



Collapse of cooperation? The North-Atlantic mackerel dispute and lessons for international cooperation on transboundary fish stocks

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Abstract

A changing climate will challenge the effectiveness and functioning of existing international resource management structures or international regimes. This is already evident in regimes that manage transboundary fish stocks, where rapid changes in the abundance and distribution of fishery resources threaten international cooperation. This article examines the breakdown in resource cooperation for the northeast Atlantic mackerel fishery where, for over a decade, Coastal States have failed to reach an agreement on the management of the stock after a climate-induced shift in the stock's distribution. Why did the management regime fail? And what are lessons learnt for such regimes more generally? This article sheds light on the interplay between a relatively weak international regime, domestic interests related to the importance of the national fishing industry and a breakdown in the common principles – fisheries science – that international cooperation is based on. The limited flexibility in the negotiating position of the various states – and thus, the regime at large – can be ascribed to a combination of strong domestic industry influence on negotiating positions, and a disagreement over the appropriate methods to measure stock biomass in tandem with unclear allocation principles. Strengthening existing mechanisms to cooperatively manage shared stocks between Coastal States will be important to avoid such disputes in the future. However, states are weary of relinquishing decision-making powers. Therefore, starting with an agreement on the fundamentals, namely the science that underpins diverging claims, could be a first step towards a long-term solution for the northeast Atlantic mackerel.

Keywords Resource conflict · Climate change · Fisheries · International regimes · North Atlantic · Cooperation

Introduction

In 2008, the European Union (EU) stated: ‘the overall effect [of climate change] will fuel existing conflicts over depleting resources, especially where access to those resources is politicised’ (Solana and Ferrero-Waldner 2008, 3). The Cod Wars and the Turbot War provide recent historical examples of

such conflict erupting over straddling fish stocks. In the case of the Cod Wars, access to fishing grounds was the initial cause for contention between the UK and Iceland. In the case of the Turbot War, excessive Spanish fishing in international waters just outside of the Canadian EEZ caused an ensuing conflict. These conflicts took place at a time when fisheries increased in magnitude and geographical scope, followed by an extension of the international legal regimes in the same domain (Swartz et al. 2010).

The world's oceans are now being impacted in an unprecedented way, adding another layer to the challenge of international cooperation over fisheries. Wild fisheries are increasingly exploited, decreasing the total available biomass of marine resources (FAO 2016). At the same time, stocks are changing their migratory patterns because of changes in the geophysical marine environment (Allison et al. 2009; Brander 2010). Those changed conditions are particularly troubling for international management of transboundary fish stocks, i.e.

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fish stocks that move between and across neighbouring EEZs and high seas. Scholars foresee an increase in the failure of cooperation globally, as the impact of climate change on fish stocks becomes increasingly apparent (Pinsky et al. 2018; Shearman and Smith 2007, 49–55; Cheung et al. 2016).

Just south of the Arctic Circle, in 2009, Iceland and the Faroe Islands unilaterally decided to increase their annual catch quotas of the Northeast Atlantic mackerel by 6500% and 340%, respectively (Cendrowicz 2010). This move was ardently opposed by the other implicated Coastal States with an interest in the stock (i.e. the EU and Norway). The decision to unilaterally set quotas came after the mackerel stock shifted its distribution more north-westwards around 2006. Whether the shift was due to natural stock fluctuations or warming sea temperatures became a point of contention (Jansen and Gislason 2013). To date, Iceland remains outside of the total quota setting scheme, whereas the Faroe Island reached an agreement with the EU and Norway in 2014.

The ensuing dispute over the management of the Northeast Atlantic mackerel stock, which entails agreeing on quotas as well as other management measures such as monitoring standards, is an example of how international cooperation can fail to adjust to changing biophysical conditions (Bomsdorf 2014).¹ Further, the ensuing dispute has had a negative impact on the sustainability of the fish stock. By late September 2018, the International Council for the Exploration of the Sea (ICES) reported that the mackerel stock, for the first time since 2007, was below a sustainable level at current fishing pressures (ICES 2018). By 2019, North East Atlantic mackerel lost its Marine Stewardship Council (MSC) certification (MSC 2019).

In this article, we ask a simple yet relevant question: Why did the international regime set up to manage the northeast Atlantic mackerel stock fail? Furthermore, what lessons can be learned from this case, of relevance to the question of how international management regimes adapt, or collapse, when faced with external challenges?

This is not the first study concerned with the mackerel dispute. Previous studies examined the role of the institutions set up to manage the resource; the influence of power dynamics; the importance of a consensus on scientific validity; the effects of climate change; and stylised conceptions of the interests of the various actors (the countries partaking in negotiations and the EU).² Though not disputing the validity of examining such potential drivers of the dispute, we argue that the existing literature on the mackerel dispute fails to appropriately examine the *interplay* between three dimensions: the

regime structure and its limited effectiveness; the unusually strong link to domestic interests in Iceland and the Faroe Islands; and the expectation held by all countries that by persevering they would eventually reap the benefits. Understanding this interplay adds a central piece to the puzzle of how and why cooperation over mackerel, as well transboundary resources in general, can fail when challenged by rapidly changing physical and political environments.

Thus, we add to the increasing amount of literature that studies how global warming impacts transboundary resource regimes, although our main focus here is on the internal workings of *one* such regime. We focus on how current regimes – in this case the regime dealing with mackerel in the North Atlantic – respond and cope with changes in the preferences and interests of partaking Coastal States; changes which inherently derive from alterations in the geophysical environment. Furthermore, this is the first article that examines the dispute in the Northeast Atlantic from the perspective of literature on international regimes – particularly that of Young (2010a, 2010b) – as a subfield of international relations theory that draws attention to issue-specific areas of international cooperation between states.

At the same time, we cannot ignore how state interests are formed, namely, through domestic interest groups that in turn frame the scope of possible outcomes in international negotiations (Putnam 1988; Bernauer et al. 2010). We therefore complement the regime-approach with a new analysis of interview data from an earlier publication by Spijkers and Boonstra (2017). In addition, several background interviews were made for this article with the relevant actors. These include the Norwegian Ministry of Trade, Industry and Fisheries, the European Commission (specifically DG Mare), the Icelandic Ministry of Industry and Innovation and the NEAFC-organisation. The data analysed in that paper were compiled from interviews with 26 experts, i.e. politicians, civil servants, scientists and industry stakeholders. The interviews, which were semi-structured, were conducted with experts from the Coastal States (i.e. Norway, the Faroe Islands, Iceland and the EU) and ICES (Spijkers and Boonstra 2017). These interviews are used sparingly in the section ‘Why did cooperation fail’ in order to illustrate the findings from the literature analysis.

Following, we will first outline concepts that connect fisheries, international cooperation and domestic interests, the purpose being to provide tools to better comprehend the issue at hand. Second, we go through the specific case, where we examine the failure of the Coastal States to reach an agreement on the management of the mackerel stock. We focus specifically on the interplay between a relatively weak international regime, domestic politics related the fishing industry and a changing marine ecosystem. Finally, the article leans on the first and second sections to discuss why the cooperation collapsed, what this entails for the regime more widely and

¹ Some even noted that the mackerel dispute was the primary reason for Iceland’s decision to end its EU membership bid on March 12, 2015 (Griswold 2015).

² For a varied set of studies concerned with, or related to, the dispute over mackerel, see Bjørndal and Ekerhovd 2013; Gänsbauer et al. 2016; Ørbech 2013; Spijkers and Boonstra 2017.

lessons of relevance in the domain of fisheries cooperation faced with a rapidly changing climate.

International cooperation and fisheries

Migrating fish stocks constitute a mobile and transnational resource of great value. Straddling fish stocks in the high seas constitute a ‘global common’: as an environmental object that cannot be appropriated to any individual group (Crowe 1969, 1103–4). When states exploit stocks independently of each other to maximise their own immediate short-term benefits, it sets in motion what can become what has been called the ‘tragedy of the commons’, where the stocks risk serious depletion.

Effective international cooperation is, thus, a necessity. Some studies of cooperation on managing fisheries are focused on the economic and/or game theoretical aspects of the issue (Gänsbauer et al. 2016; Hotvedt 2010). A different set of problems requires different types of organisation to manage the underlying dynamics between participating states. Given that they are aware of this fact, states have strong incentives to cooperate with each other (sole preferred outcome), but they worry that others might not act rationally from a long-term collective perspective (i.e. overexploit the stock for short-term gains), or that they will unilaterally defect (and again overexploit the stock for short-term gains) for various political reasons. These dynamics resemble what have been termed ‘assurance problems’ (Martin 1992, 769–82). The solution is to develop an organisation of a limited character that can assist in the provision of assurance.

The increased collaboration between states through different mechanisms created *international regimes*. Krasner’s (1983, 2) regime definition has become the baseline for related research, as ‘a set of implicit or explicit principles, norms, rules, and decision-making procedures around which actor expectations converge in a given area of international relations’. This definition has, however, been criticised for being both vague and difficult to disentangle. Levy et al. (1995, 274) propose to define international regimes as ‘social institutions consisting of agreed upon principles, norms, rules, procedures and programs that govern the interactions of actors in specific issue areas’. Young (2010b) argues that a regime is an institution specialised to a certain issue or geographic area. Here, we make use of the latter two definitions.

States remain the primary actors in international fishery management, and regimes develop as states seek to tackle issues that transcend borders and boundaries. Regimes have the potential to prevent states from focusing on self-interest and to encourage them to defuse tension and avoid conflict (Hasenclever et al. 2000). Levy and his colleagues, thus, came up with the three Cs to understand what regimes do: enhance governmental *concern* over an issue to the extent that they are

willing to act on it; improve the *contractual* milieu to the extent that mutually profitable agreements are made possible; and enable national *capacities* in implementing and adhering to the international regimes (Levy et al. 1993; Levy et al. 1995).

To further evaluate the effect of regimes, we must examine the ‘degree of institutionalization’ along the lines of ‘scope’ and ‘depth’ (Keohane and Victor 2011). Scope entails the number of issue areas covered by the regime. Depth can be measured along the lines of the degree of shared expectations of behaviour and action (*commonality*), the degree of these expectations are specified in the form of rules (*specificity*), and the degree to which the regime can alter the rules by its own (*autonomy*) (Keohane 1989, 3–4). Regimes in turn ‘improve the contractual environment and thus stabilize cooperation’ (Levy et al. 1995, 288).

From these conceptualizations of international cooperation and regimes, how do regimes tackle change, and why and when do they collapse or fail? Young (2010a, 2010b) explores specifically how regimes set-up to deal with environmental and resource issues handle rapid change and internal and external pressures. Crucial is the notion of regime vulnerability to external or internal stresses: ‘Simply put, vulnerability rises as stresses begin to overwhelm an institution’s robustness (i.e. its capacity to cope with stress without adapting) and resilience (i.e. its capacity to deal with stress through adjustments that stop short of transformative change)’ (Young 2010b, 379). Specifically, he makes use of fisheries regimes when exploring the resilience, vulnerability and adaptation of environmental regimes, pinpointing that ‘long periods of institutional stasis are punctuated by shorter periods or bursts of far-reaching and dramatic change’ (Young 2010b, 379).

We lean on Young’s (1999, 2010) and Stokke’s (2012) definitions in this article, under the assumption that effective governance under such changing circumstances requires institutional resilience, that is the ability to adapt national and international institutions to such more challenging circumstances. Resilience refers to ‘a state, which corresponds to the maximum perturbation that can be taken without causing a shift to an alternative stable state’ (Scheffer et al. 2001: 591). The aspect of resilience used here is ‘institutional resilience’: The ability to respond to new challenges by adapting institutional boundaries, or cooperation across such boundaries, to an extent sufficient for maintaining or improving institutional effectiveness (De Stefano et al. 2012). Institutional effectiveness refers to significant contribution to solving the problem addressed by the regime in question (e.g. Keohane 1996; Young 1999).

Consequently, international cooperation within fisheries management has expanded as states collaborate with other states to solve border-transcending problems. An important component of institutionalizing cooperation between states on fishery issues was the establishment of Regional

Fisheries Management Organizations (RFMOs), enshrined in the United Nations Convention on the Law of the Sea (UNCLOS) and the United Nations Fish Stock Agreement (UNFSA) (UNCLOS 1982; UNFSA 1995). Although their functioning and structures can differ, most RFMOs have a Scientific Committee which provides relevant scientific advice on the biological status of the stock(s), informing possible management actions (Polacheck 2012). The performance of RFMOs varies widely and has become the subject of scrutiny as international pressure to sustainably manage fish stocks, and their marine ecosystems has mounted (ibid. 2012),

We can question how robust, resilient and vulnerable current regimes developed to deal with straddling fish stocks are, as climate change leads to greater changes in the distribution of the stocks (Christiansen et al. 2014, 355–59). Here the notion of adaptation comes into play. Yet Young (2010a, 174–78) warns that under conditions with interactive internal and external stressors – such as when fish stocks alter their geographic distribution –, the ability for a regime to adapt and manage the situation can deteriorate. This is when increasing stress might threaten the whole existence of the regime, leading to a ‘dramatic and sudden collapse’ (Young 2010b, 384).

However, states’ willingness to accept changes to that regime is defined by the national interests of the states themselves. Several scholars have explored this link leaning on Putnam’s (1988) conception of interactions between the domestic and international levels as a two-level game, and how states’ behaviour is conversely influenced.³ Leaders must balance international dispute negotiations with the wishes of their respective domestic constituencies. As proven by Ásgeirsdóttir (2008) and Hotvedt (2010) with regard to fisheries negotiations, *local* fisheries interests have a considerable impact on states’ international negotiating positions, communicated through fishers’ organisations and industry representatives.

Hence, by identifying the interests driving participating states’ actions *and* the regime set up to manage the issue at hand, we can add to the literature on why the regime failed to achieve what it was set up to do. In sum, there are useful concepts that help us understand why international regimes for fisheries fail or succeed. In the next sections, we will illustrate the importance of these aspects.

The mackerel dispute in the North-East Atlantic

In the North Atlantic, Denmark (on behalf of Greenland and the Faroe Islands), Norway, Iceland, the Russian Federation and the EU signed ‘the Convention on Future Multilateral

Cooperation in North East Atlantic Fisheries’ in 1982. This led to the creation of a specific RFMO for the region: The North East Atlantic Fisheries Commission (NEAFC) tasked with recommending measures to ensure a sustainable harvest of fish stocks in the North-East Atlantic. NEAFC not only has jurisdiction in waters outside of the 200 nautical mile EEZs but also gives recommendations applicable to the national economic zones (NEAFC 2011). Consequently, a Coastal State regime in the North East Atlantic has developed, per the definition discussed in the previous section.

NEAFC starts negotiations on management measures in waters outside of national jurisdiction after the Coastal State agreement has been concluded (covering the setting of the overall total allowable catch (TAC) and management plan), making the Coastal State negotiations the core of the management process (Russell and VanderZwaag 2010). Both the Coastal State and high seas quotas are agreed during the Coastal State negotiations and are informed by advice provided by ICES, giving NEAFC limited scope for management within its regulatory area (Russell and VanderZwaag 2010). These mechanisms are described as a success in managing both national and international fisheries in a region that historically struggled with overfishing and unsustainable practices (Kristiansen 2013).

On its own, mackerel constitutes one of the most profitable fish stocks in the North Atlantic, worth around £500 million annually (Findlay 2014). The Coastal States convene annually to agree on quotas for the various fish stocks in the North-East Atlantic, based on recommendations from ICES. Since reaching an agreement on quotas in 1999, the northeast Atlantic mackerel stock has predominantly been divided between the EU, Norway and the Faroe Islands.

In 2006, the mackerel shifted northwards, in tandem with a rise in the sea temperature in the North Sea (Werber 2015). Mackerel is found in waters between 6 and 15 °C, and as the waters around Iceland increased in temperature, Iceland found itself with a new fishery. More northern areas including the area around Iceland has become the mackerel’s summer feeding ground during this last decade; then they aggregate through autumn and early winter along the continental shelf edge.

Previously, the stock had barely entered Icelandic waters during summer, but is currently present throughout the year. Iceland said that whilst in Icelandic waters, the weight-gain of the mackerel was between 43 and 55% (Icelandic Ministry of Industries and Innovation 2012). It subsequently grasped this economic opportunity and started expansive mackerel fisheries in 2007, unilaterally setting its quota on the claim that mackerel fisheries have historically been important for the country (Fontaine 2015).

From virtually no catches, Icelandic fishermen caught more than 100,000 tonnes in 2008–2009 (ICES 2017), constituting approximately 20–25% of the total catch of mackerel in the

³ See in addition Milner 1998; Barnett 1990; DeSombre 2000; and Bernauer et al. 2010.

North-East Atlantic. Total mackerel catch reported to ICES was 621,618 tonnes in 2008 and 737,969 tonnes in 2009 (ICES 2017). Iceland did not participate in the Coastal State negotiations of the TAC for mackerel until 2010, when the mackerel entered their waters in large numbers. Being deemed a Coastal State entails that the country is recognised as a legitimate party to the quota negotiations, which has a claim to a share of the TAC. Iceland had been seeking Coastal State status since 1999, but was rejected by Norway and the EU until 2010 when it became an official Coastal State. However, the Norwegians especially refused to accept the historic claim, arguing that the Icelandic ‘history-based claim’ was ‘one of the most unfounded claims’ ever seen (Hotvedt 2010, 47).

Iceland’s zonal attachment was a contentious topic, as Norwegian authorities considered it to be about 5%, whilst Iceland demanded quotas equal to a 16% zonal attachment in 2012. Norway and Iceland had widely differing views on the right way to calculate quotas. Iceland was given a quota of less than 2000 tonnes by the annual negotiations (about 0.31% of the TAC), and the negotiations broke down as the countries disagreed on appropriate quota allocations for each Coastal State. The dispute continued in subsequent years due to wide discrepancy in expectations and concessions.

In parallel, the unilateral quotas set by the Faroe Islands were met with indignation from the EU and Norway, with the dispute reaching its climax when the EU prohibited the import of both Atlanto-Scandian herring and mackerel caught under the control of the Faroe Islands in 2013. In retaliation, the Faroe Islands involved the World Trade Organization, but the EU repealed the measures adopted against the Faroe Islands in August 2014. In March 2014, the EU, Norway and the Faroe Islands did manage to agree on a long-term management strategy for the stock. The quotas for 2015–2017 were set without Iceland signing on, although the country did partake in the negotiations (European Commission 2016). Although their demand for a bigger share of the stock was initially rejected by the EU and Norway, the Faroe Islands were included as part of the new long-term management plan as their catch increase was regarded as more legitimate due to their long-time cooperation within the Coastal State management regime. Their allocated share of the quota increased substantially from 5% of the TAC, to an average of 15% a year until 2018.⁴

Over time, the Coastal States’ combined increase in fishing pressure resulted in ever-growing overfishing of the stock. From 1998 to 2013, the total mackerel quota recommendations given by ICES have ranged between 300,000 to 700,000 tonnes. The Coastal States, on the other hand, have on average exceeded the quota by at least 100,000 annually,

prompting questions about the health and longevity of the stock itself (Cendrowicz 2010; Norwegian Ministry of Trade Industry and Fisheries 2014). No management agreement involving all Coastal States has been reached at the time of writing, and by 2019 the fish stock lost its ‘sustainable’ certification through MSC (MSC 2019). As such, the Coastal State regime that came into being precisely to manage a transboundary natural resource sustainably in the North-East Atlantic failed to solve the problem, and it was originally established to deal with.

A central point in the dispute was the disagreement over how to interpret the shift of the mackerel stock in and of itself. Two concerns in particular were relevant: what were the drivers behind the change in geographical stock distribution, and how long would it last (Hannesson 2013, 3)? Norway and the EU considered the fluctuations an irregularity, whereas Iceland argued the change was part of a larger ongoing climatic shift (Gänsbauer et al. 2016, 101). Furthermore, there was – and is – a disagreement over how to calculate zonal attachment; a core concern when setting quotas for a transboundary fish stock (Pinsky and Fogarty 2012, 890).

In addition to the science-based arguments mentioned, the fishing industry has played a key role in domestic politics limiting the possible scope of agreement in the Coastal State negotiations. Understanding this dimension is, per Putnam’s (1988) logic, central in understanding why states eventually were unwilling to relent on their quota positions. Two actors stand out in this case, namely Iceland and the Faroe Islands.

Iceland is a small island state that is heavily invested in fisheries, with a close relationship between interest groups and the government (Ásgeirsdóttir 2007). Export values by sector ranks fisheries in second place, with a 22% share of Iceland’s total export revenue. Seafood industry as well as fishing itself employs about 6% of Icelandic workers (Islandsbanki 2016, 20, 26). Statistics in the early 2000s show that the industry contributed between 10 and 15% of Iceland’s GDP, although the actual contribution might be much higher, because the fishing industry is connected to almost all facets of the Icelandic economy (Árnason and Agnarsson 2003, 14). Having arisen from almost no catches pre-2006, in 2016, the Icelandic mackerel fishery alone was worth 103 million dollars and constituted 8% of the Iceland’s total catch value (Win 2017).

Iceland’s negotiations within the NEAFC framework are led by the Ministry of Industry and Innovation, who works the closest with interest groups and spends a lot of its time drumming up support for the government’s preferred outcome (Ásgeirsdóttir 2008, 91–92). The preferred outcome for the government in fisheries negotiations is in fact historically very similar to the Federation of Icelandic Fishing Vessel Owners (LÍÚ) preferred alternative, as the largest and most influential fisheries interest group (Ásgeirsdóttir 2008, 99). The view of interest organisations is, therefore, well represented even at

⁴ Agreed record on a fisheries arrangement between the European Union, the Faroe Islands and Norway on the management of mackerel in the North-East Atlantic for 2014 to 2018.

the highest level of negotiations. As such, when the government agrees to a quota allocation figure, LÍÚ convinces its members to fall in line and support the government (Ásgeirsdóttir 2008, 95).

Like Iceland, the Faroe Islands is a small island ‘state’ with a population of just around 50,000. Even though tourism and aquaculture are important industries on the Faroes, it is still primarily a fishing community (Hovgaard and Ackrén 2017, 72). The largest businesses are all fisheries related. As far as numbers go, there are comparatively more than twice as many Faroese fishermen as there are Icelandic relative to the population: 7% of the population on Iceland and 16% on the Faroe Islands are fishermen (Hotvedt 2010, 39–40).

Fishermen loom large in the community and the economy of the Faroe Islands (Hegland and Hopkins 2014). The Faroese Minister of Fisheries leads the negotiations, and the relationship between business and politics is extremely close (Winthereig 2010). Export is handled by just a few companies, and there is a close relationship between shipowners and fish-exporting businesses (Iversen et al. 2014, 22). Faroese fishery interest groups send representatives to consult with the delegations participating in international negotiations. The two most important interest groups are the Faroese Shipowners Association and the Faroese Pelagic Fleet (Hotvedt 2010, 41). The Faroe Islands followed Iceland in setting its quota unilaterally in 2009. During the dispute, the Faroe Islands made it clear that they expected to gain quotas larger than Iceland, if an agreement was going to be reached (Iversen et al. 2014, 2).

For Norway, fisheries constitute a considerable part of the Norwegian economy, second only to petroleum in export value, although this also includes a considerable profit from aquaculture. At the same time, the total number of fishers in Norway in 2017 was only around 9500 or 0.36% of total Norwegian employment (Statistics Norway (SSB) 2018). However, the economic importance of fisheries extends beyond the extractive industry to the processing factories which was a driving factor for the Norwegians during the negotiations (Spijkers and Boonstra 2017). Overall, the influence of the fisheries sector on the official position of the Norwegian delegation was considerable, with the mackerel as the second most valuable stock (after cod, or third after herring and cod depending on the year) (Statistics Norway (SSB) 2018).

Finally, regarding the EU, its Common Fisheries Policy (CFP) sets out the rules for the conservation of fish stocks and the development of the structure and economics of fishing fleets (van Hoof and van Tatenhove 2009, 726). To enable member states to continue fishing in areas beyond the European jurisdiction, the Community began negotiating on behalf of its member states to either join RFMOs or establish bilaterally negotiated fisheries agreements with third countries (Popescu 2015, 6). Several EU states are involved in the mackerel fisheries although not nearly at the level of the UK

(predominantly Scotland). During the mackerel dispute, the species was by far the most important for the Scottish fisheries industry. Approximately 38% of the total Scottish landings during 2014 were attributed to the mackerel catch, with a value of £195 million (Scottish Government 2016). The mackerel represents approximately 35% of the UK’s (mostly Scottish) fish catch. Nonetheless, some interviewees from Spijkers and Boonstra (2017) expressed that, likely due to the special workings within the EU CFP, the industry does not have the same influence as they might in other Coastal States.

Why did cooperation fail?

If no cooperative mechanism for sustainable fisheries between the states in the North-East Atlantic area existed, we could unambiguously assume that overfishing would be more rampant than it is today. It took three decades of bilateral and multilateral interaction, in tandem with a growing emphasis on scientific measurement, to create the necessary interest in the Coastal States to come to an agreement. In 1982, Coastal State negotiations and the NEAFC became the mechanisms in the North-East Atlantic that provide venues for the involved parties to coordinate their actions, in turn expanding the so-called shadow of the future. This allowed states to realise the long-term benefit of coordination (as opposed to the immediate gains of self-interested behaviour).

So why and how did the setting of mackerel quotas manage to topple this agreement? Iceland’s desire to join the Coastal State negotiations changed the balance between the other actors. Arguments concerning the increase in the stock’s biomass in Icelandic waters and references to historical fisheries of mackerel were aimed at legitimizing Iceland’s expectations of a share of the TAC. Replacing a common management regime with two different ones (one Icelandic and one Faroese/EU/Norwegian), which were deemed unsustainable in 2019 (MSC 2019), is a clear evidence of the regime’s inability to adapt to change.

These issues relate to the notion of regime effectiveness. How can one judge whether an international regime is being effective? Some regimes play an essential part in solving the problems that led to their creation (Young 2011, 19,855). Similarly, a key finding in international regime analysis is that effective regimes contribute significantly to reducing or solving the issue-specific problem they address (Breitmeier et al. 2011; Stokke 2007). When – due to the diverging interests of the actors – can we say that cooperation has indeed failed? Arguably, a decade of failing to achieve the desired outcome (a sustainable harvest of the stock) is a clear indication that it has.

However, a central point is that networks, institutions and norms in an international cooperative regime are hard to

overcome, even as the Coastal States started to disregard the regime itself when setting their independent quotas for mackerel. Albeit hindered in their potential range of options by the domestic audience – as per Putnam’s logic – Coastal States (their negotiators and scientists) still convene to discuss the situation of the mackerel stock and make attempts at finding a solution to the current dispute. In other words, it could possibly be argued that the North-East Atlantic mackerel quota arrangement did not suffer a complete breakdown, i.e. the disbandment of the whole cooperative mechanism.

Albeit relatively informal and ad-hoc, the continued dialogue on fish stock management has become institutionalised. This has occurred through a decades-long process of institution-building, predominantly at a practical level between the bureaucrats themselves. Hønneland (2012) and Stokke (2006) provided thorough documentation of this evolution in their extensive research on the Barents Sea, findings which are applicable to the case of the North-East Atlantic as well. Iceland (and the Faroe Islands) never abandoned the fisheries regime. Iceland still participates in the annual quota allocation meetings for other stocks and continues to cooperate on enforcement and surveillance measures.

The trick in these fisheries negotiations is, naturally, to find a division of quotas acceptable to all parties. There is, however, more to this dispute than the mere coordination of interests. The key here is the role of the fishing industry played in domestic politics. Domestic interests – related to the considerable position of the fishing industry in Iceland – were actively pushing for this new opportunity, not least because other fisheries had declined at the same time as the financial crisis hit Reykjavik. The Icelandic fleet was in fact more specialised for the herring fishery. However, in the period leading up the shift to mackerel, the herring fisheries dabbled off, also greatly impacting the Norwegian fishing industry. Many Icelandic fishermen, therefore, prioritised the new abundant mackerel fisheries instead of the traditional herring fishery (Hotvedt 2010, 29).

The interests of the states’ respective domestic fishing industries were irreconcilable, and the regime failed to achieve its purpose when one of the relevant states – Iceland – chose not to partake – or was not allowed to partake – in determining the outcome. In a North-Atlantic context, scholars have found that small-scale disputes over fisheries have occurred relatively frequently off the coast of Canada, off the coast of Norway, in the Norwegian Sea, in the Barents Sea and in the Bering Sea (Hønneland 2012; Østhagen and Raspotnik 2018). In many of these instances, disputes over a limited amount of fish was tied to larger questions of regional identity politics and ‘protecting what is ours’. Fisheries, as an economic resource and a symbol of sovereignty should consequently not be underestimated as driver of state behaviour (Østhagen and Raspotnik 2019). Classifying this failure to reach an agreement on mackerel in the North-East Atlantic as a mere coordination problem fails

to catch these underlying dynamics. Providing ‘assurance’ to Iceland or the Coastal States does not solve the issue of national concern over fishing rights, something which has also attracted considerable attention in the Brexit negotiations (Phillipson and Symes 2018).

An additional central point concerns the use of, and dispute over, how to measure certain of the sharing principles set out in the UNFSA such as ‘zonal attachment’. The science that underpins common decisions on the TAC has been used to undermine some of the parties’ claims to the mackerel stock (Spijkers and Boonstra 2017). Some of the parties are unsure whether the change in the mackerel stock’s distribution northwards was a natural, temporary event or an effect of global warming resulting in a more semi-permanent situation. Norway and the EU seemed to prefer the temporary event alternative, and believed the stock would eventually move out Icelandic waters (Gänsbauer et al. 2016, 101). For that reason, the principles used to calculate and weigh zonal attachment of a stock was in dispute between the actors, a severe problem difficult to overcome in negotiations (Spijkers and Boonstra 2017).

In sum, cooperation on mackerel in the North-East Atlantic failed as the foundation for cooperation – the distribution of a marine resource – underwent rapid changes, and the established joint management mechanism (Coastal State negotiations and the NEAFC organisation) proved unable to respond adequately to the challenge. Interest in fishing mackerel grew in Iceland and the Faroe Islands, as the abundance of mackerel became apparent. Norway especially was unrelenting in its desire to maintain its relatively large share of the TAC for reasons relating to both preserving its position within the regime and domestic fishing interests (Spijkers and Boonstra 2017, 1844).

Lessons for the future?

What lessons can we draw from this specific case that holds relevance for transboundary resource regimes more generally? Returning to the general workings of international regimes, fisheries regimes like the one examined here, imply an awareness of the *concern* about illegal fisheries and depleting stocks, and to create a platform to raise the topic to the international level. They also enable states to form agreements (*contracts*) on quotas, thereby overcoming the lack of information regarding factual yields of the stocks. Moreover, the various regional fisheries management organisations aim at providing *capacities* to their members to implement these agreements, although the organisation itself is likely to be limited (Kristiansen 2013, 10–15).

In the case of the mackerel regime, the *scope* is relatively limited, as the fishery regime is restricted in the number of issues it deals with. Depth, however, varies. The degree of

commonality between member states is high, as states convene under the assumption that their expectations of behaviour and actions (quota setting and enforcement) will yield results. Cooperation is characterised by high specificity, as the rules that codify these expectations are specified in the quota agreements annually under the advice of ICES. Autonomy of the regime, however, is weak, since all agreements are consensus based. In sum, although this regime is highly specified and cohesive, it lacks autonomy to prompt rapid change in the face of external or internal stressors.

To what extent would an alteration of scope and depth through further institutionalization – like the development of organisational capacities and majority voting – hamper or improve the North-East Atlantic fisheries regime's ability to handle rapid changes in the fish stocks? Could cooperation on mackerel (or other stocks) be institutionalised to avoid conflict? Or would institutionalization hamper the flexibility of the collaborative regime, arguably making it harder to reach new agreements as stocks change their physical distribution?

The NEAFC organisation itself uses simple majority voting (in cases where a qualified majority is required, two-thirds of the present contracting parties) and votes are considered binding, unless a member state can within 50 days lodge an official 'protest'. In this case, the new regulation will not apply to them. If more than three parties object to the Commission's decision, it becomes non-binding on all parties (NEAFC 1980). Expansion of new mechanisms and procedures are consequently particularly sensitive to domestic interests, as explained, which makes it less likely that state negotiators will accept proposals that go against their country's domestic interests. Thus, the current regime, based on NEAFC and Coastal State negotiations, still requires decisions by consensus, which does not enhance the autonomy of the regime, nor makes it more immune to future breakdowns. Moving away from a strict consensus-based model has advantages for the decision-making structures. Yet such a change constitutes a loss of sovereignty that is often opposed by states, and in the NEAFC the effort was blocked by the other members (Kristiansen 2013, 55).

Some RFMOs have no power to make their members adhere to regulations and management regimes, some use qualified majority, and others use a consensus-based system (Molenaar 2004). However, in nearly all RFMOs, changes in attitude towards cooperation and sustainable resource management only happen if the states want it to happen (Hallwood 2016, 132). This raises the issue of how decision-making procedures can best adjust to rapid climate induced changes. Tying the member states down to a more rigid structure might not be an adequate response to a situation in flux. An alternative is to attempt at speaking directly to the main rationale for member opposition to new policies, namely domestic interests in retaining or increasing their

shares of the TAC. That is likely, however, to lead to overfishing of the stock. As succinctly put by Young (2010b, 380):

A fisheries regime that is unable to act in a timely manner to lower quotas when key stocks decline, for instance, cannot play an effective role in promoting sustainable uses of these resources. But such a regime that changes quotas at the least sign of stress cannot be effective in guiding the behavior of those subject to its provisions. The problem of striking a balance between extreme rigidity and excessive flexibility looms large in any effort to understand the nature of institutional dynamics.

Furthermore, the use and role of scientific advice in preventing future conflict stands out as a particularly relevant dimension of the mackerel dispute. In this instance, the issue of what fundament to build cooperation on is under threat. The use of an assumedly neutral source of reliable information is crucial for trust in the relevant regime, especially when dealing with issues linked to climate change (Sarewitz 2004, 386). If, however, there is too much uncertainty surrounding reliable information, actors sometimes opt to ignore, select or hide relevant information (Polasky et al. 2011, 402). The complexity of the reality makes it possible for actors to form their own separate interpretations of the situation, depending on what institutional and political context they are in. If the science that supports effective cooperation on this marine resource is questioned, and the fundamental principles determining quota allocations are in dispute; we are arguably witnessing signs of the dissolution of the regime itself, as the *principles*, *norms* and *rules* that define the regime are collapsing.

As per Young's (2010b) analysis, however, we could expect that all these stressors to the regime will eventually prompt a sudden realignment or change in the regime, perhaps agreeing on a new or coherent framework for scientific advice, or a distribution key that is acceptable to all parties. A tipping point might be reached; the question is what might prompt it. It seems – given the stasis of the dispute over the last decade – that what might spur the states into a renegotiation of the whole cooperative mechanism is a rapid depletion of the stock. This would force the domestic fisheries organisations to yield, although the danger lies in efforts being too limited, too late.

An alternative view is that the most effective approach to settling the dispute would be a total disbandment of the regime. In other words, including so-called sunset provisions in regime set-ups which would allow states 'to start over with arrangements that may be better suited to biophysical or socioeconomic circumstances as they evolve over time' (Young 2010b, 380, Young 2010a). This would entail that all relevant

states – including the UK after Brexit – convene to reinvent their quota-setting through Coastal State negotiations.

Given both the dependence on and reference to historic rights, as well as the advantageous positions held by both Norway and the EU, it is unlikely that this option would allow for much additional leeway. The problem is, thus, not limited robustness or resilience of the *regime* (i.e. how the relevant institutions and/or decision-making procedures are adapting to the new situation), but the rigidity of the quota expectations and positions of the various parties referring to historic rights and domestic interest groups.

The mackerel dispute proves an example of how international regimes set up to manage transboundary resources that are challenged as the resources in question change. The key to the failure of cooperation was not only interstate considerations but also intrastate interests, meaning fishery interests at the domestic level, and how these deem the negotiation positions of the Coastal States inflexible. Under a relatively weak (fisheries) regime, domestic interests consequently have considerable sway in the behaviour of Coastal States. The limited flexibility awarded the various negotiating states – and thus the regime at large – can be ascribed to a combination of strong domestic industry influence on negotiating positions, and a disagreement over the appropriate methods to measure stock biomass in tandem with unclear allocation principles that in turn led all actors to adopt a strategy of ‘holding out’ with expectations of a beneficial outcome in the future.

Managing transboundary fish stocks in the context of a changing climate is, thus, arguably not only a problem of coordination or assurance. Instead, we must be sensitive to how states use unilateral quota-setting as a final attempt to coerce other members of the regime, protecting their privileged position or forcing a more favourable outcome. This must be seen in tandem with the disruption of the principles cooperation founded on – in this case fisheries science – and the limited structure of the RFMO itself. Fisheries regimes are not too big to fail, as seen across a number of other maritime domains where small changes in biophysical conditions have led to severe disruptions in management regimes (Young 2010b, 380).

Strengthening the autonomy of the cooperative mechanisms between the Coastal States is one obvious way to better manage these types of disputes in the future. However, states are weary of relinquishing decision-making powers. In this particular dispute starting with an agreement on the fundamentals, namely, the science that underpins diverging claims may be a first step towards a long-term solution in the face of shifting stocks. As transboundary resources continue to change in response to a changing climate, understanding how regimes adapt and deal with shifting state interests is of central importance. It can help to improve our understanding of international cooperation as a reflection of regimes, at a time when such cooperation is under mounting pressure.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

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