The multiannual management plan for cod in the Baltic Sea: reactions and sentiments in two German fishing communities

Harry V. Strehlow

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Just before and one and a half years after the implementation of the Multiannual Management Plan for the Cod Stocks in the Baltic Sea, the same two fishing communities on the German Baltic coast were visited to try to understand the impacts of the plan. Such information is a prerequisite for policy-makers to mitigate possible negative consequences on specific fleet sectors. During semi-structured interviews, observations, and group discussions, information on the reactions and the sentiments about the plan prevailing in the communities was collected. In general, the plan found widespread approval, because it improved planning reliability for fishers and cooperatives considerably. Conversely, the reduction in fishing effort stipulated in the plan has had strong adverse effects on small-scale fishers. The survey furthermore revealed that this fishery segment using passive fishing gear is among the most vulnerable, because it is the interest group with the lowest income, little resilience to cope with further restrictions, and no lobby to improve their position.

Keywords: Baltic Sea, cod, community profiling, multiannual management plan, qualitative social research, small-scale fishing communities, social impact assessment.

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H. V. Strehlow: Johann Heinrich von Thünen-Institute – Institute of Baltic Sea Fisheries, Alter Hafen Süd 2, 18069 Rostock, Germany. Correspondence to H. V. Strehlow: tel: +49 3818116107; fax: +49 3818116199; e-mail: harry.strehlow@vti.bund.de.

Introduction

With the 2002 reform of the common fishery policy (CFP), multi-annual management plans started to replace the year-to-year management of fish stocks in European Community waters. Social and economic factors play an important role in determining the success or the failure of these plans. A successful multiannual management plan is one that not only ensures the sustainable exploitation of the fish stocks in their associated ecosystems, but also sustains the existing fishing communities and fleets. Social impact assessments (SIAs) are important for evaluating their potential success and provide an appraisal of possible social ramifications, as well as possible proposals for alternative approaches. Conducting studies of community profiles to identify socio-economic, demographic, and cultural characteristics of small-scale fishing communities is the first step to understanding the potential impacts of multiannual management plans. This type of information is also a prerequisite for mitigating possible negative consequences on fishing communities. For example, a quota reduction may result in fishers within a specific segment going out of business. However, in letting this happen, the perceptions within communities and their willingness to support the segment are important factors.

In 2007, a pilot study was conducted in two German fishing communities in response to a Request for Service from the European Commission (EC) to the countries involved to prepare community profiles before the implementation of a Multiannual Management Plan for the Cod Stocks in the Baltic Sea on 1 January 2008 (CEC, 2007). After its implementation, a follow-up was carried out by visiting the same two fishing communities to try to understand the impact of the plan and to corroborate findings obtained from the first visit. Easily accessible and relevant socio-economic data are critical for the development of sound management plans in support of sustainable fisheries, and community profiling is a well-established tool for incorporating social and economic data into management plans (cf. Norman *et al.*, 2007). These community profiles also provide a benchmark against which progress can be measured and impact evaluated, thereby allowing SIAs, as well as economic impact assessments. The findings obtained during both the pre- and post-implementation surveys are reported here.

Multiannual management plan

There are two main cod stocks in the Baltic Sea: a smaller western one [Subdivisions (SD) 22–24] and a larger eastern one (SD 25–32), west and east of the Isle of Bornholm, respectively (Figure 1). Both stocks have experienced strong declines during the past decade. To rebuild the two cod stocks to full reproductive capacity and achieve high long-term yields, the Multiannual Management Plan for the Cod Stocks in the Baltic Sea aims to reduce the fishing effort gradually to a level that corresponds to a specific fishing mortality rate and to set TACs that are consistent with the effort regulations, simultaneously adhering to established area restrictions on fishing. The main difference with the previous management strategy is that the plan limits annual changes in the TAC (both in terms of reductions and increases) to a maximum of 15%, at the same time reducing the fishing days by 10% annually,

Figure 1. Map of the German Baltic coastline with the study areas indicated. ICES Subdivisions are shown as emboldened numbers.

until a set fishing mortality rate is reached. In the past, excessive quota cuts were widely criticized by fishers, because it gave them little scope for good planning. The management plan allows the sector to adapt to changes gradually, thereby ensuring greater stability in fishing possibilities.

As part of the EC management system, effort regulation has undergone substantial changes (Table 1). In 2007, the regulations for fisheries targeting cod consisted of fixed closed periods set by the EC that applied to all member states (MS) and variable closed periods defined by individual MS in collaboration with fishery cooperatives. The regulations in 2008 stipulated only one fixed closed period covering the main spawning season and allocated a maximum number of fishing days that could be scheduled individually by the vessels for use during the remaining period. The latest reduction in 2009 in the allocated number of fishing days reflects the effort reduction stipulated in the plan. The total number of days when vessels were not allowed to fish indicates a decrease in total effort over the 3 years. However, these calculations do not take into account the fact that the regulations make some exemptions for small vessels: boats >8 and <12 m are permitted to target cod during the closed season for 5 days per month—with a minimum of 2 days in a row—whereas vessels <8 m are totally exempted.

The area restrictions imposed by the International Baltic Fisheries Commission (IBFSC) have been continued under the CFP. These regulations prohibit fishing activities from 1 May to 31 October in the Bornholm Basin, Gdańsk Bight, and Gotland Basin, which cover the main spawning grounds of the eastern stock. Exempted is fishing with gillnets, entangling nets, and trammelnets with a mesh size ≥ 157 mm, or with drift lines, but cod shall not be retained. For the western stock, no area restrictions exist.

Quota allocation within Germany

At the time of the German Democratic Republic (GDR), herring and flounder were the target species of the local fisheries, whereas cod played only a minor role. After the reunification in 1989, many of the larger fishing vessels in the new federal state of Mecklenburg-Western Pomerania went out of business and the remaining vessels were mainly small. At that time, a new system for quota allocation between the two federal states bordering the Baltic Sea was developed, which was in accordance with the prevailing fleet segments in each state. As a result, 30% of the cod quota was assigned to Mecklenburg-Western Pomerania and 70% to Schleswig-Holstein. The distribution was gradually adjusted up to 2007, when the distribution system was abandoned.

The quotas allocated to Germany (formerly within each federal state) are distributed among the fisheries cooperatives, which in turn distribute their quotas among their members. Within this system, the quota allocation between small and large vessels is the subject of continuing dispute and complaints by small-vessel owners. However, an important, and often unconsidered, issue is that the larger vessels are always called upon by the cooperative, if the quotas have not been exhausted towards the end of the year and the undershoots are threatened to be lost. If $>5\%$ is not caught, this quantity has to be handed back to the responsible state authority and the cooperatives risk a corresponding cut in the next year.

Fishing communities

General information

The outer Baltic coastline of Germany runs for 724 km along the Bay of Pomerania, Bay of Mecklenburg, Bay of Lübeck, Bay of Kiel, and the Flensburg Fjord, but if all inlets are included, the overall coastline extends for nearly 2000 km.

Approximately 2500 labourers are directly employed in the German marine fishery sector and some 80% of the 2200 vessels fish in the Baltic Sea. The vast majority (1600 vessels) uses passive gear, but some 100 trawlers also fish in coastal waters. The total annual catch taken in marine fisheries during the past few years has remained relatively stable at 250 000 t and a value of approximately €200 million (FAL, 2007).

The study areas are located in the two federal states bordering the Baltic Sea (Figure 1): the village of Freest in Mecklenburg-Western Pomerania (formerly GDR) and the town of Heiligenhafen in Schleswig-Holstein (formerly West Germany).

Table 1. Overview of the fixed closed periods as defined by the EU and closed periods as defined by Germany in the Baltic cod fishery for 2007, 2008, and 2009 (Bundesanzeiger, 2006, 2007, 2009; CEC, 2008) and the calculated total number of days that vessels are not allowed to fish.

ICES Subdivision	22–24	25–28
2007[a]		
Fixed closed periods (EU)	1–7 January	1–7 January
	31 March–1 May	5–10 April
	31 December	1 July–31 August
		31 December
Closed periods (Germany)	16–24 February	8–31 January
	16–30 March	1–13 September
	25–30 May	1–30 December
	25 June–15 July	
	23–28 September	
	23–28 October	
	23–28 November	
	21–28 December	
Total number of no-fishing days	117	123
2008[b]		
Fixed closed season (EU)	1–30 April	1 July–31 August
Allocated fishing days	223	178
Total number of no-fishing days	113	126
2009[b]		
Fixed closed season (EU)	1–30 April	1 July–31 August
Allocated fishing days	201	160
Total number of no-fishing days	134	143

Allocated fishing days can be scheduled by vessels individually.
[a]Exempted from these regulations are fishing vessels $<$12 m using gillnets or trammelnets with a minimum mesh size of 110 mm. Thereby these vessels are permitted to land only 20 kg of cod or up to 10% of the total catch, whereby the total catch has to be landed. In general, exempted from these regulations is the use of fishing gear not specifically designed to catch cod, i.e. fishing gear with mesh sizes $<$90 mm.
[b]Exempted from these regulations are fishing vessels using fishing gear not specifically designed to catch cod, i.e. fishing gear, such as trawl, gill, or trammelnets with mesh sizes $\leq$90 mm and/or drifting longlines.

Freest

The fishery in Mecklenburg-Western Pomerania is largely artisanal. More than 800 fishing vessels are open boats with a length $<$12 m. In 2007, the total marine landings from the Baltic Sea within the state amounted to 23 050 t (a value of €12.9 million). Herring accounted for 16 982 t and cod for 2948 t (BLE, 2008).

The village of Freest (district Ostvorpommern) is located at the mouth of the Peene river. In 1995, the harbour was extensively restructured and it is now one of the most modern harbours within the state, serving as a magnet in attracting tourists to the area. Consequently, fishing and tourism are the main income-generating activities.

The fisheries cooperative "Peenemündung Freest e.G." was founded in 1960. In 2007/2009, 30 enterprises with 43 fishers and 56 vessels were organized in the cooperative. A further 33 persons were employed in landing, processing, retailing, transport, and administration. The vessels comprise three cutters of ~17 m, 18 of 12 m, 9 of 8–10 m, and 26 boats of $<$8 m. The fishing gears most commonly used are passive (gillnets, trammelnets, traps, and longlines), whereas a minority may also use active fishing gear, such as bottom trawls. The fishing grounds are mostly the shallow coastal waters. The total annual landings during 1992–2006 varied between 1900 and 4200 t (10–20% of the landings in Mecklenburg-Western Pomerania).

The main target species are herring, flounder, and cod. Other species include pikeperch, perch, pike, eel, sole, turbot, garfish, roach, bream, maraena whitefish, and salmon. Approximately 5% is marketed in Germany and the rest exported.

During spring from February to May, when herring from the Western Baltic stock move inshore to the Greifswalder Bodden to spawn, herring is the single-most important target species. During summer, most fishers focus on flounder, with cod as bycatch, whereas others longline for eels, with walleye as bycatch. From autumn until the end of the year, the fishery concentrates on cod. Because of this traditional pattern in seasonal effort distribution, opinions are voiced elsewhere that Freest fishers should hand in their excess quotas, so that these can be redistributed among those who have exhausted their quotas before the end of the year.

Heiligenhafen

Heiligenhafen (district Ostholstein) is a small town located on the eastern tip of the Wagrien Peninsula that relies heavily on tourism and fishing. The total marine catch landed in harbours on the Baltic coast of Schleswig-Holstein in 2007 was 7899 t (revenues €9.7 million), the biggest share being taken up by cod (4119 t; €7.7 million; ALR, 2008).

Of the 1700 vessels operating in the Baltic Sea, 60 are stationed in Heiligenhafen. The majority are organized in the fisheries cooperative "Fischverwertung Heiligenhafen-Neustadt e.G.". Its annual turnover in 2008 amounted to €18 million, but a sharp decline to €10 million was anticipated in 2009, because of falling cod prices. Fishing vessels $>$12 m make up 40% of the boats in the cooperative, generating 70–80% of the annual turnover.

In contrast to Freest, there are no herring spawning grounds in proximity; therefore, no fishery targeting herring exists there. The focus is mainly on cod as a target species.

Methodology

The qualitative methods applied consecutively during the two 2-week investigation periods included: observation, identification of key informants, semi-structured and in-depth interviews, and group discussions. Interviews were supplemented by additional field notes. The two case studies selected were the fishing communities of Freest and Heiligenhafen, focusing on vessels using passive gear. The first field visit was conducted in November 2007 and the second in June 2009, just before and one and a half years after the introduction of the Multiannual Management Plan for the Cod Stocks in the Baltic Sea, respectively. The latter field visit served as a basis for identifying the socio-economic impact of the plan on the two communities. Altogether 16 semi-structured/in-depth interviews were carried out with stakeholders in the fishery sector, including fishers, officials from fisheries cooperatives, and members of the marine police (Table 2). The interviewed individuals in 2009 partly overlapped

Table 2. Distribution of the stakeholders interviewed between the two communities in the two investigation periods.

Year and community	Fishers	Cooperative officials	Marine police
2007			
Freest	4	2	–
Heiligenhafen	2	1	2
2009			
Freest	(2)	(1)	–
Heiligenhafen	1	1	–

The numbers in parenthesis indicate that these interviewed persons were the same as in 2007.

with those interviewed in 2007 (Table 2). Although this study focused on the passive gear fishery, the interviewed fisheries cooperative officials represent both categories, i.e. passive and active gear fishers. The interviews developed along the lines of a set of discussion points that guided the interview and evolved in response to the interview situation and the interviewees' assertions. The information collected was supported by official answers from the Federal Centre for Agriculture and Food, based on a data inquiry in January 2010.

Interviews

Fishers' prospects

One fisher in Freest relied in 2007 on annual quotas of 6.6 t of cod, 70 t of herring, and 5.5 t of flounder. An uncle and his nephew fished 13 t of cod, 144 t of herring, several tonnes of flounder and set longlines for eels in summer. In 2009, the cod quota of the latter had dropped to 10 t and their herring quota had been cut to 103 t. Other fishers had 5 and 10.5 t of cod, respectively. They all reported that cod catches had been increasing year after year and that they had even caught juvenile cod in their traps and fykenets. In 2007, the issue of decreasing fish stocks and quota cuts had only been raised in relation to cod. However, the spring-spawning herring stock targeted by the fishers in Freest suffered from poor recruitment from 2004 to 2008 (ICES, 2009a), resulting in a severe cut in the quota for 2009 by 39%. In addition to the gradually decreasing cod quota, fishers were hit further by the reduction in the herring quota, and this had become the number-one topic mentioned during the second visit. The coincidental drop in cod prices in 2009 left fishers gloomy, because cod earnings could not compensate for the loss in herring earnings. One fisher emphasized that the annual gross income of those fishing with passive gear (€12 000–20 000) would be reduced to the minimum subsistence level and that any further reduction might result in half the fishers going out of business. Most fishers are more than 50 years old, and none of the children of those interviewed has become a fisher, except one. In fact, only two fishers in the entire community may be considered young (29 and 33 years old). Consequently, the number of fishers is expected to decrease substantially, and this is one reason why the remaining young fishers are confident of a bright future!

Several fishers from Freest criticized the system of quota allocation between the two federal states as causing part of their problem. Although this system has in fact been abandoned and the allocation now accurately reflects the different fleet segments, the perceived imbalance remains subject to complaints.

One fisher in Heiligenhafen asserted in 2007 that his gears and fishing methods had not changed during the past 20 years, nor had the cod fishery in general. During a fishing day, he set ~50–100 nets (depending on his spirit and weather conditions), where 15 nets (1 net ≈ 50 m long) make up a string 700–800 m in length. He indicated that he had been catching less fish than in the past, yet the size of cod caught had been increasing, which he perceived as a sign of poor recruitment (in agreement with the stock assessment that has demonstrated declining year-class strength from 2004 to 2007; ICES, 2009b). He described his income as moderate, relying entirely on an annual cod quota of 25 t, which he considered sufficient. Another fisher, who also described his income as moderate, specified that his monthly income had fluctuated between zero and €3000 (average approximately €800). Both fishers had in common that they rented a small apartment and had little financial scope for improving their life style.

In 2009, one of the two had stopped fishing. His boat was waiting to be sold, whereas another fisher from the cooperative was fishing his quota. Altogether, three fishers had gone out of business in 2008, one because of his age and the other two because of excessive indebtedness and inefficiency. According to the officials of the cooperative and interviewed fishers in Heiligenhafen, there were still too many vessels in the German fishery and structural change was inevitable. One fisher interviewed in 2009 relied on 42 t of cod quota, usually generating an annual gross revenue of €50 000. Compared with former years, however, he was expecting a loss of €25 000, because of a drop in the market price for cod and a quota cut of 10 t. Cod generated 90% of his income, with flatfish accounting for the rest. He makes 50% of his annual turnover in January and February. During summer, his income is on a subsistence level, whereas from November on he fishes the rest of his cod quota. Asked about his future, he stated "I've been actively fishing for ten years now and I have not had a bad year yet". Although he expected that 2009 would be his first bad year, he was confident about his future, because he had made many investments in previous years.

Multiannual management plan

One benefit of the plan commonly mentioned by both fishers and cooperatives was the improved scope for planning. Other opinions ranged from "indifferent" to it being "only an alibi for politicians". In Freest, the plan was jokingly called "death in slices", referring to the consistent quota cuts experienced recently, not only for cod, but also—and more importantly—for herring, and the associated reduction in earnings. More importantly, the effort reduction stipulated in the plan had a strong adverse effect on small gillnetters from both communities, because they usually need 2 days per fishing trip for setting and hauling in the nets and consequently are less liable to exhaust their quota.

Although the plan met widespread approval, the comment was also voiced, "The plan comes too late!" In this statement, fishers did not refer to the biological aspect of stock recovery, but to their own livelihoods. Particularly those already with small cod quotas were affected most. Their only relief stemmed from the recovery of the eastern Baltic cod stock, for which some of the interviewed fishers held quota. This improvement was not only attributed to improved recruitment between 2003 and 2007, but far more to a massive effort reduction through scrapping of excessive fishing fleets in Poland (Anderson and Guillen, 2009; ICES, 2009c). Consequently, the current fishing mortality rate is for the first time estimated to be lower than the threshold used for sustainable exploitation.

The plan allowed for an increase in the TAC for the eastern stock in 2010 by 15% and no further effort reduction (CEC, 2009). In contrast, effort on the western stock remained higher than the sustainable level stipulated in the plan, and it was further reduced by 10% in 2010. Nevertheless, the TAC corresponding to this effort reduction was 8.3% greater than the TAC for 2009 (CEC, 2009), because the stock biomass had been predicted to increase (ICES, 2009b).

The fixed closed periods during the spawning season of cod, particularly in SD 22–24 (31 March–1 May), were apparently widely accepted by fishers, but the implications for the two communities were very different. In Freest, where fishers target herring during that time of year, this had virtually no effect. In contrast, gillnetters in Heiligenhafen were strongly affected, because there is no alternative fishery.

Enforcement

In 2007, the single-most important issue mentioned by fishers was the surveillance by the responsible institutions, which they perceived as strong. Yet, they expressed exceptional confidence in the effectiveness of the enforcement of current legislation by the local government authorities and executive bodies. In contrast, respondents widely criticized the lax attitude of the Polish government to enforcement, thereby encouraging illegal fishing. In this context, fishers highlighted the importance of strengthening their participation with a view to making resource management more effective. They were apparently willing to control each other, because of a strong interest in preventing illegal, unregulated, and unreported (IUU) fishing. They also questioned why fines differed substantially between Poland and Germany and demanded transparency in the enforcement system and equal conditions for all countries.

According to the marine police, controls at sea (both visual and on-board) were performed, on average, once per year, which, according to interviewed respondents, ranged in frequency from once in 10 years to five times within a year. The majority of interviewed fishers perceived surveillance as strong, and the marine police had several reasons to explain the discrepancy between this perception and the actual controls carried out. Most importantly, jurisdiction allowed the marine-border patrol, the marine police, and the fisheries inspection to carry out inspections equally, but independently. Consequently, any vessel could be subject to control by different inspection services within a single day. However, in the majority of cases, controls at sea were carried out visually from some distance, without boarding a ship, and the incidences of more than one inspection on board the same vessel on the same day were rare. Visual controls included vessel identification, tracking of its vessel-monitoring system signal, documentation of its actual position and distance to the coastline, and identification of the gear used. This information was then used for cross-compliance checks on shore and, subsequently, to detect potential irregularities at the time of landing. Other activities involved the control of gillnets, traps, and fykenets, focusing on identification of the owner and the quantity of gear allowed. Fishers openly discussed fraud in catch reporting and admitted that small amounts of fish were traded on the side. However, this fraction was relatively small and fishers reported that imminent penalties were the reason for that.

Cooperatives

The role played by cooperatives in underpinning the livelihoods of fishers is difficult to comprehend and assess. In Germany, cooperatives are essentially producer organizations focusing on marketing and allowing small-scale fishers to compete in the marketplace. Although independent fishers may apply legally and directly for quotas from the federal state authority, joining a cooperative is believed to be the best option to survive, and most fishers have become a member of one. The officials in both communities stated that they are continuously investing in landing and processing facilities and both have set up a cooperative-run shop. The cooperative in Heiligenhafen has recently built a cold-storage facility to increase the capacity for regional marketing.

The end of the year means a period of peak activity for the cooperatives. By the 30th of October, they have to report to the Federal Centre for Agriculture and Food how much of their quotas have been fished so far, to prevent hoarding. Their job then becomes monitoring the extent to which quotas have been exhausted and to trade and exchange undershoots and overshoots with other cooperatives, even if these belong to other states or countries.

Officials in Freest stated that it is entirely possible for a cooperative not to exhaust its quota, because of adverse weather conditions, and that smaller vessels are more susceptible to such conditions than larger vessels. The director confirmed this and emphasized the need for a balanced fleet within the cooperative to make full use of quota entitlements. Small vessels deliver their fresh fish for direct sales at the cooperative-run shop and restaurant, thereby attracting tourists, whereas larger vessels, which deliver the bulk of the catches, allow the cooperative to engage in quota trading with other cooperatives.

Visiting some of the same fishers one and a half year later revealed that they were very satisfied with their membership. When questioning the cooperative officials in the two communities about the possibility of owners of the larger vessels dominating the decision-making process, neither official indicated that this was an issue. One director explained that the cooperative strives for a balance between the different groups in the advisory board. Yet, owners of large vessels often dominate supervisory and executive boards.

Marketing

In 2009, a major issue raised by fishers and cooperative officials alike was the severe drop in market prices. Although cod landings from the western Baltic were lower than in previous years, prices plummeted from >€2 to as low as €0.40 kg^{-1}, depending on the size category. Similar decreases in price were also seen for other fish, such as herring, flounder, and turbot. According to the respondents, the main reasons for the price drops were as follows.

(i) Reduced processing capacity for fresh fish. One cooperative official blames this on former management decisions associated with quota cuts and the introduction of closed periods, which, in his opinion, resulted in the breakdown of the fresh-fish processing sector.

(ii) Increasing imports of Norwegian farmed cod flooding the German market.

(iii) Collapse of the British cod market.

(iv) Increasing supplies from Icelandic export companies driven by large backlogs.

One fisher from Heiligenhafen mentioned that the German fishing sector was in general suffering because of a perception of being the black sheep in marine conservation: gillnetters have to live with accusations by environmental NGOs of having high bycatch rates of harbour porpoises and seabirds. In addition, the poor status of the Baltic cod stocks triggered public campaigns by the World Wildlife Fund (WWF), Greenpeace, and recently the Nature and Biodiversity Conservation Union (NABU) to raise consumer awareness to choose sustainable alternatives. These campaigns were not restricted to Germany, and they have had major impacts on seafood markets across Europe and might explain the collapse of the British cod market, where cod has been largely substituted by Alaska pollock (cf. Greenpeace, 2008; Fish Info, 2009). In Germany, supermarkets removed Baltic cod from the shelves, which added to the marketing problem. Requests from a cooperative to WWF Germany to revise fish-consumption guidelines because of recovering cod stocks have not been acted upon.

Although the prices received by large cutters were at the mercy of auctions, small vessels still received €2 per kg in Heiligenhafen, because these fish could be sold directly in the cooperative-owned shop and restaurant. A cooperative official from Freest confirmed that although trawlers achieve their share of revenues through quantity, gillnetters achieve their share through higher prices.

Another adverse development is the steadily growing fleet of part-time fishers. Fishers and cooperative officials alike confirmed that competition in the direct-sales market is increasing. Because part-time fishers operate fewer nets, they are the first to return to the harbour and sell their catch. These sales often circumvent taxes, with prices being well below the auction average. However, full-time fishers in Freest do not manage to agree on a common price strategy for direct sales from individual vessels and compete among themselves.

Views on management

Throughout the study, interviewees expressed their own ideas on how the coastal fisheries should be managed, at the same time voicing concerns about and criticisms of the current management system. A striking statement by several fishers was that they had never been asked for their opinions. These opinions obviously varied: some were widely held within both communities, some were community-specific, and some were only expressed individually. Worth mentioning is that several fishers endorsed the majority of the existing regulations, and this approval appears to have improved after the introduction of the multiannual management plan. Although some issues were only voiced once in 2007, others were repeated in 2009 and they remain relevant. Fishers (using passive gear) from Freest and Heiligenhafen alike raised the following issues.

(i) The coastal fishery sector operating passive gear has no lobby in Germany. Other segments operating active gear are better represented. Small-vessel fishers felt helpless and left behind, as expressed in the quotation: "The income of fishers is determined by politics". This view had not changed in 2009: although politicians may like to praise the fishery as a tourist attraction and employment factor, they do not lobby for its well-being. The impression of one fisher was that small vessels are even unwanted, because they are more difficult to control.

(ii) The classification of fleet segments in relation to regulations should be reconsidered, and abolished or revised, based on case-by-case decisions. The underlying reason for this proposal was that fishers working under similar conditions, yet operating vessels <12 or >12 m are affected differentially by the regulations. Consequently, they must weigh the costs of shortening their boats (one interviewee mentioned €20 000 for his 12.5 m boat) against the risk that the classification scheme might be changed in the future. Because of such inconsistencies, fishers pleaded for equal measures for all segments and no exceptions for small vessels.

(iii) Large vessels (trawlers) should bear the better part of quota cuts. Gillnetters with small quota entitlements refused to bear cuts in equal measure for two reasons: (a) large vessels have the option to target other species and/or fish in different areas; and (b) their own passive gear is associated with selective fishing and low ecosystem impact. The latter argument is often used by the entire sector to raise public awareness and interest in support of commercial fishing and as a fig leaf by politicians to campaign against quota cuts. In essence, fishers call for a differentiation between gillnetters and trawlers, as expressed in the saying "Water and oil don't mix".

(iv) Minimum landing sizes (MLS) should be abandoned and replaced by suitable minimum mesh sizes. This would help to reduce the discards in the trawl fishery considerably and might benefit the entire cod fishery. In former times, larger mesh sizes in gillnets and codends were used, whereas the MLS for cod was 35 cm. According to fishers, the current MLS of 38 cm has resulted in massive discarding of undersized cod, because the minimum mesh size has not been increased. A cooperative official confirmed that indeed most discarded fish were in this range (35–38 cm). Yet, the mesh size in the prescribed BACOMA-window codend (square-mesh window panel; Suuronen *et al.*, 2007) was reduced in 2003 from 120 to 110 mm, to comply with the simultaneous increase in MLS mentioned above (ICES, 2007). A fisher in Freest suggested that the adoption of a bigger mesh size was not only reasonable, but that a "120 mm BACOMA fishes so selectively that it would pay off after two years". In fact, the recent adoption of Council Regulation (EC) No 1226/2009 appears to follow his view (CEC, 2009): from 1 March 2010, the BACOMA window required a minimum mesh opening of 120 mm in SD 22–32.

(v) Effort management for small gillnetters is seen as absurd, because they must stop fishing anyhow as soon as quotas are exhausted, and highgrading and discarding do not happen. To mitigate the social impact, several fishers suggested to exempt small gillnetters from effort regulations and to adopt a daily maximum landing weight. Because of their high susceptibility to bad weather conditions, small vessels accumulate enough layoff days in the course of a year anyway.

(vi) In both communities, it was felt that being punished for not exhausting quotas through future cuts makes no sense. Instead, fishers perceived any undershoot as contributing

to "greater sustainability". A provision to fish outstanding quotas over an extended period (e.g. 24 months) would allow greater flexibility to plan fishing activities. However, such a change would have to be safeguarded against pressure exerted by other interest groups (national fleet segments, as well as international fleets) to take over outstanding quotas.

(vii) Sanctions must be equally enforced across MS to ensure that fishers adhering to the rules are not disadvantaged by free riders. The unequal distribution of authority among MS results in unequal opportunities.

(viii) The EU bureaucracy is constantly increasing. New management and safety regulations are time-consuming and costly to implement. The recent obligation to attach acoustic pingers to gillnets in SD 24, which is the primary fishing area of the passive gear fishers in Freest, imposed costs of approximately €2500 per vessel >12 m. Furthermore with the extension of the 1977 Torremolinos International Convention for the Safety of Fishing Vessels to fishing vessels <24 m, more costly modifications are yet to come.

(ix) Several fishers in Freest highlighted the need to implement a multiannual management plan for the western Baltic spring-spawning herring, to allow for more planning of investments.

(x) One fisher expressed the view that MS that have effectively resisted a reduction in fleet capacity are now exerting pressure on those that have reduced fleet capacity to take over their quotas. The paradox of this situation of apparent stock recovery is that the latter are not capable of exhausting their quotas and might lose their entitlements to MS with larger fleets.

(xi) The small-vessel segment is not valued appropriately relative to its effect on employment in rural and disadvantaged areas and to its better utilization of natural resources and working capital, particularly fuel. This statement relates to the observation that small vessels provide a living for an entire household, whereas large vessels, with ten times higher quotas, only provide a living for two or three families (not taking into account the fact that larger vessels produce more benefits for the downstream and upstream sectors, such as processors or shipyards).

Discussion

Conducting qualitative social research is an effective means of identifying the impacts of political decision-making on a fishing community (Wilson and McCay, 1998; Jepson and Jacob, 2007; St Martin and Hall-Arber, 2008). These impacts might be vital for the livelihood of community members. However, one should bear in mind that some individuals or community groups might be affected more than others, and that changes might be subtle and difficult to quantify. Moreover, the interests of various stakeholder groups in a coastal fishing community differ widely and although some interest groups make themselves heard, others might be less vocal.

Qualitative research and data quality relies on the establishment of partnerships among the various stakeholders. Managing fish in a socio-ecological context by taking into account the social dimension can help to mitigate possible detrimental consequences on fishing communities and to develop fair and equitable management plans. The 4 weeks available for the study has been by no means enough to draw general conclusions about the social impacts of the multiannual cod management plan on the German coastal fishing communities. However, the study has resulted in some in-depth understanding of the effects on the small-scale fishing fleets in the two communities.

The strictly explorative design of the SIA applied should be broadened to integrate participatory learning through feeding back collected data to the participants. Efforts to assess social impacts in combination with raising awareness about these among the different stakeholders have a real potential for tackling priority areas that require community-based solutions, at the same time encouraging a bottom-up approach to policy assessment and implementation. Examples of the success of such a procedure are the new ideas—brought up by the respondents—for the reorganization of fisheries management.

An important controversy apparently exists between the small-scale (passive gear) vs. the large-scale (active gear) fleet segments. One can certainly argue whether the cooperative really serves the common needs of all its members, when their interests differ substantially. Several fishers underline this assertion and do not feel well represented within their cooperative. These respondents perceived the decision-making processes as dominated by large-scale fishers with high annual turnovers, although this might be a matter of who is willing to take up responsibility. Because each member of the cooperatives in both Freest and Heiligenhafen has one vote at the general assembly (and is therefore, at least theoretically, involved in decision-making; cf. Ens *et al.*, 2007), the structures susceptible to power play are obviously the supervisory and executive boards of the cooperatives.

These power structures are well known (Corbin, 2002; Béné, 2003; Berkes, 2006; Ens *et al.*, 2007). The discrimination process that may constrain or limit individuals or groups from participation in decision-making is best described as political disempowerment "(...) resulting in low/poor opportunities to control and govern their own commands over resources" (Béné, 2003). Béné attributes this to "asymmetrical power relationships based on social stratification", where local elites try to maintain their own social, economic, or political advantages. This does not imply that every single fisher should participate directly in all stages of the decision-making process, but it does require that the process be transparent and that the decision-makers can be held responsible (Ens *et al.*, 2007). In the light of the shift towards an ecosystem-based approach to fisheries management within the CFP, fishers' involvement in policy-making processes may ensure the integration of local knowledge into a governance framework consisting of public and local management authorities, as well as the development of a form of environmental stewardship, if fishers can reap the benefits of restraint. The principles to guide the organization of institutions and the establishment of good governance at all levels (from global, European, national, regional to local) are openness, participation, accountability, effectiveness, and coherence, and they should be applied according to the principles of proportionality and subsidiarity (COM, 2001).

The increasing numbers of part-time fishers has created a controversy, because their landings are sold on the market for fresh fish outside the auction. These part-time fishers are restricted to landing a maximum of 300 kg of cod a month; they consequently aim to sell their relative low quantities to occasional customers at the quayside, whereas full-time fishers market their comparatively

larger landings through the fisheries cooperatives and finally the auctions. Landings from part-time fishers are also a growing source of uncertainty affecting the scientific quality and credibility of stock assessments and consequently management in general.

The European fisheries management process is perceived as not being transparent. Specifically, fishers feel that integration of the fisheries sector into the political decision-making process is lacking. Proposed solutions on how to improve transparency in the provision of scientific advice and in the wider European fisheries management system have been recently described by Wilson (2009). In addition, the European Commission has commissioned several projects in recent years dealing with "bridging the gap between science and stakeholders" (GAP) and improving "scientific advice for fisheries management at multiple scales" (SAFMAMS), paying particular attention to improved stakeholder collaboration. The simplification of the effort regulation (Table 1) may serve as a practical and positive example of this new attitude, where the Commission has taken the main points of criticism from fishers into account and has made proceedings less complicated and bureaucratic.

Quota trading is being observed on different scales and across national boundaries, suggesting the existence of an unofficial market for quotas, although they have no price and they are not traded for money. This indicates a potential for easing transfers of quotas from fishers going out of business (or their boats). This is not a plea for individual transferable quotas, but rather for allowing more flexibility in the current system of individual non-transferable quotas.

In respect of compliance with fisheries regulations within MS, a recent communication from the EC (COM, 2008) highlights that "(. . .) the current control system is inefficient, expensive, complex, and it does not produce the desired results". This proposal for a reform of the CFP control policy emphasizes a strengthening of the mandate of the Commission and the Community Fisheries Control Agency to standardize national control procedures.

The adoption of informal, non-codified rules may be a possible solution for fishing communities to mitigate the impact of national or European formal fisheries management measures on small-scale fishers. This could include the more flexible use of quotas, the adoption of certain size limits and/or area/time restrictions. Cooperatives could play a key role in the adoption of such voluntary management measures, because they already organize the majority of fishers, provide a forum for discussion, at the same time acting as a link between the state authority and the fishing sector. In the context of compliance with the regulations, peer groups issuing pressure could carry out enforcement of cooperative fisheries management (Eggert and Ellegård, 2003). Compared with the prevalent primary producer cooperatives, such transformations would not only strengthen the role of fisheries cooperatives, but also raise the profile of the fisheries sector.

Given the general approval for the Multiannual Management Plan for the Cod Stocks in the Baltic Sea, specifically because it allows for long-term planning reliability, it may provide a good starting point for a similar approach for management of the pelagic fish stocks in the Baltic, as demanded by the herring fishers in Freest. Because the eastern cod stock is recovering and quotas are increasing, the time might never be better for adopting new management strategies (Madsen, 2007). To avoid the pitfall of the past—sacrificing long-term social and economic stability of the fishing sector to maximize short-term profits—limiting the variation in annual TACs offers a good starting point.

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