

**FROM HARBOR TO HIGH SEAS: AN ARGUMENT FOR
RETHINKING FISHERY MANAGEMENT SYSTEMS AND
MULTINATIONAL FISHING TREATIES**

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ABSTRACT

Regulation of international fisheries, and the relationship between nations and their management systems is one of the most pressing issues in international law and international relations. Oceans are facing complete marine wildlife depletion due to years of overfishing and mismanagement. Advancements in fishing technology have led to huge fishing fleets and unprecedented fish catch sizes, which, in turn, have caused a sharp drop in the number of fish in the oceans. This note proposes two substantial changes that must be made in order to quell this devastation and restore the oceans to their once bountiful state. These changes will be difficult and costly, but are necessary to reach the ultimate goal of a balanced oceanic ecosystem.

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INTRODUCTION

The fight to conserve and grow the world's ocean fish stocks continues after decades of discussion and debate. The oceans, at one point thought to contain a limitless bounty of renewable resources such as fish, crab, shrimp, and other marine wildlife have been overfished and placed in danger of irreparable harm.¹ Today, at least 70 percent of the world's fish stocks are considered fully exploited, overfished, or collapsed, and many ocean species are in serious danger of extinction.² To date, all attempts at resolving overfishing have failed, despite the many conservation efforts made. Part of the problem is that efforts to comply with treaties have been inconsistent. The list of fishing agreements signed in an attempt to curb the rapid loss of fish stocks is long, including: (1) The United Nations Convention on the Law of the Sea,³ (UNCLOS) (2) the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stock and Highly Migratory Fish Stocks,⁴ (Straddling Stocks Agreement) and (3) the Magnuson-Stevens Fishery Conservation and Management Act.⁵ While these treaties have affected nations'

¹ William J. Broad & Andrew C. Revkin, *Has the Sea Given Up Its Bounty?: Overfishing Imposes a Heavy Toll*, N.Y. TIMES, July 29, 2003, <http://www.nytimes.com/2003/07/29/science/has-the-sea-given-up-its-bounty.html>.

² *Id.*

³ U.N. Convention on the Law of the Sea, *opened for signature* Dec. 10, 1982, 1833 U.N.T.S. 397 (entered into force Nov. 16, 1994) [hereinafter UNCLOS] (this is the largest international fishing treaty to date).

⁴ Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 Dec. 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, *opened for signature* Dec. 4, 1995, 2167 U.N.T.S. 88 (entered into force Dec. 11, 2001) [hereinafter Straddling Fish Stocks Agreement].

⁵ Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. §1801 (2000) (the Magnuson Stevens Act is actually a domestic law, but was implemented for the same purpose as

attitudes toward fishing conservation, they lack sufficient enforcement mechanisms to compel member states to comply.⁶ As a result, the world's oceans are on a crash course with disaster, as oceanic ecosystems can no longer sustain overexploitation.⁷

This note examines the effect that *legal* overfishing and illegal, unreported, and unregulated (IUU) fishing have had on the high seas, and suggests a solution to stop both problems to set the oceans on a course of regrowth. Ultimately, this note suggests that, rather than maintaining already dangerously low levels of marine life, nation states should move away from the Maximum Sustainable Yield (MSY) model of fishing quotas in favor of a yield that promotes growth of fish stocks instead of maintaining already dangerously low levels of marine life. It also argues that a new international fishing treaty must be devised. One that unites all member states, puts more pressure on flag states to stop IUU fishing, and creates a centralized fishing regulation agency to inspect vessels to ensure compliance with fishing quotas.

Part I of this article will make a brief survey of existing international fishing treaties and comment on the reasons why the systems in place have failed to deliver on their initial goals. Part II will examine the history of the MSY quota system and argue that it can no longer be used, because its basic premise is flawed. Finally, Part III will argue for the implementation of a rigorous multilateral treaty that will encourage, and, if necessary, compel nations and individual fishermen to comply through the use of remedial actions or fines, threatening fishermen's profits.

I. BACKGROUND ON INTERNATIONAL FISHING TREATIES

When nation states began to realize that the oceans' natural supplies could be depleted, they began looking for ways to prevent the collapse of ocean ecosystems.⁸ The most serious factors of depletion that must be addressed are: (1) overfishing, the result of allowing fishermen

UNCLOS and the Straddling Stocks Agreement; to curb the drastic losses to the vital marine life in the oceans near the United States).

⁶ Zachary Tyler, *Saving Fisheries on the High Seas: The Use of Trade Sanctions to Enforce Compliance with Multilateral Fisheries Agreements*, 20 TUL. ENVTL. L.J. 43, 53–64 (2006) (noting that UNCLOS and flag nation monitoring have largely failed to curb any of the overfishing and fish stock depletion in the world's oceans).

⁷ *Id.* at 45.

⁸ Adrienne J. Oppenheim, Comment, *The Plight Of The Patagonian Toothfish: Lessons From The Volga Case*, 30 BROOK. J. INT'L L. 293, 293–95 (2004).

to harvest too many fish, and (2) IUU fishing, which is fishing done in violation of international and domestic laws. The two most prominent treaties that have attempted to curb these problems are UNCLOS⁹ and the Straddling Stocks Agreement.¹⁰

A. UNITED NATIONS CONVENTION ON THE LAW OF THE SEA

The 1982 version of UNCLOS, the third installment of the convention, was agreed upon by a consensus vote, and was the largest multinational agreement that the United Nations ever produced.¹¹ Many of the rights UNCLOS created had already been generally established over years of evolving customary international law¹² and fishing regulation.¹³ UNCLOS's most significant provision is that it grants nations a 200-mile exclusive economic zone (EEZ),¹⁴ in which all coastal states¹⁵ have exclusive control over commercial fishing regulation. In theory, the granting of an EEZ came with an obligation for each coastal state to protect and manage the resources in that zone; however, there has been little enforcement of such obligations by international policing agencies. Consequently, nations have not been held to any conservation standard and the oceans' ecosystems continue to suffer from overfishing

⁹ UNCLOS, *supra* note 3.

¹⁰ Straddling Fish Stocks Agreement, *supra* note 4.

¹¹ UNCLOS I was convened by fifty-eight states in Geneva in 1958, as an effort to ensure responsible use of marine resources and to protect various marine ecosystems from overfishing and piracy. It set out that regulation on the high seas could be carried out by a vessel's flag state. This left the questions of the size of a territorial sea, and whether national fisheries zones (similar to EEZ's) would be accepted by international law. UNCLOS II sought to answer these questions, but was largely unsuccessful and forced the immediate reconvention in order to create UNCLOS III. Rebecca Bratspies, *Finessing King Neptune: Fisheries Management and the Limits of International Law*, 25 HARV. ENVTL. L. REV. 213, 225 (2001); Brooke Glass-O'Shea, *Watery Grave: Why International and Domestic Lawmakers Need to do More to Protect Ocean Species from Extinction*, 17 HASTINGS W.-NW.J. ENVTL. L. & POL'Y 191, 195-96 (2011).

¹² Customary international laws are unwritten rules that arise from "a general and consistent practice of states followed by them from a sense of legal obligation." RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS LAW OF THE UNITED STATES §102(2) (1986) (explaining that customary international law is one of two ways to regulate international law; the second is through the treaty or international agreement).

¹³ Richard J. McLaughlin, *UNCLOS and the Demise of the United States' Use of Trade Sanctions to Protect Dolphins, Sea Turtles, Whales, and Other International Marine Living Resources*, 21 ECOLOGY L.Q. 1, 29 (1994).

¹⁴ *Id.* (explaining that an EEZ is a 200-mile bubble that extends from the coast into the ocean from each coastal state).

¹⁵ *Id.* These states are particularly involved in all international fishing treaties because their geographical position adjacent to the ocean has created a sense of personal property for the nation-states.

and IUU fishing.¹⁶ The lack of policing of the EEZs has been the main downfall of UNCLOS. Although the use of EEZs has not reached its full conservation potential, the right to control one's EEZ has become an important interest for coastal states.

The major advantage that UNCLOS provided states was the uninhibited right to control fish stocks within their particular EEZ.¹⁷ Uninhibited control gives states the ability to set fishing quotas and enforce other regulatory measures in order to conserve their ecosystems. The creation of EEZs sparked a hope that the 160 UNCLOS member states would be able to drastically reduce the amount of overfishing on the seas and begin saving fish stocks by implementing maritime laws against vessels engaging in overfishing and illegal fishing within their EEZ.¹⁸ With sovereignty to patrol and enforce fishing laws in their own EEZ, all coastal states have the freedom to board any fishing vessels within their EEZ to determine whether they are violating fishing regulations or quotas. If there are violations occurring, the policing vessel may shuttle the violators into the harbor, hold the captain and crew, and initiate sanctions against them in the coastal state's court system under local maritime laws.¹⁹

With UNCLOS being one of the largest treaties ever struck, there was hope that it would resolve most of the problems with ocean fish stock depletion. Those hopes have largely been unfulfilled and UNCLOS has proven to have many problems that were not recognized at the time of its signing. The first, and most significant, problem is that the 200-mile EEZ range still leaves thousands of square miles of unregulated *high seas*.²⁰ The high seas are any ocean waters that do not fall within the EEZ of any coastal state and are, consequently, "outside the jurisdiction of any state."²¹ On the high seas, there is virtually no way for countries to

¹⁶ Mary Turnipseed, Stephen E. Roady, Raphael Sagarin & Larry B. Crowder, *The Silver Anniversary of the United States' Exclusive Economic Zone: Twenty-Five Years of Ocean Use and Abuse, and the Possibility of a Blue Water Public Trust Doctrine*, 36 *ECOLOGY L.Q.* 1, 5-6 (2009).

¹⁷ RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS LAW OF THE UNITED STATES §514 (1986).

¹⁸ Ryan P. Kelley, *UNCOLS, But No Cigar: Overcoming Obstacles to the Protection of Maritime Piracy*, 95 *MINN L. REV.* 2285, 2296-97 (2011).

¹⁹ *Id.* at 2297.

²⁰ Jon Van Steenis, *Pirates As Poachers: International Fisheries Law and the Bluefin Tuna*, 29 *CAP. U. L. REV.* 659, 660 (2002).

²¹ Kelly, *supra* note 18, at 2288 (explaining that because the high seas are outside the jurisdiction of any state it is nearly impossible to punish vessels that may be overfishing or fishing out of season. As a result, these areas on the high seas are being depleted of valuable resources).

enforce conservation laws or regulations against vessels fishing illegally.²² The only way to regulate these illegal activities is if the vessel involved is flying the flag of the enforcing nation.²³ If a state has expressly granted a vessel the right to fly its flag, then the maritime laws of that state regulate the vessel.²⁴ This is known as the right of exclusive jurisdiction.²⁵ Because the high seas are so vast, it is difficult for states to patrol open waters in order to regulate their own vessels engaging in illegal fishing.²⁶ To bolster regulation, flag nations would have to randomly patrol the high seas in an attempt to find vessels that are flying their flag and determine if they were fishing illegally.²⁷ In practice, this type of investigation is prohibitively expensive and inefficient for flag nations to seek to enforce their own maritime laws against the ships that fly their flag. So flag flying vessels go virtually unchecked both on the high seas and within EEZs.²⁸ As a result, many vessels are able to fish illegally without the knowledge of their flag state, as they may be thousands of miles off the coast of the state whose flag they fly.²⁹

Because there is little chance of being caught, a vessel can receive its flag from nearly any country (e.g., the United States) and then proceed to fish on the high seas in waters very far from that flag state (e.g., the Atlantic ocean close to Iceland). It would be infeasible for the US government to send ships around the world simply to confirm that each ship flying its flag was in compliance with domestic and international fishing regulations. The effect is that fishing vessels simply run rampant on the seas under the licensure of a flag state. This is known as “flying a flag of convenience,” which results in a free-for-all on the high seas and squashes all hopes of conservation.³⁰

²² Deirdre Warner-Kramer, *Control Begins at Home: Tackling Flags of Convenience and IUU Fishing*, 34 GOLDEN GATE U. L. REV. 497, 503 (2004).

²³ All commercial fishing vessels must raise or fly the flag of a particular state in order to fish on the high seas. States can allow any vessel to fly their flags (regardless of whether the crew and ship are from the flag state), but they are then responsible, in theory, for those vessel's actions on the high seas. Once a nation has given a vessel permission to fly its flag the nation then has the right to set regulations, board the vessel when on the high seas, and place sanctions against the vessel for noncompliance with fishing quotas and other regulations. *Id.*

²⁴ *Id.*

²⁵ *Id.*

²⁶ *Id.*

²⁷ *Id.*

²⁸ *Id.*

²⁹ *Id.* at 510.

³⁰ *Id.* at 510.

A second problem not addressed by UNCLOS is that the agreement for a 200-mile EEZ failed to recognize that many fish are migratory and fish stocks move in and out of regulated zones.³¹ These fish are called straddling stocks and it is estimated that "more than half of the world's major maritime capture fisheries . . . straddl[e] the boundary between national regulation and international commons."³² Because so many fish stocks migrate between regulated and unregulated areas it becomes almost impossible to ensure the proper degree of conservation.³³

A final adverse effect that this has had is that fishing vessels now simply refuse to fish within EEZs and, instead, will fish the outer edges of an EEZ, where they cannot be regulated by any state except the one whose flag they fly.³⁴ This lack of a remedial system to stop IUU fishing on the high seas led to later agreements aimed at resolving the problem; one such agreement is the Straddling Stocks Agreement of 1995.³⁵

B. STRADDLING STOCKS AGREEMENT

The Straddling Stocks Agreement sought to build on the successes of UNCLOS while resolving many of its deficiencies.³⁶ The goal of the agreement was to afford substantive rights and obligations to member states in order to allow UNCLOS to take the form of a more mandatory regulatory scheme.³⁷ The pursuit of that goal began with expanding cooperation between member states on conservation of straddling fisheries.³⁸ The agreement requires that states do their best to cooperate with other states, both coastal states and distant water fishing nations (DWFNs),³⁹ by creating a plethora of factors for determining "compatible conservation measures" between these coastal states and

³¹ Bratspies, *supra* note 11, at 226–27.

³² *Id.* at 227.

³³ *Id.*

³⁴ *Id.*

³⁵ Straddling Fish Stocks Agreement, *supra* note 4.

³⁶ Mark Christopherson, *Toward a Rational Harvest: The United Nations Agreement on Straddling Fish Stocks and Highly Migratory Species*, 5 MINN. J. GLOBAL TRADE 357, 368 (1996).

³⁷ *Id.*

³⁸ *Id.*

³⁹ Distant water fishing nations do not have a coastal border, but still take part in substantial commercial fishing and are members of the international fishing treaties.

DWFNs.⁴⁰ Compatible conservation measures are adjustments and compromises that states make, aimed at reducing the negative effects arising from mismanagement of fisheries.⁴¹ In essence, the Straddling Stocks Agreement strove to create a symbiotic relationship where bordering states had to work together to implement measures that did not simply regulate one EEZ, but the regulated many interconnected and dependent EEZs.⁴² If nations use these compatible conservation measures, then, fish stocks can be treated as a single unit, measured in both the EEZs and the high seas, which would lead to greater regulation and more effective conservation.⁴³ All of this is the result of greater coordination and communication between multiple nation states, as member states now have a duty to take steps toward creating regulations to safeguard other states' EEZs, as well as the high seas.⁴⁴

The Straddling Stocks Agreement uses regional and subregional fisheries to manage and regulate fish stocks.⁴⁵ These fisheries are burdened with many responsibilities, including determining desired fishing quotas, determining what the minimum standards for professional use of commercial vessels should be, and running scientific tests to determine the health and virility of various fish stocks in their region.⁴⁶ All decisions reached by the regional and subregional fisheries are binding on all other member states.⁴⁷ This simple step was the first in creating mandatory enforcement and recognition of fishing quotas and standards.

In addition to using regional fisheries, the Straddling Stocks Agreement sought to substantially expand the enforcement power that UNCLOS severely lacked.⁴⁸ It is in this area that the Straddling Stock Agreement broke innovative ground. The Straddling Stocks Agreement explicitly gives regional or subregional regulating vessels the ability to

⁴⁰ Gisselle Vigneron, *Compliance and International Environmental Agreements: A Case Study of the 1995 United Nations Straddling Fish Stocks Agreement*, 10 GEO. INT'L ENVTL. L. REV. 581, 586 (1998) ("[T]he agreement seeks to ensure a harmonious development of coherent conservation and management measures for the EEZs and the high seas, and thereby eliminate some of the existing tensions.").

⁴¹ *Id.*

⁴² *Id.*

⁴³ *Id.* at 587.

⁴⁴ *Id.*

⁴⁵ *Id.*

⁴⁶ *Id.*

⁴⁷ *Id.*

⁴⁸ *Id.*

board and inspect other flag nation's ships fishing on the high seas.⁴⁹ The boarding of flag vessels is not restricted as long as boarding is for the purpose of seeking compliance with the fisheries management and conservation measures.⁵⁰ After boarding, the violation must be reported to the flag state and that state may investigate and bring the vessel to their closest harbor if they have "clear grounds for believing that [the] vessel has committed a serious violation."⁵¹ For example, a regional vessel patrolling the high seas 250 miles off the coast of Alaska would be allowed to board a salmon-fishing vessel that was flying the Russian flag in order to confirm that the Russian vessel was conforming to the relevant salmon quotas. They would not need a special warrant or agreement; they are simply empowered to board the ship. If there were a violation on the Russian vessel, then the regional ship could tow the Russian vessel back to Alaska, where the ship could be held in port until a settlement was reached.

The Straddling Stocks Agreement has the potential to drastically improve the effectiveness of UNCLOS, however, the lack of vehement implementation of the agreement thus far has rendered it a figure-piece, rather than an actual advancement in fishing regulation. This is evidenced by Charles Glover's research, in which he finds that regulating states often ignore complaints of overfishing or illegal fishing.⁵² According to Glover, when regulating vessels do investigate complaints of overfishing, they often turn a blind eye to violations instead of vigorously enforcing the compatible conservation measures.⁵³ This lack of regulation is a clear violation of the Straddling Stocks Agreement, but the remedial system is not operating in such a way as to force member states to comply. As a result, fish stocks continue to struggle for survival.⁵⁴

Because of their significant failures, neither UNCLOS nor the Straddling Stock Agreement can be used as models for future conservation efforts. Instead, a new treaty must be devised that builds

⁴⁹ Christopherson, *supra* note 36, at 371.

⁵⁰ Erik Franck, *Pacta Tertis and the Agreement for the Implementation of the Straddling and Highly Migratory Fish Stocks Provisions of the United Nations Convention on the Law of the Sea*, 8 TUL. J. INT'L & COMP. L. 49, 63 (2000).

⁵¹ Vigneron, *supra* note 40, at 588.

⁵² Glass-O'Shea, *supra* note 11, at 204.

⁵³ *Id.*

⁵⁴ *Id.*

upon the best ideas from past efforts; with a mandatory compliance system⁵⁵ that puts states in a better position to carry out enforcement.

II. THE MAXIMUM SUSTAINABLE YIELD SYSTEM

Even before illegal fishing became an international crisis, the problem of *legal* overfishing plagued the high seas.⁵⁶ The oceans were once thought to contain an inexhaustible supply of marine life, so conservation of marine species was never a priority.⁵⁷ Commercial vessels have long attempted to fish for large catches, without regard for the detrimental effects on marine ecosystems.⁵⁸ This harm has only been amplified since the 1950s, when industrial fishing began spreading rampantly around the world with technological advances that rapidly increased yields.⁵⁹ Once wealthy and more developed nations began to realize that the world's fish supply was finite and that overfishing could have a significant effect on future yields of commercial fishing, a system was implemented to curb the drastic reduction in fish stocks.⁶⁰ In order to combat overfishing, the general consensus in international fishing was to adopt the maximum sustainable yield system (MSY).⁶¹ Instead of solving the overfishing problem, however, the implementation of MSY to set fishing quotas has only led to further desolation of marine populations.⁶² The MSY system must be done away with or significantly modified.

⁵⁵ See *infra* Part III for further discussion on the implementation of a mandatory compliance system.

⁵⁶ Erik E. Bilsky, *Conserving Marine Wildlife Through World Trade Law*, 30 MICH. J. INT'L L. 599, 600 (2009).

⁵⁷ Broad & Revkin, *supra* note 1.

⁵⁸ Bilsky, *supra* note 56, at 601.

⁵⁹ *Id.* at 603.

⁶⁰ Dave Bard, *Fishing to the Limits: The Trouble with Maximum Sustainable Yield and the Need for Target and Limit Reference Points*, PEW ENVTL. GRP., (Feb. 15, 2013) <https://www.wcpfc.int/system/files/PEW-Reference-Points.pdf>.

⁶¹ *Id.*

⁶² Bilsky, *supra* note 56, at 607–08 (for example, from 2002 to 2008 the cod population in Georges Bank dropped from 217,000 metric tons to 148,084 metric tons. Bilsky argues that the MSY was too high by a factor of one and a half).

A. BACKGROUND ON THE MAXIMUM SUSTAINABLE YIELD

The MSY principle has been the dominant approach to creating fishing quotas and limits since the 1950s.⁶³ The international community widely accepted this method because it was touted as an objective, scientific test, aimed at fully utilizing all that the oceans have to offer, without depleting resources and diminishing future catches.⁶⁴ The current definition of MSY, as defined in the Guideline for National Standard 1, is "the largest long-term average catch or yield that can be taken from a stock or stock complex under prevailing ecological and environmental conditions."⁶⁵ What the MSY attempts to achieve is to allow commercial fishing vessels to take the highest possible amount of resources from the ocean without causing ecosystem collapse or long-term detrimental effects on fishing products.⁶⁶ Using the MSY system is like playing with fire; if it goes on for too long, it will likely have catastrophic effects.

Keeping entire species and ecosystems on the brink of collapse is too risky for multiple reasons. One problem is that using MSY creates a delicate balance in which perfect regulation of quotas is required to avoid a significant loss of fish stocks. Perfect enforcement is impossible, so overfishing becomes inevitable. This is an argument based on simple logic and arithmetic: if the quotas for fishing vessels are set to the absolute highest numbers necessary to preserve harmony, then any overages by those vessels will take the catch yield over that which the ecosystem can sustain. Although immediate ecosystem collapse is unlikely, these unregulated overages (that range in quantity) lead to the depletion of fish stocks over time, contrary to the intent behind MSY. This is exactly what has happened over the past sixty years since MSY was implemented, and almost all of the world's fish stocks are now in jeopardy,⁶⁷ driving the necessity to move away from the MSY model.

Although a scientific model to create limits is desirable because it seems objective and straightforward, MSY has not provided the black and white clarity that many thought it would when it came to prominence in the 1950's.⁶⁸ There is a long history of difficulty in determining

⁶³ Donna R. Christie, *Living Marine Resources Management: A Proposal for Integration of United States Management Regimes*, 34 ENVTL. L. 107, 132 (2004).

⁶⁴ *Id.*

⁶⁵ 50 C.F.R. § 600.310(c)(1) (2004).

⁶⁶ Bard, *supra* note 60.

⁶⁷ *Id.*

⁶⁸ *Id.*

exactly how to set the MSY because of a multitude of complexities in choosing which factors to use for calculation purposes.⁶⁹ For example, it is almost impossible to figure out how many fish there actually are in a particular fish stock, because so many fish species on the high seas straddle an EEZ or are highly migratory.⁷⁰

Compounding this problem, many countries, even the wealthiest of countries, commonly set their MSY quotas based on biological information obtained through a process of modeling, instead of up-to-date field research.⁷¹ Modeling is a data projection of the current fish population based on research done in the field multiple years in the past.⁷² Likewise, modeling is based on incomplete data collected from small sample sizes of fish populations, so year-to-year fluctuations may dramatically alter the projections, simply because data is not collected uniformly or frequently enough to keep up with real-time changes within fish stocks.⁷³

The alternative to setting MSY quotas based on modeling is to employ a full-fledged field study with the goal of accurately predicting the levels of single fish species. This method is very expensive, which is why most countries, even wealthy countries, prefer to use a modeling system.⁷⁴ States that use modeling will often take the information from one year and assume that the same information will hold true for the next year. However, without using new field data each year, or at least every few years, it is impossible for MSY calculations to be as effective as anticipated.⁷⁵

Not only has it proven especially difficult to generate accurate data for the MSY system, but the data that is released fails to take into account multiple factors that are very important to the health and regrowth of the oceans' ecosystems. The MSY system is a single-stock-focused calculation; meaning that it only considers the effect that fishing will have on the fish stock of whichever species the calculation is performed for.⁷⁶ For example, when calculating the MSY for herring, the scientific data and accompanying quota do not consider the effect that

⁶⁹ Christie, *supra* note 63, at 133.

⁷⁰ *Id.*

⁷¹ Bilsky, *supra* note 56, at 607.

⁷² *Id.*

⁷³ *Id.*

⁷⁴ *Id.*

⁷⁵ *Id.*

⁷⁶ *Id.*

herring fishing will have on the tuna population (tuna often feed on herring). This oversight could lead to the depletion of both the herring stock and tuna stock for a substantial period of time, and may eventually have economic effects on the fishing industry.⁷⁷ It is important to recognize that the use of the MSY system not only threatens the ecological security of the world's oceans, but also has the potential to reduce commercial fishing rates, which could cause fishermen to lose their livelihoods and cause the price of fish to skyrocket in domestic markets.⁷⁸

One final problem with the MSY system is that, even when it is used, it is frequently implemented incorrectly. In theory, MSY should be the ultimate ceiling of any particular resource that can be harvested from the sea in order to maintain a healthy fish stock.⁷⁹ Instead of sticking to that as the status quo, many countries use MSY calculations as the *baseline* for the amount of fish they wish to harvest in a given year and rely on the myth of perfect regulation to prevent overfishing.⁸⁰ However, reliance on perfect regulation is foolish, because it is both fiscally and practically impossible.

For the 1992–93 fishing season, the quota for the catch of mackerel on the US Gulf Coast was set at the MSY (6.1 million pounds), but the United States instead used a quota of 7.8 million pounds total (5.3 million for recreational fishing and 2.5 million for commercial fishing).⁸¹ The outcome of this decision predictably led to overfishing because the quota, based on the MSY as the desired catch amount, was set much too high. Of the 7.8 million-pound total, the recreational fishing quota was set at 5.3 million pounds, however, because of imprecise methods of regulation, there was a severe overfishing problem, and the total recreational intake was 6.2 million pounds.⁸² That 6.2 million-pound catch was above the suggested absolute maximum (i.e., the MSY). Without even taking into account commercial fishing intake, the harvest of mackerel in the Gulf Coast was higher than the MSY and the mackerel population was in serious danger of catastrophic collapse.⁸³ The lesson to be learned from the US Gulf Coast mackerel example is that quotas set at

⁷⁷ *Id.*

⁷⁸ *Id.*

⁷⁹ 50 C.F.R. § 600.310(c)(1) (2004).

⁸⁰ Bilsky, *supra* note 56, at 609.

⁸¹ *Id.* at 611.

⁸² *Id.*

⁸³ *Id.*

the MSY are inherently flawed, because perfect regulation of fishing yield is impossible, and overfishing will likely ensue as a result.

B. SOLUTION TO THE MAXIMUM SUSTAINABLE YIELD PROBLEM

The MSY system is failing. There must be alternatives put into place to counteract MSY's shortcomings. The two most feasible alternatives are abandonment of the MSY system in lieu of the more effective Maximum Economic Yield (MEY) system, or simply a shift in the way MSY measurements are carried out.

1. *Abandonment of the Maximum Sustainable Yield Calculation*

Even though the majority of the international community has accepted that MSY is a flawed and dangerous way to measure and set fishing quotas, it still remains the most commonly used measurement system.⁸⁴ The choice to keep the MSY system reinforces the idea that states would rather maintain fish stocks, instead of restoring them by implementing strict fishing quotas.⁸⁵ In order to promote healthier and more constant fish stocks, states must commit to fish stock growth and the MSY must be abandoned.

The MSY system has continually proven that it is unreliable; therefore, going in another direction is not only plausible, but also necessary. In order to move away from the MSY system, however, there has to be another system that can take its place. The most readily available and reasonable alternative is to use MEY.⁸⁶ Instead of being based on the highest yearly catch that can sustain a fish stock, the MEY is a much lower catch limit that is more focused on the economic benefits of commercial fishing.⁸⁷

The MEY premise is straightforward; there is an economic benefit to fishermen if they take lower yields of fish per year, in order to let fish stocks replenish and become healthier.⁸⁸ In an MEY system, the fishermen take fewer fish from the oceans per year, in turn giving the fish the ability to reproduce, and stocks can grow quantitatively larger, as

⁸⁴ Bard, *supra* note 60.

⁸⁵ Glass-O'Shea, *supra* note 11, at 199.

⁸⁶ Bilsky, *supra* note 56, at 606.

⁸⁷ *Id.*

⁸⁸ Villy Christensen, *MEW=MSY*, 11 FISH & FISHERIES 105, 106 (2010).

well as allowing the fish to grow physically larger and more mature.⁸⁹ The latter fact is the most important benefit to fishermen. Fishermen require an economic reason to justify harvesting fewer fish. Fish that are larger and more mature will yield a higher net profit for fishermen.⁹⁰ This benefit is even higher for fish that sell for more money per pound than others, such as tuna or salmon, as opposed to cod.

The MEY system is based on the now proven theory that it becomes progressively more expensive to catch fish the more a fish stock is depleted.⁹¹ With scarce amounts of fish in the stocks, a vessel may have to spend extra days and weeks searching for fish, and buy updated equipment to locate fish more precisely.⁹² Although the MEY system may produce a smaller catch and, therefore, a smaller income, it can cut the operating costs for a fishing captain drastically, therefore increasing the captain's profits.⁹³ Research into the effect that the MEY system could have on the tuna industry alone has suggested that the MEY system could produce as much as \$3.2 billion in additional profits over the next fifty years, while also replenishing tuna stocks.⁹⁴ The MEY system is certainly the most studied and tested alternative method to MSY, and the seemingly win-win situation it creates for both fishermen and fish stocks makes it a very viable option to try to solve the problems that the MSY system has created for the world's ocean ecosystems.

⁸⁹ *Id.*

⁹⁰ See generally JOHN M. GATES, PEW ENVIRONMENTAL GROUP, INVESTING IN OUR FUTURE: THE ECONOMIC CASE FOR REBUILDING MID-ATLANTIC FISH POPULATIONS (2009), available at http://www.pewtrusts.org/~media/legacy/uploadedfiles/wwwpewtrustsorg/reports/protecting_ocean_life/final20PEGREbuilding20072209pdf.pdf (outlining the economic effects of overfishing, and the positive impact that better regulation could have on fish stocks over an extended period of time).

⁹¹ Richard Black, *Catch Cuts Bring Bigger Profits*, BBC NEWS (Dec. 7, 2007), <http://news.bbc.co.uk/go/pr/ft/-/2/hi/science/nature/7127761.stm>.

⁹² *Id.*

⁹³ *Id.* A smaller yield in terms of number of fish caught may seem like a negative, but if fish are more abundant in the oceans, the cost of locating and catching the fish is much lower. The gain on the back end is so great in the MEY system, that fishermen actually net a higher profit than they would if they were allowed to catch a greater number of fish.

⁹⁴ Christensen, *supra* note 88, at 106 (showing that higher profits like this can be expected with every commercially harvested fish species. If all species see profit gains in the billions of dollars, then the benefit of switching to the MEY system is not only great for the fish stocks, but highly beneficial for fishermen).

2. Change In The Use Of The Maximum Sustainable Yield

The scientific community has generally accepted that the MEY system is better suited to set effective fishing quotas; however, there are still some doubters who do not believe that the effects will be more beneficial than using the MSY system.⁹⁵ If states choose to agree with that minority, then it could still be feasible to use the MSY system, but its use would have to be completely reimagined. As of now, MSY is used as the baseline catch limit, with many states using it only as an arbitrary number that does not bind commercial fishermen to a catch limit; this has to change.⁹⁶ Instead, MSY should be used simply as a statistic that indicates the absolute worst-case scenario ceiling for the amount of fish taken out of a given stock in any year. In order to set the actual desired quota, states should look at MSY for each individual fish stock and set quotas at some percentage much lower than MSY.

The goal of setting the actual quota at a percentage lower than MSY would be to promote the growth of fish stocks, instead of simply maintaining stocks at already dangerously low levels. By reducing yield, existing fish would be able to grow larger, more mature, and more fertile.⁹⁷ More fertile fish would, over time, actually mean higher yields of spawning and young fish to help grow the fish population.⁹⁸

Another advantage to setting the quota at a percentage far below MSY would be the creation of a natural buffer between the quota and MSY. This buffer would serve as a cushion for when vessels overfish their quotas. Traditionally, any overfishing would automatically push overall yield over MSY and place the stock in danger, but if the quota was set at 70% of MSY, then there would be a 30% buffer, reducing the likelihood of overfishing having a detrimental effect on fish stocks. To be clear, however, the goal would be not to have overfishing, as the 30% buffer would still exist mainly for the purpose of replenishing fish stock. If overfishing approached that 30%, then fish stock would again only be maintained, and not grown.

Because the goal is to maintain the 30% barrier for fish stock growth, there must also be much stricter regulations placed on fishermen to keep them from overfishing and cutting into the buffer zone. The first

⁹⁵ *Id.*

⁹⁶ Glass-O'Shea, *supra* note 11, at 199.

⁹⁷ Black, *supra* note 91.

⁹⁸ *Id.*

way to help fish stocks through regulation would be to put limitations on the size of fish allowed to be brought onto vessels, in effect, a form of catch-and-release policy. This would be a most onerous and tedious requirement, but could also be one of the most effective, because of the benefits of having large and mature fish in the oceans.⁹⁹

A recent University of California-Davis research experiment showed that removing all of the large fish in a given fish stock led to fewer fish being born and reductions in the average size of the fish that were born, owing to the removal of large fish from the gene pool.¹⁰⁰ This is a significant problem because fishermen are attracted to larger fish for their relative value. It is also a problem because fertility rates determine substantially how fast a fish stock will replenish itself.¹⁰¹ Another solution would be to limit the quantity of large fish that vessels can harvest. Limiting the large fish harvest would be a good compromise, as it would allow fishermen to harvest *some* of the largest fish in the oceans, without depleting the entire large fish stock. It is better for fishermen to have some right to large, high-profit fish than completely disallowing them from harvesting the most profitable segment of the fish stock, but it is also better for the stock not to allow fishermen to keep everything that happens to make its way onto a vessel.

III. THE CREATION OF A NEW MULTINATIONAL FISHERY MANAGEMENT TREATY

Changing the way the MSY system is used to set quotas is only the first step in fixing the problems that all commercial fishing nations face. It is time for nations to choose “restoring” fish stocks over “maintaining” them.¹⁰² The only way to put any muscle behind a genuine effort to regulate overfishing is to implement a new treaty aimed at resolving the problems of past treaties. A new treaty is an ambitious goal, but it is the most feasible way to set the seas on a path of regrowth after years of overfishing. Many of the requirements under the new treaty would reflect or duplicate those of past international fishing treaties, but there would also have to be many improvements and changes to a new,

⁹⁹ *Id.*

¹⁰⁰ Iqbal Pittalwala, *Fewer Fish Eggs, Smaller Fish Result from Over-fishing*, UCR NEWSROOM (Jan. 19, 2006), <http://newsroom.ucr.edu/1224>.

¹⁰¹ *Id.*

¹⁰² Glass-O'Shea, *supra* note 11, at 199.

all-encompassing fishing agreement. Included in these changes would be a mandatory adjudicatory system, a harbor-policing policy, and trade sanctions for noncompliant states.

A. MANDATORY HARBOR POLICING

The first, and most important change that must be made is the establishment of a mandatory harbor-policing system. There are two cornerstone changes that would be necessary for a policing system to be effective. First, there would have to be a requirement that all commercial fishing vessels be equipped with a Vessel Monitoring System (VMS). Second, and more ambitiously, each major harbor of the member states to the new treaty would set up regional offices as part of a larger centralized agency, charged with inspecting and monitoring the catch of all commercial fishing vessels within their region.

1. Implementing Mandatory Vessel Monitoring Systems

The twentieth and twenty-first centuries have brought substantial advances in nautical technology. Many of these advances, such as bottom trawlers, have led to much larger fishing harvests and have detrimentally harmed fish stocks because there have been few checks on the size of fish yields.¹⁰³ In fact, it has been said that bottom trawling is “the world’s largest human-caused disturbance in the oceans.”¹⁰⁴ But one invention from the late-twentieth century that can be used to reverse these negative trends on the high seas is the implementation and use of Vessel Monitoring Systems.

VMS are satellite-based global positioning systems (GPS) that can pinpoint the exact, real-time location of fishing vessels anywhere, whether in an EEZ or on the high seas.¹⁰⁵ VMS require a transceiver to be placed on a vessel, which then relays location data to a base station on the mainland of whichever state is monitoring that portion of the

¹⁰³ Tamara Mullen, *The Convention on Biological Diversity & High-Sea Bottom Trawling: The Means to an End*, 14 U. BALT. J. ENVTL. L. 135, 136 (2007).

¹⁰⁴ Trawling is a process by which fish and other organisms are caught by dragging a huge net over the ocean floor; along with catching fish, the nets also destroy many fish and plant species that inhabit the ocean floors. *Id.*

¹⁰⁵ Nicola Kieves, *Crisis at Sea: Strengthening Government Regulation to Save Marine Fisheries*, 89 MINN. L. REV. 1876, 1912 (2005).

ocean.¹⁰⁶ There are many benefits to having constant pinpoint GPS locations for all fishing vessels. The first and most important benefit of VMS is the potential to substantially deter vessels from overfishing.¹⁰⁷ When vessels are under constant surveillance there is greater incentive to follow regulations closely, out of a fear of being caught and reprimanded.¹⁰⁸ With VMS, each individual country would be able to monitor any ship fishing within its EEZ, in order to determine if that particular vessel was fishing within a restricted area, potentially, an area where the fishing quota of a particular fish stock had already been filled for the year.¹⁰⁹ If it were determined that such a vessel was fishing illegally in that EEZ, then the EEZ state would be able to track down the vessel and board it for inspection, before towing it into harbor to be held and issued sanctions.¹¹⁰ At first blush, it may appear that this is a very rigorous standard that puts a lot of responsibility on ship captains; however, taking a strict stance against overfishing and illegal fishing is the only way to proceed with fish stocks in such dire straits.

A second effect that a mandatory VMS requirement would have on the monitoring of commercial vessels and fishing quotas would be a drastic reduction in the financial cost of enforcement of quotas in EEZs.¹¹¹ Without VMS tracking, coastal states are more or less restricted to sending vessels out into the EEZ to search aimlessly for wayward vessels that may be fishing illegally. The cost of this type of patrolling can be astronomical, taking into consideration the costs of deck crews' salaries, maintenance to vessels, and fuel.¹¹² In comparison, instead of having to patrol endless waters, VMS enables a monitor on the mainland to detect all unregistered or unauthorized vessels and to easily dispatch enforcement officers to investigate. For example, the Coast Guard estimated in 1999 that it would cost \$23 million to patrol an EEZ to the

¹⁰⁶ Christopher J. Carr, *Vessel Monitoring Systems, A New Technology for the Transition to Sustainable Fisheries*, in EMERGING ISSUES IN NATIONAL OCEAN AND COASTAL POLICY, 31 (Harry N. Scheiber ed., 1999).

¹⁰⁷ Roger Fleming, Peter Shelley, Priscilla M. Brooks, *Twenty-Eight Years and Counting: Can the Magnuson-Stevens Act Deliver on its Conservation Promise?*, 28 VT. L. REV. 579, 616 (2004).

¹⁰⁸ *Id.* (noting that the ability of VMS to provide constant information on location and activity deters overfishing).

¹⁰⁹ Shui-Kai Chang, Kun-Yu Liu & Yann-Huei Song, *Distant Water Fisheries and Vessel Monitoring System Implementation in Taiwan- History and Driving Forces*, 34 MARINE POL'Y 541, 542 (2010).

¹¹⁰ Kelley, *supra* note 18, at 2297.

¹¹¹ Kieves, *supra* note 105, at 1912.

¹¹² *Id.*

same effectiveness of enforcement that a VMS monitoring hub could do with \$250,000.¹¹³ The exact area that the Coast Guard was referring to is not clear, but what is clear is that that amount of savings could be invaluable to help curtail overfishing and illegal fishing.¹¹⁴ If each coastal state were able to save valuable fiscal resources by implementing VMS, then it becomes abundantly clear that such systems should be mandatory, and all commercial vessels must be required to don a transceiver before being allowed to fish.

2. Creating a Centralized Agency to Monitor and Inspect Fishing Vessels

The most ambitious and expensive, but likely most effective policy that could be put into a new international fishing treaty, would be the creation of a centralized agency, shouldered with the responsibility of inspecting vessels that come into harbor from both the high seas and the EEZs. The idea would be to create an agency similar to any US governmental agency, but on a much larger scale. The first thing to do would be to select a council or panel that would become the highest-ranking officials of the agency. The panel would be charged with the responsibility of setting the high seas fishing quotas, bringing claims against non-complying member states, and devising strategies to influence non-member states to sign the treaty. The panel would have the authority to set up various regional offices at major port cities around the world. In these port cities the agency would be staffed with multiple inspectors whose responsibility would be choosing ships to board each day and monitoring compliance.

Choosing the ships to inspect daily is the most delicate and important aspect of creating the regional agencies. In a utopian world, each commercial vessel that entered into the various fishing harbors would be inspected before being allowed to return to fishing, but that is simply not a realistic or feasible goal. There are thousands of fishing vessels that dock in harbors around the world every day and the manpower and financial resources that it would take to police every vessel would be astronomical.¹¹⁵ That is simply not an option. Having no

¹¹³ Carr, *supra* note 106, at 32.

¹¹⁴ *Id.*

¹¹⁵ In 2002 alone there were over four million fishing vessels registered worldwide. To attempt to regulate each of these vessels that entered into harbor would be impossible. Jeremy Turner, *Fishing Vessels*, FISHERIES & AGRIC. DEP'T, <http://www.fao.org/fishery/topic/1616/en> (last visited Nov. 12, 2014).

harbor regulation, however, is not an option either because the fishing vessels would have no incentive to stick to their quotas without fear of actual reprimand or punishment.

Instead, regional agencies would have to determine the appropriate number of inspectors necessary to significantly deter vessels from violating restrictions. The balance here is delicate. If there are too many inspectors at all the ports around the world, then the expense will become too great and the incentive for states to sign and enter into the proposed treaty would diminish significantly. On the other hand, if there are only a very few inspectors in each port, vessels may decide to take a calculated risk to overfish. Once the regional offices have determined how to strike this balance, they may begin to inspect vessels and detain all ships that are fishing illegally until the dispute settlement process has taken its course.¹¹⁶

Even without inspecting every ship, this centralized regulation agency would be very expensive to implement. Research has shown that the likelihood of a country joining an international agreement substantially rises when the level of commitment required is relatively low, so this substantial cost could prove to be a hindrance to orchestrating a widely inclusive treaty.¹¹⁷ One hope is that the money saved by making VMS mandatory on all fishing vessels would represent enough savings to incentivize states to enter into a new, more restrictive treaty. While this remains to be seen, a commitment of this nature would finally show how dedicated nations are to saving the world's fish stocks.

Because VMS are so advanced and create such a great advantage in tracking vessels, it would also be feasible to require that each vessel coming into harbor weigh its catch and report it to the local agency. VMS would give regional offices the ability to recognize each vessel coming into a harbor, and once a vessel was docked, the regional officials could refuse to allow the ship to head back out before weighing its catch. Once the agency received the numbers, they could add up all the catches from a harbor and determine whether fishing quotas had been

¹¹⁶ The dispute settlement process will be another facet of the new treaty that has to be bargained for. This will include how to penalize overfishing vessels and what to do with their ships while they are waiting for sanctions to be handed down. The dispute settlement process should replicate a system that has been used before; one of the better examples could be to replicate the WTO dispute settlement system. General Agreement on Tariffs and Trade, art. 12–13, Oct. 30, 1947, 61 Stat. A-11, 55 U.N.T.S. 194.

¹¹⁷ Ana Espinola-Arendondo & Felix Munoz-Garcia, *Free-Riding in International Environmental Agreements: A Signaling Approach to Non-Enforceable Treaties* 23 J. THEORETICAL POL. 111, 112 (2011).

met for the season. Requiring vessels to report their catch is a simple modification, in theory, but there would likely be problems with vessels intentionally misrepresenting numbers in order to be able to catch more fish later in the season. There does not seem to be an obvious solution to such a problem. The agency may only trust fishermen to do the right thing, because, in the end, misrepresenting the numbers would hurt the fishermen's future prospects. The more fish they catch one season, the less they are likely to catch the next, so instead of harvesting a large haul one year with a small one the next, it should be asserted that a medium haul every year is in the best interest of the oceans and fishermen alike.

B. COMPULSORY ADJUDICATORY SYSTEM

Implementing a brand new treaty to regulate fishing in the world's oceans does no good if the system of adjudication for violations is optional. Traditionally, most international agreements have not given rise to compulsory adjudicative systems, and, as a result, many international courts' jurisdictions are limited to the members who submit to them.¹¹⁸ This is true in tribunals such as the International Court of Justice (ICJ).¹¹⁹ Because adjudication at the ICJ is optional, the amount of participation and litigation has been thoroughly disappointing, and the ICJ has not had as strong an effect on international law as was hoped for at its inception.¹²⁰ In fact, the ICJ has only heard 124 contentious cases in its sixty-five years of existence.¹²¹

This type of non-binding and lightly used adjudication system is not desirable with an issue as pressing as international fish stocks. A non-binding system gives off the impression that compliance and use should be optional and not to be taken seriously as a way to resolve disputes. Without a compulsory system the entire treaty would fail to have any real world effect. Member states would be allowed to reap the benefits that the treaty provides while being free to selectively choose which provisions to follow.¹²²

The WTO has implemented a compulsory adjudicative system that should serve as a model for an international fishing treaty.¹²³ As part

¹¹⁸ Gary Born, *A New Generation of International Adjudication*, 61 DUKE L.J. 775, 803 (2012).

¹¹⁹ *Id.*

¹²⁰ *Id.* at 805.

¹²¹ *Id.*

¹²² See *infra* Part C for more on free rider problems

¹²³ Born, *supra* note 118, at 851–53.

of the requirement to enter the WTO, all states must accept the terms of the Dispute Settlement Understanding and submit to the jurisdiction of the WTO panels and the Appellate Body.¹²⁴ A similar provision should be made in an international fishing treaty. In order for the system to work, there would have to be a neutral third-party panel elected by the member states that would sit and hear disputes. In order to appear in front of the tribunal, the regional agencies could bring a complaint against a member state or a vessel caught fishing illegally. The defending party would not have a choice of whether to go to the hearing, otherwise a default judgment could be entered in favor of the complaining country. This compulsory system then would not give the member state the ability to opt out, and they would have to defend themselves before a neutral third party, in order to avoid heavy penalties.

This requirement would substantially intensify the obligations under the international treaty, and could receive some push back, but it is the only way to ensure that overfishing can be quelled. Countries entering this new treaty would need to believe that there was an advantage to their joining. A mandatory adjudicative system has the advantage of ensuring that a wronged country can receive payment from an illegal fishing vessel. This could be especially true in the waters on the outskirts of an EEZ. If a vessel did most of its illegal fishing just past another country's EEZ range, they would no longer be able to escape liability simply because they were fishing on the high seas. With this system, that coastal country could bring a grievance against that vessel and its flag country, and receive compensation for any straddling fish stock that may have been damaged.¹²⁵

C. TRADE SANCTIONS AND COERCION ON NON-COMPLYING NATIONS

The most important factor in resolving the problem of overfishing and IUU fishing is widespread participation among nations

¹²⁴ *Id.*

¹²⁵ Monetary recoveries from vessels that were fishing near an EEZ but on the high seas could present difficulties in allocating where those settlement proceeds go. This article takes the position that most of the funds should be placed into a common fund that could be recycled to help offset the huge cost of a treaty of this nature. Some of the funds should also be allocated to the nation whose EEZ will be most affected by the loss of that straddling stock fish. This would serve the dual purpose of keeping treaty enforcement stable while rewarding nations for fully participating in the conservation of the oceans.

that have a substantial interest in ocean ecosystems. There is no question that many nations have taken notice of the growing problem on the high seas, as there are currently 166 member states of the UNCLOS treaty and eighty members to the Straddling Stocks Agreement.¹²⁶ The sheer numbers here suggest that states are willing to listen and make small concessions to maintain fish stocks, but the question of how much coastal states are willing to collaborate in order to grow fish stocks remains to be answered.

Undoubtedly, a treaty such as the one suggested in this article is going to have strong opponents because of the amount of investment that would be required from each member state. However, with some convincing and bargaining, the goal for the new treaty should be to have nearly as many members as the UNCLOS agreement. Such a large group, matched with higher regulatory requirements, would avoid the free-rider problem that has been an issue in the WTO and other international agreements, and give member states the ability to place trade sanctions on non-complying states.

One of the fundamental problems of many multilateral international trade agreements is a concern that non-member states (and noncompliant member states) will be given a “free-riding” advantage against active, compliant member states.¹²⁷ Free riding occurs when the benefits of a treaty or agreement are conferred to a non-participating or noncompliant member when that party does not have to make any concessions itself.¹²⁸ For example, if country A and B (who are both WTO members) created a bilateral contract to reduce all tariffs on imported salmon to 3%, by virtue of the Most Favored Nation clause,¹²⁹ countries A and B would also have to extend that reduced tariff to country C, who is also a WTO member. The free rider issue is that C, simply by not taking part in the agreement between A and B, does not have to extend the same 3% tariff rate to countries A and B. So C was able to confer a substantial benefit without having to make any concessions.

¹²⁶ UNCLOS, *supra* note 3; Straddling Fish Stocks Agreement, *supra* note 4.

¹²⁷ Brian K. Myers, *Trade Measures and the Environment: Can the WTO and UNCLOS be Reconciled?*, 23 UCLA J. ENVTL L. & POL’Y 37, 68 (2005).

¹²⁸ Rodney D. Ludema & Anna Maria Mayda, *Do Countries Free Ride on MFN?*, 1 (Centro Studi Luca d’Agliano Development Studies Working Paper Series No. 254, 2008) available at http://papers.ssm.com/sol3/papers.cfm?abstract_id=1392742.

¹²⁹ *Id.* (showing that the Most Favoured Nation clause is a part of the GATT/WTO system that requires member states to give equal treatment to all other member states).

This free riding issue is a significant and common problem with many international trade agreements, including UNCLOS.¹³⁰ The good news is that “group solidarity may reduce the free riding problem,”¹³¹ which simply means that a larger group, with members that are dedicated to enforcing the treaty, will help avoid free riding because those countries can influence non-complying countries to adhere to the treaty. Having a widely inclusive treaty, with the number of member states close to that of UNCLOS, will have the immediate effect of reducing the free riding problem because so many of the nations that have a substantial interest in fishing would be bound by the agreement. If not enough countries are bound to the treaty then there will be, in effect, a “race to the bottom,” in which each state that is not bound by the treaty will actively seek to avoid obligations while benefiting from an ocean more rife with fish because of limits on other states’ fishing industries.¹³²

It is in this way that vigilant countries (i.e., countries that use the dispute settlement system and who attempt to comply with the treaty) could become the lifeblood of a successful agreement. If each member state held its neighbors accountable for their actions, then there could be substantial enforcement of best fishing practices that would, hopefully, lead to regrowth, especially on the high seas, where every country has an interest in cultivating healthier fish stocks.

As it stands, the dispute settlement system of UNCLOS has language that makes it seem mandatory, but, in practice, there are multiple exceptions that limit its effectiveness, especially when paired with under-regulation.¹³³ These factors combine to render it essentially non-mandatory.¹³⁴ A new treaty would have to eliminate those exceptions to the greatest extent possible. But even more important is greater enforcement through trade sanctions. Before UNCLOS, the United States and other countries often used the threat of trade sanctions (most prominently, embargoes restricting fish importation) to force compliance

¹³⁰ William R. Sprance, *The World Trade Organization and United States' Sovereignty: The Political and Procedural Realities of the System*, 13 AM. U. INT'L L. REV. 1225, 1239 (1998) (stating that free-riding issues were especially concerning before the use of the Dispute Settlement Understanding became widespread).

¹³¹ Robert E. Scott & Paul B. Stephan, *Self-Enforcing International Agreements and the Limits of Coercion*, 2004 WIS. L. REV. 551, 579 (2004).

¹³² Mary Bede Russel, *What's It To You?: The Difficulty of Valuing the Benefits of Climate-Change Mitigation and The Need for a Public-Goods Test Under Dormant Commerce Clause Analysis*, 94 IOWA L. REV. 727, 739 (2009).

¹³³ UNCLOS, *supra* note 3, arts. 297(2)-(3).

¹³⁴ McLaughlin, *supra* note 13, at 49.

with domestic US regulations.¹³⁵ For example, the United States once put an embargo on Mexican tuna imports after Mexico refused to comply with an act that the United States enacted to protect dolphins from being harmed during tuna fishing.¹³⁶ This type of coercive practice by the United States should be used to compel states to comply with a newly signed international fishing treaty.

Placing embargoes on states to strong-arm compliance with unilaterally-created protection acts¹³⁷ is rightfully frowned upon in the WTO, but this article suggests that coercive embargoes and other acts only be used to force compliance with multilaterally-created acts,¹³⁸ and to encourage states to enter into a new treaty. The biggest area where coercion could be used is in initially attracting signatory states. If there are originally seventy-five states that want to sign onto a new treaty, then they can collectively threaten to lower their intake of a certain export from non-signatory states around the world. This would force non-signatory states to do two things. First, they would have to evaluate how important that export is to their economy. Second, they would have to make a concerted effort to support conservation if they wish to continue prospering from that export. After all, a concerted effort is the only thing that will help regrow fish stocks. Regardless of whether one thinks coercion should be encouraged or discouraged, the real world implications of inaction must be considered. The fish from the world's oceans are one of the most valued commodities around the world. By signing a treaty that will require some monetary investment and a lot of accountability, the oceans can be set on a path to regrowth and fish stocks may eventually return to levels that have not been seen for decades.

IV. CONCLUSION

This article asks for two gigantic, but ultimately necessary, changes to be made in international fisheries management and relations.

¹³⁵ *Id.* at 7.

¹³⁶ *Id.* at 9–10.

¹³⁷ *Id.* at 7 (showing that a unilateral act would be one that a single nation, like the United States in the tuna/dolphin example, creates by itself and attempts to enforce against other countries).

¹³⁸ Multilaterally created acts would be those that are signed and implemented by many nations at the same time. These could be simply signing the new treaty, creating a concerted effort to protect the halibut population by placing a very low mandatory quota, or creating an act that forces certain, safer fishing methods to be used.

First, that the Maximum Sustainable Yield system for calculating fishing quotas either be eliminated or substantially changed. The MSY system has been under attack for over a decade, so there are already experts clamoring for this change. By using the MEY system, states can better control their EEZs. The MEY system is designed to set fishing quotas at a number that approximates the greatest benefit for both the fish stock and the fishermen, instead of only proposing the highest number of fish that can be caught before resulting in ecosystem collapse. MEY is a win-win because it keeps commercial fishing profits high while allowing for EEZ fish stock growth. Second, and more substantially, it suggests that a new multilateral international fishing treaty should be struck. Simply put, existing treaties lack the enforcement power necessary to help regrow fish stocks on the high seas. Continuing to adhere to current international standards will lead to devastation. There are good qualities of the existing agreements that should be incorporated into a new treaty. Those ideas, matched with a stronger enforcement system and coercive pressure could come together to make a multilateral fishing agreement that succeeds in restoring ocean ecosystems to their former, seemingly infinite bounty.