

Implications of Illegal, Unreported, and Unregulated Fishing for US Special Operations Forces

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Abstract

In this self-initiated study, we characterize the nature and scope of the People's Republic of China's (PRC) illegal, unreported, and unregulated (IUU) fishing activities, the set of approaches that nations have available to them to address and counter IUU fishing, the degree to which these approaches are aligned to the nature of the PRC's activities, and the degree to which US special operations forces (SOF) might be able to contribute to the application of those tools.

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EXECUTIVE SUMMARY

In *Special Operations Research Topics 2023*, published by the Joint Special Operations University (JSOU), one of the highlighted topics of interest was the potential for special operations forces (SOF) to address illegal, unreported, and unregulated (IUU) fishing conducted by the People's Republic of China (PRC).¹ According to JSOU, "IUU resource extraction is inherently competition below the level of armed conflict"²—a view shared by other authors³—and SOF are interested in understanding to what extent they might be able to contribute to the amelioration of this issue. In this self-initiated study, we sought to

characterize the nature and scope of the PRC's IUU fishing activities, the set of approaches that nations have available to them to address and counter IUU fishing, the degree to which these approaches are aligned to the nature of the PRC's activities, and the degree to which SOF might be able to contribute to the application of those tools.⁴

Having reviewed a wide variety of sources describing the PRC's IUU fishing activities, we identified these activities as being global in nature and taking a range of forms, as shown in Table 1.

In this self-initiated study, we sought to characterize the nature and scope of the PRC's IUU fishing activities, the set of approaches that nations have available to them to address and counter IUU fishing, the degree to which these approaches are aligned to the nature of the PRC's activities, and the degree to which SOF might be able to contribute to the application of those tools.

1 *Special Operations Research Topics 2023*, Joint Special Operations University (JSOU), 2023, p. 25, <https://www.jsou.edu/Press/PublicationDashboard/222>.

2 *Special Operations Research Topics 2023*.

3 Scott C. Apling et al., "Pivoting the Joint Force: National Security Implications of Illegal, Unregulated, and Unreported Fishing," *JFQ*, 107, 4th Quarter 2022, 93–101.

4 We recognize that within the US government (USG), the Department of State, US Coast Guard (USCG), and the US National Oceanic and Atmospheric Administration colead 21 other USG agencies in an interagency attempt to combat IUU fishing. We are, therefore, looking for ways that SOF could *substantively contribute* to this interagency effort as opposed to leading it or embarking on some other, independent effort aimed at this issue.

Table 1. China’s IUU fishing activities

Type of Activity	Examples/Comments
Fishing in restricted areas without authorization	<ul style="list-style-type: none"> • Fishing in other countries’ economic exclusion zones without permission • Fishing in other countries’ territorial waters without permission • Fishing in areas governed by regional fisheries management organizations (RFMOs) without authorization • Poaching in protected areas, such as marine reserves
Capturing protected species	<ul style="list-style-type: none"> • Finning sharks and stingrays • Killing dolphins and whales • Harvesting giant clams and sea cucumbers
Using prohibited fishing gear	<ul style="list-style-type: none"> • Using a prohibited type of longline to target protected sharks • Using nets with a prohibited mesh size • Using cyanide and explosives
Turning off the automatic identification system (AIS)	<ul style="list-style-type: none"> • Turning off the AIS to hide fishing in protected areas • Turning off the AIS to hide unauthorized fishing in a country’s jurisdictional waters
Falsifying records	<ul style="list-style-type: none"> • Keeping inadequate records • Falsifying records of vessels’ catches to obfuscate how much fish they catch and/or conceal which species they target
Transshipment	<ul style="list-style-type: none"> • Transferring catches to large, refrigerated cargo ships and receiving supplies and fuel at sea • Can help vessels underreport catches or disguise their origin
Obstructing inspections	<ul style="list-style-type: none"> • Fleeing law enforcement and/or coast guard vessels to avoid inspection • Ramming or attempting to ram law enforcement and/or coast guard vessels
Ramming other fishing vessels	<ul style="list-style-type: none"> • Ramming other fishing vessels to intimidate them away from fishing in contested fishing grounds

Source: CNA.

According to a variety of US government (USG), academic, think tank, and other sources, IUU fishing is a complex phenomenon that generally cannot be solved with single policy fixes. Addressing the PRC’s IUU fishing activities listed above requires policies and capabilities that enable effective **identification** of suspicious behavior, as well as the capacity and capability to carry out **enforcement** actions when such behaviors are detected. Effective identification

and enforcement may require technological, operational, legal, and political initiatives. The international legal context of the United Nations Convention on the Law of the Sea further complicates enforcement against fishing vessels from noncooperative states in the high seas. As a result, **measures beyond enforcement** might be necessary to address wrongdoing. Table 2 summarizes policy responses for countering IUU fishing.

Table 2. Policy responses for countering IUU fishing

Identification	Enforcement	Measures Beyond Enforcement
Improve land-based maritime domain awareness (MDA) <ul style="list-style-type: none"> • Long-range radars 	Join RFMOs	Name and shame
Improve ocean-based MDA <ul style="list-style-type: none"> • Crewed and uncrewed vessel patrols 	Establish RFMOs	Promote diversions from IUU activities (e.g., job programs)
Improve air-based MDA <ul style="list-style-type: none"> • Aircraft and drone patrols 	Sign the International Plan of Action to Prevent, Deter, and Eliminate Illegal, Unreported, and Unregulated Fishing (IPOA-IUU)	Publicize advocacy days (e.g., the International Day for the Fight against Illegal, Unreported, and Unregulated Fishing)
Improve space-based MDA <ul style="list-style-type: none"> • Satellite imagery • Radio sensing 	Ratify the Port State Measures Agreement (PSMA)	
Connect and leverage RFMO databases	Implement IPOA-IUU and PSMA requirements (domestically)	
Expand seafood-tracking processes	Tighten beneficial-ownership rules	
Increase information sharing	Strengthen penalties for IUU fishing	
	Increase enforcement patrols	
	Expand ship-rider programs	
	Conduct enforcement training	

Source: CNA.

After comparatively analyzing the two tables above within the context of existing USG policies and approaches to countering the PRC’s IUU fishing activities, we identified *information collection and sharing, training, and increasing crewed-vessel patrols* as the approaches most conducive for SOF to explore. After examining a range of suggestions by other authors and our own subject-matter experts, we identified a small number of potentially feasible ideas that SOF might pursue in these three areas. Such efforts would be niche in nature, and SOF would be in a supporting role to other USG agencies—most notably, the US Coast Guard (USCG)—as well as those of partner nations (and, potentially, nongovernmental organizations). Looking across the ideas we identified, our overarching conclusion is that **SOF can best support countering IUU fishing by serving as a “global connector” for this issue.**

This role would entail three major components. First, it would involve establishing SOF as the leader for coordinating support to this issue within the Department of Defense (DOD) and with allied and partner militaries worldwide. Second, it would involve creating a centralized intelligence and information clearinghouse to ensure dissemination of critical information, reduce individual actor costs (via cost sharing) for obtaining that information, and enable more efficient use of crewed-vessel patrols for interdicting IUU fishing activities. Third, it would involve identifying, developing, and continuously adapting best-practice tactics, techniques, and procedures (TTPs) for countering such activities, as well as sharing and practicing those TTPs with partner-nation militaries and coast guards through exercises and training events.

With these three components in mind, and assuming for the moment that the SOF enterprise remains interested in contributing to countering IUU fishing, we offer the following associated recommendations:

- **Establish SOF as the DOD leader for countering IUU fishing.** The commander of the US Special Operations Command (SOCOM) should consider advocating for the creation and assignment to him of the role of coordinating authority for countering IUU fishing. Doing so would place SOCOM in a lead DOD coordination role for this issue, as it currently is for such activities as countering violent extremist organizations and countering weapons of mass destruction. Although this authority is limited in scope, it would serve a foundational function in enabling the other recommendations below.
- **Create a centralized intelligence and information clearinghouse for countering IUU fishing.** The SOCOM commander should consider establishing an organization akin to Operation Gallant Phoenix to increase and improve the sharing of releasable intelligence and other information with allied and partner-nation governments (e.g., coast guards and law enforcement agencies), multinational organizations, and (potentially) nongovernmental entities that are involved in, or have an interest in, countering IUU fishing activities. Initial priority partners for such an organization should include the five focus countries identified by the US Interagency Working Group on IUU Fishing (Ecuador, Panama, Senegal, Taiwan, and Vietnam).
- **Identify, develop, and continuously adapt best-practice TTPs for countering IUU fishing; share and practice them with**

partner-nation militaries and coast guards through exercises and training events.

The SOCOM commander should direct the theater special operations commands to incorporate IUU fishing in their exercises wherever this issue is important to US allies and partner nations and aligns with the goals of the geographic combatant commands. In addition, the commander of the Naval Special Warfare Command (NAVSPECWARCOM) should create a center of excellence for countering IUU fishing at the Naval Small Craft Instruction and Technical Training School to ensure that best-practice TTPs are identified and disseminated to US partners. The NAVSPECWARCOM commander should also engage the Navy's Task Force 59 to develop and bring uncrewed surface and subsurface maritime surveillance systems—along with artificial intelligence and machine-learning technologies to quickly analyze the data these systems generate—to US partner nations globally (in collaboration with the US Department of State and USCG).

We recognize that these recommendations would come with some degree of increased costs for SOCOM and NAVSPECWARCOM, which might be a tough sell given that SOCOM's budget has been flat for the past three years. Nonetheless, if SOF are interested in contributing to this issue area, we assert that playing the role of global connector—via the recommendations we provide above—is likely the least expensive and most cost-effective path. If SOF decide that this role is no longer of interest, the analysis summarized above should still be useful to other US government agencies involved in countering IUU fishing.

TABLE OF CONTENTS

Introduction.....	1
What is IUU fishing?.....	2
Organization of this report.....	3
China and IUU Fishing.....	4
Why focus on China?.....	4
The PRC has the largest DWF fleet in the world.....	4
The PRC DWF operates globally.....	5
The PRC views its DWF as strategically important and heavily subsidizes it.....	5
PRC efforts to combat IUU fishing within its DWF fleet have been limited.....	7
PRC vessels engage in IUU fishing more frequently than vessels from any other country.....	7
What types of IUU fishing do PRC vessels conduct?.....	8
Fishing in restricted areas without authorization.....	8
Capturing protected species.....	9
Using prohibited fishing gear.....	10
PRC TTPs for engaging in IUU fishing.....	10
Turning off the AIS.....	11
Falsifying records.....	11
Using transshipment to hide illegal practices.....	12
Obstructing inspections.....	13
Ramming other fishing vessels.....	13
What is the impact of PRC IUU fishing?.....	15
PRC IUU fishing harms ecosystems and threatens fish stocks.....	15
PRC IUU fishing deprives coastal communities of their livelihoods.....	15
PRC IUU fishing poses multiple law enforcement challenges.....	15
The PRC DWF may have ties to the PRC’s Maritime Militia.....	16
Summary of China’s IUU fishing activities.....	17
Approaches to Addressing IUU Fishing.....	18
Identification.....	18
MDA.....	18
Information sharing among stakeholders.....	20

Enforcement.....	20
Legal actions and innovations.....	20
Enforcement Patrols	21
Training.....	21
Measures beyond enforcement.....	22
Summary of approaches to address IUU fishing	22
Comparative Analysis of Countermeasures and PRC IUU Activities .	23
Implications for SOF.....	26
Information collection and sharing.....	28
Training.....	29
Increasing crewed-vessel patrols.....	31
Conclusions and Recommendations.....	32
Appendix A: Approach and Data Sources	34
Appendix B: Kiribati Case Study	35
Country overview	35
IUU fishing in Kiribati.....	35
Existing counter-IUU fishing efforts.....	38
Appendix C: Argentina Case Study	40
Country overview	40
IUU fishing in Argentina.....	41
Existing counter-IUU fishing efforts.....	42
Appendix D: Ghana Case Study	45
Country overview	45
IUU fishing in Ghana.....	46
Existing counter-IUU fishing efforts.....	47
Abbreviations.....	51
References	53

FIGURES

Figure 1. Common types of IUU fishing.....	2
Figure 2. Illegally harvested shark fins and rays found on PRC-flagged fishing vessel off Gabon.....	9
Figure 3. PRC vessels detained for illegal fishing in Vanuatu’s territorial waters.....	11
Figure 4. Philippine fishing vessel struck by PRC vessel	14
Figure 5. Study approach	34

TABLES

Table 1. China’s IUU fishing activities	ii
Table 2. Policy responses for countering IUU fishing	iii
Table 3. China’s IUU fishing activities	17
Table 4. Policy responses for countering IUU fishing	22
Table 5. Efficacy of countermeasures against PRC IUU fishing activities	24
Table 6. Key USCG activities to counter IUU fishing	27

INTRODUCTION

In *Special Operations Research Topics 2023*, published by the Joint Special Operations University (JSOU), one of the highlighted topics of interest was the potential for special operations forces (SOF) to address illegal, unreported, and unregulated (IUU) resource extraction conducted by the People's Republic of China (PRC), including fishing, mining, and timbering, as part of "integrated statecraft approaches that achieve soft balancing effects against strategic competitors."⁵ According to JSOU, "IUU resource extraction is inherently competition below the level of armed conflict"—a view shared by other authors⁶—and SOF are interested in understanding to what extent they might be able to contribute to the amelioration of this issue.⁷

In this self-initiated study, we sought to address one component of the PRC's IUU resource-extraction

efforts: IUU fishing. In particular, we set out to characterize the nature and scope of the PRC's IUU fishing activities, the set of approaches that nations have available to them to address and counter IUU fishing, the degree to which these approaches are aligned to the nature of the PRC's activities, and the degree to which the military—and specifically, SOF—might be able to contribute to the application of those tools. Of note, we recognize that within the US government (USG), the Department of State, US Coast Guard, and the US National Oceanic and Atmospheric Administration (NOAA) co-lead 21 other USG agencies in an interagency attempt to combat IUU fishing.⁸ We are, therefore, looking for ways that SOF could *substantively contribute* to this interagency effort as opposed to leading it or embarking on some other, independent effort aimed at this issue.

According to JSOU, "IUU resource extraction is inherently competition below the level of armed conflict"—a view shared by other authors—and SOF are interested in understanding to what extent they might be able to contribute to the amelioration of this issue.

5 *Special Operations Research Topics 2023*.

6 Apling et al., "Pivoting the Joint Force."

7 Apling et al., "Pivoting the Joint Force."

8 These agencies do so as the cochairs of the US Interagency Working on IUU Fishing. See: "FACT SHEET: Marking the One Year Anniversary of the National Security Memorandum on Combating Illegal, Unreported, and Unregulated Fishing and Associated Labor Abuses," White House, June 27, 2023. This working group is a cooperative effort among USG agencies to advance the Maritime SAFE Act of 2019 (a copy of the act can be found at https://media.fisheries.noaa.gov/dam-migration/maritime_safe_act-508compliant.pdf).

What is IUU fishing?

Before discussing in depth the nature of the PRC’s IUU fishing activities and approaches to address them, it is worth describing the nature of IUU fishing as an international problem. According to NOAA’s Fisheries Division, IUU fishing is defined in terms of the following components:⁹



Illegal fishing. Fishing conducted in contravention of applicable laws and regulations, including laws and rules adopted at regional and global levels.



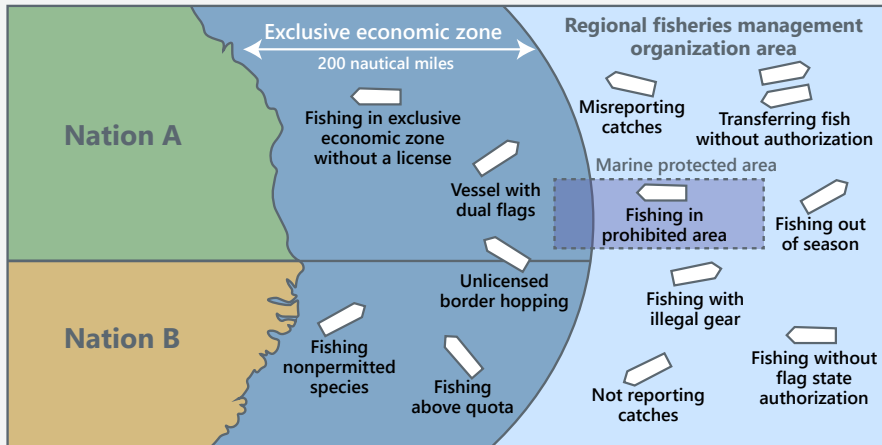
Unreported fishing. Fishing that is not reported or is misreported to relevant authorities in contravention of national laws and regulations or reporting procedures of a relevant regional fisheries management organization (RFMO).



Unregulated fishing. Fishing that occurs in areas or for fish stocks for which there are no applicable conservation or management measures and where such fishing activities are conducted in a manner inconsistent with state responsibilities for conserving living marine resources under international law. Fishing is also unregulated when it occurs in an area managed by an RFMO and conducted by vessels without nationality, or by those flying a flag of a state or fishing entity that is not party to the RFMO in a manner that is inconsistent with the conservation measures of that RFMO.¹⁰

Common types of IUU fishing are depicted in Figure 1.

Figure 1. Common types of IUU fishing



Source: “Combating Illegal Fishing: Better Information Sharing Could Enhance US Efforts to Target Seafood Imports for Investigation,” Government Accountability Office (GAO), GAO-23-105643, May 2023.

⁹ “Understanding Illegal, Unreported, and Unregulated Fishing,” NOAA Fisheries, <https://www.fisheries.noaa.gov/insight/understanding-illegal-unreported-and-unregulated-fishing#:~:text=Illegal%20fishing%20refers%20to%20fishing,the%20regional%20and%20international%20level>.

¹⁰ RFMOs “are treaty-based bodies whose objective is to ensure the sustainable conservation and management of shared fish stocks and other living marine resources through international cooperation. Each RFMO has regularly scheduled meetings in which nations adopt binding conservation and management measures, and throughout the year, there are typically intersessional meetings of RFMO subsidiary bodies to address specific scientific and management issues.” See “International and Regional Fisheries Management Organizations,” NOAA Fisheries, <https://www.fisheries.noaa.gov/international-affairs/international-and-regional-fisheries-management-organizations>.

Organization of this report

The first part of this report will address, in turn, the nature and scope of the PRC's IUU fishing activities, the approaches that might address those activities, and the degree to which these approaches are aligned to the nature of the PRC's activities. The report will then examine the degree to which the military—specifically, SOF—might

be able to contribute to the application of those approaches. It will conclude with recommendations associated with specific findings. The report also includes four appendixes that describe our research approach and data sources, as well as three case studies that informed our analysis (Kiribati, Argentina, and Ghana).

CHINA AND IUU FISHING

In this section, we will explain why we are focusing on the PRC's IUU fishing activities; what types of IUU fishing the PRC conducts; what tactics, techniques, and procedures (TTPs) it uses in these activities; and how the PRC's IUU fishing is affecting ecosystems, fish stocks, coastal communities, and more.



Why focus on China?

The PRC has the largest DWF fleet in the world

The PRC began constructing a distant-water fishing (DWF) fleet in 1985, in part as a response to depleted fishing stocks in PRC waters.¹¹ Since then, the PRC's DWF fleet has grown rapidly. In the past 10 years, estimates by academics, nongovernmental organizations (NGOs), and governments of the size of the PRC DWF fleet have ranged from 1,600 to more

than 12,000 vessels.¹² Regardless of the exact number of ships, there is consensus that the PRC possesses the largest DWF fleet in the world.¹³

As the world's largest, the PRC DWF fleet has an outsized influence. PRC vessels that illegally target protected species, use destructive fishing techniques, or underreport their catches damage ecosystems and harm global fish stocks.¹⁴ The PRC DWF fleet also poses a direct security threat to US interests, as a result of its possible ties to the PRC's Maritime Militia.¹⁵

11 *The Ever-Widening Net: Mapping the Scale, Nature and Corporate Structures of Illegal, Unreported and Unregulated Fishing by the Chinese Distant-Water Fleet*, Environmental Justice Foundation, 2022.

12 Miren Gutierrez et al., "China's Distant Water Fishing Fleet: Scale, Impact and Governance," ODI, 2020, <https://odi.org/en/publications/chinas-distant-water-fishing-fleet-scale-impact-and-governance>; European Commission, "Study on the Subsidies to the Fisheries, Aquaculture, and Marketing and Processing Subsectors in Major Fishing Nations beyond the EU," Directorate-General for Maritime Affairs and Fisheries, 2016, <https://publications.europa.eu/en/publication-detail/-/publication/45f78bf8-d24b-11e6-ad7c-01aa75ed71a1>.

13 Gutierrez et al., "China's Distant Water Fishing Fleet." See also "Most Long-Distance Fishing in Foreign Waters Dominated by Only a Few Governments," Pew Trusts, May 27, 2022, accessed Apr. 20, 2023, <https://www.pewtrusts.org/en/research-and-analysis/issue-briefs/2022/05/most-long-distance-fishing-in-foreign-waters-dominated-by-only-a-few-governments>; Shuxian Luo and Jonathan G. Panter, "China's Maritime Militia and Fishing Fleets: A Primer for Operational Staffs and Tactical Leaders," *Military Review* (Jan.–Feb. 2021), <https://www.armyupress.army.mil/Journals/Military-Review/English-Edition-Archives/January-February-2021/Panter-Maritime-Militia/>.

14 "Harvesting Giant Clams Has Led to 'Wanton Destruction' of Scarborough Shoal: Expert," *ABS-CBN News*, Apr. 17, 2019, <https://news.abs-cbn.com/spotlight/04/17/19/harvesting-giant-clams-has-led-to-wanton-destruction-of-scarborough-shoal-expert>; Hadi Azmi, "Giant Clams Under Threat as Poachers Target Philippine, Indonesian Waters after China Ban," *The South China Morning Post*, Apr. 26, 2023, <https://www.scmp.com/week-asia/health-environment/article/3218470/giant-clams-under-threat-poachers-target-philippine-indonesian-waters-after-china-ban>; Margaux Garcia, "Cracking Down on Illegal Chinese Fishing in North Korean Waters," CSIS, Sept. 12, 2022, <https://www.csis.org/blogs/new-perspectives-asia/cracking-down-illegal-chinese-fishing-north-korean-waters>.

15 Jennifer Runion, "Fishing for Trouble: Chinese IUU Fishing and the Risk of Escalation," *Proceedings* 149, no. 2 (2023), <https://www.usni.org/magazines/proceedings/2023/february/fishing-trouble-chinese-iuu-fishing-and-risk-escalation>; Luo and Panter, "China's Maritime Militia and Fishing Fleets."

The PRC DWF operates globally

Although reports vary on what areas are most frequented by the PRC DWF, it is clear that the fleet has a global footprint. For instance, the NGO Overseas Development Institute published an analysis of automatic identification system (AIS) data that found that the largest number of PRC DWF operations in 2017 and 2018 occurred in the northwest Pacific, followed by the western central Pacific and the southeastern Pacific.¹⁶ A review of DWF projects approved by the PRC's Ministry of Agriculture and Rural Affairs (MARA) that was conducted by the NGO Environmental Justice Foundation (EJF) found that the economic exclusion zones (EEZs)¹⁷ with the most MARA-approved projects were Mauritania, Myanmar, and Guinea-Bissau, and the oceanic areas with the most MARA-approved projects were the Indian, North Pacific, and Southwest Atlantic Oceans.¹⁸ Although the findings

of these two reports differ, they both draw a picture of a fleet that is active in disparate regions around the world.

The PRC views its DWF as strategically important and heavily subsidizes it

The PRC government regards its DWF fleet as supporting multiple strategic goals and has prioritized its development. This is evident in the PRC's 2017 publication "Thirteenth Five-Year Plan for the Development of the National Distant-Waters Fishing Industry." This plan explicitly states that "the distant-water fishing industry is a strategic industry" that plays an important role in "building a 'strong maritime nation' and enacting the 'Going Out' strategy"¹⁹ and the 'Belt and Road' initiative."²⁰ This plan also notes that the DWF industry is

Although reports vary on what areas are most frequented by the PRC DWF, it is clear that the fleet has a global footprint.

16 Gutierrez et al., "China's Distant Water Fishing Fleet."

17 Per international law of the sea, in an EEZ, "the coastal State has: (a) sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living, of the waters superjacent to the seabed and of the seabed and its subsoil, and with regard to other activities for the economic exploitation and exploration of the zone, such as the production of energy from the water, currents and winds; (b) jurisdiction...with regard to the establishment and use of artificial islands, installations and structures, marine scientific research, [and] the protection and preservation of the marine environment; and (c) other rights and duties" provided for in the law. See: https://www.un.org/depts/los/convention_agreements/texts/unclos/part5.htm.

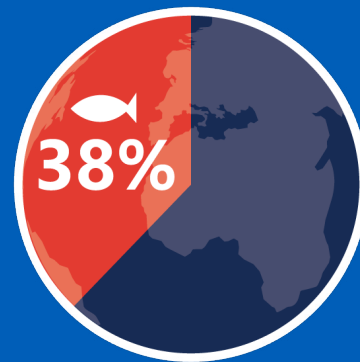
18 *The Ever-Widening Net*.

19 In the late 1990s under then-PRC president Jiang Zemin, China initiated a series of "going out" policies that encourage PRC companies to invest overseas. These policies mainly seek to secure access to the resources necessary to sustain China's economic growth, but they have had the additional effect of increasing China's global economic influence. See Elizabeth C. Economy, "The Game Changer: Coping with China's Foreign Policy Revolution," *Foreign Affairs* 89, no. 6 (2010): 142–152.

20 "Thirteenth Five-Year Plan for the Development of the National Distant-Waters Fishing Industry" ('十三五'全国远洋渔业发展规划), Agricultural Ministry Fisheries Management Bureau (农业部渔业渔政管理局), Dec. 21, 2017, accessed Jan. 24, 2023, http://www.moa.gov.cn/gk/ghjh_1/201712/t20171227_6128624.htm.

important for protecting food security and maritime rights.²¹ For this reason, the PRC provides various forms of support to its fishing industry, including fuel subsidies, subsidies for upgrading vessels, discounted insurance premiums, and tax incentives. In 2019, the PRC provided approximately \$4.16 billion (CNY 28.192 billion) in subsidies to the capture-fisheries industry. Most of these subsidies flowed to its DWF fleet, creating overcapacity in it.²² These subsidies have made the PRC's fishing industry more internationally competitive and have allowed PRC fishing fleets to travel farther, employ more people, and lower the prices of their products.²³

Fish and other marine products are important sources of food for the PRC, and the PRC DWF fleet helps ensure the country's access to marine resources. The PRC is a major consumer of fish products; in 2016, it consumed 38 percent of total global fish production.²⁴ However, the PRC's domestic fisheries are not robust enough to support the PRC fishing industry. By 2012, 30 percent of the PRC's fisheries had collapsed, and 20 percent were considered over-exploited.²⁵ This depletion of local fish stocks, along with a desire to create additional employment opportunities for its sizable population, has encouraged the PRC to increase its distant water fishing.²⁶



The PRC is a major consumer of fish products; in 2016, it consumed 38 percent of total global fish production.

The PRC's support for its fishing fleet also has geopolitical dimensions. The PRC sees its DWF fleet as playing an important role in its aspiration to become a maritime power. Evidence suggests that the PRC's DWF fleet plays a role in asserting Beijing's claims to disputed maritime territories. At least some of the PRC's DWF vessels serve as part of its Maritime Militia and are charged with challenging counterclaimants' abilities to maintain control over disputed waters.²⁷

21 "Thirteenth Five-Year Plan for the Development of the National Distant-Waters Fishing Industry" ('十三五' 全国远洋渔业发展规划).

22 Tabitha Grace Mallory, Chen Hao, and Leng Danyan, "China's Financing and Subsidization of Capture Fisheries," China Ocean Institute, 2021, <https://oceana.org/publications/reports/chinas-fisheries-subsidies-propel-distant-water-fleet>.

23 Bruce Vaughn and Ben Dolven, *China's Role in the Exploitation of Global Fisheries: Issues for Congress*, Congressional Research Service, R47065, Apr. 12, 2022, <https://crsreports.congress.gov/product/pdf/R/R47065/1>.

24 Gutierrez et al., "China's Distant Water Fishing Fleet."

25 Gutierrez et al., "China's Distant Water Fishing Fleet."

26 *The Ever-Widening Net*.

27 See, for example, Derek Grossman and Logan Ma, "A Short History of China's Fishing Militia and What It May Tell Us," RAND, Apr. 6, 2020, <https://www.rand.org/blog/2020/04/a-short-history-of-chinas-fishing-militia-and-what.html>; Luo and Panter, "China's Maritime Militia and Fishing Fleets."

In addition, the PRC views its DWF fleet as an important component of its Belt and Road Initiative (BRI), Xi Jinping's signature economic policy.²⁸ As part of the BRI, the PRC is building a network of fishing bases in developing countries around the world. These bases include ports, boats, and fish-processing plants designed to service the PRC's DWF fleet. Beijing touts its investment in these fishing bases as "win-win" investments that benefit the host countries.²⁹

PRC efforts to combat IUU fishing within its DWF fleet have been limited

The PRC has a mixed record on combating IUU fishing within its DWF fleet. Nonetheless, the PRC describes itself as a "responsible fishing country" that has "done a lot in effectively combating illegal fishing."³⁰ For example, in 2018, the PRC published a list of DWF companies and vessels that it claimed to have penalized in 2017 for overfishing or illegal fishing. This move was considered significant because it was the first time that the PRC publicly stated that it had punished IUU fishing offenders.³¹ However, in 2021, NOAA reported that the PRC had not taken "appropriate corrective actions" in response to its vessels' participation in IUU fishing.³²

Since 2015, the PRC has made commitments and taken actions to increase the sustainability of its fishing industry, including by reducing the fuel subsidies it provides. However, the PRC has continued to disproportionately provide subsidies that promote overcapacity in its DWF fleet.³³ In fact, in 2018, the PRC provided the world's largest amount of "harmful subsidies" for fishing in other countries' waters and on the high seas. These subsidies promote overfishing by allowing the PRC's DWF vessels to travel farther, stay at sea longer, and catch more fish.³⁴

PRC vessels engage in IUU fishing more frequently than vessels from any other country

Multiple government agencies and NGOs have identified the PRC as a key source of IUU fishing. For example, in a 2021 report that sought to quantify IUU fishing behaviors, the PRC was listed as the world's worst-performing country in terms of the prevalence of IUU fishing among its fleet.³⁵ Similarly, in its 2019 report to Congress, NOAA stated that allegations of PRC vessels engaging in IUU fishing around the world indicate "a possible pervasive problem from Chinese-flagged fishing vessels."³⁶

28 Luo and Panter, "China's Maritime Militia and Fishing Fleets."

29 Whitley Saumweber, "Distant-Water Fishing along China's Maritime Silk Road," Stephenson Ocean Security Project, CSIS, July 31, 2020, <https://ocean.csis.org/commentary/distant-water-fishing-along-china-s-maritime-silk-road/>.

30 Mark Godfrey, "Pingtan Marine, Chinese Government, NGOs Respond to US Sanctions," *SeafoodSource*, Dec. 21, 2022, <https://www.seafoodsource.com/news/environment-sustainability/pingtang-marine-chinese-government-ngos-respond-to-us-sanctions>.

31 Zhang Chun, "China Cracks Down on Illegal Distant Water Fishing," *China Dialogue Ocean*, Sept. 4, 2018, <https://chinadialogueocean.net/en/fisheries/4239-china-cracks-down-on-illegal-distant-water-fishing/>.

32 Janet Coit and Richard W. Spinrad, *Improving International Fisheries Management: 2021 Report to Congress*, NOAA, Aug. 2021, <https://media.fisheries.noaa.gov/2021-08/2021ReporttoCongressonImprovingInternationalFisheriesManagement.pdf>.

33 Mallory, Hao, and Danyan, "China's Financing and Subsidization of Capture Fisheries at Home and Abroad."

34 "Most Long-Distance Fishing in Foreign Waters Dominated by Only a Few Governments."

35 *The Illegal, Unreported and Unregulated Fishing Index 2021*, Global Initiative Against Transnational Crime and Poseidon Aquatic Resource Management, Dec. 2021, <https://iuufishingindex.net/downloads/IUU-Report-2021.pdf>.

36 Chris Oliver and Neil A. Jacobs, "Improving International Fisheries Management: 2019 Report to Congress," NOAA, 2019.

What types of IUU fishing do PRC vessels conduct?

The PRC DWF fleet engages in three main types of IUU fishing:

 **Fishing in restricted areas without authorization**

 **Capturing protected species**

 **Using prohibited fishing gear³⁷**

We will address each of these practices in turn below. Of note, EJF has also found that vessels owned by the same company tend to commit similar types of IUU fishing offenses.³⁸ There also seem to be common areas of operation: in an analysis of IUU fishing associated with the PRC DWF fleet and reported between 2015 and 2019, EJF found that West Africa had the largest share of incidents, followed by East Asia and Latin America.³⁹

Fishing in restricted areas without authorization

There are multiple, specific examples of PRC DWF vessels fishing in restricted areas without proper authorization. For example, multiple PRC-flagged vessels were caught illegally fishing in Argentina's EEZ in 2016 and 2018. Similarly, in 2017, seven PRC-flagged fishing vessels were detained for illegally fishing in Senegal's waters, and in 2018, a PRC-flagged vessel was detained for illegally fishing in Peru's EEZ.⁴⁰ In addition to illegally fishing in other countries' EEZs, PRC-flagged fishing vessels have been found fishing in areas governed by regional fisheries management organizations (RFMOs) without proper authorization. In 2021, for example, NOAA reported that six PRC vessels were observed fishing in the North Pacific Fisheries Commission convention area without authorization between 2018 and 2019.⁴¹

PRC vessels have also fished in protected areas. For example, in December 2020, the crew of the PRC fishing vessel *Qiong Sanya Yu* was arrested by Palau Marine Law Enforcement for poaching 500 pounds of sea cucumber from the protected Helen Reef.⁴²

37 This finding is, in part, drawn from CNA's previous work. See Ryan Loomis and Heidi Holz, *Exposing the Gap Between PRC Rhetoric and Illicit Maritime Activity: Summary Report*, CNA, IIM-2021-U-031285-Final, 2021, <https://www.cna.org/reports/2021/12/illegal-maritime-activity-summary>. This finding has also been both informed and confirmed by EJF's review of fishing-crimes databases, which found that between 2015 and 2019, the three most common unique IUU fishing offenses committed by the PRC DWF fleet were fishing without a license/authorization (42.7% of datasets), using prohibited fishing gear (11.5%), and fishing for prohibited species (10.3%). *The Ever-Widening Net*.

38 *The Ever-Widening Net*.

39 *The Ever-Widening Net*.

40 Oliver and Jacobs, "Improving International Fisheries Management."

41 Coit and Spinrad, *Improving International Fisheries Management*.

42 "Chinese Poachers Barred from Returning to Palau," *Island Times*, Jan. 15, 2021, <https://islandtimes.org/chinese-poachers-barred-from-returning-to-palau/>; Adam Somers, "MOJ Forgoes Charges, Releases Chinese Vessel," *Island Times*, Dec. 31, 2020, <https://islandtimes.org/moj-forgoes-charges-releases-chinese-vessel/>; Adam Somers, "Twenty-Eight Chinese Crewmen Detained for Poaching," *Island Times*, Dec. 15, 2020, <https://islandtimes.org/twenty-eight-chinese-crewmen-detained-for-poaching/>.

Capturing protected species

There is also ample evidence that the PRC DWF fleet has fished for protected species (see Figure 2). Interviews conducted by EJF with 116 Indonesian crew members who had worked for 88 different Chinese DWF vessels between September 2020 and August 2021 showed that capturing and killing protected species is common aboard PRC DWF vessels. For example, 95 percent of interviewees had seen sharks being finned, 22 percent had seen dolphins killed, 38 percent had seen false killer whales killed, and 34 percent had seen other protected species killed.⁴³

Inspections of PRC DWF vessels have also revealed catches of protected species. On August 8, 2020, for example, Gabonese authorities, alongside members of the Netherlands-based nonprofit organization Sea Shepherd, inspected two Chinese trawlers (*Gouji 826* and *Gouji 866*) and found that both ships had caught prohibited species, including stingrays and rough-head sea catfish, in contravention of Gabonese law.⁴⁴

Figure 2. Illegally harvested shark fins and rays found on PRC-flagged fishing vessel off Gabon



Source: “Two Trawlers Arrested with Over One Ton of Rays and Fins in Gabon,” Sea Shepherd Global, Aug. 17, 2020, <https://www.seashepherdglobal.org/latest-news/two-trawlers-arrested-rays/>.



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43 *The Ever-Widening Net*.

44 “Two Trawlers Arrested with Over One Ton of Rays and Fins in Gabon,” Sea Shepherd, accessed Jan. 5, 2023, <https://www.seashepherdglobal.org/latest-news/two-trawlers-arrested-rays/>; Trevor Phillips-Levine, Dylan Phillips-Levine, and Walker Mills, “Leveraging NGOs and Volunteerism for Maritime Surveillance Against IUU Fishing,” CIMSEC, Oct. 20, 2020, <https://cimsec.org/leveraging-ngos-and-volunteerism-for-maritime-surveillance-against-iuu-fishing/>.

Using prohibited fishing gear

In multiple instances, PRC DWF vessels have been caught using prohibited fishing gear. For example, in 2019, a vessel operated by Sea Shepherd in the East Pacific captured evidence of a PRC vessel, *Fu Yuan Yu 19*, using a prohibited type of longline to target a protected species of shark.⁴⁵ Similarly, Greenpeace has reported that multiple PRC fishing vessels operating in West African waters between 2011 and 2013 were found with illegal gear, specifically nets with a prohibited mesh size.⁴⁶

PRC DWF vessels also engage in environmentally destructive fishing practices. Particularly egregious examples of this can be found in the South China Sea (SCS), where PRC fishing vessels have been reported to use cyanide and explosives to catch fish, practices that damage coral reefs.⁴⁷ In addition, PRC fishing vessels have routinely targeted protected giant clams in the SCS and have harvested them with methods that kill coral and destroy reefs.⁴⁸

PRC TTPs for engaging in IUU fishing

To enable its IUU fishing activities, PRC DWF vessels employ various legal and illegal TTPs. This section discusses five TTPs that are particularly widespread or egregious:



Turning off the AIS (i.e., “going dark”)



Keeping inadequate or false records



Using transshipment to hide illegal practices



Obstructing inspections (sometimes violently)



Ramming other fishing vessels



Greenpeace has reported that multiple PRC fishing vessels operating in West African waters between 2011 and 2013 were found with illegal gear, specifically nets with a prohibited mesh size.

45 “US Government Calls Out China for IUU Fishing in Response to Sea Shepherd Legal Submission,” Sea Shepherd, Aug. 20, 2021, <https://seashepherd.org/2021/08/20/national-marine-fisheries-service-nmfs-identifies-china-for-illegal-unreported-and-unregulated-iuu-fishing-by-its-distant-water-dwf-fleet/>; Coit and Spinrad, *Improving International Fisheries Management*.

46 *Africa’s Fisheries’ Paradise at a Crossroads: Investigating Chinese Companies’ Illegal Fishing Practices in West Africa*, Greenpeace, May 20, 2015, <https://wayback.archive-it.org/9650/20200403031825/http://p3-raw.greenpeace.org/africa/en/Press-Centre-Hub/Publications/Africas-fisheries-paradise-at-a-crossroads/>.

47 Dona Z. Pazzibugan, Jhesset O. Enano, Julie M. Aurelio, “PH Protests China’s Harvest of Giant Clams,” *Philippine Daily Inquirer*, Apr. 17, 2019, <https://globalnation.inquirer.net/174536/ph-protests-chinas-harvest-of-giant-clams>.

48 “Harvesting Giant Clams Has Led to ‘Wanton Destruction’ of Scarborough Shoal: Expert”; Azmi, “Giant Clams Under Threat as Poachers Target Philippine, Indonesian Waters After China Ban”; Sara Susanne D. Fabunan, “Sino Poachers Kill Coral Reefs,” *Manila Standard*, Sept. 24, 2016, <https://manilastandard.net/news/top-stories/216988/sino-poachers-kill-coral-reefs.html>.

Turning off the AIS

AIS is an electronic tracking system that publicly transmits a vessel's location and movement in near real time to prevent collisions and increase oversight. However, the AIS can be turned off by a vessel's crew. This might be done to conceal a vessel's position and its illegal behavior, such as unauthorized fishing in another country's EEZ.⁴⁹

There is evidence that PRC DWF vessels have turned off their AIS to hide illegal fishing. For example, in 2021, Vanuatu authorities detained two PRC-flagged fishing vessels, *Dong Gang Xing 13* and *16*, for suspected illegal fishing in Vanuatu's territorial waters (see Figure 3). The vessels had permission to fish in Vanuatu's EEZ but not in its 12-mile territorial waters, where they were caught with their AIS turned off.⁵⁰

In a study of AIS data from fishing vessels operating within 20 nautical miles of Argentina's EEZ between January 1, 2018, and April 25, 2021, the NGO Oceana found that 66 percent of instances in which a vessel's AIS was off for more than 24 hours occurred on PRC vessels. In addition, 319 of 433 PRC vessels in the study had gaps of at least 24 hours in their AIS transmission. Given the length of these AIS gaps, Oceana theorized that they likely constituted deliberate attempts to avoid tracking. Indeed, there is a documented connection between AIS gaps and illegal fishing in Argentinian waters. In April 2020, a large number of PRC-flagged vessels were allegedly found fishing illegally in Argentina's EEZ, each with its AIS turned off.⁵¹

Falsifying records

Fishing vessels can also hide illegal activities by keeping inadequate records or falsifying records of their catches. Vessels falsify records to obfuscate how much fish they catch or to conceal which species they target, thereby enabling them to hide overfishing and the capture of legally protected species.

There have been multiple reports of PRC DWF vessels and companies falsifying records to hide illegal behavior. In 2022, the Center for Advanced Defense Studies reported that PRC DWF company Pingtan Marine Enterprise had not reported profiting from the sale of shark species in its Securities and Exchange Commission filings despite numerous reports of the company's ships harvesting and transporting shark products. In addition, none of

Figure 3. PRC vessels detained for illegal fishing in Vanuatu's territorial waters



Source: Glenda Willie, "Chinese Fishing Vessels Seized," *Daily Post Vanuatu*, Jan. 22, 2021, https://www.dailypost.vu/news/chinese-fishing-vessels-seized/article_7f921a84-5c33-11eb-8c48-8b7b17bf15d2.html.

49 *Now You See Me, Now You Don't: Vanishing Vessels Along Argentina's Waters*, Oceana, 2021.

50 Glenda Willie, "Chinese Fishing Vessels Seized," *Daily Post Vanuatu*, Jan. 22, 2021, https://www.dailypost.vu/news/chinese-fishing-vessels-seized/article_7f921a84-5c33-11eb-8c48-8b7b17bf15d2.html; Dan McGarry, "Chinese Fishing Captains Face Jail, Big Fines for Alleged Illegal Fishing in Vanuatu," *The Guardian*, Feb. 16, 2021, <https://www.theguardian.com/world/2021/feb/17/chinese-fishing-captains-face-jail-big-fines-for-alleged-fishing-in-vanuatu>.

51 *Now You See Me, Now You Don't*.



During transshipment, fishing vessels transfer their catches to large, refrigerated cargo ships and receive supplies and fuel at sea, eliminating the need to return to port and allowing fishing vessels to fish continuously, year-round.

Pingtang Marine Enterprise's vessels are authorized to engage in shark fishing. According to the report, these violations demonstrate disregard for regulations that protect vulnerable species and ensure sustainable fishing.⁵²

In addition, Greenpeace Africa has found that the China National Fishing Corporation (CNFC) has falsified the gross tonnage (GT) of its fishing vessels to Senegalese, Guinean, and Guinea-Bissauan regulatory authorities. These countries require DWF companies to report their vessels' technical specifications, including GT, which determine the cost of their fishing license and, in some cases, the areas in which they are allowed to fish. Greenpeace Africa found that in 2014, 44 of 59 CNFC vessels operating in Senegal, Guinea, and Guinea-Bissau had underreported their GT. Effectively, this means that the CNFC concealed the quantity of fish it harvested, thereby gaining access to sensitive ecological areas and defrauding local governments of their license fees.⁵³

Improperly kept records have also prevented enforcement agencies from ascertaining whether illegal activities have occurred. In March 2020, the Namibian navy intercepted six PRC-owned fishing vessels suspected of illegal fishing in Namibian waters. Although no concrete evidence of illegal fishing was found, the vessels lacked logbooks or licenses documenting their activities over the previous 11 months, which may have allowed them to conceal illegal activity.⁵⁴



Using transshipment to hide illegal practices

Transshipment enables PRC DWF vessels to fish at an industrial scale over large expanses of time and ocean. During transshipment, fishing vessels transfer their catches to large, refrigerated cargo ships and receive supplies and fuel at sea, eliminating the need to return to port and allowing fishing vessels to fish continuously, year-round.⁵⁵ Although often legal, transshipment occurs outside the oversight of port and fisheries officials, meaning that it can help vessels

52 Austin Brush and Mary Utermohlen, *Net Worth: How the Chinese Government and US Stock Investors are Funding the Illegal Activities of a Major Chinese Fishing Company*, Center for Advanced Defense Studies, Mar. 23, 2022, <https://c4ads.org/reports/net-worth/>.

53 *Scam on the African Coast: The Hidden Face of Chinese and Joint-Venture Vessels Tonnage Fraud in Senegal, Guinea Bissau, and Guinea*, Greenpeace Africa, May 2015, <https://www.greenpeace.org/static/planet4-africa-stateless/2018/10/9b77bf5d-9b77bf5d-scam-on-the-african-coast-final-proof1.pdf>; *Africa's Fisheries' Paradise at a Crossroads*.

54 Leandrea Louw, "Chinese Vessels Free to Go: Investigation Concluded," *Erongo*, Apr. 1, 2020, <https://www.erongo.com.na/news/chinese-vessels-free-to-go-2020-04-01>; Namibia Press Agency, "Six Chinese Fishing Vessels under Investigations," *Namibia News Digest*, Mar. 31, 2020, <https://www.namibianewsdigest.com/six-chinese-fishing-vessels-under-investigations/>; Ryan Loomis and Heidi Holz, *Exposing the Gap Between PRC Rhetoric and Illicit Maritime Activity: Case Study Compilation*, CNA, IIM-2021-U-031286-Final, Dec. 2021, <https://www.cna.org/reports/2021/12/illicit-maritime-activity-case-studies#:~:text=To%20examine%20possible%20contradictions%20between%20the%20PRC%E2%80%99s%20official,in%20the%20maritime%20domain%20between%202018%20and%202021.>

55 "How China Targets the Global Fish Supply," *New York Times*, Sept. 26, 2022, <https://www.nytimes.com/interactive/2022/09/26/world/asia/china-fishing-south-america.html>.

engaged in illegal fishing to underreport catches and disguise their origin, as well as hide abuse of their crews.⁵⁶ Effectively, transshipment can be used to “launder” illegally caught fish.⁵⁷

There is evidence that transshipment has been used by PRC DWF vessels in conjunction with illegal activities. In August 2017, Ecuadorian authorities boarded the PRC-owned refrigerated cargo ship *Fu Yuan Yu Leng 999* off the Galápagos Islands and discovered 300 tons of fish on board and over 6,000 sharks, including protected species. Drone footage from February 2017 indicates that the *Fu Yuan Yu Leng 999* had also previously engaged in the unauthorized transshipment of sharks and rays.⁵⁸

Obstructing inspections

There have also been reports of PRC DWF vessels fleeing or even attempting to ram other ships when approached by regulatory authorities for inspection. A recent example of this occurred in August 2022, when a US Coast Guard (USCG) cutter attempted to inspect a group of PRC fishing vessels in the waters off the Galápagos Islands for evidence of IUU fishing. When approached by the USCG vessel, three PRC fishing boats fled, with one turning aggressively

toward the USCG vessel, forcing the US vessel to take evasive action to avoid being rammed.⁵⁹

PRC vessels fishing illegally in Argentina’s EEZ have acted in a similarly evasive and aggressive manner. On March 14, 2016, for example, the Argentine Coast Guard discovered the PRC-flagged vessel *Lu Yan Yuan Yu 010* illegally fishing in Argentina’s EEZ. When the coast guard vessel tried to contact the *Lu Yan Yuan Yu 010*, the fishing vessel began to flee. However, after the coast guard ship fired warning shots, the *Lu Yan Yuan Yu 010* turned and attempted to ram it. During the engagement, the Argentine vessel sank the *Lu Yan Yuan Yu 010*.⁶⁰ This is not the only attempted ramming in Argentine waters. In 2018, the PRC vessel *Jing Yuan 626* was found fishing in Argentina’s EEZ and fled official pursuit with the help of four other PRC fishing vessels, which threatened to ram an Argentine Coast Guard vessel.⁶¹ (For more details on the 2016 and 2018 incidents, see the sidebar in Appendix C.)

Ramming other fishing vessels

There have been multiple reports of PRC-flagged fishing vessels intentionally ramming fishing vessels from other countries. Typically, these incidents are the result of competition over contested fishing



Ramming incidents have intimidated rival fisherfolk, damaged equipment, sunk vessels, and injured, killed, or marooned crew.

56 *Now You See Me, Now You Don't*; “How China Targets the Global Fish Supply”; *The Ever-Widening Net*.

57 *The Ever-Widening Net*.

58 Brush and Utermohlen, *Net Worth*.

59 “China Fishing Fleet Defied the US in Standoff on High Seas,” *Associated Press*, Nov. 1, 2022, <https://www.voanews.com/a/china-fishing-fleet-defied-us-in-standoff-on-high-seas-/6815717.html>.

60 Cliff White, “Argentina Sinks Chinese-Flagged Vessel Suspected of Illegal Fishing,” *SeafoodSource*, Mar. 16, 2016, <https://www.seafoodsource.com/news/environment-sustainability/argentina-sinks-chinese-flagged-vessel-suspected-of-illegal-fishing>.

61 Oliver and Jacobs, “Improving International Fisheries Management.”

grounds or other natural resources, often in waters that are the subject of maritime territorial disputes. Ramming incidents have intimidated rival fisherfolk, damaged equipment, sunk vessels, and injured, killed, or marooned crew.⁶² The following incidents are examples of this behavior.

Philippines. On the night of June 9, 2019, the 44-meter, steel-hulled PRC vessel *Yuemaobinyu 42212* rammed the 19-meter wood-hulled Philippine vessel *Gem-Ver* (see Figure 4). At the time of the incident, the PRC vessel's AIS and lights were both off. The PRC vessel sailed away from the scene, leaving the 22 crew members of the *Gem-Ver* stranded at sea until they were rescued by Vietnamese fishermen.⁶³

Mauritania. On the night of October 9, 2020, a large PRC trawler rammed a Mauritanian artisanal fishing boat. The PRC vessel had its lights off and its AIS deactivated.⁶⁴ The Mauritanian vessel sank, and three of its crew died.⁶⁵

Senegal. On September 19, 2020, a PRC-operated trawler reportedly tried to capsize a Senegalese-captained 11-person fishing canoe.⁶⁶ With the canoe up against the trawler, the Senegalese captain

Figure 4. Philippine fishing vessel struck by PRC vessel



Source: Benjamin Pulta, "PH to Finally Get Compensation Offer for Gem-Ver Incident," *Philippines News Agency*, 2021, <https://www.pna.gov.ph/articles/1142951>.

climbed aboard to confront the PRC crew about its dangerous maneuvers and was beaten and burned with gasoline.⁶⁷

Brazil. On November 22, 2018, the 49-meter PRC tuna vessel *Chang Rong 4* allegedly rammed the 22-meter *Oceano Pesca* six times, resulting in \$90,000 in damage.⁶⁸

62 For more on this topic, see Loomis and Holz, *Exposing the Gap Between PRC Rhetoric and Illicit Maritime Activity: Case Study Compilation*.

63 Rambo Talabong, and Sofia Tomacruz, "The Sinking of Gem-Ver" *Rappler*, July 10, 2019, <https://specials.rappler.com/newsbreak/in-depth/234304-there-is-a-ship-about-hit-sinking-gem-ver-recto-bank-series-part-1/index.html>; Marlon Ramos, "Remember Gem-Ver? Redress for PH Fishermen Still Stuck in Talks," *Philippine Daily Inquirer*, June 9, 2021, <https://newsinfo.inquirer.net/1443586/remember-gem-ver-redress-for-ph-fishermen-still-stuck-in-talks>; Benjamin Pulta, "PH to Finally Get Compensation Offer for Gem-Ver Incident," *Philippines News Agency*, 2021, <https://www.pna.gov.ph/articles/1142951>.

64 "Mauritania: 3 Fishermen Died after Their Boat Collided with a Chinese Ship, and the Matter Worsened" (نيديايس 3 لكاله: ايناتيروم), *El Hayat*, Oct. 10, 2020, <https://tinyurl.com/5n9a3td3>; "Mauritania: 3 Fishermen Were Killed after Their Boat Collided with a Chinese Ship" (ةينيس ؤنيسب مهبراق مانطص! رثا! ايناتيروم), *Skonic*, Oct. 11, 2020, <https://tinyurl.com/4ma5m2bt>.

65 "Mauritania: 3 Fishermen Were Killed after Their Boat Collided with a Chinese Ship."

66 "A Senegalese Fisherman Burned Alive by Chinese off the Coast of Gambia" (Un pêcheur sénégalais brûlé vif par des Chinois), *Fandene TV Facebook Page*, Sept. 25, 2020, https://m.facebook.com/413024349490289/photos/a.454433722016018/777875543005166/?type=3&rd_rdr; Maria Diop, "Senegalese Fisherman Burned Alive by Chinese," *Seneweb.com*, Sept. 25, 2020, <https://www.archyde.com/senegalese-fisherman-burned-alive-by-chinese/>.

67 "Fisherman Burned in Confrontation with Chinese Trawler," *Africa Defense Forum*, Sept. 19, 2020, <https://adf-magazine.com/2020/11/fisherman-burned-in-confrontation-with-chinese-trawler/>.

68 "Brazilian Ship Attacked by Chinese in Dispute for Tuna, Union Says," *Navio brasileiro é atacado por chineses em disputa por atum, diz sindicato*, *UOL*, Nov. 27, 2018, https://noticias-uol-com-br.translate.google.com/cotidiano/ultimas-noticias/2018/11/27/navio-brasileiro-piratas-chineses-pesca-atum-rn.htm?_x_tr_sl=pt&_x_tr_tl=en&_x_tr_hl=en&_x_tr_pto=nui,sc.

What is the impact of PRC IUU fishing?

The PRC DWF fleet poses a unique challenge due to its size, the global scope of its operations, and the frequency with which its vessels engage in IUU fishing.⁶⁹ As a result, the illegal activities that the PRC DWF fleet engages in often have serious environmental, socioeconomic, law enforcement, and even potential military implications. These implications are detailed below.

PRC IUU fishing harms ecosystems and threatens fish stocks

For example, PRC vessels that illegally catch squid in North Korean waters have reduced regional squid stocks, with fisheries in South Korea and Japan experiencing an 80 to 82 percent decline in reported squid catches since 2003, despite these countries having implemented stringent fisheries regulations.⁷⁰ Similarly, PRC fishing vessels in the SCS have damaged coral reefs while hunting for giant clams, destroying a crucial ecosystem and further endangering fish stocks.⁷¹

PRC IUU fishing deprives coastal communities of their livelihoods

In Ghana, for instance, where the majority of the industrial fishing fleet is illegally owned by PRC DWF companies, local fishing communities reported that their incomes, standards of living, and food security have all decreased, and that they were encountering industrial fishing vessels more often.⁷² These socioeconomic problems may develop into security issues; in some countries, foreign exploitation of fisheries has pushed local fishers into criminal activity, including drug trafficking and piracy.⁷³

PRC IUU fishing poses multiple law enforcement challenges

In addition to IUU fishing, some PRC DWF vessels engage in a variety of other illegal behaviors that create challenges for law enforcement. For instance, worker exploitation and forced labor seem to be common aboard some PRC DWF vessels. Indonesian and Ghanaian crew members of PRC DWF vessels have reported enduring unsafe working conditions, threats, and even physical abuse while working.⁷⁴ PRC

The PRC DWF fleet poses a unique challenge due to its size, the global scope of its operations, and the frequency with which its vessels engage in IUU fishing.

69 Runion, "Fishing for Trouble"; Michael Sinclair, "The National Security Imperative to Tackle Illegal, Unreported, and Unregulated Fishing," Brookings Institution, Jan. 25, 2021, <https://www.brookings.edu/blog/order-from-chaos/2021/01/25/the-national-security-imperative-to-tackle-illegal-unreported-and-unregulated-fishing/>.

70 Garcia, "Cracking Down on Illegal Chinese Fishing in North Korean Waters."

71 Azmi, "Giant Clams Under Threat as Poachers Target Philippine, Indonesian Waters After China Ban."

72 *A Human Rights Lens on the Impacts of Industrial Illegal Fishing and Overfishing: On the Socio-Economic Rights of Small-scale Fishing Communities in Ghana*, EJF, Aug. 17, 2021, <https://ejf.org/reports/a-human-rights-lens-on-the-impacts-of-industrial-illegal-fishing-and-overfishing-on-the-socio-economic-rights-of-small-scale-fishing-communities-in-ghana>.

73 Runion, "Fishing for Trouble."

74 *The Ever-Widening Net*; George Wright and Thomas Naadi, "Ghana Fishing: Abuse, Corruption and Death on Chinese Vessels," BBC, Jan 4, 2023, accessed Jan. 6, 2023, <https://www.bbc.com/news/world-africa-63720181>.

DWF vessels may also engage in illegal smuggling. In testimony given before Congress in March 2023, a Brookings Institute researcher reported that a series of 2021 interviews with US government and law enforcement officials indicated that PRC fishing ships might be increasingly involved in drug trafficking.⁷⁵

The PRC DWF may have ties to the PRC's Maritime Militia

Numerous PRC fishing vessels are also members of the Maritime Militia, an auxiliary component of, and reserve force for, the People's Liberation Army (PLA).⁷⁶

Maritime Militia members receive training from the PLA and the China Coast Guard for tasks including border patrol, surveillance and reconnaissance, and search and rescue.⁷⁷ The Maritime Militia has played a large role in asserting PRC territorial claims in the SCS, and militia vessels have reportedly rammed fishing vessels from other countries that attempt to fish in the waters claimed by the PRC.⁷⁸ It is not clear to what extent PRC DWF vessels are members of the Maritime Militia. Notably, given the PRC's territorial claims over the SCS, it does not consider fishing vessels operating there to be engaging in DWF.⁷⁹

Numerous PRC fishing vessels are also members of the Maritime Militia, an auxiliary component of, and reserve force for, the People's Liberation Army (PLA).

75 Vanda Felbab-Brown, China's Role in the Fentanyl Crisis, *Follow the Money: The CCP's Business Model Fueling the Fentanyl Crisis*, 118th Cong., 1st sess., Mar. 23, 2023, pub. Brookings Institution website, Mar. 31, 2023, <https://www.brookings.edu/testimonies/chinas-role-in-the-fentanyl-crisis/>.

76 Runion, "Fishing for Trouble"; Luo and Panter, "China's Maritime Militia and Fishing Fleets."

77 Luo and Panter, "China's Maritime Militia and Fishing Fleets."

78 Runion, "Fishing for Trouble"; Luo and Panter, "China's Maritime Militia and Fishing Fleets."

79 *The Ever-Widening Net*.

Summary of China’s IUU fishing activities

Table 3 summarizes the PRC’s IUU fishing activities.

Table 3. China’s IUU fishing activities

Type of Activity	Examples/Comments
Fishing in restricted areas without authorization	<ul style="list-style-type: none"> • Fishing in other countries’ EEZs without permission • Fishing in other countries’ territorial waters without permission • Fishing in areas governed by RFMOs without authorization • Poaching in protected areas, such as marine reserves
Capturing protected species	<ul style="list-style-type: none"> • Finning sharks and stingrays • Killing dolphins and whales • Harvesting giant clams and sea cucumbers
Using prohibited fishing gear	<ul style="list-style-type: none"> • Using a prohibited type of longline to target protected sharks • Using nets with a prohibited mesh size • Using cyanide and explosives
Turning off the AIS	<ul style="list-style-type: none"> • Turning off the AIS to hide fishing in protected areas • Turning off the AIS to hide unauthorized fishing in a country’s jurisdictional waters
Falsifying records	<ul style="list-style-type: none"> • Keeping inadequate records • Falsifying records of vessels’ catches to obfuscate how much fish they catch and/or conceal which species they target
Transshipment	<ul style="list-style-type: none"> • Transferring catches to large, refrigerated cargo ships and receiving supplies and fuel at sea • Can help vessels underreport catches or disguise their origin
Obstructing inspections	<ul style="list-style-type: none"> • Fleeing law enforcement and/or coast guard vessels to avoid inspection • Ramming or attempting to ram law enforcement and/or coast guard vessels
Ramming other fishing vessels	<ul style="list-style-type: none"> • Ramming other fishing vessels to intimidate them from fishing in contested fishing grounds

Source: CNA.

APPROACHES TO ADDRESSING IUU FISHING

IUU fishing is a complex phenomenon that generally cannot be solved with single policy fixes. Addressing IUU fishing requires policies and capabilities that enable effective **identification** of suspicious behavior, as well as the capacity and capability to carry out **enforcement** actions when such behaviors are detected. Effective identification and enforcement may require technological, operational, legal, and political initiatives. The international legal context of the United Nations Convention on the Law of the Sea (UNCLOS) further complicates enforcement against fishing vessels from noncooperative states in the high seas. As a result, **measures beyond enforcement** might be necessary to address wrongdoing. In this chapter, we will examine these three bolded aspects in turn.

Identification

Identifying possible wrongdoing on the ocean, particularly in expansive economic exclusion zones (EEZs) and the high seas, requires effective identification mechanisms, including enhanced maritime domain awareness (MDA) and information sharing among stakeholders.

MDA

MDA is “the effective understanding of anything associated with the global maritime domain” related to security, safety, and prosperity.⁸⁰ Here, we will focus on four types of MDA: land-based, ocean-based, air-based, and space-based.

LAND-BASED MDA

Land-based MDA, which involves such capabilities as coastal radar arrays, may help identify possible instances of IUU fishing within EEZs. Many land-based radar systems, such as India’s Coastal Surveillance Radar System (also used in several other Indian Ocean states), cannot cover a full 200-nautical-mile EEZ due to restricted ranges.⁸¹ Land-based automatic identification system (AIS) receivers have ranges of approximately 60 nautical miles.⁸² Long-range over-the-horizon radar (OTHR) systems, such as the US Navy’s ROTH or Australia’s Jindalee Operational Radar Network, might be able to identify vessels operating on the edge of an EEZ or in the high seas, but such sophisticated systems also come with substantially higher costs.⁸³

80 *National Plan to Achieve Maritime Domain Awareness*, Department of Homeland Security, 2005.

81 The Coastal Surveillance Radar System’s range is around 50 kilometers. See *Coastal Surveillance Radar*, Defense Research and Development Organisation, https://www.drdo.gov.in/sites/default/files/inline-files/107-5CIR-107_CAT-A_CSR.pdf.

82 Dean Cheng, *The Importance of Maritime Domain Awareness for the Indo-Pacific Quad Countries*, The Heritage Foundation, 2019, <https://www.heritage.org/global-politics/report/the-importance-maritime-domain-awareness-the-indo-pacific-quad-countries>.

83 “AN/TPS-71 ROTH (Relocatable Over-the-Horizon Radar),” Federation of Atomic Scientists, June 29, 1999, accessed May 26, 2023, <https://nuke.fas.org/guide/usa/airdef/an-tps-71.htm>; “Jindalee Operational Radar Network,” DST, accessed May 26, 2023, <https://www.dst.defence.gov.au/innovation/jindalee-operational-radar-network>.

OCEAN-BASED MDA

Ocean-based MDA includes the use of crewed vessels that can contribute to domain awareness with visual, as well as radar- and sonar-based identification.⁸⁴ Uncrewed surface vessels (USVs) promise to multiply the platforms available for sensing operations as part of MDA. Surface drones already in use by various governments promise persistent endurance, along with sensors and transmitters tailored to the MDA mission set.⁸⁵ However, cheaper drones will likely be more constrained in terms of range and function, and legal questions remain about USV use in law enforcement.⁸⁶

AIR-BASED MDA

Air-based MDA can offer more flexible coverage than ocean- or space-based MDA. Maritime patrol aircraft, such as the Orion P-3 and Poseidon P-8, combine flexibility and relative speed with endurance, making them particularly useful for boosting MDA in response to cues from other sources.⁸⁷ Uncrewed aerial vehicles also promise to improve MDA at lower costs than crewed aircraft, though again, cost and capability will have an inverse relationship for such technologies, and questions about their use in law enforcement may need to be resolved.

Space- and satellite-based MDA continues to grow in importance.

SPACE-BASED MDA

Space- and satellite-based MDA continues to grow in importance. The International Maritime Organization's Long-Range Identification and Tracking (LRIT) system is satellite-based and is required on cargo, drilling, and passenger (but not fishing) vessels built after 2008.⁸⁸ AIS transmissions and other radio emissions can also be detected by satellites in low-earth orbit.⁸⁹ Defense research institutes have also been experimenting with using machine vision on synthetic aperture radar satellite imagery (which is effective in all weather conditions) to identify and track vessels that have turned off or do not have AIS transponders, but are engaged in IUU fishing.⁹⁰ However, space-based capabilities will likely remain the most expensive form of MDA, meaning that smaller states will likely depend on major powers and commercial providers for access to and analysis of information derived from space-based assets.

84 *The Importance of Maritime Domain Awareness for the Indo-Pacific Quad Countries.*

85 "NAVCENT Expands Unmanned Integration, Operates Saildrone in Arabian Gulf," US Navy, Jan. 27, 2022, accessed May 26, 2023, <https://www.navy.mil/Press-Office/News-Stories/Article/2914322/navcent-expands-unmanned-integration-operates-saildrone-in-arabian-gulf/>; Denys Reva and Tshegofatso Johanna Ramachela, "Can a New Wave of Drone Tech Make Africa's Seas Safer?" Institute for Security Studies, Nov. 30, 2022, accessed May 26, 2023, <https://issafrica.org/iss-today/can-a-new-wave-of-drone-tech-make-africas-seas-safer>.

86 Joel Coito, "Maritime Autonomous Surface Ships: New Possibilities—and Challenges—in Ocean Law and Policy," *International Legal Studies* 97 (2021).

87 *The Importance of Maritime Domain Awareness for the Indo-Pacific Quad Countries.*

88 "Long-Range Identification and Tracking (LRIT)," International Maritime Organization, accessed May 26, 2022, <https://www.imo.org/en/OurWork/Safety/Pages/LRIT.aspx>; "LRIT CDC—Legal Basis," EMSA, accessed May 26, 2022, <https://www.emsa.europa.eu/lrit/lrit-home/legal-basis.html>.

89 *The Importance of Maritime Domain Awareness for the Indo-Pacific Quad Countries.*

90 "US Government and Nonprofit Organization Host Prize Competition to Leverage the Latest Technology to Detect and Defeat Illegal Fishing," Defense Innovation Unit, July 22, 2021, accessed May 26, 2022, <https://www.diu.mil/latest/us-government-and-nonprofit-organization-host-prize-competition-xview3>; "Space-Based Maritime Domain Awareness," Department of National Defence and the Canadian Armed Forces, accessed May 26, 2023, <http://www.forces.gc.ca/en/business-defence-acquisition-guide-2016/services-840.page>.

Information sharing among stakeholders

DATABASE EXPANSION

Regional fisheries management organizations (RFMOs) often maintain databases to track vessels known to have engaged in IUU fishing. These datasets, however, are notoriously incomplete, under-networked, out of date, or underutilized, although at least one organization has independently collated and updated RFMO lists of IUU fishing vessels.⁹¹ Expanding and connecting RFMO databases to other sources of information can aid authorities as they consider licensing, registration, and enforcement actions. Other public or nonpublic tools, such as Global Fishing Watch or the MDA tools sponsored by the United States, the European Union, France, and the United Kingdom, also provide near-real-time intelligence, which coastal and flag states can use to home in on potential wrongdoing.⁹² IUU fishing transshipment in particular is an area in which increased information sharing and improved databases can help bridge gaps among the flag states of fishing vessels, the flag states of transshipment vessels, and port and coastal states.⁹³ Relatedly, increased tracking measures for fish products that would allow importing states to identify and reject IUU fishing products may create economic incentives against such practices.

US-PARTNER INFORMATION SHARING

The United States and major economies like Canada and Australia can afford to invest in experimental and cutting-edge technology, but flag and coastal

states with smaller economies do not have the same luxury. The United States and its allies can act alone and in concert to increase intelligence sharing on IUU activities, particularly with the states that possess jurisdiction over the activity. The United States has already taken steps to increase information sharing with some key partners in the fight against IUU fishing. For instance, in 2022, the Indo-Pacific Partnership for Maritime Domain Awareness promised to improve access to advanced satellite-based information for regional allies and partners that otherwise might not be able to afford these sources.⁹⁴

Enforcement

Enforcement activities involve legal actions and innovations, enforcement patrols, and training. We will discuss each of these aspects below.

Legal actions and innovations

Both international and national legal actions and innovations could help address IUU fishing, particularly if undertaken by states with a record of IUU fishing in their waters.

INTERNATIONAL

Unregulated fishing can occur when a fishing vessel's flag state is not party to the RFMO that oversees the relevant region or species, or when no RFMO covers a particular area or species. Countries joining RFMOs or countries establishing new RFMOs where needed are two effective policy solutions for eliminating some types of unregulated fishing.

91 "IUU Vessel List," IUU Vessel List, accessed May 26, 2023, <https://iuu-vessels.org/>.

92 "Global Fishing Watch," Global Fishing Watch, <https://globalfishingwatch.org>.

93 Duncan Copland and Courtney Farthing, "Canada Recognizes Need for Strong and Consistent Transshipment Measures," Global Fishing Watch, May 5, 2022, accessed May 31, 2023, <https://globalfishingwatch.org/impacts/policy-compliance/canada-recognizes-need-transshipment-measures/>.

94 David Brewster, "New Satellite-based Technologies a Game Changer for Indo-Pacific Maritime Security," ASPI The Strategist, July 13, 2022, accessed May 26, 2023, <https://www.aspistrategist.org.au/new-satellite-based-technologies-a-game-changer-for-indo-pacific-maritime-security/>.

States can also leverage international agreements that provide regulations and guidelines for how port states should manage fisheries vessels that call at their ports. States that have not done so can sign the International Plan of Action to Prevent, Deter, and Eliminate Illegal, Unreported, and Unregulated Fishing (IPOA-IUU), as well as the Port State Measures Agreement (PSMA).⁹⁵ In particular, the PSMA provides legally binding measures designed to restrict port access to vessels engaged in IUU fishing. However, these tools will be of limited relevance if vessels engaged in IUU fishing do not call at ports covered by the agreements. Several key states in the fight against IUU fishing, including Argentina, Colombia, Malaysia, Papua New Guinea, Tuvalu, and Kiribati, have not ratified the agreement.⁹⁶

DOMESTIC

After signing and ratifying the IPOA-IUU and PSMA, coastal and flag states need to implement those two instruments in national legislation. They can also pursue additional legal innovations. These include tightening beneficial-ownership laws, because actors involved in IUU fishing may hide the true beneficial owner of vessels or fishing operations, enabling illegal fishing. Another option is to strengthen penalties for IUU fishing, although UNCLOS establishes some limits on penalties for fisheries-related crimes.⁹⁷

Enforcement Patrols

States with jurisdiction can increase enforcement patrols with naval and coast guard vessels. More vessels on station makes action based on intelligence more feasible and enforcement more likely to succeed. However, many states with expansive maritime entitlements, particularly in the Pacific and Indian Oceans, will not be able to independently sustain extensive patrol capabilities. Furthermore, jurisdiction issues persist, particularly on the high seas.

Ship-rider agreements allow a state with jurisdiction (whether being the flag or coastal state) to piggyback on a more capable partner's navy or coast guard vessels, with a ship rider conducting law enforcement from the partner's vessel. Expanding ship-rider programs, whether through the United States signing more such agreements or US allies and partners establishing their own programs, could expand enforcement opportunities and help circumvent jurisdiction issues.

Training

Enforcement training can build partners' capacity to conduct boardings, inspections, and arrests during anti-IUU fishing patrols, as well as helping partner states understand the challenges of IUU fishing and the intelligence tools and legal best practices available to counter such fishing. The United States already conducts such training programs with some partners, particularly in the Caribbean and Pacific.⁹⁸

95 "IPOA-IUU," Food and Agriculture Organization of the United Nations, accessed May 22, 2023, <https://www.fao.org/iuu-fishing/international-framework/ipoa-iuu/en/>; "Agreement on Port State Measures," Food and Agriculture Organization of the United Nations, accessed May 22, 2023, <https://www.fao.org/iuu-fishing/international-framework/psma/en/>.

96 "Parties to the PSMA," Food and Agriculture Organization of the United Nations, accessed May 22, 2023, <https://www.fao.org/port-state-measures/background/parties-psma/en/>.

97 Article 73 of UNCLOS permits boarding, inspection, and arrest by a coastal state in its EEZ, but it prohibits imprisonment as a penalty for conviction absent a bilateral treaty to that effect and requires prompt release of vessel and crew upon bond being posted.

98 "Countering Illegal, Unreported, and Unregulated Fishing: Capacity Building and Technical Assistance, National Oceans and Atmospheric Administration," Mar. 14, 2023, accessed May 31, 2023, <https://www.fisheries.noaa.gov/enforcement/countering-illegal-unreported-and-unregulated-fishing-capacity-building-and-technical>.

Measures beyond enforcement

Where enforcement is not possible due to jurisdiction issues, naming and shaming perpetrator vessels and enabling governments to do so on their own can help build pressure for change. For small-scale IUU fishers, diversions such as job programs may also reduce IUU fishing. Publicizing advocacy days and years, such as those proclaimed by the UN in the recent past (e.g., the International Day for the Fight against Illegal, Unreported, and Unregulated Fishing), may also help build momentum for addressing IUU fishing.⁹⁹

Summary of approaches to address IUU fishing

The capabilities and activities discussed above cover the spectrum of policy and operational responses that can address IUU fishing. Table 4 summarizes these responses. Not all measures will be relevant to all types of IUU fishing, and in many cases, effectively countering such fishing will require multiple responses being conducted in concert. In the next section, we will consider the relevance of these tools to the types of PRC IUU fishing activities identified earlier in the report.

Table 4. Policy responses for countering IUU fishing

Identification	Enforcement	Measures Beyond Enforcement
Improve land-based MDA <ul style="list-style-type: none"> • Long-range radars 	Join RFMOs	Name and shame
Improve ocean-based MDA <ul style="list-style-type: none"> • Crewed and uncrewed vessel patrols 	Establish RFMOs	Promote diversions from IUU activities (e.g., job programs)
Improve air-based MDA <ul style="list-style-type: none"> • Aircraft and drone patrols 	Sign the IPOA-IUU	Publicize advocacy days (e.g., the International Day for the Fight against Illegal, Unreported, and Unregulated Fishing)
Improve space-based MDA <ul style="list-style-type: none"> • Satellite imagery • Radio sensing 	Ratify the PSMA	
Connect and leverage RFMO databases	Implement IPOA-IUU and PSMA requirements (domestically)	
Expand seafood-tracking processes	Tighten beneficial-ownership rules	
Increase information sharing	Strengthen penalties for IUU fishing	
	Increase enforcement patrols	
	Expand ship-rider programs	
	Conduct enforcement training	

Source: CNA.

⁹⁹ “International Day for the Fight against Illegal, Unreported, and Unregulated Fishing,” United Nations, accessed May 31, 2023, <https://www.un.org/en/observances/end-illegal-fishing-day>.

COMPARATIVE ANALYSIS OF COUNTERMEASURES AND PRC IUU ACTIVITIES

The PRC's IUU fishing behaviors include fishing in illegal locations, fishing with illegal equipment, catching protected species, turning off location transmitters, falsifying records, conducting illegal or unrecorded transshipments, and obstructing inspections. The previous section lays out countermeasures ranging from increasing patrols and boosting maritime domain awareness to introducing or expanding legal tools for coastal and flag states. In this section, we consider how these various countermeasures to IUU fishing stack up against the activities observed in the PRC's DWF fleet.

Table 5 considers how effective a given countermeasure would likely be at addressing the PRC's IUU fishing activities of concern. In the table, the numerical scores reflect three of the four categories we used to assess the potential effectiveness of various countermeasures:

- **Ineffective or largely ineffective (0):** Countermeasures that would be entirely or largely ineffective against a specified PRC IUU fishing activity.
- **Effective in conjunction (1):** Countermeasures that would effectively address a specified PRC IUU fishing activity only when combined with at least one other countermeasure.

- **Effective independently (2):** Countermeasures that would effectively address, but not solve, a specified PRC IUU fishing activity independent of any other countermeasures.
- **Solves problem (3):** Countermeasures that would entirely solve problems associated with a specified PRC IUU fishing activity.

As Table 5 shows, no countermeasures available to states (other than the PRC itself) would completely solve the problems associated with the PRC's IUU fishing activities (i.e., we identified no countermeasures with a score of 3). And we assessed several of the countermeasures (i.e., tightening beneficial-ownership rules, boarding training, naming and shaming, diversions, and advocacy days) as being either completely or nearly completely ineffective against PRC activities (having a score of 0).

No countermeasures available to states (other than the PRC itself) would completely solve the problems associated with the PRC's IUU fishing activities.

Table 5. Efficacy of countermeasures against PRC IUU fishing activities

	Illegal Location	Illegal Species	Illegal Methods	Turning off the AIS	False Records	IUU Transshipment	Obstructing Inspections
Use long-range radars	1	0	0	1	1	1	0
Conduct crewed-vessel patrols	2	2	2	2	2	2	2
Conduct uncrewed-vessel patrols	1	1	1	1	1	1	0
Conduct aircraft and drone patrols	1	0	1	1	1	1	0
Network RFMO databases	1	1	1	1	1	1	1
Use satellite imagery	1	1	1	2	1	1	0
Use radio sensing	1	0	0	1	1	0	0
Expand seafood-tracking processes	1	1	1	0	2	1	0
Increase information sharing	1	1	1	1	1	1	1
Join RFMOs	1	1	1	1	1	1	0
Establish RFMOs	1	1	1	1	1	1	0
Implement IPOA-IUU and PSMA requirements	0	2	2	1	2	1	2
Tighten beneficial-ownership rules	0	0	0	0	1	0	0
Strengthen penalties for IUU fishing	1	1	1	1	1	1	1
Increase enforcement patrols	2	2	2	2	2	2	2
Expand ship-rider programs	2	2	2	2	2	2	2
Conduct enforcement training	1	1	1	1	1	1	1
Conduct boarding training	0	0	0	0	0	0	1
Name and shame	0	0	0	0	0	0	0
Promote diversions from IUU	0	0	0	0	0	0	0
Publicize advocacy days	0	0	0	0	0	0	0

Source: CNA.

We did, however, find that states concerned by the PRC's IUU fishing can make some progress against certain behaviors with countermeasures that expand intelligence and information collection, legal toolkits, at-sea presence, and enforcement capacity. We also found that, to be most effective at addressing PRC IUU fishing, most of these countermeasures require the use of complementary countermeasures (i.e., most of the entries in the table have a score of 1).

For example, the various **information-collection countermeasures** (e.g., long-range radars, uncrewed-vessel patrols, air patrols, networking RFMO databases, satellite imagery) are useful for identifying IUU activities, or cueing patrols at sea or inspections in port, but they do not effectively address PRC IUU activities independently. Any of the information-collection countermeasures can contribute to identifying AIS manipulation or fishing in illegal locations. Those that can provide higher fidelity information, such as patrols and high-resolution satellite imagery, can help identify the use of illegal equipment or the transshipment of IUU fishing products. It is likely, however, that only patrols can provide reliable information on the catch of illegal species.

The effectiveness of expanded **training** necessarily depends on additional countermeasures that implement the training, but different types of training can help prepare flag and coastal states to address each type of PRC IUU fishing activity. Training on data analysis and integration can prepare US partners to use intelligence and information on possible IUU activity to make decisions about enforcement actions. Enforcement training can help inspection agents identify signs of wrongdoing while on patrol or in port. Finally, boarding training can improve the capacity of partner enforcement entities to respond to attempts to evade or prevent at-sea inspections, as the PRC DWF fleet sometimes has done.

Implementing **port-state control measures** can create opportunities to identify some types of IUU activity, particularly record falsification, the use of illegal equipment, or the catch of illegal species. However, the PRC DWF fleet is known for relying on reefers and other support ships to stay at sea for extended periods and may only occasionally (or never) visit ports outside the PRC. Although port enforcement would be ineffective in these cases, port states could criminalize support to vessels engaged in IUU fishing practices, which might cut off some sources of at-sea sustainment for such fleets.

Creating, expanding, or joining RFMOs could create additional rules and structures that might reduce illegal catches and fishing practices, as well as falsified records, but their primary effect would be to bring PRC fishing under international regulations on allowable catches.

The only set of countermeasures that we assessed to be consistently effective at independently addressing PRC IUU fishing activities were **crewed-vessel patrols**, whether conducted as expanded patrols or via ship-rider agreements (though implementing IPOA-IUU and PSMA requirements was assessed as effective independently against four of the seven activities). Crewed patrols are perhaps the most effective countermeasure because they combine the ability to collect information and initiate enforcement against vessels engaged in IUU fishing (with jurisdiction to inspect vessels and enforce laws when violations are present). Being on location could allow crewed fisheries enforcement vessels to identify illegal locations, equipment, catch species, or transshipments, as well as AIS gaps and record falsification. International law creates some complications on jurisdiction on the high seas, so crewed patrols by coastal states (either directly or via a ship-rider agreement) are likely most effective in EEZs or areas where PRC membership in an RFMO grants wider boarding, inspection, and enforcement rights.

IMPLICATIONS FOR SOF

In this section, we will explore the implications of the comparative analysis in the previous section for special operations forces (SOF) as they consider how and to what extent they might be able to contribute to countering the PRC's IUU fishing activities.

Authors writing about how the US military can help with the global IUU fishing challenge have identified two main ways: (1) promoting and engaging in multilateral arrangements and activities that bolster rules-based fishing activities, and (2) working through bilateral partnerships with states that have a common view of the IUU fishing challenge.¹⁰⁰ An example of the former is the Quadrilateral Defense Coordination Group (comprising the United States, Australia, France, and New Zealand) and its efforts to improve maritime security in the South Pacific. An example of the latter is an effort by the US Indo-Pacific Command in which partner-nation law enforcement officers embark US Navy ships to enforce fishery laws in those countries' EEZs.¹⁰¹ Building on these observations, Apling et al. recommended the creation of a Joint Interagency Task Force (JIATF)—featuring military, law enforcement, and international partners—to counter IUU fishing, drawing on the success achieved by JIATF-South in its counterdrug mission.¹⁰²

For its part, the US Coast Guard (USCG) has identified IUU fishing as “the leading global maritime security threat,” having displaced piracy from that position in recent years.¹⁰³ To address this challenge, the USCG has engaged in three primary lines of effort (LOEs): (1) promote targeted, effective, intelligence-driven enforcement operations, (2) counter predatory and irresponsible state behavior, and (3) expand multilateral fisheries enforcement cooperation.¹⁰⁴ Key activities in each of these LOEs are shown in Table 6.

For its part, the US Coast Guard (USCG) has identified IUU fishing as “the leading global maritime security threat,” having displaced piracy from that position in recent years.

100 Apling et al., “Pivoting the Joint Force.”

101 Apling et al., “Pivoting the Joint Force.”

102 Apling et al., “Pivoting the Joint Force.” JIATF-South conducts detection and monitoring operations across the US Southern Command area of responsibility to facilitate the interdiction of illicit trafficking of drugs and other illegal activities. It conducts operations such as *Martillo*, which is “a multi-national detection, monitoring and interdiction operation conducted by US Navy and Coast Guard vessels and aircraft as well as US federal law enforcement assets working in cooperation with military and law enforcement units from various Central and South American nations, Canada, the United Kingdom and the Netherlands.” See <https://www.jiatfs.southcom.mil>.

103 “Illegal, Unreported, and Unregulated Fishing Strategic Outlook,” US Coast Guard, September 2020, p. 2.

104 “Illegal, Unreported, and Unregulated Fishing Strategic Outlook.”

Table 6. Key USCG activities to counter IUU fishing

LOE	Key Activities
Promote targeted, effective, intelligence-driven enforcement operations	<ul style="list-style-type: none"> • Deploying tailored force packages that meet regional mission requirements • Leveraging intelligence community capabilities and innovative technology to analyze, consolidate, and share enforcement data • Streamlining processes for information sharing related to maritime enforcement and port security • Pushing intelligence information to the widest possible audience • Training, developing, and maintaining robust counter-IUU fishing expertise
Counter predatory and irresponsible state behavior	<ul style="list-style-type: none"> • Focusing operations and engagement on priority regions and countries^a • Confronting the actions of predatory and irresponsible nations and raising international community awareness of destabilizing influences that threaten vulnerable states • Leveraging existing resources, enforcement tools, and legal authorities to coordinate efforts alongside partner nations • Building partnerships with the private sector to leverage new and existing technologies and data analytics to identify and address major IUU fishing trends and threats
Expand multilateral fisheries enforcement cooperation	<ul style="list-style-type: none"> • Promoting the adoption of high-seas boarding authorities in RFMOs that do not currently have them • Adding counter-IUU fishing to existing US bilateral enforcement agreements and pursuing new agreements with flag states and countries in priority regions • Seeking increased operational commitments for at-sea enforcement presence from capable nations • Including counter-IUU fishing in annual at-sea exercises conducted with the Department of Defense (DOD) and international partners • Creating partnerships similar to the Oceania Maritime Security Initiative and the Africa Maritime Law Enforcement Partnership in other priority regions • Providing targeted country- and region-specific training on combating IUU fishing • Supporting improvements to key technologies and systems to enhance maritime enforcement and port security information sharing • Supporting increased effectiveness and transparency of fisheries enforcement sectors • Promoting the adoption of the PSMA and helping priority states implement port security programs

Source: "Illegal, Unreported, and Unregulated Fishing Strategic Outlook," US Coast Guard, September 2020, p. 2.

a. *Priority regions* are defined as those "at high risk for IUU fishing activity or the entry of illegally caught seafood into the markets of countries in the region; and in which countries lack the capacity to fully address the illegal activity." *Priority countries* (flag states) are defined as countries whose vessels are "actively engaged in, knowingly profit from, or are complicit in IUU fishing" and, at the same time, are willing but do not have the capacity to "monitor or take effective enforcement action against" their fleet. *National 5-Year Strategy for Combating Illegal, Unreported, and Unregulated Fishing: 2022–2026*, US Interagency Working Group on IUU Fishing, p.5.

The USCG clearly has a much broader role to play in countering IUU fishing than do SOF. The results of our analysis in the previous section suggest that there are three primary areas SOF might consider for contributing to US government (USG) efforts to combat IUU fishing. These are information collection and sharing, training, and increasing crewed-vessel patrols.¹⁰⁵ We will discuss each of these areas in turn below.

Information collection and sharing

As one scholar described, “IUU fishing is a needle-in-a-haystack problem...those engaged in intentional IUU fishing often go to great lengths to disguise their activities.”¹⁰⁶ By now, SOF have a wealth of experience tackling “needle-in-a-haystack” problems, in the form of the counterterrorism and counterproliferation missions that they have led for years. One of the key elements of those types of operations is the targeted collection, structured analysis, and widest dissemination of intelligence and information to enable and continuously improve the conduct of operations.

Already, USG agencies are making substantial efforts to collect information on IUU fishing. (These agencies include US Customs and Border Protection and the agencies partnered with it via the Commercial

Targeting and Analysis Center.¹⁰⁷) In addition, private-sector companies have “developed capabilities for visual, radar, and radio-frequency surveillance that previously were the exclusive domain of national intelligence agencies.”¹⁰⁸

Efforts are also underway to use state-of-the-art tools—leveraging artificial intelligence and machine learning (AI/ML)—to analyze the high volumes of data being collected on the activities of the millions of fishing boats operating across the globe daily.¹⁰⁹ As one notable example, the National Geospatial-Intelligence Agency (NGA) has been purchasing data and AI/ML analytics on a combination of “satellite imagery data, terrestrial AIS, which is transponder data that ships broadcast, company registry and ownership information, vessel spec databases, [and] nautical charts.”¹¹⁰ AI/ML tools are then used “to identify the high-probability ‘bad actors’ by applying historic knowledge of what the entities in the space are doing over time.”¹¹¹ Through this kind of analysis, NGA can alert its DOD and other USG customers when a particular ship is about to become a “dark target” likely to engage in IUU fishing or some other nefarious behavior.

These examples, among others, suggest that there is little need for SOF to provide additional broadly focused information-collection or analysis capabilities to the problem of IUU fishing. However, SOF could play important niche roles that would both add value

105 Even though our analysis highlighted port-state control measures, as well as creating, expanding, or joining RFMOs as useful efforts for countering PRC IUU fishing activities, we have not included them in this discussion because these are actions that flag states would need to take, and we identified little, if anything, that SOF could do to advance these countermeasures.

106 Peter C. Oleson, “Intelligence on the High Seas: Using Intelligence to Counter Illegal, Unreported, and Unregulated Fishing,” *Studies in Intelligence* 67, no. 1 (2023): 1–17.

107 “Combating Illegal Fishing: Better Information Sharing Could Enhance US Efforts to Target Seafood Imports for Investigation,” GAO; and “CTAC Partner Agencies,” <https://www.cbp.gov/trade/priority-issues/import-safety/ctac-partner-agencies>.

108 Oleson, “Intelligence on the High Seas.”

109 Oleson, “Intelligence on the High Seas.”

110 Brandi Vincent, “As It Helps Combat Unlawful Fishing Internationally, NGA Is ‘Posturing’ for an AI-driven Future,” *DEFENSESCOOP*, May 10, 2023, <https://defensescoop.com/2023/05/10/as-it-helps-combat-unlawful-fishing-internationally-nga-is-posturing-for-an-ai-driven-future>.

111 Vincent, “As It Helps Combat Unlawful Fishing Internationally, NGA Is ‘Posturing’ for an AI-driven Future.”

to efforts to counter IUU fishing and be unique to SOF. One of these could be clandestinely tagging and tracking specific vessels engaged in IUU fishing that are deemed of significant intelligence value (this could be due to the origin or ownership of the vessel, the nature of its actions, or the overlap of its IUU fishing with other nefarious activities, among other reasons).¹¹²

Another SOF role could be establishing a centralized, multinational, multiauthority information fusion and sharing organization along the lines of Operation Gallant Phoenix (OGP). As described recently by the Assistant Secretary of Defense (ASD) for Special Operations and Low-Intensity Conflict, Christopher P. Maier, OGP is “a US interagency and multinational [counterterrorism] initiative launched by USSOCOM in 2014 [that has] enabled international and interagency partners to share information and disrupt” terrorist groups.¹¹³ One of the most notable elements of OGP has been its focus on using all-source information gathering and analysis to enable partner-nation law enforcement agencies to take preemptive action against terrorist financing, recruitment, and technology transfers.¹¹⁴ As ASD Maier described, however, “Well beyond [counterterrorism] efforts, the OGP model is applicable to countering coercive activities in the ‘gray zone’ and deterring aggression” by actors such as the PRC.¹¹⁵ Establishing an OGP-like entity focused on pulling all-source information (e.g., that being contracted for by NGA) into a central node that

includes liaisons from partner-nation (and potentially, multinational) law enforcement agencies and coast guards could prove to be a powerful means of both illuminating the nature and extent of PRC IUU fishing activities and enabling US partner nations to take increased actions against these activities. It would also help US partner nations share the costs of expensive sources of useful information, such as space-based imagery, and better tap into existing RFMO databases in a centralized fashion.

Initial priority partners for such an organization would likely include the five focus countries identified by the US Interagency Working Group on IUU Fishing (Ecuador, Panama, Senegal, Taiwan, and Vietnam). Given the US goal to “assist these governments and authorities to become self-sufficient, regional leaders in the fight against IUU fishing,”¹¹⁶ a centralized OGP-like entity could eventually be spun off into a set of regional entities anchored on these countries. Over time, these entities might even be expanded into a set of regional JIATFs, as recommended by Apling et al.¹¹⁷

Training

Another niche area in which SOF could help is training partner nations to better combat PRC IUU fishing. An immediate idea in this vein would be for the theater special operations commands (TSOCs) to fully integrate countering IUU fishing activities into the major exercises that they conduct with US allies and partners globally each year. An example of this

112 Tagging, tracking, and locating devices (across multiple domains, including maritime) are a stated capability area of interest for US Special Operations Command. See https://www.socom.mil/SOF-ATL/Pages/eSOF_cap_of_interest.aspx.

113 “Statement for the Record: The Honorable Christopher P. Maier, Assistant Secretary of Defense for Special Operations and Low-Intensity Conflict and General Bryan P. Fenton, USA, Commander, United States Special Operations Command Before the Committee on Armed Services United States Senate,” Mar. 7, 2023, [https://www.armed-services.senate.gov/imo/media/doc/2023%20SOLIC-USSOCOM%20Posture%20-%20Maier-Fenton%20-%20SASC%20\(7Mar23\)%20\(FINAL\).pdf](https://www.armed-services.senate.gov/imo/media/doc/2023%20SOLIC-USSOCOM%20Posture%20-%20Maier-Fenton%20-%20SASC%20(7Mar23)%20(FINAL).pdf).

114 Jim Garamone, “Australia, US Discussions Ranged the Globe, Dunford Says,” DOD News, June 7, 2017, <https://www.jcs.mil/Media/News/News-Display/Article/1205895/australia-us-discussions-ranged-the-globe-dunford-says>.

115 “Statement for the Record: The Honorable Christopher P. Maier.”

116 “FACT SHEET: Marking the One Year Anniversary of the National Security Memorandum on Combating Illegal, Unreported, and Unregulated Fishing and Associated Labor Abuses.”

117 Apling et al., “Pivoting the Joint Force.”

was the first-ever maritime exercise included in this year's *Flintlock*, which is the signature yearly exercise led by the US Special Operations Command–Africa. As described in an article about the event, at one point in the exercise, “West African troops silently pulled their small boats up to a rust-stained ferry and swarmed up its sides on grappling hooks to disarm the mock kidnappers onboard.”¹¹⁸ While the TSOCs would need to balance the priority placed on IUU fishing in these exercises relative to other important missions (e.g., counterterrorism), it should be possible to strike such a balance through close consultation with the allied and partner nations participating in the exercises.

Another idea to enhance training of US partners for countering IUU fishing could be for the US Special Operations Command (USSOCOM) to establish a training center of excellence for identifying and taking action against vessels engaged in such fishing. The ideal location for such a center would be the Naval Small Craft Instruction and Technical Training School (NAVSCIATTS), operated by the Naval Special Warfare Command (NAVSPECWARCOM).¹¹⁹ Currently, NAVSCIATTS offers a range of tactical- to strategic-level courses;¹²⁰ these could be supplemented by classes focused on a similar range of issues specifically related to countering IUU fishing (e.g., how to identify IUU fishing activities, how to conduct boardings and inspections of suspect vessels, and how to conduct detentions of suspect individuals at sea). Although such a move would

likely require dedicating at least some additional resources to NAVSCIATTS to support the additional courses, this idea is one that SOCOM could act on relatively quickly (i.e., in the next two to three years). Importantly, this idea would need to be implemented in close coordination with the USCG.

Taking a longer view, SOF could also begin working closely with the US Navy's Task Force 59¹²¹ and in collaboration with the US Department of State and USCG to develop and bring uncrewed surface and subsurface maritime surveillance systems—along with AI/ML technologies to quickly analyze the data these systems generate—to US partner nations globally. This would likely require some degree of advocacy to partner nations to signal a demand for such technologies to the State Department and the geographic combatant commands. Such advocacy could be done via the TSOCs in conjunction with the Navy's regional component commands. Once such systems were developed and in procurement pipelines, however, SOF could expand upon the training center of excellence at NAVSCIATTS to help partner nations use these cutting-edge technologies to combat IUU fishing. Such a center of excellence could be further supplemented by placing SOF liaison officers at key nodes for detecting partner-nation requirements. An example of such a center is the IUU Fishing Center of Excellence that is to be established on Ford Island, Hawaii.¹²²

118 Cooper Inveen, “US Military Conducts First Maritime Drills with West African Forces,” Reuters, Mar. 16, 2023, <https://www.reuters.com/world/africa/us-military-conducts-first-maritime-drills-with-west-african-forces-2023-03-16>.

119 For more information on NAVSCIATTS, see <https://www.socom.mil/navsoc/NAVSCIATTS>.

120 See “Strategic Courses,” <https://www.socom.mil/navsoc/NAVSCIATTS/Pages/Strategic-Courses.aspx>; “Operational Courses,” <https://www.socom.mil/navsoc/NAVSCIATTS/Pages/Operational-Courses.aspx>; and “Tactical Courses,” <https://www.socom.mil/navsoc/NAVSCIATTS/Pages/Tactical-Courses.aspx>.

121 According to the US Navy's Fifth Fleet, “TF 59 is the first US Navy task force of its kind, designed to rapidly integrate unmanned systems and artificial intelligence with maritime operations in the US 5th Fleet area of operations.” Roland Franklin, “U.S. 5th Fleet Launches New Task Force to Integrate Unmanned Systems,” US Naval Forces Central Command, Sept. 9, 2021, <https://www.cusnc.navy.mil/Media/News/Display/Article/2768468/us-5th-fleet-launches-new-task-force-to-integrate-unmanned-systems>.

122 “FACT SHEET: Marking the One Year Anniversary of the National Security Memorandum on Combating Illegal, Unreported, and Unregulated Fishing and Associated Labor Abuses.”

Increasing crewed-vessel patrols

Of the three main areas that our analysis identified as potential SOF contributions, increasing crewed-vessel patrols is both the trickiest to implement and likely the area of least return on investment for SOCOM. Although NAVSPECWARCOM could contribute to these operations by providing surface maritime platforms¹²³ for law enforcement officials, whether US or foreign, to carry out boarding, inspection, and enforcement actions, such operations come with several notable limitations. First, these patrols are arguably the costliest of all options to counter IUU fishing. Government vessels and seafarers are in limited supply, and time spent by NAVSPECWARCOM conducting fisheries enforcement patrols is time not spent using its stealthy boats on other, likely higher priority, missions. Second, a vessel on an enforcement patrol can be in only one place at a time, meaning that cueing from intelligence sources is vital for concentrating patrols in areas with suspected fisheries violations. Third, international law constrains enforcement patrols to cases in which the state (either of the government vessel or of a ship rider aboard) conducting the enforcement action has jurisdiction.¹²⁴ For all these reasons, crewed-vessel patrols for countering IUU fishing is likely a poor use of NAVSPECWARCOM maritime platforms.

That said, one of the roles that SOF have played over the past 20 years is that of a global connector between parties that have an interest in a particular

issue but are not naturally predisposed to be part of a network to address the issue. SOF could again play this role for IUU fishing. One example noted above would be the creation of an OGP-like entity to share intelligence and information across interested parties. Doing so would have the benefits of collaboration and cost-sharing noted above. It could also help increase crewed-vessel patrols in two ways: first, by providing information on where to focus patrols to increase their efficiency and decrease costs, and second, by providing an entry point for collaboration not just among governments but also among nongovernmental entities. One example of the latter is Sea Shepherd, which describes itself as “an international, non-profit marine conservation organization that engages in direct action campaigns to defend wildlife, and conserve and protect the world’s ocean from illegal exploitation and environmental destruction.”¹²⁵ Sea Shepherd is currently conducting approximately 20 named campaigns against IUU fishing in regions across the globe.¹²⁶ Although the organization had previously come under fire for its aggressive and unilateral maritime activities, in recent years it has begun working directly with the governments and coast guards of several countries that the US considers partner nations, such as Italy, Gabon, and São Tomé. This may provide an opening for SOF to engage with Sea Shepherd as part of an effort to broadly support crewed-vessel patrols.¹²⁷

123 NAVSPECWARCOM’s maritime platforms include the Combatant Craft Assault, Combatant Craft Medium, and Special Operations Craft-Riverine. “Fact Book 2023,” US SOCOM Office of Communications, p. 34, <https://www.socom.mil/FactBook/2023%20Fact%20Book.pdf>.

124 In the fight against PRC IUU fishing, this will be limited to cases in which (1) PRC vessels fish in a coastal state’s EEZ; (2) PRC-controlled fishing vessels operate under a different flag that has enforcement capacity or ship riders; (3) inspection and enforcement are carried out by a party to the South Pacific Regional Fisheries Management Organization; (4) PRC explicitly grants other states enforcement rights. See Valentin Schatz and Millicent McCreath, “EEZ-Adjacent Distant-Water Fishing as a Global Security Challenge: An International Law Perspective,” The European Center of Excellence for Countering Hybrid Threats, Working Paper 19, 2022, https://www.hybridcoe.fi/wp-content/uploads/2022/09/20220912_Hybrid_CoE_Working_Paper_19_DWF_WEB.pdf.

125 Sea Shepherd, “Who We Are,” <https://www.seashepherdglobal.org/who-we-are>.

126 Sea Shepherd, “Illegal Fishing Campaigns,” <https://www.seashepherdglobal.org/our-campaigns>.

127 Zahra Ahmed, “20 Things You Must Know about the Sea Shepherds,” *Marine Insight*, Mar. 13, 2023, <https://www.marineinsight.com/environment/20-things-you-must-know-about-the-sea-shepherds>.

CONCLUSIONS AND RECOMMENDATIONS

Given the discussion in the previous sections, we conclude that there are several ways in which SOF could meaningfully and valuably contribute to countering PRC IUU fishing. Such efforts would be niche in nature, and SOF would be in a supporting role to other USG agencies (most notably, the USCG) as well as those of partner nations (and potentially, nongovernmental organizations). Looking across the ideas we identified regarding what SOF could bring to this issue area, our overarching conclusion is that **SOF can best support countering IUU fishing by serving as a “global connector” for this issue.**

This role would entail three major components. First, it would involve establishing SOF as the leader for coordinating support of this issue within DOD and with allied and partner militaries worldwide. Second, it would involve creating a centralized intelligence and information clearinghouse to ensure dissemination of critical information, reduce individual actor costs (via cost sharing) for obtaining that information, and enable more efficient use of crewed-vessel patrols for interdicting IUU fishing activities. Third, it would involve identifying, developing, and continuously adapting best-practice tactics, techniques, and procedures (TTPs) for countering such activities, as well as sharing and practicing those TTPs with partner-nation militaries and coast guards through exercises and training events.

With these three components in mind, and assuming for the moment that the SOF enterprise remains interested in contributing to countering IUU fishing, we offer the following associated recommendations:

- **Establish SOF as the DOD leader for countering IUU fishing.** The commander of SOCOM should consider advocating for the creation and assignment to him of the role of coordinating authority for countering IUU fishing.¹²⁸ Doing so would place SOCOM in a lead DOD coordination role for this issue, as it currently is for such activities as countering violent extremist organizations and countering weapons of mass destruction.¹²⁹ Although this authority is limited in scope, it would serve a foundational function in enabling the other recommendations below.
- **Create a centralized intelligence and information clearinghouse for countering IUU fishing.** The SOCOM commander should consider establishing an OGP-like organization to increase and improve the sharing of releasable intelligence and other information with allied and partner-nation governments (e.g., coast guards and law enforcement agencies), multinational organizations, and (potentially)

128 “Coordinating authority” is defined by DOD as “An individual assigned responsibility for coordinating specific functions or activities involving forces of two or more Military Departments, two or more joint force components, or two or more forces of the same Service. The individual has the authority to require consultation between the agencies involved, but does not have the authority to compel agreement.” “Department of Defense Directive 5205.75, Incorporating Change 1,” DOD, May 22, 2017, <https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodd/520575p.pdf>.

129 “Defense Primer: Special Operations Forces,” Congressional Research Service, Nov. 21, 2022, <https://crsreports.congress.gov/product/pdf/IF/IF10545>.

nongovernmental entities that are involved in, or have an interest in, countering IUU fishing activities. Initial priority partners for such an organization should include the five focus countries identified by the US Interagency Working Group on IUU Fishing (Ecuador, Panama, Senegal, Taiwan, and Vietnam).

- **Identify, develop, and continuously adapt best-practice TTPs for countering IUU fishing; share and practice them with partner-nation militaries and coast guards through exercises and training events.**

The SOCOM commander should direct the TSOCs to incorporate IUU fishing in their exercises wherever this issue is important to US allies and partner nations and aligns with the goals of the geographic combatant commands. The commander of NAVSPECWARCOM should create a center of excellence for countering IUU fishing at NAVSCIATTS to ensure that best-practice TTPs are identified and disseminated

to US partners. The NAVSPECWARCOM commander should also engage the Navy's Task Force 59 to develop and bring uncrewed surface and subsurface maritime surveillance systems—along with AI/ML technologies to quickly analyze the data these systems generate—to US partner nations globally (in collaboration with the US Department of State and USCG).

We recognize that these recommendations would come with some degree of increased costs for SOCOM and NAVSPECWARCOM, which might be a tough sell given that SOCOM's budget has been flat for the past three years (resulting in a net decrease in buying power when adjusted for inflation).¹³⁰ Nonetheless, if SOF are interested in contributing to this issue area, we assert that playing the role of global connector—via the recommendations we provide above—is likely the least expensive and most cost-effective path. If SOF decide that this role is no longer of interest, the analysis described above should still be useful to other US government agencies involved in countering IUU fishing.¹³¹

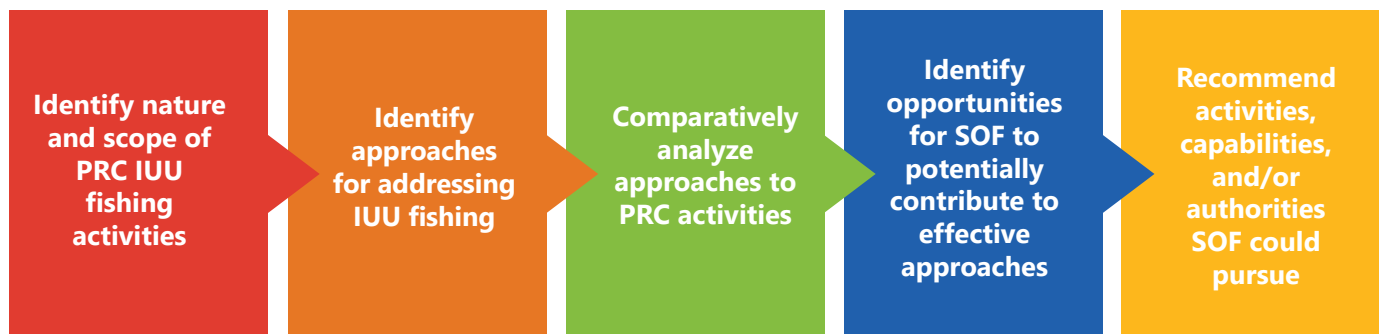
¹³⁰ Sean Carberry, "JUST IN: SOCOM Needs New Tech, Old Approaches, Senior Leader Says," *National Defense*, Aug. 25, 2023, <https://www.nationaldefensemagazine.org/articles/2023/8/25/socom-needs-new-tech-old-approaches-vice-commander-says>.

¹³¹ For example, the non-defense members of the US Interagency Working Group on IUU Fishing are the following: NOAA, Department of State, USCG, Council on Environmental Quality, Director of National Intelligence, National Security Council, Office of Management and Budget, Office of Science and Technology Policy, Office of the US Trade Representative, US Agency for International Development, Department of Agriculture, Department of Homeland Security, Department of Justice, Department of Labor, Department of the Treasury, Federal Trade Commission, Fish and Wildlife Service, Food and Drug Administration, and Immigration and Customs Enforcement. See: <https://www.fisheries.noaa.gov/national/international-affairs/us-interagency-working-group-iuu-fishing#:~:text=about%20our%20work.,Member%20Agencies,and%20the%20U.S.%20Coast%20Guard>.

APPENDIX A: APPROACH AND DATA SOURCES

To identify potential ways in which SOF could contribute to strategic competition by helping to address the PRC's IUU fishing activities, we followed a five-step approach, as shown in Figure 5.

Figure 5. Study approach



Source: CNA.

In the first step, we identified the nature and scope of the PRC's IUU fishing activities. To do this, we relied on Chinese-language sources, as well as English-language sources from the USG, academics, journalists, foundations, and maritime security organizations, among others. In the second step, we identified the range of approaches for addressing IUU fishing generally. To do this, we relied on information from the USG, the United Nations, academics, think tanks, and legal journals, among other sources. In the third step, we compared the approaches for addressing IUU fishing identified in step two with the PRC's IUU fishing activities identified in step one to identify which approaches might be most promising for the military—and

specifically, SOF—to conduct or support. In the fourth step, we compared the current capabilities and authorities that SOF have available to them to those approaches that seem most promising for them to conduct or support regarding the PRC's IUU fishing activities. This allowed us to identify specific findings for SOF. To do this, we relied on a variety of USG, academic, and open-source information. Finally, we used our own subject-matter expertise, as well as ideas offered by other writers on the topic of countering IUU fishing, to derive recommendations for potential activities, capabilities, or authorities that SOF could pursue to help address the PRC's IUU fishing activities.

APPENDIX B: KIRIBATI CASE STUDY

Country overview

Kiribati is one of the Pacific Island countries that lies between Hawaii and the Philippines and is found in the Micronesia region. Although it has a land mass of only 810 km², its EEZ covers 3.55 million km², roughly the size of the Indian subcontinent.¹³² Kiribati has a population of around 131,000 people, most of whom are concentrated in the country's capital, the atoll Tarawa. There, the population density is comparable to that of cities like Tokyo or Hong Kong. Its other islands are much more sparsely populated and geographically isolated.¹³³

In addition to its small geographic size, Kiribati also has a small economy; its gross domestic product (GDP) is roughly \$223 million, which is small even by regional standards.¹³⁴ It also has a low level of economic diversity, which has made economic growth a challenge and has contributed to the country's designation as a "least developed country" by the World Bank.¹³⁵

For years, the Pacific Islands were home to many of Taiwan's remaining diplomatic allies. Recently, however, some have begun to flip diplomatic recognition to Beijing, with Kiribati being the latest to make this switch, in 2019. The decision was cemented when the people elected a pro-Beijing president in 2020, in an election many observers characterized as a referendum on the decision. Since the election, the PRC has continued to expand its influence and investment in Kiribati.¹³⁶

IUU fishing in Kiribati

Kiribati's economy depends heavily on the ocean and the fishing industry. In 2021, over 80 percent of the country's exports came directly from the fishing industry, and roughly 75 percent of government revenues come from fishing fees and licenses.¹³⁷ This dependence, coupled with the country's geography, economic climate, proximity to overfished regions, weak governance, and lack of maritime enforcement mechanisms, has left the country particularly

132 Food and Agriculture Organization of the United Nations, "Fishery and Aquaculture Country Profiles: Kiribati," Food and Agriculture Organization of the United Nations, July 10, 2018, accessed July 3, 2023, <https://www.fao.org/fishery/en/facp/kir>.

133 CIA, "Kiribati," The World Fact Book, July 12, 2023, accessed July 13, 2023, <https://www.cia.gov/the-world-factbook/countries/kiribati/>; World Bank, "Population, Total - Kiribati," World Bank Data, 2022, accessed July 3, 2022, <https://data.worldbank.org/indicator/SP.POP.TOTL?locations=KI>.

134 World Bank, "GDP (Current US\$)—Kiribati," World Bank Data, 2022, accessed July 3, 2023, <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=KI>.

135 Natalie Fiertz, Sally Yozell, and Tracy Rouleau, *CORVI Risk Assessment: Tarawa, Kiribati*, Stimson Center, Aug. 4, 2022, <https://www.stimson.org/2022/corvi-risk-profile-tarawa-kiribati/>.

136 Michelle Nichols, "China Restores Ties with Kiribati, Site of Space Tracking Station," Reuters, Sept. 27, 2019, <https://www.reuters.com/article/us-china-kiribati/china-restores-ties-with-kiribati-site-of-space-tracking-station-idUSKBN1WC2KB>; Christopher Pala, "China Could Be in Reach of Hawaii after Kiribati Elects Pro-Beijing President," *Foreign Policy*, June 19, 2020, <https://foreignpolicy.com/2020/06/19/kiribati-election-china-taiwan/>.

137 The Observatory of Economic Complexity, "What Does Kiribati Export?," OEC, 2021, accessed July 3, 2023, https://oec.world/en/visualize/tree_map/hs92/export/kir/all/show/2021/; Robert Gillett, *Fisheries in the Economies of Pacific Island Countries and Territories*, The Pacific Community: Fisheries, Aquaculture, and Marine Ecosystems, 2016, <https://fame-archive.spc.int/component/content/article/237-benefish-study-2016?lang=en>; Fiertz, Yozell, and Rouleau, *CORVI Risk Assessment*.

susceptible to high rates of IUU fishing.¹³⁸ Kiribati itself has only 510 locally flagged vessels, compared with over 700,000 foreign flagged vessels, and most of these foreign vessels are Chinese or Taiwanese.¹³⁹ This high foreign vessel presence, coupled with weak maritime governance and enforcement, contributes to the ongoing proliferation of IUU fishing in the region, with the PRC as one of the primary culprits.

The primary issue with such fishing in the Pacific Islands centers on underreporting, misreporting, and nonreporting. Ninety percent of IUU fishing activity in the Pacific is due to misreporting, compared with only 5 percent that comes from illegal and unlicensed fishing.¹⁴⁰

There have been several efforts to quantify the economic impact of IUU fishing in the region. One of the most comprehensive and consistently cited

studies finds that during the 2017–2019 period, the IUU fishing catch in the Pacific Islands was valued at around \$333.5 million. The researchers who generated this value, however, cautioned against its overuse. Under normal circumstances, Pacific Island countries receive only a fraction of the catch's value, which often comes through licensing fees. Estimating the lost revenue associated with this catch places the lost regional value closer to \$43 million, though this amount is still a high value given the size of regional country economies.¹⁴¹ Regardless of the exact figure, given the nature of Pacific Island economies, these islands' dependence on the fishing industry for economic growth, and their communities' dependence on the fish supply for food security (e.g., Kiribati has one of the world's highest per capita rates of fish consumption¹⁴²), the ongoing presence of IUU fishing in the region poses a serious threat.

Ninety percent of IUU fishing activity in the Pacific is due to misreporting, compared with only 5 percent that comes from illegal and unlicensed fishing.

138 Mark Leahey, "Illegal, Unreported, and Unregulated Fishing in Oceania," Naval Postgraduate School Center for Homeland Defense and Security, Mar. 2022, <https://www.hsaj.org/articles/21264>.

139 Josh Nicholas, Ben Doherty, and Kate Lyons, "Pacific Plunder," *The Guardian*, May 21, 2021, <https://www.theguardian.com/world/ng-interactive/2021/may/31/pacific-plunder-this-is-who-profits-from-the-mass-extraction-of-the-regions-natural-resources-interactive>; Fiertz, Yozell, and Rouleau, *CORVI Risk Assessment*.

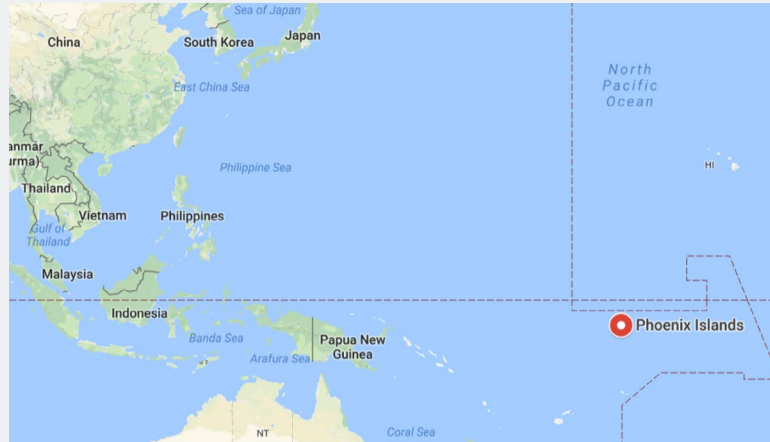
140 D. Souter et al., *The Quantification of Illegal, Unreported and Unregulated (IUU) Fishing in the Pacific Islands Region—a 2020 Update*, Pacific Islands Forum Fisheries Agency, 2021, <https://mragasiapacific.com.au/wp-content/uploads/2021/12/ZN2869-FFA-IUU-2020-Update-final.pdf>. See commentary in Tim White, "Recent Study Shows How Satellite Technology Can Help Track Illegal Fishing Throughout the Pacific Region," Global Fishing Watch, Mar. 31, 2022, <https://globalfishingwatch.org/data/tracking-illegal-fishing-in-the-pacific/>; Pacific Islands Forum Fisheries Agency, *Regional Monitoring, Control, and Surveillance Strategy (RMCSS) 2018–2023*, Pacific Islands Forum Fisheries Agency, accessed July 3, 2023, https://www.ffa.int/system/files/CP11_2122%20RFP-Provision%20of%20Monitoring%20and%20Evaluation%20of%20the%20RMCSS%202018-2....pdf.

141 D. Souter et al., *The Quantification of Illegal, Unreported and Unregulated (IUU) Fishing*.

142 Fiertz, Yozell, and Rouleau, *CORVI Risk Assessment*.

KIRIBATI'S PHOENIX ISLANDS PROTECTED AREA

In 2007, Kiribati created the Phoenix Islands Protected Area (PIPA) and a related trust to protect over 400,000 km² of marine and terrestrial habitats in the South Pacific. This area was the world's largest Marine Protected Area and was also a UNESCO World Heritage Site. Under the legislation that created PIPA, the government closed the area to commercial fishing, and the conservation trust compensated Kiribati for the lost revenue.¹⁴³



But in late 2021, Kiribati announced that it was reopening PIPA to commercial fishing, giving up its UNESCO World Heritage site designation and trust funding in exchange for expected revenue. The Kiribati government argued that maintaining PIPA was no longer cost-effective, and leaked cabinet files estimated that opening the region to fishing could generate \$200 million in annual license fees, although this value has since been disputed.¹⁴⁴

Although not specifically an IUU fishing challenge, Kiribati's decision to reopen PIPA to fishing nonetheless demonstrates power dynamics at play in the region. Many analysts and observers believe the PRC is behind the change of PIPA's status. Not only did the decision come around the time of sharply increasing PRC influence in the country, but it would also give the PRC greater access to coveted tuna resources and proximity to US waters. The impacts of this decision are still to be seen.

143 UNESCO, "Phoenix Islands Protected Area," UNESCO World Heritage Convention, accessed July 5, 2023, <https://whc.unesco.org/en/list/1325/>.

144 Richard Herr, *What's Behind Kiribati's Move to Open Marine Reserve to Fishing?*, Australian Strategic Policy Institute, Nov. 18, 2021, <https://www.aspi.org.au/whats-behind-kiribatis-move-to-open-marine-reserve-to-fishing/>; Jill Goldenziel, "Kiribati's Liaison with China Threatens Sushi and US Security," *Forbes*, July 22, 2022, <https://www.forbes.com/sites/jillgoldenziel/2022/07/22/kiribatis-liaison-with-china-threatens-sushi-and-security/?sh=4dd772ed6ec0>; Derek Grossman, "China's Pacific Push is Backfiring," RAND Corporation, July 26, 2022, <https://www.rand.org/blog/2022/07/chinas-pacific-push-is-backfiring.html>.

Existing counter-IUU fishing efforts

Given the threat IUU fishing poses to local and regional economies, Kiribati has participated in several Pacific-initiated efforts to combat such fishing. One of the most prominent and successful examples is the Nauru Agreement Concerning Cooperation in the Management of Fisheries of Common Interest, or more simply, the Nauru Agreement. In 1982, Kiribati and seven other Pacific Island countries¹⁴⁵—whose collective waters cover an area roughly 1.5 times the size of the United States and contain around 50 percent of the global supply of skipjack tuna—signed this agreement to manage their tuna fisheries. The Vessel Day Scheme lies at the core of the Nauru Agreement. Under this arrangement, members agree on a limited number of fishing days per year, allocate the days by country, and sell fishing rights to the highest bidder. This agreement has allowed Kiribati and the other member countries to negotiate as a bloc, control access to their waters, and raise substantial revenue through more coordinated licensing practices. It has largely been considered a success.¹⁴⁶

In addition to the Nauru Agreement, Kiribati is also a signatory to the United Nations Convention on the Law of the Sea and the UN Fish Stocks Agreement,

as well as the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean. It is also party to several other agreements to manage regional fisheries.¹⁴⁷

Despite these treaties and evidence pointing to the success of several counter-IUU fishing efforts, Kiribati and its neighbors still face limitations in responding to IUU fishing.¹⁴⁸ Kiribati, for example, lacks a formal navy, coast guard, or maritime enforcement agency and only has about 40 coast guard personnel and one patrol boat.¹⁴⁹ It receives its primary defense assistance from Australia and New Zealand. Other Pacific Island countries similarly rely on formal or informal agreements with other countries to meet their defense and maritime enforcement needs.¹⁵⁰ Yet even with this help, they lack the capabilities and resources to police the entirety of their EEZs, leaving them vulnerable to IUU fishing.¹⁵¹

The United States has created several programs to help address these deficits. Most prominently, the USCG has a permanent bilateral ship-rider agreement with Kiribati and 10 other Pacific Island countries. These ship-rider agreements allow USCG law enforcement personnel to collaborate with host countries to conduct maritime law enforcement operations and patrol Pacific waters for IUU fishing.¹⁵²

145 Members include the Federated States of Micronesia, Kiribati, the Marshall Islands, Nauru, Palau, Papua New Guinea, the Solomon Islands, and Tuvalu.

146 In 2010, they generated roughly \$50 million in revenue, but after raising fees in 2011, revenue rose to \$500 million in 2020. See Christopher Pala, "How Eight Pacific Island States Are Saving the World's Tuna," *Foreign Policy*, Mar. 3, 2021, <https://foreignpolicy.com/2021/03/05/tuna-fishing-overfishing-conservation-pacific-islands-skipjack-pna/>; Parties to the Nauru Agreement, "About PNA," Parties to the Nauru Agreement, accessed July 6, 2023, <https://www.pnatuna.com/content/about-pna>.

147 "Fishery and Aquaculture Country Profiles: Kiribati."

148 For a discussion of the declining rate of IUU fishing and successes, see "Recent Study Shows How Satellite Technology Can Help."

149 Radio New Zealand, "Pacific News in Brief for July 13," RNZ, July 13, 2–23, <https://www.rnz.co.nz/international/pacific-news/493681/pacific-news-in-brief-for-july-13>.

150 Leahey, "Illegal, Unreported, and Unregulated Fishing in Oceania."

151 Joseph Hammond, "Chinese Fishing Fleet Poses Threat to Pacific Island Economies," Indo-Pacific Defense Forum, June 21, 2021, <https://ipdefenseforum.com/2021/06/chinese-fishing-fleet-poses-threat-to-pacific-island-economies/>.

152 Warren Wright, "Shiprider Program," Indo-Pacific Defense Forum, Jan. 27, 2020, <https://ipdefenseforum.com/2020/01/shiprider-program/>.

The presence of the USCG in this effort is important. For years, Pacific Island countries have expressed a desire to stay out of great-power competition and avoid the further militarization of the region. As a result, by relying on the USCG as opposed to the US Navy to conduct these missions, Pacific Island countries have been more willing to collaborate with the United States on counter-IUU fishing efforts, and the program has received a positive reception in the region.

Beyond more defense-oriented efforts, the US Agency for International Development also works with Pacific countries to counter IUU fishing. It is currently implementing a five-year program (2021–2026) called OurFish OurFuture, a \$15 million effort addressing social and ecological drivers of IUU fishing. The program involves activities to make coastal fisheries management more sustainable, enhance monitoring and surveillance of coastal

fisheries, develop private-sector partnerships to promote sustainable supply chains, and integrate marginalized actors into coastal fisheries management.¹⁵³ With growing attention on IUU fishing challenges across USG agencies, other non-defense-related efforts are expected to emerge to help combat the issue in the Pacific.¹⁵⁴

Given Kiribati and other Pacific communities' reliance on the fishing industry for economic and food security, as well as the importance of Pacific waters to global fish supplies, IUU fishing in the region poses a serious threat. The Kiribati government is aware of this challenge and is working actively with regional actors and international partners to combat the practice and build domestic enforcement and surveillance capabilities. Although many of these efforts have made notable progress, further action is still needed.

Given Kiribati and other Pacific communities' reliance on the fishing industry for economic and food security, as well as the importance of Pacific waters to global fish supplies, IUU fishing in the region poses a serious threat.

153 USAID, "OurFish OurFuture," USAID, accessed July 6, 2023, <https://www.usaid.gov/pacific-islands/fact-sheets/ourfish-ourfuture>.

154 White House, "Memorandum on Combating Illegal, Unreported, and Unregulated Fishing and Associated Labor Abuses," The White House, June 27, 2022, <https://www.whitehouse.gov/briefing-room/presidential-actions/2022/06/27/memorandum-on-combating-illegal-unreported-and-unregulated-fishing-and-associated-labor-abuses/>.

APPENDIX C: ARGENTINA CASE STUDY

Country overview

Argentina, the second-largest country in South America, is located astride strategic sea lanes connecting the South Atlantic and the South Pacific Oceans. It has a population of over 46 million people, with about a third of them living in the capital, Buenos Aires.¹⁵⁵ Argentina has a GDP of \$610 billion, one of the largest in Latin America, and as of 2021, the World Bank classified it as an upper-middle-income country.¹⁵⁶ It has an abundance of natural resources, including energy endowments, and large-scale agricultural industries.¹⁵⁷

Argentina's long-term economic growth, however, has been limited by recurring financial crises and debt challenges. For decades, the country has battled inflation, which has led it to participate in over 22 International Monetary Fund (IMF) financial-support programs. One of the most prominent came in 2001, after Argentina defaulted on a \$21.6 billion IMF loan, and the most recent came in 2022, when officials agreed to another IMF loan, for \$45 million.¹⁵⁸ These IMF programs often come with strict austerity requirements that impose short-term pain in exchange for long-term growth and stability. These requirements, however, are often politically

Argentina's long-term economic growth, however, has been limited by recurring financial crises and debt challenges.

unpopular and can prompt anti-Western sentiment among voters.¹⁵⁹

The country's refusal to implement the necessary economic reforms often limits its access to Western financing. This has created an opening for the PRC to increase its economic engagement with Argentina, and both sides of the political spectrum have welcomed the PRC's involvement. The political left appreciates the opportunity to move away from IMF loans, while the political right enjoys the opportunity to diversify access to international funds. But despite these growing economic partnerships, the United

155 CIA, "Argentina," The World Fact Book, July 25, 2023, accessed July 25, 2023, <https://www.cia.gov/the-world-factbook/countries/argentina/>.

156 Nada Hamadeh et al., "New World Bank Country Classifications by Income Level: 2022–2023," World Bank Blogs, July 1, 2022, <https://blogs.worldbank.org/opendata/new-world-bank-country-classifications-income-level-2022-2023>; World Bank, "The World Bank in Argentina," World Bank, accessed July 24, 2023, <https://www.worldbank.org/en/country/argentina/overview#1>.

157 The Observatory of Economic Complexity, "What Does Argentina Export?," OEC, 2021, accessed July 23, 2023, <https://www.worldbank.org/en/country/argentina/overview#1>.

158 Walter Bianchi, "Explainer: Argentina's New IMF Deal Pushes Default Fears Down the Road," Reuters, Mar. 4, 2022, <https://www.reuters.com/business/finance/argentinas-new-imf-deal-pushes-default-fears-down-road-2022-03-04/>.

159 Anusha Rathi, "Argentina's Economic Crisis Never Went Away," *Foreign Policy*, Aug. 15, 2022, <https://foreignpolicy.com/2022/08/15/argentina-imf-debt-massa-fernandez/>.

States remains a key provider of foreign direct investment and a leading sponsor of international cooperation programs in Argentina.¹⁶⁰ As such, the Argentine political establishment finds itself trying to delicately balance its relationship with the United States and the PRC.

IUU fishing in Argentina

Argentina's fishing industry produces over \$2.7 billion in economic value, constituting about 3.5 percent of the country's GDP.¹⁶¹ This industry is dominated by squid, Argentine hake, Argentine red shrimp, and Patagonian grenadier. The squid are particularly important for the fishing industry and the surrounding ecosystem. Squid catches alone generate \$597 million, on average, for the region's economy, and the species is a vital component of regional food chains.¹⁶²

Argentina's fishing industry is dominated by foreign-flagged vessels. Argentine fishing vessels account for less than 1 percent of total fishing hours, while the PRC has hundreds of vessels operating in the area. Although these PRC vessels dominate the international fishing fleet, South Korea, Spain, and Taiwan also have many vessels operating in the region.¹⁶³

The volume of foreign-flagged vessels, the presence of abundant fishing stocks, and the difficult and expensive nature of protecting the region's EEZs due to its geography make IUU fishing a particular challenge.¹⁶⁴ Estimates place the economic loss from IUU fishing between \$2 billion and \$4.6 billion per year.¹⁶⁵ The practice is particularly threatening to local communities because it is often accompanied by other crimes, such as forced labor and drug smuggling. In addition, IUU fishing often exacerbates overfishing problems, which can be devastating for South Atlantic ecosystems.¹⁶⁶

Vessels employ a variety of tactics to conduct IUU fishing. In Argentine waters, the practice of "going dark"—in which fishing vessels turn off their AIS—is one of the most common. Vessels often trawl just beyond the Argentine EEZ before turning off their AIS to fish illegally in Argentine waters.¹⁶⁷ From 2018 to 2021, foreign vessels illegally fished for over 600,000 hours with their AIS turned off, and 66 percent of this illegal fishing came from PRC-flagged vessels. This contrasts the roughly 900,000 hours of fishing during the same period, highlighting the extent and scope of the problem. But although the PRC dominates illegal fishing by sheer volume, Spanish ships have some of the highest rates of "going dark" per vessel, showing

160 Ariel González Levaggi and Ryand C. Berg, "Argentina's Embrace of China Should Be a Wake-up Call," *Foreign Policy*, May 23, 2022, <https://foreignpolicy.com/2022/05/23/argentina-china-us-imf-bri-debt-economy-summit-americas/>.

161 Oceana, *Oceana Finds Hundreds of Vessels Vanishing along Argentina's Waters*, Oceana, June 2021, <https://usa.oceana.org/reports/oceana-finds-hundreds-vessels-vanishing-along-argentinas-waters/>.

162 Oceana, *Oceana Finds Hundreds of Vessels Vanishing along Argentina's Waters*.

163 Dan Collyns, "Illegal Fishing Spurs Billions in Losses for Developing Countries, Study Says," *The Guardian*, Oct. 26, 2022, <https://www.theguardian.com/environment/2022/oct/26/illegal-fishing-billions-losses-developing-countries>; Elizabeth Claire Alberts, "'Dark' Ships off Argentina Ring Alarms over Possible Illegal Fishing," *Mongabay*, June 3, 2021, <https://news.mongabay.com/2021/06/dark-ships-off-argentina-ring-alarms-over-possible-illegal-fishing/>; Oceana, *Oceana Finds Hundreds of Vessels Vanishing along Argentina's Waters*.

164 Evan Ellis, "Do Latin American Waters Continue to Fall Prey to China's Fishing?," *Diálogo Americas*, Dec. 7, 2020, <https://dialogo-americas.com/articles/do-latin-american-waters-continue-to-fall-prey-to-chinas-fishing/>.

165 Collyns, "Illegal Fishing Spurs Billions in Losses for Developing Countries, Study Says."

166 Oceana, *Oceana Finds Hundreds of Vessels Vanishing along Argentina's Waters*.

167 Alessandro Ford, "GameChangers 2021: How IUU Fishing Plundered Latin America's Oceans," *InSight Crime*, Dec. 23, 2021, <https://insightcrime.org/news/gamechangers-2021-iuu-fishing-plundered-latin-americas-oceans/>; Oceana, *Oceana Finds Hundreds of Vessels Vanishing along Argentina's Waters*.

that the problem is not uniquely PRC-initiated.¹⁶⁸ In addition to “going dark,” IUU fishers may also manipulate GPS positions and identification numbers when engaging in IUU fishing in Argentine waters.¹⁶⁹

Existing counter-IUU fishing efforts

There are several Argentine, regional, and foreign efforts to combat IUU fishing in Argentine and South American waters.

Argentina has directed naval assets and resources to address the problem. In February 2021, it created the Joint Maritime Command, tasked with patrolling

and controlling Argentina’s maritime areas and monitoring the international fishing fleet sailing near Argentina’s EEZ.¹⁷⁰ Later in 2021, Argentina expanded its surveillance efforts, adding a navy vessel at the Strait of Magellan to monitor suspicious incoming ships and deploying four new *Gowind*-class offshore patrol vessels to monitor territorial waters.¹⁷¹ Argentina has also enacted a number of policy changes to support these efforts, including stronger legislation and higher fines.¹⁷² Despite these efforts, the international fishing fleet still outnumbers the Argentine navy’s present capabilities, and the Argentine navy still struggles with effectively countering IUU fishers (see the sidebar on the next page).¹⁷³

There are several Argentine, regional, and foreign efforts to combat IUU fishing in Argentine and South American waters.

168 Oceana, *Oceana Finds Hundreds of Vessels Vanishing along Argentina’s Waters*.

169 María Fernanda Ramírez and Alessandro Ford, “Plunder and Danger on Argentina’s Sea Shelf,” InSight Crime, Aug. 3, 2022, <https://insightcrime.org/investigations/argentina-plunder-danger-atlantic-sea-shelf-iuu-fishing/>.

170 Wilder Alejandro Sanchez, “Argentina Deploys New Patrol Vessels to Combat IUU Fishing,” CIMSEC, Feb. 2, 2022, <https://cimsec.org/argentina-deploys-new-patrol-vessels-to-combat-iuu-fishing/>.

171 Ford, “GameChangers 2021”; Ramírez and Ford, “Plunder and Danger on Argentina’s Sea Shelf”; Sanchez, “Argentina Deploys New Patrol Vessels to Combat IUU Fishing.”

172 Ford, “GameChangers 2021.”

173 Sanchez, “Argentina Deploys New Patrol Vessels to Combat IUU Fishing”; Ford, “GameChangers 2021.”

IUU FISHING INTERACTIONS BETWEEN PRC-FLAGGED VESSELS AND THE ARGENTINE MILITARY

In 2016, the Argentine Coast Guard ship *Derbes* discovered a PRC-flagged vessel illegally fishing in its waters. The *Derbes* contacted the vessel by radio and tried to board it, but the PRC vessel ignored the communication and fled to international waters. The *Derbes* then fired several warning shots, prompting the PRC vessel to repeatedly attempt to ram the coast guard ship. The *Derbes* eventually fired at the vessel, hit it, and caused it to sink. All crew members were rescued by the *Derbes* or nearby fishing vessels, and there were no reports of injury or death.¹⁷⁴

In 2018, the Argentine Coast Guard found another PRC-flagged vessel illegally fishing in its waters. The coast guard once again contacted the vessel by radio, but the PRC vessel turned off its lights and fled to international waters. During an hours-long chase in which the Argentine Coast Guard fired warning shots at the vessel, four other PRC-flagged boats worked together to try to collide with the coast guard to prevent the capture of the illegal fishing vessel. After an eight-hour operation, the coast guard ended the mission.¹⁷⁵

These are just two of the many interactions between the Argentine Coast Guard and PRC-flagged fishing vessels that have escalated to violence, and they highlight Argentina's challenges in combating IUU fishing in its waters.

174 White, "Argentina Sinks Chinese-Flagged Vessel Suspected of Illegal Fishing"; Raul Pedrozo, "China's IUU Fishing Fleet: Pariah of the World's Oceans," *International Law Studies* 99 (2022), <https://digital-commons.usnwc.edu/cgi/viewcontent.cgi?article=3005&context=ils>.

175 Reuters Staff, "Argentina Calls for Capture of Five Chinese Fishing Boats," Reuters, Mar. 8, 2018, <https://www.reuters.com/article/us-argentina-china-fishing-idUSKCN1GK35T>; Pedrozo, "China's IUU Fishing Fleet."

At the regional level, several countries are trying to establish an RFMO to facilitate greater cooperation among governments on counter-IUU-fishing initiatives. Argentina, however, has been resistant to the present model and refused to negotiate on the RFMO at a meeting of the Food and Agriculture Organization (FAO) of the United Nations.¹⁷⁶

Interestingly, the PRC has also attempted to play a role in countering IUU fishing in South American waters. It has imposed harsher penalties for companies that turn off their transponders, tightened

transshipment reporting requirements, and banned off-season squid fishing in the region. Despite these efforts, conservation experts say PRC actions in total continue to exacerbate the problem and fail to instill full faith in the country's willingness to counter IUU fishing. The PRC, for example, continues to be opaque about the subsidies it provides to its DWF fleet, and the PRC has rejected South American requests to participate in regional counter-IUU-fishing efforts.¹⁷⁷

176 Sabina Goldaracena, "Uruguay, Argentina and Brazil Consider Regional Fix for IUU Fishing," *The Maritime Executive*, Apr. 4, 2021, <https://maritime-executive.com/editorials/uruguay-argentina-and-brazil-consider-regional-fix-for-iuu-fishing>.

177 Ford, "GameChangers 2021."

The United States, meanwhile, provides limited support for Argentine counter-IUU-fishing initiatives and has only recently begun to work with South American countries on this issue. In late 2020, a USCG cutter deployed to South America for a 68-day mission, Operation Southern Cross, targeting IUU fishing called. This operation marked the first time in recent memory that the USCG has patrolled the South Atlantic and included visits to several countries in the region, including Brazil and Uruguay.¹⁷⁸ The cutter was supposed to visit Argentina, but US and Argentine officials cancelled the visit due to alleged logistical challenges. An Argentine official, however,

told a news outlet that the cancellation was more likely due to the presence of the PRC fishing fleet in the region.¹⁷⁹

IUU fishing in Argentina and South America threatens territorial sovereignty, the livelihoods of local communities, and the health of regional ecosystems. Although efforts are underway in Argentina and across the region to combat IUU fishing, the scale of the issue coupled with capacity limitations means IUU fishing practices continue to flourish.

178 USOUTHCOM, "SOUTHCOM Support to Operation Southern Cross," accessed July 24, 2023, <https://www.southcom.mil/Media/Special-Coverage/SOUTHCOM-Support-to-Operation-Southern-Cross/>.

179 Ford, "GameChangers 2021."

APPENDIX D: GHANA CASE STUDY

Country overview

Ghana, a West African country located along the Gulf of Guinea, is known for its rich natural resources, relative democratic stability, and status as sub-Saharan Africa's first country to gain independence. Today, it has a population of 33.8 million people, most of whom are concentrated in the southern region's urban centers.¹⁸⁰

For many years, Ghana's economy was one of the fastest growing in the world, with an average increase of 7 percent, but the COVID-19 pandemic, high government debt, and inflation have reduced this growth. In 2021, the country's GDP stood at roughly \$178 billion. Ghana's primary export commodities are gold, crude petroleum, and cocoa products, and these exports drive much of the country's economy. As a result, the economy is vulnerable to commodity price shocks, which can further restrict long-term economic growth.¹⁸¹ The World Bank currently classifies Ghana as a lower-middle-income country.¹⁸²

Ghana has traditionally been a close security partner for the United States. It has participated in US Africa Command joint training exercises, is part of the United States' state partnership program, and participates in the United States' International Military Education and Training program. Beyond

Ghana has traditionally been a close security partner for the United States.

the security space, there are robust youth-exchange and study-abroad programs as well as strong cultural links between the two countries.¹⁸³

In March 2023, Vice President Kamala Harris landed in Ghana, the first stop in her first official visit to Africa. The trip was part of the Biden Administration's broader efforts to counter PRC and Russian influence and strengthen US ties to the continent. Although the PRC and Russia have minimal direct presence in Ghana, the Russian mercenary force, the Wagner Group, operates just to the north, in Burkina Faso, and the PRC has extensive investments in the region.¹⁸⁴

180 CIA, "Ghana," World Factbook, July 25, 2023, accessed July 31, 2023, <https://www.cia.gov/the-world-factbook/countries/ghana/#people-and-society>.

181 International Trade Administration, "Ghana—Country Commercial Guide," US Department of Commerce International Trade Administration, July 22, 2022, accessed Aug. 1, 2023, <https://www.trade.gov/country-commercial-guides/ghana-political-environment>; "Ghana."

182 Nada Hamadeh et al., "New World Bank Country Classifications by Income Level: 2022–2023."

183 US Department of State, "US Relations with Ghana," US Department of State, Aug. 2, 2021, accessed July 31, 2023, <https://www.state.gov/u-s-relations-with-ghana/>.

184 Associated Press, "Vice President Harris Pledges Aid to Ghana Amid Security and Economic Concerns," NPR, Mar. 27, 2023, <https://www.npr.org/2023/03/27/1166406843/kamala-harris-pledges-aid-to-ghana-russia-china-africa>; Joseph Hammond, "Sweet and Sour: China in Ghana," *The Diplomat*, Dec. 4, 2019, <https://thediplomat.com/2019/12/sweet-and-sour-china-in-ghana/>. For more on PRC investment in Africa, see *China in Africa*, *The Economist*, May 28, 2022, <https://www.economist.com/special-report/2022-05-28>.

IUU fishing in Ghana

West Africa is home to some of the world's most abundant and profitable fishing grounds. Consequently, there are high economic incentives for both local communities and foreign interests to open and conduct fishing operations in Ghanaian and West African waters.¹⁸⁵

Local communities rely on these fisheries for their livelihoods. Ghana has the highest dependence on fish for nutrition in Africa, with fish comprising almost 60 percent of Ghanaians' animal protein intake.¹⁸⁶ The industry also supports the livelihoods of 2.5 to 3 million people along the value chain, accounting for 10 percent of Ghana's population.¹⁸⁷

Unlike in Argentina or Kiribati, most of the fishing vessels in the Gulf of Guinea region are locally flagged by West African countries. These vessels, however, are owned and operated primarily by foreigners. To protect traditional artisanal fishing, Ghana passed a law in 2002 banning foreign ownership of vessels flying its flag. Nevertheless, foreigners—specifically PRC interests—make up about 90 percent of the industrial fishing fleet. They circumvent the law by using Ghanaian front

companies to access vessels and fishing licenses, allowing PRC owners to conceal their identity.¹⁸⁸

The concealed presence of the PRC owners and the growth of the industrial fishing fleet, coupled with the profitable fishing grounds, weak governance, limited accountability, and a lack of transparency, enable the proliferation of IUU fishing in Ghanaian and West African waters. Globally, one in five fish are caught via IUU fishing practices, but in West Africa, the figure is closer to one in four, accounting for over 26 million tons of illegally harvested fish, with Ghana serving as the epicenter of West African IUU fishing. This translates to a lost value of \$10 billion to \$23 billion for the region, with Ghana estimated to lose \$23.7 million in annual revenue.¹⁸⁹

IUU fishing practices in West Africa manifest in the form of unlicensed foreign industrial vessels, fishing in prohibited areas (e.g., in zones that should be reserved for artisanal fishing), the use of illegal equipment and gear, and the illegal discard of fish.¹⁹⁰ IUU fishing adversely affects local communities by threatening the collapse of the pelagic fishery industry, undermining economic growth, fostering food insecurity, negatively affecting women, and contributing to the proliferation of organized crime

185 Alfonso Daniels et al., *Western Africa's Missing Fish: The Impacts of Illegal, Unreported and Unregulated Fishing and Under-Reporting Catches by Foreign Fleets*, Overseas Development Institute, June 2016, https://cdn.odi.org/media/documents/Western_Africas_missing_fish.pdf.

186 Brian Gicheru Kinyua, "The Human Rights Cost of IUU Fishing in Ghana," *The Maritime Executive*, Sept. 5, 2021, <https://maritime-executive.com/editorials/the-human-rights-cost-for-iuu-fishing-in-ghana>.

187 Kinyua, "The Human Rights Cost of IUU Fishing in Ghana."

188 Kinyua, "The Human Rights Cost of IUU Fishing in Ghana."; Zubaida Mabuno Ismail, "With IUU Fishing Rampant, Ghana May Lose Access to EU Seafood Market," *The Maritime Executive*, Mar. 11, 2022, <https://www.maritime-executive.com/editorials/with-iuu-fishing-rampant-ghana-may-lose-access-to-eu-seafood-market>; Kate Hodal, "Illegal Fishing by Foreign Trawlers Costs Ghana \$50m a Year, Researchers Say," *The Guardian*, June 17, 2019, <https://www.theguardian.com/environment/2019/jun/17/illegal-fishing-by-foreign-trawlers-costs-ghana-50-million-dollars-a-year-researchers-say>; Environmental Justice Foundation, *On the Precipice: Crime and Corruption in Ghana's Chinese-Owned Trawler Fleet*, Environmental Justice Foundation, Aug. 12, 2022, <https://ejfoundation.org/reports/on-the-precipice-crime-and-corruption-in-ghanas-chinese-owned-trawler-fleet>.

189 Ismail, "With IUU Fishing Rampant, Ghana May Lose Access to EU Seafood Market"; Daniels et al., *Western Africa's Missing Fish*; Beatrice Gorez, "Ghana Artisanal Fishers Facing the Perfect Storm of Climate Change and IUU Fishing," *Coalition for Fair Fisheries Arrangements*, Apr. 26, 2022, <https://www.cffacape.org/news-blog/ghana-artisanal-fishers-facing-the-perfect-storm-of-climate-change-and-iuu-fishing>; Environmental Justice Foundation, *On the Precipice*.

190 Environmental Justice Foundation, *On the Precipice*; Daniels et al., *Western Africa's Missing Fish*.

and human rights abuses.¹⁹¹ The following paragraphs highlight three of these impacts.

First is the impact on local incomes and food supplies. Research has found that almost 90 percent of surveyed fishermen and processors faced declining income over the past five years, with incomes falling by as much as 40 percent in the past decade.¹⁹² Other researchers found that pelagic fish populations have declined by almost 80 percent in the past two decades, which has forced Ghana to import almost half of the fish it consumes.¹⁹³

Second is the impact on women. Traditional fishing practices have served as a critical employment opportunity for women, who make up almost 25 percent of total employment in the industry, with most of this labor concentrated in post-harvest jobs. The proliferation of industrial trawlers and IUU fishing practices, however, has reduced employment opportunities for women, causing many far-reaching downstream effects.¹⁹⁴

Third is IUU fishing's linkages to organized crime, human trafficking, and human rights abuses. Many vessels connected with human trafficking in the region have also been implicated in IUU fishing.¹⁹⁵ In addition, there has been increased reporting of widespread abuse on PRC-operated industrial fishing vessels in Ghanaian and West African waters. Workers describe excessive working hours, physical

abuse, inadequate living conditions, and serious injury at sea.¹⁹⁶

These examples highlight only some of the first-order effects of IUU fishing. The practice has many far-reaching second- and third-order effects that can have long-term and adverse consequences for local communities.

Existing counter-IUU fishing efforts

Given the importance of the fishing industry to local communities, Ghana has engaged in a diverse range of counter-IUU-fishing activities.

In the legal realm, Ghana has passed several pieces of legislation addressing the issue (see the sidebar below). In 2021, it included provisions to address markings on fishing vessels, gear usage, licenses, transshipments, and compliance and monitoring mechanisms.¹⁹⁷ It also created the Fisheries Enforcement Unit, an interagency team including the Fisheries Commission, Ghana's navy, and Marine Police. This unit conducts at-sea inspections and other efforts to monitor compliance.¹⁹⁸ Ghana is also working to acquire four patrol boats to help monitor the country's coastal regions.¹⁹⁹

191 Daniels et al., *Western Africa's Missing Fish*; Kinyua, "The Human Rights Cost of IUU Fishing in Ghana."

192 Kinyua, "The Human Rights Cost of IUU Fishing in Ghana."; Hodal, "Illegal Fishing by Foreign Trawlers Costs Ghana \$50m a Year, Researchers Say."

193 Hodal, "Illegal Fishing by Foreign Trawlers Costs Ghana \$50m a Year, Researchers Say"; Ismail, "With IUU Fishing Rampant, Ghana May Lose Access to EU Seafood Market."

194 Environmental Justice Foundation, *On the Precipice*; Daniels et al., *Western Africa's Missing Fish*.

195 Daniels, et al., *Western Africa's Missing Fish*.

196 Wright and Naadi, "Ghana Fishing"; Environmental Justice Foundation, *On the Precipice*.

197 Shem Oirere, "Ghana Updating Its Laws, Adding Patrol Boats to Fight IUU Fishing," SeafoodSource, Sept. 22, 2021, <https://www.seafoodsource.com/news/supply-trade/ghana-reviewing-its-fisheries-act-to-protect-its-fisheries>.

198 Ismail, "With IUU Fishing Rampant, Ghana May Lose Access to EU Seafood Market."

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GHANA'S SAIKO INDUSTRY

In Ghana, the practice of transferring fish from industrial trawlers to specially adapted canoes for onshore sales is referred to as the “saiko” trade. The practice began as an informal trading system in which locals canoed out to industrial trawlers and exchanged supplies for the unwanted bycatch from the larger vessels. But as populations of valuable export fish declined, the trawlers turned the saiko trade into a highly organized and lucrative business to make up for lost revenue. These vessels started intentionally catching the small pelagic fish typically reserved for artisanal fishers and freezing them in large blocks. At night, the specially adapted canoes sailed out to the trawlers, where they loaded the frozen blocks, took them ashore, and sold them to local communities.²⁰⁰



In 2017, the Environmental Justice Foundation estimated that the saiko trade accounted for about 100,000 metric tons of fish, more than the 67,205 metric tons of the reported and legal catch from the industrial trawlers. This large discrepancy between the reported and unreported catch results in adverse effects for local communities. Local communities are forced to confront declining fish populations and marine ecosystems pushed practically to the point of collapse. This threatens the coastal communities' primary source of income, even as the Ghanaian canoe owners and foreign owners of the industrial trawlers profit from the saiko trade.²⁰¹

In September 2021, the Ghanaian government passed a law banning the saiko trade. Although the ban appeared to be successful in stopping the practice of at-sea transfers, it resulted in many unintended consequences. For example, the ban pushed the industrial trawlers to start simply boxing up the saiko fish in cartons and landing them in Ghana's industrial ports themselves. The ban also led trawlers to increase dumping, the practice of illegally discarding unwanted fish in Ghanaian waters. Although the practice can be economically advantageous for the trawlers, it further damages local ecosystems and results in lost income for local fisherfolk.²⁰²

200 Environmental Justice Foundation, *On the Precipice*; Lieven Engelen, “Under Cover of Darkness: The Damaging Effects of Illegal ‘Saiko’ Fishing,” *The Guardian*, Oct. 17, 2022, <https://www.theguardian.com/environment/2022/oct/17/ghana-coastal-fishing-villages-industrial-trawling-saiko-illegal>.

201 Environmental Justice Foundation, *On the Precipice*; Engelen, “Under Cover of Darkness”; ADF staff, “Saiko Practices Are Killing Ghana’s Fishing Industry,” *Africa Defense Forum*, Oct. 21, 2020, <https://adf-magazine.com/2020/10/saiko-practices-are-killing-ghanas-fishing-industry/>.

202 Environmental Justice Foundation, *On the Precipice*; ADF Staff, “Illegal Fish Dumping by Chinese Trawlers Rising in Ghana,” *Africa Defense Forum*, Mar. 29, 2023, <https://adf-magazine.com/2023/03/illegal-fish-dumping-by-chinese-trawlers-rising-in-ghana/>.

At the regional level, Ghana is working with the Fisheries Committee for the West Central Gulf of Guinea to expand a Regional Monitoring, Control, and Surveillance Center. The center is currently headquartered in Ghana and focuses on bolstering joint action in the region.²⁰³

Ghana has also employed a variety of novel technologies to tackle IUU fishing. In 2018, the country worked with the UN's FAO to implement electronic monitoring systems (EMSs) to monitor vessel operations at sea. The systems collect video footage that could be reviewed by government officials for compliance and could serve as evidence for prosecution.²⁰⁴ Ghana also partners with international nonprofits to expand the use of technical solutions. Global Fishing Watch and Trygg Mat Tracking, for example, are implementing Vessel Viewer, a new tracking tool designed to assist decision-makers and operational planners.²⁰⁵ More recently, in March 2023, Ghana announced that it would achieve 100 percent transparency in industrial fishing operations in Ghanaian waters by 2025. To support this effort, it announced that it would deploy further use of EMS as well as remote sensors and GPS.²⁰⁶

The European Union (EU) has been one of the primary foreign actors attempting to combat IUU fishing practices in Ghana and in West Africa more generally. In 2013, it issued Ghana a yellow card, meant to serve as a warning that the country was inadequately addressing the IUU fishing threat. In

2015, after Ghana implemented new legislation and a fisheries management plan, the EU rescinded the warning. The situation failed to improve, however, and in 2021, Ghana became the first country to be reissued a yellow card. If Ghana fails to get the issue under control, it could receive a red card, which would result in economic sanctions and blocked access to the lucrative European export market.²⁰⁷

In theory, Ghana has all the resources and framework in place to counter IUU fishing in its waters. These efforts, however, have failed to achieve the desired effect, in large part due to a culture of corruption and bribery. One study found that "the ability to operate

In theory, Ghana has all the resources and framework in place to counter IUU fishing in its waters. These efforts, however, have failed to achieve the desired effect, in large part due to a culture of corruption and bribery.

203 ADF Staff, "New Monitoring Center to Fight Illegal Fishing in West Africa," Africa Defense Forum, June 9, 2021, <https://adf-magazine.com/2021/06/new-monitoring-center-to-fight-illegal-fishing-in-west-africa/>.

204 Common Oceans ABNJ Tuna Project/FAO, *Testing the Use of Electronic Monitoring Systems to Combat IUU Fishing: Results from Pilot Activities in Fiji and Ghana*, Food and Agriculture Organization of the United Nations, 2018, <https://www.fao.org/documents/card/en/c/CA0513EN>.

205 Sarah Bladen, "African Nations to Use New Technology in Tightening Port Controls, Fighting Illegal Fishing with Big Data," Global Fishing Watch, Nov. 4, 2021, <https://globalfishingwatch.org/press-release/africa-new-tech-tighten-port-control/>.

206 ADF Staff, "Illegal Fish Dumping by Chinese Trawlers Rising in Ghana."

207 Ismail, "With IUU Fishing Rampant, Ghana May Lose Access to EU Seafood Market"; Environmental Justice Foundation, *On the Precipice*.

with such flagrant disregard for the law is enabled by individuals and institutions who are actively engaged in bribery, corruption, and the silencing of dissent.”²⁰⁸ For example, Ghanaian law requires an observer to be stationed on every industrial bottom trawler operating in the region, but these observers are subject to constant intimidation, threats, and bribery to prevent any reporting of illegalities, human rights abuses, and IUU fishing. This culture of corruption is present at all levels of enforcement, with the navy,

fisheries observers, and port authorities all routinely engaging in corrupt practices.²⁰⁹ This culture serves as a key limiting factor in any counter-IUU-fishing efforts in Ghana.

IUU fishing in Ghanaian and West African waters threatens local communities and regional economic growth. Although many efforts are underway to remedy the issue, they largely fail to address underlying challenges, which has limited their long-term success.

208 Environmental Justice Foundation, *On the Precipice*.

209 Environmental Justice Foundation, *On the Precipice*.

ABBREVIATIONS

AI/ML	Artificial intelligence and machine learning
AIS	Automatic identification system
ASD	Assistant Secretary of Defense
BRI	Belt and Road Initiative
CNFC	China National Fishing Corporation
DOD	Department of Defense
DWF	Distant-water fishing
EEZ	Economic exclusion zone
EJF	Environmental Justice Foundation
EMS	Electronic monitoring system
EU	European Union
FAO	Food and Agriculture Organization
GAO	Government Accountability Office
GDP	Gross domestic product
GT	Gross tonnage
IMF	International Monetary Fund
IPOA-IUU	International Plan of Action to Prevent, Deter, and Eliminate Illegal, Unreported, and Unregulated Fishing
IUU	Illegal, unreported, and unregulated
JIATF	Joint Interagency Task Force
JSOU	Joint Special Operations University
LOE	Line of effort
LRIT	Long-Range Identification and Tracking
MARA	Ministry of Agriculture and Rural Affairs
MDA	Maritime domain awareness
NAVSCIATTS	Naval Small Craft Instruction and Technical Training School
NAVSPECWARCOM	Naval Special Warfare Command
NGA	National Geospatial-Intelligence Agency
NGO	Nongovernmental organization
NOAA	National Oceanic and Atmospheric Administration
OGP	Operation Gallant Phoenix
OTHR	Over-the-horizon radar

Abbreviations Table (cont'd)

PIPA	Phoenix Islands Protected Area
PLA	People's Liberation Army
PRC	People's Republic of China
PSMA	Port State Measures Agreement
RFMO	Regional fisheries management organization
SCS	South China Sea
SOCOM	US Special Operations Command
SOF	Special operations forces
TSOC	Theater special operations command
TTPs	Tactics, techniques, and procedures
UNCLOS	United Nations Convention on the Law of the Sea
USCG	US Coast Guard
USG	US government
USV	Uncrewed surface vessels

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An underwater scene with various coral reefs and small fish swimming in the water. The lighting is dim, creating a blue and purple hue.

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