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Attitudes towards fishery and conservation of the Saimaa ringed seal in Lake Pihlajavesi, Finland

MIKA TONDER AND JUHA JURVELIUS*
Finnish Game and Fisheries Research Institute, FIN-58175 Enonkoski, Finland
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SUMMARY

The Saimaa ringed seal (*Phoca hispida saimensis*) is the only endemic mammal in Finland. At present the total population size of this subspecies is *c.* 250 individuals. Because the seal feeds on fish, and because of its value particularly as a source of meat, oil and leather, hunting was allowed until 1955. Conservation of the seal and some of its lairing areas by means of fishing restrictions requires the adoption of new attitudes. Semi-structured interviews elucidated the basis of conflicts concerning protection of the Saimaa ringed seal and fishing in Lake Pihlajavesi, Finland, where one of the most viable populations of the seal lives. Socio-economic position largely determined personal attitudes towards conservation; local landowners felt that their use of natural resources was restricted, while summer cottage owners wanted strict conservation. Commercial fishers considered the protection of the ringed seal unnecessary and a waste of money. Conservation biologists believed that the proposed actions were necessary to reduce the risk of extinction. Attitudes were also widely influenced by culture and social backgrounds. Those influenced by the traditional Finnish peasant/nature relationship had a different vision of nature from the conservationists who were influenced by modern science. Questions raised by the protection of the Saimaa ringed seal form an example of transition of an environmental conflict to larger-scale criticism of ongoing structural transformation in society. It is obvious that if nature conservation requires the approval of all social groups, it needs a change of authoritarian measures and acceptance of local knowledge, which should be used alongside scientific knowledge in management. Nature conservation policy led by specialists and authorities could be seen as widening the gap between urban and rural areas.

Keywords: attitudes, Finland, locality, Natura 2000 network, protected areas, qualitative research

INTRODUCTION

The Saimaa ringed seal (*Phoca hispida saimensis*) is the only endemic mammal in Finland. It is assumed to be a land-locked form of the ringed seal living in the Baltic Sea (Forsten & Alhonen 1975). The habitat of this seal has been restricted to the Saimaa lake-complex in south-east Finland. Today seals are only found in some parts of this complex. This subspecies has, in many ways, been a key animal in Finnish environmental policy. Nature conservationists have evaluated the success of environmental policies largely through the Saimaa ringed seal. Scientists have used it as an indicator of water quality (see Helminen *et al.* 1968; Hyvärinen & Sipilä 1984; Hyvärinen *et al.* 1998). The seal is considered important for the development of regional tourism.

The Saimaa ringed seal was one of the first subspecies included in the Red List of Threatened Animals (IUCN [World Conservation Union] 1996; Helle *et al.* 1998). In total there are 35 species of seals worldwide, but the European Union has only four species, the Mediterranean monk seal (*Monachus monachus*), the harbour seal (*Phoca vitulina*), the grey seal (*Halichoerus grypus*) and two subspecies of ringed seal, one in Lake Saimaa and the other in the Baltic Sea (*Phoca hispida botnica*).

The Habitat Directive of the European Union categorized the Saimaa ringed seal as needing strict protection (Council Directive 92/43/EEC) and the subspecies is also listed in the Federal Register of the USA Department of Commerce as an endangered and threatened animal (Anon. 1993; Reijnders *et al.* 1993; IUCN 1996; Brasseur *et al.* 1997; Rice 1998). Breeding areas of this seal have been included in the European ecological network, Natura 2000 (Oksanen 2003).

The foundation of the Natura 2000 network was widely associated with a referendum on membership of the European Union in 1995, where rural people had an especially negative attitude towards the Union. Local viewpoints about restrictions on the use of natural resources sometimes differ from those of administrative authorities (see Lehtinen & Rannikko 1994). In objections, people were mostly concerned for their rights to use land property and questioned the necessity of conservation measures (Tonder 1999).

Environmental conflicts in Finland are usually connected with issues concerning ownership of land and the use of natural resources (Oksanen 2003). Water ownership is linked to land ownership. Private ownership has determined the access to fishing and the management rights of waters. Privately owned waters are managed in a statutory fishery association (see Jurvelius & Auvinen 2001), which represents the local landowners and primarily aims to maximize fish yields. However, there has been increasing pressure from some landowners and the wider public for waters to be managed

*Correspondence: Dr Juha Jurvelius Tel: + 358 205 751 622 Fax: + 358 205 751 609 e-mail: juha.jurvelius@rktl.fi

for their recreational and nature conservation value (Muje & Tonder 2002).

Hunting and fishing are historically important means of subsistence in Finland (Tiitinen 1995). In eastern and northern Finland, the subsistence fishery is still of great significance, at least in the minds of local people. At the moment, nearly 80% of the 2.1 million Finnish recreational fishers fish mainly in lakes and rivers, and approximately 1000 commercial fishers, who are mostly part-time, harvest inland waters (Toivonen *et al.* 2002). They fish especially for *vendace* (*Coregonus albula*), chiefly with trawls and seine nets. About 45% of recreational fishers use gill nets (Toivonen *et al.* 2002), which cause most harm to the seals (Sipilä & Hyvärinen 1997).

The population size of the Saimaa ringed seal at the moment is *c.* 250 individuals, and about 40 pups are born annually (Sipilä & Hyvärinen 1997; Kunnasranta 2001). Hunting, gill-net fishing, water-level regulation and pollution have posed the largest threats to the seal population. Hunting has been forbidden since 1955, and at the moment pollution is a minor threat to the seals in Lake Saimaa (Hyvärinen *et al.* 1998; Kostamo *et al.* 2000). The most effective way to enhance future prospects for the Saimaa ringed seal population is to improve pup survival to maturity (Kokko *et al.* 1998). However, about 15 pups and 1–3 adults are drowned annually, mostly in gill nets. According to Sipilä *et al.* (1990), voluntary fishing restrictions have decreased the number of seal pups drowned during the 1980s.

In 1999, in an attempt to reduce the mortality of adult seals, the Ministry of Agriculture and Forestry of Finland implemented technical restrictions regarding fishing gear within the breeding area of the Saimaa ringed seal. Thus gear using fish as bait, gill nets with strong mesh and a fyke net with a closed cod-end have been prohibited since April 2002. Restrictions were implemented in large parts of Lake Pihlajavesi.

The enforcement of conservation measures always concerns society as well as the ecosystem itself. Therefore social science is relevant to the solution of environmental problems. Qualitative, semi-structured interviews are often a more sensitive means of studying people's attitudes than structural questionnaires.

A qualitative social case study analyst should, instead of generalizing results with other case studies, try to generalize findings to form a theory (Yin 1994). This means concentrating more on covering all dimensions of the issue and the level of theoretical saturation in the acquisition of data material than on statistical validity (Eskola & Suoranta 1998). The distinctive contribution of qualitative research is its ability to use theoretical resources in deep analysis of small data bodies (Silverman 2000). In the current study, we used qualitative methods to describe local attitudes towards conservation of the Saimaa ringed seal.

We aimed to evaluate how differences in public attitudes to conservation measures targeted at the Saimaa ringed seal reflected wider conflicts in a period of major socio-economic change. More specific objectives were to find out (1) what kind of attitudes and patterns of argument exist towards Saimaa ringed seal conservation, (2) the factors which influence people's attitudes and (3) what kind of solutions should be implemented to make conservation more acceptable.

Figure 1 Lake Pihlajavesi, Finland. Islands with permanent settlement are named.

METHOD

Study area

Lake Pihlajavesi is a part of the Saimaa lake-complex in south-east Finland (Fig. 1). Its water area is about 500 km^2. At present, there are about 2500 cottages on its islands and shores, the number having greatly increased during recent decades, and there has been constant pressure to build more. There has been permanent settlement in the archipelago at least since the 16th century. Fishing, farming and forestry have traditionally been the main sources of income. The number of permanent inhabitants in the archipelago has drastically decreased from hundreds of households to *c.* 50 during recent decades.

Approximately 35% of the annual pup production of the subspecies takes place in Lake Pihlajavesi (Auvinen *et al.* 2003), which is also important for commercial, subsistence and recreational fishing. Its water area is divided between 220 statutory fishing associations. About 20 000 people fish annually in this lake, the total annual catch amounting to 400–500 tonnes (Leinonen *et al.* 1998). Almost every cottage owner fishes.

The implementation of the Natura 2000 network elicited 252 objections from the Lake Pihlajavesi area, mostly from landowners who considered that the conservation actions were unnecessary and who were concerned about their rights of access (Tonder 1999).

Interviews

In the current study, we focused on the variation of key contentions, local arguments, justification, social interaction and the way arguments were interrelated in the interviews. The interviews covered core members of the main interest groups in the issue. The aim was to make analytical

Table 1 Interviews at Lake Pihlajavesi in 1999.

Interest group	*Number interviewed*
Local stakeholders	19
Cottage owners	12
Commercial fishers	4
Conservation biologists	3
Total	38

generalizations about the issue, not to derive statistical explanations. We followed established theoretical principles of grounded theory (Strauss & Corbin 1998). Theories about the phenomena were generated through multilevel coding of data, and the emphasis on theoretical assumptions increased during the course of the analysis.

We formed our interpretations by deducing the opinions of each interest group. The researcher considered what was appropriate in the acquisition of data material (Hirsijärvi & Hurme 2001). Delimitation of material according to subject matter is an essential premise in argumentation analysis (Fletcher & Huff 1994).

People in the study area were surveyed by 38 semi-structured interviews in 1999 (Table 1). One cottage owner and one biologist were women; the other respondents were men. The duration of an interview ranged from 40 minutes to several hours. The interviewer did not lead the discussion, but encouraged the interviewee by empathetic questions to give his/her opinion on nature conservation in relation to the lake. Approximately 50 hours of interviews were taped, transcribed and analysed by a tripartite coding procedure, where key topics were searched, relations between arguments and concepts were analysed and further theoretical assumptions were compared with data using ATLAS/ti Knowledge Workbench (www.atlas.ti.de), a computer programme for qualitative analysis.

We concentrated on analysing the attitudes of local stakeholders, cottage owners, commercial fishers and conservation biologists, groups whose activities have an impact on the Saimaa ringed seal. Local stakeholders in the fishery associations lived in the study area throughout the year and their incomes were usually derived from farming and forestry. Respondents in this group were active directors of the most important fishing associations in the region. Cottage dwellers spent mostly weekends, and sometimes even longer periods, in the cottages. Most of them had permanent residence in the nearby municipalities. Summer is the most popular season for cottage dwelling, but the use of cottages in other seasons has recently increased. Of the cottage dwellers interviewed, 66% were retired. Three of the four commercial fishers interviewed lived in the study area. Fishing was not their sole source of income. The conservation biologists worked in a governmental park and forest service (Metsähallitus) responsible for the conservation of the Saimaa ringed seal, and lived in an adjacent urban area. Every biologist interviewed worked with the seal issue.

RESULTS

None of the people interviewed had a negative attitude towards the voluntary fishing restrictions (Table 2). Restriction measures by the Ministry of Agriculture and Forestry of Finland and the Natura 2000 programme were strongly opposed by all groups, except the conservation biologists. Commercial fishers and conservation biologists were the groups most antagonistic towards each other.

Local stakeholders

Although the respondents were positive about nature conservation, they disapproved of specific measures. Only three of the 19 stakeholders interviewed thought conservation measures regarding the Saimaa ringed seal were positive and necessary. The majority declared such measures to be unnecessary, and four of them considered conservation measures were unfavourable to the area.

The effect of fishing on seal mortality was considered low, and all respondents felt that their own fishing activities were harmless to the seal, based on the long coexistence between men and the seal. In addition to this, seals were often considered harmful animals, which destroyed fishing gear and ate catches. None of the local stakeholders wanted to harm seals, but they thought the conservation of the Saimaa ringed

Table 2 Interviewees' ($n = 38$) attitudes towards conservation measures at Lake Pihlajavesi in 1999.

Interest group	*Attitudes towards*			
	Voluntary fishing restrictions	*Natura 2000*	*Fishing restrictions of ministry*	*Other conservation measures*
Local stakeholders	68% positive, 26% did not specify, 6% did not mention	100% negative	84% negative, the rest did not specify	Not mentioned
Summer cottage owners	100% positive	33% positive, 17% negative, 50% did not specify	75% positive, 25% did not specify	33% positive, 67% did not specify
Commercial fishers	Not mentioned	100% negative	100% negative	100% negative
Conservation biologists	100% positive	100% positive	100% positive	100% positive

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seal had been sufficient until now. The Natura 2000 network and fishing restrictions imposed by the Finnish Ministry of Agriculture and Forestry were considered to be an exaggerated response. All interviewees were aware of the increase in fishing intensity resulting from the increased number of summer cottages.

Most respondents believed that conservation measures imposed financial burdens that harmed fishing, agriculture, forestry and the traditional way of life in the archipelago. The local stakeholders thought conservation measures did not have any benefits for them, and the measures placed restrictions on the settlement habitation of rural areas, thus the discussion concerning conservation addressed wider social issues. Moreover, stakeholders in their thirties or forties had more negative attitudes towards conservation than older people. In many cases the income of the younger people was directly connected to natural resources.

The interviews revealed considerable antagonism towards the Natura 2000 network. Its greatest defect was said to be its size and the transfer of power from stakeholders to 'Brussels'. Although the conflict about the network had calmed down from its highest point in 1997 and 1998, there was little sympathy or awareness towards its aims among local stakeholders.

Fishers, especially those who were landowners, and their representatives strongly resisted the 1999 fishing restrictions. Many of them criticized the contents and scope of the proposal and could not comprehend the need for intervention by the central authorities. Stakeholders whose fishing activity was infrequent considered fishing restrictions more harmful than those whose fishing activity was high. Forbidden gear, for example hooks using live fish as bait, had often been used in previous decades, but usage was diminishing. This could explain the attitudes of those whose fishing activity was now low, but who used the gear in their youth.

Among local stakeholders there was strong criticism of the decision by the Ministry of Agriculture and Forestry to restrict fishing. Local people were not consulted during the preparation of the decision and they heard about the decision from the media. This was said to have reflected limited knowledge of local circumstances. It was felt that the seal was more highly valued than people.

Cottage owners

The attitudes of cottage owners towards conservation were widely different from those of local stakeholders. Nine of the 12 owners supported strict conservation measures. Some of them wanted the area to have national park status. This was thought to create a much stricter conservation regime than the fishery restrictions. In addition to the seal, flora and shorelines were considered worth conserving. In the opinion of the cottage owners, the main advantages of conservation were linked to the preservation of the landscape and the tranquillity of nature. The building of new cottages was considered to be undesirable.

A prominent feature among cottage dwellers was that if the person was born in the area, he/she closely followed the discourses of local stakeholders. Those not born in the area had much more positive attitudes towards seal protection.

Commercial fishers

In general, the fishers were unsympathetic towards conservation measures (Table 2), even though the restrictions did not apply to trawling or seining, the gear most often used by these fishers. Conservation of the Saimaa ringed seal was considered unnecessary and a waste of money. Commercial fishers had frequent contact with seals, which often appeared in the seine or in the wake of trawling boats. The Saimaa ringed seal was considered a harmless and pleasant animal and a symbol of the environment. Commercial fishers disagreed with scientific opinion about the size of the seal population. Fishers thought that the number of seals was much higher than biologists had estimated.

All the fishers interviewed said that the seal had a minor impact on the fish stocks. With regard to destruction of fishing gear, seals were said to be a problem only if fishing nets were close to their lair. The economic loss caused by damage to gill nets was mentioned only in the interview where the attitude towards conservation was most antagonistic.

Conservation biologists

The biologists believed that the proposed management actions were necessary to reduce the risk of extinction. They explained this opinion by referring to research done by Ranta *et al.* (1996) and Kokko *et al.* (1998). At the time, restrictions were at a suitable level, and if fishing intensity increased the Ministry of Agriculture and Forestry should take further action. The biologists considered such conservation measures were part of a larger national responsibility towards nature protection, in line with Finnish membership of the EU and the directives of Natura 2000.

According to biologists, gill net fishing was the biggest threat to the seal. They considered the recently distorted development of the subsistence fishery as a reason for the fishing restrictions imposed by the Ministry. Only big valuable fish were appreciated. Non-local summer cottage owners were perceived especially as following this trend, where gill nets, strong enough to catch even an adult seal, were used.

The increase in cottage building and cottage dwelling in wintertime was thought to accentuate potentially-harmful fishing pressure and disturbance during the nesting season of the seal in late winter. The biologists did not consider the activities of permanent local inhabitants as harmful.

Most of the respondents were positive about the seal. Attitudes towards conservation depended on the measures involved and, especially, the way they were implemented. In addition to this, people's attitudes were influenced by economic and socio-cultural backgrounds, which could act independently of each other.

DISCUSSION

People's attitudes towards nature conservation measures were determined by their dependence on the natural resources in Lake Pihlajavesi. This was clearest in the attitudes of local stakeholders, in accordance with Lahdenmäki (1996), who stated that people opposed conservation measures if their socio-economic position was threatened. However, economic dependence did not explain attitudes unequivocally; for example, incomes of commercial fishers were not threatened by fishing restrictions, but they rejected conservation measures in the same way as other local people.

In rural Finland, the peasant/nature relationship highlights local knowledge, ownership of land and priority of local society. These discourses had a great influence on people's arguments at Lake Pihlajavesi. Although people's lives were not dependent on natural resources or threatened by conservation measures, attitudes widely followed traditional ways of defining society between 'us and the outsiders'. Dependence on economic factors highlights the problematic position of environmental management, especially if there are changes in society and/or private life (Lahdenmäki 1996).

The latest changes in society have emphasized its fragmentation (central/periphery, urban/rural areas) and the structural transition in rural areas (Sairinen *et al.* 1999). At present, the Finnish rural population is to a large extent migrating to five major urban centres in the country. Thus, conflicts in nature conservation can be seen to partly include criticism of the structural transformation going on in Finnish society. From a rural perspective, conservation measures are often seen as reflections of the unfair dominance of ignorant urban authorities. This view was often heard in the interviews at Lake Pihlajavesi.

According to Giddens (1990), the nature of social dynamics has been changed by late modernism, which is emphasized by discontinuation and individualism. The significance of local contexts has increased and people's identities are no longer widely connected to the nation, but more to such as occupational groups and ways of living. This was clearly seen also at Lake Pihlajavesi. As Lacau (1990) describes, changes in society have led to the transformation from mono- to multi-centrism, and society members have many different identities according to their particular interest.

In general, nature conservation was widely accepted among local stakeholders at Lake Pihlajavesi because it followed the global discourse on environmental awareness. However, if conservation measures impinged on local life they were often rejected, because they were seen as antagonistic to traditional lifestyles. Negative attitudes towards nature conservation emphasized people's interests and identity as a continuum of traditional natural resource use, differing from the mainstream of society. Thus, the specialists and officials determining present nature conservation policy can be seen as widening the gap between urban and rural areas. Three further issues could be identified in the arguments.

Political power struggle

The interviews revealed a political power struggle and fear of the reinforcement of the central-periphery position. In arguments where conservation measures were criticized, interviewees often mentioned that decision-making power had been transferred to Helsinki (the capital of Finland) or Brüssels (European Public Office). Criticism expanded away from the context of the Saimaa ringed seal to cover the general situation of rural areas in Finland. This is a feature of post-modern society, where communities are no longer formed through historical, geographical and spatial development, but are formed within groups of people having the same kind of socio-economic backgrounds and political regimes (Stone 1986). The interaction of these groups easily leads to competition for political power. The conservation of the Saimaa ringed seal is a good example of this.

The Natura 2000 network and the decision of the Ministry of Agriculture and Forestry gave rise to conflicts where different regimes at Lake Pihlajavesi started to compete for power. Similar conflicts have arisen elsewhere in EU (Alphande'ry & Fortier 2001). Neglect of social, cultural and economic impacts of marine protected areas has sometimes led to poor local consensus, if not hostility (Badalamenti *et al.* 2000). At Lake Pihlajavesi, the voluntary fishing restrictions were considered positive because they were created through negotiation, thus strengthening local power. However, it is worth mentioning that the statutory fishing associations in the best lairing areas of Lake Pihlajavesi were annually paid for restricting fishery in their waters.

Although the human population of the archipelago of Lake Pihlajavesi has declined and the lifestyle of people is more individualistic than in the past, strong local social cohesion still existed in certain levels. The negative attitudes of people who did not fish actively and of the native summer cottage dwellers towards fishing restrictions are an example of power relations inside the community. According to Foucault (1998), a community member, when following rules and discursive practices of the community, carries on its traditions. Accepted discourses and rules are followed as an example to other people and provide a framework for personal life, criteria defining social acceptability within the local community. Those who opposed fishing restrictions, though their own fishing activity was limited, often had a central position in local statutory fishing associations. Activity in these associations was considered part of farm management, the water areas forming part of farm properties. The motive for opposing restrictions was derived from the traditions of a free peasantry in Finnish agriculture and the position of farmers in the society.

Different types of knowledge

Conservation is based on scientific knowledge. Local people observe the environment through their own experiences and local folklore. This was seen, for example, in the estimations

of the size of the Saimaa ringed seal population. Local people mistrusted the estimates made by researchers and thought that the size of the total seal population in Lake Saimaa (area 4000 km^2) was 50 seals higher than scientific estimates. Conservation biologists said that local people were often counting each seal several times, and that seal density varied greatly among different parts of Lake Pihlajavesi.

The attitudes of summer cottage owners varied according to the degree of attachment to the place. People with long roots in the locality respected local knowledge, indicating how knowledge had a connection with locality and this turned into discourse.

That science and local knowledge were not absolutely separate could also be seen in the interviews. Local people obviously had different sources of knowledge, including scientific reports, especially if written in Finnish. People seemed to be able to engage with all of these at different levels. They did not accept one sort of knowledge and dismiss another. Thus knowledge was also used as a discourse, to legitimate people's attitudes. Local people often considered the results of science to be goal-oriented, and the results thereby only empowered external control. People thought scientific research on the Saimaa ringed seal was conducted only for conservation purposes. This view tended to make people cautious about accepting scientific knowledge, especially if the results were not what they expected.

The way of informing people about the conservation measures reduced their acceptability. In many interviews people complained that they read about measures in the local newspaper, although the issue also impinged on their interests. To their minds, science was taking account only of the conservation of diversity in nature, not of local lifestyles and experience.

The planning and managing of protected areas should be conducted on a multidisciplinary basis (Badalamenti *et al.* 2000). Only with such flexibility will it be possible to reach greater understanding of nature conservation and create a lasting consensus to avoid damaging nature and prevent others from doing so.

Environmental entitlement

Conservation measures have a high value at national and international level. However, the cost of these measures is often too high at the local level (Rannikko 1999). Nature conservation falls outside the context of local nature resource use. It is largely based on empirical science, and nature is validated through certain measurements and concepts. From the perspective of a local stakeholder at Lake Pihlajavesi, nature conservation intruded into the area and replaced local traditions, which might also have been based on sustainability.

Land ownership has been a sensitive issue through the ages in Finland, and the rights of non-landowners have long been an issue of political struggle (Määttä 1999). In addition to the historical development of the ownership of land property and the situation of water areas as a part of farm property, the meanings of ownership and nature resource use are deeply rooted in the minds of people. The image of a productive and managed natural resource was highlighted as 'a good natural asset' among local stakeholders at Lake Pihlajavesi, and a landscape with no marks of human activity was considered useless compared to the traditional agrarian landscape. Attitudes like these make it difficult for nature conservation to get its entitlement of access into the area. However, summer cottage owners tried sometimes to use their ownership to support nature conservation measures.

The statutory fisheries associations are designated to carry the main responsibility for the fishery management in the area. The Ministry of Environment puts nature conservation into action, and the measure is based on the Environmental Protection and the Water Act (Jurvelius & Auvinen 2001), which differs from the Fishing Act. However, the decision of the Ministry of Agriculture and Forestry to restrict fishing in the breeding areas of the Saimaa ringed seal was based on the Fishing Act. Thus the legal procedure is open to speculation and different definitions as to who should carry the responsibility for management.

In Finland the conflict between environmentalists and landowners is mainly a conflict between different values attached to nature. The conservation of the Saimaa ringed seal has been reconstructing regimes that were formed to carry out local environmental entitlements and that obtained their validity from different interests and sources of knowledge. In solving problems arising from this process, interpretations of local environmental consciousness and values generated through social traditions have been of fundamental importance. If nature conservation requires approval from all social groups, change in authoritarian measures and acceptance of local knowledge should be used alongside scientific knowledge in its management.

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