

Fisheries vs. Marine Conservation: Lessons Learned from the Shiretoko World Natural Heritage Site

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ABSTRACT

The most prominent issue in the field of fisheries management is the choice between the wellbeing of the fishermen and the promotion of conservation, either in an ecosystem level or as species-specific approach. However, recently, there has been a general shift towards a more holistic approach, through which both goals may be achieved, without sacrificing one in favour of the other. The ecosystem approach is supported by a large proportion of the academic community as the solution to avoid conflict between livelihoods and conservation. In the Shiretoko World Natural Heritage Site, the local stakeholders have managed to bridge the gaps through extensive consultation and, supported by the Japanese local and national governments and various academic institutions, have established a coordinating network of organisations, in order to build consensus among the stakeholders and adopt the ecosystem approach. As representatives from most stakeholder groups participate in the collaborating institutions, the interests of various sides, including tourism, fisheries, reforestation, agriculture, citizens, scientists and environmental groups, are voiced and supported during the decision-making process. The Shiretoko Natural Heritage Site Management Plan has made significant achievements, by adopting viable trade-offs between conservation, fisheries management and tourism, resulting in a sustainable and largely self-funded conservation scheme. The example of Shiretoko could function as a best case practice for many countries worldwide that face the same problem, especially insular ones, in order to achieve sustainable fisheries without sacrificing marine conservation.

Keywords: natural resource management, participation, conservation, fisheries

1. Introduction

In “The Freedom of the Seas (*Mare Liberum*)” by Grotius (1608), he claimed the non-disposable common property of the sea as opposed to land. The marine realm should be without borders, freed of natural sovereignties and accessible to navigation (Cocco 2013). However, is this view of the world viable nowadays? Especially in the case of fish stocks, which constitute a profound example of common-pool resources as defined by Ostrom et al. (1994), the current management schemes, based on central planning, and the absence of well-enforced, high quality property rights, have resulted in both declining stocks and decreasing fishermen’s profitability (Arnason 2009). As

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governing authorities continue to design and implement managerial plans that cannot combat the “race to fish”, which is the result of constant increasing fishing effort due to the competition between fishermen in order to exploit a common-pool resource (Hardin 1968), the degradation of the marine ecosystems and the artisanal fishing community livelihoods will only continue to exist (Arnason 2009).

The current conservation plans also tend not to be holistic. They ignore the human factor and focus only on conservation from a biological perspective (Bundy et al. 2008). However, the biotic community that constitutes an ecosystem and interacts with the surrounding environment inevitably includes humans. Humans are the most significant factor of the ecosystem balance, as the ecosystem health is highly dependent on human behaviour and vice versa (Bundy et al. 2008). The managers tend to consider conservation and livelihoods as two conflicting aims: in order to maintain or increase one, the other must be sacrificed.

Nevertheless, there is a noticeable global shift towards more sustainable fisheries, as the actors have begun to realise that there is an urgent need for change. Apart from the damage done to the marine habitats, these managers’ decisions have also dealt a fatal blow to the local artisanal communities; income decline, impoverishment and village depopulation (UNEP-WCMC 2006). The near-shore settlements all around the world are being abandoned for an “easier” livelihood in the cities. In order to avoid utter collapse, multiple nations have started to adopt managerial frameworks focusing on the idea of decentralised management. Multiple researches have shown that the most efficient management choices are those that include some form of co-management of the resource. By co-management, we mean the sharing of responsibilities between governmental institutions and groups of users (Matsuda et al. 2009; Persoon et al. 2005). This management regime cannot be used at the national level and it targets only a local habitat or ecosystem. The inclusion of resource users in the decision-making process has several advantages. First of all, the incorporation of local knowledge in the planning phase may increase significantly the efficiency of the management framework, as it multiplies the known parameters for the targeted resource. The knowledge that the fishermen and the generations of their ancestors before them, have gathered by working in the targeted area cannot be substituted by scientific research. However, the two can complement each other. In addition, by including the local stakeholders in the decision-making process and the following regulation implementation, the authorities may be relieved of significant financial costs, as the fishermen can undertake the task of enforcing the regulations, monitoring the resource and control the local activity (Jentoft 2005). This approach also contributes highly to the enhancement of local social capital, by developing bonds between the fishermen, the community members, the authorities and the rest of the stakeholder groups (Tsobanoglou 2008; Wilkinson, Pickett 2009). Participation of a variety of local stakeholders has the potential to improve significantly the legitimacy of management. The development of social capital, has in turn, the potential of promoting social cohesion, leading thus to community capacity building (Jentoft 2005; Pateman 1970; Pomeroy, Kuperan 2003; Tsobanoglou 2008; Tsobanoglou 2013).

Despite the international efforts, there is still extensive overexploitation of fish stocks all around the globe. The question is whether this turn towards community management can become a weapon against the desertification of the oceans and the collapse of the near-shore communities.

2. Shiretoko World Natural Heritage Site

In the middle of this bleak situation, in some areas, best-practice initiatives have been implemented, that shine like rays of hope for the future of fisheries. One of

the most successful is the case of the Shiretoko World Natural Heritage Site in Northern Japan.

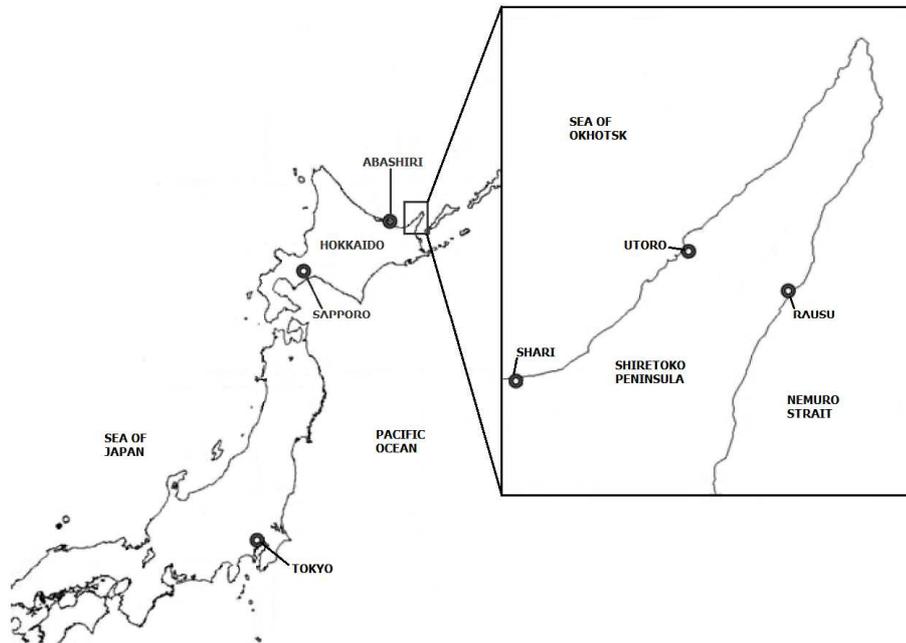


Fig. 1: Shiretoko World Natural Heritage Site location in Japan

The Shiretoko World Natural Heritage Site is constituted by the inland and marine territory of and around Shiretoko Peninsula, located in Northern Hokkaido Island (Fig. 1). The marine territory extends up to 3km from the coast (Fig. 2) (Sakurai, 2013).

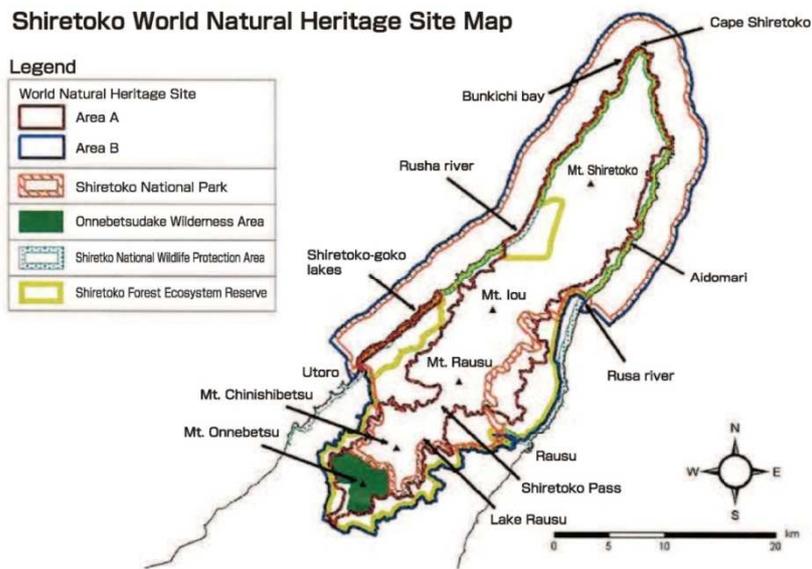


Fig. 2: Shiretoko World Natural Heritage Map. Source: Ministry of the Environment of Japan (2009)

The Shiretoko area has suffered from local human activity, such as fisheries, as well as global climate change. Since the 1990s, many commercial species, such as walleye pollock (*Theragra chalcogramma*), common squid (*Todarodes pacificus*) and masu salmon (*Oncorhynchus masou*) have been declining (Nagata, Miyakoshi 2013; Sakurai 2013). On the other hand, human effort has enhanced the numbers of a variety of important stocks, such as chum salmon (*Oncorhynchus keta*) and kelp (*Laminariales* spp.), especially through artificial hatchery and replanting programmes (Nagata and Miyakoshi 2013; Sakurai 2013). In addition to fisheries decline and other problems, the local ecosystems are also suffering from temperature rise. In the Sea of Okhotsk, the intermediate depth water temperature has been decreasing, resulting in the decrease of the seasonal ice coverage and volume (Sakurai 2013).

Under the immediate threat for the health of the local environment and the well-being of the communities in Shiretoko, solutions towards an effective ecosystem-based management framework were sought out. Based on the common decentralised Japanese fisheries management system, the Shiretoko area stakeholders developed a unique model for ecosystem conservation, the Shiretoko Approach (Makino 2011).

The Shiretoko Approach was structured upon the national fisheries management regime in Japan, a highly efficient system based on decentralisation and stakeholder participation in the decision-making process, enforcement and monitoring. Particularly, with professional fisheries operations, a Fisheries Cooperative Association (FCA), is established, in which membership is obligatory for professional fishermen intending to operate in the area, as the FCAs hold the totality of the fishing rights for the area under their jurisdiction (Makino 2011). FCAs are mostly comprised of fishing households and small-scale fishing companies, based in the same geographical area and function similarly to agricultural cooperatives, with joint market administration, purchases etc. (Uchida, Makino 2008). The members of the FCAs establish the majority of fishing regulations in their jurisdictional area and they enforce and implement their regulations, with the support of various research institutions. These institutions, which are both governmental and non-governmental, play the role of the scientific advisors; they provide FCAs with relevant scientific information and conduct constant evaluations of the stock levels of major resources and the marine environment state. Furthermore, according to the FCA Law (Article 11), FCAs may engage in various economic activities apart from regulatory action, such as fish marketing, granting credit, issuing insurance, processing, running cold storage, and guidance, as well as in non-economic activities such as lobbying, environmental protection, member education, consultation and resource management (Uchida, Makino 2008). Most importantly, FCAs maintain catch data records, upon which are based the official fisheries statistics.

On the prefectural level, elected members of the FCAs constitute the Area Fisheries Coordinating Committees (AFCCs), which operate as consulting bodies to the prefectural government. The AFCCs also elect members that compose the Wide-area Fisheries Coordinating Committees (WFCCs) which advise the central government on the coordination of resource use and the management of highly migratory species (Makino 2011).

Nevertheless, the Japanese management regime, allows for considerable flexibility in the local level. For example, in the case that, within a group of Japanese local fishermen (usually belonging to the same FCA), develops the need for more case-specific measures against overexploitation of marine environment degradation, they may form an autonomous body called Fisheries Management Organisation (FMO), in order to implement those measures (Makino 2011). This situation falls within the Japanese notion of resource management fisheries ("*Shigen Kanrigata Gyogyo*") that

orbits around the fact that in the Japanese fisheries management, the fishermen are the main actors and the main decision-makers (Makino 2010).

As the fishing right is authorised to each FCA in a 5-year basis, it forms a collective right of the association members. As such, it also forms a right of every individual member. Along with the right, the FCA members also shoulder significant responsibilities towards the conservation of the fish stocks and the marine environment. In order to fulfil their responsibilities, each association holds regular meetings of its members, during which they set their regulations and make important decisions. The most significant characteristic of the operational way of the FCAs is the fact that democracy among members prevails. Especially for vital issues, the decision is often required to be unanimous in order to be adopted (Murota 2013). By seeking consensus through the unanimity of the vote, the FCAs also minimise the risk of future conflicts. Yet, the FCAs go through evaluation for the renewal. Even though the rights are usually reissued, it is still possible that they might be revoked due to non-compliance for example (Uchida, Makino 2008).

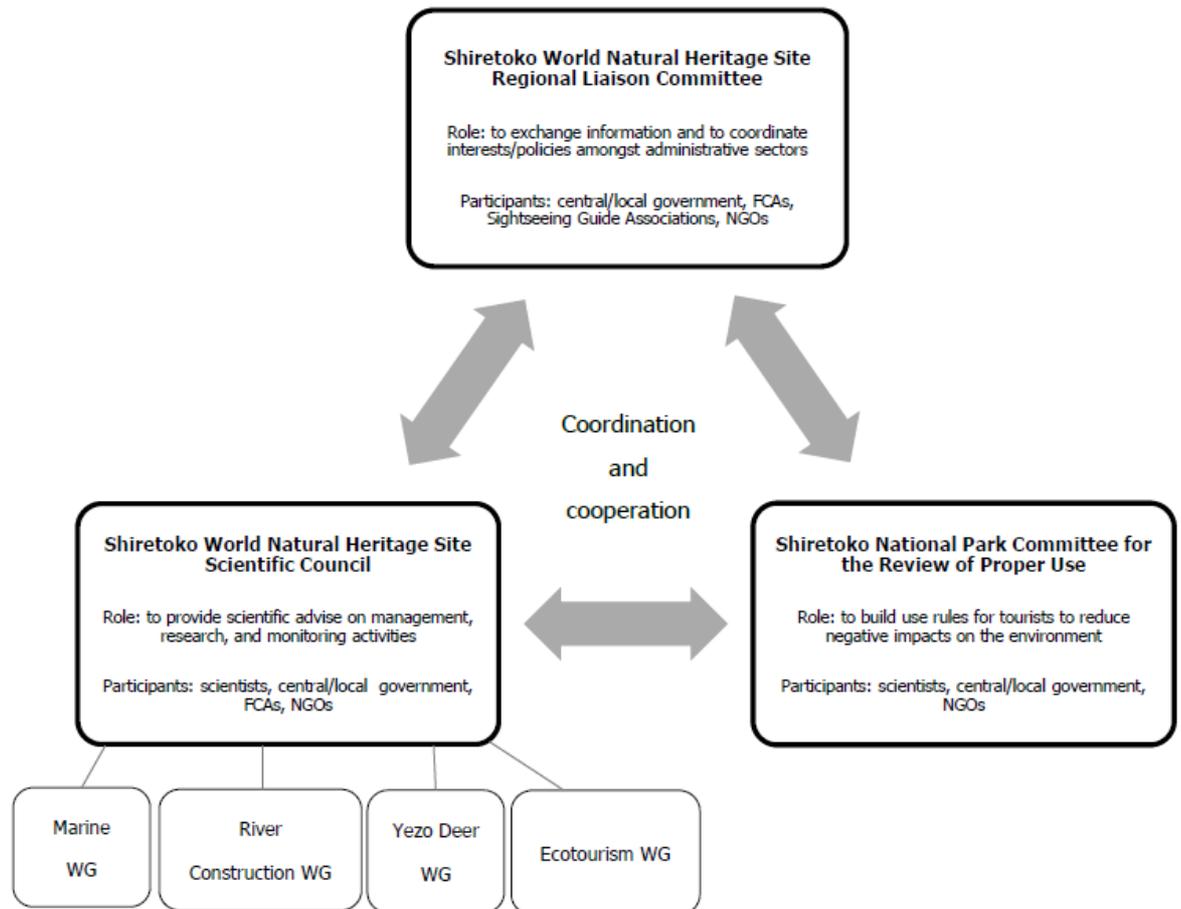
Nonetheless, the Japanese fisheries management system still harbours two major weaknesses. Firstly, as the fish constitute moving resources, even though an FCA might have implemented case-specific regulation in its jurisdiction area, the area outside its jurisdiction might not be managed in a consistent way. In other words, the targeted fish stock management might be under threat in the areas surrounding the FCA area of operation. This is particularly true for migratory species, especially anadromous ones. As the marine and terrestrial aspects are managed as separate units, it is impossible to apply a holistic approach in fish stock management. Moreover, there is limited utilisation of scientific knowledge in the management plans, as there is limited cooperation between the professional fishermen and the academic and scientific community.

However, the Shiretoko Approach managed to incorporate the aforementioned fisheries management system in a holistic framework that takes also into account the terrestrial parameters of the area by establishing a collaboration network between the local stakeholder groups and the state actors (Makino et al. 2009).

In 2003, as a first step towards the realisation of the Japanese government's vision to nominate the Shiretoko Peninsula as a UNESCO World Natural Heritage, the Shiretoko World Natural Heritage Site Regional Liaison (SWNHRL) Committee was established. The SWNHRL Committee's aim is to bridge the differences between the various stakeholder groups, by promoting consensus building between its participants. The members of the Committee belong to various institutions, private and governmental, including the local and national government, FCAs and NGOs. The Committee's main role is the coordination policy decision-making among the administrative bodies (Makino 2011).

In addition to the SWNHSL Committee, in 2004, the Shiretoko World Natural Heritage Site (SWNHS) Scientific Council was also established, with the aim to provide scientific advice and support to the SWNHSL Committee (Makino 2011). The Scientific Council is comprised by four Working Groups (WGs), each one specialising in a different research area: the Ecotourism WG, specialising in the sustainable touristic exploitation of the area, the Yezo Deer WG, specialising in Yezo deer (*Cervus nippon yezoensis*) management, the River Construction WG, specialising in the improvement of river infrastructure and, finally, the Marine WG, specialising in marine ecosystem management. Similarly to the SWNHSL Committee, in addition to scientists, representatives from governmental and private bodies participate in the SWNHS Scientific Council and its WGs (Makino 2011). All the aforementioned bodies are connected through bonds of coordination and cooperation, in order to maintain a stable management regime, ideally with elimination of intra-participant conflict (Fig. 3) (Makino, Matsuda 2011).

Fig. 3. Coordinating system in the Shiretoko WNHS. Adapted from: Makino and Matsuda (2011)



Despite the fact that in Japan, there is limited capacity for ecosystem conservation and national park utilisation, as areas designated and managed as national parks have restricted land development potential due to the complicated environmental management regime in Japan, and in spite of the absence of integrated natural park management, which made it difficult to apply for World Natural Heritage Site status, Shiretoko was established as a World Natural Heritage Site (WNHS) in 2005, covering approximately 71,100ha, including 22,400ha of Marine Protected Area (MPA). 86% of the Heritage Site is accounted by the Shiretoko National Park (Yamanaka, Murakami 2013).

3. Multiple Use Integrated Marine Management Plan

In order to achieve sustainable fisheries resource exploitation and, at the same time maintain the diversity of the Shiretoko ecosystems, without disrupting the natural balance, the SWNHS Scientific Council submitted in 2007 the Multiple Use Integrated Marine Management Plan, to promote the parallel pursuit of sustainable fisheries and marine habitat conservation (Makino et al. 2009; Sakurai 2013). In Shiretoko, there is strong awareness among local fishermen, who seek the continued existence of fisheries and there is a continuous effort to form consensus with local residents, governmental bodies and other stakeholder groups (Sakurai 2013).

After the submission of the Multiple Use Integrated Marine Management Plan, the contributors continued to improve on the prototype, until, in 2009, a comprehensive plan was formulated (Yamanaka, Murakami 2013). The last plan included also solutions to the terrestrial challenges, such as control of deer population,

public use and conflicts between wildlife (brown bears – *Ursus arctos lasiotus*) and human activities. The draft of the plan, after it was submitted by the Scientific Council, was adopted by the Liaison Committee and approved by the Ministry of the Environment of Japan and the Hokkaido Prefecture Government, establishing the plan as generally accepted management framework document. Obviously, the management plans need constant evaluation and upgrades. However, the attempt for holistic management in SWNHS is one of the most advanced natural park management regimes in Japan and probably in the world as well (Yamanaka, Murakami 2013).

The Marine Management Plan introduced a very significant parameter, with impact in multiple aspects of the management regime. The fishermen maintain catch records and other fisheries related data which are used for the effective monitoring of the Shiretoko WNHS. These data are vastly more inclusive than the data that could be collected by the Government itself, as the fishermen target the majority of keystone species and have first-hand access to observations of non-commercial species, weather conditions etc. Furthermore, the collection of the data by the fishermen saves the state from considerable costs, especially coupled with regulation enforcement and control, also performed by the fishermen (Makino, Matsuda 2011).

4. Conclusions and Discussion

The Shiretoko World Natural Heritage Site case is very interesting due to the unique nature of its management regime. However, even though the positive aspects of the case have been thoroughly laid out, there are still points that have the potential for improvement. As an example, the decision-making system sometimes becomes inflexible and time consuming due to its complexity and this could prove problematic in cases where swift action is required (Makino, Matsuda 2005).

Nevertheless, the Shiretoko Approach has great potential to promote a more sustainable and less conflict-ridden management concept for cases where conflicting interests between conservation and human activity, especially fisheries, are present. Another point that should be made here is the fact that, based on the Shiretoko WNHS, a team of scientists from Japan, Russia, China and Mongolia have been attempting to establish a jointly managed conservation area that will encompass the whole area of the Amur river basin and the Sea of Okhotsk (Amur-Okhotsk Consortium 2013). The "Amur-Okhotsk Consortium", as the team has been named, was established in 2009 and its main objective is the exchange of knowledge and information for the promotion of sustainability in the area of the Sea of Okhotsk. However, through extensive research of the environmental and geopolitical characteristics of the area, the Consortium has deduced that the only solution would be an official international cooperation with input from the countries with interests at stake in the area (Amur-Okhotsk Consortium 2013). Ideally, this case will result in the first transnational protected area and the establishment of this conservation park will result in the elimination of conflicts within the borders of each collaborating country, as well as international conflict between the countries.

Conclusively, rather than the simple participation of fishermen in the management design process, the actual focus on them as the primary decision-makers made the Shiretoko Approach a best-practice case in marine management. In the Shiretoko WNHS, there is currently in place an overall well-balanced management regime that does not sacrifice livelihoods for the sake of conservation and vice versa, from which all the stakeholders benefit and could act as a guide for the improvement of marine management all over the globe.

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