



More Than 100,000 Fishing-Related Deaths Occur Each Year, Study Finds

IUU fishing among the drivers of alarming death rate and extensive injuries among fishers

Overview

Fishing has long been known as one of the world's most dangerous professions, but a new study by the FISH Safety Foundation, commissioned by The Pew Charitable Trusts, suggests that the problem far exceeds previous estimates. According to this research, more than 100,000 fishing-related deaths occur each year—three to four times previous estimates.¹ Serious injuries and abuses, including child labor and decompression sickness—for example, from workers being forced to make repeated deep dives to harvest lobster—are also well-documented across the sector.

Further, while fishing can be inherently risky, the study draws attention to the harsh reality that many of these deaths were, and are, avoidable. Incredibly, few were even officially recorded. Insufficient and unenforced safety regulations are a key challenge, but the study also points to a convergence of other major factors that leads individuals to risk their lives and die on the water. These factors include scarcity of fish due to illegal, unreported, and unregulated (IUU) fishing, overfishing, and climate change, and, for many fishers, the added desperation caused by poverty and food insecurity challenges driving them into IUU fishing practices. The study shows that these deaths and injuries disproportionately victimize impoverished people, including children, in low-income countries, which is a major reason they are so seldom noted.

According to the Food and Agriculture Organization of the United Nations (FAO), more than 3 billion people rely on fish and other marine species as a significant source of protein, and experts expect that number to increase.² As the demand for seafood increases worldwide, fishing could grow ever more dangerous—unless the international community demands and ensures safer practices and accountability among fisheries managers.

Quantifying deaths in an opaque industry

No government or organization has collected accurate numbers on how many fishers die on the job, though some have tried. In 1999, the International Labor Organization (ILO) estimated that as many as 24,000 fishers, including individuals in fishing-related professions such as fish farming, perish each year.³ In 2019, the FAO released its own estimate of 32,000 per year, based on increased fisher numbers and the earlier ILO estimate.

Unfortunately, both the ILO and FAO figures likely underestimate fisher fatalities, according to this new research. Decision-makers, at all levels, have failed to count deaths or to design policies that address the root causes of these deaths and injuries.

There are many barriers to calculating fisher deaths, including lack of data collection and sharing among governments, inconsistencies in reporting, and limited or nonexistent data on deaths within subsistence and IUU fishing activities. Further, many governments have insufficient human and financial resources to collate that data.

To help overcome these challenges, the FISH Safety Foundation cross-referenced official data—as the ILO and FAO had done—and went further by analyzing news, investigative articles, and social media about fishing safety and reviewing responses to information requests from government officials. This approach yielded the most complete picture to date of the number of fishers—and fisher fatalities—worldwide, and showed that the number killed on the job each year is likely much higher than previously estimated. These detailed analyses also allowed for new insight into important trends regarding the nature and location of these deaths and injuries, and their key causes, which can better inform a suite of global solutions.

Poor fisheries oversight and management a major contributor to deaths

The FAO reports that a third of all fish stocks are overfished and that another nearly 60% cannot sustain any increases in fishing.⁴ Stocks can become depleted due to insufficient management measures or lack of enforcement of these rules.

Further, a decline in fish due to poor management or climate change can prompt formerly independent fishers to turn to work on illegal boats where the operators—in some cases, also due to economic losses from the depleted fisheries—engage in dangerous behavior, such as fishing without safety equipment or radio communications devices or limits on how many hours someone can work without sleep. Or it can force poorly equipped boats farther out to sea for longer periods. Increased IUU fishing can lead to catch exceeding science-based catch limits, which can then result in further depletion of the stock.

In its study, the FISH Safety Foundation identified three categories of IUU fishing that can contribute to fisher deaths and can be interrelated:

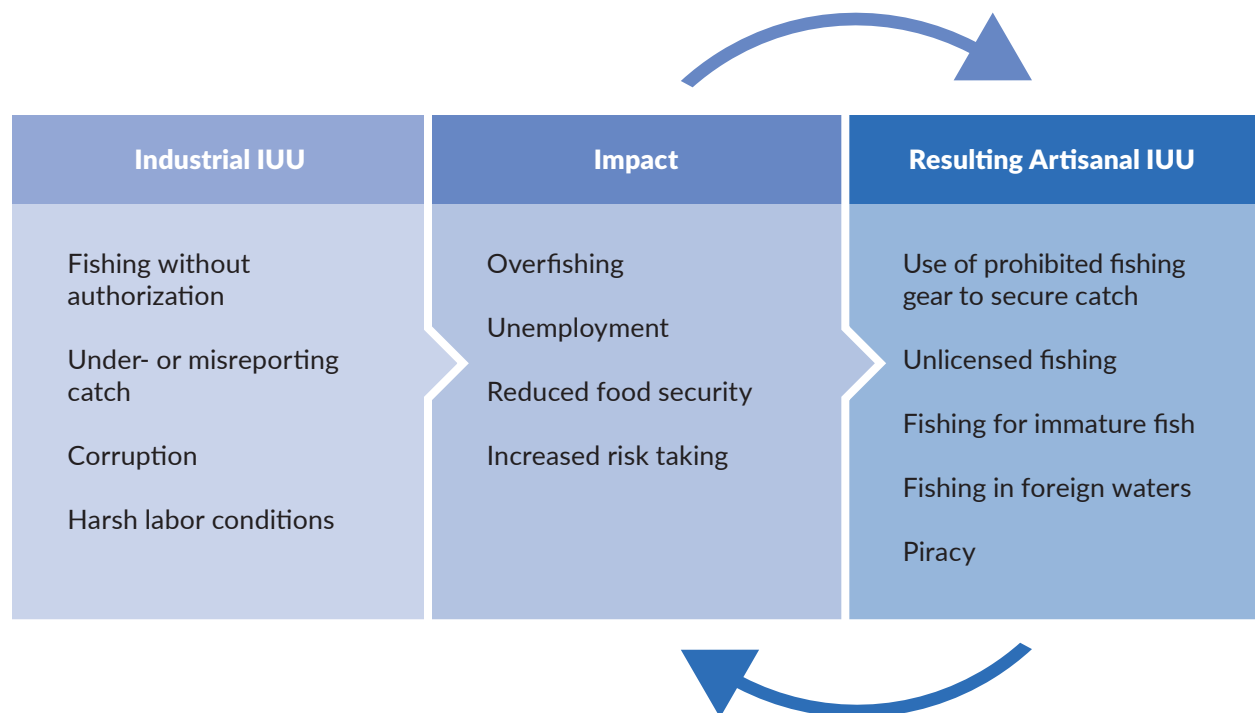
1. **Organized industrial IUU fishing:** This is typically undertaken by distant water fleets using larger vessels seeking to exploit highly profitable catch, such as tunas or sharks. Although various U.N. organizations and other maritime and fishery oversight bodies have rules that govern vessel safety in international waters, organized illegal operators disregard these measures, fishing in marginal conditions and putting crews at risk.

2. **Organized small-scale IUU fishing:** Organized fisheries crime also occurs in small-scale and artisanal fisheries. In these cases, fishers often operate within larger networks of illegal traders, some with organized crime or piracy groups, or people knowingly transshipping catch from illegally operating industrial vessels or using bribery and other forms of corruption to siphon revenue from officials.
3. **IUU fishing by necessity:** This category is one of the largest contributors to fisher mortality. In small-scale fisheries, millions of people rely on catch for food and livelihoods. And in all regions of the world, from southeast Asia to inland Africa, individuals engage in IUU fishing because they have no alternatives. Poverty, the need for nutrition, climate change, geopolitical conflicts, and overfishing are the leading causes of these activities.

Figure 1

The Cycle of Illegal, Unreported, and Unregulated Fishing

Industrial-scale illegal fishing drives overfishing and subsequent economic pressures that fuel smaller-scale IUU activities



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All these factors, in turn, increase human mortality rates, particularly for vulnerable people and communities. The overfishing-IUU-fisher mortality cycle will continue until international and national authorities address IUU fishing at each level and set catch limits that prevent overfishing.

Because the drivers for each type of IUU are different, each requires its own solution. For example, addressing the factors driving artisanal IUU fishing will require a different approach than large-scale illegal fishing. For the former, governments and other fishery management bodies would need to develop equitable solutions, including localized financial support and capacity building—for governments and artisanal fishers. Industrial IUU fishing, on the other hand, calls for more aggressive, large-scale solutions such as regional or global policy and enforcement efforts.

Fishers face deadly risks around the globe

Below are just a few of the many case studies highlighted by the FISH Safety Foundation in its report. Each case provides a unique lens into the dangerous conditions facing fishers today, including the prominent role of poor government oversight, IUU fishing, overfishing, and climate change in exacerbating these outcomes.

African countries face costly IUU and overfishing

The 22 member States of the Ministerial Conference on Fisheries Cooperation Among African States Bordering the Atlantic Ocean have a yearly fatality rate of about 1,000 per 100,000 fishers—over 12 times the rate the FAO used for its most recent global estimate of fisher deaths. The region is a hotbed of IUU fishing, carried out by both distant-water and local fleets. The European Union IUU Fishing Coalition estimates that illegal fishing accounts for US\$2.3 billion worth of fish in the waters of the six countries of West Africa alone and has adversely impacted more than 300,000 jobs in the industry.⁵

Contributing to the region's high fisher mortality rate are deaths within the sizable artisanal fleet, where boats have limited safety, navigation, and communications equipment and are also—although mainly unintentionally—run over by industrial vessels fishing relatively close to shore.⁶ Additional contributing factors to fisher deaths in this region are overfishing and climate change, which both affect fish abundance in local waters and increase time at sea and at risk for fishers.

In the Indian Ocean off Madagascar, illegal fishing may make up as much as half of that country's total catch due to IUU activity by both the artisanal and industrial sectors. Only one in five artisanal fishing canoes are registered with government authorities, leading to vast amounts of unreported activities in this fleet.⁷



A Senegalese fisher helps guide a boat ashore. Deaths among fishers in West Africa are high, in part because of poor government oversight and because many boats must travel farther from shore than in the past to find enough fish. *The Pew Charitable Trusts*

At the same time, the Madagascar government has allowed 28 large-scale industrial Chinese vessels to access local waters and fish without a formal license by allowing them to fish under the Malagasy flag—and thus skirt obligations normally expected of foreign-flagged vessels—for an annual fee.⁸ The concomitant overfishing has caused a decline in populations of local octopus, tuna, and roughy that has negatively affected vulnerable coastal communities. Local fishers have lost revenue due to the drop in accessible catch and have been forced to go farther out to sea, significantly increasing their safety risk and leading to higher levels of mortality.

In the Bay of Bengal, poor working conditions and climate change drive fatalities

Figure 2

Fishing Nations Surrounding the Bay of Bengal

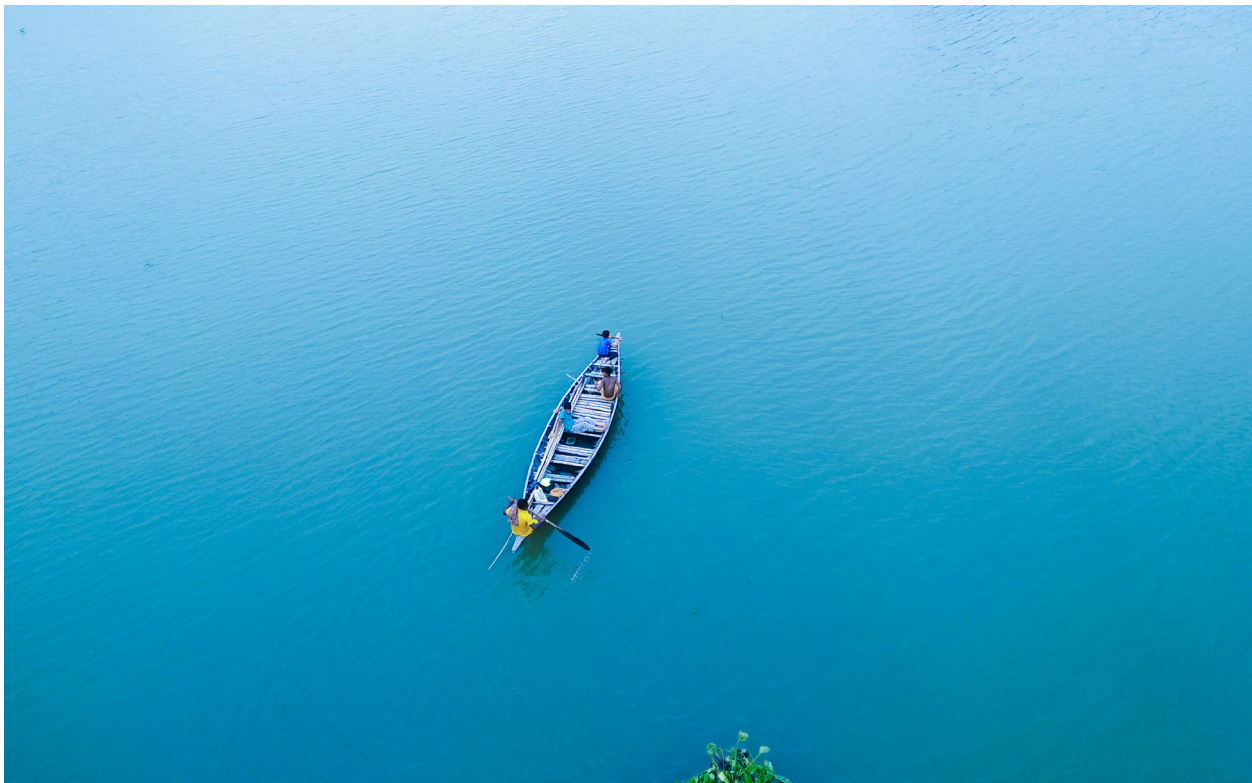
More than 20 million fishers work across Sri Lanka, India, and Bangladesh alone



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The FISH Safety researchers estimated that there are more than 20 million fishers working throughout Sri Lanka, India, and Bangladesh, but acknowledged that the number is likely an underestimate. In Myanmar, fishers on rafts—bamboo platforms of about 100 square feet each—land catch that accounts for as much as 80% of the country’s fish paste and dried prawns.⁹ Thousands of individuals are recruited annually to work on rafts. Because wages are paid upfront via brokers, many fishers facing poverty or drug addiction are persuaded to sign contracts and set sail on poorly run rafts for up to eight months at a time. The brokers often steal fishers’ wages as well, essentially enslaving them for months.¹⁰

Working conditions on these rafts can be dire. Many fishers become malnourished due to lack of fresh food and water, and there is little to no access to medical care. Fishers and observers also say violence and torture in this sector is common. For Myanmar, the FISH Safety Foundation combined recorded fatalities with the number of individuals reported lost at sea and hospital and police records to estimate that fisher death rates may be as high as 690 per 100,000 each year.



A man paddles a small fishing boat over the sea near Gopalganj, Bangladesh. *Neamul Hasan/EyeEm*

Unsafe working conditions and violence plague inland fisheries

The fisher mortality rate is also high on seven major lakes in Africa—lakes Victoria, Naivasha, Edward, Albert, Chad, Volta, and Kyoga—that support hundreds of thousands of fishing jobs. The thousands of annual drownings, murders, and accidental deaths on these lakes are due to a wide range of factors, including insufficient safety equipment, violence associated with non-fishing crimes and boundary disputes, wildlife attacks, and badly maintained and equipped vessels. Lake Victoria alone is the site of more than 4,000 annual deaths, with an estimated fatality rate of 1,800 per 100,000, according to the FISH Safety Foundation, which further assumes a similar fisher mortality rate for the other lakes throughout the region.

On Lake Volta, a 3,283-square-mile (8,502-square-kilometer) manmade lake in Ghana, the fishing conditions are notoriously dangerous, especially for children. Many children, most under the age of 10, are forced to work 18-hour days as slaves, sold by desperate families to traffickers or directly to fishers. These children, many of whom cannot swim, are tasked with the often-deadly work of diving overboard to untangle fishing nets.¹¹

Pacific Islands recording criteria and vast waters make fatalities difficult to track

Fish are vital to Pacific Islanders, making up about 50% to 90% of the protein in the diets of rural residents.¹² But collecting data on fishing in the region is difficult, and many countries record only the number of fishers involved in tuna fleets. Underreporting is also a challenge. For example, some regional regulations make it hard to quantify accurate numbers because the length of time it takes to register someone “lost at sea” to “deceased” can take years in some countries. This leaves them out of mortality statistics, and stalls potential efforts to quantify loss and better regulate fisheries.

The Pacific Islands also have some of the largest exclusive economic zones in the world, which, along with limited resources for policing, make these areas highly vulnerable to IUU activities. According to “The Scale of Illicit Trade in Pacific Ocean Marine Resources,” a report by the World Resources Institute, an estimated 24% of Pacific marine catch is underreported each year—with half of that underreported catch reaching international markets. In recent years, Palau, Papua New Guinea, Micronesia, and Fiji have all had crews killed, arrested, or reported missing over illegal activities, such as poaching or encroachment on another country’s territorial waters.¹³ As these vessels go farther afield, the nature of their activity means that associated deaths are often unreported or unattributed. There are many other areas of the globe where, likewise, border disputes and unilateral action by other vessels or authorities result in unrecorded deaths at sea.

Weak oversight and poverty driving fatalities in Central America

In Central America, lobster fishing is a big business. It dominates the fishing industry in Honduras, which exports more than 1.3 million metric tons of lobster to the United States each year. Honduras is also one of the poorest countries in Latin America, with more than 60% of the population living in poverty. Given the importance of lobster to the economy, and the poverty of many workers and families, fishers are vulnerable to exploitation.

Although lobster fishing—which is done either with traps or by hand by divers—is regulated, fishers often ignore these rules. This laxity particularly affects divers. The Honduran government limits divers to no more than two dives per day that go deeper than 60 feet, but the World Wildlife Fund has observed divers performing up to 13 each day either because there aren’t enough fish or prices are too low. These divers are at increasing and deadly

risk for decompression sickness because they often cannot get adequate emergency care in a timely manner. Yet divers continue because diving is one of the only ways for them to earn money. Consequently, Honduran lobster divers face an extremely high mortality rate—between 400 and 900 deaths per 100,000 fishers—largely because of the lack of oversight and enforcement of the rules by the authorities.



A Honduran lobster diver is transported for medical care after suffering decompression sickness in 2018. *Rodrigo Abd/Associated Press*

Fishing is safer in Europe, but significant risks remain

Compared with lower-income nations, higher-income countries have lower mortality rates among their fishing communities due to stricter safety measures, better—and better-enforced—management regulations, and lower poverty rates. But that doesn't mean all fishers in those higher-income places aren't at risk. For example, while research indicated an average mortality rate of 85 per 100,000 fishers for the EU fleet, the rate for fishers on vessels less than 15 meters long was 124 per 100,000. In addition, exploitation of foreign workers is a prominent problem in European fishing sectors, where fishers—especially migrant workers—may be paid below the legal minimum and work in abusive conditions.

Solutions for a safer fishing sector

The FISH Safety Foundation study provides evidence of fishing-related deaths on a much larger scale than previously thought, and across diverse geographies, from marine to freshwater, and from the high seas to territorial waters.

Lack of data collection means mortality numbers are uncertain. What is certain, however, is that governments and other oversight entities need to act urgently across many fronts. Although it will take time to design systems and solutions to adequately address this crisis, here are some steps that authorities can take now.

A clarion call for urgent national-level interventions

Most urgently, there are clear opportunities in the short term for fishers' groups, advocates, and others already on the ground to engage national and local governments to reduce injuries and deaths. The information provided in their report can help to inform whether this engagement should be accomplished by implementing fisher safety measures directly or by addressing some of the key drivers of reduced safety, such as IUU by necessity. National and local governments may need financial support and capacity building to collectively address some of the most egregious causes of mortality and injury in the artisanal fleets and fisheries.

A requirement that governments collect and share data on mortality would also be an important part of the solution. Simply by starting to count these deaths, countries will take stock of the extent of their fishing safety issues, which should help motivate them to prevent the unnecessary deaths of their citizens.

Important role for international fisheries managers

Although deaths within internationally managed fisheries, such as those targeting tunas, are a small percentage of the deaths identified in the report, the responsible management bodies and their member States should show leadership and demonstrate that they are treating this issue seriously. Individual States should focus on ratification, adoption, and enforcement of existing international agreements and safety policies as a simple but critical step. That action would help avoid preventable deaths and serious injuries among commercial fishers and would help improve the data that will inform future policies. Further, regional fishery management bodies can set the tone for their member governments on how to address key drivers of fisher mortality domestically.

The 2012 Cape Town Agreement, adopted by the International Maritime Organization, outlines design, construction, equipment, and safety standards for fishing vessels at least 24 meters long.¹⁴ Urgent ratification of the agreement would help show the international community's concern for fisher safety. Many developed States already have stronger requirements in place for their own vessels, but some other countries do not. By ratifying the agreement immediately and encouraging others to do so, States that are already leading on fisher safety could inspire others to follow suit. Once implemented, the Cape Town Agreement will improve transparency and vessel identification and tracking, and provide concrete mechanisms to assess and record vessel safety and crew welfare for larger-scale operations.

Additionally, the 2007 ILO Work in Fishing Convention C188—which is in force but in fewer than 20 countries—sets the requirements for onboard living conditions, including by mandating adequate food and accommodation, occupational safety and health protection, and medical care for workers on all commercial fishing vessels. Greater adoption and stronger implementation of this treaty would help set better safety and oversight standards for fishers around the world and encourage better information sharing among States.

Once a State adopts either of these treaties, all vessels using that State's ports and waters are required to meet its provisions. The United Nations, International Maritime Organization (IMO), FAO, ILO, regional fisheries

management organizations (RFMOs), and regional cooperative bodies must also work to ensure that their member States are following reporting and safety rules. In rare cases in which a country might lack the resources to fully comply, it must be able to explain its situation and request help.

To reduce the contribution of overfishing and IUU fishing within international fisheries to fisher deaths, Pew continues to call on RFMOs to improve governance over these fisheries. This call includes better tracking and monitoring of fishers, vessels, and fishing activities; establishing more effective systems to deliver compliance with existing fishing regulations and rules; and adopting precautionary harvest strategies that end overfishing and maintain stocks at population levels that support healthy marine ecosystems and coastal communities.

Governments should also look to close gaps for IUU fishing and improve existing regulatory frameworks. For example, the Port State Measures Agreement, which entered into force in 2016, is an important treaty for oversight of vessels internationally. It requires vessels to report—before entering port to offload their catch—where and when the fish were caught. This treaty increases information exchange among port and flag States and encourages governments—through their port officials—to improve their assessments of which vessels might be involved in IUU, which in turn helps States better target inspections of vessels on arrival. The treaty also calls for States to share the results of those inspections with each other.

Improved data needed to inform future policies

To improve accountability of their fishing fleets, the FISH Safety Foundation and Pew recommend that governments and RFMOs should urgently work to improve their records and reporting of fisher deaths and injuries. More than 100,000 people are dying each year, and they are not counted in many parts of the world.

In particular, the FAO, IMO, and ILO have a role in protecting the sector's workforce. This oversight includes finally ensuring transparent reporting and information sharing on fisher deaths and injuries, and establishing an accessible and universal repository for fisher safety data that all countries can contribute to equally. This effort would provide critical data necessary for governments to better target their policies and practices to protect people and communities.

Acknowledgments

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Endnotes

- 1 S. Willis and E. Holliday, "Triggering Death: Quantifying the True Human Cost of Global Fishing" (FISH Safety Foundation, 2022), <https://the-human-cost-of-fishing.org>.
- 2 Food and Agriculture Organization of the United Nations, "The State of World Fisheries and Aquaculture: Towards Blue Transformation" (2022), <https://www.fao.org/state-of-fisheries-aquaculture>.
- 3 International Labor Organization, "Fishing Among the Most Dangerous of All Professions, Says ILO," news release, Dec. 13, 1999, https://www.ilo.org/global/about-the-ilo/newsroom/news/WCMS_071324/lang--en/index.htm.
- 4 Food and Agriculture Organization of the United Nations, "The State of World Fisheries and Aquaculture: Towards Blue Transformation."
- 5 European Union IUU Fishing Coalition, "Environmental Crime Is Largest Source of Income for Militias," accessed May 12, 2022, <http://www.iuuwatch.eu/2018/10/environmental-crime-largest-source-income-militias/>.
- 6 B. Heubl, "How Europe's Dark Fishing Fleets Threaten West Africa," Engineering and Technology, accessed May 12, 2022, <https://eandt.theiet.org/content/articles/2021/03/europe-s-dark-fishing-fleets-in-west-africa-s-waters/>.
- 7 T.W. Bank, "Madagascar: Balancing Conservation and Exploitation of Fisheries Resources," accessed May 25, 2022, and June 8, 2020, <https://www.worldbank.org/en/news/feature/2020/06/08/madagascar-balancing-conservation-and-exploitation-of-fisheries-resources>.
- 8 B. Gorez, "Small Scale Fisheries at Risk: Madagascar Signs Destructive Fishing Agreement With Chinese Investors," Coalition for Fair Fisheries Arrangements, accessed May 25, 2022, and Nov. 17, 2020, <https://www.cffacape.org/publications-blog/small-scale-fisheries-at-risk-madagascar-signs-destructive-fishing-agreements-with-chinese-investors>.
- 9 H. Thar, "The Abuse Behind Myanmar's Fish Paste Industry," Frontier, accessed May 25, 2022, and Jan. 20, 2020, <https://www.frontiermyanmar.net/en/the-abuse-behind-myanmars-fish-paste-industry/>.
- 10 K.M.M. Wai, "Burma's Enslaved Fishermen," Chiang Mai City Life, accessed May 25, 2022, <https://www.chiangmaicitylife.com/clg/our-city/opinion/burmas-enslaved-fishermen/>; T.T. Win, "Over 100 Cases of Murder, Death and Missing From Fishing Rafts," Mizzima, accessed May 25, 2022, <https://mizzima.com/article/over-100-cases-murder-death-and-missing-fishing-rafts>.
- 11 R. Miller, "Escaping Slavery on the Most Dangerous Lake in Africa," Compassion Canada, Feb. 6, 2019, <https://www.compassion.ca/blog/escaping-slavery-on-the-most-dangerous-lake/>.
- 12 Q. Hanich et al., "Small-Scale Fisheries Under Climate Change in the Pacific Islands Region," Marine Policy 88 (2018): 279-84, <https://doi.org/10.1016/j.marpol.2017.11.011>.
- 13 "PNG Military Accused of Forcing Missing Papuans Into the Water," Radio New Zealand, accessed May 25, 2022, <https://www.rnz.co.nz/international/pacific-news/235700/png-military-accused-of-forcing-missing-papuans-into-the-water>; E.F. Simonne Pauwels, ed. Fisheries in the Pacific: The Challenges of Governance and Sustainability (Marseille: pacific-credo Publications, 2016), https://halshs.archives-ouvertes.fr/halshs-01735395/file/2016_Fisheries_in_the_Pacific.pdf.
- 14 International Maritime Organization, "2012 Cape Town Agreement to Enhance Fishing Safety," accessed Sept. 29, 2022, <https://www.imo.org/en/MediaCentre/HotTopics/Pages/CapeTownAgreementForFishing.aspx>.

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