

NGO Influence on the Effectiveness of Regional Fisheries Management Organizations: The Case of International Shark Management

Abstract

The influence of non-governmental organizations (NGOs) on the effectiveness of international organizations to solve complex problems is a perennial question in global governance research. In this paper, we analyze whether and why NGO influence on IO effectiveness has occurred, using the case of the International Commission for the Conservation of Atlantic Tunas (ICCAT). Drawing on NGO research in global governance and marine policy research, we develop an argument clarifying why horizontal venue-shopping works as a mechanism for NGO influence. The argument is examined through a process tracing and preference attainment analysis of the influence of NGOs based on extensive fieldwork material (combining document analysis, interviews, and participatory observations) in relation to ICCAT's effectiveness to manage sharks during the period 1995–2021. The evidence suggests NGO preference attainment in a majority of the eight studied policy processes, and is indicative of increased NGO influence at ICCAT concerning sharks over time. Moreover, the strategic use of horizontal venue-shopping by NGOs at the global level was a mechanism for influence in several of the eight processes. We conclude by discussing broader implications for existing research on the influence of NGOs operating in a complex and fragmented global governance landscape.

Introduction

Regional Fisheries Management Organizations (RFMOs) are the main international organizations (IOs) through which coastal states and states with a fishing interest cooperate to adopt common rules for managing highly migratory fish stocks. In recent decades, RFMOs have begun to adopt rules to conserve sharks, going beyond their original mandate in fisheries (Løbach et al. 2020). Shark management among RFMOs marks a shift toward the demands made by non-governmental organizations (NGOs) active in global marine governance, whose political advocacy has long centered on shark protection (Sellheim 2020, Schiller et al. 2021, Shiffman et al. 2021).

Global governance scholarship more generally has seen the rise of a substantial volume of research on NGO influence on the effectiveness of IOs to solve shared problems, not only in environmental affairs (e.g., Skodvin & Andresen 2003, Allan & Hadden 2017, Challender & Macmillan 2019, Dörfler and Heinzel 2023), but also in relation to human rights (e.g., Clark 1995, Welch 2001) and general-purpose organizations (Pallas and Uhlin 2014, Tallberg et al. 2018). But research has only rarely examined systematic variation in NGO influence on the effectiveness of IOs across issues, which is why horizontal venue-shopping – both in relation to cases of successful or failed NGO influence – remains understudied. Moreover, studies focusing on marine species are scant. In this study, we address these limitations by theorizing and examining how horizontal venue-shopping shapes NGO influence on outcomes related to shark management within the International Commission for the Conservation of Atlantic Tunas (ICCAT).

This study seeks to advance on two distinct literatures on NGO influence on IOs, situated at the intersection of global governance research and the interdisciplinary literature on

institutional complexity in sustainability science. First, we contribute to the NGO literature on the strategies and influence of NGOs by developing an argument on the horizontal venue-shopping as a mechanism for NGO influence on IO effectiveness. Horizontal venue-shopping occurs when NGOs strategically seek out alternative international venues, which are more favorable to their cause, thereby lobbying multiple international venues to achieve the same aim. Part of this endeavor is to put pressure on policy development within a specific IO or to shift the debate from one venue to another (Murphy & Kellow 2013). Horizontal venue-shopping is increasingly common in global governance (Murphy & Kellow 2013, Eckhardt & De Bièvre 2015), yet horizontal venue-shopping is rarely studied as a mechanism for influence in IOs. Instead, the literature has privileged vertical venue-shopping taking place between national and international levels (e.g., Keck & Sikkink 1998; Pallas & Uhlin 2014; Chalmers & Jacobov 2023). We contend that horizontal venue-shopping will become more important in future NGO activities given increasing institutional complexity and overlapping mandates and memberships across IOs, and thus warrants more scholarly attention.

Second, we contribute to the growing literature on institutional complexity and fragmentation in global governance, by examining the behavior of NGOs in such settings. Existing studies propose that institutional complexity is likely to increase the opportunities for NGOs to engage in lobbying at international level (Murphy & Kellow 2013, Orsini 2013). Yet, only very few studies have examined how NGOs use these opportunities and to what effect on influence on IO effectiveness. There is a well-established literature on institutional complexity and fragmentation in global governance, but previous works have primarily focused on the causes of institutional complexity (Faude & Fuss 2020, Eilstrup-Sangiovanni & Westerwinter 2021, Panke & Staple 2022) and its consequences on the behavior of states (Alter & Meunier 2009, Hafner-Burton 2009), and IO bureaucracies (Betts 2013, Margulis 2021). In this article, we

address this limitation in the existing literature by examining the use of horizontal venue-shopping as a mechanism for NGO influence, within the context of global marine governance, which is characterized by particularly strong institutional complexity (Blanchard 2017).

Given these limitations in earlier research, we make two principal contributions, one empirical and one theoretical. First, we make a distinct theoretical contribution. We draw on global governance and marine policy research to develop a theoretical framework to assess whether and why NGOs influence the effectiveness of ICCAT to manage sharks. While we focus on horizontal venue-shopping as a mechanism for NGO influence, we consider other mechanisms commonly studied in previous research, including issue framing, coalition building, and resources provision (e.g., Heiss & Johnson 2016, Allan & Hadden 2017, Tallberg et al. 2018). We conceptualize ICCAT's effectiveness to manage sharks, by referring to the adoption of more ambitious policy outputs, including changes to the policies, rules and programs (Tallberg et al. 2016). Policy outputs are an important outcome of study, as they are important for behavioral change and policy impact (Gutner & Thompson 2010).

Second, empirically, we examine NGO influence on the effectiveness on RFMOs to manage sharks, by conducting an in-depth case study of NGO advocacy on shark management within ICCAT between the years 1995-2021. ICCAT was established in 1969 and is the largest and most resourceful of the RFMOs, with a long history and relatively high levels of NGO participation compared to other RFMOs (Petersson et al. 2019). In 2004, ICCAT was the first RFMOs to adopt a binding shark measure, and in 2019, its member states signed the new Convention text which officially expands ICCAT's mandate to include sharks alongside tuna and tuna-like species (ICCAT 2019). Sharks are of significant economic value for ICCAT's member states (Juan-Jordá et al. 2017). Considering the case of shark management within

ICCAT enables us to examine NGO influence on a case in which NGO influence tends to be constrained by the presence of strong economic interests. At the same time, we observe substantial NGO advocacy in this space, which is characterized by institutional overlaps across RFMOs and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which regulates international trade of endangered species, including marine species¹ (Webster 2011, Sellheim 2020, Shiffman 2021).

To measure policy output, we use extensive fieldwork material on NGO influence in relation to eight instances of policy change, and one unsuccessful proposal for a policy change, to address the problem of confirmation bias. The material is analyzed through process tracing, which we combine with a preference attainment analysis (cf., Betsill & Corell, 2001, Dür 2008, Allan & Hadden 2017). Our empirical analysis is based on data from multiple data sources, including: ICCAT meeting reports from 1995 to 2021, interviews with governmental officials, industry representatives, NGOs and other experts, and participatory observations at two ICCAT meetings.

There are three main findings. First, there is evidence for preference attainment in a majority of the studied policy processes, which we argue indicates that NGOs had an influence. Second, we find that NGO influence at ICCAT concerning sharks appears to have increased over time. Third, our analysis suggests that the strategic use of horizontal venue-shopping by NGOs, in particular within the CITES, was an important mechanism in several of these cases, which strengthened NGO influence on shark management at ICCAT. While these findings do not confirm that NGO activities were sufficient for explaining the observed outcome, we find

¹ The original CITES appendices from 1975 listed only five marine species, while in 2019, 2392 marine species were listed (Pavitt et al. 2021). The first shark species was listed in Appendix II 2003, and since then, 15 additional shark species have been listed. Some of these listing refer to individual species while others refer to several species within the same family (abbreviated: spp.).

evidence indicative of influence. Our study thus contributes to theory-building on horizontal venue-shopping as a mechanism for NGO influence in IOs. In the conclusions, we elaborate on the implications for existing research on the role of NGOs operating in a complex and fragmented global governance landscape.

Horizontal venue-shopping and NGO influence

IR research is bifurcated into a body of literature that has conceptualized NGOs as voluntary collective organizations that pursue public interests, and a line of research that has directed attention to the strategic advocacy behavior of NGOs (cf., Tallberg et al. 2018; Dellmuth and Bloodgood 2023). Given the extensive lobbying efforts of NGOs in global marine governance, we find it useful to conceptualize NGOs as advocacy groups pursuing political goals.

NGO influence occurs when a particular outcome would not have happened in the absence of intentional NGO actions (Dür 2008), for example when the positions of individual countries or the final outcome text of international negotiations change (Betsill & Corell 2001). We define NGO influence as the adoption of more ambitious policy outputs (Tallberg et al. 2016), occurring either before or during the course of negotiations conducted within ICCAT.

NGOs are navigating an institutionally complex and fragmented global governance landscape, characterized by an increasing number of IOs that exhibit institutional overlaps (in terms of mandate and membership) (Eilstrup-Sangiovanni and Westerwinter, 2021, Panke and Staple 2022). In global governance, NGOs have been found to utilize increasing opportunities offered by increasing institutional complexity to strategically identify alternative international venues

that are more favorable for their policy preferences in order to advance their lobbying efforts (Murphy & Kellow 2013) – engaging in so-called horizontal venue-shopping. By participating in multiple international venues, NGOs can benefit from differences in membership, decision-making rules, enforcement mechanisms, but also things like organizational culture, secretariat capacity, funding arrangements, and procedures for providing technical and scientific advice (Murphy & Kellow 2013).

Horizontal venue-shopping enables NGOs to make use of issue linkages across different venues operating within the same issue area(s) as part of their lobbying efforts (Orsini 2013). We define venue-shopping as an advocacy strategy of selecting and using different policy venues and mobilizing around a single policy issue, or a set of related issues (Murphy & Kellow 2013, Chalmers & Iacobov 2023). Policy venues often come with both opportunities and costs. While IOs provide access to non-state actors, they do varyingly so (Tallberg et al. 2013). By engaging in horizontal venue-shopping, non-state actors can strategically select those venues that provide greatest opportunities for them to pursue their policy preferences. The aim is often to shift a debate from one venue to another, to promote issue linkages across venues, or to use achieved policy changes within one venue as leverage in another venue (Orsini 2013, Eckhardt & De Bièvre 2015, Chalmers & Iacobov 2023).

Global marine governance is likely to invite horizontal venue shopping, as it is characterized by institutional complexity and, by increasingly institutional overlaps across IOs operating within this area of governance (Blanchard 2017, Langlet & Vadrot 2023). A central development relevant for international shark management is that RFMOs have broadened their mandates to also consider sharks over the past two decades (Løbach et al. 2020). CITES has also become an increasingly important international venue. While CITES traditionally focused

mainly on terrestrial species, it has, in the past decades, increased its efforts to regulate international trade of marine species (Sellheim 2020, Pavitt et al. 2021), with implications for RFMO policy-making. Both NGOs and states have used CITES listings to leverage action in RFMOs (Webster 2011, Challender & Macmillan 2019, Sellheim 2020). Other international venues relevant for shark management include the Convention on the Conservation of Migratory Species of Wild Animals (CMS). We thus expect horizontal venue-shopping to be a crucial mechanism used by NGOs in an attempt to influence IO effectiveness.

To be sure, horizontal venue-shopping is unlikely to be the sole mechanism for NGO influence. The IR literature yields insights on several additional mechanisms for NGO influence: issue framing, coalition building, and resource provision. In the context of international shark management, these mechanisms might reinforce advocacy effects when combined with horizontal venue-shopping.

Issue framing occurs when NGOs highlight certain features of an issue, outlining what is important and what should be prioritized, in order to influence political outcomes (Allan & Hadden 2017). Issue framing can be an important mechanism enabling NGOs to place issues on the political agendas of IOs (Challender & Macmillan 2019). However, framing alone is unlikely to be effective, since it cannot ensure convincing a larger number of actors and countering potentially opposing positions of industry actors, which have a strong presence in ICCAT and other RFMOs. However, when combined with horizontal venue-shopping we expect issue framing to reinforce NGOs ability to influence.

Coalitions with like-minded actors, including states, industry actors, but also other NGOs, can put pressure on national and international decision-makers (Keck & Sikkink 1998; Hadden

2015). According to DeSombre's (1995) "baptists and bootleggers model", NGOs and industry actors tend to battle domestically, but once domestic legislation has been adopted, these actors often have similar goals internationally, although for different reasons. NGOs advocate for more stringent regulations at international level to enhance the range of environmental protection, while industry actors pursue the same goal in order to "internationalize" legislation as they want their competitors to adhere to the same standard they must uphold. While coalitions with like-minded actors is likely to enhance the likelihood of NGO influence, it does not guarantee that the positions of potentially opposing states shift. However, we expect horizontal venue-shopping to be more effective when NGOs simultaneously build coalitions with like-minded actors.

Finally, material, informational, or reputational resources might matter. NGOs have been shown to strategically use resource dependencies, providing resources required by IOs to fulfill their mandates, which is biased towards their policy preferences (Tallberg et al. 2018). By providing such resources, NGOs are granted access to policy-makers, enabling "inside lobbying" through direct interaction with decision-makers, which is widely believed to facilitate NGO influence, as opposed to "outside lobbying" such as protests or public opinion mobilization (Dellmuth & Tallberg 2017). Resource provision is however unlikely to be the sole mechanism for NGO influence, given that inside lobbying does not guarantee that NGOs are able to persuade member states to change positions or successfully counter lobby industry actors, who also participate on the "inside" in RFMOs, typically through national delegations (Pettersson et al. 2019). We expect horizontal venue-shopping to be more effective when NGOs also are able to provide useful resources to IOs.

Methodology

In this study, we rely on process tracing, a systematic methodology to examine diagnostic evidence selected in light of the research questions and theoretical expectations posed by the researcher (Collier 2011). There are three main descriptive tasks: establishing NGO's strategic use of horizontal venue-shopping in an attempt to shape shark policy outputs in ICCAT (independent variable), documenting NGO's use of other strategies, including issue framing, coalition building and resource provision to shape shark policy outputs (intervening variables) and providing evidence that the positions of member states and, or, the text of the policy outputs adopted occurred in response to the actions by NGOs before or during the negotiations (dependent variable). Our research task is to carefully describe the sequence of events, outline plausible causal pathways and provide systematic evidence for our expectations about horizontal venue-shopping as a crucial mechanism underlying NGO influence.

We use three main steps to examine our theoretical argument. First, we consider the “preference attainment” of NGOs, by conducting a systematic assessment of the extent to which NGO preferences and changes in policy outputs are congruent (Dür 2008). Identifying preference attainment and providing evidence that NGO actions employed to reach certain preferences correlate with an outcome (inclusion of specific text or changes to positions) provides a plausible case that NGOs had something to do with the observed outcome (Betsill & Corell 2001).

Second, we consider member state preferences at the start of the negotiations as a benchmark, against which we assess NGO influence. Specifically, we consider the positions and economic interests of the key member states. We also review the scientific advice related to sharks

provided to member states by ICCAT's Standing Committee Research and Statistics (hereinafter referred to as the "Scientific Committee") during the negotiations. Through this benchmarking exercise we also describe the main shifts in member state positions over time, allowing us to causally link such shifts to NGO action. While we acknowledge that this benchmarking exercise does not allow us to adjudicate between potential alternative explanations, we argue that it enables us to provide a richer descriptive analysis of the sequence of events and helps to outline a plausible pathway through which NGO influence occurred.

Third, we apply a process-tracing test known as the "hoop test" (Collier 2011, Mahoney 2012). Passing a hoop test indicates that the researcher has documented *necessary* but not sufficient evidence for underlining a theoretical expectation. The expectation must "jump through the hoop" to remain under consideration, but passing a hoop alone does not provide a basis for eliminating alternative explanations (see also Allan & Hadden 2017). In our case, passing the hoop test requires evidence connecting actions of NGOs, and specifically NGOs use of horizontal venue-shopping, to the adoption of shark policies in ICCAT, in a plausible causal sequence.

The analysis relies on multiple sources and kinds of data, including documentary material, interviews and participant observations. This triangulation strategy enables us to conduct a richer analysis of this complex phenomena, namely NGO influence, and increases the confidence of our findings (cf. Betsill and Corell 2001).

Our analysis encompasses the time period 1995–2021, as ICCAT adopted the first shark policy in 1995. We identify three main time periods for analyzing NGO influence of changes to shark policy outputs adopted by ICCAT. We identified an overarching timeline of the sequence of

events for each policy process over the examined time period. This assessment is based on documentary material from ICCAT's Commission (decision-making body) and Scientific Committee (providing scientific advice) meeting reports from the years 1995-2021, publicly available on ICCAT's website. We began by identifying changes to policy outputs (dependent variable) by coding the adoption of (binding) Recommendations and (non-binding) Resolutions by ICCAT.

Within each time period, we then identified key member state positions at the start of the negotiations (to establish a benchmark) and the main changes to their positions – considering their proposals (rejected and adopted) and plenary statements, extracted from Commission reports. To complement the benchmarking exercise, we reviewed stock assessments results and the scientific advice provided for sharks over time, extracted from Scientific Committee reports, to assess whether detailed scientific advice was provided and if member states followed it.

Thereafter, we assessed NGO preference attainment. Here, we coded NGO policy preferences related to sharks at the outset of negotiations, as stated in their written policy statement submitted to ICCAT Commission meetings. To establish preference attainment, we compared NGO preferences to the changes in shark policies over the examined time period.

We also rely on 24 semi-structured interviews to describe of the sequence of events and in examining our theoretical argument on NGO influence and the mechanism through which influence occurs. The interviews were conducted in 2013 and during the period 2019-2020. To capture multiple perspectives of NGO influence, the interviewees were selected to reflect a diverse set of state actors (in terms of geographical representation, size of shark catches by

domestic fishing fleets, and positions on shark management issues) and non-state actors representing different interests and constituencies (including NGOs, industry associations, research organizations, and others experts) (SI Table S1). The interviewees were identified using information provided in the “list of participants” extracted from Commission reports, and snow-ball sampling. Considering multiple perspectives is critical, given that different actors may have different perceptions about whether or not NGOs were influential, depending on their professional position, interests, and policy preferences.

We also draw on participatory observations conducted at two ICCAT Commission meetings (held in 2018 and 2019, during ten days) - a common methodology when studying NGO influence on international negotiations (see e.g., Allan & Hadden 2017). These observations enabled face-to-face interviews, and deepened the researchers’ understanding of the decision-making process and the interactions between state and non-state actors inside and outside of plenary sessions. The observations revealed which critical aspects of the negotiations were carried out through discussions on the sidelines rather than in plenary, and provided important details around each policy process and how the negotiations unfolded.

Empirical analysis

We begin with an overview with some of the most important changes in NGO participation and shark policy in ICCAT during the examined time period. This is important background information to understand our ensuing analysis of NGO influence. Based on our methodology described in the previous section, Figure 1 shows that NGO participation in ICCAT Commission meetings started in the early 1990s, and has grown apace ever since.

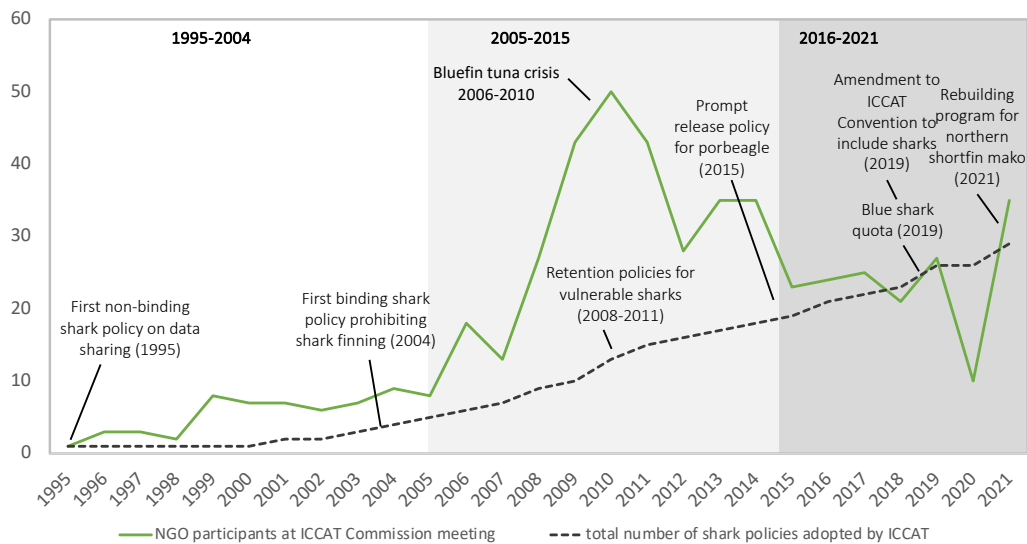
In the early 1990s, only between one and three NGOs representatives participated in ICCAT Commission meetings, as part of member state delegations. For example, between 1995-1998, the US delegation typically included one NGO each year. After 1998, NGO participation increased somewhat (ICCAT 1999, 2004), as NGO representatives began to participate as accredited observers to ICCAT, following a significantly reduction in the participation fee (which was lowered from 2000USD to 500 USD) (Petersson 2022). At this time, some NGOs started to attend meetings of ICCAT's Scientific Committee. For example, between 1999 and 2004, the Wildlife Conservation Society (WCS) regularly attends both Commission and Scientific Committee meetings. The most active NGOs in terms of participation include: the World Wide Fund for Nature (WWF), the Wildlife Conservation Society and Greenpeace International.

During the second time period (2005-2015) NGO participation initially increased compared to earlier years. In particular, NGO participation increased between the years 2006 and 2010, when intense negotiations over the Eastern Atlantic bluefin tuna (*Thunnus thynnus*) took place within ICCAT. NGO participation reached a peak in 2010 when around 50 participants took part in the Commission meeting, and then decreased in subsequent years. Most NGOs participated as accredited observers, while a limited number of NGOs participate as part of national delegations. The most active NGOs, including Pew Environment Group, Greenpeace International and WWF increase the size of their observer delegations to ICCAT meetings during this time period (from one to three to five to nine participants). Most NGOs participate in Commission meetings, but an increasing number of NGOs also attend Scientific Committee meetings (see e.g, ICCAT 2005, 2014).

During the final time period, NGO participation stabilized to around 20 to 25 participants annually. Most NGOs participate as observers, while a limited number of NGOs continue to participate as part of national delegations. The sharp drop in 2020 is due to a cancelled Commission meeting during the COVID-19 pandemic. This meeting was held through correspondence and each observer delegation was asked to elect one point of contact during the correspondence, implying a significantly lower number of participating NGOs. These changes in NGO participation coincided with an increased number of shark policies adopted by ICCAT, indicated by the dashed line. In 2021, these culminated in 29 outputs, of which 18 are currently active (see SI Table S8).

These patterns of NGO participation led us to structure our subsequent analysis of NGO influence on ICCAT's effectiveness to manage sharks in three time periods: 1995-2004, 2005-2015 and, 2016-2021. Dividing up the analysis in this way allows for a more fine-grained and focused analysis of the observed processes, although participation does not equal influence, the patterns in participation are indicative of the opportunity structures of NGOs to actively lobby for their cause. Our analysis focuses on eight changes in policy outputs (see Table 1), as well as one instance in which NGOs proposed a change unsuccessfully: the so-called "fins attached" proposal.

Figure 1. NGO participants and policy outputs adopted for sharks by ICCAT, 1995–2021.



Source: ICCAT Commission reports.

Table 1. Overview of the main changes to policy outputs targeting sharks across the three examined time periods

Time period	Changes to policy outputs
1995-2004	Adoption of shark finning ban (2004)
2005-2015	Adoption of no-retention policy for big eye thresher (2009) Adoption of no-retention policies for oceanic whitetip and hammerhead (2010) Adoption of no-retention policy for silky sharks (2011) Adoption of a prompt release policy adopted for porbeagle sharks (2015) <i>Rejected proposals for “fins attached” (2009-2015)</i>
2016-2021	Adoption of binding quota adopted for blue sharks (2019) Adoption of rebuilding program adopted for the northern stock of shortfin mako sharks (2021) <i>Rejected proposals for “fins attached” (2016-2021)</i>

Source: ICCAT Commission reports (1995-2021).

For each of the three time periods, the analysis is in two parts. The first starts with a description of the output and benchmarks the analysis by describing member state preferences and expert committee input prior to the output. The second part in each subsection moves on to analyze NGOs' preference attainment and the NGO strategies which made a difference (or not) for bringing about a policy change.

Period of influence through vertical venue-shopping: 1995-2004

In 1995, ICCAT's member states adopted the first non-binding policy in relation to sharks, which appointed the FAO as the focal point for a global data collection program on sharks, after a proposal by the Japanese delegation. ICCAT resolutions refer to non-binding policies, while ICCAT recommendations refer to binding policies. When the proposal was discussed at the ICCAT, the Spanish delegation supported the proposal, albeit "express[ing] reservation as to the authority of ICCAT to involve itself in the management of shark species" (ICCAT, 1995). This type of reservation over ICCAT's mandate, concerning the organization's ability to manage sharks, has been raised repeatedly by states until the new Convention text was signed in 2019, which officially expanded ICCAT's mandate to officially include sharks.

In 2004, ICCAT adopted the first binding policy relevant for sharks. The policy banned *shark finning* at sea - a practice used in some fishing operations where the shark fins are cut off and retained onboard to be landed and sold, while the shark bodies are thrown back to the ocean (Clarke et al. 2007). It also specified that vessels cannot have fins onboard that total more than 5 % of the weight of sharks onboard. This was the first binding shark policy adopted by an RFMOs, which is notable. With this policy, ICCAT built on the CITES resolution "Status of International Trade in Shark Species" which called for a global review of the biological status

and trade of sharks, and which requested FAO and RFMOs to establish data collection programs for sharks (CITES 1994, Res. Conf. 9.17).

Discussing the process leading up to these two policies, the US led the proposal as they wanted to internationalize a domestic shark finning policy from 1993 to “level the playing field” for their fishing industry (Interviews 13). The proposal was supported by the main players at ICCAT: Brazil, Canada, Japan, and the EU (2003). The EU, Japan and the US hold a majority of the fishing quotas allocated by ICCAT and send the largest delegations to Commission meetings (ICCAT 2019). These countries have large fishing fleets, including a distant water fleet (which fishes far away from the national coastline), long history of engagement in international fisheries negotiations, and stand for large (albeit decreasing) shares of global catches (Axelrod 2017). The EU is a particularly central actor, as its fleet (mainly from Spain, but also from Portugal) stands for the bulk of shark catches from ICCAT Convention area (SI Table S2). Given this broad support, the policy was adopted in 2004 without major difficulty.

ICCAT’s Scientific Committee began to discuss the status of global shark populations in the early 1990s. The shark working group established under the Scientific Committee held its first meeting in 1996. The 2004 shark finning policy was adopted without any specific scientific advice provided by the Scientific Committee. It is worth noting that this policy differs from more recent policies adopted for sharks within ICCAT, as it is not about specific species but rather concerns a particular fishing practice.

Turning to NGO preference attainment, we find congruence between NGOs policy preferences and these policies (SI Table S9). Prior to 1998, NGOs were well placed to work close to their domestic delegations, as NGO participation in ICCAT occurred only through a few national

delegations, including the US delegation. In the early 2000s, NGOs began to submit written policy statements outlining their policy preferences and “asks” to ICCATs member states. During this time period, shark conservation is a key priority for NGOs (Interview 16). From 2004, we could retrieve NGO policy statements from the ICCAT Commission meeting reports, while earlier statements cannot be accessed. In 2004, the WWF submitted a written policy statement to ICCAT asking for improved shark data collection program and a shark finning ban (ICCAT, 2004). NGOs could also address the plenary and panels of ICCAT by making oral statements, however, there are very few records of such statements during this time period. In their communication during the early 2000s, NGOs frame sharks as vulnerable wildlife in need of conservation, and in particular, focus their advocacy on putting an end to shark finning (Interview 1-2, 4, 9, 12-16).

In respect of horizontal venue-shopping, there is some (but very limited) overlap between the NGOs that attend both ICCAT and CITES meetings. Some of the first NGOs, notably the WWF and TRAFFIC, who began to send representatives to attend ICCAT meetings in the early 1990s had already sent representatives to attend CITES meetings in 1970s and 1980s (see e.g., CITES 1979; 1989; ICCAT 1992). However, there is only limited exchange between NGOs that engaged in both IOs (Interview 16), and there is no clear evidence that NGOs explicitly used advocacy in CITES to put pressure on ICCAT negotiations. The issue of shark finning, was also difficult to address through CITES, given that its appendices are species specific and thus not appropriate for banning a specific fishing practice. At the same time, the first sharks are listed in CITES appendices during the early 2000s, and the substantial trade in shark fins are raised as a concern for shark conservation in these negotiations. NGOs attending both IOs, such as for example WWF, were also active supporters of the first CITES resolution on sharks

adopted in 1994. During this time period, NGOs increase their participation in ICCAT and other RFMOs².

Rather, NGO influence appears to have occurred through vertical venue-shopping. Many of the NGOs that attend ICCAT meetings during this time period have a history of engaging in vertical venue-shopping. In particular, NGOs engaged in advocacy campaigns in the US during the early 1990s framing shark finning as a wasteful and destructive fishing practice. According to several interviewees, this advocacy largely contributed to the adoption of the domestic shark finning ban in the US in 1993 (Interviews 13, 16). In 2004, NGOs worked actively together with the US delegation to rally support for a shark finning ban which was adopted by ICCAT that same year (Interview 13). This suggests that NGOs were able to push for action at ICCAT by engaging in strategic coalitions with the US delegation and domestic industry players to pursue common goals at ICCAT, in line with the Baptiste and Bootleggers model (DeSombre, 1995). By contrast, we find very limited evidence that issue framing or resources mattered.

In sum, the evidence suggests that NGOs attained their preferences for a shark finning ban adopted in 2004. The evidence is indicative of NGO participation in ICCAT in US-led delegations, as well as NGO advocacy at domestic level, particularly in the US, can have contributed to the adoption of the shark finning ban at ICCAT. This evidence passes the hoop test and is in line with of the alternative explanations pertaining to vertical venue-shopping. In contrast, the evidence is not in line with expectations about horizontal venue-shopping.

² ICCAT was one of the first RFMOs that NGOs began to participate in and that early on developed specific procedures for observer accreditation. But as time develops, additional RFMOs adopt specific observer accreditation rules and effectively open up access to NGOs (Pettersson 2022), several of the same NGOs begin to participate in multiple RFMOs, in particular, in the five tuna RFMOs (Pettersson et al. 2019).

Period of NGO influence through horizontal venue-shopping and issue framing: 2005-2015

During this time period, several important shark policies were adopted at ICCAT. Specifically, *no retention* policies were adopted for four vulnerable shark species and more a stringent *prompt release* policy was adopted for porbeagle sharks (*Lamna nasus*) (Table 1). A reoccurring proposal to adopt a “fins attached” policy to strengthened the shark fining ban from 2004 was negotiated at ICCAT, yet, despite increasing member state support, the opposing parties did not shift position and consensus could not reached. In what follows, we discuss these two processes separately. Moreover, we discuss the “fins attached” process, in which there was no ICCAT policy output.

The adoption of the binding “no retention” policies meant that fishing vessels could no longer bring certain shark species onboard and were instead required to safely release the shark if caught incidentally as bycatch. The first “no retention” policy was adopted for bigeye thresher (*Alopias superciliosus*) in 2009 after an EU proposal. Brazil had submitted a similar proposal in 2008, but only a diluted policy was adopted then, indicating that some member states initially preferred to keep the status quo (Interviews 2, 16). Similar policies were adopted for oceanic whitetip (*Carcharhinus longimanus*) and hammerhead (*Sphyrnidae*) sharks in 2010, and for silky sharks (*Carcharhinus falciformis*) in 2011 without major difficulty after proposals by Brazil, the EU and Japan. The proposals were also supported by important industry players targeting sharks (Interview 11, 16). These shark species have relatively little economic importance to fleets of important member states and its fishing fleets (Interview 2, 15, 16). Some of these policies also included exemptions so that artisanal fleets in developing states would not be affected by the policy.

These no retention policies were adopted in line with scientific advice. In 2008, the Scientific Committee conducted an ecological risk assessment as an alternative to a stock assessment, given the lack of available catch data on sharks, and found that most shark species are highly vulnerable as they have exceptionally limited biological productivity (SI Table S3). Between 2008-2011, the Scientific Committee recommended that precautionary measures be adopted for the most vulnerable sharks – prioritizing big eye thresher, oceanic whitetip and silky sharks.

Regarding porbeagle sharks, a more ambitious binding policy was adopted in 2015, which required vessels to *promptly release* unharmed porbeagle sharks to the extent possible. These negotiations were much more challenging compared to the “no retention” negotiations described above, given that it concerns a targeted shark fishery of economic importance to two of ICCAT member states, namely the EU and Canada. In 2007, concerns over the status of the porbeagle population first came to the attention of ICCAT. At the time, the EU and Canada together stood for the majority of porbeagle catches (SI Table S2). The EU was also the main market for porbeagle meat (Interviews 9, 12). In 2007, driven by the EU which adopted a zero quota, ICCAT adopted a shark policy that stated that the first stock assessment would be conducted for porbeagle sharks in 2009 and that measures should be taken to reduce porbeagle mortality (ICCAT 2007). Between 2010 and 2015, the EU proposed bans for porbeagle landings from the Atlantic, which were regularly opposed by Canada. In 2015, Canada closed its domestic porbeagle fishery, after which consensus on a prompt release policy could be reached. The policy was not adopted explicitly based on scientific advice, but may have been shaped by the result of the 2009 stock assessment, which found that the porbeagle population was overfished (SI Table S4).

From 2009 and onwards, the US, Brazil, and Belize had also submitted repeated but unsuccessful proposal to strengthen the 2004 shark finning ban policy by requiring vessels to land sharks with their fins attached. The support for a “fins attached” policy steadily increased over time, as member states shifted position and became more active supporters. The 2013 fins attached proposal was submitted by Brazil, and co-sponsored by Belize, Egypt, European Union, Guatemala, Mexico, Panama, Senegal, United Kingdom-Overseas Territories and US. However, a number of important member states including China, Japan, and South Korea continue to oppose the proposed “fins attached” policy. These countries stand for large shares of global catches (Axelrod 2017) and have substantial long-line distant water fleets which historically have practiced shark finning at sea (Clarke et al. 2007).

The opponents to fins attached argue that the policy would imply significant costs for their fishing fleets, for example since it would require additional freezing and storage capacities onboard vessels (Interview 1, 2). The proponents of “fins attached” have not called for a vote, however, as the opposing parties would simply object and “then the measure wouldn’t apply to them” (Interview 2). ICCAT relies on consensus decision-making as a general norm, and calling for a vote is hardly ever applied, even though the Convention text formally states that decisions shall be taken by a two-third majority (Lodge et al. 2007). This is evidence of highly contentious of an issue that “fins attached” has become within ICCAT (Authors’ observations, ICCAT 2019).

No retention policies

Regarding preference attainment, there is evidence for complete congruence between NGO policy preferences and the observed changes in policy outputs concerning no retention (SI Table S9).

Discussing horizontal venue-shopping, we need to first understand lobbying efforts at ICCAT. During this time period, NGOs submitted more than 50 written statements to ICCAT, out of which around 20 percent address panel 4 (where sharks are discussed) directly. The majority of these statements were submitted by Greenpeace (international), Oceana (international), Pew Environmental Group (US-based with a European office), and the WWF (international). The record of oral statements by NGOs also increased during this time period, indicating that NGOs were more and more active during ICCAT meetings.

At the same time, NGOs intensified their lobbying efforts for listing shark species on Appendix II of CITES, to enhance shark protection through trade restrictions. At CITES meetings, NGOs worked together with different government “champions”, thereby contributing to the listing of several shark species on Appendix II (Interviews 1, 4, 11–13, 16, 18). These efforts aimed to achieve “successes” at CITES but were also part of an explicit horizontal venue-shopping strategy to push for more stringent shark management at ICCAT (Interviews 12, 15, 16).

During this time period, the overlap and exchange between NGOs that attend both ICCAT and CITES meetings increased significantly, as CITES in the early 2000s began to list shark species into its appendices. In particular, overlap increased in 2010 as the Eastern Atlantic bluefin tuna and three shark species were proposed to be listed in CITES Appendix II (Interviews 12, 15, 16). These proposals were all rejected in the end, but had implications for ongoing negotiations at ICCAT related to the Eastern Atlantic bluefin tuna and sharks (Webster 2011).

The extensive advocacy by NGOs at CITES mattered in the no-retention negotiations. Pressure grew particularly strong in 2010 when multiple sharks (i.e., hammerhead, ocean whitetip and porbeagle sharks), as well as the Eastern Atlantic bluefin tuna was proposed to be listed at CITES. In some cases, even the proposed listing at CITES functioned as an effective pressure point at ICCAT. For example, the “no retention” policies for hammerhead and oceanic whitetip sharks were adopted at ICCAT only a few months after both species had been proposed (but rejected) for listing at CITES. It is likely that these “no retention” policies were adopted because ICCAT’s member states “felt pressured” and “worried that we [the NGOs] were going to push for listing more shark species on CITES” (Interview 15). Some member states expressed frustration over NGOs enhanced efforts to list sharks at CITES: “whatever we do, they want to list as many shark species as possible inside this appendix” (Interview 1). This suggests that the sheer threat of listing additional sharks in CITES appendices was an effective pressure point to raise action for sharks in general, due to a fear that inaction might damage ICCAT reputation.

NGOs often used a broad horizontal venue-shopping strategy, by regularly attending and lobbying for more stringent shark measures in multiple RFMOs as well (Interview 4, 12, 15, 16). A limited number of NGOs also engaged within Convention on the Conservation of Migratory Species of Wild Animals (CMS) for example in relation to the shark Memorandum of Understanding adopted by its parties in 2012 (Interview 16). NGOs frequently referred to CITES listings³ of sharks and developments in other RFMOs as arguments to press for action at ICCAT. CMS was rarely mentioned and perceived to be of little important for ICCAT (Interview 16).

³ For example, in their 2020 policy statement Pew Environmental Group explicitly referred to the rejected shark proposals at CITES earlier that same year, and urged ICCAT to take measures, given that these “proposals were not adopted, with some countries arguing that sharks should be regulated through the RFMOs” (ICCAT 2010).

On alternative explanations, we begin with issue framing. NGOs were actively engaged in framing sharks as vulnerable species in need of increasing protection at meetings of the Commission, the Scientific Committee and the shark working group of ICCAT. NGOs also attend Scientific Committee and working group meeting related to sharks to encourage the Committee to provide “actionable” and specific scientific advice (Interview 2, 11, 16). One state representative, who was personally very active in pushing for an ecological risk assessment to be carried out to, noted that NGOs were “helpful” and “very active in meetings in relation to the ecological risk assessment, in making the point of the need to protect big eye thresher and silky sharks” (Interview 2). Both government and NGO interviewees consider the increasingly active participation and the actions of NGOs as critical for adoption of these policies (Interviews 1, 2, 4, 7, 13, 15). These policies were adopted in the aftermath of the so-called *bluefin tuna crisis* which occurred between the years 2006-2010. This was a time when NGOs were particularly vocal in the media about their perception of ICCAT as greatly ineffective (Interviews 2, 13, 18, 24).⁴ The intense media attention and the naming and shaming tactic directed at ICCAT at the time may have shaped the willingness of member states to adopt these “no retention” policies. Several NGO interviewees suggests that these no retention policies might have been a “low hanging fruits” that could be adopted relatively easily given that no real economic interests were at stake (Interview 12, 15) and that they may have been adopted partly to “give NGOs one win a year” (Interview 16).

⁴ For example, in an article in the Guardian after the 2007 ICCAT Commission meeting, an NGO representative from the WWF accused ICCAT of having "failed in its duty to sustainably manage our common marine resources" (Guardian 2007).

Regarding vertical venue-shopping, NGOs also had regular exchanges with government officials, providing information and engaging in lobbying for more stringent shark measures (Interviews 1-2, 4, 9, 12-16) There is no evidence that resources mattered.

Prompt release for porbeagle sharks

When it comes to *porbeagle sharks*, we also find congruence between the observed outcome and NGOs policy preferences (SI Table S9). In 2007, NGOs first raised concerns over the depleted status of porbeagle sharks at the ICCAT Commission meeting. In the coming years, NGOs successfully framed the species as endangered, highly vulnerable and in need of immediate action (Interview 12). Given that only two member states had strong policy preferences, Canada and the EU, NGOs used an isolation tactic and focused their lobbying efforts on these countries (Interview 12, 16).

Turning to the mechanisms for influence, NGOs engaged in advocacy in during, but also prior to ICCAT meetings. Prior to meetings, NGOs were able to access to national delegations as invited guest to preparatory meetings in both Canada and the EU, during which draft proposals and national positions were discussed (Interviews 9, 12, 14, 16). NGOs coordinated their efforts through the official “Shark League” coalition and engaged in lobbying domestically in Canada and in the EU. At the EU level, NGOs collaborated with conservation-minded EU member states and individual parliamentarians to push for a zero quota for porbeagle sharks in the EU, which was adopted in 2007 (Interview 16). After that, the EU delegation began to push for more stringent porbeagle measures at ICCAT.

NGOs extensively relied on a horizontal venue-shopping strategy in the case of porbeagle sharks. Porbeagle was first proposed to be listed on CITES by two EU countries without major fishing fleets and thus limited ICCAT involvement. First in 2007 (by Germany) and then in 2010 (by Sweden), but these proposals were both rejected (SI Table S7). The porbeagle shark was eventually listed in CITES Appendix II in 2013 (Table S3). During these years, NGOs actively lobbied for the proposal to list porbeagle sharks on Appendix II of CITES, while at the same time, repeatedly used the CITES nomination, and later, the actual listing to push for more ambitious porbeagle measures at ICCAT. The proposed and actual listing of porbeagle sharks in CITES Appendix II clearly shaped the discussions at ICCAT. For example, at the 2007 Commission meeting, after porbeagle had first been proposed to be listed at CITES, several members expressed concern that “immediate proactive measures were required [for porbeagles] within ICCAT to avoid future intervention from organizations such as CITES” (ICCAT, 2007: 206). In 2007, ICCAT adopted a measure stating that efforts shall be taken to reduce fishing mortality in porbeagle fisheries (but without specifying how). The preamble recognized “the proposal to add porbeagle shark to Appendix II of the CITES” (ICCAT 2007: 158). Moreover, Canada eventually shut down their porbeagle fishery as a direct effect of the CITES listing in 2013 “since it tends to dry up the market” (Interview 9). After that, Canada changed its position at ICCAT and the proposed prompt release policy could be adopted with consensus in 2015.

“Fins attached”

Finally, we observe lobbying for a “fins attached” policy. However, NGOs have not been able to reach their policy preferences for a “fins attached” policy at ICCAT despite persistent advocacy efforts. NGOs have promoted a “fins attached” policy ever since the first concerns

over the difficulty to implement the policy were raised by US law enforcement in the early 2000s. NGOs first lobbied for “fins attached” in the US and then expanded their efforts to the EU (Interview 16). Once “fins attached” policies were adopted in the US and the EU, NGOs worked together with these members, and other proponents such as Brazil, to gain support for “fins attached” at ICCAT. NGOs also pushed for fins attached in multiple RFMOs as part of a strategy to “diffuse the policy” and push for action at ICCAT (Interviews 12, 16).

In the case of shark finning, as noted earlier, CITES is not considered an appropriate place for lobbying, given that CITES listing are species specific and thus cannot be used to regulating fishing practices. At ICCAT, NGOs have also been able to persuade a number of developing coastal members states, which do not have a targeted shark fishery to “do the right thing” by supporting the “fins attached” policy (Interview 13). Despite increasing support, however, consensus for a more stringent “fins attached” policy has not been possible, and the 2004 policy remains in place.

Summary

In sum, the evidence underpins our expectation that NGOs influenced the observed changes in policy outputs (regarding no retention policies and porbeagle). The evidence also indicates that horizontal venue-shopping was a mechanism for that influence, thereby passing the hoop test of being a necessary but not necessarily a sufficient condition. Given the evidence, we put forward that it is unlikely that the no retention and porbeagle policies would have been adopted without the NGOs’ lobbying efforts to list sharks in CITES appendices, and then to use these proposed or actual listings as leverage at ICCAT. Moreover, there is evidence that issue framing has had some impact, particularly in relation to prompt release porbeagle policy.

However, when it comes to “fins attached”, the evidence suggest that NGOs have been unable to reach their policy preferences and persuade the main opponents of “fins attached” to shift their position.

NGO influence through horizontal-venue shopping: 2016-2021

In this third and final time period, ICCAT adopted several shark policies, including more stringent measures for blue (*Alopias superciliosus*) and shortfin mako sharks (*Isurus oxyrichus*) (Table 1), i.e., two of the main targeted shark fisheries within the ICCAT Convention area. These shark species are of economic importance to powerful member states of ICCAT, including the EU, Japan, and the US. The shortfin mako negotiations were particularly challenging, and it took several years of intense negotiations before a more stringent policy was adopted at ICCAT, despite concerns of overfishing. During this time period, NGOs also continued to advocate for a “fins attached” policy, but without success. It is also worth noting that the new convention text, which formally extends ICCAT mandate to include sharks alongside tuna and tuna-like species, was signed during this time period (in 2019).

For blue sharks, more ambitious policies were adopted for the northern and southern stocks in 2019, as the first and to date only binding shark quotas adopted by a RFMO. The northern stock policy included a total allowable quota and allocated specific shares to the EU, Japan and Morocco. The southern stock policy included a TAC but did not allocate any specific shares. These policies were adopted without major difficulty as they were supported by the EU and the European fishing industry, which stands for the majority of blue shark catches (Interview 11).

The policy for the northern stock replaced a less stringent “catch limit” from 2016, after a proposal by Japan. A similar proposal had been submitted by the EU the year before, but at that time, no consensus could be reached. After the catch limit was adopted, the European fishing industry attempted to get their blue shark fishery certified as sustainable by the Marine Stewardship Council (MSC). After entering the certification process the European fishing industry and the EU delegation started to advocate for binding blue shark quotas at ICCAT (Interview 11, 12). The EU may also have had an interest in locking down the quota allocation, as the new Convention was about to be adopted (signed that same year, in 2019), which officially made shark management part of ICCAT’s mandate (Interview 12, 16).

The adopted quota limit for the southern stock was in line with scientific advice, while the quota for the northern stock was adopted without explicitly relying on scientific advice. Between the years 2015-2019, the Scientific Committee was unable to reach a consensus on scientific advice for the northern stock given high levels of uncertainty in the assessment results, while during the same period reaching agreement on recommending a specific quota level for the southern stock. It is noteworthy that blue shark population has been considered healthy so far and that the species (unlike most other sharks) is not highly vulnerable. The 2008 ecological risk assessments conducted by the Scientific Committee ranked the blue shark the least vulnerable out of the twelve assessed species and the stock assessments (from 2004, 2008 and 2015) have consistently found that blue sharks are not overfished (SI Table S5).

Turning to shortfin mako sharks, a binding policy including a rebuilding program and an initial two-year no-retention ban was adopted for the northern stock in 2021⁵. It replaced a less

⁵ We focus our analysis on the northern stock given that the negotiations concerning the southern stock were still ongoing in 2021. During the examined time period (1995-2021), ICCAT had not yet adopted a specific measure for the southern stock, despite specific scientific advice being provided by the scientific committee for

stringent prompt release policy from 2017 which allowed retention under certain circumstances. The rebuilding program was adopted after five years of intense negotiations and two intersessional meetings of panel 4 (where sharks are discussed) held in 2021. The intensity of the shortfin mako negotiations culminated at the 2019 Commission meeting, following the successful listing of the species in CITES Appendix II earlier that year. Three very different proposals were put forward and negotiated at the 2019 Commission meeting, which clearly illustrated three very different positions. The EU's position was that catches of northern shortfin mako should decline gradually, and that retention should be allowed under certain circumstances. The EU's fishing industry stands for the majority of shortfin mako catches (SI Table S2) and was strongly opposed to the no-retention policy (Interview 11).

Interestingly, however, while the EU delegation at ICCAT appeared frustrated with the CITES listing, the EU co-sponsored the proposed listing at CITES. The US instead advocated for a rebuilding program for northern stock which included gear changes (namely shifting to circle hooks), and that retention should be allowed under certain conditions, allowing for recreational fisheries. Finally, Senegal and Canada lead a "no retention" proposal and argued that a long-term no-retention without exceptions should be adopted for the northern stock, and a binding quota of 2001 tonnes for the southern stock. Neither of these members have a lot of targeted fisheries on shortfin makos. Senegal also co-sponsored the proposed CITES listing of short fin mako sharks.

the southern stock. Shortfin mako has been assessed four times (in 2004, 2008, 2012, and 2017). All of them (except for the 2012 assessment) found that the southern stock may be overfished and that overfishing may be occurring. From 2017 and onwards, the Scientific Committee recommended a catch limit for the southern stock. In 2022, ICCAT adopted a more stringent policy for the southern shortfin mako stock, which outlines a management plan to reduce overfishing while providing small amounts of retention.

Regarding expert input, shortfin mako sharks has been assessed four times (in 2004, 2008, 2012, and 2017). All assessments (except for the 2012 assessment) found the northern stock to be overfished and that overfishing was occurring (SI Table S6). Between 2017-2021, the Scientific Committee recommended a no-retention policy for the northern stock. The 2021 rebuilding program for the northern stock was thus partly in line with scientific advice, even though adopted with a few years delay and only adopting a temporary retention ban.

During this third time period, the US, Brazil and Belize continue to advocate (albeit unsuccessfully) for a “fins attached” policy at ICCAT. At the 2019 Commission meeting, as many as 30 out of the 53 member states supported fins attached (Authors’ observations, ICCAT 2019). Yet, despite increasing support, the issue remains gridlock.

Binding quotas for blue sharks

We find that NGO preferences and policy outputs for blue sharks were congruent (SI Table S9). Regarding NGO lobbying efforts, NGOs have consistently, ever since 2008 (long before it was proposed by any member state), asked for the establishment of catch limits or quotas for blue sharks (SI Table S9). NGOs have not lobbied for the listing of blue sharks at CITES during the examined time period, given that such listing are used to protect *endangered species* by limiting international trade.

Rather, the adoption of a binding quota for blue shark was largely the result of a shift in the EU position at ICCAT (as the EU report the largest catches of blue sharks in the ICCAT Convention area, see SI Table S2). In the years leading up to the adoption of blue shark quotas, the European fishing industry attempted to MSC certify their longline blue shark fishery.

Several NGOs participated in the MSC objection procedure and contributed to “stopping that certification from happening”, making the case the “there was no blue shark management measures in place”. This, in turn, led to greater effort by “the EU to get measures [at ICCAT] to get this certification” (Interview 12). This suggests that NGOs’ strategy to engage in horizontal venue-shopping at multiple international venues, in this case ICCAT and the MSC, shaped ICCAT policy output, but in this case the evidence for NGO influence is thin.

This is especially so because the extensive lobbying efforts cannot be clearly tied to ICCAT policy output. Between 2016 and 2021, close to 100 written policy statements were submitted to ICCAT Commission meetings by NGOs, of which 25 percent directly addressed Panel 4 where sharks are discussed. The majority of statements were submitted by the Ecology Action Centre (Canadian), Oceana (international), Pew Charitable Trust (US-based with a European office), and the World Wildlife Fund (international). In addition to these statements, NGOs make oral statements and often distribute their own material to delegates.

However, there is evidence for coalition building, but these efforts cannot be clearly linked to ICCAT output. A number of NGOs (including Shark Advocates International, Shark Trust, Padi Aware Foundation and Ecology Action Centre) formed an official coalition “Shark League for the Atlantic and Mediterranean” to coordinate their lobbying efforts at ICCAT and other RFMOs (Interviews 12, 16). From 2016 on, this coalition has submitted joint policy statements (often supported by other participating NGOs such as Pew Environmental Group and WWF) to ICCAT and other RFMOs focusing on shark management. In conjunction with the 2019 Commission meeting, the shark coalition held a side event specifically focused on short fin makos.

Similarly, there is evidence for issue framing but unsuccessful. When it comes to their behavior at ICCAT, many NGOs appear to have shifted strategies – from relying mainly on outside strategies and naming and shaming ICCAT in the global media, to increasingly relying on inside strategies, by directly engaging with governments, engaging in lobbying, and providing policy relevant information (Interviews 2, 7, 9, 11, 12, 17, 18, 24). For example, NGOs often draft proposals and oral statements and ask delegations if they would be willing to use them in Commission meetings (Interview 4).

Rebuilding program for short fin mako sharks

Finally, we find that NGOs eventually reached their policy preferences for the northern stock of the short fin mako sharks (SI Table S9). NGOs initially (between 2008-2016) asked for science-based and precautionary catch limits or quotas for shortfin makos, but eventually increased the intensity of their lobbying efforts and shifted preferences, asking for a no retention without exception policy for the northern stock between 2017-2021. NGOs engaged in strategic horizontal venue shopping at CITES, and contributed to the successful listing of shortfin mako sharks in CITES Appendix II in 2019 (Interview 4, 11-13, 16). The gloomy stock assessment results from 2017 made it relatively easy for NGOs to frame makos as critically endangered both at CITES and at ICCAT. The CITES listing was extensively discussed at the 2019 meeting, both in plenary and along the sidelines of the meeting (Authors' observations, ICCAT 2019). NGOs worked closely with Canada and Senegal (the main proponents of the no retention proposal in 2019) and provided input to draft proposals as these developed over the course of the negotiations. Some of the NGOs also had a history of collaborating with Senegal in advancing listings for sharks at CITES and continued that relationship during the ICCAT meeting (Interview 4, 8). During the 2019 Commission meeting, NGOs lobbied extensively to

increase support for the no retention proposal, “talking to other delegations, explaining the proposal and trying [...] to really push them to go on to the proposal and be a co-sponsor” (Interview 12). In the coming two years, NGOs continued to focus much of their lobbying efforts on shortfin makos. This is reflected in the many policy statements submitted to the 2019, 2020 and 2021 meetings which explicitly focus on shortfin mako sharks. All the same, consensus was not reached in 2019 nor in 2020. Yet in 2021 Commission meeting, following two intersession meetings of panel 4 on shortfin makos, a more stringent measure was finally adopted. This measure was described as a compromise, which includes a temporary ban rather than a long-term ban.

Summary

Taken together, the evidence for NGO influence on policy output for blue and short-fin mako supports our theoretical expectations that NGOs had an influence and that horizontal venue-shopping functioned as an important mechanism for influence. In relation to blue sharks, NGOs attained their preferences and NGO actions in the MSC appear to have mattered for getting the EU and its fishing industry onboard at ICCAT, but evidence for influence is thin in this case. Concerning shortfin mako sharks, NGO preferences were largely attained for the northern stock. Horizontal venue-shopping at CITES, combined with coalition building at both CITES and ICCAT, were mechanisms for NGO influence on ICCAT policy on the northern stock. In all, we conclude that our expectation on NGOs influence on more ambitious ICCAT policies regarding shortfin mako sharks jumps through the hoop, which affirms the relevance of our expectation but does not confirm it.

Conclusions

In this study, we have examined NGO influence and the relevance of horizontal venue-shopping as a mechanism for influence on changes to policy outputs for managing sharks by ICCAT. Using process tracing and an analysis of preference attainment, there are three main findings. First, while NGO participation and influence is found to be limited during the first time period (1995-2004), the evidence suggests that NGO influence mattered for the adoption of more ambitious ICCAT shark policies the second and third time period (between 2005-2015 and 2016-2021). Second, our findings suggest that NGO influence in ICCAT concerning sharks has increased over the time. Third, we find that horizontal venue-shopping functioned as a mechanism for influence in a majority of the adopted policies during the second and third time period (i.e., the “no retention”, porbeagle and short fin mako policies), thereby passing the hoop test in these cases.

We find that CITES was a particularly important venue for NGOs to engage in horizontal venue-shopping. To be sure, CITES is not always a useful alternative venue for NGO influence, for example in the case of management of healthy shark populations (blue sharks) and in regulating fishing practices (ending shark finning by requiring fins attached). In these cases, we have only found limited evidence of NGO influence, and no indication that horizontal venue-shopping at CITES functioned as an effective mechanism for influence. While our case study cannot show that NGO influence was sufficient for explaining the observed outcome, it contributes to theory-building by bringing attention to horizontal venue-shopping as an important mechanism for NGO influence. CITES functioned as a particularly important alternative international venue in the case of ICCAT, given the increasing overlap in mandate between the two institutions over the examined time period.

Further, there is some evidence for alternative explanations, in particular vertical venue-shopping during the first time period, where NGOs had only very limited access to ICCAT. Issue framing and coalition building were found to matter in later phases. What is more, horizontal venue-shopping appeared to have strengthened NGO influence when combined with the use of issue framing and coalition building. These are factors highlighted by previous research as crucial for NGO influence (DeSombre 1995, Allan & Hadden 2017).

While we have conducted a single case study of ICCAT, our findings may travel to other RFMOs as well, given that these institutions are similar in terms of their institutional design, consensus-oriented decision procedures, membership, and mandates (Lodge et al. 2007). While sharks are commercially important species which are shaped by vested economic interests, the main target tuna stocks remain the main focus of RFMO negotiations. Negotiations over target fish stocks tend to be even more strongly shaped by vested economic interests (Cullis-Suzuki & Pauly 2011), thereby limiting the likelihood of NGO influence. At the same time, NGOs influence mattered in the case of the Eastern Atlantic bluefin tuna in ICCAT, where again, the proposed listing at CITES played an important role (Webster 2011). Understanding the potential impact of NGOs on the effectiveness of RFMOs beyond policy outputs, the measure used here, is another area for future research. This research would be important, as RFMOs struggle to overcome problems with overfishing (Cullis-Suzuki & Pauly 2011) and reduce unwanted bycatch (Juan-Jordá et al. 2017) due to weak enforcement (Webster 2011).

Moving beyond our specific case, future research could also usefully analyze the extent to which horizontal venue-shopping shapes the effectiveness of other IOs, issue areas, and time periods. Today, most IOs operate within an increasingly dense institutional environment,

characterized by overlapping IOs (in terms of issue area and membership), as well as the emergence of informal IOs (Vabulas & Snidal 2021) and public-private institutions (Westerwinter 2021), which together present NGOs with an increasing number of alternative international venues for lobbying. However, horizontal venue-shopping might matter even more in relation to IOs which do not look back to a long history of interactions with NGOs, such as ICCAT.

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Supplementary Information

Table S1. List of interviewees

Interview ID	Type	Date
1	Government	18th of November 2019
2	Government	19th of November 2019; 4th of December 2019
3	Partnership	20th of November 2019
4	Government	21st of November 2019
5	Secretariat	21st of November 2019
6	Consultant	22nd of November 2019
7	Consultant	22nd of November 2019
8	Government	22nd of November 2019
9	Government	23rd of November 2019
10	Researcher	23rd of November 2019
11	Fishing industry	24th of November 2019
12	NGO	20th of December 2019
13	Government	15th of January 2020; 16th of January 2020
14	Government	15th of January 2020
15	NGO	30th of January 2020
16	NGO	21st of February 2020
17	Fishing industry	15th March 2013
18	Fishing industry	15th February 2013; 13th March 2013
19	Secretariat	13th February 2013
20	Fishing industry	24th March 2013
21	Secretariat	28th April 2013
22	NGO	5th May 2013
23	NGO	15th February 2013
24	Government	14th February 2013; 1st March 2013

Note: the interviews were conducted in two time periods. 16 interviews were conducted in conjunction with the 2019 ICCAT Commission meeting (18th-25th of November in Mallorca, Spain). These interviews were structured to gather the interviewees perceptions of the development of shark management within ICCAT and other RFMOs, as well as the preferences, positions, strategies, and influence NGOs on this development. Eight interviews were carried out during 2013. These interviews centered around interviewee perceptions of the role and strategies of participating NGOs in RFMOs over the past two decades.

Table S2. Percentage of member state catches of the targeted sharks reported to International Commission for the Conservation of Atlantic Tuna (ICCAT) between 2000-2020.

Member state	% of porbeagle catches	% of blue shark catches	% of shortfin mako catches
Belize		1%	1%
Brazil	4%	4%	4%
Canada	28%	1%	1%
China	1%		1%
European Union	42%	76%	60%
Japan	6%	7%	4%
Morocco		1%	6%
Namibia		4%	9%
Norway	2%		
South Africa			3%
South Korea	1%		
Taiwan	7%	3%	3%
United Kingdom	2%		
United States	2%		6%
Uruguay	2%		1%
Venezuela	2%		
Other*	2%	4%	1%

Source: Nominal catch data reported to ICCAT, publicly available on:
<https://www.iccat.int/en/accesingdb.HTML>.

Notes: Empty cells indicate that the catches represented less than 1 % percentage of catches.

* Combined catches by all other members.

Table S3. Summary of scientific assessment and advice, the extent to which scientific advice was followed in the no-retention negotiations concerning vulnerable sharks

Result of scientific assessments	Summary of scientific advice	Action by ICCAT Commission	Followed advice?
<p>The 2008 ecological risk assessment found that most Atlantic pelagic sharks have exceptionally limited biological productivity and, as such, can be overfished even at very low levels of fishing mortality.</p> <p>The analyses found that bigeye threshers, longfin makos, and shortfin makos have the highest vulnerability of the 13 shark species examined.</p>	<p>Between 2008-2011, the Scientific Committee recommended that precautionary management measures should be considered for stocks of the greatest biological vulnerability and conservation concern, and for which there is very little data, and that such measures should be species-specific whenever possible.</p> <p>In 2008, the Committee raised bigeye thresher sharks as a species of high concern and advised that prohibiting landings could be effective for conservation.</p> <p>In 2010, the Scientific Committee recommended minimum size limits as a precautionary measure for oceanic white tip sharks.</p> <p>In 2011, the Scientific Committee recommended that similar precautionary measures that had been taken for other vulnerable sharks should be taken for silky sharks.</p>	<p>In 2008, the Commission adopted Recommendation (Rec)* 08-07, a prompt release policy for bigeye thresher sharks.</p> <p>In 2009, the Commission adopted Rec. 09-07, a no-retention policy for bigeye thresher sharks (exempting the small-scale Mexican fleet).</p> <p>In 2010, the Commission adopted Rec. 10-07, a no-retention policy for oceanic whitetip sharks (without exception) and Rec. 10-08, a no-retention policy for hammerhead sharks (exempting catch for local consumption by coastal developing states, while prohibiting international trade).</p> <p>In 2011, the Commission adopted Rec. 11-08 a no-retention policy for silky sharks (exempting catch for local consumption by coastal developing states, while prohibiting international trade).</p>	<p>Yes, the Commission adopted no-retention measures for bigeye threshers, oceanic whitetip and silky sharks - which were all raised as a highly vulnerable priority species by the Scientific Committee.</p>

<p>The ecological risk assessment from 2012, found confirmed the results of the 2008 assessment, i.e.: that bigeye thresher, longfin and shortfin makos, porbeagle, and night sharks are the most vulnerable out of the 20 assessed species (SCRS, 2012).</p>	<p>2012-2019, the Scientific Committee reiterated its advice that precautionary management measures should be considered for stocks where there is the greatest biological vulnerability and conservation concern, and for which there is very little data, and that such measures should be species-specific whenever possible, but without specifying any species of higher priority.</p>	<p>After 2011, no additional measures adopted by the Commission</p>
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Notes: Authors' own coding based on ICCAT reports from the Commission and the Standing Committee on Research and Statistics between 1995–2021.

* Recommendations are binding conservation and management measures.

Table S4. Summary of scientific assessment and advice, the extent to which scientific advice was followed in relation to the porbeagle shark negotiations

Result of scientific assessments	Summary of scientific advice	Action by ICCAT Commission	Followed advice?
	In 2000, the Scientific Committee recommended that ICCAT should conduct stock assessments for porbeagle sharks.	In 2007, the Commission adopted Recommendation (Rec)* 07-06 which stated that the Scientific Committee shall assess the stock status of Atlantic porbeagles (no later than 2009) and recommend management advice to the Commission, and that until such time as sustainable levels of harvest can be determined through stock assessments, members and cooperating non-members shall take appropriate measures to reduce fishing mortality in fisheries targeting porbeagle.	No, it took seven years before the Commission asked the Scientific Committee to conduct a first stock assessment of porbeagle sharks. At the same time, the Commission adopted a Rec. 07-06 even before a stock assessment had been conducted.
The 2008 ecological risk assessment found porbeagle to be fourth most vulnerable among the 13 assessed species.	Between 2008-2015, the Scientific Committee did not recommend any specific advice for porbeagle sharks.	In 2008, the Commission adopted Resolution (Res)** 08-08, which states that a joint ICCAT-International Council for the Exploration of the Sea (ICES) Inter-sessional meeting would be undertaken in 2009 to further assess porbeagle sharks in conformity Rec. 07-06.	Cannot be assessed as no specific scientific advice was provided for porbeagles. At the same time, no additional precautionary measures were adopted for porbeagle sharks between 2009-2014, even though the ecological risk assessment indicated high vulnerability.
The 2012 ecological risk assessment found porbeagle to be fourth most vulnerable among the 20 assessed stocks.	On the basis of the results from the ecological risk assessment, the Committee however recommends generally that precautionary measures should be taken for highly vulnerable species for which there is limited data.		

<p>The 2009 stock assessment found porbeagle stocks in the northwest and northeast Atlantic to be overfished, with the northeastern stock being more depleted. The Committee states that the main source of fishing mortality on these stocks came from non-ICCAT, directed porbeagle fisheries that are being managed by the relevant Contracting Parties.</p>	<p>Between 2009-2019, the Scientific Committee provided broad advice, recommending: more research on how to limit bycatch and discard mortality of porbeagle, cooperation with countries targeting porbeagles and other relevant RFMOs that affect the Atlantic stock, and that fishing mortality should be kept at current levels and new porbeagle fisheries be prevented.</p>	<p>In 2015, the Commission adopted Rec. 15-06, which states that vessels shall promptly release unharmed, to the extent practicable, porbeagle sharks caught in association with ICCAT fisheries, and that porbeagle data shall be submitted in accordance with ICCAT's data requirements.</p>	<p>Cannot be assessed given that the scientific advice was broadly formulated.</p>
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Notes: Authors' own coding based on ICCAT reports from the Commission and the Standing Committee on Research and Statistics between 1995-2021.

* Recommendations are binding conservation and management measures.

** Resolutions are non-binding (voluntary) conservation and management measures.

Table S5. Summary of scientific assessment and advice, the extent to which scientific advice was followed in relation to the blue shark negotiations

Result of scientific assessments	Summary of scientific advice	Action by ICCAT Commission	Followed advice?
	In 2000, the Scientific Committee recommended that ICCAT should conduct stock assessments for blue sharks.	In 2001, the Commission adopted Resolution (Res)* 01-11 which stated that a stock assessment shall be carried out for blue sharks by 2004.	Yes, with one year delay.
The 2004 stock assessment found that both the northern and southern stock appear to be above levels that would support MSY.	Between 2004-2008 no specific scientific advice was provided for blue sharks	In 2004, the Commission adopted Recommendation (Rec)** 04-10, which stated that blue sharks shall be reassessed by 2007. In 2006, the Commission adopts Rec. 06-10, which stated that the stock assessment of blue sharks shall be completed in time for consideration at the 2008 annual meeting of the Commission.	Cannot be assessed as no scientific advice was provided
The 2008 stock assessment found that both the northern and southern stock appear to be above levels that would support MSY.	Between 2008-2015 no specific scientific advice was provided for blue sharks		Cannot be assessed as no scientific advice was provided

<p>The 2015 stock assessment found that the North Atlantic stock was not overfished and that overfishing was not occurring, but also acknowledged that there still remained a high level of uncertainty in data inputs and model structural assumptions, by virtue of which the possibility of the stock being overfished and overfishing occurring could not be ruled out.</p>	<p>Between 2015-2019, the Committee were not able to reach consensus on a scientific advice for the North Atlantic stock, due to the high level of uncertainty in the data inputs and model structural assumptions.</p> <p>2015-2016, the Scientific Committee recommended catches should not increase beyond recent catch levels (e.g., in the past five years, 2009-2013) for the South</p>	<p>In 2016, the Commission adopts Rec. 16-12, which included a catch limit: stating that if the average total catches of the North Atlantic blue shark in any consecutive two years from 2017 onward exceeds the average level observed during the period 2011-2015 (i.e., 39,102 t), the Commission shall review the implementation and effectiveness of these measures.</p>	<p>Yes and no. The Commission adopted a catch limit for the northern stock in 2016 (without relying on any advice), but no measures were adopted for the southern stock (despite scientific advice that catches should not increase).</p> <p>The more ambitious measures from 2019 adopted for both stocks were however in line with scientific advice.</p>
<p>The assessment found that the South Atlantic stock was not overfished and that overfishing was not occurring, but that some models were less optimistic, predicting that the stock could be overfished and overfishing could be occurring in some cases.</p>	<p>Atlantic stock of blue sharks.</p> <p>In 2017, the Scientific Committee specified that 28,923 t could be an appropriate catch limit for the Southern stock (based on 2009-2013 years catches).</p>	<p>In 2019, the Commission adopted Rec. 19-07 which outlined a quota (of 39,102 t) and a quota table allocating quotes to the EU, Japan and Morocco for the Northern stock, and Rec 19-08 which outlined a quota (of 28,923 t) for the Southern stock (but without a quota table).</p>	

Notes: Authors' own coding based on ICCAT reports from the Commission and the Standing Committee on Research and Statistics between 1995-2021.

* Resolution (Res) are non-binding (voluntary) conservation and management measures.

** Recommendation (Rec) are binding conservation and management measures.

Table S6. Summary of scientific assessment and advice, the extent to which scientific advice was followed in relation to the shortfin mako shark negotiations

Result of scientific assessments	Summary of scientific advice	Action by ICCAT Commission	Followed advice?
	In 2000 the Scientific Committee recommended that ICCAT should conduct stock assessments for shortfin mako sharks.	In 2001, the Commission adopted Resolution (Res)* (01-11) stating that shortfin makos shall be assessed by the Scientific Committee by 2004.	Yes, with one year delay.
The 2004 stock assessment found that both the North and South Atlantic shortfin mako stocks have declined. The results of stock assessment are stated to be highly uncertain given a lack of reliable data.	In 2004, the Scientific Committee made no specific recommendations concerning shortfin mako but broadly recommended members and cooperating non-members to improve data reporting and to follow previous CMMs adopted that outline the data requirements for sharks. Between 2005-2006, the Scientific Committee stated there is no basis for recommending catch limits for this stock, given the lack of data. They also stated that technical measures such as modifications to fishing gear, restrictions on fishing areas and times, minimum or maximum sizes for allowable retained catch might prove beneficial, and that reductions in fleet capacity and effective effort could provide the most direct benefit to shortfin mako sharks. The Committee also urged members to submit full and accurate data on shark catches. In 2007, the Scientific Committee did not provide any detailed advice, but	In 2004, the Commission adopted Recommendation (Rec)** 04-10 stating that the Scientific Committee shall review the 2004 stock assessment of shortfin mako and make management recommendations and that the stock shall be re-assessed in 2007. It also outlines data requirements for members and cooperating non-members when it comes to the reporting of shark data. In 2005, the Commission adopts a binding recommendation (05-05 amending point 7 of Rec. 04-10): adding wording that members and cooperating non-members "that have not yet implemented this recommendation to reduce North Atlantic shortfin mako shark mortality, shall implement it and report to the Commission". In 2006, the Commission adopted Rec. 06-10, which stated that the stock assessment of shortfin mako sharks shall be completed in time for consideration at the 2008 annual meeting of the	Cannot be assessed as the Scientific Committee did not make specific recommendations for shortfin mako during these years. At the same time, the measure adopted in 2004 and 2005 party focuses on improving members and cooperating non-members shark data reporting, which is in line with scientific advice. The 2007 measure states that members and cooperating non-members shall take appropriate measures to reduce fishing mortality, which also is in line with the broadly formulated scientific advice.

reiterated the need for members and cooperating non-members to submit accurate and timely shark catch data.

Commission and scheduled a data preparatory meeting in 2007.

In 2007, the Commission adopted Rec. 07-06, stating that until sustainable levels of harvest can be determined through peer reviewed stock assessments, members and cooperating non-members shall take appropriate measures to reduce fishing mortality in fisheries targeting North Atlantic shortfin mako sharks.

<p>The 2008 ecological risk assessment found shortfin mako to be the second most vulnerable among the 13 assessed species.</p>	<p>In 2008, the Scientific Committee recommended that precautionary measures be taken for highly vulnerable species for which there is limited data reporting, but do not mention shortfin mako specifically.</p>	<p>2008-2009, the Commission received proposals concerning shortfin mako, but no consensus on new measures were reached.</p>	<p>Cannot be assessed as the Scientific Committee did not make any specific recommendations for shortfin mako during these years. At the same time, no additional measures were adopted for shortfin mako, even though the Scientific Committee has found the species to be second most vulnerable and have recommended that the Commission take precautionary measures for highly vulnerable species.</p>
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<p>The 2008 stock assessment found that the North Atlantic shortfin mako stock is likely to be overfished and that overfishing is occurring. The South Atlantic shortfin mako stock was not possible to assess, given lack of reliable data. The results of stock assessment are stated to be highly uncertain given a lack of reliable data.</p>	<p>Between 2009-2011, the Scientific Committee reiterated previous advice to take precautionary measures for highly vulnerable and data poor sharks, but did not mention shortfin mako specifically.</p>	<p>In 2010, the Commission adopted Rec. 10-06, which states that members and cooperating non-members shall implement previous recommendations (04-10, 05-05, 07-06) outlining requirements for reporting shark data on catches and incidental catches, and that members and cooperating non-members that do not comply with the data reporting requirements shall be prohibited from retaining this species, beginning in 2013 until such data has been received. The recommendation also states that the Scientific Committee shall conduct a stock assessment of shortfin mako in 2012, and advise the Commission on catch levels and appropriate measures to be taken for the species.</p>	<p>Cannot be assessed as the Scientific Committee did not make any specific recommendations for shortfin mako.</p>
		<p>In 2011, the Commission adopted Rec. 11-15 (which is a general recommendation but that also mentions sharks), which reiterated that members and cooperating non-members shall comply with already adopted data requirements and report catches (including incidental catches) of sharks in their Annual Reports.</p>	

<p>The 2012 stock assessment found the North and South Atlantic shortfin mako stocks to be healthy. The results of stock assessment are stated to be highly uncertain given a lack of reliable data. The 2012 ecological risk assessment found shortfin mako to be the third most vulnerable among the 20 assessed species. The results of the assessment are stated to be more robust compared to the 2008 assessment.</p>	<p>Between 2012-2014, the Scientific Committee recommends precautionary measures to be taken for shortfin mako, given the results of the ecological risk assessment, and recommend that fishing mortality for North and South Atlantic shortfin mako should not increase, but does not specify this advice in more detail, for example by outlining a specific catch limit.</p>	<p>In 2014, the Commission adopted Rec. 14-06, which states that members and cooperating non-members shall improve their catch reporting system for shortfin mako, in accordance with the data reporting requirements. Members and cooperating non-members shall also report what they have done domestically to monitor catches and conserve and manage shortfin mako. The Recommendation also states that the Scientific Committee shall endeavor to conduct a stock assessment of shortfin mako by 2016, if the data permits.</p>	<p>No, the Commission did not adopt any specific precautionary measures to reduce fishing mortality of shortfin mako. Instead, the measures focus on data reporting and additional stock assessments.</p>
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	<p>Between 2015-2016, the Scientific Committee recommends that catches for both North and South Atlantic shortfin mako should not exceed catch levels in previous years (for the time period 2006-2010).</p>		<p>No, no additional measures are taken for shortfin mako sharks.</p>
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<p>The 2017 stock assessment found both the North and South Atlantic shortfin mako stocks to be overfished and experiencing overfishing. The results for the South stock are stated as highly uncertain given a lack of reliable data.</p>	<p>In 2017, the Scientific Committee recommended that a prohibition of retention be adopted for the North Atlantic shortfin mako stock in order to stop overfishing. Additional measures such as time/area closures, gear restrictions, safe handling and safe release may also help reduce fishing mortality. For the South stock, the Committee recommended that catches should not exceed the minimum catches in the last five years (2011-2012 of 2001 t).</p>	<p>In 2017, the Commission adopted Rec. 17-08, which states that North Atlantic shortfin mako sharks shall be promptly released. The measure however includes a number of exemptions. For example, shortfin makos may be retained if the shark is already dead when brought alongside for taking on board the vessel, and provided that vessels larger than 12m have observers onboard. The recommendation also stated that the Scientific Committee shall review the effectiveness of this recommendation and provide additional scientific advice on conservation and management measures.</p>	<p>No, a prompt release (with exceptions) measure was adopted rather than a no-retention measure for the northern stock and no measure is adopted for the southern stock.</p>
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<p>The 2019 projections for the shortfin mako (based on the 2017 stock assessment) showed that a zero total allowable quota would only allow the stock to rebuild by 2045 with a 53 % probability and that even with a zero TAC, the biomass will continue to decrease until 2035.</p>	<p>2019: the Scientific Committee recommended that a no-retention without exception measure be adopted for the North Atlantic shortfin mako stock and reiterated that catches of the South stock should not exceed 2001t.</p>	<p>In 2019, the Commission adopted Rec. 19-06 which is the same policy that was adopted in 2017 and extended for one more year, given that consensus could not be reached on a new measure.</p> <p>In 2021, the Commission adopts a rebuilding program for shortfin mako, including an initial 2-year no retention without exceptions which is to be reviewed in 2023.</p>	<p>No, the Commission initially prolonged the previously adopted prompt release policy. Then, it took five years before the Commission adopted a more stringent measure, including an initial two year no-retention policy.</p>
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Notes: Authors' own coding based on ICCAT reports from the Commission and the Standing Committee on Research and Statistics between 1995–2021.

* Resolutions are non-binding (voluntary) conservation and management measures.

** Recommendations are binding conservation and management measures.

Table S7. Shark species listed in Appendix II of the Convention of International Trade in Endangered Species (CITES) Appendix II, also managed by ICCAT

Species name (<i>scientific name</i>)	Year listed, proponents of successful listing	Previous rejected proposed listing(s), and proponent(s)
Hammerhead sharks (<i>Sphyrnidae</i>): - Scalloped hammerhead (<i>Sphyrna lewini</i>) - Great hammerhead (<i>Sphyrna mokarran</i>) - Smooth hammerhead (<i>Sphyrna zygaena</i>)	2013, Palau, the US, Brazil, Costa Rica and Honduras	2010, Palau and the US
Oceanic whitetip shark (<i>Carcharhinus longimanus</i>)	2013, Brazil, Colombia and the US	2010, Palau and the US
Porbeagle shark (<i>Lamna nasus</i>)	2013, Germany, Sweden, Brazil, Comoros, Croatia, Denmark and Egypt	2007, Germany 2010, Sweden
Silky shark (<i>Carcharhinus falciformis</i>)	2016, Republic of Maldives (co-sponsors: Bangladesh, Burkina Faso, Comoros, Dominican Republic, Egypt, the EU, Fiji, Gabon, Ghana, Guinea, Mauritania, Palau, Samoa, Senegal, Sri Lanka, Ukraine, United Arab Emirates)	
Bigeye thresher shark (<i>Alopias superciliosus</i>)	2016, Sri Lanka, Bangladesh, Burkina Faso, the Comoros, Dominican Republic, Egypt, the EU, Fiji, Gabon, Ghana, Guinea, the Maldives, Mauritania, Palau, Samoa, Senegal, the Seychelles, the United Arab Emirates, and Ukraine	
Shortfin mako shark (<i>Isurus oxyrinchus</i>)	2019, Mexico (co-sponsors: Bangladesh, Benin, Bhutan, Brazil, Burkina Faso, Cabo Verde, Chad, Côte d'Ivoire, Dominican Republic, Egypt, the EU, Gabon, Gambia, Jordan, Lebanon, Liberia, Maldives, Mali, Mexico, Nepal, Niger, Nigeria, Palau, Samoa, Senegal, Sri Lanka, Sudan and Togo)	

Notes: Authors' own coding based on the "Species +" database (<https://speciesplus.net/>).

Table S8. Conservation and management measures adopted by ICCAT on sharks, 1995–2021

Year adopted	Name	New/ amended (active/inactive as of 2022)	Binding/ non-binding	Lead proponent(s)
1995	95-02 Resolution by ICCAT on Cooperation with the Food and Agriculture Organization of the United Nations (FAO) with Regard to Study on the Status of Stocks and By-Catches of Shark Species	New (active)	Non-binding	N/A
2001	01-11 Resolution by ICCAT on Atlantic sharks	New (inactive)	Non-binding	N/A
2003	03-10 Resolution by ICCAT on the Shark Fishery	New (active)	Non-binding	Japan
2004	04-10 Recommendation by ICCAT Concerning the Conservation of Sharks Caught in Association with Fisheries Managed by ICCAT	New (active)	Binding	US (co-sponsors: Canada, EU, Japan, Mexico, Panama, South Africa, Trinidad and Tobago, Venezuela)
2005	05-05 Recommendation by ICCAT to Amend Recommendation [Rec. 04-10] Concerning the Conservation of Sharks Caught in Association with Fisheries Managed by ICCAT	Amended (inactive)	Binding	US
2006	06-10 Supplementary Recommendation by ICCAT Concerning the Conservation of Sharks Caught in Association with Fisheries Managed by ICCAT	Amended (inactive)	Binding	N/A
2007	07-06 Supplemental Recommendation by ICCAT Concerning Sharks	Amended (active)	Binding	Canada and US
2008	08-07 Recommendation by ICCAT on the Conservation of Bigeye Thresher Sharks (<i>Alopias superciliosus</i>) Caught in Association with Fisheries Managed by ICCAT	New (inactive)	Binding	Brazil
2008	08-08 Resolution by ICCAT on Porbeagle Shark (<i>Lamna nasus</i>)	New (inactive)	Non-binding	EU
2009	09-07 Recommendation by ICCAT on the Conservation of Thresher Sharks Caught in Association with	Amended (active)	Binding	EU

Fisheries in the ICCAT Convention Area				
2010	10-06 Recommendation by ICCAT on Atlantic Shortfin Mako Sharks Caught in Association with ICCAT fisheries	New <i>(active)</i>	Binding	N/A
2010	10-07 Recommendation by ICCAT on the Conservation of Oceanic Whitetip Shark Caught in Association with Fisheries in the ICCAT Convention Area	New <i>(active)</i>	Binding	Japan
2010	10-08 Recommendation by ICCAT on Hammerhead Sharks (<i>family Sphyrnidae</i>) Caught in Association with Fisheries Managed by ICCAT	New <i>(active)</i>	Binding	EU and Brazil
2011	11-08 Recommendation by ICCAT on the Conservation of Silky Sharks Caught in Association with ICCAT fisheries	New <i>(active)</i>	Binding	The EU (co-sponsors: the US and Brazil)
2011	11-15 Recommendation by ICCAT on Penalties Applicable in Case of Non Fulfillment of Reporting Obligations	New <i>(active)</i>	Binding	Permanent Working Group for the Improvement of ICCAT Statistics and Conservation Measures (PWG)
2012	12-05 Recommendation by ICCAT on Compliance with Existing Measures on Shark Conservation and Management	New <i>(inactive)</i>	Binding	EU
2013	13-10 Recommendation on Biological Sampling of Prohibited Shark Species by Scientific Observers	New <i>(active)</i>	Binding	EU
2014	14-06 Recommendation by ICCAT on Shortfin Mako Caught in Association with ICCAT Fisheries	Amended <i>(active)</i>	Binding	EU
2015	15-06 Recommendation by ICCAT on Porbeagle Caught in Association with ICCAT Fisheries	New <i>(active)</i>	Binding	EU, Canada and the US
2016	16-12 Recommendation by ICCAT on Management Measures for the Conservation of Atlantic Blue Shark Caught in Association with ICCAT Fisheries	New <i>(inactive)</i>	Binding	Japan
2016	16-13 Recommendation by ICCAT on Improvement of Compliance Review of Conservation and Management Measures Regarding	Amended <i>(inactive)</i>	Binding	N/A

Sharks Caught in Association with ICCAT Fisheries				
2017	17-08 Recommendation by ICCAT on the Conservation of North Atlantic Stock of Shortfin Mako Caught in Association with ICCAT Fisheries	Amended <i>(inactive)</i>	Binding	N/A
2018	18-06 Recommendation by ICCAT to Replace Recommendation 16-13 on Improvement of Compliance Review of Conservation and Management Measures Regarding Sharks Caught in Association with ICCAT Fisheries	Amended <i>(inactive)</i>	Binding	ICCAT Compliance Committee
2019	19-06 Recommendation by ICCAT on the Conservation of North Atlantic Stock of Shortfin Mako Caught in Association with ICCAT Fisheries	Amended <i>(inactive)</i>	Binding	N/A
2019	19-07 Recommendation by ICCAT Amending the Recommendation 16-12 on Management Measures for the Conservation of the North Atlantic Blue Shark Caught in Association with ICCAT Fisheries	Amended <i>(active)</i>	Binding	EU
2019	19-08 Recommendation by ICCAT on Management Measures for the Conservation of South Atlantic Blue Shark Caught in Association with ICCAT Fisheries	New <i>(active)</i>	Binding	EU
2021	21-09 Recommendation by ICCAT on the Conservation of the North Atlantic Stock of Shortfin Mako Caught in Association with ICCAT Fisheries	New <i>(active)</i>	Binding	The Chair of panel 4
2021	21-10 Recommendation by ICCAT amending recommendation 19-07 amending the Recommendation 16-12 on management measures for the conservation of the North Atlantic blue shark caught in association with ICCAT fisheries	Amended <i>(active)</i>	Binding	N/A
2021	21-11 Recommendation by ICCAT amending recommendation 19-08 on management measures for the conservation of South Atlantic blue shark caught in association with ICCAT fisheries	Amended <i>(active)</i>	Binding	N/A

Notes: Authors' own coding based on ICCAT Commission reports (1995–2021) as well as the 2022 Compendium Management Recommendations and Resolutions Adopted by ICCAT for the Conservation of Atlantic Tunas and Tuna-Like Species, available at:

https://www.iccat.int/Documents/Recs/COMPENDIUM_ACTIVE_ENG.pdf. N/A indicates that it was not possible to identify which member state or subsidiary body of ICCAT that the proposal came from.

Table S9. NGO preference attainment across the examined policy processes

NGO policy position	Example quote	Name(s) and year(s) of supporting NGOs	Preference attainment
<u>Shark finning process</u>			
Shark finning ban	<i>"ICCAT should use the precautionary approach and minimize waste and discards from shark catches by promoting full use through implementing shark finning bans"</i> (World Wildlife Fund statement to ICCAT 2004)	World Wildlife Fund (2004)	Yes
"Fins attached"	<i>"Regarding the practice of shark finning, the transshipment of fins and carcasses at sea, and their landing in separate harbors, must be prohibited. Instead, a "fins attached" policy must be established, in which fins must be left attached to the body in a natural way until landing."</i> (Oceana statement to ICCAT 2008)	Individual statements from Oceana (2008-2021), Pew Charitable Trusts (2013-2021), Humane Society International (2010), Ecology Action Centre (2013), Defenders of Wildlife (2021), Pro Wildlife (2021); Shark Project (2021), World Wildlife Fund (2021), Ocean Foundation (2021), Shark Guardian (2021)	No (but support for fins attached has increased)
	<i>"In line with global best practice ICCAT should also adopt a policy that requires sharks to be landed with their fins naturally attached"</i> (Pew Charitable Trusts Statement to ICCAT 2013)	Joint statements (from different combinations of the following NGOs): Defenders of Wildlife, Ecology Action Centre, Greenpeace, Humane Society International, Oceana, Ocean Foundation, Pew Charitable Trusts, Project Aware, Shark Advocates International, Shark Trust, TRAFFIC, World Wildlife Fund (2013-2021)	
	<i>"Specifically, we urge the Parties to adopt a prohibition on the removal of shark fins on board vessels, the retention on board, transshipment, and landing of shark fins which are not naturally attached to the shark carcass, before the first landing, without exception."</i> (Joint NGO statement to ICCAT 2013)		
<u>No-retention process</u>			
No-retention measures for: all thresher, bigeye thresher, hammerhead, requiem, oceanic	<i>"A prohibition of all targeted fisheries in the Atlantic for vulnerable and endangered pelagic species, including thresher sharks, hammerhead sharks and requiem sharks."</i> (Oceana statement to ICCAT 2008)	Oceana (2008-2011), Pew Charitable Trusts (2009-2010) Joint NGO statements from Ocean Conservancy and Pew Charitable Trusts (2008)	Yes (for bigeye thresher, hammerhead, oceanic whitetip and silky sharks)

whitetip, silky sharks	<p>“...the ICCAT 2008 ecological risk assessment showed silky sharks to be a highly vulnerable species. We therefore recommend that ICCAT adopt prohibitions on retention of [...] silky sharks.”</p> <p>(Pew Charitable Trusts statement to ICCAT 2011)</p>	No (for requiem sharks)
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Targeted sharks process: Porbeagle

No-retention or mandatory release for porbeagle sharks	<p>“In particular, we support a prohibition on the fishing and/or landing of porbeagle sharks (<i>Lamna nasus</i>), one of the Atlantic Ocean’s most depleted shark species.”</p> <p>(Oceana statement to ICCAT 2007)</p> <p>“Specifically, we urge ICCAT Parties to protect (through mandatory release and/or prohibition on retention) particularly vulnerable and/or depleted shark species taken in ICCAT fisheries. [...] we suggest priority be given to [...]:</p> <ul style="list-style-type: none"> – Porbeagle (<i>Lamna nasus</i>) - likely the North Atlantic’s most depleted oceanic shark species, classified by the IUCN (International Union for the Conservation of Nature) as Threatened with extinction on a global scale, Endangered in the Northwest Atlantic and Critically Endangered in the Northeast Atlantic.” <p>(Joint NGO statement to ICCAT 2008)</p>	<p>Individual statements from Pew Charitable Trusts (2010-2015), Ecology Action Centre (2013-2015), Oceana (2007, 2011-2015).</p> <p>Joint statements (from different combinations of the following NGOs): Defenders of Wildlife, Ecology Action Centre, Greenpeace, Humane Society International, Oceana, Ocean Conservancy, Pew Charitable Trusts, Project Aware, Shark Advocates International, Shark Trust, TRAFFIC, and World Wildlife Fund (2007-2008, 2013-2015)</p>	<p>Yes (mostly)</p> <p>A prompt (equivalent to mandatory) release was adopted, but not a no-retention measure</p>
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Blue sharks

precautionary catch limits/quotas for blue sharks, freeze catches at the current level	<p>“The establishment of catch limits/quotas for blue sharks [...] in the Atlantic by freezing the catches of blue sharks at the current level”</p> <p>(Oceana statement to ICCAT 2008).</p> <p>“The Commission also needs to act with precaution to ensure sustainable harvest of blue sharks is maintained before this species</p>	<p>Individual statements from: Oceana (2007, 2010-2013, 2015), Pew Charitable Trusts (2009, 2013-2016, 2018), Ecology Action Centre (2013-2016)</p> <p>Joint statements (from different combinations of the following NGOs): Defenders of Wildlife, Ecology Action Centre, Greenpeace, Humane Society</p>	<p>Yes</p>
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becomes as depleted as other shark species in the convention area. The Commission should establish precautionary catch limits for [...] blue sharks.”
(Ecology Action Centre statement to ICCAT 2013)

International, Ocean Conservancy, Ocean Foundation, Pew Charitable Trusts, Project Aware, Shark Advocates International, Shark Trust, TRAFFIC, and World Wildlife Fund (2008, 2013, 2015-2016, 2018-2019)

<i>Shortfin mako sharks</i>			
2008-2016: adopt precautionary and science-based catch limits/quotas for shortfin mako, to reduce or at least limit catches to current levels	<i>“For... [shortfin mako sharks], which are those of most economic value to the fleets catching them, catch limits must be established if the fisheries are to continue”.</i> (Oceana statement to ICCAT 2008)	Individual statements by Oceana (2008, 2010-2015), Pew Charitable Trusts (2009-2010, 2012-2016), Ecology Action Centre (2013-2016), World Wildlife Fund (2015) Joint statements (from different combinations of the following NGOs): Defenders of Wildlife, Ecology Action Centre, Greenpeace, Humane Society International, Oceana, the Ocean Conservancy, Pew Charitable Trusts, Project AWARE, Shark Advocates International, Shark Trust, TRAFFIC, and World Wildlife Fund (2008, 2013-2015)	No, not initially
2017-2021: no-retention for both stocks/long term) retention ban for the northern and catch limits for the southern stock, and additional measures to reduce mortality and mitigate bycatch	<i>“Until a scientifically based catch limit has been established and implemented, the retention of shortfin mako sharks should also be prohibited.”</i> (Pew Charitable Trusts statement to ICCAT 2011) <i>“The situation for makos is now critical. We urge ICCAT to adopt measures to immediately minimize mortality on this vulnerable species, in line with the SCRS advice and the precautionary approach. It is also imperative that retention bans and bycatch mitigation measures be incorporated into a comprehensive rebuilding program with mechanisms to ensure reliable monitoring and accountability for effective implementation.”</i> (Joint NGO statement to ICCAT 2017)	Individual statements from Pew Charitable Trusts (2011, 2017-2021), World Wildlife Fund (2020-2021); Ecology Action Centre (2017, 2020-2021), Sciaena (2020-2021), Defenders of Wildlife (2021), Shark Project International (2021), Ocean Foundation (2021), ProWildlife (2021), Sea Shepherd (2021), Shark Guardian (2021) Joint statements (from different combinations of the following NGOs): David Suzuki Foundation, Defenders of Wildlife, Dutch Elasmobranch Society, Earthworm Foundation, Ecology Action Centre, European Elasmobranch Association, German Elasmobranch Society, Humane Society International, Ocean Foundation, Pew Charitable Trusts, Project Aware Foundation, Sciaena, Sea Shepherd, Shark Advocates International, Shark Foundation,	Yes A rebuilding program (including a two-year retention ban, prompt release and additional measures was adopted for the northern stock. <i>(A more stringent measure for the southern stock was also adopted after the examined time period)</i>

"The scientific advice is clear indicating the ban of retention for the North Atlantic stock and a TAC for the Southern stock, to be the most effective measures to be urgently adopted. WWF strongly calls for the adoption of an ambitious mitigation plan that aims at achieving a zero retention policy, while introducing additional measures including improved data collection, area/time-based management, technical measures on fishing gears, safe handling and best practices for the release of live specimens and verification means as crucial tools to mitigate bycatch, reduce mortality and increase post-release survival."

(World Wildlife Fund statement to ICCAT 2020)

Shark League for the Atlantic and Mediterranean, Shark Project, Wildlife Conservation Society, Shark Trust, Submon, WildAid, WildTrust, and World Wildlife Fund (2017-2020).

Notes: Authors' own coding based on NGO policy statements, extracted from ICCAT Commission reports between 2002–2021.