

## **Arctic Geopolitics, Climate Change, and Resilient Fisheries Management**

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### **INTRODUCTION**

This article examines the resilience of fisheries management institutions to the combined challenges inherent in geopolitical and climatic change. Institutional resilience concerns the ability to deal with changing circumstances by adapting institutions, or relationships among them, to an extent sufficient for maintaining or improving institutional performance.<sup>1</sup>

Twenty years of rising geopolitical tensions have not severely restrained international cooperation on Arctic affairs. Despite the intensifying great-power rivalry in global politics, Arctic governance continues to thrive, as evident in the acceptance of China and other geo-economically rising States as observers in the Arctic Council, in the evolution of a legally binding Polar Code on shipping, and in the entry into force in 2021 of an agreement to prevent unregulated fisheries in the Central Arctic Ocean, involving all Arctic coastal States and others with a real interest in Arctic fisheries, including China, Iceland, Japan, the Republic of Korea, and the European Union (EU).

In fact, the coexistence of geopolitical tension and progress in the formation and strengthening of Arctic governance structures is neither paradoxical nor coincidental. Increased emphasis on geopolitical considerations tends to make governments more, not less, inclined to seek practical management arrangements acceptable to all. As this article argues, solutions that can accommodate underlying geopolitical tensions tend to be particularly resilient. Mechanisms that may explain this relationship are of two kinds, both operating at the level of States. The first mechanism is *interest aggregation*, as when governmental [p. 441] decision-makers worry that a sector dispute may escalate and spill over into issue-areas that are closer to core national interests. A second mechanism is *sector-gains protection*, as when fisheries officials and scientists are determined to insulate mutually advantageous institutional arrangements against the ups and downs of general political relations.

Combined with a third mechanism associated with the “malignancy” of the management problem, including the extent of free-rider incentives among participants,<sup>2</sup> these mechanisms are also

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<sup>1</sup> O.R. Young, “Institutional dynamics: Resilience, vulnerability and adaptation in environmental and resource regime,” *Global Environmental Change* 20, no. 3 (2010): 378–385.

<sup>2</sup> A. Underdal, “One question, two answers,” in *Environmental Regime Effectiveness: Confronting Theory with Evidence*, E. L. Miles et al. (Cambridge, MA: MIT Press, 2002), pp. 3–45.

relevant for explaining variation among Arctic fisheries regimes in their resilience to climate change, a second test of the ability of Arctic governance processes to adapt to more demanding circumstances. Rising ocean temperatures interact with other factors such as bottom topography, stock size, and prey availability to affect the spatial distribution of marine stocks. Extensive and rapid spatial shifts may influence fisheries management regimes by altering underlying factors like the stock's attachment to exclusive economic zones (EEZs) and the availability of fish on the high seas.<sup>3</sup> Such changes may challenge the basic tasks of fisheries management, which revolve around cognition, regulation, and compliance.

The *cognitional* management task is to develop and communicate scientific advice concerning how various levels of harvesting pressure will affect the state of the stocks and their long-term ability to support employment, yield incomes, and provide food. A stock that expands its area of distribution may become available to fishers from additional States. This will typically complicate the provision of scientific advice by requiring not only wider spatial coverage in costly survey activities, but also the involvement of new actors in generating policy advice. The *regulatory* task entails moving from such a shared understanding of means-end relationships into joint commitments among user-States to a set of common or compatible rules. A stock shift may put pressure on agreed quota allocation arrangements among user-States, especially if it involves a significant change in the stock's "zonal attachment," i.e., its occurrence in the various 200-mile EEZs that States have established along their coasts. Finally, the *compliance* task involves ensuring that those rules shape the performance of target groups, namely the fishing vessels that feed the global seafood value chain. A stock that moves into high seas areas will narrow the jurisdictional basis for at-sea inspection or other modes of verification [p. 442] necessary for compliance review and response to violations, because under international law the flag State enjoys a near-monopoly on rule enforcement beyond the maritime zones of coastal States.

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<sup>3</sup> O.S. Stokke, A. Østhagen and A. Raspotnik, eds., *Marine Resources, Climate Change, and International Management Regimes* (London: IB Tauris, forthcoming).



**Figure 1. High seas areas in the marine Arctic**

Source: Map drawn by Jeremy Davies, Ocean Conservancy (used with permission)

This article focuses on the marine waters included within the boundary of the Arctic, as defined by the Arctic Council’s Conservation of Arctic Flora and Fauna (CAFF) Working Group.<sup>4</sup> As shown in Figure 1, four pockets of high seas emerged from the establishment of Arctic EEZs during the 1970s, requiring broader management cooperation among coastal States and distant-water [p. 443] fishing nations: the “Loophole” of the Barents Sea, the “Banana Hole” of the Norwegian Sea, the “Donut Hole” of the Central Bering Sea, and the high-seas segment of the Central Arctic Ocean.<sup>5</sup> These high seas areas are politically and ecologically important, but commercial stocks fished there are often fished also in

<sup>4</sup> See the Arctic area under the definition of the Conservation of Arctic Flora and Fauna Working Group, available online: <<https://arcticportal.org/maps/download/arctic-definitions/2422-arctic-caff-boundary>>.

<sup>5</sup> A fifth pocket of high seas is sometimes included in Arctic overviews, the “Peanut Hole” of the Sea of Okhotsk, which is fully encompassed by Russia’s EEZ, but CAFF’s Arctic boundary lies northward of this sea.

adjacent waters under national jurisdiction. Further, the control of coastal States over access to their own EEZs has proven the single most effective means for obtaining international agreement among various user-States over high seas conservation and allocation issues.<sup>6</sup>

Therefore, an account of how geopolitical change influences efforts to create and strengthen institutions for governing Arctic fisheries, as provided in the next section, must include the high seas as well as the adjacent EEZs. Thereafter the article will examine institutional resilience, narrowing in on cases of Arctic fisheries management affected by climate change. In focus here are shifts in the abundance and spatial distribution of the world's largest cod, herring, and mackerel stocks, taken in the Barents Sea and the Nordic Seas respectively, and in the growing stock of snow crab currently expanding from Russia's EEZ into the western parts of the Barents Sea. The cod and snow crab cases have rekindled an underlying international controversy over the maritime zones that Norway has established around its Svalbard archipelago, as evident in the 2021 diplomatic rift with the EU, discussed below. Jointly these cases bring out the interplay of global oceans law and regional fisheries regimes shaped in different ways and degrees by geopolitical and climatic changes. The concluding section summarizes findings and draws some implications for implementation of the most recent Arctic fisheries instrument, the Central Arctic Ocean Fisheries Agreement.<sup>7</sup>

## GEOPOLITICS AND ARCTIC FISHERIES GOVERNANCE

The geopolitical approach to international relations involves examining connections between geographic space and power politics,<sup>8</sup> sensitive to the [p. 444] proclivity of States to widen their jurisdiction and expand their access to natural resources.<sup>9</sup> Toward the end of the 19th century, geopolitics emerged as a distinct strand in the wider realist tradition in international relations. Among its core tenets is holism, tied in with studies of how geographical properties such as climate, topography, and physical distance from other centers of power influence international politics. Holism posits that global processes shape regional affairs and that security considerations define interstate relations also in other issue-areas.<sup>10</sup>

Geopolitics-derived predictions as to the ability of Arctic institutions to cope with demanding issues of conservation and allocation could be expected to be rather gloomy in the present situation. General political relations between Russia and the USA, the two great powers with territories in the Arctic, have been on a downward slope for more than two decades, as visible particularly in controversies over NATO expansion, the U.S. invasion of Iraq, interventions in Georgia, Libya, and Syria, and Russia's annexation of Crimea and its 2022 full-scale invasion of Ukraine. Economic

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<sup>6</sup> See, e.g., O.S. Stokke, "Management options for high seas fisheries: Making regime complexes more effective," in: *Strengthening International Fisheries Law in an Era of Changing Oceans*, eds., J.R. Caddell and E.J. Molenaar (London: Hart, 2019), pp. 51–78.

<sup>7</sup> Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean, adopted at Ilulissat, October 3, 2018, in force since June 25, 2021.

<sup>8</sup> R. Tamnes and K. Offerdal, "Introduction," *Geopolitics and Security in the Arctic: Regional Dynamics in a Global World*, eds., R. Tamnes and K. Offerdal (London: Routledge, 2014), p. 6.

<sup>9</sup> B. Teschke, "Geopolitical relations in the European Middle Ages: History and theory" *International Organization* 52 (1998): 325–358.

<sup>10</sup> O.S. Stokke, "Geopolitics, governance, and Arctic fisheries politics," in: *Global Challenges in the Arctic Region: Sovereignty, Environment and Geopolitical Balance*, eds., E. Conde and S.S. Iglesias (London: Routledge, 2016), pp. 170–195.

sanctions have been imposed by both sides and the frequency of bilateral diplomatic and political meetings has declined.<sup>11</sup>

During the same period, the relative economic and military clout of a third major power, China, has grown significantly, as has its Arctic interest, as evident in China's successful bid for Arctic Council observer status,<sup>12</sup> its involvement in international negotiations on prevention of unregulated fisheries in the Central Arctic Ocean,<sup>13</sup> and its reinforcement of a steadily closer partnership with Russia through a string of energy investments in the Russian Arctic zone.<sup>14</sup> Meanwhile, China's relations with the USA have turned increasingly competitive, as seen in the escalation of reciprocal trade restrictions from 2016 and the even longer track record of increasingly aggressive mutual naval posturing in the South China Sea.<sup>15</sup> The general souring of U.S.-Chinese relations [p. 445] has spilled into Arctic affairs, most clearly in a statement made by then U.S. Secretary of State, Mike Pompeo, during an Arctic Council meeting: "China's pattern of aggressive behavior elsewhere will inform how it treats the Arctic."<sup>16</sup>

A final significant element of geopolitical change with Arctic repercussions is the British exit from the EU. Jointly and separately, both these entities are major players in world affairs with considerable Arctic stakes, also in the area of fisheries.

In short, if geopolitical thinkers are right in claiming that global rivalries determine regional processes and that security concerns trump objectives in other issue-areas, recent developments provide scant cause for optimism. Nevertheless, geopolitical tensions have not prevented the creation and strengthening of Arctic fisheries management regimes. Indeed, such tensions might even have made those regimes more resilient to changing environments.

## **Barents Sea and Svalbard**

Relatively shallow and highly productive, the Barents Sea is that part of the Northeast Atlantic that stretches from Russia's Arctic archipelagos westward to Svalbard. During the 1970s, the wider geopolitical struggle over marine living resources, resulting in EEZs and generally extended coastal State jurisdiction,<sup>17</sup> shifted regulatory competence from the multilateral North-East Atlantic Fisheries Commission (NEAFC) to a body dominated by two States, what is now the Joint Norwegian-Russian Fisheries Commission (JNRFC). Geopolitically speaking, the two members of the new regime were poles apart. They belonged to opposite Cold War camps, and they differed dramatically in overall power capabilities. Meeting annually since 1976, this regime sets total allowable catches (TACs) and technical regulations for the main commercial stocks in the region, namely cod, haddock, and capelin; and later, Greenland halibut and redfish as well. Regulations adopted under this bilateral commission bind also

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<sup>11</sup> R.D. Kaplan, "A new cold war has begun," *Foreign Policy* (7 January 2019).

<sup>12</sup> O.S. Stokke, "Asian stakes and Arctic governance," *Strategic Analysis* 38 (2014): 770–783.

<sup>13</sup> N. Liu, "The rise of China and conservation of marine living resources in the polar regions," *Marine Policy* 121 (2020): 104181.

<sup>14</sup> T. Røseth, "Russia's energy relations with China: Passing the strategic threshold?," *Eurasian Geography and Economics* (2017): 1–33.

<sup>15</sup> Ø. Tunsjø, *The Return of Bipolarity in World Politics: China, the United States, and Geostructural Realism* (New York: Columbia University Press, 2018).

<sup>16</sup> Cited in S. Sengupta, "United States rattles Arctic talks with a sharp warning to China and Russia," *New York Times*, 6 May 2019.

<sup>17</sup> W.T. Burke, *The New International Law of Fisheries: UNCLOS 1982 and Beyond* (Oxford: Clarendon Press, 1994).

other user-States in the region by means of a string of reciprocal access and quota agreements negotiated annually with the EU, Iceland, the Faroe Islands, Greenland, and following Brexit, also the UK.<sup>18</sup> [p. 446]

According to collective-action theory, such a shift from a multilateral to a bilateral regime facilitates resource management, because the fewer the actors who must agree on regulatory constraints, the lower the danger that one or more will exploit the free-rider option of avoiding commitments or compliance, or both.<sup>19</sup> Also after the transition from multilateral to bilateral regime, geopolitical competition has played a conducive role in regional fisheries governance. It has done so, as this section will show, by inducing the coastal States to adopt decision rules that facilitate annual agreement on conservation and allocation, to exploit windows of opportunity for strengthening compliance cooperation, and to develop practices that have helped to avoid escalation of the dispute regarding the legal status of the waters around Svalbard.

Two features of the Barents Sea fisheries regime central to its effectiveness clearly derive from the geopolitical situation when the regime was formed: the mutual access arrangement and the fixed-division keys for quota allocation.<sup>20</sup> Due to its migratory pattern, Northeast Arctic cod is generally older and larger toward the west, so Russian access to Norway's zone facilitates more rational overall harvesting pressure,<sup>21</sup> generating considerable economic gains for both parties.<sup>22</sup> In presenting the mutual-access arrangement to the Norwegian Parliament, the Foreign Minister stressed the elaborate procedures that were detailed in a separate treaty, to minimize the risk of incidents that might escalate into diplomatic issues or even conflicts.<sup>23</sup> Thus, geopolitically fueled Norwegian worries over a superpower-flagged fleet of fishing vessels operating in waters that had only recently come under national jurisdiction might well have prevented the economic gains of mutual access, had not elaborate regime provisions calmed those worries.

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<sup>18</sup> A new Norway-UK framework agreement on fisheries was adopted in September 2020. Norway, Ministry of Fisheries, *Press Release*, 30 September 2020. "Norway and the United Kingdom agree on fisheries cooperation," available online: <<https://www.regjeringen.no/en/aktuelt/norway-and-the-united-kingdom-agree-on-fisheries-cooperation/id2767058/>>.

<sup>19</sup> M. Olson, *The Logic of Collective Action: Public Goods and the Theory of Groups* (Cambridge, MA: Harvard University Press, 1971).

<sup>20</sup> O.S. Stokke, *Disaggregating International Regimes: A New Approach to Evaluation and Comparison* (Cambridge, MA: MIT Press, 2012).

<sup>21</sup> P. Gullestad, S. Sundby and O.S. Kjesby, "Management of transboundary and straddling fish stocks in the Northeast Atlantic in view of climate-induced shifts in spatial distribution," *Fish and Fisheries* 21, no. 5 (2020): 1008–1026.

<sup>22</sup> A. Sergunin, "Russia and Arctic fisheries," in *Governing Marine Living Resources in the Polar Regions*, eds., N. Liu, C.M. Brooks and T. Qin (Cheltenham: Edward Elgar, 2019), p. 122.

<sup>23</sup> O.S. Stokke, L.G. Anderson and N. Mirovitskaya, "The Barents Sea Fisheries," in: *The Effectiveness of International Environmental Regimes: Causal Connections and Behavioral Mechanisms* ed., O.R. Young (Cambridge, MA: MIT Press, 1999).

Also the fixed-division keys for quota allocation of shared stocks, including 50/50 sharing of the cod TAC, is closely related to the geopolitical situation during the formative years of the Barents Sea cooperation. The negotiations that produced this outcome revolved around historical fishing rather than zonal attachment, largely because any argument linked to zonal attachment would [p. 447] suffer from the geopolitical circumstance that no agreed maritime boundary existed between the two EEZs,<sup>24</sup> a situation that would persist for more than 30 years.<sup>25</sup> The straightforward and fixed quota-division keys built into the Barents Sea regime contrast with the dynamic keys, in practice renegotiable when stock distributions change, that emerged later for pelagic stocks in the Nordic Seas.<sup>26</sup> There is much to indicate, as argued below, that the simplicity of the fixed keys, driven partly by the geopolitical circumstance of unsettled jurisdiction, has made them more resilient to the impacts of climate change.

Unsettled jurisdiction also characterizes the Fisheries Protection Zone (FPZ) that Norway established around Svalbard in 1977.<sup>27</sup> The disputed status of this zone is rooted in differing interpretations of the 1920 Svalbard Treaty, which grants Norway sovereignty over the archipelago, with some specified limitations.<sup>28</sup> Norway must give equal access to, and equal treatment of, nationals of any signatory State as regards specified economic activities. It must refrain from collecting more tax than necessary for administering the archipelago, and it may not establish naval bases there (Articles 3, 8, and 9). Relying on the wording of the Treaty, Norway has held that those limitations apply only to the onshore areas and the territorial sea, not to the continental shelf or to waters beyond the territorial sea. That is why the FPZ is legally based on Norway's EEZ legislation, whereas fisheries regulations in Svalbard's internal waters and territorial sea are based on Norway's Svalbard Act.<sup>29</sup>

Russia has rejected the right of Norway to establish unilaterally any zone of water beyond Svalbard's territorial sea, claiming that the area is international waters.<sup>30</sup> Several other States have taken the softer position of reserving their opinion on whether the zone falls within the ambit of the Svalbard Treaty.<sup>31</sup> As [p. 448] shown below, the EU, in a 2021 diplomatic exchange with Norway over cod and snow crab, has argued in terms that approximate the Russian position.

As user-States deriving economic gains from the same scarce resource, those engaged in the FPZ dispute have a common interest in the existence of constraints on fisheries, and therefore in the exercise of enforcement authority. A shared challenge has been to find a practical management solution that touches as lightly as possible on the contested jurisdictional issue. Such an outcome has been

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<sup>24</sup> S. Engesæter and J. Hamre, "Scientific input to international fishery agreements," *International Challenges* 13 (1993): 85–106.

<sup>25</sup> A. Moe, D. Fjærtøft and I. Øverland, "Space and timing: Why was the Barents Sea delimitation dispute resolved in 2010?," *Polar Geography* 34 (2011): 145–162.

<sup>26</sup> Engesæter and Hamre, n. 24 above.

<sup>27</sup> G. Ulfstein, *The Svalbard Treaty: From Terra Nullius to Norwegian Sovereignty* (Oslo: Scandinavian University Press, 1995).

<sup>28</sup> Treaty concerning Spitsbergen; adopted 1920, in force since 1925; Art. 1. The official Norwegian name of the archipelago, in which Spitsbergen is a major island, is Svalbard.

<sup>29</sup> Norway, Act on the Economic Zone (17 Dec. 1976); Norway, Svalbard Act (17 July 1925).

<sup>30</sup> Sergunin, n. 22 above, p. 123; A. Østhagen, A-K. Jørgensen and A. Moe. "The Svalbard Fisheries Protection Zone: How Russia and Norway manage an Arctic dispute." *Arctic and North* 40 (2020): 150–168.

<sup>31</sup> Ulfstein, n. 27 above; E.J. Molenaar, "Fisheries regulation in the maritime zones of Svalbard," *The International Journal of Marine and Coastal Law* 27 (2012): 3–58.

obtained by a combination of Norwegian restraint in the exercise of authority and practical acceptance of this authority by user-States with quotas in these waters, with some diversity in their degree of acceptance. Norwegian restraint is evident in the decision to abstain ‘for the time being’ from implementing the general EEZ ban on non-licensed foreign fishing in the FPZ and to license such fisheries on the basis of historical fishing.<sup>32</sup> Hence the term “fisheries protection zone,” which connotes non-discrimination. Russian fishers have no special quota in the FPZ; quotas agreed under the JNRFC apply to the entire Barents Sea, including waters around Svalbard. Another sign of restraint is that Norway for many years chose rather mild responses when exposing rule violations by foreign vessels in the FPZ,<sup>33</sup> usually confined to written warnings. In return, most other States have instructed their fishers to adhere to Norwegian measures in the zone and to accept at-sea inspections. Although Russian captains are instructed not to sign inspection papers, which Moscow considers would indicate too much acceptance of Norwegian jurisdiction, they rarely obstruct inspectors.<sup>34</sup> Like the mutual access provisions and the fixed division keys for shared stocks between Norway and Russia, the *modus vivendi* on the FPZ showcases institutional adaptation to a geopolitical challenge that might otherwise have undermined effective fisheries management.

Two other interactions between geopolitical change and Barents Sea fisheries governance deserve brief mention. In the years following Gorbachev’s rise to power in the Soviet Union and the warming in East-West relations associated with *perestroika*, bilateral fisheries cooperation deepened considerably, [p. 449] especially on the compliance side of management.<sup>35</sup> First, in a joint endeavor to discourage third-party harvesting of cod in the high seas Loophole during the 1990s, Norway and Russia coordinated their use of national regulations and third-party agreements to reduce the profitability of Loophole fisheries, including by denying port and EEZ access to vessels with a history of unregulated fishing in the area.<sup>36</sup>

Second, in response to mounting evidence that substantial overfishing occurred in connection with landings abroad and the wider integration of Russia’s fishing industry into Western value-chains, a Permanent Committee for Regulation and Control was established under the JNRFC in 1993, facilitating data sharing on Russian landings in Norwegian ports and vessel activities in waters under Norwegian jurisdiction.<sup>37</sup> The joint compliance measures elaborated in that Committee include regular exchanges of information about national fisheries legislation, annual seminars involving enforcement personnel of the two States, exchanges of observers on each other’s control vessels, and the coordination of satellite tracking systems.<sup>38</sup>

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<sup>32</sup> Norway, Regulations on a Fisheries Protection Zone at Svalbard (3 June 1977), Art. 2 [my translation]. The general prohibition against non-licensed fishing by foreigners in the EEZ is found in Norway, Act on the Economic Zone (17 Dec. 1976), Art. 4.

<sup>33</sup> T. Pedersen, “The dynamics of Svalbard diplomacy,” *Diplomacy and Statecraft* 19 (2008): 236–262.

<sup>34</sup> For a prominent counter example, see K. Åtland and K. Ven Bruusgaard, “When security speech acts misfire: Russia and the Elektron incident,” *Security Dialogue* 40 (2009): 333–353.

<sup>35</sup> G. Hønneland, *Kvotekamp og kyststatssolidaritet: Norsk-russisk fiskeriforvaltning gjennom 30 år*. (Bergen: Fagbokforlaget, 2006).

<sup>36</sup> O.S. Stokke, “Managing fisheries in the Barents Sea Loophole: Interplay with the UN Fish Stocks Agreement,” *Ocean Development and International Law* 32 (2001): 241–262.

<sup>37</sup> G. Hønneland, *Making International Fisheries Agreements Work: Post-Agreement Bargaining in the Barents Sea* (Cheltenham: Edward Elgar, 2012).

<sup>38</sup> O.S. Stokke, “Stock shifts, value chains and institutional resilience: Fisher compliance in the Barents Sea,” in: *Arctic Governance Volume II: Energy, Living Marine Resources and Shipping*, eds., S.V. Rottem and I.F. Soltvedt (London: IB Tauris, 2018), pp. 228–252.



In summary, geopolitical dynamics have shaped the development of the Barents Sea fisheries regime. During its Cold War formative years, the coastal States' placement on opposite sides of the global divide, reinforced by deeply asymmetric power relations, encouraged the development of a string of conflict-avoidance measures and practices regarding mutual access, quota allocation, and fisheries in the FPZ. Similarly, in the East-West thaw period from 1985 to 2000, the dominant actors in the Barents Sea fisheries regime exploited the window of opportunity to deepen their cooperation on compliance, by joining forces to discourage third-party activities in the Loophole and establishing direct lines of communication between their enforcement agencies. Illustrative of the stickiness of cooperative sector-gains in periods of geopolitical cooling, Russian-Norwegian coast guard cooperation on fisheries and on search and rescue was the only bilateral military connection to remain untouched by the sanctions Norway imposed on Russia in response to its annexation of Crimea and its 2022 invasion of Ukraine. [p. 450]

### **Nordic Seas**

The “Nordic Seas” is a collective term denoting the Norwegian Sea, the Greenland Sea, and the Iceland Sea, three ocean areas separated from the remaining North Atlantic by the Greenland-Scotland Ridge.<sup>39</sup> These waters are home to the world's largest stocks of herring and mackerel, as well as many other species such as blue whiting, saithe, redfish, salmon, and tunas.

Compared to the Barents Sea situation, geopolitical issues have played a minor role in the development of fisheries governance structures in the Nordic Seas, partly because general power-relations between the East- and West-bloc participants has been more balanced, and partly because no jurisdictional issue comparable to that of Svalbard has complicated international management. Since the early 1990s, when the Atlanto-Scandian herring stock recovered sufficiently to resume its transboundary migratory pattern, the main actors in fisheries management of this stock have been the same as those currently harvesting and sometimes co-managing Northeast Atlantic mackerel, namely the EU, Norway, and to a lesser extent Russia, all with long track records of harvesting mackerel, as well as three recent newcomers: the Faroes, Greenland, and Iceland.

The newcomer challenges emerged around 2007 due to the increased abundance and geographic expansion of mackerel in particular, with greater availability in Faroese, Icelandic, and Greenlandic waters, as well as on the high seas.<sup>40</sup> That led to negotiations, deadlocks, and sanctions of various kinds among new entrants and those with the heaviest historic interest in this stock, the EU and Norway. A geopolitical confounder here was the UK decision to leave the EU, which was fully implemented by the

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<sup>39</sup> ICES, 2018. Norwegian Sea Ecoregion: Ecosystem Overview. *ICES Advice*, available online: <[https://www.ices.dk/sites/pub/Publication%20Reports/Advice/2018/2018/NorwegianSea\\_EcosystemOverview.pdf](https://www.ices.dk/sites/pub/Publication%20Reports/Advice/2018/2018/NorwegianSea_EcosystemOverview.pdf)>.

<sup>40</sup> O.S. Astthorsson et al., “Climate-related variations in the occurrence and distribution of mackerel (*Scomber scombrus*) in Icelandic waters,” *ICES Journal of Marine Science* 69 (2012): 1289–1297; L. Nøttestad et al., “Quantifying changes in abundance, biomass, and spatial distribution of Northeast Atlantic mackerel (*Scomber scombrus*) in the Nordic Seas from 2007 to 2014,” *ICES Journal of Marine Science* 73, no. 2 (2016): 359–373.

expiry of the Brexit transition period at year-end 2020. In the preceding year, UK fishers took nearly one-fifth of the Northeast Atlantic mackerel catch, accounting for almost half of the EU catch.<sup>41</sup> [p. 451]

The ability of the governance structures for managing pelagic fisheries in the Nordic Seas to absorb perturbations such as Brexit and rapid changes in stock distribution is limited by institutional fragmentation and weakness. Institutional strength can be measured on a procedural as well as a substantive dimension. It denotes the capacity to adopt prescriptive outputs that are deep (requesting more than the prescriptive target, here the user States, would otherwise do) despite resistance from one or a minority of those targeted.<sup>42</sup>

For the Nordic Seas, as in the JNRFC, scientific advice from the International Council for the Exploration of the Sea (ICES) forms the basis for annual negotiations among the user-States, but the *regulatory* task is far more decentralized. In the JNRFC, annual negotiations start out from agreed interpretations of basic conservation principles, like the precautionary approach, and clearly defined harvest control and allocation rules, whereas management of the pelagic complex proceeds on a stock-by-stock basis, involving two multilateral venues and numerous bilateral commissions. The regulatory core is an annual multilateral fisheries consultation among those with acknowledged coastal State rights, groupings that may vary from one stock to another. Such consultations sometimes produce an inclusive agreement on the TAC and its allocation, but more often the result is an agreement limited to a subset of those capable of harvesting the stock within their own EEZ. The outcomes of those stock-specific multilateral consultations form the basis for subsequent bilateral negotiations among the relevant coastal States concerning quota exchange and mutual access to each other's zones. They also set the parameters for decisions within NEAFC, which has retained its regulatory competence over those parts of fisheries that occur on the high seas, including a segment of the Central Arctic Ocean.

This institutionally weak and loosely coupled complex of consultations frequently fails to produce agreement among all user-States on what levels of harvesting pressure are appropriate and what criteria should guide the allocation of harvesting rights. No allocative agreement inclusive of all user-States has been obtained since 2009, and the sum of subset-agreed and unilaterally set quotas has typically exceeded the scientific advice by considerable margins, on average, by as much as 40 percent each year.<sup>43</sup> The additional complications deriving from Brexit are evident in the fact that although the UK has negotiated a string of framework instruments with other user-States and [p. 452] entities to enable annual consultations on fisheries, only that with the EU has so far generated a tangible accord on quota sharing and mutual access to each other's zones.<sup>44</sup>

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<sup>41</sup> ICES 2020a. Mackerel (*Scomber scombrus*) in subareas 1–8 and 14, and in Division 9.a (the Northeast Atlantic and adjacent waters). *ICES Advice*, available online: <<https://www.ices.dk/sites/pub/Publication%20Reports/Advice/2020/2020/mac.27.nea.pdf>>.

<sup>42</sup> A. Underdal, "Methodological challenges in the study of regime effectiveness," in *Regime Consequences: Methodological Challenges and Research Strategies*, eds., A. Underdal and O.R. Young (Dordrecht: Kluwer Academic, 2004), pp. 27–48.

<sup>43</sup> ICES 2020a, n. 41 above.

<sup>44</sup> On the breakdown of the Norway-UK negotiations concerning fisheries in 2021, see Norway, Ministry of Fisheries, *Press Release*, 30 April 2021. Norge og Storbritannia avslutter fiskeriforhandlinger [in Norwegian], available online: <<https://www.regjeringen.no/no/aktuelt/norge-og-storbritannia-avslutter-fiskeriforhandlinger/id2846634/>>.

## Bering Sea

Located between Russia and Alaska, the Bering Sea is separated from the rest of the North Pacific by the Aleutian Islands. Like the Barents and Nordic Seas, it is among the world's most productive ocean areas, feeding valuable fisheries for crab, cod, mackerel, and salmon, as well as two of the world's largest single-species fisheries, the U.S. and Russian pollock fisheries, each currently supporting annual catches in the order of 1.5 million tonnes.<sup>45</sup>

Unlike the major North Atlantic stocks, however, those of pollock in the Bering Sea have not straddled international boundaries since the early 1990s, when this species disappeared from the Donut Hole, the high seas pocket located between the Russian and the U.S. EEZs. Due to the stepwise reductions of foreign fishing that both coastal States implemented from the early 1980s, distant-water fishing vessels from China, Japan, Poland, and the Republic of Korea had relocated their operations to the Donut Hole, obtaining high seas catches of pollock that rose from negligible levels to nearly 1.5 million tonnes in 1989.<sup>46</sup>

The geopolitical fault line that shaped the contours of the Donut Hole regime was the one dividing coastal States and distant-water fishing nations, partly because the period of negotiating the Bering Sea Donut Hole Convention coincided with a thaw in East-West relations, but mostly because the USA and Russia had a firm common interest in an outcome that could constrain the operations of vessels flagged by non-coastal States. As part of the circumpolar flurry of initiatives that had followed Gorbachev's call for greater cooperation in the Arctic,<sup>47</sup> the USA and the Soviet Union established an Intergovernmental Consultative Committee on Fisheries in 1988, [p. 453] which remains their main bilateral forum for discussing fisheries matters.<sup>48</sup> This and other arenas, including a 1992 summit of Presidents Bush and Yeltsin, were used to coordinate policies and develop joint positions in the Donut Hole negotiations.

Geopolitical circumstances clearly favored an outcome leaning toward coastal State priorities, namely two superpowers standing together, threatening to stretch international law by unilaterally or bilaterally imposing regulations on fisheries beyond 200 miles, with one of them, Russia, actually doing so in 1993 concerning the "Peanut Hole" in the Sea of Okhotsk.<sup>49</sup> Importantly, both were able to legitimize such coastal State activism by growing evidence that stock collapse was underway in the Donut Hole as a consequence of unregulated foreign fishing.<sup>50</sup>

A central proposition in studies of environmental regime formation is that ambitious regulatory proposals are more likely to succeed if backed by the most powerful States involved, as in the case of the U.S.-initiated ozone regime, when the commercial whaling moratorium was adopted, and in the early

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<sup>45</sup> A.H. Hoel, "The evolving management of fisheries in the Arctic," in: *Research Handbook on Polar Law* eds., K.N. Scott and D.L. VanderZwaag (Cheltenham: Edward Elgar Publishing, 2020), pp. 200–217.

<sup>46</sup> D.A. Balton, "The Bering Sea Doughnut Hole Convention: Regional solution, global implications," in: *Governing High Seas Fisheries: The Interplay of Global and Regional Regimes*, ed., O.S. Stokke (Oxford University Press 2001), pp. 146–148.

<sup>47</sup> O.S. Stokke, "The northern environment: Is cooperation coming?," *Annals of the American Academy for Political and Social Science* 512, no. 1 (1990): 58–68.

<sup>48</sup> Sergunin, n. 22 above.

<sup>49</sup> A. Oude Elferink, "The Sea of Okhotsk Peanut Hole: De facto extension of coastal State control," in: Stokke, *Governing High Seas Fisheries*, n. 46 above, pp. 179–206.

<sup>50</sup> Balton, n. 46 above, 147–152.

stages of the climate regime.<sup>51</sup> It is highly plausible, therefore, that the specific power constellation that marked the Donut Hole negotiations contributed to an outcome more favorable for the coastal States than any other high seas arrangement examined here, on all *three* management tasks.<sup>52</sup>

Regarding the cognitional task, the agreement provides for a Scientific and Technical Committee with representatives from all parties, but the decision on whether the pollock biomass had reached an agreed trigger level for lifting the interim moratorium imposed on fisheries in 1993 was left to coastal State science bodies, ultimately that of the USA (as per Article IX and Annex 1).

As to regulation, the distant-water fishing nations fended off a proposal that only the coastal States should have the right to veto a regulation.<sup>53</sup> However, the consensus rule adopted was circumscribed by a default procedure according to [p. 454] which, in case of deadlock, a set of pre-agreed regulations would apply, setting a relatively low TAC and allocating around 70 percent to the coastal States.<sup>54</sup>

A default arrangement agreed concerning the third management task, compliance activities, also clearly favored the coastal States. It has proven more consequential than other provisions because it influenced the contents of the 1995 UN Fish Stocks Agreement (UNFSA) on high seas fisheries management.<sup>55</sup> Both the regional and the global instrument formally upheld the principle that flag-State consent is needed for non-courtesy inspection and detention by another State on the high seas. The innovative feature, in practice available only to the coastal States, as only they are likely to have a regular fisheries enforcement presence in the region, was to incorporate such consent as a default whenever the flag State fails to implement its flag-State responsibilities, which had in the meantime been strengthened globally by the 1993 FAO Compliance Agreement. Specifically, Article XI of the Donut Hole Convention provides that whenever the flag State is unable to board and investigate an alleged rule violation, officials of the inspecting State may detain the vessel and continue its detention until full compliance is obtained.<sup>56</sup>

Because the biomass of the pollock stock fishable in the Donut Hole has not yet reached the trigger-level for lifting the moratorium, these innovative and coastal State-leaning default procedures on regulation and compliance have never been tested. The six parties meet annually to review inputs from the Scientific and Technical Committee, and the USA and Russia regulate unilaterally the hugely valuable pollock fisheries conducted in their respective EEZs. The absence of commercially lucrative shared stocks means that the U.S.-Russian Intergovernmental Consultative Committee on Fisheries is

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<sup>51</sup> S. Andresen, E.L. Boasson, and G. Hønneland, eds., *International Environmental Agreements: An Introduction* (London: Routledge, 2012).

<sup>52</sup> Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea, adopted 1994, in force since 1994.

<sup>53</sup> Balton, n. 46 above, p. 158.

<sup>54</sup> Articles VII–VIII and Annex 1; more details in Balton, n. 46 above, pp. 159–161. Such default regulations were agreed for stock-biomass levels below 2.5 million tonnes; should the biomass exceed that level, a consensus would be needed for setting a total allowable catch; without agreement on allocation, the default would be an “Olympic fishery,” i.e., no national quotas (Annex 2).

<sup>55</sup> Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks; adopted 1995, in force since 2001. See O.S. Stokke, “Managing straddling stocks: The interplay of global and regional regimes,” *Ocean and Coastal Management* 43 (2000): 205–234; Balton, n. 46 above, p. 170.

<sup>56</sup> Corresponding provisions are included in Articles 21–22 of the Fish Stock Agreements. The Donut Hole Convention uses the term “boarding Party.”

marginal to the management of Bering Sea fisheries.<sup>57</sup> However, some evidence of institutional insulation of sector gains can be found in the adoption, [p. 455] one year after the introduction of Crimea-based sanctions on Russia, of a 2015 bilateral agreement, strongly supported by the regional fishing industries in both countries, allowing a string of cooperative measures for combating illegal, unreported and unregulated (IUU) fisheries.<sup>58</sup>

### Central Arctic Ocean

Among the four areas of high seas in the marine Arctic, the Central Arctic Ocean pocket has received by far the greatest scholarly attention in recent years.<sup>59</sup> This focus is not unnatural, given the rising general interest in the Arctic associated with receding sea ice, enabling increases in activities in the fisheries, petroleum, minerals, and shipping industries. Fisheries have been particularly topical due to the diplomatic processes of developing two closely connected international instruments, the Oslo Declaration adopted by the Arctic Five coastal States in 2015, and the more inclusive, and legally binding, Central Arctic Ocean agreement to prevent unregulated fisheries (CAOFA), adopted in 2018 and in force since June 2021, following ratification by China as the last among the ten signatories.<sup>60</sup>

Studies of the CAOFA process often compare it to the 1994 Bering Sea Donut Hole Convention, noting the partial overlap in membership and highlighting the striking contrast in timing.<sup>61</sup> For the Donut Hole, constraints on harvesting activities could not be agreed upon until the fishery had demonstrably collapsed, whereas the commitment under CAOFA to prohibit own vessels from engaging in unregulated fisheries in the Central Arctic Ocean was obtained even before the commercial activity had begun. Promising as this contrast may seem from a governance perspective, none of the cases poses a difficult test [p. 456] for the precautionary approach. At the time when agreement was reached, the potential fisheries to be governed were in both cases acknowledged as economically marginal, even hypothetical.

As in the Donut Hole case, the geopolitical fault line involved went primarily between coastal States and distant-water fishing nations. Originally a U.S. initiative associated with a Joint Resolution passed by the U.S. Congress in 2008,<sup>62</sup> the idea that the high seas portions of the Central Arctic Ocean require international regulation soon merged with the Ilulissat process, revolving around the adequacy

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<sup>57</sup> Sergunin, n. 22 above, p. 126.

<sup>58</sup> Agreement between the Government of the United States of America and the Government of the Russian Federation on Cooperation for the Purposes of Preventing, Deterring and Eliminating Illegal, Unreported, and Unregulated Fishing, adopted September 11, 2015, in force December 4, 2015.

<sup>59</sup> V.J. Schatz, A. Proelss and N. Liu, “The 2018 Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean: A Critical Analysis,” *The International Journal of Marine and Coastal Law* 34 (2019): 195–244; A. Serdy, “The Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean: An Overview,” *Ocean Yearbook* 33 (2019): 401–417; E.J. Molenaar, “The CAOF Agreement: Key Issues of International Fisheries Law,” in: *New Knowledge and Changing Circumstances in the Law of the Sea*, ed., T.H. Heidar (Leiden: Brill/Nijhoff, 2020) pp. 446–476; D. Balton, “Implementing the new Arctic Fisheries Agreement,” in: ed., Heidar id., pp. 429–445; A.N. Vylegzhanin, O.R. Young and P.A. Berkman, “The Central Arctic Ocean Fisheries Agreement as an element in the evolving Arctic Ocean governance complex,” *Marine Policy* 118 (2020):104001; Liu, n. 13 above.

<sup>60</sup> CAOFA, n. 7 above.

<sup>61</sup> Schatz et al., n. 59 above; Serdy, n. 59 above; Balton, n. 59 above.

<sup>62</sup> Balton, n. 58 above, pp. 444–445.

of the existing framework for Arctic environmental governance.<sup>63</sup> Central to that process is the 2008 Ilulissat Declaration, in which the five coastal States to the Arctic Ocean – Canada, Denmark/Greenland, Norway, Russia, and the USA – reminded critics of various kinds, including environmental NGOs, non-Arctic States proposing Arctic bans on deep-water drilling, and an EU Parliament Resolution on the need for a new, comprehensive Arctic environmental treaty,<sup>64</sup> that the UN Convention on the Law of the Sea (UNCLOS) already provided a framework for such regulation, one that accorded a prominent place to the coastal States:<sup>65</sup>

By virtue of their sovereignty, sovereign rights and jurisdiction in large areas of the Arctic Ocean the five coastal states are in a unique position to address these possibilities and challenges [and] ... have a stewardship role in protecting” Arctic ecosystems.<sup>66</sup>

Taking the lead in the precautionary process of regulating possible future fisheries activities in the Central Arctic Ocean, as the Arctic Five did by first negotiating among themselves the Oslo Declaration, allowed them to demonstrate the adequacy of the existing legal framework and their own agility as stewards of the Arctic environment, but also to lay down certain parameters for the subsequent negotiations with other interested parties.<sup>67</sup> Two important [p. 457] such parameters were that a new instrument would be confined to the high seas parts of Central Arctic Ocean (Article 1), thus not interfere with EEZ regulations of stocks that may straddle maritime boundaries, and that parties may not authorize commercial fisheries in the agreement area unless conservation and management measures are agreed among the parties or within regional or subregional management regimes “that have been or may be established and are operated in accordance with international law” (Article 3(1)).<sup>68</sup> According to Molenaar,<sup>69</sup> those parameters were acceptable to the “Other Five” – China, the EU, Iceland, Japan, and the Republic of Korea – only because this provision and others made clear that such high seas abstention was not intended to imply a permanent moratorium.

Unlike the Donut Hole arrangement, the CAOFA does not place the coastal States in a privileged position relative to other signatories regarding any of the management tasks. To support the cognitional task of developing a shared understanding of the ecosystem and whether fish can be harvested sustainably, and any impacts of such fisheries on the ecosystems, a Joint Program of Scientific Research

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<sup>63</sup> Molenaar, n. 59 above.

<sup>64</sup> O.S. Stokke, “Pros and cons of institutional complexity: The case of Arctic governance,” in: *Arctic Governance, Volume 1: Law and Politics*, eds., S.V. Rottem and I.F. Soltvedt (London: IB Tauris, 2017), pp. 73–87.

<sup>65</sup> United Nations Convention on the Law of the Sea, adopted 1982; in force since 1994.

<sup>66</sup> Ilulissat Declaration, 28 May 2008, available online: <<https://arcticportal.org/images/stories/pdf/Ilulissat-declaration.pdf>>.

<sup>67</sup> Geopolitics slowed down the adoption of what became the 2015 Oslo Declaration. The text had been finalized prior to Russia’s annexation of Crimea and intervention in Eastern Ukraine in 2014, but the subsequent cooling of East-West relations delayed the formal adoption; see E.J. Molenaar, “International regulation of Central Arctic Ocean fisheries,” in: *Challenges of the Changing Arctic: Continental Shelf, Navigation, and Fisheries*, eds., M.H. Nordquist, J.N. Moore and R. Long (Leiden: Brill/Nijhoff, 2016), pp. 429–463.

<sup>68</sup> The regimes intended by the phrase “have been [...] established” include NEAFC, which, as noted, regulates a segment of the high seas in the Central Arctic Ocean. Norway and Russia also consider the JNRFC as an “arrangement” for high seas fisheries management (Molenaar, n. 67 above), because it claims management authority of cod also in the Loophole, but this view is not shared by all parties to the CAOFA (Molenaar, n. 59 above, pp. 458–459).

<sup>69</sup> Molenaar, n. 59 above, p. 469.

and Monitoring is to be established (Article 4), starting out from the five Meetings of Scientific Experts on Fish Stocks in the Central Arctic Ocean held prior to and during the negotiation of the Agreement but pushing considerably further in formalization and ambition.<sup>70</sup> A Provisional Scientific Coordinating Group met in February 2020, and recommended interim terms of procedure likely to be approved by the first Meeting of the Parties to the Agreement. Scientific advice, according to those terms, will be adopted by consensus within a body comprising delegations from all signatories, including scientists and holders of indigenous and local knowledge. If consensus cannot be reached, the different views shall be presented in the report of the [p. 458] scientific body.<sup>71</sup> The transparency thus provided means that the legitimacy derivable from scientific expertise in debates over regulatory measures cannot be annulled by one or a few dissenting delegations.

Article 6 of the Agreement provides that all decisions on matters of substance shall be taken by consensus. Prominent among such decisions are the establishment of regulatory measures for exploratory fisheries and whether scientific information indicates that the qualified ban on commercial high seas fisheries may be lifted (Article 5). The latter would require a decision to negotiate additional management structures, but a consensual Meeting of the Parties could then adopt interim conservation and management measures for such high seas operations (Article 5(1)). Although some of the wording in the Agreement suggests otherwise, the ability to regulate exploratory fisheries, lift the qualified ban, and set interim measures indicates that for regulatory purposes the CAOFA has created a regional fisheries management “arrangement” as defined in the UNFSA.<sup>72</sup>

In contrast, on the compliance task, the COAFA is fairly silent, except that it commits parties to the general dispute settlement provisions in the UNFSA, whether or not they are parties to that agreement (Article 7); to encourage non-parties to take measures consistent with the Agreement; and to discourage non-party vessels from undermining its effective implementation (Article 8). To the extent that the COAFA qualifies as an arrangement under the UNFSA, however, such near-silence would not prevent the default inspection and detention provisions contained in Articles 21–22 of that agreement from applying to nine out of ten parties. China has signed the UNFSA and is thus bound by its general principles and objectives, but not by all provisions as it has yet to ratify that agreement.

Considering that no commercial fisheries are envisaged in the high seas parts of the Central Arctic Ocean in the foreseeable future, the main practical [p. 459] contribution of the CAOFA is to provide incentives for more scientific investigations to improve on the currently scarce knowledge available about regional ecosystems,<sup>73</sup> as well as structures for coordinating such investigations. From

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<sup>70</sup> Balton, n. 59 above. For a summary of findings from these scientific meetings, see J. Sigurjónsson, “Some Icelandic perspectives on the Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean,” *The Yearbook of Polar Law* 12, no. 1 (2020): 268–284, pp. 277–279.

<sup>71</sup> PSCG 2020, Report of the 1st meeting of the Provisional Scientific Coordinating Group (PSCG) of the Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean, Annex 03.

<sup>72</sup> Schatz et al., n. 59 above, p. 240; Molenaar, n. 59 above, p. 471; Sigurjónsson, n. 70 above; The UNFSA defines an arrangement simply as “a cooperative mechanism established in accordance with the Convention and this Agreement by two or more States for the purpose, inter alia, of establishing conservation and management measures in a subregion or region for one or more straddling fish stocks or highly migratory fish stocks” (Article 1(1)(d)). The CAOFA wording that contradicts the idea that it means to create such an arrangement is the provision in Article 5(1), that the Meeting of the Parties shall determine “(i) whether to commence negotiations to establish one or more additional regional or subregional fisheries management organizations or arrangements for managing fishing in the Agreement Area.”

<sup>73</sup> T.I. Van Pelt et al., “The missing middle: Central Arctic Ocean gaps in fishery research and science coordination,” *Marine Policy* 85 (2017): 79–86.

a geopolitical point of view, the Agreement strengthens the claim of the Arctic Five to a stewardship role in the Arctic, but also the competing claim by the Other Five, that for high seas fisheries, such a role may be taken by non-coastal States as well.

## CLIMATE CHANGE AND RESILIENT FISHERIES MANAGEMENT

Judging by the Arctic cases reviewed above, the global fisheries regime codified in UNCLOS has proven rather resilient to geopolitical challenges and change. The shared interests among coastal States forged by that regime has trumped other geopolitical rivalries, such as those between East and West in the formative stages of the Barents Sea regime, enabling deep cooperation and pragmatic management of disputes, like that over Norway's enforcement activities in the FPZ around Svalbard. Nor did the more complex geopolitical situation from around 2010, with sharpened rivalry among the leading powers, the USA, China, Russia, and the EU, prevent the negotiation of a precautionary fisheries agreement for the Central Arctic Ocean. Periods of thaw have permitted the deepening of cooperation as well as the creation of new regimes, like that for managing pollock in the Bering Sea Donut Hole. The dissolution of the Soviet Union, as Balton notes,<sup>74</sup> was certainly the greatest geopolitical shift since World War II, yet had practically no bearing on the ongoing Donut Hole negotiations in which Russia seamlessly replaced its Soviet precedent.

As shown by the Donut Hole and the Loophole cases, a major deficiency of the UNCLOS-based global fisheries regime was its relatively vague provisions on how to implement the duty to cooperate on the management of straddling or highly migratory stocks when fisheries occurred on the high seas. When many coastal States gradually phased out distant-water fishing vessels from their new EEZs during the 1980s, that deficiency became steadily more evident due to a shift in harvesting pressure toward waters beyond national jurisdiction. Institutional resilience to this change in deployment strategies on the part of major fishing companies was apparent in the relatively swift process of negotiating the 1995 UNFSA, which specified the duty to cooperate by linking [p. 460] it to regional fisheries management organizations or arrangements.<sup>75</sup> Indeed, an important part of that process was its interplay with regional frontrunner regimes that had developed innovative regulatory or compliance measures, like the Donut Hole regime, the Northwest Atlantic Fisheries Organization, and the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR).

This section examines institutional resilience to another perturbation, namely the possible effects of climate change on fish stocks that are shared by several coastal States or straddle into the high seas. Global warming affects such stocks by contributing to variability in ocean conditions such as temperature, sea ice extent, salinity, and stratification. Climate variability may have direct effects on the metabolic and reproductive processes of marine organisms in the food web. It can also alter their biological and abiotic environment, including access to prey, spatial overlaps with predators, and the type and structure of their habitat.<sup>76</sup> Whenever a stock adapts to such changes, which typically interact with topographic conditions and other determinants of food availability, by shifts in its spatial

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<sup>74</sup> Balton, n. 46 above, p. 155.

<sup>75</sup> Stokke, n. 55 above.

<sup>76</sup> J.E. Stiansen et al., "Northern seas: Climate and biology," in: Stokke et al., n. 3 above.



distribution that imply changes in zonal attachment or greater availability on the high seas, the existing regime for managing the stock may come under pressure. In such cases, climate change amplifies generic challenges to the cognitional, regulatory and compliance tasks of fisheries management.

The case studies of institutional resilience along those three dimensions reported in this section derive from a larger study of how polar fisheries regimes have been challenged by the impacts of climate change and how they have adapted.<sup>77</sup> Today, no commercial fisheries occur in the high seas part of the Central Arctic Ocean, likewise with the Chukchi and Beaufort Seas adjacent to Alaska and Canada. The adjacent Bering Sea, as noted, is home to some of the most valuable fisheries in the world, but these occur within the EEZs of Russia and the USA. Accordingly, the focus below on regimes with a spatial ambit in the Atlantic segment of the Arctic Ocean, those for the Barents Sea and the Nordic Seas, is not coincidental. It is only here that management of commercially important Arctic fisheries occurs at the international level.

### *Cognitional Resilience*

The Barents Sea fisheries regime and the complex of institutions that manage pelagic stocks in the Nordic Seas have withstood quite well the climate-induced [p. 461] challenges to the cognitional task. In both ocean areas, the ICES plays the central advisory role.<sup>78</sup> This organization has maintained its regular provision of consensual scientific recommendations to regional management bodies and coastal States on the levels of harvesting pressure it deems compatible with the precautionary approach, also for the highly contested pelagic stocks of herring and mackerel.

Such cognitional resilience cannot be taken for granted as scientific disagreement may easily become intertwined with political controversy in ways that can undermine basic conditions for persuasive scientific advice: credibility, legitimacy, and salience.<sup>79</sup> In the polarized mackerel case, for instance, a dispute over survey methodologies favored differently by scientists from the respective sides nurtured suspicions that inputs to the scientific advisory process were distorted by political considerations.<sup>80</sup> This threat to scientific credibility was compounded by evidence that scientists had systematically underestimated the stock for several years.<sup>81</sup> Earlier studies had indicated that low accuracy in predictions inherent in scientific advice regarding how the stock will respond to harvesting pressure serves to reduce the propensity of decision-makers to keep quotas within the advice.<sup>82</sup>

Also the salience of scientific advice, that is, its relevance to the specific regulatory issues debated by decision-makers may suffer as a result of stock shifts. A forthcoming study of the Barents Sea fisheries regime<sup>83</sup> notes how a scientific working group established under the JNRFC failed to agree

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<sup>77</sup> Stokke et al., n. 3 above.

<sup>78</sup> P. Gullestad, "The scope for research in practical fishery management," *Fisheries Research* 37 (1998): 251–258; D.J. Dankel, K. Stange and K.N. Nielsen, "What hat are you wearing? On the multiple roles of fishery scientists in the ICES community," *ICES Journal of Marine Science* 73 (2015): 209–216.

<sup>79</sup> R.B. Mitchell et al., *Global Environmental Assessments: Information and Influence* (Cambridge, MA: MIT Press 2006).

<sup>80</sup> A. Østhagen, J. Spijkers and O.A. Totland, "The North-Atlantic mackerel dispute: Lessons for international cooperation on transboundary fish stock," in: Stokke et al., n. 3 above, (forthcoming).

<sup>81</sup> J. Spijkers and W.J. Boonstra, "Environmental change and social conflict: The Northeast Atlantic mackerel dispute," *Regional Environmental Change* 17 (2017): 1835–1851.

<sup>82</sup> Stokke, n. 20 above.

<sup>83</sup> A.-K. Jørgensen, "Stock shifts and regime resilience in the Barents Sea," in: Stokke et al., n. 3 above.

on how to weight new information on the zonal attachment of Greenland halibut against other quota-allocation criteria, notably historical fishing and contributions to research and conservation.<sup>84</sup> Similarly, a NEAFC working group of legal experts [p. 462] on how to specify and weight the various allocation criteria applied in international law in the contentious allocation of pelagic stocks in the Norwegian Sea found itself unable to come up with consensual scientific advice.

In the mackerel case, a related scientific controversy has revolved around how to define zonal attachment.<sup>85</sup> Should one consider only the amount of time that proportions of the stock occur in each zone, or should the calculation also take additional factors into account? In the negotiations as well as in the scientific debate, Icelandic participants have held that the weight-gain the mackerel stock achieve while within their country's EEZ should figure in the calculation because that gain has occurred at the expense of other ecosystem components within the zone.<sup>86</sup>

In these and other cases, the salience of scientific advice declines whenever changes in the spatial distribution of stocks serve to shift the focus of management debates from conservation, i.e., the level of harvesting pressure, to allocation. Under such circumstances, the indeterminacy of international fisheries law with respect to precise contents, operationalization, and relative standing of allocation criteria equips scientists poorly for providing advice on the most pressing issues. As with credibility and legitimacy, low scores on salience imply that decision-makers must proceed with their regulatory task without the advantage of a cognitional task successfully performed, without well-substantiated, consensual advice from the regime's scientific body.

In the Northeast Atlantic, the salience of scientific advice has therefore declined for stocks subject to allocative controversy, but here we should recall that ICES has never been authorized to provide advice on quota sharing, nor has it requested such a role. Nevertheless, on this dimension too it has provided inputs relevant to allocation. On request from the management authorities, ICES has prepared survey- and fishery-based reports on changes in a stock's distribution and migration (e.g., on mackerel),<sup>87</sup> sometimes including annual percentage calculations of zonal attachment (e.g., on herring).<sup>88</sup> Similarly, for the Barents Sea, the JNRFC has authorized separate *ad hoc* expert [p. 463] groups to map changes in the distribution of halibut and redfish to inform the Commission's allocative deliberations.<sup>89</sup>

All things considered, extensive stock shifts and considerable quota controversies in the Barents and Nordic Seas have not disrupted the cognitional performance of the regional fisheries regimes. Such cognitional resilience is best explained by the institutional strength of ICES in its provision of scientific advice. Institutional features that strengthen ICES' capacity to solve the cognitional problem in North-East Atlantic fisheries management are its membership, which comprises national fisheries research

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<sup>84</sup> Those criteria and others, including the dependency of coastal fishing communities on the stock in question, are explicitly listed but neither specified nor ranked in the UNFSA, Article 11.

<sup>85</sup> Østhagen et al., n. 80 above.

<sup>86</sup> See also Spijkers and Boonstra, n. 81 above.

<sup>87</sup> ICES 2013, Report of the Ad hoc Group on the Distribution and Migration of Northeast Atlantic Mackerel (AGDMM). ICES CM 2013/ACOM:58, available online: <<http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/acom/2013/AGDMM/AGDMM%202013.pdf>>.

<sup>88</sup> ICES 2014, Report of the Coastal States Working Group on the distribution of Norwegian spring spawning herring in the North-East Atlantic and the Barents Sea, available online: <[https://d3b1dqw2kzexi.cloudfront.net/media/5731/coastal\\_states\\_nssh\\_final\\_report.pdf](https://d3b1dqw2kzexi.cloudfront.net/media/5731/coastal_states_nssh_final_report.pdf)>.

<sup>89</sup> Jørgensen, n. 83 above.

institutions in all coastal States concerned, and a set of procedures that help to balance the salience or policy relevance of the advice with insulation from political pressure that may be exercised by industry or governments. Such insulation from political pressure is obtained by a review group or process in which experts from members without any stake in the fishery examine data and analyses provided by researchers from the harvesting States, against the standards of best available science. On that basis, the external group of experts develops draft advice that the ICES Advisory Committee reviews and modifies as appropriate when adopting the official advice.<sup>90</sup>

Accordingly, the high cognitional resilience of the regimes for managing fisheries in the Barents and Nordic Seas is due largely to their common reliance on an institutionally strong advisory organization, one with a solid reputation for impartiality and highly advanced peer review procedures for insulating the advisory process from political pressure.

### **Regulatory Resilience**

Compared to this strong performance on the cognitional dimension, regulatory resilience to the impacts of climate change has been far more variable in the Atlantic Arctic, and the difficulties have involved both conservation and allocation. In the Barents Sea, the JNRFC has regularly managed to deliver quota agreements in line with scientific advice also in cases involving shifts in spatial distribution. Thus, despite a northward and eastward shift of Northeast Arctic cod, implying relatively greater zonal attachment than previously to Russia's EEZ,<sup>91</sup> Russia has refrained from requesting any renegotiation of its 50/50 sharing agreement with Norway. Moreover, for less valuable shared stocks, the two coastal States have rather smoothly negotiated new division keys in recent [p. 464] years, and only in the case of Greenland halibut did such reallocation coincide with catch limit increases somewhat beyond ICES' recommendations.<sup>92</sup>

In contrast, the States harvesting the westward and northward expanding mackerel and herring in the Nordic Seas have failed to obtain a comprehensive quota sharing agreement since 2009 and 2012 respectively, and the sums of coastal State quotas have exceeded the scientific advice by considerable margins every year.<sup>93</sup> Regulatory issues in the FPZ around Svalbard fall in an intermediate category. Although catches thus far have been kept within the limits advised by scientists, the underlying dispute with the EU over Norway's right to regulate fisheries for cod and snow crab in these waters has come to a head.

Explaining this variation in regulatory resilience requires attention partly to institutional strength, as it did for cognitional resilience, and partly to differences in the malignancy of the regulatory challenge; that is, in the severity of the collective-action problem States face when negotiating the TAC and its allocation. Such problems are more severe when the number of players is high and when the

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<sup>90</sup> H. Lassen, C. Kelly and M. Sissenwine, "ICES advisory framework 1977–2012: From Fmax to precautionary approach and beyond," *ICES Journal of Marine Science* 71 (2013): 166–172.

<sup>91</sup> Jørgensen, n. 83 above; Stiansen et al., n. 76 above.

<sup>92</sup> O.S. Stokke, "Comparisons and conclusions." in Stokke et al., n. 3 above.

<sup>93</sup> ICES 2020a, n. 41 above; ICES 2020b, Herring (the Northeast Atlantic and the Arctic Ocean)," *ICES Advice*, available online: <<https://www.ices.dk/sites/pub/Publication%20Reports/Advice/2020/2020/her.27.1-24a514a.pdf>>.

potential gain a State can make from staying outside or defecting from a collective agreement is not matched by corresponding costs.<sup>94</sup>

As noted, the institutional strength of the Barents Sea fisheries regime considerably exceeds that of the fragmented arrangements for managing pelagic stocks in the Nordic Sea. True, both are in practice constrained by consensual decision-making, but the Barents Sea regime has a much more firmly established set of rules to guide the process of reaching consensus. Nearly two decades ago, the JNRFC adopted long-term management plans with specific harvest control rules for all the shared stocks.<sup>95</sup> When combined with fixed allocation keys, these harvest control rules, based on biological reference points and, in the case of the valuable Northeast Arctic cod, an inter-annual quota stability clause, have greatly facilitated agreement on management responses to any changes in the stock. As Stokke notes,<sup>96</sup> in the Barents Sea fisheries regime, annual decisions on conservation as well as allocation are normally obtained more by calculation than by negotiation. [p. 465]

Concerning the collective-action oriented explanation of why some management regimes perform better than others, Jørgensen<sup>97</sup> notes the obvious advantage held by the JNRFC over the regimes for managing the pelagic stocks in the Nordic Seas, namely that the most valuable stocks occur more or less exclusively within the EEZs of only two States. In contrast, the pelagic complex has involved six States or entities (including the EU), and since 2020 also a seventh, the UK. Problem malignancy is further compounded by the dynamism of the pelagic complex as mackerel and herring migrate over greater ocean areas than do demersal species, so the changes in spatial distribution in recent years have been far more extensive and transboundary. Moreover, as Stiansen and associates explain,<sup>98</sup> the distribution of pelagic species is closely related to stock size, a factor that also tends to fluctuate more widely for pelagic species than for demersal stocks managed under the bilateral Barents Sea fisheries regime.

Scientific uncertainty regarding the durability of a stock shift is another problem-malignancy driver relevant to resilience. Even in the most contested management processes, ICES has provided consensual advice on the extent of changes in distribution, but the durability of that change remains uncertain.<sup>99</sup> Judging by the cases reviewed here, such uncertainty has an ambiguous effect on the resilience of management. Østhagen et al.,<sup>100</sup> show how disagreement as to whether today's wide distribution of mackerel is cyclical or climate-driven (and thus durable), has fostered hardliner policies on both sides of the dispute.

In contrast, Jørgensen<sup>101</sup> lists scientific uncertainty among the drivers of resilience for the Barents Sea regime, arguing that it may have restrained Russia from requesting a new cod-division key, as it has done regarding the less valuable regional stocks of halibut, redfish, and saithe. In the future, the current 50/50 division of cod may again compare favorably (from a Russian perspective) with the stock's zonal attachment. One important difference between the situations in the Barents Sea and the Nordic

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<sup>94</sup> Underdal, n. 2 above.

<sup>95</sup> Hønneland, n. 35 above; S.F. Kvamsdal et al., "Harvest control rules in modern fisheries management," *Elementa* 4 (2016): 000114.

<sup>96</sup> Stokke, n. 92 above.

<sup>97</sup> Jørgensen, n. 83 above.

<sup>98</sup> Stiansen et al., n. 76 above.

<sup>99</sup> Id.

<sup>100</sup> Østhagen et al., n. 80 above.

<sup>101</sup> Jørgensen, n. 83 above.

Seas may explain why scientific uncertainty plays out differently. Unlike Russia with respect to cod, the Faroe Islands and especially Greenland and Iceland had very little to lose from a confrontational approach towards the regional pelagic heavyweight, as their agreed shares in the stocks were initially negligible. [p. 466]

Problem malignancy is also relevant for understanding regulatory resilience in the snow crab case. In itself, this problem has been relatively benign, due to the EU's limited vested interest in this fishery, which is central in explaining why the EU did not further escalate the issue when Norway in 2017 arrested an EU-licensed vessel in the FPZ.<sup>102</sup> The EU had disputed Norway's 2015 prohibition on catching snow crab in these waters because Norwegian fishers were exempted. However, although a few small EU Member States and some European Parliamentarians have lobbied for a more assertive stance on the part of the European Commission and the European External Action Service, persuasive counterarguments have included the value of maintaining smooth cooperation with Norway on the commercially far more important stocks covered in the annual EU-Norway quota agreements.<sup>103</sup> The mechanism involved here is the one that explains the *modus vivendi* regarding Norwegian PFZ enforcement more generally. Pragmatic solutions are reluctantly accepted out of fear that fisheries disagreements may spill over into larger, potentially more sensitive controversies among the parties.

The limits of that mechanism when the economic stakes rise, and thereby problem malignancy as well, is evident in the 2021 diplomatic rift between Norway and the EU, triggered by the re-emergence of the UK as an independent international fisheries actor. The EU's share of the annual allowable catch of Northeast Arctic cod has for many years comprised two parts: one quota in Norway's EEZ, compensated by quotas for other species that Norway may take in EU waters; and a second quota in the FPZ, which is uncompensated and derives from historical fishing by EU members in these waters prior to the establishment of the FPZ. Arguing that a considerable portion of that historical fishing was conducted by UK vessels, Norway deducted the same portion from the EU's quota in the FPZ.<sup>104</sup> The EU responded by issuing several formal protest notes (countered by Norway) reiterating and sharpening the EU rejection of Norway's management authority in the FPZ, and setting unilaterally its own quota for Northeast Arctic cod in these waters.

The sharpening of the EU's rejection is evident in a Note Verbale, issued in June 2021, which not only insists that Norway abstain from discriminatory measures in the FPZ, but goes two steps further. It argues first that the Svalbard [p. 467] Treaty "does not oblige the European Union to stop exercising its rights under the Treaty [...] and to comply with Norwegian discriminatory provisions as long as a judicial authority has not annulled them."<sup>105</sup> The implication seems to be that should the EU (or any other signatory) consider a Norwegian regulation discriminatory, it can freely ignore this until an international court has settled the contested issue, which a court would find difficult to do without also addressing the larger dispute over whether the Svalbard Treaty applies beyond the territorial sea.

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<sup>102</sup> A. Østhagen and A. Raspotnik, "Crab! How a dispute over snow crab became a diplomatic headache between Norway and the EU," *Marine Policy* 98 (2018): 58–64.

<sup>103</sup> A. Østhagen and A. Raspotnik, "Snow crabs, the EU and diplomatic headaches," in: Stokke et al., n. 3 above.

<sup>104</sup> Norway, Ministry of Foreign Affairs, "Svalbard, the Fisheries Protection Zone and Norway's fisheries regulation," Annex to a note to the Delegation of the European Union, May 4, 2021, Sec. 4, available online: <<https://www.regjeringen.no/contentassets/83930993ec23456092199fcc9ed9de51/vedlegg-til-note-til-eu-torsk-og-snokrabbe.pdf>>

<sup>105</sup> EU Delegation to Norway. 2021. *Note Verbale* 08/21. Sec. 2.

The EU then argues that, because Norway allows Norwegian and Russian vessels to take their quotas under the JNRFC in the FPZ, “Norway [...] must likewise allow EU fleets to fish full quotas established by the European Union, and UK fleets to fish full quotas established by the UK, in Svalbard waters.”<sup>106</sup> As the 2021 quota that the EU set for itself is higher than that allocated by Norway, the phrase “full quotas established by the European Union” is undoubtedly meant to imply that the EU is free to set its quota independent of Norwegian management decisions, and that the same would be true for any unilateral quota set by the UK, and possibly by other signatories to the Svalbard Treaty.

Taken together, those Note Verbale formulations and the unilaterally set quota place the EU position closer than before to the official position of Russia, namely that Svalbard waters are to be considered high seas.<sup>107</sup> Previously, the EU acknowledged Norwegian regulatory authority in the FPZ but claimed that such authority is constrained by the Svalbard Treaty, implying that signatories may challenge Norwegian regulations under an international court. In the excerpts from the note cited above, the EU position appears to be that Norway has no regulatory authority on contentious matters unless an international court has confirmed such authority.

For many reasons, including sovereignty, that new EU position is unacceptable to Norway,<sup>108</sup> and one of those reasons may induce the EU to readjust its position. If the waters around Svalbard cannot be legally regulated and policed by Norway (as the coastal State) until an international court has settled the dispute, this important harvesting area for the world’s largest cod stock would in the meantime be open to any interested party to the Svalbard Treaty, not only those currently operating there. That situation would hardly be attractive to the EU, with its valuable fishery in the region, and it would be extremely [p. 468] unappealing not only to Norway but also to Russia, the State that relies most heavily on Svalbard waters for its cod fisheries.<sup>109</sup>

In summary, regulatory resilience to climate change and other perturbations varies considerably among the regimes examined here. It is high in the bilateral Norway-Russia relationship, medium but possibly declining to low in the Norway-EU relationship, and low for the complex of arrangements for managing pelagic stocks in the Nordic Seas. This variance can be explained by two factors: 1) the greater institutional strength of the JNRFC compared to the Nordic Seas complex, and 2) the more malign management problem faced in the pelagic cases due to the larger number of actors, more extensive and rapid stock shifts, and considerable uncertainty regarding the durability of those shifts.

## **Compliance Resilience**

The resilience score on the third management task is high across the board. All the regimes examined here have maintained adequate compliance systems despite the challenges deriving from climate change-related stock shifts, notably greater availability on the high seas. Resilient compliance systems are not unique to the Arctic. Although capacities for implementing them varies significantly, regional fisheries management organizations or arrangements worldwide have developed a wide range of

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<sup>106</sup> Id., Sec. 3.

<sup>107</sup> Sergunin, n. 22 above, p. 123.

<sup>108</sup> Norway, Ministry of Foreign Affairs, 2021, n. 104 above.

<sup>109</sup> Stokke, n. 20 above, p. 277; Østhagen et al., n. 30 above.

cooperative measures for detecting and deterring IUU fishing on the high seas, including denial of entry and use of ports.<sup>110</sup>

Even in the deeply contested pelagic fisheries for herring and mackerel, compliance with the sum of coastal State quotas has generally been high,<sup>111</sup> partly because of the state-of-the-art compliance system developed under NEAFC,<sup>112</sup> but also because the compliance problem has been benign. Both the subset-agreed and the unilateral quotas have consistently been set high, to support the parties' competing claims to enlarged shares of the stocks.<sup>113</sup> High compliance is expected when compliance systems are strong and the incentives to overfish are reduced by lenient quotas. However, both stocks are [p. 469] now on a downward trend,<sup>114</sup> which may entail a more malign compliance problem in the years ahead.

In the Barents Sea too, the compliance system developed under the JNRFC has proven its strength by successfully combating two waves of IUU fishing during the 1990s and early 2000s, within and beyond the EEZs.<sup>115</sup> More recently, and despite the risk of being challenged on the basis of the Svalbard Treaty, in 2017 Norway arrested an EU vessel harvesting the sedentary snow crab on the continental shelf near Svalbard, in defiance of the prohibition introduced by Norway two years earlier.<sup>116</sup>

The escalation of the Norway-EU rift over regulatory jurisdiction and quotas in the FPZ raises the stakes, and thereby the malignancy, of the compliance problem. Should an EU-licensed vessel continue its cod fisheries in the FPZ after Norway's allocation to the EU has been taken, the most probable response by Norway would be to arrest the vessel, as it has on every previous occasion when its regulatory authority in these waters has been openly challenged. In the past, such enforcement clashes have involved the EU, Iceland, Russia, as well as flag-of-convenience States.<sup>117</sup> Given the disputed nature of Norway's authority, it will not be surprising if they occur in the future as well. The risk of such clashes is especially high in periods of change in underlying conditions, as in connection with quota renegotiation after Brexit.

## CONCLUSIONS

Geopolitical rivalry has not prevented the formation and strengthening of institutional means for managing Arctic fisheries. On the contrary, in the Barents Sea fisheries regime, underlying geopolitical issues have encouraged coastal States to adopt particularly strong institutional features, such as fixed division keys for shared stocks, to avoid deadlocks during the annual quota negotiations. Jointly with other user-States in the region, the coastal States have also developed a string of practices that have helped to avoid escalation of their longstanding dispute regarding jurisdiction over economic activities in the waters around Svalbard.

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<sup>110</sup> See E.J. Molenaar, "Cooperation through Regional Fisheries Management Organizations," in: Stokke et al., n. 3 above.

<sup>111</sup> ICES 2020a, n. 41 above; ICES 2020b, n. 93 above.

<sup>112</sup> O.S. Stokke, "Trade measures and the combat of IUU fishing: Institutional interplay and effective governance in the Northeast Atlantic," *Marine Policy* 33 (2009): 339–349.

<sup>113</sup> Østhagen and Raspotnik, n. 103 above.

<sup>114</sup> ICES 2020a, n. 41 above; ICES 2020b, n. 93 above.

<sup>115</sup> Stokke, n. 92 above.

<sup>116</sup> Østhagen and Raspotnik, n. 102 above, p. 61.

<sup>117</sup> Pedersen, n. 33 above; Østhagen et al., n. 30 above.

Similarly, multilateral negotiations “closing” the high seas Bering Sea Donut Hole, conducted in a period of rising tensions between coastal States [p. 470] and distant-water fishing nations, produced agreement on innovative default regulatory and enforcement procedures that will apply if annual quota negotiations end in deadlock, or if the flag State fails to act on its responsibilities when a vessel has been shown to violate agreed rules. Particularly important is the default regarding enforcement as it inspired similar provisions in the 1995 UNFSA now applicable to all parties to that agreement.

The more recent Central Arctic Ocean fisheries agreement illustrates the same general point. The world’s leading powers, entangled in increasingly bitter military and economic rivalries, encountered only moderate problems in negotiating a precautionary and legally binding instrument,<sup>118</sup> applicable to an area that all of them deem geopolitically important. That instrument provides means for coordinating scientific investigations and for regulating exploratory fisheries, and, should scientific advice and the parties decide that harvesting can be conducted sustainably, procedures for strengthening decision-making structures and adopting interim conservation measures.

From a governance perspective, such dynamism within regional management processes indicates that the global fisheries regime, codified in UNCLOS, has been resilient to geopolitical change. It has maintained its contributions to fisheries management worldwide despite geopolitical fluctuations and tensions. Cooperation under regional management regimes, the core prescription of the global fisheries regime with respect to the high seas,<sup>119</sup> has continued and even deepened, relatively insulated from geopolitical ups and downs. The resilience of the global fisheries regime is also evident in the further specification, obtained in the UNFSA, of the previously vague provisions on the duty to cooperate on high seas fisheries contained in UNCLOS. When proven inadequate, that central global rule was strengthened.

This article has noted considerable variation among Arctic fisheries regimes in their resilience to another perturbation, namely climate change and its possible impacts on the abundance and spatial distribution of fish stocks. In focus have been stocks occurring in the Barents Sea and the Nordic Seas, the only segments of the Arctic Ocean where commercial fisheries are managed internationally. The variation described here, especially concerning the regulatory management task, is best explained by a combination of institutional properties and the extent of malignancy in the management challenge; that is, the incentives for avoiding commitment or compliance. [p. 471]

The high scores on cognitional resilience obtained in all the cases examined, despite the severity of the allocative divides concerning the pelagic stocks in the Nordic Seas, indicate the importance of the institutional strength of ICES. Notably, its formal advisory role in many Northeast Atlantic fisheries regimes, and its recognized expertise and reputation for impartiality.

Likewise as regards the compliance task, those operating fisheries management regimes in the Atlantic segment of the Arctic Ocean have at their disposal a wide array of compliance measures, including satellite-based monitoring, vessels and procedures for at-sea inspection, and coordination of port State controls applicable also to vessels flagged by non-members. The harvesting pressure on stocks in this region sometimes exceeds scientific recommendations, but it rarely exceeds the quotas set by States. Moreover, enforcement activities may generate international tension, but rarely in cases where

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<sup>118</sup> Molenaar, n. 59 above.

<sup>119</sup> F. Orrego Vicuña, “The international law of high seas fisheries: From freedom of fishing to sustainable use,” in: Stokke, ed., *Governing High Seas Fisheries*, n. 46 above, pp. 23–52.



there were no underlying regulatory disputes. As with the cognitional task, Arctic compliance systems have proven resilient to the impacts of climate change.

In contrast, regulatory resilience emerges as far more diverse in the cases reviewed here, partly because the regimes differ in regulatory strength, but also because the climate-related stock shifts pose challenges that differ in malignancy. Malignancy is particularly high for the rapidly expanding and widely fluctuating pelagic stocks in the Nordic Seas, allowing the entry of new participants in the fisheries and altering zonal attachments. Unfortunately, such high malignancy is not matched by strong institutions. There is a fragmented and decentralized complex of multilateral consultations and bilateral arrangements with few means for enabling comprehensive and deep commitments when one or more participants see themselves as better served by avoiding them. The combination of malign management challenges and weak institutions makes for pessimism regarding regulatory resilience, as confirmed by the only partial ability of the States engaged in pelagic fisheries in the Nordic Seas to reach agreement on TACs and on how to divide them.

In the Barents Sea as well, some of the stocks shared by Norway and Russia have shifted their spatial distribution and zonal attachment, thus raising levels of malignancy and placing allocation keys under pressure. However, the problem of handling such pressure is more benign in a bilateral than in a multilateral setting, especially when considerable economic gains can be derived from the exchange of quotas and mutual access to each other's zones. Regulatory resilience in the Barents Sea is evident in the ability of the JNRFC to produce, every year and for all shared stocks, agreed TACs typically in keeping with scientific recommendations. Institutional features facilitating this continuity in reaching an annual agreement are the elaborate and treaty-based procedures that enable incident-proof mutual access, the harvest control rules [p. 472] agreed for major stocks, the longstanding quota-division keys, and the numerous procedures and cooperative practices developed since the 1990s allowing the parties to monitor compliance and respond effectively to violations.

We have also seen how a combination of climatic and geopolitical change has put to the test the longstanding *modus vivendi* achieved between Norway and other user-States regarding fisheries around Svalbard. The availability of the contested snow crab in Svalbard waters derives in part from this species' preference for low temperatures,<sup>120</sup> and the second issue to trigger an escalation of the Norway-EU dispute, the reduction of the EU's cod quota, is among the consequences of the UK's momentous decision to leave the EU.

Judging from previous practices in this dispute, the resilience of the *modus vivendi* on the FPZ will depend on whether diplomatic efforts succeed in preventing enforcement clashes, or at least in reducing their consequences, should they occur. Elements in such diplomatic efforts could involve adjustments of the EU's stated position on the larger dispute, returning to that held in the past, or of Norway's overall allocation of cod to the EU and UK respectively, or a combination of those elements.

The implications of these findings regarding conditions for institutional resilience for the now legally effective Central Arctic Ocean fisheries agreement are straightforward. From the little that is known about fish stocks available in the agreement area, commercial fisheries seem very unlikely in the foreseeable future. Therefore, the weak but existing structures for regulating such fisheries are not in urgent need of strengthening. For the same reason, creating an operational compliance system will not

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<sup>120</sup> M.M. McBride et al., *Joint Norwegian-Russian Environmental Status 2013. Report on the Barents Sea Ecosystem* (Bergen: Marine Research Institute, 2016), p. 134.

be an early priority for the Meetings of the Parties. Moreover, should commercial fisheries evolve in the region, and regulatory commitments be agreed upon, the UNFSA already commits nine out of the ten parties to accept that their fishing vessels may become subject to rather intrusive inspection and detention activities by the others.

Of greater immediate relevance to the implementation of the CAOFA are findings that revolve around the cognitional side of fisheries management. As per its Article 5, measures must be in place concerning exploratory fisheries by June 2024. Even prior to that, the parties must have embarked on the development and use of a Joint Program of Scientific Research and Monitoring to enhance knowledge about regional ecosystems and to “provide timely scientific advice to meetings of the Parties” (Article 4). [p. 473]

We have seen how those who negotiated the default compliance provisions of the UNFSA drew inspiration from regional regimes with the most advanced enforcement procedures, including the Donut Hole Agreement. A similar process is likely for CAOFA measures to be developed concerning exploratory fisheries. All parties are members of CCAMLR, another resource management regime that must cope with sparse scientific knowledge. They are likely to draw lessons from the longstanding efforts under that body to regulate exploratory fisheries in ways that can support the larger precautionary approach to fisheries management.<sup>121</sup>

With respect to structures for providing scientific advice on harvesting, the Provisional Scientific Coordinating Group that met in 2020 to propose terms of reference for a scientific advisory body is widely expected to become a permanent scientific committee.<sup>122</sup> Such an advisory body is also expected to develop formal ties to ICES and its counterpart on the other side of the Arctic Ocean, the North Pacific Marine Science Organization (PICES).<sup>123</sup>

However, more ambitious proposals have also been mooted. The conference chair during the CAOFA negotiations, David Balton, advocates that, at least in the longer term, the advisory function should be anchored in an entirely new marine science organization, exclusively dedicated to the Central Arctic Ocean and with a mandate that covers fisheries as well as other activities in the region.<sup>124</sup> Vylegzhanin and associates second this proposal,<sup>125</sup> seeing it as a useful first step to obtain greater coherence among the numerous governance processes relevant to the conservation of marine biological diversity in the Arctic Ocean.

The findings reported in this contribution indicate that one key to cognitional resilience is that the advisory body can combine salience – the capacity for studies directly relevant to decision-makers – with sufficient autonomy from those decision-makers to remain credible also on contested matters. In those parts of the marine Arctic where commercial fisheries are now managed [p. 474] internationally, ICES has been able to combine salience and credibility, due not least to its longstanding practice of exposing the data and analyses provided by scientists from the harvesting nations to critical scrutiny by

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<sup>121</sup> R. Caddell, “Precautionary management and the development of future fishing opportunities: The international regulation of new and exploratory fisheries,” *The International Journal of Marine and Coastal Law* 33 (2018): 199–260.

<sup>122</sup> B. Baker, “Smart as SILK: An innovative advisory body for implementing the knowledge-based requirements of the Central Arctic Ocean Fisheries Agreement,” *Polar Perspectives* 4 (Washington DC: Wilson Center, 2021).

<sup>123</sup> Schatz et al., n. 59 above, p. 230; Molenaar, n. 59 above, p. 454; Sigurjónsson, n. 70 above, p. 282.

<sup>124</sup> Balton, n. 59 above, pp. 443–445.

<sup>125</sup> Vylegzhanin et al., n. 59 above, p. 9.

external experts. Therefore, in developing the scientific advisory component of CAOFA, the parties should ensure that they not only capitalize on the accumulated credibility and legitimacy of ICES and PICES, by forging strong links to them, but also pay close attention to the long and winding history of how ICES managed to achieve such institutional strength.

## **ABSTRACT**

Geopolitical rivalry has not prevented the formation and strengthening of institutional means for managing Arctic fisheries. Governments seek to prevent that sector-specific disputes escalate and spill over into other issue areas and are eager to insulate mutually advantageous institutional arrangements against the fluctuation of general political relations. Rising ocean temperatures may alter the spatial distribution of fish stocks, including their relative attachment to exclusive economic zones and their availability on the high seas. Such changes may complicate the cognitional task of fisheries management—development and provision of scientific advice—and challenge existing arrangements for quota-sharing or compliance control. The article examines the resilience of international institutions for managing fisheries in the marine Arctic, i.e., their ability to cope with such rapid changes in circumstances by adapting institutional features or inter-regime relationships sufficiently to maintain or improve institutional effectiveness. In focus for this resilience analysis are the regimes for managing the world’s largest cod, herring, and mackerel fisheries as well as the untested regime for managing pollock fisheries in the Central Bering Sea. The concluding section summarizes findings and draws some implications for implementation of the most recent Arctic fisheries instrument, the Central Arctic Ocean Fisheries Agreement.

## **KEYWORDS**

fisheries management; geopolitics; international regimes; Arctic; institutions; resilience; Svalbard

