contribute to the deterioration of local and regional environment. The problem is even more serious conditions, there is a trend in the warming of the Arctic, which leads to an accelerated release and distribution of substances in the environment.

(Perelet R. 2006)

What is the ecosystem approach?

The term “ Ecosystem Approach to Fisheries” (EAF) was adopted by the FAO Technical Consultation on Ecosystembased Fisheries Management held in Reykjavik from 16 to 19 September 2002 (FAO, 2003). Thereby the EAF should be seen as an evolution of traditional fisheries management and not as revolution. The term “ approach” indicates that the concept delineates a way of taking ecosystem considerations into more conventional fisheries management (Garcia *et al.*, 2003). The Reykjavik FAO Expert Consultation (FAO, 2003) was introduced the main purpose of an ecosystem approach to fisheries is to plan, develop and manage fisheries in a manner that addresses the multiplicity of societal needs and desires. (Kempf, 2009)

Under the World Summit in Johannesburg in 2002, the participants were committed to implement an ecosystem approach to fisheries management within 2010 (Norwegian State Secretary Ulriksen, 2006). In 2003, the UN's Food and Agriculture Organisation (FAO, 2002) published guidelines for an ecosystem -based management approach to fisheries. The guidelines emphasized that fisheries should be conducted to limit the impact on ecosystems. Moreover, it also states that dependent and associated species being harvested should maintain their ecological relationship for further generation to be able to benefit from them.

The North Pacific Fishery Management Council (NPFMC) (the US fisheries in the Bering Sea) was supposed that ecosystem approach to fisheries management should consider the interactions among fisheries and their target species, their direct and indirect impact on other species and this influence on target fisheries, as well as broader ecosystem actions such as climate, predate or play relationship and other socioeconomic activities (NPFMC: 71). The plan sees other activities that affect the marine ecosystem, such as communities, shipping, oil and gas development, and military. (Tonje Fingalsen, 2009)

Arctic Marian Ecosystems

The Arctic is the habitat of more than 21, 000 species, well adapted to cold: mammals, birds, fish, invertebrates, plants and fungi, including lichens, as well as tens of thousands of species of microbes.

The Arctic is a unique opportunity to keep large intact ecosystems to their original set of species. The implementation of this feature will help to <https://assignbuster.com/ecosystem-approach-in-fisheries-governance-in-the-arctic/>

preserve the integrity of Arctic biodiversity and sustainability of Arctic communities.

Biodiversity in the Arctic is degraded, but the immediate adoption of decisive measures will help to keep extensive and relatively intact ecosystems tundra, mountains, fresh water, seas, and the role that they play in the livelihood of mankind.

The Arctic Ocean is the smallest of the world's oceans (total area c. 10 million km²) and consists of a deep central basin, the Arctic Basin, surrounded by continental shelves. The Arctic Basin is further divided by the Lomonosov Ridge (maximum sill depth: 1, 870 m; Jakobsson et al. 2008) into the Eurasian and Amerasian Basins. Maximum depths (c. 5, 260 m) are found near the Gakkel Ridge, an extension of the North Atlantic Mid-Ocean Ridge system that divides the Eurasian Basin along a line from northern Greenland to the East Siberian shelf (Jakobsson et al. 2004). The Arctic Ocean has the most extensive shelves of any ocean, covering about 50% of its total area. The circumpolar marine Arctic comprises the Barents Sea, Kara Sea, Laptev Sea, East Siberian Sea, Chukchi Sea, Beaufort Sea, Canadian Arctic Archipelago and Greenland Sea. The Barents, Kara, Laptev, East Siberian and Chukchi shelves are shallow and broad (400-800 km) while the shelves

Arctic marine ecosystems are important constituents of global biodiversity. Arctic marine ecosystems are habitats to a vast array of over 5, 000 animal species and over 2, 000 species of algae and tens of thousands of microbes. The marine Arctic also provides habitat for large populations of marine

mammals and birds, some of which form colonies that are among the largest seabird colonies on the planet.

The unique characteristics of Arctic marine ecosystems also contribute directly to global diversity. For example, Arctic sea ice ecosystems support biodiversity at various scales ranging from unique microbial communities to apex predator species such as the polar bear *Ursus maritimus* and walrus *Odobenus rosmarus* whose ecology is closely associated with the sea ice environment.

Indirectly, the Arctic Ocean plays a key role in shaping the global biodiversity of marine and terrestrial ecosystems as it plays an essential role in the Earth climate system. The Arctic Ocean also influences marine ecosystems of the Atlantic Ocean directly, as waters and sea ice exiting the Arctic Ocean affect the physical, chemical and biological characteristics of the North Atlantic. (Christine Michel, 2013)

An Ecosystem Approach in the Arctic Ocean.

Climate change affects the physical environment, with consequent impacts on ecosystems and species as well as the mobilization of contaminants. Human activity in the Arctic may increase due to improved access and rising global demand for resources. Risks from pollution such as oil spills will increase as Arctic development proceeds. Pathways for invasive species to reach the Arctic will become more numerous as more ships travel north and more roads are built.

More activity also means a greater potential for habitat degradation. And more activity may mean more people, who may increase fishing and hunting pressures.

The habitat needs of migratory species, long-range transport of persistent contaminants, global shipping lanes and the geography of ecosystems do not follow political boundaries. Thus, international cooperation is increasingly needed to fully address the conservation challenges that face Arctic biodiversity now and in the decades to come. The recommendations that follow recognize the interconnected and transboundary nature of the challenges to biodiversity conservation in the Arctic and beyond. (Henry Huntington, 2013)

The cumulative impact of anthropogenic pressures such as climate change, pollution, and overfishing is of great concern in the polar regions, where marine ecosystems already face extreme environmental conditions (Clarke and Harris, 2003). This situation applies to the Arctic Ocean, where early signs of global warming (ACIA, 2004) and significant levels of persistent bio-accumulating pollutants (UNEP, 2006) are superimposed on local Stressors. Climate change impacts are expected to be greater in the Arctic than in any other region and will result in important socioeconomic changes. For example, future scenarios of climate change predict a reduction of the Arctic ice cover that will certainly lead to a significant increase in shipping, with new or enhanced harbour infrastructures and facilities built on Arctic coasts (Brigham and Ellis, 2004). In addition to marine transportation, traditional activities like fishing and hunting, a reactivation of the oil and gas industry in

the offshore zone, and emergent sectors like tourism have the potential to affect Arctic ecosystems as never before. (Siron *et al.*, 2008)

In 1999 was started the development of the Global Environment Facility (GEF) “ Integrated ecosystem approach to biodiversity and minimize habitat fragmentation in the Russian Arctic.” The ecosystem approach doesn’t focus only on the regulation of certain types of fishing, but also ensures that the fishery absent a negative impact on the species associated with the target species or dependent. Given the inherent complexity of the ecosystem approach, it is not surprising that organizations involved in fisheries management, ecosystem usually ignores questions and focus on species, are subject to specific fisheries.

In 2002, the World Summit on Sustainable Development (WSSD, Johannesburg) noted that human-induced threats to biodiversity require urgent action, and for achieving progress in the conservation and sustainable use of biodiversity is the ecosystem approach set out in the decisions taken in the framework of the Convention on Biological Diversity. WSSD welcomed in its final document the application by 2010 of the ecosystem approach, noting the Reykjavik Declaration on Responsible Fisheries in the Marine Ecosystem and of the Conference of Parties of the Convention on Biological Diversity.

In 2002, the Declaration of the Third Ministerial Meeting of the Arctic Council (Inari) gave a positive assessment of the GEF project “ Integrated Ecosystem Approach to Conserve Biodiversity and reduce violations of habitats in the Russian Arctic” (ECORA) as an integrated ecosystem approach to the

management of natural resources, in which individuals and communities improve their ability to make responsible decisions about their natural habitat.

In 2004, the Reykjavik Declaration on the Strategic Plan for the Protection of the Arctic Marine Environment (AMSP), it is observed that the basis of AMSP put the ecosystem approach, and there was a call for Member States, working groups of the Arctic Council and relevant regional and international bodies to encourage application of this approach to the Arctic marine environment.

The ecosystem approach is the key principle proposed to meet the long-term goals of the Arctic Council's Arctic Marine Strategic Plan: to reduce and prevent pollution, conserve marine biodiversity and ecosystem functions, promote the health and prosperity of Arctic inhabitants, and advance sustainable marine resource use (Arctic Council, 2004). The Strategic Plan for the Protection of the Arctic Marine Environment recognizes the need on the basis of international agreements contribute to global control and reduction of production in the Arctic found dangerous chemicals.

Fingalsen T. supposed that the greatest fear in the Arctic is an oil spill. How the petroleum company is going to clean it up, especially from the ice?

Twenty years after the Exxon Valdez oil spill, Prince William Sound cannot be perceived as clean. Oil spills might be rare, but it we still don't know the long term consequences on how an oil spill and seismic exploration affects sea mammals. The petroleum industry might create jobs, but how important is

this if it interferes with the way of life of the indigenous peoples? (Fingalsen T, 2009)

The Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) has developed an ecosystem approach to fisheries management. This approach doesn't concentrate exclusively on industrial species. The main goal is prevent the harmful influence of fishing on the " dependent and related" species.

Unlike other multilateral agreements on Fisheries Convention on the Conservation of Antarctic Marine Living Resources is engaged not only the regulation of fishing, but is also responsible for the preservation of the ecosystem. Such an " ecosystem approach", which considers the entire Southern Ocean as a set of interconnected ecosystems, the case for other multilateral agreements on fisheries.

The ecosystem approach does not focus exclusively on the species, non-target species. This approach aims to avoid situations in which fishing has an adverse influence on " their dependent and associated species" (animals with which people compete for food resources).

Conclusion

Large areas of the Arctic is still relatively little change, which makes it possible to take proactive measures to minimize or even complete prevention of future problems, the elimination which would be very expensive or simply impossible.

For the conservation of biological diversity in the Arctic ecosystem approach is needed to the examination of projects implemented here, to assess the possible environmental impact of their implementation, the ecosystem approach to fisheries planning biological resources, taking into account possible changes in climate and ecosystem change, the value of ecosystem functions in the assessment of projects and planning fishing bioresources as well as the choice of options for the development of the Arctic regions.

More and more countries (including the Arctic circumpolar countries) will incorporate ecosystem approach into their national legislation and policy instruments for the management of activities and resources in marine areas under their jurisdiction. Optimally, national approaches will be compatible and consistent with each other, though not necessarily similar. Work with this species in the Arctic-wide level will not be easy

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