

**This is an electronic reprint of the original article.**

**This reprint *may differ* from the original in pagination and typographic detail.**

**Author(s):** Pekka Salmi, Milena Arias-Schreiber & Kristina Svells

**Title:** Societal Transformations and Governance Challenges of Coastal Small-Scale Fisheries in the Northern Baltic Sea

**Year:** 2023

**Version:** Published version

**Copyright:** The Author(s) 2023

**Rights:** CC BY 4.0

**Rights url:** <http://creativecommons.org/licenses/by/4.0/>

**Please cite the original version:**

Salmi, P., Arias-Schreiber, M., Svells, K. (2023). Societal Transformations and Governance Challenges of Coastal Small-Scale Fisheries in the Northern Baltic Sea. In: Partelow, S., Hadjimichael, M., Hornidge, AK. (eds) Ocean Governance. MARE Publication Series, vol 25. Springer, Cham. [https://doi.org/10.1007/978-3-031-20740-2\\_13](https://doi.org/10.1007/978-3-031-20740-2_13)

All material supplied via *Jukuri* is protected by copyright and other intellectual property rights. Duplication or sale, in electronic or print form, of any part of the repository collections is prohibited. Making electronic or print copies of the material is permitted only for your own personal use or for educational purposes. For other purposes, this article may be used in accordance with the publisher's terms. There may be differences between this version and the publisher's version. You are advised to cite the publisher's version.

# Chapter 13

## Societal Transformations and Governance

### Challenges of Coastal Small-Scale Fisheries in the Northern Baltic Sea



Pekka Salmi, Milena Arias-Schreiber, and Kristina Svells

**Abstract** Our chapter adds a northern dimension to the discussion about the past, present and future of small-scale fisheries and their governance. For centuries, extraction of fish resources has been of utmost importance in many coastal areas of the Baltic Sea and small-scale fisheries have survived due to the robustness of the social institutions that have helped them adapt throughout periods of economic and social upheaval. Lately, the fishing livelihood has been undergoing a continuous process of contraction and concentration in terms of vessel numbers and employment. Leisure use of water areas, nature conservation and science-based governance systems have challenged fishers' access to fish resources. Especially in the northern parts of the Baltic Sea, the viability and future of coastal small-scale fisheries is severely challenged by problems caused by fish-eating animals, mainly grey seals and cormorants. We draw upon interactive governance theory to compare experiences on Finnish and Swedish small-scale fisheries governance. Our conclusion is that the present governance system is incompatible with the small-scale fisheries context, and propose creating new co-governance arrangements where small-scale fishers' interests, values and local knowledge are better integrated into a governance system.

## 13.1 Introduction

The Baltic Sea is located in Northern Europe and is considered the second largest brackish semi-enclosed water body in the world (Bonsdorff et al. 2015). With a coastline of approximately 1600 km in length and estimated 29 million people living within 50 km of the coast (Baltic Sea 2019), it stretches along nine countries

---

P. Salmi (✉) · K. Svells  
Natural Resources Institute Finland, Turku, Finland  
e-mail: [pekka.salmi@luke.fi](mailto:pekka.salmi@luke.fi); [kristina.svells@luke.fi](mailto:kristina.svells@luke.fi)

M. Arias-Schreiber  
University of Gothenburg, Gothenburg, Sweden  
e-mail: [milena.schreiber@gu.se](mailto:milena.schreiber@gu.se)

including Finland and Russia, the Baltic countries (Estonia, Latvia and Lithuania), Denmark, Sweden, Poland and Germany.<sup>1</sup> Throughout history the availability of natural resources has been of crucial importance for coastal inhabitants of the northern Baltic Sea whose coastal waters become ice-covered during the winter. Fish and seals have been of major importance dating back to the food cultures of Stone Age coastal dwellers (Pääkkönen et al. 2016). Between the 15th and seventeenth century, the Baltic Sea including its northern waters were central in the development of the important commercial late medieval fishery (Lajus et al. 2013).

Since centuries, coastal fishing has adapted to changing conditions and transformations in nature and society. During the last 70 years many coastal fishing communities along the Baltic Sea have lost their vitality and, in many locations, the remaining coastal fishers are struggling to continue with their livelihoods. At the same time, these livelihoods produce environmentally friendly healthy food and nutrition as well as maintain cultural and economic values of communities (Waldo and Loven 2019). These benefits create opportunities for coastal fishing communities to develop and self-sustain, yet these fisheries are being increasingly steered and restricted from external influences. National and supranational top-down governance systems, and market-based fisheries management, are among those factors (Hultman et al. 2018). Presently, external environmental governance is also affecting Finnish and Swedish small-scale fishers<sup>2</sup> allowing populations of seals and cormorants to rise which creates further challenges for small-scale fisheries.

While transformations seem to be part of the dynamics of certain social groups, at the onset of the twenty-first century the concept of societal transformations has emerged in academic, the media and policy spheres to emphasize that radical changes are required to tackle major global challenges. The concept is used also to point out that small social or technical readjustments will not be enough to for example fully implement the Sustainable Development Goals by 2030 or to confront global environmental and climate change. Societal transformations are defined as “deep and sustained, nonlinear systemic change, generally involving cultural, political, technological, economic, social and/or environmental processes” (Linner and Wibeck 2020, page 222). As it is regarded non-linear, many outcomes of the transformations might be unforeseen and not predictable. The term gained wide recognition through Karl Polanyi’s classic book “The Great Transformation”, despite its scarcely explicit mention in the book or its use as a synonym for secular social change (Merkel et al. 2019). Governance, understood as the formal and informal processes of collective decision-making, planning, deliberating, and capacity building by governmental, market, and civil society actors is inevitably affected by societal transformations.

In this chapter, we examine the connections between societal transformations, present challenges and future opportunities of the northern Baltic Sea small-scale fisheries. The main geographical focus is on the coastlines and archipelagos of

---

<sup>1</sup>For the purposes of the Helsinki Convention the “Baltic Sea Area” is defined as the Baltic Sea and the entrance to the Baltic Sea bounded by the parallel of the Skaw in the Skagerrak at 57° 44.43’N.

<sup>2</sup>Throughout this chapter the terms coastal fishers and small-scale fishers are used as synonyms.

Sweden and Finland, stretching from the Northern Baltic Proper area to the north (Fig. 13.1). These regions share similar ecosystem features but also face akin challenges related to fishing, livelihoods and transformations of their local owner-based management systems, where the landowners could use and manage the local fisheries in the past.



Fig. 13.1 The Baltic Sea case study areas in Sweden and Finland. (Source: Authors)

The northern Baltic Sea coastal fisheries are scantily studied, although it differs in many respects from other parts of the Baltic Sea, regarding its particular environmental conditions, historical, cultural and economic settings, and governance systems. Using interactive governance theory (Kooiman 2003), our core question is whether the current governance system fits or harmonize with the system-to-be-governed. How has this compatibility changed along with societal transformations? What have been the consequences of these changes from the perspective of small-scale fisheries?

## 13.2 Conceptual Framework and Methods

The conceptual framework in this chapter is based on the interactive governance theory by Jan Kooiman (2003). This theory provides a suitable framework for studying fisheries governance (Kooiman et al. 2005). It has been often applied in the analysis of fisheries systems (Jentoft and Chuenpagdee 2019; Partelow et al. 2020) and helps examine the interdependencies between the systems being governed and the governing systems (Jentoft and Chuenpagdee 2015). A special feature of interactive governance theory is “first identifying the unique characteristics and challenges of the system to be governed, i.e., the problems and opportunities it presents, and then assessing the social organizational factors of governance” (Partelow et al. 2020). The theory builds upon a three systems model: a system of governing interactions links the governing system and the system-to-be-governed (Fig. 13.2). In the fisheries context, governance is a result of the interactions between governing institutions (the governing system) and the targeted social-natural system (system-to-be-governed) (Kooiman et al. 2005). In the Baltic Sea, research on changes in the system-to-be-governed has mostly focused on regular assessments of the ecological (natural) system which has guided science-based policy and decision-making (Arias Schreiber et al. 2019). However, this scope is insufficient for understanding and governing the diverse, complex and dynamic coastal fisheries socio-natural system.

In interactive governance theory, interactions are divided in intentional elements and structural modes (Kooiman and Chuenpagdee 2005). Intentional elements are



**Fig. 13.2** The three systems analyzed by Interactive Governance Theory. (Kooiman et al. 2005)

images, instruments and action. Images come in many types: visions, knowledge, facts, judgements, presuppositions, hypotheses, convictions, ends and goals. These images constitute the guiding lights as to how and why of governance (Kooiman and Bavinck 2005) including background ideas about the major problems and challenges (Jentoft et al. 2010). An image can be for example the vision that a sustainable fishery will be achieved by matching fishing effort to the size of the fish populations in a certain area. The main focus in our analysis, however, is on governance instruments, which is an intermediary element that links images to action. Instruments are not a neutral medium; their design, choice and application frequently elicit strife (Kooiman and Bavinck 2005). One's position in society determines the range of instruments available. Instruments can be for example policies, management plans, governing structures or governance actors' constellations.

Interactive governance theory distinguishes three types of structural modes: hierarchical governance, co-governance, and self-governance (Kooiman and Bavinck 2005). Hierarchical governance is the most classical of the governance modes, characteristic of the top-down interactions between a state and its citizens. This style of intervention expresses itself in policies and in law being control and steering key concepts in hierarchical governance. In co-governance, societal parties join hands with a common purpose in mind and stake their identity and autonomy in this process (ibid.). Governance theory contains numerous manifestations of co-modes, such as communicative governance, public-private partnerships, networks, regimes, and co-management. Co-governance is at the core of governance theory, as the necessity of broad participation is, for instance in the context of fisheries, seen as essential from a normative and from a practical standpoint (Kooiman and Bavinck 2005). Finally, self-governance, where actors take care of themselves outside the purview of government, is rare in the governance of modern fisheries.

Governance has an analytical but also a normative application. In fisheries and coastal governance, governing systems and the system-to-be-governed should often be compatible (Jentoft and Chuenpagdee 2009). Jentoft et al. (2010) emphasize that the governing system needs to correspond to images of the system-to-be-governed and note that when the system-to-be-governed is perceived to be simple and stable, the governing system with a top-down, centralized government pyramid may be most effective. Conversely, when the system-to-be-governed is complex and unstable, the governing image of a rose (a coalition of stakeholder groups) may be more desirable (Jentoft et al. 2010). Similarly, conflicting images among stakeholders impact the governability or the quality of governance of a fishing system (Arias Schreiber et al. 2019).

Fisheries is not managed in a vacuum (e.g., Jentoft 2000). It is important to study societal transformations, because they affect both the system-to-be-governed and the governing system. In this chapter, our point of departure is, firstly, that recent struggles of coastal fisheries in the northern Baltic Sea are largely due to societal

transformations in the governing institutions towards post-productivism,<sup>3</sup> globalized economies of scale and environmentalisation.<sup>4</sup> Secondly, we hold that these transformations shape the compatibility and balance between the governance system and the system-to-be-governed, as these transformations affect both fisheries and the governance systems, including images, instruments, structures and actions. Moreover, we discuss options for striking a better balance broadening the perspectives to understand and steer the future of the northern Baltic Sea.

### ***13.2.1 Methods***

We use secondary documentary sources and draw on an overview of the literature. We also use primary material collected by the Baltic Sea Seal and Cormorant Transnational Cooperation (TNC) project (Svels et al. 2019) and the project “Fishing for solutions: community economies for a coastal rural development in Sweden”. For both projects, surveys and semi-structured interviews were used for data collection. The regular participation of the authors in workshops, meetings and other fora where the situation of the small-scale fisheries is analysed and discussed and continuous dialogues with Baltic fishers during at least the last 5 years contributed also to the data collection. In the following sections we describe the empirical contexts of small-scale fishing in the Baltic Sea and changes in their governing system. By providing regional examples, the next section examines the multiple and changing conditions of small-scale fisheries in Finland (Northern Satakunta and the Archipelago Sea region) and Sweden (from Östergötland up to the Uppland archipelagos) and their relations to the governance systems. Further, two main contemporary governance challenges – the quota-based management and seals and cormorants-related conflicts – are analysed. We finish this chapter with a conclusions section where the theoretical framework is linked to our results.

---

<sup>3</sup>In the post-productivist setting, coastal areas are viewed as sources of individual experiences and consumption, as well as places for nature conservation (Rannikko, 2008; Rannikko and Salmi, 2018).

<sup>4</sup>Environmentalisation is defined as “the adoption of a generic environmental discourse by different social groups, as well as the concrete incorporation of environmental justification to legitimate institutional, political and scientific practices” (Acselrad, 2010, p. 103). The story of environmentalisation reflects an emphasis on ecological values in society and tends to disempower the primary producers and other rural people (Marsden, 2004). The change towards environmentalisation can be clearly seen in the fisheries sector (Salmi, 2009).

## 13.3 Transformations of Small-Scale Fishing and the Governance System in the Northern Baltic Sea

### 13.3.1 *The Northern Baltic System-to-Be-Governed*

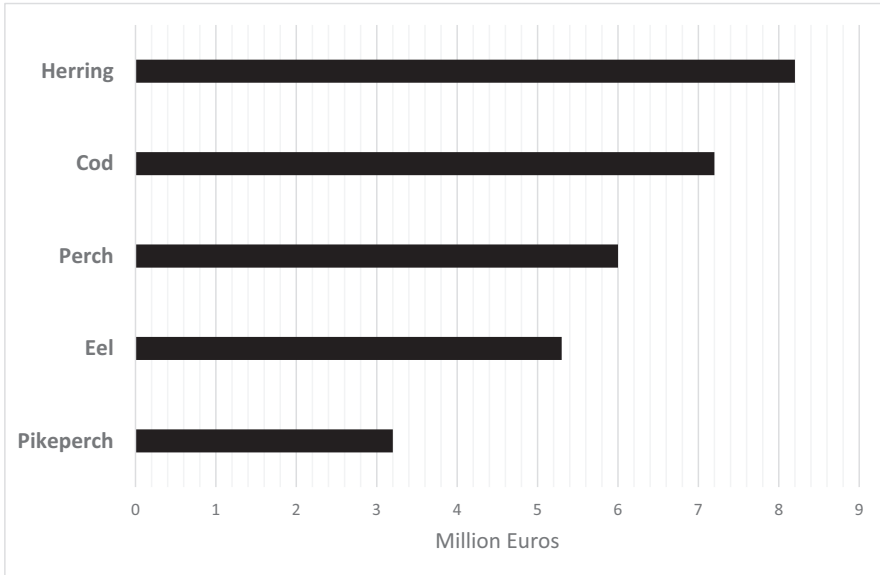
Baltic Sea is one of the world's largest semi-enclosed bodies of brackish water (HELCOM 2021). Eutrophication, caused by nutrient pollution, is a major concern in most areas. The only coastal areas not affected by eutrophication are confined to the Gulf of Bothnia. Recently, inputs of nitrogen and especially phosphorus to the Baltic Sea have been substantially reduced. Living organisms and bottom sediments are affected by hazardous substances in all parts of the Baltic Sea (HELCOM 2021). In Finland, fish stocks targeted by coastal small-scale fishers have not been under serious threat and are recommended as environmentally friendly food (Salmi 2018; WWF 2021). The coastal areas of the northern Baltic Sea are ice covered usually for 3 or 4 months each year, which amplifies the seasonality of capture fisheries.

After WWII, the number of coastal fishers started to decline at the same time when trawlers' landings increased rapidly (Zeller et al. 2011). Numbers of active coastal fishers in the Swedish Baltic Sea peaked in 1945 (6000 fishers) and after that these numbers fell by a half towards the end of the century (Piriz 2000). Between 2008 and 2018, the number of coastal vessels in Sweden decreased from 852 to 660 while in Finland there are still 1413 active fishers left (STECF 2019). The patterns in number of coastal fishers in the Baltic Sea are part of a European trend. The small-scale fisheries fleet (vessels under 12 m of length) in the European Union decreased significantly over the first decade of the twenty-first century, from around 90 thousand vessels in 2000 to just over 70 thousand in 2010 (Lloret et al. 2018). Three countries that were most affected by this decrease, i.e., Lithuania, Poland and Sweden, all operated in the Baltic Sea and showed significant decreases (over 30%) during that period.

In 2017, the coastal fishing fleet in the Baltic Sea was estimated at 5418 vessels and equivalent to 92% of the total Baltic Sea fleet and around 9% of the total fishing EU small-scale fishing fleet (Lloret et al. 2018; STECF 2019). Almost 6500 fishers are estimated to be involved in this fishery. Landings of coastal fishing in the Baltic Sea are notoriously more diverse in comparison with large-scale fisheries. Apart from herring and cod which are heavily fished also by large-scale vessels current larger economic contribution to the Baltic Sea coastal fishers are yielded by perch, eel, and pikeperch (Fig. 13.3). Instead of cod, which is unimportant for the studied northern Baltic Sea coastal fisheries, trap net and gill net fishing for European whitefish and Baltic salmon are of importance.

The relatively high diversity in the studied fishing culture is explained by the extraordinarily and unique climatic and ecological variable conditions in the Baltic Sea, which has led to correspondingly large variations in fishing technologies and adaptation strategies of the coastal fishers (Eklund 1991).





**Fig. 13.3** Top 5 species landed in value by coastal fishers operating in the Baltic Sea in 2017. (Source: STEFC 2019)

Particularly in the northern Baltic Sea coast, alone the fact that fishing waters are frozen in the winter-time has led to specific demands for fishing methods. Fishing activities are seasonal also due to changes in availability of target species. Hence, coastal fishers in these areas employ a large variety of fishing gears including seine nets, gill nets, trap nets, long lines among others, and have been since centuries commonly shifting between traditional activities such as fishing, farming, forestry and shipping. Typically, the economic unit of coastal fishing is the household and fishers use small boats for accessing near-by water areas. This means that the above-mentioned statistical procedure of using vessels as the unit does not fit well with the studied northern Baltic Sea small-scale fisheries.

### ***13.3.2 The Northern Baltic Governing System***

Fisheries in the Baltic Sea have always been regulated by local rules since at least the 1500s. In these times, harbour authorities of spring-summer fishing settlements kept records of the number of fishers, controlled the landings and quality of the products, and supervised that fishers did not go fishing on weekends or before the daily morning signal, usually by the sound of a horn (Hessle 1934). These authorities were also in charge of collecting the taxes from fishing activities. Over those centuries, fisheries resources were considered inexhaustive and fishing regulations were limited to organizational matters and the collecting of taxes. Additional local

fisheries rules on, for example, the division of revenues from fishing among crews, or the procedures to avoid gear collisions in fishing areas, were decided within the local fishing community.

In Sweden and Finland, the owner-based fisheries management has been important part of the governance system at the local level for centuries. Most of the coastal and inland waters are under private ownership and associated with the possession of land. In Finland this was codified in a statute in 1766 when Finland was part of Swedish territory (Eklund 1994). Later, the system became included in fisheries legislation. The landowning farmers were allocated more decision power over fishing in their water areas, and the fishing rights of the landless people – the majority of professional fishers – became weaker (Eklund 1994). Within this spatial management system, waters inside a line between the outermost islands longer than 100 meters are private according to the Swedish rule for separating private and public waters (Bruckmeier and Neuman 2005).

In the local owner-based system, fisheries management is commonly driven by a collective; a shareholders' association, which jointly represents the interests of individual owners in fishery matters. From the commercial fishers' perspective, problems in getting fishing user rights have occurred as the management rights are in the hands of other groups, like the landowners (Salmi 2012). While the local owner-based management system still exists, and water owners are according to law responsible for managing their fishing waters, new governance institutions and levels have become important players. Swedish and Finnish fisheries governance system became highly complex as a result of the coexistence of several systems: governmental fisheries management, local fisheries management and public and private ownership of coastal waters (Bruckmeier and Neuman 2005). When fisheries management became part of national and later international authority, ecological and economic concerns gained attention and little to no attention was given to the viability and sustainable development of coastal communities that depended on fisheries.

Besides local transformations, external developments in Europe and worldwide contributed to shaping the current governance of the Baltic Sea. Firstly, the threats to fish stocks from fishing became acknowledged and the “cod wars” between the UK and Iceland triggered the process which ultimately led to the UN Convention on the Law of the Sea (UNCLOS) in 1982 (see Nakamura Ch. XX in this book). As threats of overfishing and environmental degradation, in particular eutrophication, in the Baltic Sea become notorious and fisheries governance went national – and later international – the regulating and governing actors expanded accordingly. In 1980, the first Convention on the Protection of the Marine Environment of the Baltic Sea Area, known as the Helsinki Convention, was signed.

The governance of fisheries in European seas including the Baltic Sea changed substantially with the institutionalization of the European Union Common Fisheries Policy (CFP), which has served as the overarching governing framework for fisheries management in all European Union member states through its directives and regulations. Finland and Sweden became EU members in 1995. Prior to 2004 and the inclusion of Poland and the Baltic countries (Estonia, Lithuania and Latvia) into

the EU, the states bordering the Baltic Sea managed fisheries issues multilaterally via the *International Baltic Sea Fisheries Commission* (IBSFC).

The Baltic Sea fisheries governance has been described lately as a complex, multi-level governance case (Burns and Stöhr 2011) where different actors from a variety of sectors interact to steer formal and informal processes to achieve collective (socially) beneficial outcomes. Over the last decades, governance in the Baltic Sea region has witnessed a process of “Europeanisation” at a significant incremental level (Gilek et al. 2016; Zeller et al. 2011) where not only fisheries but also the environmental governance system plays important roles.

In the following we describe cases about how the above-described changes in the governing structures and principles have affected the systems-to-be-governed, namely the small-scale fisheries along the northern Baltic Sea coasts.

## 13.4 Regional Examples of Transformations in Small-Scale Fisheries in the Northern Baltic Sea

### 13.4.1 Northern Satakunta Region

In the Northern Satakunta region, on the Finnish West coast, the heyday of commercial fishing was at the end of the 1910s, when a general shortage of food supplies increased the demand for Baltic herring especially during wartime (Salmi and Salmi 2009). At that time boats were progressively being equipped with motors which increased efficiency and reduced workload. However, a new fishing method, trap net fishing for Baltic herring, was adopted slowly among the professional fishers in the Northern Satakunta region. In spite of the tensions over fishing rights, contradictions between the local owners of the fishing rights and the professional fishers were not as severe in the Northern Satakunta region as it was the case in archipelago areas in South-west Finland (Salmi 2018).

After WWII the number of fishers in the region declined rapidly and traditional coastal fishing methods and operation models were reassessed and renewed in many ways (Salmi and Salmi 2010). The number of commercial fishers in the major fishing village Merikarvia decreased to less than one half in 30 years. New fishing methods were adopted; for example, stationary long line fishing for Baltic salmon in autumn months became widely appreciated as it enabled the sharing of economic risks through fishing co-operation. The episode of stationary long line fishing started a wider strategic change in the commercial fishing in the region, as the fishing moved from Baltic herring towards targeting river-spawning species: Baltic salmon and European whitefish. Moreover, targeted species were affected by the damming of rivers for the purposes of electric power production and forestry. The consequent decline was partly compensated by restocking of fish fingerlings.

Trawling for Baltic herring started in the 1950s but this capital-intensive method failed to attract the Northern Satakunta fishers, who considered the striving of economic profit as morally dubious (Salmi and Salmi 2010). At the beginning of the 1960s driftnet fishing for European whitefish was invented along with the introduction of synthetic fibres in fishing nets (Salmi 2011). Fishers were paid good prices for the large-sized European whitefish. Therefore, driftnet fisheries for European whitefish soon became an important element in the fishing culture of the Northern Satakunta coast.

Unlike today, opportunities for fishing livelihoods before the 1960s were less often directly affected by the state – whether supporting or restricting the livelihood. The major legislative issue was connected to the definition of water ownership and access rights for the fishers. Thus, the local community, alongside fishers' life modes and identities, was of major importance in responding and adapting to transformations in the society. During the last 50 years however, the role and effects of the national and international levels of governance, and especially measures for biodiversity protection, have substantially increased.

In the 1980s the Baltic salmon stocks increased in abundance partly due to restocking programs. In addition to using long lines to fish Baltic salmon, fishers started to use trap nets. No local license had previously been needed as salmon fishing was operated outside the privately owned water areas. With time, state-initiated regulations for Baltic salmon fisheries have become stricter and increased in complexity over the last 30 years. In the 1980s the salmon fishery was regulated by closed seasons and by restricting the number of fishing gears (Salmi and Salmi 1998). As a consequence of new top-down fishing policies, which were found unreasonable by fishers, a national fishery organization, the Finnish Fishermen's Association, was founded to defend their rights.

Much later, drift net fishing was banned by the EU in 2008 legitimated by the protection of the Baltic Sea harbour porpoise. This decision terminated not only open sea netting for Baltic salmon, but also the drift net fishing for Baltic herring, adopted already in 1861, and later for European whitefish, and to some extent also trout and salmon (Saiha 2009). Small-scale fishers considered the ban to be an example of centralized decision making based on insufficient knowledge, as, for instance, porpoises seldom entered Finnish coastal areas (Salmi and Mellanoura 2019).

The current situation was examined in an annual national survey that monitors changes in commercial fishing. Fishers in the municipality of Merikarvia stated that the seal-induced losses had increased in 2017 (Setälä et al. 2018) and that the effects of the seals, accompanied with the cormorants, pose the greatest threat to their fishing livelihood. In addition, the local herring and salmon fishers are affected by the launching of the transferrable quota system, which is often considered to increase bureaucracy rather than to enhance independent decision making in fishing operation. The consequences of the quota system and the seal and cormorant-induced conflicts will be in more detail studied in Sect. 13.5 below.

### 13.4.2 *Archipelago Sea Region*

The Archipelago Sea, South-west Finland, consists of unique coastal landscape with shallow water areas between thousands of islands, skerries and fragmented shorelines (Salmi 2018). Extraction of fish resources has been of utmost importance. Baltic herring was landed for centuries cooperatively during the ice cover period by winter seining methods. Tensions between the professional fishers and the land-owning peasants became evident in the 1920s, causing more severe and long-lasting contradictions within the local communities than those in the Northern Satakunta region. In the inner waters of the archipelago local peasants had started, in addition to seine nets, capturing Baltic herring by large trap nets. The breakthrough of trap nets for herring occurred after WWI. With this method, the land-owners captured large quantities of herring during the spawning season in spring, which created conflicts with the full-time gill net fishers in the outer archipelago (Eklund 1991, 1994).

In 1934 the number of commercial fishers in the southern parts of the Archipelago Sea was 3447, of them 42% being full time fishers (Salmi 2018). The golden era of the archipelago fisheries lasted until the end of WWII. After the war, fisheries started to lose their position as co-providers of welfare and nutrition, and consequently the number of commercial fishers declined. Already in the 1930s the demand for salted herring started to decline as a consequence of the reduced purchasing power of the consumers after the depression and import restrictions and new preservation methods for fish products (Jónsson 2009). For centuries, live pikes, perches and other species were transported from the archipelago especially to Stockholm and Helsinki, where fish demand had grown (Eklund 1991). This well-boat shuttle continued until the 1950s when Sweden forbid the import of live fish (Soldéus 2013).

In some islands the traditional fishing peasant livelihood still continued; root crops were produced on small fields and the Baltic herring was smoked in order to gain added value. Cattle were also a part of this self-sufficient economy. Processing, transportation and marketing chains in the archipelago were underdeveloped, as the Finnish state prioritized the development of agriculture. While agriculture was generously subsidized, the archipelago and coastal fishing was being supported only in the late 1960s, once the former fishing villages were transformed to sites for agriculture, recreation and services (Eklund 1991). The adoption of industrial trawling since the 1950s moved part of the fishing activities away from the archipelago and contributed to its depopulation (Jaatinen 1961).

Still in the 1970s nearly half of the archipelago inhabitants were employed in primary production, like agriculture and fisheries (Andersson and Eklund 1999). Thereafter the importance of primary production has decreased as recreational activities, shipping and nature protection became more significant. A new fisheries innovation, rearing of rainbow trout in net cages in the sea, was introduced and partially transformed the 'capture economy' into 'fish culture'. Moreover, new post-productivistic interests, e.g., summer cottage dwellings and nature conservation,

captured large archipelago and coastal water areas without prior discussions with the fisheries sector. Also the number of recreational fishers multiplied. Regarding several fish species, the annual landings by recreational fishers exceed those by the commercial fishers. Furthermore, recreational rod fishers have successfully gained fishing rights and easy access to fishing waters (Salmi 2012). Especially the launching of the province-wide lure fishing fee system in 1997 raised bitterness among water owners as the new state-organized license system narrowed local opportunities for managing local recreational fisheries – the local owners could not anymore control rod fishing in their waters. Environmental conservation has intensified in the study area since the 1970s along with initiations for establishing national and international protected areas. Commercial fisheries find the expanded spatial occupation by nature conservation interests problematic (Salmi 2018) due to the restrictions of access and overlapping protective zones (Svels 2017).

Parallel to diminishing availability and demand for the Baltic herring, the archipelago fishers have relied on other fish species like perch, pikeperch and European whitefish. Lately pikeperch stocks built up and occupied wider areas in the archipelago, and compensated for the reduced herring landings. Yet, after the turn of the millennium increased seal and cormorant populations have created the greatest threat to the viability of commercial fishing (Salmi 2015). The effects of the grey seals have also changed the fishing locations; instead of more open archipelago waters the best pikeperch catches are currently yielded in sheltered and shallow coastal fishing grounds (Saarinen 2013). Archipelago fishers have traditionally relied on local support whereas the state and authorities are more often perceived as restricting fishers' operations and independence (Salmi 2005). The ownership of waters has partly shifted to the summer cottage dwellers, not inevitably willing to grant licenses for commercial fishing. This challenges fishers who have tried to move their pikeperch fisheries towards more shallow waters. Moreover, the minimum size of pikeperch in the Archipelago Sea commercial fishing was, by law, raised to 40 cm in 2019. Fishers objected the change doubting the idea that the pikeperch stocks were endangered (Sonck-Rautio 2019).

### *13.4.3 From Östergötland to Uppland Archipelago*

Fishing, farming and animal husbandry have been important livelihoods in the history of several archipelago areas in Östergötland, Sweden (Norr et al. 2018). The land and water are connected in use, ownership and livelihoods alike, as in the above case of the Finnish Archipelago Sea. Fishing is one element of archipelago peoples' identity and one part of the pluriactivity providing income to the permanent population. In Hållnäs on the Uppland coast, fishing culture and its specific life mode has been important for local identity as well as supporting local tourism using fishers' knowledge and stories in creating tourism products (Rådberg et al. 2018). In spite of traditions and the importance of fishers' livelihood recruitment of new fishers is challenging.

In the southern part of the Östergötland coast, in Valdemarsvik, Baltic herring and eel capturing has dominated. In the past, Baltic herring was targeted in winter and spring by seine nets near the bays and by gill nets in the outer archipelago. Later trawling was adopted and consequently the Baltic herring landings substantially increased. Eel was fished in late summer and in autumn with trap nets. Today, there are only a few commercial fishers in Valdemarsvik, while in S:t Anna's archipelago, another part of Östergötland coast, there is only one fisher left (Norr et al. 2018).

On the Swedish Baltic Sea coast recreational rod fishing has been free since 1985. The lack of charges and regulation has been criticized as it is considered to hamper management of local fish resources (Norr et al. 2018). In the Östhammar-Singö archipelago on the Uppland coast, narrowed economic opportunities for the local management organization irritated water owners, as they found unjust that one group could operate without fees and others needed pay for the funding of the fishery management. This situation is similar to local perceptions regarding the widened rights of rod fishing in the Finnish Archipelago Sea (Salmi 2002). People on the Swedish Baltic Sea coast have found that 'free rod fishing' is a consequence of general change in fisheries policies towards downplaying the local level management.

According to the Swedish archipelago fishers, fisheries policy has contributed to supporting large-scale fisheries at the expense of small-scale fisheries (Norr et al. 2018). Fishers claim they have been neglected by the society while large-scale trawling has been supported. Small-scale fishers state difficulties in following new requirements which necessitate investing, e.g., new fish processing facilities, and bureaucracy has increased. Similarly, water owners of the Östhammar-Singö archipelago were convinced that the large-scale trawlers caused damaging effects on the environment and fish stocks (Salmi 2002). Fishers in the Hållnäs region state that small-scale fishing is a sustainable way to utilize the sea resources and that the livelihood supports development of local communities (Rådberg et al. 2018).

Fishers in the Östergötland archipelago state that the price and demand for local fish is good (Norr et al. 2018). Thus, opportunities for small-scale fishing could be seen as promising, nevertheless the core problem is that the landings by the remaining small number of fishers are too small to revitalize a fishing industry. This is due to the seals and cormorants that reduce catches and discourage fishers participation. In Hållnäs, fishers process their catch for direct sale to tourists during the summer, claiming they could sell more provided they had better opportunities to decide what and where to fish as it was in the past for small-scale fishing (Rådberg et al. 2018).

The contemporary seal and cormorant-induced problems were highlighted both in the Östergötland archipelago and in Hållnäs (Norr et al. 2018; Rådberg et al. 2018). During interviews with local fishers made in 2018 it became clear that especially the seal population had exploded within 2 years. Seals are allowed to be hunted, but the hunter must be accompanied by a registered commercial fisher (Norr et al. 2018). Seal hunting in the Swedish archipelago, like in Finland, is hampered also by the EU ban of trading seal products (European Union 2009a). Fishers are displeased with the compensation payments because they are bound with turnover instead of the amount of losses. Likewise, cormorants eat a lot of fish. In Hållnäs, informants said that although protective hunting of cormorant is allowed, the

amounts are too small to make a difference (Rådberg et al. 2018). Seals, cormorants and authorities are perceived as prime factors of Hållnäs fishers' problems as they feel powerless and not recognized in the decision-making process. In this area the number of commercial fishers has decreased between 1930 and 2018 from 250 to only two fishers left (Rådberg et al. 2018).

## **13.5 Contemporary Governance Challenges in the Northern Coasts**

The studied examples of coastal small-scale fisheries in the northern Baltic Sea have shown capacity to adapt to a variety of changes. Despite this potential, recent societal transformations driven by post-productivist governance images, instruments and structures have changed, and become increasingly pivotal for the existence of this fishery. Alongside these developments, this section focuses on two core issues that challenge the northern Baltic Sea small-scale fisheries: market-based governance and natural predators-related conflicts.

### ***13.5.1 Quota Management as a Market-Based Governance Instrument***

The quota management (individual transferable quota, ITQ) was introduced as an instrument for fisheries governance widely during the twentieth century (Hultman et al. 2018). A basic idea is that individual 'ownership' of fishing quotas, combined with a free market for the selling and buying of these quotas, will foster a more economically efficient and sustainable fishing sector. These quota systems arrived in the northern Baltic Sea more recently. In Sweden, individual and transferable quotas were introduced in 2009 in the large-scale pelagic (herring and alike species) fisheries and later individual quotas with annual leasing were set up in the demersal (cod and alike species) fisheries (Hultman et al. 2018). The pelagic ITQ system was introduced for a period of 10 years (Stage et al. 2016) and was renewed for the same period in 2019, while for the demersal fisheries the individual quota system was a provisional regulation which ended in 2018 and was not renewed in 2019 (Arias Schreiber et al. 2019). Finland introduced individual quotas (more specifically: transferable fishing concessions, TFCs) in the Baltic herring and Baltic salmon fisheries in 2017.

According to Hultman et al. (2018) quota markets have been contested and opposed by large groups of fishers, and the implications have been subject to public debate in Nordic countries. This introduction of market mechanisms in the distribution of fishing quotas and rights has changed the previous economic and social base, and hence the very basic conditions for the coastal fishing sectoral development.



It is evident that this policy change has favoured volume-based large-scale fisheries (Hultman et al. 2018) in comparison to small-scale fisheries. The impacts of the ITQ system for the coastal fisheries in Sweden have not been systematically evaluated and are a matter of debate.

In contrast to the Swedish quota system, the Finnish system also covers small-scale coastal fishing. According to a survey made in 2018, many Finnish fishers were sceptical of the benefits of the newly launched system, especially for the coastal small-scale Baltic herring and Baltic salmon fisheries (Salmi et al. 2019). The system was considered complicated, bureaucratic and unsuitable for the seasonal trap net fishing for Baltic herring and Baltic salmon. These views are similar with those among the Northern Satakunta fishers (Sect. 13.4). Baltic salmon fishers, however, found a positive aspect of the quota system, as it enabled partial relieving of temporal regulation in Baltic salmon fisheries (Salmi et al. 2019).

### ***13.5.2 Natural Predators-Related Conflicts; Governing Seals, Cormorants and Fisheries***

Environmental and predators-related themes have emerged along with the post-productivist transition not only in the public discourse but also in governance institutions and practices of coastal resource utilization. The increased seal and cormorant populations ('natural predators') form the greatest contemporary conflict issue for commercial fisheries in most parts of the Baltic Sea coast and challenge the future of small-scale fisheries also in the studied Finnish and Swedish coastal locations (Sect. 13.4).

Seals' and cormorants' impacts on coastal fishing livelihood can be divided in six types: damage to fishing gear, damages in caught fish, reduction of catches by taking fish from the gear and fishing grounds, reduction of catches due to changes in fish stocks and behavior, an increase of the work load, and an increase of the operation costs of fishing (Svels et al. 2019). The seal-induced impacts are perceived as considerable or serious in nearly all the studied Baltic Sea coastal areas and the cormorant-induced impacts are usually considered less serious than those of seals (Arias Schreiber and Gillette 2021).

The multi-level and sectorised governance systems have been unable to solve the conflicts, although technological measures have provided partial mitigation of the seal-induced problems (Salmi 2009; Svels et al. 2019). In general, perspectives on seal politics are steeply divided between fisheries and hunting organizations on one hand and nature conservationists and environmental administrators on the other. The former groups want to restrict the seal population and the latter like to restrict hunting and enhance conservation. Similar tensions are present in the cormorant conflict, where environmental perspectives hold more power, largely due to the cormorants' status as non-hunted species under the EU Bird Directive (European Union 2009b).

Grey seals can be hunted with certain limitations in Finland and Sweden. The motivation for hunting is, however, often low due to the EU ban for the trade of seal products (European Union 2009a). In the cormorant case derogation permits can be locally applied for harassment, shooting or oiling eggs. Fishers call for wider opportunities for hunting seals and cormorants as the primary choice of governance instrument (Svels et al. 2019). Active hunting near fishing gear may improve catches for a couple of days, nevertheless fishers stress that over time it will affect the behavior of the animals, becoming yet again more fearful towards humans. The fishers interviewed by the TNC project (Svels et al. 2019) recommend that killed animals should be considered a resource; thus, a repeal of the EU ban for trading seal products is considered to be central for this option. The opinion is divided regarding the role of monetary compensations as a governance tool for mitigating the animal-human contradictions. Development of fishing technology has been considered as a primary instrument in the mitigation of the seal-induced problems, as gear development aims to enable commercial fishers to continue their livelihood without challenging the protection of seal populations (Svels et al. 2019).

National and local management plans have been made for seals and cormorants in Sweden and Finland. The process of making the plans may support learning and finding common ground among stakeholders and interest groups. However, the final plans are typically science-based and lack recommendations for improving the institutional arrangements and efficient governance tools for conflict mitigation (Pettersson et al. 2012). Discussion on inclusion of local knowledge in the conflict mitigation processes has been controversial (Bruckmeier and Høj Larsen 2008).

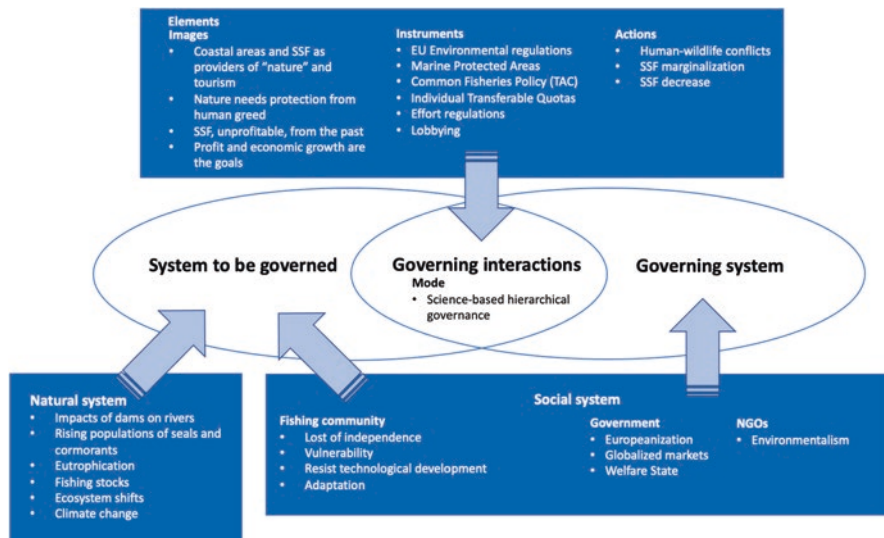
## 13.6 Conclusions: Societal Transformations and Governance

Changes and challenges of the Baltic Sea natural system including its fishing stocks has been extensively researched while social changes in the fisheries system, and in particular related to coastal small-scale fisheries, have been seldom addressed (Arias Schreiber et al. 2019). The lack of research persists despite significant transformations that have been witnessed in the governing system and the way it affects the small-scale fisheries sector. This chapter has focused on the changing govern systems and their compatibility with small-scale fisheries operated on the northern coasts and archipelagos of the Baltic Sea. The presented case studies show that a minor number of northern Baltic Sea coastal fishers have been able to adapt and continue their livelihood in current difficult circumstances. Adaptation to the present challenges, especially the quota systems and the natural predators-related conflicts, is, more than ever, in the hands of the governors, their images of the small-scale fisheries, and the functionality of the governance structures.

Societal transformation towards post-productivism, globalized economics of scale and environmentalisation with a multilevel hierarchic science-based governance, have shaped both the system-to-be-governed, namely the studied small-scale fishers and their communities, and the fisheries governance systems. Under a

post-productivism context, coastal areas provide individual experiences, touristic attractions and places for nature conservation where commercial fishing is not valued. Globalized economics of scale allow for large amounts of imports of cheap seafood that tends to limit marketing opportunities of the coastal fishers. Moreover, since ecological concerns are prioritized in the current governance system, science-based hierarchical governance has turned small-scale fisheries voices and knowledge irrelevant for fisheries management. The reduced number of small-scale fishers are not well organized and their participation and values are rarely considered in the decision-making process (Arias Schreiber et al. 2019). The governance challenges are substantial as the system-to-be-governed has become more diverse, complex and dynamic along with arrival of new interests and values, such as those of the environmental movement and recreational users of the area. Many fishers have coped with the new situation by adopting new strategies that make use of the increased demand, for instance, for environmentally friendly niche products (Hultman et al. 2018). However, the narrowing scope of action, bureaucracy and consequent reduced independence poses a challenge for recruiting new generations of coastal fisheries.

Figure 13.4 connects our theoretical framework of interactive governance with the elements and systems relevant for the studied Baltic Sea small-scale fisheries. Main changes in the governing mode have been described as a shift from local owner-based governance to a hierarchic science-based fisheries and environmental governance. In the past the local community was of major importance in responding and adapting to transformations in society. During the last 50 years the role of the



**Fig. 13.4** Interactive governance framework adjusted for the analysis of the societal transformation and governance challenges of the small-scale fisheries in the Northern Baltic Sea. (Modified on the basis of Jentoft and Chuenpagdee 2009 and Kooiman et al. 2005)

national and international levels of governance has become central. At the same time the societal transformations have brought new governance principles, structures and practices that have increasingly affected coastal small-scale fisheries. As our analysis shows, neither the local level governance has been free of contradictions. Tensions regarding fishing opportunities of professional fishers vis-à-vis land owners, who possess more power in local fisheries management, have provoked obstinate conflicts in the studied archipelago fisheries until today.

Northern coastal fishers perceive that the hierarchic science-based systems enhance large-scale fisheries, and do not take the coastal fishers' interests, values and cultures properly into account. These perceptions are visible e.g., in the presented examples of the drift net ban, the natural predators-fisheries conflicts and the transferable quota system. The quota systems form a governance instrument that fits well with fisheries based on mobility, large investments, and economies of scale to achieve profitability. This is in contrast to small-scale fishers who lack financial capital, and normally avoid large investments (Arias Schreiber et al. 2019). In Finland small-scale fishers considered that the consequent distributional outcomes, were not properly taken into account when launching the quota system.

It is not far-fetched to conclude that the fisheries and environmental governance systems are incompatible with the system-to-be-governed, small-scale fisheries in the northern parts of the Baltic Sea. How can a better balance be achieved? There is an obvious need for improvements both regarding structural modes and intentional elements. The emergence of hierarchic science-based governance structure is largely behind the problems, but there is no turning back to self-governance if that ever existed. However, a narrowly science-based governance approach does not guarantee a fitting to small-scale fisheries values and interests. The third and most promising alternative is co-governance where small-scale fishers' interests, values and local knowledge are integrated into a governance system that considers economic, ecological and also social sustainability concerns. At present the EU-funded Fisheries Local Action Groups provide an opportunity for small-scale fishers also in the northern coasts of the Baltic Sea to collaborate widely and get support for applying locally relevant survival strategies (Salmi and Svells 2022). New networks and hands-on collaboration with the fishers may raise the awareness of small-scale fishers' challenges and every-day life, which is needed for improving compatibility in the governance interactions.

Governance collaboration, creating better balance and wider awareness of small-scale fisheries, could thus enhance the overall sustainability of the Baltic Sea coastal regions. Similarly, the science-based policy setting needs to rely on more disciplines than just the ones that provide knowledge on ecological and economic aspects within the complex fisheries system. Transdisciplinary research that includes the co-production of knowledge with resource users offers an alternative in this regard. As this chapter shows, interactive governance theory is well fitted for analyzing the modes and elements in the complex governing systems that affect opportunities for small-scale fisheries in the constantly changing system-to-be-governance.

## References

- Acselelad H (2010) The “Environmentalization” of Social Struggles: the Environmental Justice Movement in Brazil. Trans. by Jeffrey Hoff, *Estudos Avançados* 24(68):103–119. [http://www.scielo.br/pdf/ea/v24n68/en\\_10.pdf](http://www.scielo.br/pdf/ea/v24n68/en_10.pdf). Accessed 15 Dec 2019
- Andersson K, Eklund E (1999) Tradition and innovation in coastal Finland: the transformation of the Archipelago Sea region. *Sociol Rural* 39(3):377–393
- Arias Schreiber M, Gillette M (2021) Neither fish nor fowl: navigating motivations for fisheries participation and exit in Sweden. *Soc Nat Resour* 34(8):1019–1037. <https://doi.org/10.1080/008941920.2021.1925381>
- Arias Schreiber M, Linke S, Delaney AE, Jentoft S (2019) Governing the governance: small-scale fisheries in Europe with focus on the Baltic Sea. In: Chuenpagdee R, Jentoft S (eds) *Small-scale fisheries governance: transdisciplinary analysis and practices*. Springer, Dordrecht, pp 357–376
- Baltic Sea (2019) *New World Encyclopedia*. Retrieved 12:11, December 1, 2019 from [http://www.newworldencyclopedia.org/p/index.php?title=Baltic\\_Sea&oldid=1022236](http://www.newworldencyclopedia.org/p/index.php?title=Baltic_Sea&oldid=1022236)
- Bonsdorff E, Andersson A, Elmgren R (2015) Baltic Sea ecosystem-based management under climate change: integrating social and ecological perspectives. *Ambio* 44(3):333–334
- Bruckmeier K, Høj Larsen C (2008) Swedish coastal fisheries – from conflict mitigation to participatory management. *Mar Policy* 32:201–211
- Bruckmeier K, Neuman E (2005) Local fisheries management at the Swedish Coast: biological and social preconditions. *Ambio* 34(2):91–100
- Burns TR, Stöhr C (2011) Power, knowledge, and conflict in the shaping of commons governance: the case of EU Baltic fisheries. *Int J Commons* 5:233–258
- Eklund E (1991) *Kustfiskets historia i Finland*. Skärgård 2:5–15
- Eklund E (1994) ‘Kustfiskare och kustfiske i Finland under den industriella epoken. Studier i en yrkesgrupps yttre villkor, sociala skiktning och organisation 1860–1970’, SSKH Skrifter 5, Svenska social- och kommunalhögskolan vid Helsingfors universitet. Forskningsinstitutet, Helsinki
- European Union (2009a) Regulation (EC) No 1007/2009 of the European Parliament and of the Council of 16 September 2009 on trade in seal products. <https://op.europa.eu/en/publication-detail/-/publication/a6064cc0-48ee-4698-b380-106c6ea30e89/language-en>
- European Union (2009b) Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (amended from Directive 79/409/EEC in April 1979). <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L0147>
- Gilek M, Karlsson M, Linke S, Smolarz K (2016) Environmental governance of the Baltic Sea: identifying key challenges, research topics and analytical approaches. In: Gilek M, Karlsson M, Linke S, Smolarz K (eds) *Environmental governance of the Baltic Sea*. Springer International Publishing, Cham, pp 1–17
- HELCOM (2021) *Ecosystem Health of the Baltic Sea 2003–2007*. HELCOM Initial Holistic Assessment. Baltic Sea Environment Proceedings No. 122. Helsinki Commission. <https://www.helcom.fi/wp-content/uploads/2019/08/BSEP122-1.pdf>
- Hessle C (1934) Die Schwedische Ostseefischerei. *Handbuch der Fischerie Nordeuropas* 8(3b):31
- Hultman J, Säwe F, Salmi P, Manniche JB, Holland E, Høst J (2018) Nordic fisheries at a crossroad. *TemaNord* 2018(546). <http://norden.diva-portal.org/smash/get/diva2:1253218/FULLTEXT01.pdf>
- Jaatinen S (ed) (1961) *Text till Atlas över skärgårds-Finland*. Helsinki, Nordenskiöld-samfundet i Finland
- Jentoft S (2000) The community: a missing link of fisheries management. *Mar Policy* 24(1):53–59
- Jentoft S, Chuenpagdee R (2009) Fisheries and coastal governance as a wicked problem. *Mar Policy* 33:553–560
- Jentoft S, Chuenpagdee R (eds) (2015) *Interactive governance for small-scale fisheries*. Global reflections, MARE publication series no. 13. Springer

- Jentoft S, Chuenpagdee R (2019) The quest for Transdisciplinarity in small-scale fisheries governance. In: Chuenpagdee R, Jentoft S (eds) *Transdisciplinarity for small-scale fisheries governance*, MARE publication series, vol 21. Springer, Cham. [https://doi.org/10.1007/978-3-319-94938-3\\_1](https://doi.org/10.1007/978-3-319-94938-3_1)
- Jentoft S, Chuenpagdee R, Bundy A, Mahon R (2010) Pyramids and roses: alternative images for the governance of fisheries systems. *Mar Policy* 34:1315–1321
- Jónsson G (2009) Fishing nations in crisis: the response of the Icelandic and Norwegian fisheries to the great depression. *Int J Marit Hist* 21(1):127–151. <https://doi.org/10.1177/084387140902100107>
- Kooiman J (2003) *Governing as governance*. SAGE Publications, London, p 249
- Kooiman J, Bavinck M (2005) ‘The governance perspective’. In: Kooiman J, Bavinck M, Jentoft S, Pullin R (eds) *Fish for life. Interactive governance for fisheries*, MARE publication series no 3. Amsterdam University Press, Amsterdam, pp 11–24
- Kooiman J, Chuenpagdee R (2005) Governance and governability. In: Kooiman J, Bavinck M, Jentoft S, Pullin R (eds) *Fish for life. Interactive governance for fisheries*, MARE publication series no. 3. Amsterdam University Press, Amsterdam, pp 325–349
- Kooiman J, Bavinck M, Jentoft S, Pullin R (eds) (2005) *Fish for life. Interactive governance for fisheries*, MARE publication series no. 3. Amsterdam University Press, Amsterdam, p 427
- Lajus J, Kraikovski A, Lajus D (2013) Coastal fisheries in the eastern Baltic Sea (gulf of Finland) and its basin from the 15 to the early 20th centuries. *PLoS One* 8(10):e77059. <https://doi.org/10.1371/journal.pone.0077059>
- Linnér B-O, Wibeck V (2020) Conceptualising variations in societal transformations towards sustainability. *Environ Sci Pol* 106:221–227. <https://doi.org/10.1016/j.envsci.2020.01.007>
- Lloret J, Cowx IG, Cabral H, Castro M, Font T, Gonçalves JMS, Gordoa A, Hoefnagel E, Matić-Skoko S, Mikkelsen E, Morales-Nin B, Moutopoulos DK, Muñoz M, Dos Santos MN, Pintassilgo P, Pita C, Stergiou KI, Ūnal V, Veiga P, Erzini K (2018) Small-scale coastal fisheries in European Seas are not what they were: ecological, social and economic changes. *Mar Policy* 98:176–186. <https://doi.org/10.1016/j.marpol.2016.11.007>
- Marsden T (2004) The quest for ecological modernisation: re-spacing rural development and Agri-food studies. *Sociol Rural* 44:129–146
- Merkel W, Kollmorgen R, Wagener H (2019) Transformation and Transition Research: An Introduction. In *The Handbook of Political, Social, and Economic Transformation*. Oxford: Oxford University Press, 2019. Oxford Scholarship Online. p. 2019. <https://doi.org/10.1093/oso/9780198829911.003.0001>
- Norr H, Olsson E, Lovén E, Rohlin L (2018) Fiskeförvaltning och mervärden I S:t Annas, Gryts och Tjusts skärgård In: Sandström, E. (ed.) *Det småskaliga kustfiskets förändrade förutsättningar och mervärden*. Urban Rural Rep 2018(1):21–30
- Pääkkönen M, Bläuer A, Evershed RP, Asplund H (2016) Reconstructing food procurement and processing in early comb ware period through organic residues in early comb and Jäkärlä ware pottery. *Fennosc Archaeol* XXXIII:57–75
- Partelow S, Schlüter A, Armitage D, Bavinck M, Carlisle K, Gruby R, Hornidge A-K, Le Tissier M, Pittman J, Song AM, Sousa LP, Väidianu N, Van Assche K (2020) Environmental governance theories: a review and application to coastal systems. *Ecol Soc* 25:19. <https://doi.org/10.5751/ES-12067-250419>
- Peterson E, Salmi P, Parz-Gollner R (2012) The incorporation of scientific contributions and other stakeholders’ views into management plans: an analysis for ‘conflict’ species. In: Marzano M, Carss DN (eds) *Essential social, cultural and legal perspectives on cormorant-fisheries conflicts*. Intercafe-project, COST, pp 58–84
- Piriz L (2000) Dependence, modernisation and the coastal fisheries in Sweden. In: Symes D (ed) *Fisheries Dependent Regions*. Fishing News Books, Blackwell Science, pp 118–131
- Rådberg B, Karlsson L, Lindberg M (2018) Det kustnära fisket i Hällnäs – utmaningar och mervärden In Sandström E (ed) *Det småskaliga kustfiskets förändrade förutsättningar och mervärden*. Urban Rural Rep 2018(1):31–40

- Rannikko P (2008) Postproduktivismi metsässä. In: Karjalainen T, Luoma P, Reinikainen K (eds) *Ympäristösosiologian virrat ja verkostot*. Juhlakirja professori Timo Järvikosken 60-vuotispäivänä. Oulun yliopisto, Oulu, pp 83–95
- Rannikko P, Salmi P (2018) Towards neo-Productivism? – finnish paths in the use of forest and sea. *Sociol Rural* 58(3):625–643
- Saarinen M (2013) Saaristomeren elinkeinokalatalouden nykytila. Strategiatyöryhmä 31.3.2013. Report, p. 32. <http://www.sameboat.fi/wp-content/uploads/2016/06/Saaristomeren-elinkeinokalatalouden-nykytila-2013.pdf>. Accessed 28 Feb 17
- Saiha M (2009) Itämeren rannalla. Valokuvaajan meriselityksiä. Porvoo, WS Bookwell
- Salmi P (2002) Local fishery management and private property of coastal waters – case study Östhammar-Singö archipelago, Swedish east coast, Human Ecology Research Series, SUCOZOMA report 2002:7
- Salmi P (2005) Rural Pluriactivity as a coping strategy in small-scale fisheries. *Sociol Rural* 45:22–36
- Salmi P (2009) Rural resource use and environmentalisation: governance challenges in Finnish coastal fisheries, Maaseudun uusi aika. *Finnish J Rural Res Policy Special Issue* 2/2009(17):47–59
- Salmi J (2011) Merikalastuksen vaiheet – jokivirran kuohuista kansainvälistyviin aaltoihin’ In Hiedanpää J, Jussila I, Lehto S, Louekari S, Ruohonen J, Salmi J, Salonen T, Savola A, Ylikoski K (eds) *Kokemäenjoen aalloilla ja rannoilla*. Satakuntaliitto 2011, Sarja A(304), pp. 100–125
- Salmi P (2012) The social in change: property rights contradictions in Finland. *Maritime Studies* 11(2) <http://www.maritimestudiesjournal.com/content/11/1/2>
- Salmi P (2015) Constraints and opportunities for small-scale fishing livelihoods in a post-productivist coastal setting. *Sociol Rural* 55(3):258–274
- Salmi P (2018) Post-productivist transformation as a challenge for small-scale fisheries: changing preconditions and adaptation strategies in the Finnish Archipelago Sea region. *Reg Stud Mar Sci* 21:67–73
- Salmi P, Mellanoura J (2019) Finnish small-scale fisheries: marginalisation or revival? In: Pascual-Fernandez J, Pita C, Bavinck M (eds) *Small-scale fisheries in Europe: status, resilience and governance*. Springer, MARE Publication Series
- Salmi J, Salmi P (1998) Livelihood and way of life: Finnish commercial fisheries in the Baltic Sea. In: Symes D (ed) *Northern waters: management issues and practice*. Fishing News Books, Blackwell Science, pp 175–183
- Salmi J, Salmi P (2009) Ammattikalastajuuden synty: yhteiskunnallinen murros ja kalastajan identiteetti Pohjois-Satakunnan rannikolla, Riista- ja kalatalous. Tutkimuksia nro 7:35
- Salmi J, Salmi P (2010) ‘Ammattikalastuksen selviämiskamppailu – Elinkeinoon kriisi ja yhteisön tuki’, Riista- ja kalatalous, Selvityksiä nro 23, 22pp
- Salmi P, Svets K (2022) Marginalization and reinvention of small-scale fisheries – the Finnish case study of social justice. In: Jentoft S, Chuenpagdee R, Said A, Isacs M (eds) *Blue justice: small-scale fisheries in a sustainable ocean economy*, Mare publication series. Springer
- Salmi P, Mellanoura J, Niukko J, Saarni K, Setälä J, Virtanen J (2019) Kalastuksen toimijakohtaisen kiintöjärjestelmän käyttöönoton vaikutusten arviointi, Natural resources and bioeconomy studies. Natural Resources Institute Finland, Helsinki. Submitted
- Setälä J, Harjunpää H, Jaukkuri M, Lehtonen E, Mellanoura J, Niukko J, Keskinen T, Salmi P, Saarni K (2018) Kalastuksen olosuhdekatsaus 2017, Natural Resources Institute (Luke). <https://merijakalatalous.fi/wp-content/uploads/Ammattikalastuksen-olosuhdekatsaus-2017.pdf>
- Soldéus LG (2013) Fiskköpare, sumpskeppare och deras seglande sumpar. *Handeln med levande fisk i Stockholm och skärgårdarna*, 1st edn. Malmö, SoldEko HB
- Sonck-Rautio K (2019) The endangered coastal fishers in the coast of the Archipelago Sea – the environmental conflict in policy-making. *Ethnologia Fennica* 46:5–35
- Stage J, Christiernsson A, Söderholm., P. (2016) The economics of the Swedish individual transferable quota system: experiences and policy implications. *Mar Policy* 66:15–20

- STECF (2019) The 2019 annual economic report on the EU fishing fleet (stecf-17–12), Scientific, Technical and Economic Committee for Fisheries Luxembourg
- Svels K (2017) World Heritage management and tourism development: A study of public involvement and contested ambitions in the World Heritage Kvarken Archipelago. Doctoral Thesis. Åbo Akademi University, Vaasa
- Svels K, Salmi P, Mellanoura J, Niukko J (2019) ‘The impacts of seals and cormorants experienced by Baltic Sea commercial fishers’, natural resources and bioeconomy studies 77/2019. Natural Resources Institute Finland, Helsinki, p 50
- Waldo S, Loven I (2019) Värden i svenskt yrkesfiske, Agrifoods Economics Centre. RAPPORT 2019:1
- WWF (2021) WWF:n kalaopas. World wildlife fund. <https://wwf.fi/kalaopas/>. Accessed 8 Oct 2021
- Zeller D, Rossing P, Harper S, Persson L, Booth S, Pauly D (2011) The Baltic Sea: estimates of total fisheries removals 1950–2007. *Fish Res* 108(2):356–363

**Open Access** This chapter is licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter’s Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter’s Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

