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Social Acceptability of Marine Protected Areas – A Case Study of the Gålö No-Fishing Zone in Sweden

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Social acceptans av marina skyddade områden – en fallstudie av det fiskefria området vid Gålö

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Abstract

No-fishing zones (NFZs) are increasingly used for managing declining fish stocks internationally and in Sweden. NFZs are ultimately implemented in order to change human behaviour, and acceptability among stakeholders can affect the possibility of their implementation as well as their ecological success. The current study explored the concept of Social Acceptability in relation to the Gålö NFZ by conducting twelve semi-structured interviews with stakeholders. The study found a general acceptance towards the NFZ among the interviewees. Before establishing the NFZ, the area was perceived to have experienced a significant decline of fish stocks due to a high fishing pressure. The area was also regarded to be important to protect since it offers important reproduction opportunities for the target species. The perceived poor state of many fish stocks in the Stockholm archipelago was a reason for supporting NFZs in general. Many interviewees saw however a shortcoming of the NFZ, as it does not offset other possible factors causing declining fish stocks. Strong opposition towards the NFZ was found among some fishing right owners, who felt marginalised in the decision making process and were disappointed with the absence of a follow up dialogue, leading to a lack of trust in management authorities. NFZs also impose large restraint on fishing right owners' use rights. The Swedish legal context with strong private ownership of waters on the majority of the Swedish east coast, and the legal space in the Swedish Fisheries Act, makes acceptability among fishing right owners important from a management perspective when implementing NFZs. The general support of NFZs found, and also the initial support among some fishing rights owners, speaks for a future use of NFZs if the ecological effects on the target species are found to be significantly positive. A more strategic approach of involving stakeholders, as well as increasing the understanding of the effects on fish stocks by other factors than fishing, would probably improve the acceptability of such areas.

Populärvetenskaplig sammanfattning

Sex stycken fiskefria områden inrättades i svenska vatten mellan 2006 och 2011 för att undersöka vilka effekter ett totalt fiskestopp kan ha på lokala fiskbestånd. Ett av dessa områden inrättades 2010 vid Gålö i Stockholms skärgård med syftet att stärka bestånden av gös, gädda och abborre. Att det finns stöd från allmänheten och privatpersoner kan dock påverka möjligheten att inrätta fiskefria områden, samt hur väl reglerna efterföljs och därmed deras ekologiska framgång. Syftet med denna studie är att öka förståelsen för vilka faktorer som bidrar till att personer med anknytning till det fiskefria området vid Gålö antingen accepterar eller motsätter sig det. För att undersöka detta så intervjuades tolv personer med olika anknytning till området (t.ex. fiskerättsägare, sport fiskare och myndighetspersoner).

Resultaten av studien tyder på att det finns ett generellt stöd för den här typen av åtgärder då det ansågs att skyddande av känsliga och viktiga reproduktionsområden är en viktig del i att stärka fiskbestånden i Stockholms skärgård. Många av de intervjuade var dock bekymrade över andra faktorer som ansågs påverka fiskbestånden men som fiskereglering inte motverkar, främst påverkan från skarv och säl på fiskbestånden, samt negativa effekter från en ökande båttrafik och allmän exploatering av skärgården. De intervjuade fiskerättsägarna hade en stark negativ inställning till området, dels på grund av att de upplevde att deras åsikter inte hade tagits i beaktande när området inrättandes, samt att myndigheterna hade misslyckats med att hålla fiskerättsägarna informerade om områdets påverkan på fiskbestånden som utlovat. Besökande sport fiskare ansågs också vara den största orsaken till minskade bestånd i området medan fiskerättsägarna var de som ansåg sig drabbats mest av införande. Att det inte ansågs finnas någon tydig plan för vad som skulle hända med området efter det initiala fem år förbudet var också en orsak till missnöje.

Vilka ekologiska effekter området vid Gålö, samt de andra fiskefria områdena som har inrättats sedan 2006, har haft på fiskbestånden kommer att presenteras 2016 och vara en viktig del gällande det framtida användandet av fiskefria områden i Sverige. Resultaten i den här studien antyder dock att det finns många faktorer som talar för ett generellt stöd för användandet av fiskefria områden framöver, även om ett visst motstånd troligtvis är oundviklig då fiskefria områden innebär stora inskränkningar i den privata äganderätten när de inrättas i enskilda vatten. Acceptansen av fiskefria områden kan troligtvis öka genom att förvaltande myndigheter mer kontinuerligt involverar och informerar intressenter, framförallt fiskerättsägare. Samt genom att man ökar förståelsen för vilken påverkan andra faktorer än fiske har på fiskebestånden. Det vore också viktigt att undersöka möjligheten att integrera fiskefria områden med andra typer av marint områdesskydd.

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1. Introduction

The introduction chapter first describes the background of how and why the Gålö NFZ came into existence. The problem formulation section gives reasons for why social acceptability is important to research in relation to NFZs, and presents factors which may contribute to acceptability towards, or opposition against, NFZs. The study's aim, main research questions, and addressed sub-questions are then presented. Lastly the Gålö NFZ is described in more detail in order to understand the context of the present study.

1.1. Background

The number of marine protected areas (MPAs) in the world has increased from only 118 in the 1970s to a total of 5880 MPAs in 2010 (NRC, 2001; IUCN, 2010). The Convention on Biological Diversity (CBD) which entered into force in 1993 accentuates the need for improved environmental protection due to the insight that human activities pose threats to the existence of many species and important ecosystems (CBD, 2015a). The CBDs strategic plan for 2011-2020, and its Aichi biodiversity targets, endorses governments to increase their marine conservation measures and outlines specific goals to be fulfilled (Thomas, et al., 2014). The CBD includes targets for sustainable management and harvesting of all fish stocks in order to avoid overfishing (Target 6), as well as turning at least 10% of the marine environment into protected areas, with focus on areas being important for biodiversity and providing ecosystem services (Target 11), by year 2020 (CBD, 2015b). Failure of achieving support and social acceptability of marine protected areas has however reduced their rate of implementation globally (Voyer, et al., 2014).

The definition of an MPA given by the International Union for Conservation of Nature (IUCN) is equated with what is regarded to be a protected area in the CBD (Thomas, et al., 2014). The IUCN definition states an MPA to be "*a clearly defined geographical space recognized, dedicated, and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values"* (IUCN, 2015, p. 1). An MPA is therefore a broad term, which can be applied to describe areas in the marine environment with several different forms of human use restrictions (Sale, et al., 2005).

No-fishing zones[1] (NFZ) are forms of MPAs that regulate or completely ban extractive fishing and are mainly used in order to protect declining fish stocks (Sale, et al., 2005). Recently, calls have been made for making up to 30% of the world's ocean into areas where fishing is banned (IUCN, 2014), while the corresponding figure today is probably less than 1% (Thomas, et al., 2014). Although NFZs can be successful in protecting fish stocks the method has its limitations as a fisheries management method, and the knowledge of the ecological implications of NFZs is still growing (see Sale, et al. [2005] and Jones [2006]) for

[1] The term *no-fishing zone* is used in some but not all academic literature to denote an area where there is a permanent ban of extractive fishing. Other terms that are commonly used with the same or similar meaning are *no-take zone*, *marine reserve* or *fishery reserve* (NRC, 2001)

overviews over ecological arguments in favour and against NFZs as a fisheries management method).

Sweden is one of the 168 signatory countries of the CBD (CBD, 2015c) and uses different forms of regulations in order to conserve the marine environment, including; national parks, nature reserves, Natura 2000 areas and shoreline protection areas (for descriptions see [SwAM, 2013a]). Between 2006 and 2011 six NFZs have been implemented in Swedish waters in order to examine how effective the method can be for strengthening site specific fish stocks (SLU, 2014), and to fulfil the Swedish government's environmental objectives (Swedish EPA, 2011). One of these NFZs is located on the inside of the Gålö peninsula in the Stockholm archipelago and was implemented in 2010. The objective of the Gålö NFZ was to strengthen the populations of pikeperch, pike and perch which had faced declines in this and other areas on the Swedish east coast (Sköld, et al., 2008; Ljunggren, et al., 2010). The Gålö area was chosen since it offers important reproduction opportunities for the target species, and because the area had been subjected to a significant recreational fishing[2] pressure from visiting sport fishers and from fishing right owners (Swedish Board of Fisheries, 2009). No commercial fishing was reported to have taken place in the area (Swedish Board of Fisheries, 2009). The initial fishing closure in the Gålö NFZ was set to expire on January 1st 2015, but has been extended to expire on July 1st 2015 in order to provide time for discussion with stakeholders regarding the possibility of an extension in time (County Administrative Board, 2014).

1.2. Problem formulation

Although NFZs aims to protect certain fish stocks, they are ultimately implemented in order to change human behaviour (Mascia, et al., 2010) and to regulate, or redistribute, use rights[3] (Mascia & Claus, 2009). The implementation of NFZs tends to lead to *social dilemmas* due to the often conflicting interests between individuals and the society at large (Schuitema & Jakobsson Bergstad, 2012). Social science research on marine protection, and especially research on the concept of social acceptability, is modest compared to the research on their ecological implications (Thomassin, et al., 2010). Previous research has however found relationships between stakeholder acceptability and the perceived need for environmental protection of a certain area, the inclusiveness in decision-making, and also to what extent stakeholders' activities have been affected (Sutton & Tobin, 2009). Without a deeper understanding of what forms social acceptability there is a risk that the planning process of NFZs fails in meeting stakeholder needs and hence *"alienate those groups on whom the success of MPAs is most dependent"* (Voyer, et al., 2012, p. 437)

[2] Recreational fishing is defined as all fishing activities not conducted for commercial purposes (Swedish Board of Fisheries, 2008b).

[3] The most direct impacts implementation of a MPA are the immediate changes in use rights and control over the resource , while other impacts relate to e.g. economical well-being, social capital and culture (Mascia & Claus, 2009). In general, social impacts can be defined as "*all social and cultural consequences to human populations of any public or private actions that alter the ways in which people live, work, play, relate to one another"* (Burdge & Vanclay, 1996, p. 59)

The importance of stakeholder participation in the planning, implementation and management of marine protected areas is widely recognized (Voyer, et al., 2014) and can lead to greater acceptance of a NFZ (Velez, et al., 2014). Stakeholder consultation has shown to be important not only in order to create use restriction areas that are socially successful, but also the potential of fulfilling ecological objectives (e.g. due to the level of compliance [Pollnac et al., 2010]) has been argued to be dependent on the degree of participation and acceptance from various stakeholders (Blount & Pitchon, 2007). The creation of MPAs in general can therefore benefit from taking both stakeholder concerns and scientific ecological advice into consideration, while not necessarily prioritizing one over the other (Scholz, et al., 2004). As Charles and Wilson (2009, p. 202) states it:

"In all MPAs, there is a critical need to supplement biophysical and ecological data with people-orientated information: about the human values and goals that relate to the area, about historical and current human uses of the area, and about social, economic, and institutional considerations within the area. Such human- orientated baseline assessments and ongoing monitoring are needed to balance the corresponding biological aspects."

Every NFZ is situated in a unique social context, and their acceptance is therefore dependent on a site specific understanding of the social dimensions of the communities they affect (Hilborn, et al., 2004). There is also a general need for a better understanding of marine protected areas in relation to recreational fishing activities, since recreational fishers can have important effects on fish stocks, but have been given little research attention compared to other stakeholder groups, e.g. commercial fishers (Cooke & Cowx, 2004). The lack of research on the social dimensions of recreational fishing has been proposed to be due to the simple fact that they usually do not depend on fishing for their subsistence (Mayo-Ramsay, 2014).

1.3. Aim of the study and research questions

The aim of this study is to increase the understanding of different views in regards to the Gålö no-fishing zone among stakeholders.

The main research question of this study is:

- What factors contribute to social acceptability of, or opposition against, the Gålö no-fishing zone among different stakeholder groups?

In order to answer the main research question the following sub-questions are addressed:

- How successful as a fisheries management method is the Gålö no-fishing zone perceived to be?
- What are the attitudes towards the management of the Gålö no-fishing zone?
- What are the perceived social impacts of the Gålö no-fishing zone?

1.4. The Gålö NFZ

This section describes the Gålö NFZ and its implementation process, user groups, and ecological state in order to understand the context of the present study.

1.4.1. Implementation process

The implementation of the Gålö NFZ is the result of a governmental commission to the Swedish Board of Fisheries in 2005 of establishing six NFZs in Swedish waters (three in the Baltic Sea, and three in Skagerrak and Kattegat). The implementation of the NFZs was to be carried out before 2010 in collaboration with the respective county administrative boards and the Swedish Environmental protection agency (Sköld, et al., 2008). The commission stated the purpose of the NFZs to be:

- to contribute to reducing the risk of stock collapse,
- to build up stocks with diversified size distribution and a natural genetic composition,
- to protect other natural values,
- to serve as a reference area (Sköld, et al., 2008).

The Gålö NFZ consists of a total fishing closure in Lännåkersviken, a bay located on the inside of the Gålö peninsula in the inner parts of the Stockholm archipelago (see figure 1). Simultaneously a buffer zone was implemented in the adjacent Blista Fjärd, where fishing is prohibited between April 1st and June 30th in order to protect fish populations during the spawning period (SwAM, 2013b). The closed area of Lännåkersviken is 1,8 km^2. In combination with the buffer zone in Blista Fjärd a total of 3,5 km^2 was closed due to the implementation of the Gålö NFZ[4] (SwAM, 2013b).

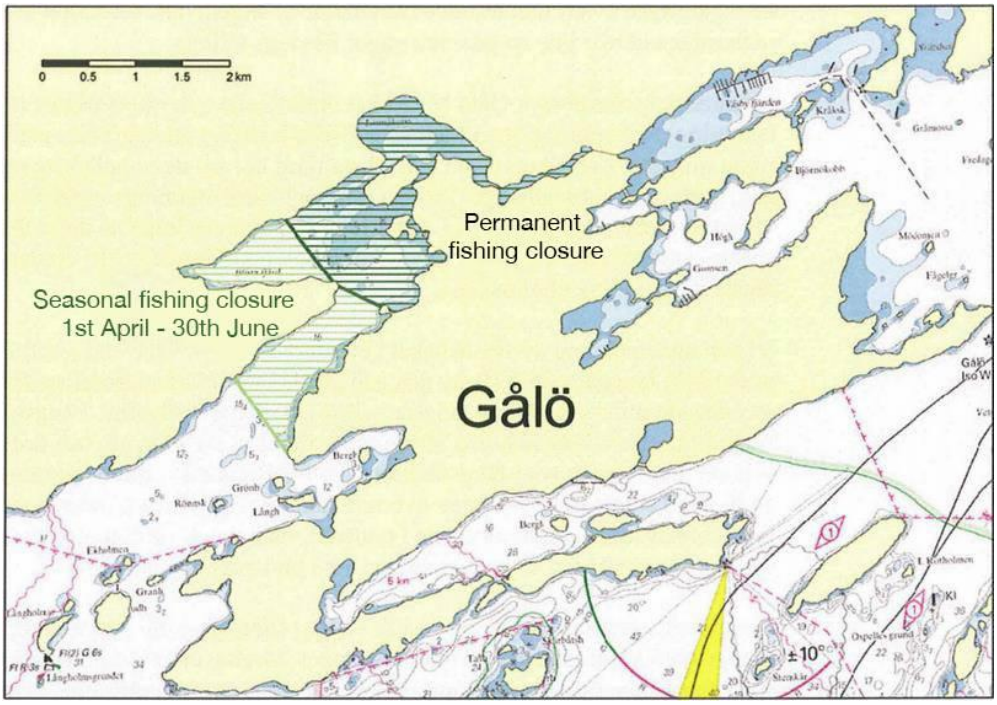

Figure 1. *The Gålö NFZ* (Swedish Board of Fisheries, 2009)

[4] In this text, the term "Gålö NFZ" refers to both the area with the permanent fishing closure in Lännåkersviken, as well as the temporary closures in the area of Blista Fjärd.

The Swedish Board for Fisheries had the main responsibility of the management of the NFZ until the agency ceased to exist in 2011. The major part of the responsibilities for national fisheries management was then transferred to the new Swedish Agency for Marine and Water Management, while the research division was turned into the Department of Aquatic Resources at the Swedish University for Agricultural Sciences. The ecological and economical consequences of the NFZs, as well as their effects on fisheries are to be officially evaluated by these institutions and reported to the government during 2016 (Sköld, et al., 2008).

1.4.2. User groups

Gålö is part of the Haninge municipality, situated at the coast south east of Stockholm. In total the entire county of Stockholm has a population over 2 million people, of which a little more than 80 000 reside within Haninge municipality (SCB, 2015). The Gålö NFZ is located five to ten kilometres away from the more densely populated areas in the municipality, around 140 persons and organisations are fishing right owners in the area of the Gålö NFZ. The Gålö NFZ is divided into nine ownership zones. While some of these areas have single owners, many of them are owned by multiple actors. For example a small area of water in the NFZ, has a shared ownership of over 120 persons. The Swedish Fisheries Act gives fishing right owners relatively large freedom to fish with nets or hand held gear in their own waters, except for some restrictions such as total protection or size limitations of certain species (Åqvist Almlöv & Hammer, 2006). The fishing right owners of the Gålö NFZ conducted household fishing to different degrees in the before the Gålö NFZ was implemented (Swedish Board of Fisheries, 2009).

The main reason for implementing the NFZ was the high fishing pressure from recreational fishing, mostly from visiting sport fishers (Swedish Board of Fisheries, 2009). The expansion of public fishing rights in 1985 allowed persons without private fishing right ownership to fish with handheld gear in private waters[5] on the majority of the Swedish east coast, and led to a considerable overall increase of recreational fishing within Stockholm county (Åqvist Almlöv & Hammer, 2006). The Gålö area was seen as one of the most popular areas for sport fishers in the Stockholm archipelago, although its popularity had been reduced during the most recent years due to declining fish stocks in the area (Swedish Board of Fisheries, 2009). A study conducted between years 1995-1996 estimated that around 7 000 persons conducted recreational fishing in the area surrounding Gålö and the neighbouring Island of Ornö (Svedäng, et al., 1998). Sport fishers were mainly coming from other parts of Stockholm county and had large catches of especially pikeperch, perch and pike (Svedäng, et al., 1998), the same species that the recently established NFZ is targeted to protect.

Fishing guides and their customers used to visit the area frequently before the NFZ was implemented, but they were not deemed to be significantly affected by the closure since they could easily take their customers to other areas in the archipelago (Swedish Board of Fisheries, 2009). The NFZ was not subjected to any commercial fishing before the closure (Swedish Board of Fisheries, 2009), although some of the waters nearby the Gålö NFZ are

[5] Private waters are generally waters up to 300 meters from the mainland or islands. For an overview of Swedish fishing regulations see (Svenska Fiskeregler, 2014).

considered to be of national interest for commercial fishing (Thörnqvist, 2006). Overall, commercial fishing in Stockholm County declined drastically over the last decades (Åqvist Almlöv & Hammer, 2006), and today there are only around 40 commercial fishers left in the whole county (Andersson, 2013).

1.4.3. Ecological state

One of the most important pieces of evidence for showing that fishing has had importance for the decline of the fish populations in the Gålö NFZ is the absence of pikeperch greater than 40 cm, the minimum size limit of the species (Swedish Board of Fisheries, 2009). The small population of pikeperch larger than 40 cm indicates a skewed population structure, which may impair the reproductive potential of the population (Swedish Board of Fisheries, 2009). This phenomenon has also been found for pikeperch in other areas of the Baltic Sea (Mustamäki, et al., 2013), as pikeperch is a species that is highly valued by both commercial and recreational fisheries (Swedish Board of Fisheries, 2008a). Fish surveys in the NFZ before the closure also found evidence for skewed pike populations, while the perch population was found to be in a more stable state (Swedish Board of Fisheries, 2009).

There are several natural and human induced factors besides fishing affecting both the recruitment and mortality among coastal fish populations. Coastal development has been shown to have negative effects on natural habitats and biodiversity, mainly through exploitation of areas offering important for reproduction opportunities for pike and perch populations (Sundblad & Bergström, 2014). The Gålö NFZ is however quite unique in the view of recent coastal developments, still providing good reproductions conditions for all the target species of the NFZ due to its relatively low degree of exploitation (Swedish Board of Fisheries, 2009).

Human induced eutrophication causing decreased water transparency has diverse effects on coastal fish species. It is likely that the increased eutrophication of the Baltic Sea has had positive effects on pikeperch populations while affecting other species such as perch negatively (Bergström, et al., 2013). Increasing eutrophication cannot therefore explain the experienced decline of pikeperch in the area.

Persons residing in the Gålö area have expressed worries about the effects that the predation by cormorants and grey seals has on the fish populations, suggesting that they have had played an important role in the declines of fish stocks (Swedish Board of Fisheries, 2009). The results from the fish surveys were ambiguous in determining the effects of cormorants in the area of the Gålö NFZ. Research from other areas in the Baltic Sea has shown that predation from cormorants can have local negative effects on the catches by fishers, by decreasing the catches of perch with 13-34 % and pike by 8-19% (Östman, et al., 2013), and cormorants may increase the mortality of juvenile pikeperch (Mustamäki, et al. 2013). Both perch and pike have also been shown to play a part of the grey seal diet in the Baltic Sea (Östman, et al., 2013).

2. Theoretical framework

This chapter describes the concept of social acceptability, as well as a theoretical framework for explaining acceptability of environmental policies. The chapter also present previous studies related to the concept of social acceptability.

2.1. Environmental policies and their social dilemmas

Environmental policies, e.g. use restrictions of marine areas, typically benefits society at large while affecting certain individuals negatively (Schuitema & Jakobsson Bergstad, 2012). The positive impacts of a MPA tend to be spread out over a wide group of persons and can also be realized over a long time period, while the negative impacts are more likely to be held by a small group of people and affecting them immediately at the introduction of the area (Hilborn, et al., 2004; Charles & Wilson, 2009; Hattam, et al., 2014). For example, a benefit from a NFZ, e.g. the value of maintained biodiversity, may be held on a national or even international level, while the loss of fishing opportunities in the area are held by the local consumptive users (Scholz, et al., 2004). Because of incompatible objectives between individuals and society at large, a central concern during the implementation of an environmental policy is often how to attend to this *social dilemma* (Schuitema & Jakobsson Bergstad, 2012).

2.2. The concept of Social Acceptability

The social dimensions of MPAs have been studied previously, however few studies explicitly studies the concept of social acceptability in relation to MPAs and NFZs (Thomassin, et al., 2010; Voyer, et al., 2015). Thomassin, et al. (2010, p. 170) gives a definition of the concept of social acceptability as follows;

"*a measure of support towards a set of regulations, management tools or towards an organisation by an individual or a group of individuals based on geographic, social, economic and/or cultural criteria".*

Reasons for acceptability of, or opposition against, a NFZ can vary among stakeholder groups, and also within them since these groups are not necessarily homogenous (Voyer, et al., 2015). Schuitema and Jakobsson Bergstad (2012) state that social acceptability of an environmental policy can be defined as either positive or negative *attitudes* towards it, or certain *behaviour* resisting the policy. Negative attitudes can in turn lead to different behaviours resisting the policy, which can be anything from signing petitions to non-compliance with the policy (Schuitema & Jakobsson Bergstad, 2012). Social acceptability can change over time, e.g. an initial resistance can transform into support during the course of time if positive effects are experienced by opponents (Schuitema & Jakobsson Bergstad, 2012). Changing public support has been found previously in the case of marine protected areas (Taylor and Buckenham, 2003).

Social acceptability is regarded as a behaviour or an attitude that either supports or opposes the Gålö NFZ in this study. The framework presented below is used in order to explain what contributes to social acceptability of, or opposition against, environmental policies like the Gålö NFZ, and is primarily based on the work of Schuitema and Jakobsson Bergstad (2012).

2.3. Framework for explaining Social Acceptability

The Greed-Efficiency-Fairness (GEF) hypothesis originally proposed by Wilke (1991) states that*"...in a social dilemma, people a priori want to maximise their own outcomes, but also have the desire to preserve collective resources and distribute outcomes fairly"* (Schuitema & Jakobsson Bergstad, 2012, p. 257). According to the GEF hypothesis, social acceptability is formed by three different types of perceived outcomes; *"(1) individual policy outcomes, (2) collective policy outcomes and (3) the perceived fairness of the distribution of policy outcomes"* (Schuitema & Jakobsson Bergstad, 2012, p. 258).

Firstly, environmental policies can be opposed if they are perceived to severely restrict the freedom of the individual, i.e. if they are believed to have negative *individual policy outcomes*. Policies set to restrict certain behaviours permanently are especially likely to be opposed. Compensation measures can be useful in order to improve acceptability if the policy implies permanent negative consequences for the individual (Schuitema & Jakobsson Bergstad, 2012).

Collective policy outcomes, and the beliefs whether environmental policies are efficient in solving collective problems also influence stakeholders' attitudes. Acceptance of an NFZ can therefore be dependent on how effective as a fisheries management method it is considered to be. Beliefs regarding collective policy outcomes are likely to influence social acceptability partly because persons naturally care about both the environment as well as other people, and because positive collective outcomes also are likely to benefit the individual (Schuitema & Jakobsson Bergstad, 2012). Polices with objectives that are easy to understand and that are likely to be fulfilled usually gains more acceptability than policies with the opposite characteristics (Schuitema & Jakobsson Bergstad, 2012). Also the degree of environmental concern among stakeholders, and how severe the problem is perceived to be, are determinants of the acceptability of such policies (Schuitema & Jakobsson Bergstad, 2012).

How stakeholders perceive the fairness of the distribution of policy outcomes can be divided into three *"fairness principles: intrapersonal, interpersonal and intergenerational comparisons"* (Schuitema & Jakobsson Bergstad, 2012, p. 260). Perceived intrapersonal fairness depends on how the individual perceives the outcomes of an environmental policy to have affected the own situation, not comparing with how the policy has affected others.

Interpersonal fairness refers to a comparison between the individual effects of a policy, with the effects the policy has had on others. Acceptability is likely to decline if the individual perceives to be affected more severely by a policy than others. Interpersonal fairness relates therefore to the issue of equality, to what extent stakeholders perceived to be affected equally of an environmental policy. A perceived lack of equality can lead to the Not-in-my-backyard (Nimby) syndrome (Schuitema & Jakobsson Bergstad, 2012). The Nimby syndrome refers to the phenomenon of stakeholders being in favour of a proposed solution to an environmental problem, e.g. the introduction of an NFZ, however opposed to the NFZ being located in their immediate surroundings (e.g. Taylor & Buckenham, 2003)

The perceived interpersonal fairness also depends on *horizontal equity*, i.e. whether persons experience their own negative consequences of a policy to be fair in relation to how much they contributed to creating the problem in the first place. Perceived *vertical equity* on the other hand *"implies that people are affected in proportion to their needs and abilities*" (Schuitema & Jakobsson Bergstad, 2012, p. 262). Environmental policies may seem unfair if vulnerable groups are affected more negatively than others. Previous studies have found the issue of equity to be of main concern among fishers hence affecting their reactions and acceptance of marine protection policies (Blount & Pitchon, 2007).

Lastly the intergenerational fairness refers to how just the policy outcomes are perceived to be with consideration taken to future generations, and also the future status of the environment. Increase of perceived intergenerational fairness can lead to a greater social acceptability (Schuitema & Jakobsson Bergstad, 2012). Symes and Philipson (2009) warn however that a too large focus on inter-generational justice and conservation for future generations may be at the expense of intra-generational equity and the possibility of fair distribution within the current generation.

2.4. Fairness in decision making processes and acceptability

Decision-making processes characterized by fairness are likely to increase trust in governmental agencies and hence improve the acceptability of environmental policies. It is important that participating parties feel that their opinions are taken seriously into consideration when stakeholder consultation is undertaken. Trust in authorities is also likely to diminish if stakeholders perceive that authorities are not keeping their promises or fail in their stakeholder communication (Schuitema & Jakobsson Bergstad, 2012).

3. Methodology

The methodology chapter describes the chosen research design, as well as how the data collection was made. Reasons for, and critic against, the methodological choices made are also presented.

3.1. Case study research design

Various definitions of what characterizes a case study exist (for an overview see Gerring, 2004). Yin (2003, p. 13) defines the scope of a case study as *"...an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident".* This contrasts the case study from other research strategies (e.g. experiments) which try to separate the phenomena that are being studied from its context (Yin, 2003). By understanding the studied phenomena and demonstrate its characteristics, the researcher can hopefully contribute to the understanding of similar phenomena elsewhere (Gerring, 2004; Swanborn, 2010). It is however important to remember that case studies using qualitative methods such as interviews can be useful in providing a deeper understanding from the perspective of the participating stakeholders, but the results may not be representative for all stakeholders (Hattam, et al., 2014). The current study is mainly exploratory in the sense that it aims to "*develop pertinent hypotheses and propositions for further inquiry*" (Yin, 2003, p.6) regarding what factors contributing to acceptability towards, or opposition against, the Gålö NFZ. The results from the study can serve as framework for further research, and testing of hypotheses, in order examine if they can be generalised (Swanborn, 2010). A case study research strategy was chosen for this study partly since there is a need for more, qualitative research focusing on the social dimensions of fishing closures (Hattam, et al., 2014).

A case study can focus on process-tracing, which is *"the description and explanation of social processes that unfold between persons participating in the process, people with their values, expectations, opinions, perceptions, resources, controversies, decisions, mutual relations and behaviour, or the description and explanation of processes within and between social institutions"* (Swanborn, 2010, p.13). Process-tracing enables an understanding of the emergence of the phenomenon that is being studied, and how and why it has changed over time (Swanborn, 2010). This study aims at understanding the emergence of the phenomenon of social acceptability among the stakeholders of the Gålö NFZ.

The fact that the existing definitions of a case study are wide and do not give any detailed description of how to conduct the study does not have to be seen as a weakness. A flexible approach allows for the researcher to design the research in accordance with the specific case that is being studied (Swanborn, 2010). This flexibility can therefore be considered to be one of the strengths of case study research, and was one reason for why the case study strategy was chosen for the research conducted in this study. It was seen as beneficial that the case study design allows for a wide choice of combination of different methods, theories from different disciplines, and an initially broad research question (Swanborn, 2010; Yin, 2003). This openness in the research strategy gives an opportunity to obtain a deeper understanding of the phenomenon that is being studied (Swanborn, 2010; Gerring, 2004).

One of the most important criticisms against case studies, and other qualitative inquiry, is that they leave room for subjectivity and researcher biases due to lack of a structured use of methodology[6] (Yin, 2003). One should acknowledge that all choices made in research are made by a person, and to avoid subjectivity one should therefore thoroughly reflect over the choices made and explain the reasons for them (Yin, 2003). Or as Gillham (2005, p. 134) puts it; *"In the sense of being a function of human intelligence all judgements are subjective: they could not be anything else. The 'objectivity' lies in making explicit the criteria for the judgement; but the process remains a matter of interpretation and opinion to a greater or lesser degree, and particularly in relation to human behaviour, feelings, opinions, and the like".*

The concepts of reliability (an accurate measurement of data) and validity (measuring data that are important to the studied topic) can be used to discuss the quality of qualitative research (Morse, et al., 2002; Golafshani, 2003). This study aimed at conducting an iterative process which "*moves back and forth between design and implementation to ensure congruence among question formulation, literature, recruitment, data collection strategies, and analysis*" (Morse, et al., 2002, p. 10) in order to increase its reliability and validity (Morse, 2002),

3.2. Data collection methods

The data for this study were mainly collected through semi-structured interviews. A document review was also undertaken in order support the validity of the data gathered in the interviews. These methods are the most common data collection methods used in case studies together with observations, archival records (e.g. maps and charts) and physical artefacts (Swanborn, 2010; Yin, 2003).

3.2.1. Semi-structured interviews

The interviews were formed around a set of core questions which related to the overarching theme of the study. These preset questions did have an open character allowing for the interviewees to discuss the topic from different perspectives, making the format of the interviews semi-structured (Whiting, 2008). The questions covered the following themes:

- the perceived need for a NFZ in the area and the perceived success of the NFZ as a fisheries management method,
- how the stakeholders perceived the management of the area, with focus on the degree of cooperation between the management and various stakeholders,
- the social impacts that had been encountered.

The interviews took place between the middle of March and the beginning of May in 2015. The majority of the interviewees were initially sent an email explaining the study and what core questions the interview would centre around (see Appendix A). For a few stakeholders no email addresses were available, thus these persons were called up without a previous email. It was made clear at the initial contact with the interviewees that their participation was

[6] Even if this is an important critique, one should remember that research bias can also be encountered in other forms of research claiming to be objective, such as experiments (Yin, 2003).

completely voluntary, anonymous and that they would decide whether they did not want any part of the information given to be used in the study.

The interviews were either conducted over telephone or through face-to-face interviewing. Telephone interviewing was chosen as the main method as it is more time and cost efficient (Gillham, 2005). Conducting personal meetings does however lead to a greater opportunity for interaction between the researcher and interviewee (Gillham, 2005). A total of nine persons were interviewed via telephone, and three persons were interviewed during my two visits to the case study area. Two persons were interviewed at the same time on one occasion since it was deemed to be the most efficient and practical solution at hand. The possibility of the interviewees influencing each other's answers (Gillham, 2005) was taken into consideration when the data from this interview was analyzed.

All the interviewees gave permission for the interviews to be audio recorded. Recording interviews increases the accuracy of the subsequent analyses compared to taking notes (Yin, 2003). The interviews were then transcribed and sent to the interviewees by email or regular mail, thereby providing them with the opportunity to comment on their answers and to clarify them if they regarded it as necessary. Some of the interviewees chose to edit their answers at this point, and the edited documents were therefore regarded to include new data.

Case studies using interviews as a method are exposed to biases partly because the researcher may not know who is suitable to interview, or what questions are suitable to ask (Swanborn, 2010). Interviewees may also unintentionally give inaccurate answers (Yin, 2003). Some of the questions in the interviews focused on the process in which the no-fishing zone was implemented and were therefore of retrospective character. To the greatest extent possible retrospective questions should however be avoided since "*answers on retrospective questions are notoriously liable to bias"* (Swanborn, 2010, p. 17). Triangulating (discussed in section 3.5.) is useful in order to try to improve the neutrality of the data analysis when using qualitative data sources since it enables the conclusions to be based on more than one just one data source (Yin, 2003).

3.2.2. Document review

In this study documents from public authorities (the Swedish Board of Fisheries and the Swedish Agency for Marine and Water Management) acted as a data sources supplementing the information gathered during the interviews. These documents were mainly reviewed in order to obtain an understanding of the process leading up to the implementation of the NFZ, and general information about the area and its user groups. Documents are an information source that is likely to be relevant for almost all kinds of case studies (Yin, 2003). In a document review information published in other forms than in peer-reviewed scientific journals may also be relevant to include although there is risk of obtaining misleading and biased information (Yin, 2003). In order to partly overcome this problem, the researcher should critically reflect on the underlying objectives of the actors being responsible for the publishing of the documents reviewed (Yin, 2003).

3.3. Snowball sampling

The study used so called *snowball sampling*, also known as *chain referral sampling*, in order to find suitable stakeholders to interview. Snowball sampling is a process where the persons participating are asked to recommend other persons that may qualify as interviewees (Robinson, 2014). Following the recommendations of interviewed persons to find other stakeholders is a common approach in a case study (Yin, 2003). The main critique of using snowball sampling is that it does not provide a random sample of the population, leading to collected data that might not be representative for the whole population (Sadler, 2010).

Sampling *saturation* is when a sufficient number of persons have been interviewed and no more relevant information would be found by conducting more interviews (Sadler, 2010). Reaching saturation in sampling is one factor improving the validity of qualitative research (Morse, et al., 2002). It can however be difficult to determine when saturation has been reached (Sadler, 2010). The results in this study are therefore foremost meant to be illustrative, and are not argued to be representative for all the stakeholders affected by the Gålö NFZ. The snowball sampling method was still deemed as useful in this study due to the lack of pre-knowledge of suitable stakeholders to interview. A handful of persons, mainly fishing right owners, declined to be part of the study. Reasons given for not participating in the study were either lack of time, an unwillingness to be a part of the debate on a controversial topic or other unstated reasons. The stakeholders interviewed in this study can be seen in table 1.

Table 1. *Description of interviewed stakeholders*

No.	Description of stakeholder's relation to the Gålö NFZ
1	Commercial fisher living close to the NFZ, owns fishing rights in waters elsewhere.
2	Fishing right owner, conducted household fishing in the NFZ before the closure.
3	Person living in the Gålö area, owns fishing rights in waters elsewhere.
4	Fishing guide operating in the whole archipelago, used to visit the NFZ before closure.
5	Manager working for the managing authorities.
6	Fishing right owner, conducted household fishing in the NFZ before the closure.
7	Person working for an organisation owning fishing rights in the NFZ.
8	Manager working for the managing authorities.
9	Person working for a sport fishing interest organisation.
10	Person working for a sport fishing interest organisation, fished in the NFZ before the closure.
11	Part-time commercial fisher living close to the NFZ, owns fishing rights in waters elsewhere.
12	Person living close to the Gålö area, stopped fishing in the NFZ before the closure.

The sampling in this study started with that I was handed a list of 27 stakeholders with a various connections to the Gålö NFZ by Ulf Bergström at SLU, acting as my supervisor. Bergström was involved in the process of implementing the NFZ by being responsible for describing the status of the fish populations in the area, and for explaining the biological basis of the proposed management measure at stakeholder meetings. He has also been responsible

for evaluating the biological effects of the NFZ. Since Bergström had been involved throughout the implementation process from the beginning I saw him as knowledgeable regarding who could qualify as an interviewee for the research. The interviewing process started by interviewing some of the persons on the obtained list, whereafter they were also asked to recommend other persons to be interviewed. Many of the persons interviewed were considered to qualify as stakeholders even though they are not part of the local community of the Gålö NFZ. This view of a stakeholder is based on the argument that a stakeholder can be anyone *"who has influence on, or can be affected by, the management process"* (Geoghegan & Renard, 2002, p. 17).

3.4. Coding

The transcripts from the interviews were coded in order to systematize the large amount of unstructured data that the texts provided. Saldana (2009, p. 3) defines a code as following; *"A code in qualitative inquiry is most often a word or short phrase that symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute for a portion of language-based or visual data".*

The coding process included the following steps; the transcripts were firstly read through, then for particular passages covering a certain topic one or a few words were noted on the side of the text as code for what was stated. The texts were then read through again and these codes were at a second step sometimes revised. The same code could surface several times in the same text, codes that were repeated several times were seen especially interesting since one of the purposes with the coding process is to find patterns in the data (Saldana, 2009). The coding was done with the overall themes (successfulness of the NFZ, attitudes towards management and social impacts) of the study in mind. The codes were also related to literature review and the concept of social acceptability. Coding can therefore be seen as the initial part of the analysis of the gathered data (Saldana, 2009). Since the researcher interprets the data in the coding process, this process includes unavoidable subjectivity no matter how rigorous the researcher tries to be (Gillham, 2005). It is therefore important to remember that all interpretation done by the researcher in qualitative studies are reflections of the researchers own pre-knowledge and context (Creswell, 2007).

3.5. Triangulation

Since one of the key characteristics of case study research is the use several sources of data, triangulating (or comparing) the gathered data is necessary in order to perform a successful case study (Yin, 2009). Triangulating data from several different sources is also necessary in order to improve the validity and reliability of qualitative case studies (Yin, 2009; Golafshani, 2003). Guion (2002) distinguishes between two different types of triangulation, both of which have been used in this study, *data triangulation* and *method triangulation*.

Data triangulation is based on the inclusion of several sources of information (Guion 2002). In an interview study this means identifying different stakeholder groups and interview persons from each group. If several interviewed stakeholders support the same view it strengthens the trust that can be placed on the statements (Guion, et al., 2002).

Method triangulation entails the use of different methods and comparing the evidence in order to reach validity (Guion, 2002). In this study data from the two main sources of information, interviews and documents, were analysed in order to obtain an understanding of the phenomenon of social acceptability that was as nuanced as possible.

4. Results

The results section presents the data gathered through interviews and documents, the data gathered in the interviews serves as the primary source of information and is presented in tables and in the text, while information found in documents is presented in the body of text and is cited. Illustrative quotes from the interviews are also presented, the quotes have been translated from Swedish to English.

4.1. Perceived success of the Gålö NFZ

The majority of the persons interviewed stated they have had a positive attitude towards the NFZ before the implementation and are also supporting an extension in time (see table 2). Of the twelve stakeholders interviewed, two stated to have opposed the NFZ from the beginning and are also opposing an extension of it, while an additional stakeholder who did not oppose the NFZ from the beginning is now opposing an extension. Some of the proponents strongly support the NFZ while others see it as an overall beneficial method although it should be complemented with other forms of regulations. Of the three persons opposing an extension of the area in time, two are fishing right owners and the third person lives in the local community, but owns fishing waters located elsewhere. A wider understanding of the attitudes towards the NFZ before its implementation is given by a document written after the stakeholder meeting held on Gålö in 2009, which gathered around 40 fishing right owners, sport fishers and other stakeholders. There was an overall consensus during the meeting that fishing restrictions were needed in the area due to the declines in the fish populations, although there were some objections to the proposal (see Appendix B), the reason for these and other objections, as well as reasons for support of the Gålö NFZ will be presented in the coming sections.

Table 2. *Stakeholders' acceptance of the Gålö NFZ*

	Accepting the NFZ	Opposing the NFZ
Initial Period	10	2
Extension	9	3

4.1.1. Perceptions of the NFZ as a fisheries management method

The majority of the stakeholders interviewed had positive attitudes towards the NFZ as a method in general, and some even argued for an overall need of more NFZs in the Stockholm archipelago and the Baltic Sea (see table 3 for an overview of reasons for acceptance of the NFZ as a fisheries management method). Some interviewees argued that there is a general need for more environmental and marine protection since fish stocks are declining in most of the archipelago, and also partly because of the value nature has for future generations, as well as its intrinsic value. NFZs in the archipelago were therefore regarded as necessary among many proponents. An extension of the Gålö NFZ was also supported due to the view that a better understanding of what long term consequences that method has for fish stocks is needed.

Some proponents argued however that NFZs are not a comprehensive solution, and that there is a need for measures against other factors affecting fish stocks negatively, such as predation

by cormorants and grey seal, exploitation of sensitive areas and increased boat traffic. From a management perspective it was also desirable to complement the NFZ with other forms of environmental protection. Although this was not seen as currently possible to accomplish using the Swedish Fisheries Act, and using the legal space of the Environmental Code to increase the protection was seen as practically difficult.

"*The area has a history with extensive public use, and as consequence of this the fishing pressure has evidently caused problems for the fish stocks. The tricky question here is what effect seal and cormorants have on fish stocks in the area, these are factors that has been introduced during the last 15 years"* - Stakeholder 4

Opposition towards the method originated partly from the view that fishing rights owners were the ones affected most negatively by the closure even though visiting sport fishers were perceived to be the ones responsible for overfishing in the area. Opponents argued that limited fishing by fishing right owners should be allowed whilst the area is closed for the general public. A contrasting view declared by some other interviewees was that the system with private ownership of waters is flawed and that separate fishing rights for fishing right owners should not exist at all.

Opposition from fishing right owners also originated from the view that cormorants affect the fish stocks heavily, thereby reducing the benefits accomplished by a fishing closure. Also other stakeholders considered cormorants and grey seals as having large effects on the stocks. The possible negative impacts on fish stocks by cormorants were also one of the main concerns among stakeholders according to the document from the stakeholder meeting in 2009. The participants of the meeting also stressed that the effects of predation should be further researched (see Appendix B). Some interviewees regarded an extension of the NFZ and a long term closure as a confiscation of private waters and it is therefore seen as unacceptable. Removing all fishing restrictions after the initial five-year closure of the area was however not seen as wishful since it would probably lead to a high fishing pressure taking away all the ecological benefits gained from the initial five-year fishing closure.

Table 3. *Reasons for acceptance of the NFZ as a fisheries management method*

Reasons for acceptance
The NFZ can hopefully reverse the present trend of declining fish stocks
There is general need for more marine protection
Without intervention there would be no fish left for future generations
Nature has an intrinsic value
Less fishing also leads to less boat traffic
Reasons for opposition
There are other factors than fishing affecting fish stocks
Persons not being the cause of overfishing the most negatively affected
Some fishing right owners unfairly benefitted from the NFZ
Long term closure equals confiscation of fishing rights

4.1.2. Attitudes towards the choice of location

Several stakeholders regarded Lännåkersviken as a suitable area for implementing an NFZ, mainly because of the historically high fishing pressure in the area (see table 4 for an overview of attitudes towards the choice of location of the Gålö NFZ). The area is also regarded to be unique in the Stockholm archipelago due to its low degree of exploitation and its ecological conditions making it an important reproduction area for many species, including the target species of the NFZ. The Gålö NFZ was also seen as an area suitable for conducting research and evaluations of NFZs in since it is a geographically well defined area. It was hoped to be successful in order to serve as a positive example of the benefits of NFZs.

A stated reason for discontent with the allocation of the NFZ was that it would have been better if the reference area Askviken, at the other side of the Gålö peninsula, was made into a NFZ instead, with Lännåkersviken as a reference area. This was claimed to have been easier due to the complex ownership structure in Lännåkersviken compared to Askviken which only has one owner. A reason for opposition towards the NFZ was also the perceived unfairness in that some waters are closed permanently while others areas are closed only seasonally during the year, thus benefiting some waters owners. Another reason for not supporting the location of the NFZ was the view that the fish stocks in the area were not as threatened as claimed. It was however recognized by a fishing right owner opposing the NFZ that far from all fishing right owners shared a resistance against a NFZ in their waters, some waters owners were said to either support the NFZ or not to have a great interest in the issue.

Table 4. *Attitudes towards the choice of location*

Reasons for acceptance
The areas has had a historically high fishing pressure
It is an important reproduction area for the target species
It has an unique ecological setting
It is an unexploited area
It is suitable for conducting research and evaluations of NFZs
Reasons for opposition
The fish stocks not as threatened as stated
The reference area "Askviken" should have been made into an NFZ instead

4.2. Attitudes towards management

The interviewees had mixed perceptions on how successful management had been in consulting and involving stakeholders of the Gålö NFZ (see table 5). Around half of the interviewees did consider stakeholders' opportunity to participate as appropriate and fair, due to the stakeholder meeting held at Gålö before the implementation and the formal consultation process. It was however suggested that responsible management authorities could increase their consultation of other organisations possessing knowledge regarding the environmental conditions of Stockholm archipelago in order to improve the planning process of NFZs.

The opposing fishing right owners felt that they did not have the opportunity to influence the decision making process. Their proposed regulation exceptions, such as allowing angling for children less than 15 years of age, were not perceived to have been taken seriously into

consideration. The opposing fishing right owners therefore felt marginalised, finding management authorities inflexible in developing the regulations and the whole decision-process as unfair. Further reasons expressed for opposition was a general lack of trust in authorities.

This discontent with the planning and design of the NFZ also partly originated from the view that the owner of the largest water area had been favoured by management, and that the boundaries of the NFZ had been designed in a way that benefitted this person. Consulting the main fishing owner separately in order to obtaining his permission of implementing the NFZ was seen as necessary by management authorities due to the legal insecurity of implementing the NFZ without it, and in order to obtain approval to conduct fish surveys in the area. Consulting fishing right owners in general was stated to be important from a management perspective. The quote below illustrates the importance of obtaining fishing right owners' acceptance of implementing NFZs due to uncertainty in how to interpret the Swedish Fisheries Act:

> *"When doing this kind of strong use restrictions in fishing waters owned by private persons it is possible for them to initiate court proceeding, and I am not certain if managing authorities could win such a process. This means that is not possible to implement these kind of restrictions without the support of fishing right owners"* – Stakeholder 5

Other reasons stated for the need of acceptability is that it leads to increased social control making rule enforcement easier, as well as that authorities need approval from fishing right owners in order to be able to conduct test fishing for research purposes in private waters. From a management perspective is it seen as problematic to implement NFZs in areas where there is a private ownership of waters. It was stated to be easier to gain acceptance and to implement NFZs on the west coast of Sweden where the private water rights do not exist. This implies that no fishing right owner is affected separately and several fishers can share the spill over effects of an NFZ by fishing in adjacent areas. Some areas on the east coast of Sweden are also owned by multiple private persons, leading to difficulties for communication which are perceived as a problematic by management.

Table 5. *Stakeholders' perceptions of the decision making process*

Reasons for positive attitudes
Good collaboration with managing authorities (consultation process and informal talks)
Reasons for negative attitudes
Possibility to involve more organisations in the decision process *Large discontent among fishing right owners:* • *Exclusion from decision process* • *Management authorities inflexibility in development of regulations* • *Some fishing right owners favoured by management* • *General lack of trust in authorities*

4.2.1. Perceptions of management information and follow-up

Several interviewees stated that the managing authorities had promised to provide information on the development of the fish stocks in the area during the closure. However none of the interviewees state to have received follow-up information on how the closure had affected the fish populations or the general ecological conditions in the area. The fact that no official information on the ecological consequence so far had been delivered was not however a source of large discontent among many proponents, still supporting the idea of preserving the Gålö NFZ and other areas and believing in its positive consequences.

Opponents were however dissatisfied with the lack of information, as well as the perceived lack of a long-term plan for what would happen after the initial five-year period. Concern about what would happen after the initial five-year period can also be found in both the document from the stakeholder meeting in 2009 (See Appendix B), and the responses in the consultation process before the implementation of the NFZ (See Appendix C). These documents show that stakeholders feared that the area would be permanently closed after the initial period, at the same time fearing that fishing in the area would open up to everyone after the initial closure. Failure in conducting forward planning and providing the promised information was claimed to have enhanced the opposition towards the area during its existence and also the distrust in management by some interviewees.

"Unfortunately we have not been able to keep up the dialogue that would have been appropriate, and that probable makes it difficult to implement an extension in time of the closure" – Stakeholder 8

"Management has lost is face in front of the community, if there had been follow-ups the contact could have continued and there would be a better understanding" – Stakeholder 3

It was recognized from a management perspective that the Swedish Board of Fisheries had promised to provide continuous information on the ecological consequences in the area to fishing right owners, and that this information and dialogue had not been delivered as promised. The failure of providing the promised information was stated to be partly due to the closedown of the Swedish Board of Fisheries and the transfer of responsibilities to persons that had not been part of the process from the beginning at the time newly formed Swedish Agency for Marine and Water Management.

4.3. Perceived social impacts

Several interviewees regarded fishing right owners' loss of opportunity for household fishing as the most important social impact of the NFZ (see table 6 for an overview of perceived social impacts). Besides losing an appreciated food source, also the associated loss of enjoyment and satisfaction from household fishing was considered as an important negative consequence for fishing right owners. Another suggested negative consequence was the potential value decline of fishing right owners' properties since buyers would not have the opportunity to fish in the associated waters.

> *"People were depressed, they were sad. Some have not even put their boats in the sea, there is no reason for it, what would they do with a boat..."* - Stakeholder 2

Even if the area of the NFZ had been traditionally popular for visiting sport fishers and fishing guides, most of the interviewees stated that there is a general acceptance towards the NFZ among these categories, mainly since these persons can easily fish in other areas. It was also argued to be a general acceptance of NFZs within the sport fishing community, since interventions are seen as necessary due to declining fish stocks and because these areas will hopefully be beneficial in the long term for sport fishing and fishing tourism.

Table 6. *Perceived social impacts*

Fishing right owners
Loss of household fishing • *Loss of food source* • *Loss of enjoyment* *Possible decline of house value*
Sport fishers and fishing guides
Unproblematic to fish in other areas

4.3.1. The topic of compensation

The interviewees had varying opinions on whether fishing right owners should be compensated for their loss of fishing waters. Especially stakeholders owning waters in the NFZ, or in other areas in archipelago, argued that fishing right owners were entitled to compensation due to the restraint in their user rights. Financial compensation was therefore seen as necessary even if it was suggested not to be completely substitutable for losing the opportunity to fish in own waters. Contrasted opinions offered were that even if it was recognized that fishing right owners could suffer from implementing a NFZs, compensation is inappropriate since it is based on the flawed view that some persons should have a special right to the fish in an area. A few interviewees stated that financial compensation is important if a NFZ is established in an area which has been subject to commercial fishing and therefore leads to a loss of income. From a management perspective financial compensation was seen as problematic since it is not in accordance with the Swedish Fisheries Act. It was also regarded to be too expensive if management would have to compensate fishing right owners every time they wanted to make constraints in private fishing rights.

There was a discussion if the fishing right owners should be offered fishing waters elsewhere before the implementation of the NFZ. Even if this was seen as viable partial compensation among some interviewees the waters offered to the fishing right owners were regarded to be located too far away in order to be a practically viable solution. From a management perspective the general possibility of compensating fishing right owners with fishing waters elsewhere when implementing NFZs in the archipelago is limited since it requires that another fishing right owner allows other persons to fish in their private waters.

4.3.2. Degree of compliance

The main point of view found among the interviewees was that some illegal fishing occurs in the NFZ, but to a small degree and probably mostly due to persons being unaware of the fishing restrictions (see table 7). One interviewee stood out from the rest stating there to be a non-negligible degree of purposively illegal fishing in the parts of the area where it is unlikely to be detected. Some interviewees did not have any appreciation on the degree of illegal fishing in the area. Several interviewees perceived the area to have quite a strong social control since persons residing in the area usually reported suspected fishing activates to either the local fish warden or the coast guard. The degree of active enforcement was perceived to be generally quite low. The coast guard had one reported incident in the area of the temporary closure between 2012 and 2014.

Table 7. *Perceived presence of illegal fishing*

Presence of illegal fishing
To a small degree, mostly due to mistake
A significant amount of illegal fishing by persons aware of the rules
No appreciation

5. Discussion

The discussion chapter applies the theoretical framework, and previous studies, to discuss the findings presented in the result chapter. The main purpose of the discussion chapter is to increase the understanding of how the result of the study can be used in order to understand acceptability towards, and opposition against, the Gålö NFZ.

5.1. The social dilemma of the Gålö NFZ and the need for social acceptability

There seems to be a general positive attitude towards the Gålö NFZ. However, a strong opposition exists among some of the fishing right owners, causing a social dilemma where different stakeholders' views seem to be incompatible. The found opposition towards NFZs has significant importance, although it originates from a minority group, not only for the benefit of implementing a NFZ that is regarded socially fair, but also since fishing right owners possibly can hinder or delay the implementation of a NFZ due to its legal uncertainty. The Swedish Agency for Marine and Water Management can create no-fishing zones with the support of the Swedish Fisheries Act as long as the status of the fish stocks necessitates protection measures (Swedish Board of Fisheries, 2008a), but NFZs cannot be implemented for research purposes only (Swedish EPA, 2011). The legal possibility of an extension in time of the Gålö NFZ is therefore uncertain if monitoring shows that fish stocks have recovered significantly during the initial closure. The legal uncertainty was a reason for the management of the NFZ to consult fishing right owners before the initial implementation, with focus on the main fishing right owner in the area, in order to gain acceptance. Local support was also sought since approval from fishing right owners is needed in order to conduct fish surveys in private waters.

5.2. Is the Gålö NFZ an efficient solution to a collective problem?

Acceptability is influenced by the degree of environmental concern and the perceived severity of the problem which the policy is supposed solving (Schuitema & Jakobsson Bergstad, 2012). How severe the problem with declining stocks of the target species is perceived to be, and how successful the NFZ is perceived to be in solving the problem is therefore likely to contribute to its acceptability. Many interviewees expressed worries for the overall ecological state of the Stockholm archipelago and of the fish stocks in the Gålö NFZ. Beliefs that protecting sensitive and important reproduction areas is vital in order to reverse the last decades' trend with declining fish stocks in parts of the Stockholm archipelago is therefore probably a strong factor contributing to support of the NFZ.

Many interviewees of the NFZ argued that there are other factors besides fishing affecting fish stocks negatively which policy measures should focus on. Also several of the proponents of the NFZ argued that a more comprehensive plan was needed and that the fishing restrictions should be complemented with other measures. Agardy, et al. (2003) argue that NFZs should be integrated with other forms of marine protection in order to lead to an overarching, long lasting and successful protection against overexploitation of marine resources. This is due to the fact that NFZs usually only ban extractive use of marine resources, mainly fishing, while not prohibiting other forms of human exploitation with the

potential of damaging marine ecosystems and biodiversity (Agardy, et al., 2003). Jones (2006a) and Roberts, et al., (2005) compares however NFZs with conventional fisheries management approaches and argues that proponents of NFZs should stress its use as an ecosystem approach enriching overall marine biodiversity while buffering against uncertainty, and not only as a method to protect certain fish stocks. In other words; implementing an NFZ does not lead to a protection against all the factors having negative effects on fish stocks. However, protecting fish stocks by banning fishing can improve the overall ecological state of a marine area.

Some interviewees stated to be especially concerned with the effects on fish stocks from predation by cormorants and grey seal, even though explicit questions regarding their impact were not part of standard questions asked in the interviews. Predation by cormorants and grey seals has raised an infected public debate regarding their impact on fish stocks, and has also lead to conflicts in the case of the Gålö NFZ[7]. The academic research on the topic is currently increasing (Östman, et al., 2013). Even if it is unsure at this point to what degree predation from cormorants and seal affects fish stocks in the NFZ, their perceived by some stakeholders negative effects are likely to influence stakeholder's acceptability of the NFZ since positive outcomes of the fishing restrictions are perceived to be diminished by predation.

The perspective that the Gålö NFZ, and fishing restriction in general, are needed for the benefit of future generations was mentioned in some of the interviews. This form of intergenerational comparisons can lead to increased acceptability of environmental policies (Schuitema & Jakobsson Bergstad, 2012), but has not been found to be the main reason for advocating NFZs previously (Jones, 2009).

5.3. The Gålö NFZ and fair distribution of outcomes

Some interviewees regarded the NFZ as an unequal measure based on the view that fishing right owners were the ones suffering, losing their right to fish for the benefit of others. Some proponents of the NFZ saw it however as inevitable that someone had to suffer if there are to be healthy fish stocks in the future of the archipelago. Some proponents also dismissed the view that fishing right owners were affected unfairly since the stocks in the area were considered to be a common resource belonging to the overall society.

The NFZ has not affected the individual outcomes for sport fishers and fishing guides significantly, since they easily can fish in other areas, being a probable reason for the stated general acceptance of the NFZ among these stakeholders. The interviews indicated that NFZs, and marine protection measures in general implemented to strengthen fish stocks, were advocated by sport fishing community. Previous studies has also found that spill over effects by NFZs can have appreciated effects for recreational fishing in adjacent areas (Roberts, et al., 2001).

[7] For example, hunting of cormorants in the Gålö area for research purposes resulted in police reports for illegal hunting in 2010 (Stof, 2010).

Opposition was found related to the notion of "*horizontal equity*". Some opposition was based on the view that visiting sport fishers were the main source of overfishing before the closure, while fishing right owners were the ones being punished. It was also found that one fishing right owner were in favour of the method, but not of the choice of location. This is sometimes known as the not-in-my-backyard (Nimby) syndrome and is due to a perceived lack of equality of an environmental policy (Schuitema & Jakobsson Bergstad, 2012). Nimby is of main importance in this case not only because it is generally associated with NFZs (Grafton & Kompas, 2005), but also because of the unique private fishing right ownership situation on the Swedish east coast.

The notion of "*vertical equity*" can be used to explain opposition if vulnerable groups are disproportionally affected by a fishing closure (Schuitema & Jakobsson Bergstad, 2012). Even if the Gålö NFZ might have resulted in some negative economical consequences for fishing rights owners, the perceived absence of especially vulnerable stakeholder groups in the area (e.g. small-scale fishers) is a probable reason for the general acceptance of the closure. Opposition towards NFZs due to the notion of "*vertical equity*" is probably more likely to exist when the closures affects communities relying on marine resources for their livelihood. The majority of studies on social impacts of MPAs have focused on such communities in a developing country context (Hattam, et al., 2014).

NFZs have previously been suggested to result in good compliance due to its easy enforcement (Sobel & Dahlgren, 2004), and a majority of the interviewees perceived the compliance of the Gålö NFZ to be high, although with some exceptions. The Gålö NFZ was perceived to have a high degree of social control, which may be due to an unwillingness of letting illegal fishes benefit from the closure. Fear that others (e.g. illegal fishers) would reap the benefits of a NFZ has also been found in previous studies (e.g. Velez et al., 2014).

5.4. The use of compensation to increase acceptability

Intrapersonal comparisons of individual outcomes are likely to be important factors contributing to acceptability of, or opposition against, environmental policies in general (Schuitema & Jakobsson Bergstad, 2012). The Gålö NFZ severely restraints the user freedom for fishing right owners, and there is also a fear that the initial five-year closure will be extended taking away the opportunity to conduct household fishing indefinitely. The opposition towards the NFZ found among fishing right owners can therefore be derived from the effects on their wellbeing compared to before closure. Compensation can help to improve the acceptability of policies having large infringements on people's freedom according to the theoretical framework, and the issue of compensation has also been discussed in the case of the Gålö NFZ. Offering financial compensation was however not seen as a viable solution from a management perspective due to the lack of legal opportunities and funds for it. Also, financial compensation is not probable to completely offset the loss of enjoyment often associated with fishing activities (Urquhart, et al., 2011).

The proposed solution of providing fishing right owners with fishing rights elsewhere was initially regarded as a suitable in the case of the Gålö NFZ, but was never realised since the proposed areas were considered to be located too far away. Some of the critique against

NFZs in general is that they may only lead to effort displacement and not decrease overall fishing effort (Hilborn, 2004). Moving fishing efforts from a NFZ to other areas can lead to other ecological, e.g. increasing the pressure on other ecosystems, or social, e.g. user conflicts, consequences (Charles and Wilson, 2009). Reallocation of high fishing pressure by NFZs is however foremost likely to be a problem in commercial offshore fishing (e.g. Suuronen, et al., 2010). The Gålö NFZ is likely to decrease the total fishing pressure as long as fishing right owners are not compensated with fishing waters elsewhere. Also, even if fishing effort would be reallocated is it possible to justify the implementation of the Gålö NFZs on the basis that it is an import reproduction area for the target species (Swedish Board of Fisheries, 2009).

Another option with the potential of increasing acceptance of NFZs is to allow local fishers to continue fishing within the restricted area. This was also suggested by some interviewees (mainly fishing right owners) as a solution for the period after the initial five-year closure of the Gålö NFZ. Some interviewees were however strongly opposed to the view that fishing right owners have a special right to fish stocks as a resource. Giving fishing right owners but not the public access to the Gålö NFZ would therefore be a controversial solution. The expansion of public fishing rights 1985 on the major parts of the Swedish east coast in 1985 is still a topic of public debate. The discontent with the expansion of public rights originates partly from the view that it created an open access problem[8] and removed the incentives for fishing right owners to locally manage fish stocks in their own waters (Åqvist Almlöv & Hammer, 2006). Incentives for local management of fish stock on the Swedish east coast could be strengthened either by "*further increasing the rights of sport fishers and giving active sport fishing associations an opportunity to manage specific areas or by withdrawing public fishing rights in some private waters"* (Åqvist Almlöv & Hammer, 2006, pp. 17-18). Support for both these alternatives was found among the interviewees in this study. From an ecological perspective, allowing fishing right owners to fish within the NFZ should only be considered when the negative impacts on the fish stocks due to their fishing effort are significantly smaller than if the area would be open for the public (Charles and Wilson, 2009).

5.5. The importance of management trust

The Gålö NFZ implementation process included a local stakeholder meeting in order to discuss and gain support for the NFZ, and was preceded by several general meetings with stakeholder groups before the area had been determined. Several interviewees regarded the stakeholder consultation to have been adequate, although some suggested however that the process could benefit from making greater efforts in consulting persons and organisation with ecological knowledge[9] of the archipelago.

The initial attempts to build acceptance seems to have been partly counterproductive since the management failure of keeping the promises made has led to an even larger opposition by some fishing right owners. The combination of losing rights while feeling marginalised in the decision process often leads to discontent among stakeholders (Jones, 2009). Limited

[8] See Ostrom (2008) for an explanation of eight "*design principles for governing sustainable resources*".
[9] Integration of *Local Ecological Knowledge* has been suggested to be an efficient approach for fisheries management internationally (Ferreira, et al., 2014).

resources and personnel, as well as the transition of responsibilities from Swedish Board of Fisheries to the Swedish Agency for Marine and Water Management partly explain why some of the promised follow-up was neglected. Involving stakeholders in decision making is generally not an easy task since it *"requires consensus building, negotiation, conflict resolution, trade-offs and holistic thinking and these issues are frequently time consuming and expensive, irrespective of the scale"* (Giordano, et al., 2007 cited by Ato Armah, et al., 2009, pp. 77).

A perceived unfairness and lack of equality was also found since fishing right owners regarded the design of the NFZ to have benefitted the main fishing right owner in the area. This perceived inequality in how different fishing right owners have been affected is probably a reason for some of the opposition towards the NFZ. Separate consultation of the largest fishing right owner was seen as necessary from a management perspective, partly since it was needed in order obtain permission to conduct fishing in this person's waters for monitoring the effects of the regulation.

Opposition from fishing right owners is seen as a main obstacle towards an extension of the NFZ in time from a management perspective, similar issues has been experienced in other countries (Voyer, et al., 2012). To overcome this opposition is probably not an easy task since restraining fishing rights is one of the key characteristics of an NFZ. However, trust in managing authorities is important for acceptance and can be increased by involving stakeholders in the decision making (Roberts and Jones, 2013). It should also be remembered that only fishing right owners with strong negative attitudes to the Gålö NFZ participated in this study. It is not clear whether this study reached saturation, if more time had been available for the interview process more persons would have been approached and asked to participate which would have increased the study's validity.

5.6. The future of NFZs in Swedish fisheries management

The ecological consequences of the Gålö NFZ and the five other NFZs established because of the governmental commission in 2005 are currently being evaluated. The results from these evaluations will be important when determining the future use of NFZs in Swedish fisheries management.

It has been argued to be beneficial to locate Swedish NFZs in areas where there already is, or is going to be, marine protection in the form of marine reserves or Natura 2000 areas, but previous attempts of implementing NFZ in already protected areas have failed due to lack of local or regional support (Sköld, et al., 2008). Environmental protection regulations supported by the Swedish Environmental code does have primacy of the Swedish Fisheries Act and could be used in order to strengthen the environmental protection of NFZs, even if the Environmental code has not been used for this purpose before (Swedish EPA, 2011). One option for the Gålö NFZ could be to integrate it with the neighbouring nature reserve and Natura 2000 area on the Gålö peninsula (Swedish EPA, 2011).

Reducing fishing effort is an essential part of NFZs, and the method is foremost effective when NFZs are located in areas with previously high fishing pressure. Attempting to avoid

areas that would imply negative social or economical impacts, possibly while aiming to fulfil targets of percentage of protected areas in the marine environment, increases the risk of allocating NFZs to areas where there has been insignificant extractive use before or where biodiversity is not threatened (Agardy, et al., 2003). The design of the Natura 2000 network in the northern Baltic Sea has been argued to have been unsuccessful in protecting areas of main ecological importance (Sundblad, et al., 2010) and where threats from human activities are largest (Sundblad & Bergström, 2014). Stakeholder opposition to NFZs has been found to been based on the perception that NFZs have been located to areas where fishing pressure were modest before the implementation (Gladstone, 2014).

The main obstacle towards further implementation of NFZs on the part of the Swedish east coast which has strong private ownership, is probably opposition from fishing right owners. To fully overcome opposition is probably not possible since *"it is inevitable that some sections of the community will always remain ideologically opposed to restrictions on their fishing access, and therefore conflict is likely to remain a feature of MPA planning processes"* (Voyer, et al., 2012, p. 437). However, the initial support for the Gålö NFZ among some fishing right owners, and the general wide support of the method, indicates that fishing closures implementing during limited periods of time with the explicit purpose of restoring weak fish stocks may be a viable option.

5.7. Conclusions

The importance of social dimensions in the planning and management of NFZs has become increasingly acknowledged and researched. The amount of previous studies focusing on social acceptability of NFZs is however modest, especially in the context of the Nordic European countries. The current study set out to explore the concept of Social Acceptability in relation to the Gålö NFZ. The study sought to understand how the perceived success of the Gålö NFZs as a fisheries management method, attitudes towards the management of the area and the perceived social impacts contributed to social acceptability towards, or opposition of, among its stakeholders.

The study found a general acceptance towards the NFZ among the interviewed stakeholders. The NFZ were supported since the area was perceived to have experienced a significant decline of fish stocks due to a high fishing pressure. The area was also considered to offer important reproduction opportunities for the target species. The overall perceived negative ecological state of the Stockholm archipelago was a reason for supporting fishing restrictions in general. Many proponents saw however some shortcomings with the NFZ as a fisheries management method, mainly that it did not prevent other factors causing declining fish stocks, such as predation from cormorants and grey seals, boat traffic and overall exploitation of ecologically sensitive areas in the Stockholm archipelago.

Strong opposition towards the NFZ were found among some of the interviewees. NFZs impose large restraint on fishing right owners' use rights. Interviewed fishing rights owners felt marginalised in the decision making process, and were disappointed with the management failure of delivering promised information as well as creating a follow up plan for what would happen after the initial five-year closure. These factors had led to a lack of trust in management authorities they may affect the possibility of an extension in time of the NFZ. Other causes for opposition was the view that visiting sport fishers were the main cause of declining fish stocks in the area, while the NFZ mainly affected fishing water owners negatively.

The Gålö NFZ has caused a social dilemma since it affects certain individuals negatively, while the greater collective sees it as positive. The found opposition has importance, partly due to the format of the Swedish Fisheries Act which has created some uncertainty during what conditions managing authorities can implement NFZs in private waters. It is therefore desirable that fishing right owners approve the NFZ and its design.

The ongoing evaluations of the ecological effects of the Gålö NFZ, and the other NFZs in Sweden implemented during the last decade, will probably be a determinant for their future use. Some opposition against the method may be impossible to overcome due to the very nature of NFZs. The findings of the present study are primarily illustrative and are not necessarily representative for all stakeholders of the Gålö NFZ, and may not be generalisable to other NFZs. The findings gives however ideas for actions that could be taken in order to increase the acceptance of the Gålö NFZs, and possibly other NFZs in Sweden.

A more strategic approach of involving stakeholders in decision-making, as well as increase the understanding of the effects on fish stocks by other factors then fishing would probably increase the acceptability. It would also be interesting to understand what ecological and social implications integrating NFZs with other forms of marine protection supported by the Environmental Code would have due to the perceived need for better marine protection in the Stockholm archipelago in general, and the perceived shortcoming of NFZs to offer a comprehensive protection. The understanding of NFZs could also benefit from further research on the social acceptability of fishing closures in the Stockholm archipelago and other areas on the Swedish east coast where there are strong private ownership rights.

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Appendix A: Interview guide sent to the participants before the interviews

Om intervjuguiden

Denna intervjuguide är en del av en uppsats som jag, Frans Sjölander, arbetar med på SLU i Uppsala inom ämnet miljövetenskap med Ulf Bergström som handledare. Intervjuerna är till för att undersöka hur olika personer (fiskerättsägare, sportfiskare, fiskeguider, förvaltare o.s.v.) påverkas av, och har för åsikter om, det fiskefria området vid Gålö. Som en av dessa personer med intresse i, och kunskap om, området har du därför blivit tillfrågad att delta.

Svaren från intervjuerna kommer att behandlas anonymt och användas endast i forskningsändamål, om tillåtelse ges skulle jag dock vilja härleda svaren till din anknytning till området, t.ex. om du är en fiskeguide som har varit verksam där. Intervjun är planerad att inte ta mer än 30 minuter, exakt hur lång den blir är dock svårt att avgöra på förhand. Du kan såklart avbryta intervjun när du vill och också meddela om du inte vill att svaren ska användas i studien.

Jag använder helst en ljudinspelare vid intervjun, om du inte vill att ljudet ska spelas in så kan jag dock ta anteckningar istället. Jag skickar gärna en transkribering av intervjun i efterhand, där du kan gå igenom det som är sagt och ändra och/eller tillägga något om du vill. Du kan också bestämma vid detta tillfälle om svaren ska användas i studien eller inte. Intervjun sker antingen vid ett personligt möte eller över telefon efter överenskommelse.

Frågorna i mitt frågeformulär har bedömts som särskilt intressanta dels genom en litteraturstudie, samt genom diskussion med min uppsatshandledare Ulf Bergström. Frågorna har en öppen karaktär för att försöka fånga varje individuellt perspektiv så bra som möjligt. Det är inte tänkt att frågeformuläret nedan behöver följas exakt utan det ska mer tjäna som ett underlag till intervjun. Vissa frågor kan också vara svåra att besvara för olika personer, det går därmed bra att helt hoppa över vissa frågor.

Om inget annat anges så inkluderar begreppet ”det fiskefria området” i mina frågor både området på bilden nedan där inget fiske är tillåtet, och området med fiskeförbud mellan 1 april – 30 juni. Du som intervjuperson är dock såklart välkommen att diskutera ”inget fiske tillåtet” området och buffertzonen ”fiskeförbud 1 april – 30 juni” var för sig om du hellre vill det.

Frågeformulär

1.

- Anser du att det fanns det ett behov av att införa det fiskefria området?
  - Varför/varför inte?
- Hur ser du på fiskefria områden som fiskeförvaltningsmetod?
  - T.ex. finns det andra fiskeförvaltningsalternativ är bättre? Finns det behov av att komplettera med andra sorters skydd?
- Vad anser du om valet av plats för området?
- Har din inställning gentemot området förändrats under tiden det har existerat?
- Hur ser du på en eventuell förlängning av området?

2.

- Hur har införandet av det fiskefria området påverkat dig?
  - T.ex. fiskar du mer/mindre nu än tidigare? Har området påverkat ditt välbefinnande eller din ekonomiska situation?
- Hur tror du att det fiskefria området har påverkat andra personer?
  - T.ex. är det någon/några som har påverkats särskilt positivt eller negativt?
- Har området påverkat relationer mellan olika personer?
  - T.ex. mellan fiskerättsägare? Mellan sportfiskare och förvaltning? Har det uppstått några konflikter?

3.

- Hur ser du på samarbetet mellan förvaltningen och de olika personerna som påverkas av området?
- Tog förvaltningen hänsyn till olika intressenters åsikter och kunskaper innan man införde området?
- Anser du att fiskerättsägare påverkade av området borde kompenseras på något sätt?
  - T.ex. ekonomisk kompensation, eller fiskerätt på annan plats?
- Hur väl efterföljs reglerna kring området?
- Finns det något som kan och borde göras annorlunda i förvaltningen av området?

4.

- Har du några övriga kommenterar angående ämnet?

Appendix B: Document from local stakeholder meeting at Gålö in 2009

Samrådsmötet vid Gålö Morarna 2009-11-17

Tid: 16-20
Deltagare: ca 42, fiskerättsägare och fritidsfiskare blandat

Mötesform
Vi hade tänkt ha individuella diskussioner med folk, men eftersom det kom så många så höll vi gemensamt möte där jag drog presentationen i tre omgångar. Diskussioner förde vi i plenum efter dragning och personligen under pauserna. Presentationen var f a om våra provfisken, dvs dataunderlaget för beslutet. Vi presenterade även en karta där vi ringat in kärnområde, som vi ville ha fiskefritt + buffertområde (där vi sade att det var öppet vilka begränsningar som skulle gälla)

Allmänt intryck
Alla mötesdeltagare verkade köpa vår argumentation om att det stod dåligt till med bestånden och att fisket var huvudorsaken, och de ville även vidta åtgärder för att stärka bestånden. Det blev heller ingen diskussion om huruvida ett fiskefritt område verkligen behövdes eller inte, utan där köpte man också våra argument

Synpunkter
Fisketrycket ansågs ha minskat kraftigt de senaste 10 åren, eftersom ryktet spritt sig att fiske inte lönar sig längre. Flera gånger återkom åsikten att man skulle göra hela Blista fjärd fiskefritt. Orsaker: ska man göra något är det lika bra att göra det ordentligt + det skulle gynna även öringen + tydligare avgränsning. Även viktigt att få med de små avsnörda vikarna innanför Lännåkersviken, eftersom det sker en del fiske därinne nu. Några personer framförde att man gärna ville fiska strömming i sundet på väg in emot Blista fjärd. Det fisket sker främst i maj och skulle alltså försvinna om man hade lektidsfredning i området. Många ansåg att skarven var ett stort problem och var övertygade om att den var huvudorsaken till den generella nedgången i bestånden på kusten. Man tyckte det var positivt att vi undersöker skarvens effekter, och ville gärna se experiment där man tog bort skarvkolonier i specifika skärgårdsområden och följde upp effekterna. Under mötet fördes en sidodiskussion om att tillåta fiske för fiskerättsägarna i Liåkersviken i stället på stiftelsens vatten. Detta skulle göra saken lättare. Detta kunde lösas praktiskt genom att man skriver ett arrendeavtal, där man inte tar ut någon arrendeavgift. Konflikten mellan det fria handredskapsfisket och enskilda rätten utgjorde en rätt stor del av diskussionen. Fiskerättägarna ville ha garanti för att de skulle få njuta frukterna av ett femårigt stopp utan att det skulle bli ett allmänt fiske på deras vatten. Man var dessutom mycket rädd för att ett femårigt stopp innebär att det sedan blir permanentat. Ska vi t ex skriva in i bestämmelserna att det är fråga om ett femårigt stopp.

Appendix C: Document with responses from the consultations process

REMISSAMMANSTÄLLNING 42

Datum Beteckning

Avdelningen för resursförvaltning 2009-12-15 13-4122-09

Förslag om fiskefritt område vid Gålö i Stockholms skärgård till skydd för gös och gädda

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Fiskeriverket har begärt synpunkter på förslaget från fiskevattenägare i det berörda området, Haninge kommun, Hembygdsföreningen Gålö Gärsar, Kustbevakningen, Länsstyrelsen i Stockholms län, Naturvårdsverket,

Skärgårdsstiftelsen, Stockholms läns fiskareförbund, Stockholm läns fiskevattenägarförbund, Svenska Naturskyddsföreningen, Sveriges Fiskares Riksförbund, Sveriges organiserade fiskeguider, Sveriges sportfiske- och fiskevårdsförbund, Världsnaturfonden WWF samt Regelrådet.

Fiskevattenägare

(Bo och Siv Ernstedt samt ca 50 ytterligare har inkommit med gemensamt yttrande) Införandet av fiskeförbud är ett stort ingrepp i äganderätten för dem som har laglig fiskerätt i de berörda vattnen. Det torde vara första gången denna typ av ingrepp görs i äganderätten. Särskild omsorg måste ägnas denna aspekt. Om förbudet förlängs måste fiskevattenägarna kompenseras ekonomiskt eller genom att tilldelas andra fiskevatten. Ett nära samarbete med alla berörda är nödvändig för ett framgångsrikt försök. Vid samrådsmötet framgick att åtgärder behövs för att bevara fiskebestånden kring Gålö, alla är positiva till ett tidsbegränsat förbud. Den föreslagna regleringen måste även innehålla bestämmelser för fisket då förbudet upphör. Det kan ta lång tid att införa en ny reglering och det är osäkert hur forskningen och regelgivande myndigheter kommer att vara organiserade år 2015. Ett mardröms-scenario är att fisket släpps helt fritt efter fem års god tillväxt. De föreslår därför att regleringen ska omfatta tio år, med fem års fiskeförbud i kärnområdet och fem års begränsat fiske för fiskevattenägare och kanske även för sportfiske, te x bara mete med en krok per person. Alternativt 3 års totalförbud och 2 års begränsat fiske. Många tycker att fiske med metspö med mask eller bröd som agn ska tillåtas för barn under femton år under hela året. Man skulle också kunna tillåta provfiske av fiskevattenägare en gång per månad med maximalt två nät, då det inte är fredningstid. Sådant fiske ska anmälas i förväg fisketillsynsman. Även fångsten rapporteras till fisketillsynsman som sammanställer denna och rapporterar till Fiskeriverket eller länsstyrelsen. År 6-10 kan fiske med nät av fiskevattenägare tillåtas när det inte är fredningstid med rapportering av fångsten till lokal fisketillsynsman. Sportfiske så som mete men spinnfiske förbjudet. Särskilda åtgärder måste vidtagas för övervakning av förbudet. Lokala tillsyningsmän måste förordnas. Eftersom regleringen av Lännäkersviken kommer att vara ett pilotprojekt som alla parter vill hålla levande föreslås att man redan nu planerar in avrapporteringar, så som samrådsmötet på Gålö Gärsas hembygdsgård, förslagsvis vartannat år.

Åke Hansson

Viktigast för att detta fiskeförbud ska lyckas är engagemang hos fiskerättsinnehavarna och lokalbefolkning. Det är ju avsett att gynna återväxt av fisk (i första hand gös). Detaljbestämmelser måste anpassas till de närboendes åsikter.

Årets Nobelpristagarinna Elinor Ostrom konstaterar i sin forskning att den lilla gruppen ofta kan sköta småskaliga projekt bättre än myndigheter (hon talar ofta om fiskereglering). Det vore därför intressant att pröva ett nära samarbete mellan Fiskeriverk/Länsstyrelse och fiskerätts ägare.

Myndigheten stiftar reglerna + har back-up med Polis, Kustbevakning och ordinarie Fisketillsyningsman. Lokal tillsynsman/män utses, utbildas (+bekostas) av myndighet för att kontinuerligt kunna övervaka att reglerna efterlevs, ”ha koll på läget” allmänt, samt rapporterar till myndighet.

Mete, lokalt provfiske och lokal tillsynsman som föreslås nedan kommer att gynna detta engagemang.

Som framgick av samrådsmötet på Morarna 091117 finns consensus om att åtgärder behövs för att bevara fiskebeståndet kring Gålö (alla positiva till tidsbegränsat förbud).

Men den föreslagna regleringen (5 års fiskeförbud) måste även innehålla bestämmelser för fisket då förbudet upphör. Åter, lokalbefolkningen måste känna delaktighet.

Vad gäller föreslaget område verkar det välgenomtänkt.

Tidsperiod och avveckling.

Ett mardröms-scenario är att fisket släpps helt fritt efter 5 år efter god återväxt, man fiskar helt fritt med nät och andra redskap (sportfiske) så att efter något år är tillgången sämre än före förbudet, Lännåkersviken töms på fisk.

Att återinföra ett förbud tar tid, dessutom vet ingen idag hur forskningen och reglerande myndigheter kommer att var organiserade 2015. En plan för tiden efter totalförbudet måste ingå i regleringen.

Jag föreslår därför 5 år förbud och 5 år begränsat fiske (regleringen omfattar10 år). Alternativet 3 års totalförbud och 2 år begränsat fiske (regleringen omfattar 5 år).

Fiske under förbudstid/avveckling.

Det finns flera alternativ både för fiske under förbudstiden och avvecklingstiden,. Ett fiske som många tycker ska tillåtas är fiske med metspö för barn upp till 15 år (en krok/barn) och bara mask eller bröd som agn. Detta gammeldags barnfiske kanske kunde tillåtas även under fredningstid. Lekande fisk är ointresserad av denna typ av agn. Allt annat fiske är förbjudet år

För att följa fiskestoppets påverkan på fisket kan fiskerätts ägare tillåtas provfiska en gång/månad med 1st nät under förbudstiden. Tillstånd av tillsynsman före fiske samt rapport av fångst till tillsynsman. Tillsynsman sammanställer och rapporterar kvartalsvis till Fiskeriverket alt Länsstyrelsen. Provfiske får ske bara under icke fredningstid.

Under avvecklingstiden (2 alt 5 år) tillåts begränsat fiske för fiskerätts ägare, kan regleras så att fiske med ett nät/dygn tillåts för fiskerätts ägare med rapportering till lokal tillsynsman av fångst. Sportfiske som ovan ”barnfiske” (mete) men ingen åldersgräns. Nätfiske bara under föreslagen icke fredningstid.

Uppföljning/återrapportering.

Eftersom regleringen av Lännåkersviken kommer att vara ett pilotprojekt som alla parter vill hålla levande, föreslår jag att man redan nu planerar in avrapporteringar, förslagsvis vartannat år. Formen kan vara ganska enkel, en upprepning av samrådsmötet på Morarna. Denna rapportering ska innehålla fisktillgångsanalys och rapportering hur projektet allmänt fortskrider.

Idag kan ju ingen säga hur detta experiment kommer att utvecklas, därför måste alla intressenter vara beredda på att justeringar kan bli nödvändiga under projekttiden.

Tillsyn

Som tidigare påpekats måste särskilda åtgärder vidtagas för övervakning av förbudet. Fiske kan ske sommar/vintertid, från strand, båt och is. Det torde bli mycket svårt att övervaka förbudet då denna typ av övervakning

Länsstyrelsen tillstyrker Fiskeriverkets förslag att inrätta ett fiskefritt område vid Gålö. Vad gäller gränserna för det tilltänkta området framför länsstyrelsen följande. Totalt fiskeförbud innebär en stor inskränkning i den enskilda fiskerätten. Länsstyrelsen anser därför att ett sådant beslut i så hög utsträckning som möjligt skall göras i samverkan med berörda fiskerättsägare. Länsstyrelsen har under processen uppfattat att fiskerättsägarna är positivt inställda till införandet. I de samråd som hållits har det framförts synpunkter från andra intressenter att fiskeförbudet borde omfatta ett större geografiskt område. Ur ett biologiskt perspektiv delar Länsstyrelsen dessa invändningar. Länsstyrelsen anser emellertid att det slutgiltiga beslutet bör vara avvägning mellan de enskilda och de allmänna intressena inte minst för att möjliggöra en adekvat uppföljning av införandet av fiskeförbudet.knappast ses som prioriterad av övervakande myndigheter därför måste lokala fisketillsyningsmän måste förordnas. Utan kontinuerlig tillsyn kan förbudet snabbt tappa förankring lokalt.

Kustbevakningen har inget att erinra mot förslaget.

Naturvårdsverket tillstyrker de föreslagna ändringarna i Fiskeriverkets föreskrifter, men anser att en utvärdering bör utföras om två till tre år, för att värdera om områdets storlek är tillräcklig för att uppfylla syftet som fiskefritt område. Arbetet med regeringsuppdraget att bilda sex fiskefria områden sker i samråd med Naturvårdsverket. Naturvårdsverket har under processen varit positivt till att ett av områdena inrättas i Stockholms skärgård med syfte att ta reda på om fiskefria områden kan var ett effektivt redskap för att stärka bestånden av kustarter som gös, gädda och abborre. Vid Gålö pågår även arbete med att inrätta naturreservat med marint syfte, varför valet av objekt även stärker arbetet med naturvårdande insatser i området.

Världsnaturfonden WWF har ingen erinran mot ett fiskefritt område vid Gålö i sig, men vill påpeka följande. Om det ska vara möjligt att se effekter av fiskefria områden är det mycket viktigt att de områden som väljs ut är tillräckligt stora för att ge relevant skydd för de arter som avses, är områden där det idag råder ett betydande fisketryck så att fredningen ger en reell minskning av fisketrycket samt att områdena är väl undersökta innan införandet av fiskestoppet. Det aktuella området har inte varit utsatt för stort fisketryck på senaste tiden. Dessutom är det ett väldigt litet område. Fisket i det föreslagna området är i huvudsak fritidsfiske med tidigare avsevärt uttag av främst gädda och gös. Fler arter borde komma ifråga då ekosystemperspektivet måste införlivas bättre för att kunna göra en helhetsutvärdering av skyddets effekt. Förslaget gällande kärnområdet bedöms dock uppfylla kriterierna som enligt regeringsuppdraget att fiskeförbudet ska gälla allt fiske och under hela året. Det är av stort nationellt intresse att utvärdera effekterna av fiskefria områden. Avsättandet av

skyddsområden och/eller skyddade zoner för fisk kan vara ett viktigt verktyg i den framtida förvaltningen av fisket. WWF anser därför att det är viktigt att urval och avgränsning av de områden som ska utgöra grunden för att inhämta denna kunskap sker med utgångspunkt från biologiska och ekologiska kriterier och inte utifrån fiskerättsgränser, juridiska gränsdragningar mm. Införandet av fiskestopp i områden med höga ekologiska värden och med potentiellt hög effekt av stoppet inte får hindras av te x enskild vattenägares intressen, att det finns internationella fiskeavtal med andra länder eller att området ligger utanför svenskt territorialvatten och fisket regleras av EU. I sådana fall måste utgångspunkten vara att försöka lösa dessa svårigheter genom internationella överenskommelser, förhandlingar med EU etc. Vi tolkar de fem utpekade fiskefria områdena som att Fiskeriverket inte i tillräcklig hög grad har mött dessa utmaningar.

Stockholms Stads Idrottsförvaltning/Fiskevårdsbyrån motsätter sig inte ett fiskefritt område i 5 år i Lännåkersviken och Blistafjärd om nedanstående punkter beaktas.

2.Däremot motsätter vi oss gränsdragningen för det helt fiskefria området. Det framgick med tydlighet vid det öppna möte på Gålö den 17 nov att alla ville ha en annan gränsdragning för det kärnområde med totalt fiskeförbud. Mötets mening var att dragningen är från Skärets södra punkt till Blista udde (Näsudden) och väster där om. Vi kan bara instämma i detta med bestämdhet. Dels för allmänhetens strömmingsfiske, dels för att området innefattar även TDA – vatten där fiskekortet redan är tryckt för 2010. Dessutom har vi byggt en risvase i området (TDA) som vi vill utvärdera och ev utöka med ytterligare vase.

3. Angående utvärdering av skarvens inverkningar så finns 25 andra fredningsområden i skärgården som kan studeras. Vi har svårt att tänka oss att en sportfiskare (som knappt får någon fisk) kan förstöra mer än 300 mellanskarvar vilket det kan vara under vissa tider. Hänvisar till Furusunds skärgård där efter 1985 var så många sportfiskebåtar att det krävdes att köa för fiske. Någon större skillnad i fiskbeståndet blev det inte. 12 – 13 år efter detta anlände skarven och därefter har fisktillgången successivt blivit allt sämre. Det är framförallt på våren innan sommargästerna anländer som stora mängder Mellanskarv ostört kan driva fisk faktiskt ända upp på land.

Risken blir att skarven nu kan härja helt utan störning i området när sportfiskarna uteblir. I denna fråga anser vi det färdigutrett. Inskränkningar även mot skarven krävs som med all säkerhet ställer till större skada. Exempelvis året runt jakt både på säl och skarv i fredningsområdet.

Gålö Gärsar. Hembygdsförening Gålö Gärsar, hembygdsförening, har varit verksam på ön i snart 30 år. Föreningen verkar för bevarande av öns historia, seder och bruk i ett skärgårdsjordbruk. Vid Morarnas gård har vi museum och hembygdsgård. I museet visas bland annat gamla fiskeredskap och fiskemetoder.

Gålö är känt för sina fiskerika vatten, något som också betonas i turistinformationen. Möjligen har detta medfört att intresset bland sportfiskare ökat och att fiskeuttaget blivit så stort att beståndet av framför allt gös minskat. Vi anser det angeläget att långsiktigt säkra tillgången på fisk i vattnen runt Gålö och har därför inget att invända mot att några viktiga rekryterings-områden fredas.

Valet av Lännåkersviken förefaller, med befintliga data, vara realistiskt och tiden fem år rimlig för att se effekterna av fiskestoppet. Vi anser det viktigt att man parallellt undersöker skarvens inverkan i rekryteringsområdet genom avskjutning av skarv på platsen och analys av maginnehållet. Efter provperioden på fem år kommer Fiskeriverket att fatta nytt beslut för området. Vi anser det viktigt att Fiskeriverket inför ett sådant beslut för allmänheten redovisar resultatet av fiskestoppet och bereder fiskevattensägare och andra intressenter tillfälle att yttre sig.

Gränsdragningen mellan fiskefritt område och buffertområde ställer vi oss däremot lite tveksamma till. Med utredarnas förslag kommer problem att uppstå i såväl information som tillsyn. Vi föreslår därför att det fiskefria området utvidgas att omfatta hela Blistafjärden, dvs även dess västra del. Buffertområdet blir därmed endast vattnen syd om Blistafjärden.

Fiskestoppet är främst riktat mot att freda gös, gädda och abborre. Gålö Gärsar genomför årligen, bl a i samarbete med Hushållningssällskapet, ett kulturevenemang, där vi demonstrerar strömmingsfiske med not. Aktiviteten brukar samla ett 100-tal åskådare. År 2009 köpte hembygdsföreningen in en ny not för att kunna fortsätta denna demonstration för allmänheten.

Hembygdsföreningen anser det viktigt att som ett led i bevarandet av gamla seder och bruk kunna fortsätta med notdragningen en dag om året.

Notdragning i skärgårdsjordbruken upphörde på 50-talet, stränderna vid örnar och notgistsplatser har växt igen och bottnarna bemängts med nedfallna träd och annat som omöjliggör notdragning. En strand har dock hållits ren genom vårt årliga evenemang, stranden NO om Frönäs, Den hamnar nu inom buffertområdet. Gålö Gärsar ansöker därför om dispens för notdragning efter strömming i Buffertområdets södra strand, en dag om året (maj – juni) och med maximalt två varp. Endast strömming får landas. Skulle annan fångst komma i noten, vilket endast undantagsvis skett tidigare, ska den återsättas.

Hembygdsföreningen rymmer medlemmar med enskilda intressen i frågan om fiskestopp, bland annat fiskevattenägare, fastighetsägare och sportfiskare. Vi har därför i vårt remissvar begränsat oss till frågor av gemensamt intresse för föreningen.

Sammanfattning Gålö Gärsar

- anser att det är värt försöket med fredat vatten i ett rekryteringsområde vid Gålö för att långsiktigt säkra tillväxten av fiskebeståndet för gös, gädda och abborre

- tillstyrker ett fiskestopp i Lännåkersviken och hela Blistafjärden under fem år

- tillstyrker att ett buffertområde införs i området söder om Blistafjärden

- anser det angeläget att skarvens inverkan i rekryteringsområdet undersöks parallellt

- kräver att resultatet från fiskestoppet redovisas fortlöpande och att intressenterna får tillfälle att yttra sig inför nya beslut om fem år.

- ansöker om dispens för Notdragning i buffertområdets södra strand vid Frönäs, en dag om året (maj – juni) och med maximalt två varp.

Ralf Alwert Det känns skönt att ni äntligen tar forskarna på allvar för att göra någonting åt dom sviktande bestånden. En svag punkt i remissen är att ni inte har någonting konkret att komma med vad som gäller efter 5-års perioden. Och att man inte påbörjat skyddsjakt på skarven, en fågel som inte hör hemma i den svenska faunan är för mig och många andra en gåta i sig. Boende i området kommer om detta faller väl ut kunna ta med sig nära och kära till det skyddade området med picknickkorgar för att se skådespelet när en skarvkoloni tar för sig av buffebordet av fisk och hela projektet faller på sin egen dumhet även om det är en mycket god ide från början.

Sveriges Organiserade Fiskeguider anser att åtgärden är bra, det skall bli intressant att följa detta. Anser att det är flera bra forskningsprojekt som genomförs just nu.

Regelrådet har avstått från att yttra sig eftersom förslaget inte + har föreskriftsform.

Elisabeth och Thomas Karlén ägare till fastigheterna Lännåker 1:48 och 1:49 som direkt gränsar till Väsbyfjärden mellan fastlandet och Björnö.

Vi är mycket positiva till förslaget om fiskefritt område vid Gålö samt fiskeförbudet under tiden 1 april - 30 juni.Vi vill också föreslå att man utökar området för fiskeförbudet till att också omfatta hela Väsbyfjärden. Väsbyfjärden är utsatt för orimligt "sportfiske" under hela den isfria delen av året. På samma sätt som på 40- och 50-talen, borde fiskeförbud gälla åtminstone under den känsliga lektiden 1 april - 30 juni.

Nils Enlund; Huddinge: Fiskeförbud vid Lännåkersviken samt delar av Blistafjärd verkar helt ok. Men varför en buffertzon med fiskeförbud i Hårsfjärden under tiden 1-4 till 1-7 den verkar helt onödig. Vad vinna med detta? Under maj månad bedrivs lite strömmingsfiske i buffertzonen. Varför förbjuda detta ? Det mesta strömmingsfisket bedrivs dessutom från land av bland annat av ungdomar, som kanske vill komma ut på vårkanten och få lite omväxling i tillvaron. Mitt förslag är förbjud fiske i hela Lännåkersviken och Blistafjärd. Tag bort fiskeförbudet i buffertconen.

Bernt Åström, sportfiskare i området Angående föreslagna fiskefria område vid Gålö i Haninge är jag helt enig med Fiskeriverkets remiss att det är en nödvändig och önskvärd åtgärd för att förbättra fisket, och föreslår även en utvidgning av det fiskefria området så att det gäller hela Blista fjärd, alltså även viken in till Husbyån, vilket underlättar tillsyn och har en gynnsam effekt på beståndsutvecklingen för gös och gädda. Dessutom föreslår jag att tidsrymden förlängs till tio år med möjlighet att avbryta tidigare, utan nytt remissförfarande, om åtgärden har önskad effekt.

Fisket bör i framtiden begränsas såväl för handredskapsfisket som för fisket med enskild rätt. Minmimått, fångstbegränsning, maskstorlekar, begränsning av nätlängder, redskapsantal, fredningsperioder och fiskedagar är därvid möjliga åtgärder.

Trots att remissen avfärdar skarven som orsak till rådande förhållanden måste även skarvens och andra predatorers effekt på fisket undersökas.