

IUU Vessel Tracker

June 2021

Introduction

Each year the commercial fishing industry provides employment for millions of workers, generates hundreds of billions of dollars in economic impacts, and supplies billions of people with their primary source of protein around the globe.¹ As the demand for seafood rises, it is unsurprising that fishing vessels can now be found operating in every corner of the world's oceans. These global fishing fleets require strong management measures to ensure that the demand for seafood is not draining fish populations past the point of recovery. Transparency of the fishing industry must be expanded to ensure healthy and abundant oceans for future generations.

Using technology to track vessels at sea can expand transparency of the fishing sector. Satellite technology and advances in automated intelligence and computer learning are some of the primary tools being used to increase fishing transparency.² The demand for innovative technology and expanded transparency is essential when working to combat systemic issues such as illegal, unreported, and unregulated (IUU) fishing.

What is Illegal, Unreported, and Unregulated (IUU) Fishing?

IUU fishing has a wide range of adverse effects on the global economy, ocean health, and vulnerable peoples. By unfairly exploiting the world's oceans, IUU activities are estimated to cost the global economy tens of billions of U.S. dollars per year.³ IUU fishing activities can include fishing without authorization, ignoring catch limits, operating in closed areas, and fishing with prohibited gear and for prohibited fish or wildlife. These illicit activities are often destructive to essential fish habitat, severely deplete fish populations, and threaten global food security.⁴ Forced labor and human rights abuses are commonly associated with IUU fishing,⁵ including withholding wages and passports; enforcing inhumane work hours and extended time at sea; verbal and physical abuse; and sexual exploitation.^{6,7,8}

The world's oceans are vast, and many coastal states (especially those with limited resources) face extreme difficulties monitoring, controlling, and surveilling vessels fishing in their waters and on the high seas. Within their exclusive economic zones (EEZ), or within 200 nautical miles from shore, coastal states are

¹ Food and Agricultural Organization of the United Nations. (2020). *The State of World Fisheries and Aquaculture 2020*. <http://www.fao.org/3/ca9229en/CA9229EN.pdf>

² Park, J., Lee, J., Seto, K., et al. (2020). Illuminating dark fishing fleets in North Korea. *Science Advances*, Vol 6(30). <https://advances.sciencemag.org/content/6/30/eabb1197.full>

³ May, C. (2017). *Transnational Crime and the Developing World*. Global Financial Integrity. https://secureservercdn.net/45.40.149.159/34n.8bd.myftpupload.com/wp-content/uploads/2017/03/Transnational_Crime-final.pdf

⁴ Ma, X. (2020). An economic and legal analysis of trade measures against illegal, unreported and unregulated fishing. *Marine Policy*, 103980. <https://doi.org/10.1016/j.marpol.2020.103980>

⁵ International Labour Organization (2015). *Forced Labour and Human Trafficking in Fisheries*. https://www.ilo.org/wcmsp5/groups/public/---ed_norm/---declaration/documents/publication/wcms_429359.pdf

⁶ Simmons, G., Stringer, C. (2014). New Zealand's fisheries management system: Forced labour an ignored or overlooked dimension? *Marine Policy*, 013. <https://doi.org/10.1016/j.marpol.2014.05.013>

⁷ Nakamura, K., Bishop, L., Ward, T., Pramod, G., Thomson, D.C., Tungpuchayakul, P., Srakaew, S. (2018). Seeing slavery in seafood supply chains. *Science Advances*, 4. <https://advances.sciencemag.org/content/4/7/e1701833>

⁸ Chapsos, I., Hamilton, S. (2018). Illegal fishing and fisheries crime as a transnational organized crime in Indonesia. *Trends in Organized Crime*, 23(3): 255-273. <https://link.springer.com/article/10.1007/s12117-018-9329-8>

responsible for developing and enforcing fishing rules and regulations. Vessels intending to fish in a foreign country's waters must seek authorization from that country. Beyond the EEZ, on the high seas, the flag state — the country that a vessel operates under — is responsible for vessel activities. Regional fishery management organizations (RFMOs) provide an overarching framework for management of these international fisheries targeting specific species and fishing in designated regions (see Figure 1).

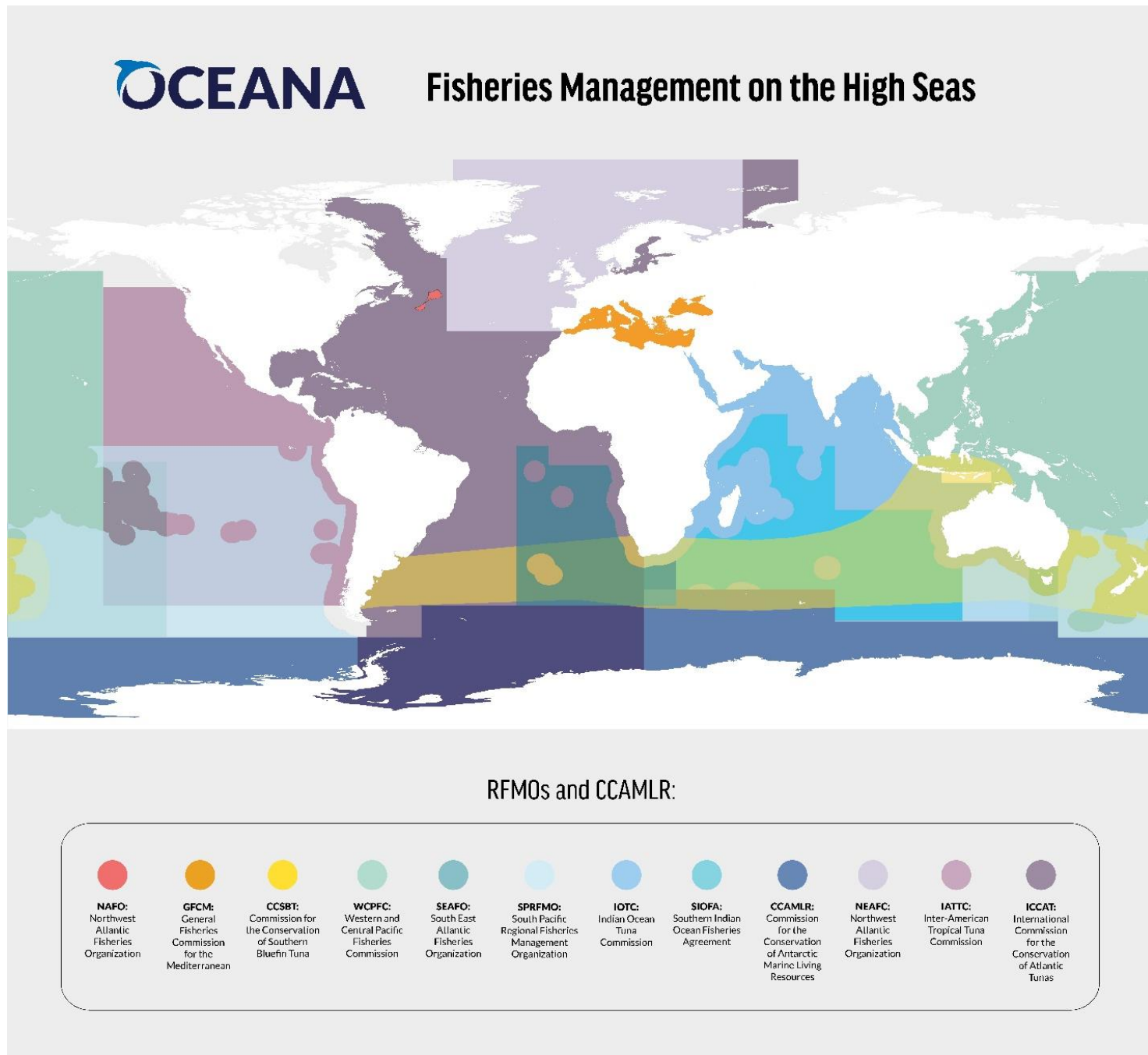


Figure 1. Map of Regional Fisheries Management Organizations and the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) and the ocean regions they are responsible for protecting.

RFMOs are intergovernmental organizations comprised of member countries that collectively manage certain fish stocks in different geographic regions. While some RFMOs are organized with the intent to manage particular species, such as tuna, others have a broader mandate to ensure commercial fishing does not negatively affect the ecosystem as a whole. The members can set catch limits, authorize vessels to fish, and officially sanction vessels for IUU fishing activities.⁹ If a vessel is found to have violated the rules of the RFMO, the vessel is placed on an “IUU Vessel List” maintained by the members of the RFMO. The repercussions for being “listed” are different depending on which RFMO listed the vessel. This classification generally requires that member countries do not provide any assistance or services to that vessel, such as port access or refueling.¹⁰

Vessels can also be “cross-listed” under different RFMOs. This means a vessel can be placed on one RFMO’s IUU vessel list due to IUU fishing activities the vessel carried out in another RFMO. The Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) is a regional fisheries body (RFB) focused on the conservation of all living marine resources within Antarctica and manages both fishing and research activities. There is a formal agreement between CCAMLR and three adjacent RFMOs for cross-listing IUU vessels. Not all these organizations cross-list vessels and some vessels that are listed by one RFMO may continue to fish in areas managed by others. RFMOs perform annual reviews of their IUU vessel lists, but unless effective action is taken in response to the IUU fishing activities that led to the listing or ownership changes, vessels may remain listed indefinitely.¹¹

The Fight Against IUU Fishing

Combating IUU fishing is not an easy task, and countries often lack the necessary resources to effectively manage their waters. A striking example of this occurs around many of the small Pacific Island nations, where foreign fishing fleets plunder the EEZs of countries that do not have the resources to enforce management regulations.¹² Many of these island nations are active in their efforts against IUU fishing but are simply understaffed and underfunded. The same is true of some of the EEZs of countries in West Africa, where corruption, vessel registration fraud, and illegal transshipments run rampant due to the lack of sufficient management resources. It is estimated that IUU activities coupled with the overexploitation of fisheries have resulted in roughly 50% of West African fish stocks being overfished.¹³

Another issue complicating the fight against IUU fishing is the ease at which owners can change a vessel’s identifying information. Renaming vessels is common, as is changing the country flag a vessel sails under — an act known as reflagging. Vessels engaged in IUU fishing activities will often sail under the flag of a foreign country known to be lax about fisheries enforcement, known as a flag of convenience or non-compliance.¹⁴ Further convoluting the matter, IUU fishing vessels will frequently operate under an internationally layered

⁹ PEW Charitable Trusts. (2010). *Port State Performance: Putting Illegal, Unreported, and Unregulated Fishing On the Radar*.

[https://www.pewtrusts.org/-/media/post-launch-images/2015/04/2015_april_pew_port-state-performance--putting-iuu-on-radar\(1\).pdf](https://www.pewtrusts.org/-/media/post-launch-images/2015/04/2015_april_pew_port-state-performance--putting-iuu-on-radar(1).pdf)

¹⁰ *Ibid.*

¹¹ Hutniczak, B., Delpuech, C. (2017). *Combating Illegal, Unreported, and Unregulated Fishing – Where countries stand and where efforts should concentrate in the future*. Organization for Economic Co-operation and Development.

[https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=TAD/FI\(2017\)16/FINAL&docLanguage=En](https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=TAD/FI(2017)16/FINAL&docLanguage=En)

¹² Grady, J. (2020, January 7). *Coast Guard: Excessive Fishing Becoming ‘Instrument of National Power’ in Oceania, Pacific*. USNI News.

<https://news.usni.org/2020/01/07/coast-guard-excessive-fishing-becoming-instrument-of-national-power-in-oceania-pacific>

¹³ Merem, E.C., Twumasi, Y., Wesley, J., et al. (2019). Analyzing the Tragedy of Illegal Fishing on the West African Coastal Region. *International Journal of Food Science and Nutrition Engineering*, 9(1): 1-15.

https://www.researchgate.net/profile/Jahshua-Washington/publication/332327658_Analyzing_the_Tragedy_of_Illegal_Fishing_on_the_West_African_Coastal_Region/links/5d1c2f75458515c11c0cbe21/Analyzing-the-Tragedy-of-Illegal-Fishing-on-the-West-African-Coastal-Region.pdf

¹⁴ Nordic Council of Ministers. (2018). *Chasing Red Herrings: Flags of Convenience, Secrecy and the Impact on Fisheries Crime Law Enforcement*.

<https://nafig.org/publication/chasing-red-herrings/>



organizational scheme, using shell companies and tax havens to mask their identity and hide money flows.^{15,16}

Additionally, IUU fishing vessels can manipulate their vessel tracking devices, called automatic identification systems (AIS), to hide their illicit activity.¹⁷ While originally designed to avoid ship collisions, AIS can also be used to track the behavior of vessels at sea, even if very few countries require such tracking for fishing vessels. However, it is not a foolproof method, as some vessels will manually alter their AIS signal's location, an act known as "offsetting." Multiple vessels may also broadcast the same maritime mobile service identity (MMSI), an act referred to as "spoofing," while others may not be equipped with AIS or may turn it off entirely. These actions can make it difficult to distinguish a vessel's true location, or even locate them at all.

Global Fishing Watch (GFW),¹⁸ an organization founded by Oceana, Google, and SkyTruth, created the first free platform that allows users to view global commercial fishing activity using AIS data. Oceana harnesses this data to provide tools and reports that help combat IUU fishing and increase transparency of the fishing industry.

IUU Vessel Tracker

Oceana's *IUU Vessel Tracker* is a free online application that uses GFW's vessel tracking data and compiled RFMO lists to show where listed vessels are located in near real time. The IUU-listed vessels are compiled from the Combined IUU Vessel List, maintained by the Norwegian nonprofit organization Trygg Mat Tracking (TMT) every month.¹⁹ While this registry includes data from all international RFMOs supplemented by other sources, it is important to note that *IUU Vessel Tracker* only displays vessels currently listed on RFMO IUU vessel lists, as indicated by Trygg Mat Tracking's Combined IUU Vessel List. *IUU Vessel Tracker* displays the IUU-listed vessels that have broadcasted AIS signals within the past month.

IUU Vessel Tracker provides vessel information, including the name, flag state, vessel type, MMSI, international maritime organization (IMO) number, callsign (a unique identifier for radio transmissions), and known aliases. Using one of GFW's algorithms, it also highlights where a vessel appears to fish in 2021 and for how many hours. While the MMSI, ship name, location, and timestamp are recorded from each vessel's AIS signals, the IMO, callsign, class, and flag state are determined from the best available vessel registry information.

Conclusion

¹⁵ *Ibid.*

¹⁶ Haenlein, C. (2017). *How Illegal, Unreported, and Unregulated Fishing Threatens Our Security*. Royal United Services Institute. <https://rusi.org/publication/occasional-papers/below-surface-how-illegal-unreported-and-unregulated-fishing-threatens>

¹⁷ [Mazzarella, F., Vespe, M., Alessandrini, A., et al. \(2017\). A novel anomaly detection approach to identify intentional AIS on-off switching. Expert Systems with Applications, Vol 78: 128-123. file:///C:/Users/wmarkowski/Downloads/1-s2.0-S0957417417300933-main.pdf](https://doi.org/10.1016/j.expst.2017.05.001)

¹⁸ IUU Vessel Tracker uses vessel information in the Global Fishing Watch database. This information is transmitted from a vessel's Automatic Identification System (AIS) device, which is collected via satellites and terrestrial receivers. Faulty AIS devices, user error, intentional manipulation, crowded areas, poor satellite reception, and transmission flaws are factors that contribute to noise and errors in AIS data, and sometimes those inaccuracies can be reflected in the speed and location of a vessel. Vessel operators can accidentally or purposefully enter false information into their ship's AIS thus concealing their identity or location. In crowded areas, such as ports, the massive number of radio transmissions can crowd the bandwidth of satellite and terrestrial receivers, leading to inaccuracies as well. For these reasons, IUU Vessel Tracker information must be relied upon solely at your own risk.

¹⁹ *IUU Vessel Tracker* uses data from [Trygg Mat Tracking's Combined IUU Vessel List \(www.iuu-vessels.org\)](http://www.iuu-vessels.org), which provides the best available, up to date information on all fishing vessels that appear on the IUU vessels lists. This source is compiled from RFMO IUU lists, online vessel databases and national fisheries authorities. Any/all information about IUU listed vessels should be considered reflective of currently available data and must be relied upon solely at your own risk. Oceana takes steps such as cross referencing RFMO lists to ensure designations are as accurate as possible.

The small number of visible IUU vessels on *IUU Vessel Tracker* is the result of numerous challenges faced when tracking these vessels after they are listed by an RFMO. First, they may no longer be fishing, but that is not likely the whole story. Many of these IUU-listed vessels are not visible because they may not be using AIS when operating and, as AIS use is not required by all flag states, this may not be unlawful. Changing their identities can shield vessels from enforcement and regulatory actions. This has led to the situation where accurate vessel identification is often missing in RFMO IUU vessel lists, with essential information, such as the IMO number and known aliases, unavailable. Denying access to an RFMO's fishing grounds will sometimes be used as a deterrent against IUU fishing, but without cross-listing vessels across all RFMOs, the impact of denying access is weakened as vessels can simply move to new waters where an RFMO's restrictions do not apply. Expanded transparency is an important tool in the fight against IUU fishing. Increased clarity of fishing authorizations, vessel tracking, and vessel ownership contributes to reduced IUU fishing activity, and incentivizes vessels to operate in a legitimate and sanctioned manner.²⁰ A dynamic combination of political will, policy, management, and enforcement are necessary on both national and international levels to reduce the pervasiveness of IUU fishing.

Policy Recommendations

- **Mandate RFMO Cross-Listing:** Members of RFMOs should adopt measures to cross-list IUU-listed vessels of other RFMOs to ensure that once a vessel is added to the IUU vessel list of one, it is considered to then be placed on IUU lists of other RFMOs.
- **Require AIS and Vessel Monitoring System (VMS) at all Times:** Require that all fishing vessels carry and continually broadcast tamper-resistant AIS and VMS for the duration of their trips at sea.
- **Eliminate Access to Services by IUU Fishing Vessels:** All RFMOs should introduce rules requiring that member countries prohibit their nationals (including companies under their jurisdiction) from providing services of any kind to vessels on IUU vessel lists. National governments should adopt similar legislation for its citizens and companies. These services should explicitly include, but not be limited to, logistics and port services, insurance, and other financial services. Companies that provide services to the fishing sector should introduce improved due diligence processes to avoid inadvertently supporting the activities of IUU fishing vessels. Any vessel applying for insurance or seeking other services should be checked against a universal database of IUU vessels, such as the Combined IUU-Vessel List (www.iuu-vessels.org) maintained by Trygg Mat Tracking.
- **Make Fishing Authorizations Public:** Countries should maintain a public and current list of all foreign and domestic vessels licensed and/or authorized to fish within the country's EEZ and all domestic vessels licensed and/or authorized to fish in external waters, as well as all fishing vessels registered under the country's flag. Countries should also provide accurate and up-to-date information to the Global Record of Fishing Vessels to facilitate information-sharing on an international scale.
- **Develop Intergovernmental Lists of Vessels Engaged in Forced Labor:** In cooperation with RFMOs, the International Labor Organization and the International Maritime Organization should work with their members to create a list of vessels with track records of human rights abuses, including forced labor practices and human trafficking, to facilitate knowledge sharing and deter criminal activity.

Global Fishing Watch, a provider of open data for use in this project, is an international nonprofit organization dedicated to advancing ocean governance through increased transparency of human activity at sea. The views and opinions expressed in this project are those of the authors, which are not connected with or sponsored, endorsed or granted official status by Global Fishing Watch. By creating

²⁰ Environmental Justice Foundation. (2018). *Out of the Shadows: Improving transparency in fisheries to stop illegal, unreported, and unregulated fishing*. <https://ejfoundation.org/resources/downloads/Transparency-report-final.pdf>

and publicly sharing map visualizations, data and analysis tools, Global Fishing Watch aims to enable scientific research and transform the way our ocean is managed.

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RFMO Website Links

Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR): <https://www.ccamlr.org/en/organisation>

Inter-American Tropical Tuna Commission (IATTC): <https://www.iattc.org/HomeENG.htm>

Indian Ocean Tuna Commission (IOTC): <https://iotc.org/>

Southern Indian Ocean Fisheries Agreement (SIOFA): <https://www.apsoi.org/>

International Commission for the Conservation of Atlantic Tunas (ICCAT): <https://www.iccat.int/en/>

General Fisheries Commission for the Mediterranean (GFCM): <http://www.fao.org/gfcm/en/>

Western and Central Pacific Fisheries Commission (WCPFC): <https://www.wcpfc.int/home>

Northwest Atlantic Fisheries Organization (NAFO): <https://www.nafo.int/>

North-East Atlantic Fisheries Commission (NEAFC): <https://www.neafc.org/>

South Pacific Regional Fisheries Management Organization (SPRFMO): <https://www.sprfmo.int/>

South East Atlantic Fisheries Organization (SEAFO): <http://www.seafo.org/>

Commission for the Conservation of Southern Bluefin Tuna (CCSBT): <https://www.ccsbt.org/>