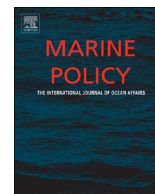




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## Opportunities for improving global marine conservation through multilateral treaties



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### ARTICLE INFO

#### Keywords:

Treaties  
Ocean governance  
Marine policy  
Fisheries  
Marine mammals  
Pollution

### ABSTRACT

The speed and scale of human impacts on marine species, such as climate change and exploitation for international markets, coupled with a poor regulatory regime and lack of enforcement, make it especially difficult to protect marine species beyond areas of national jurisdiction. Yet as the number of multilateral treaties continues to grow, the declining state of the world's oceans suggest that these treaties are largely failing to fulfill their missions and achieve meaningful protection. Here, an analysis of all multilateral treaties governing activities related to oceans is provided. A range of issues is examined including efficacy, geographic and taxonomic distribution, and other factors that facilitate or inhibit conservation. Since 1882, 103 countries have signed 265 multilateral treaties related to the management of marine resources. The majority of treaties (51%) deal with fisheries, 30% deal with pollution, 4% marine mammals and 15% deal with other topics. In terms of factors that may predict efficacy, 65% of marine treaties have secretariats, 50% have scientific mandates, and 13% have enforcement mechanisms; only 9% have all three. Given the context of the United Nations General Assembly's new commitment to manage human activity and its impact on common resources on the high seas, it is important to understand the strengths and weaknesses – individually and cumulatively – of existing binding marine agreements.

### 1. Introduction

Over the last half-century, the ‘tragedy of the commons’ has been an important concept for understanding the degradation of many common-pool resources, including marine fisheries, the global climate, and Antarctica [1–4]. However, the global commons are not as the name seems to imply, equally shared resources. The nature of the tragedy is such that while society benefits collectively in the long-term from cooperative action to protect a resource, individuals stand to gain more in the short-term by overexploiting it [1]. Consequently, over the last century, an increasing number of multilateral environmental agreements have been negotiated to govern human activity whose effects erode commons resources. World leaders have signed over 500 internationally recognized environmental agreements in the past five decades: 61 related to the atmosphere; 155 related to biodiversity; 179 pertaining to chemicals, hazardous substances, and waste; 46 land conventions; and 196 conventions related to water resource management [5]. After trade, environment is the most common area of global

rule-making [6].

Although the rapid growth of the number of environmental treaties may be seen as an encouraging sign of international commitment to protecting the environment, the declining state of the world's oceans [7–9] suggests that treaties are largely failing to fulfill their missions and achieve meaningful protection. ‘Treaty congestion’ – or the tendency of large numbers of treaties to overwhelm countries’ capacity to monitor, implement, and comply with new obligations – is a potential threat to marine conservation [10]. This congestion strains the organizational capacity of countries to handle the overlapping mandates, funding mechanisms, and distinct secretariats characteristic of these treaties. States with small governments or environmental budgets, in particular, may be unable to participate effectively in the many distinct fora. Perhaps the more troubling issue is that lack of coordination and energy behind these treaties risks turning the years of government negotiations into ‘empty treaties’ – those that look good on paper but do little to accomplish the stated objectives. A large number of uncoordinated agreements risks inconsistent obligations, overlapping

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<http://dx.doi.org/10.1016/j.marpol.2017.09.036>

Received 9 January 2017; Received in revised form 27 September 2017; Accepted 30 September 2017

Available online 08 October 2017

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norms, gaps in coverage, and duplication (e.g., [11]). With respect to wildlife and ecosystem conservation, empty treaties may actually exacerbate the decline in vulnerable systems by giving stakeholder groups the incorrect impression that positive change is underway (e.g., in western and central Pacific fisheries management; [12]). The weight of existing treaty responsibilities on states and the individuals responsible for negotiation of agreements can also inhibit the will to develop new treaties, even where there is a clearly identified gap. For example, until the fall of 2015, there was reluctance to negotiate a legally binding agreement that organizes and comprehensively addresses the conservation of marine biodiversity on the high seas – a commons covering more than 40% of the Earth's surface. Finally, lack of enforcement means that compliant users bear the brunt of the cost of the collective benefit.

Regulating resource use in the oceans is especially difficult, as exploited wildlife and pollution can travel over long distances [13]. The vastness of the areas over which these rules must apply make them even more difficult to enforce, especially in the high seas, where a patchwork coalition of enforcement agencies is responsible for policing human activity in a place where they have no individual national authority. These factors have been shown to make conservation more difficult in the ocean than on land. For example, large geographic ranges do not buffer marine megafauna from extinction in the same way that they do on land, and the ranges of marine megafauna are 10 times larger on average and span four times as many countries [14]. Sixty percent of the ocean remains outside areas under national jurisdiction [15]. Furthermore, the international nature of marine resource extraction makes it difficult for individual States to rely solely on their domestic environmental regulation to address global issues, undermining their willingness to enact strict regulations that constrain their constituencies [13,16]. To this end, strong, enforceable, multilateral treaties are a necessary component of international marine conservation.

In July 2017, the members of the United Nations General Assembly (UNGA) finalized plans to negotiate a new agreement that will specifically target activity in areas beyond national jurisdiction, including the high seas [17]. Prior to this decision, international agreements governing human activities in the global commons have only had a peripheral focus on conservation or have had a stated purpose of managing resource extraction and/or pollution (e.g., regional fisheries management bodies that manage the extraction of transboundary or high-seas living marine resources). Given the context of UNGA's commitment to develop a new multilateral agreement to manage human activity and its impact on common resources on the high seas, it is important to understand the current structure of binding agreements with applications to the marine environment. Here, an analysis of such agreements is provided.

## 2. Methods

To better understand the existing patchwork of multilateral ocean

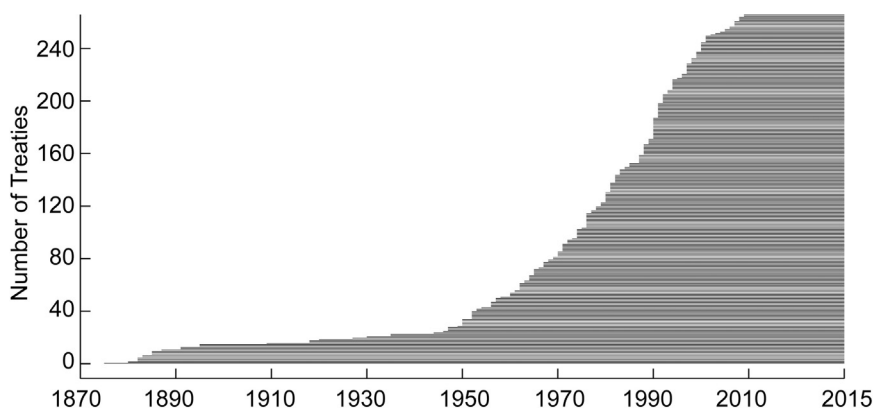


Fig. 1. Cumulative number of marine treaties by year entered into force.

treaties, a database of all binding multilateral agreements related to the use and management of marine resources is developed. Mitchell's [18] definition of international environmental agreement is applied to the marine environment as follows: a multilateral marine treaty is "an intergovernmental document intended as legally binding with a primary state purposes of preventing or managing human impacts on [marine] natural resources" [18]. Treaties regulating fisheries, conservation of biodiversity, protection of habitat and species, and other human activities impacting the marine environment such as mining and oil extraction were included. Other relevant treaties such as nuclear treaties and climate change were included if they have potential to impact the marine environment. Nonbinding treaties, bilateral treaties, soft law, and treaties related to human rights on the seas were considered beyond the scope of this study and therefore were not included.

A number of online treaty databases were consulted including the IUCN Environmental Treaty Status Data Set, The UN Treaty Collections, The International Environmental Agreements Database, The Ecolox Treaty Database, and the Fishbase Treaties and Conventions list. Information regarding the name, signatories, date of adoption, date entered into force, and major theme (fisheries, pollution, marine mammals, etc.) were compiled. Although there are many obstacles to analyzing agreement efficacy such as the lack of appropriate data or time scale [18] it was noted whether treaties had secretariats to provide reporting and coordination, scientific mandates requiring periodic expert review and assessment, and specific enforcement mechanisms to aid in implementation (e.g., compliance committees, boarding and inspection agreements, etc.). Although these three criteria were selected based on prior studies on effective environmental policy [19–23], and together were seen as a proxy to assess treaty 'efficacy', i.e., "whether the treaty solves the underlying problem" [19]. This, of course, is an oversimplification of the issue as it doesn't take into consideration the variation in characteristics of member states, the international context, and the underlying environmental problem, but it does serve as an important starting point. Finally, the range of taxonomic groups covered and geographic distribution across Large Marine Ecosystems (LME) and FAO Major Fishing Area (if applicable) were also examined.

## 3. Results and discussion

Since 1882, 103 countries have signed 266 multilateral treaties related to the management of marine resources (Fig. 1; Appendix A). The majority of treaties (51%) deal with fisheries, 30% deal with pollution, 4% deal with marine mammals and 15% deal with other topics. For treaties that were related to a specific taxonomic group, 72% were related to fish, 19% to mammals, 4% to turtles, 4% invertebrates and 1% algae. There is a wide range of infrastructure associated with marine treaties: 65% have secretariats, 50% have scientific mandates, and 13% have enforcement mechanisms; only 9% have all three (Table 1). Twenty-three treaties have none of these attributes, 80% of which are related to fisheries.

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