Now You See Me, Now You Don't: Vanishing Vessels Along Argentina's Waters

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Introduction

To meet the ever-growing global demand for seafood, fishing vessels are traveling farther away and fishing longer. These distant-water fleets fish outside of their own national waters, including on the high seas where some regions are managed by international bodies, overseeing valuable highly migratory species. In other areas, vast expanses of important habitat are left unprotected and populations of commercial species are left unmanaged or unregulated. Every year, vessels from distant-water fleets crowd together along Argentina's Exclusive Economic Zone (EEZ) to take advantage of the lucrative fishing grounds. Argentina's extensive waters boast a tremendous abundance and diversity of marine life, including more than 330 types of finfish, nearly 120 deep-sea species, and a variety of invertebrates. Commercial fishermen target approximately 60 to 70 of these species,[1] including the Argentine shortfin squid (*Illex argentinus*), which makes up the second-largest squid fishery in the world, with half of the global catch coming from Argentina's EEZ.[2]

Between January 1, 2018, and April 25, 2021, over 800 fishing vessels conducted nearly 900,000 hours of apparent fishing[i] within 20 nautical miles of the invisible border between Argentina's national waters and the high seas. During this three-and-a-half-year period, there were over 6,000 instances in which these fishing vessels appeared to go "dark" by potentially disabling their electronic tracking devices, known as Automatic Identification Systems (AIS). These vessels' activities were hidden for over 600,000 hours. Nearly 66% of the "dark" vessels were Chinese-flagged squid jiggers (i.e., vessels with bright lights and hooks designed to catch squid). Despite having a smaller fleet, Spanish trawlers (i.e., vessels that tow heavy nets to catch species like Argentine hake and red shrimp) went "dark" more than three times as often as Chinese vessels. Illegal, unreported, and unregulated (IUU) fishing thrives out of sight and undermines efforts to responsibly manage and protect our oceans. Disabling AIS hides fishing vessel locations from

[i] Any and all references to "fishing" should be understood in the context of Global Fishing Watch's (GFW) fishing detection algorithm, which is a best effort to determine "apparent fishing effort" based on vessel speed and direction data from the Automatic Identification System (AIS) collected via satellites and terrestrial receivers. As AIS data varies in completeness, accuracy, and quality, and the fishing detection algorithm is a statistical estimate of apparent fishing activity, therefore it is possible that some fishing effort is not identified and, conversely, that some fishing effort identified is not fishing. For these reasons, GFW qualifies all designations of vessel fishing effort, including synonyms of the term "fishing effort," such as "fishing" or "fishing activity," as "apparent" rather than certain. Any/all GFW information about "apparent fishing effort" should be considered an estimate and must be relied upon solely at your own risk. GFW is taking steps to make sure fishing effort designations are as accurate as possible.

public view and could mask potentially illegal behavior, such as crossing into Argentina's EEZ to fish.

In many cases, AIS avoidance goes hand in hand with illegal fishing in Argentina's EEZ.[3,4] This connection was particularly evident in April 2020, when approximately 100 squid jiggers, mostly Chinese-flagged, were allegedly caught fishing illegally within Argentina's EEZ, each with their AIS turned off.[3,5-7] These vessels reportedly waited just outside the EEZ boundary until nightfall, when they apparently turned off their AIS, entered Argentina's waters, and fished.[3,5] This scandal prompted the Cámara de Armadores de Poteros Argentinos (Argentina's fisheries association) to request action from the president himself,[3,5,7] and less than a week later, another vessel — this time a Portuguese trawler — was arrested for illegally fishing in Argentina's EEZ.[8] Interactions between the Argentine Coast Guard and illegal fishing vessels have escalated to violence, with some deeming the conflict a "literal war."[9] There have been at least two instances in which Chinese fishing vessels have allegedly attacked authorities after being suspected of fishing illegally in Argentina's waters: In 2016, a Chinese trawler was sunk after reportedly trying to ram a Coast Guard vessel,[10-12] and in 2018, four Chinese fishing vessels allegedly teamed up to protect a fifth vessel the Coast Guard was pursuing.[11-13]

Argentina's Valuable Fisheries

Argentina's commercial fishing industry produces $2.7 billion[ii] in economic impact and constitutes 3.4% of Argentina's gross domestic product.[1] This substantial industry is driven by four species — Argentine hake, Argentine shortfin squid, Argentine red shrimp, and Patagonian grenadier, which account for 75% of the catch.[1] The Patagonian grenadier, or hoki *(Macruronus magellanicus*), is a schooling fish distributed from southern Argentina to Chile along the outer continental shelf.[14] It is common for fishermen targeting Patagonian grenadier to incidentally catch other species such as Argentine hake and Argentine shortfin squid — called bycatch, which puts more pressure on these valuable stocks.[15] Argentine red shrimp (*Pleoticus muelleri*) is the largest crustacean fishery both in the nation and in the entire Southwest Atlantic, and 99.7% of its catch comes from just one region within Argentina's EEZ.[16] As with the Patagonian grenadier and hake, these shrimp are targeted by bottom trawlers, which can bulldoze the ocean floor and are notoriously destructive of marine habitats.[16]

Squid are critically important to the global economy, food security, and ocean resilience. The global squid fishery is one of the largest in the world, with a trade value of nearly $4 billion in 2016.[2] Each year, the Argentine shortfin squid fishery generates an average of $597 million for South America's economy and, in particularly favorable years, can generate nearly $2.4 billion.[2] The Argentine shortfin squid have a rapid life cycle, as they live for just one year.[2] These squid migrate far offshore to reproduce, so overfishing by distant-water fleets can have serious repercussions for the next year's population.[2] Because the Argentine shortfin squid is a key link in the food chain, these population declines can be devastating for the species that rely on them for food, such as tuna and swordfish.[17]

[ii] All monetary values are in USD.

Argentine hake (*Merluccius hubbsi*) provides employment for 60% of Argentina's fishing industry, and 40% of the global catch is from Argentina's EEZ.[18] Despite the economic importance of this species, persistent overfishing has caused its populations to plummet.[18,19] Argentine hake are typically caught using bottom trawls, and they are also incidentally caught as bycatch in the shrimp fishery.[20]

What is an EEZ?

Exclusive Economic Zones (EEZs), a country's national waters, were first established in 1982 by the United Nations Convention on the Law of the Sea.[21] Within these zones, coastal nations have sovereign rights for the purposes of exploring, exploiting, conserving, and managing natural resources (living and non-living), generally extending 200 nautical miles from their shore.[21] Coastal nations have the right to prohibit or authorize foreign fishing within their EEZs,[21] but oceans are vast, and enforcement of these expansive zones is both difficult and costly. Outside of this zone, the authority to regulate and enforce laws is weak. Compounding this issue, fish do not recognize international boundaries and often migrate following prey or as part of reproductive cycles. Thus, EEZs do very little to protect transboundary stocks. Poor oversight, weak international legal frameworks, and lack of transparency in fishing activity, vessel ownership, and supply chains make commercial fishing a vulnerable sector for illicit activity, including IUU fishing, human trafficking, and forced labor.

On the Doorstep of Argentina's Waters

Using the Global Fishing Watch (GFW) mapping platform, Oceana analyzed the activity of fishing vessels found within 20 nautical miles of Argentina's EEZ from January 1, 2018, to April 25, 2021. GFW uses publicly available tracking data transmitted by AIS transponders to monitor and track vessel movements in near real-time. AIS was initially designed as a safety mechanism for vessels to avoid collisions at sea. Despite the importance of AIS for safety and transparency, some vessel operators choose to turn off their AIS devices, making them undetectable by the public. While going "dark" refers to vessels whose AIS data was not visible to GFW, some vessels are equipped with Vessel Monitoring Systems (VMS), which send location information at set intervals to the relevant fisheries authorities of their flag state. Unfortunately, most VMS transmissions are not public unless their flag state agrees to share the data.

Key Findings: Fishing Activity

- **Chinese-flagged vessels conducted the majority of fishing** along Argentina's EEZ. Over **400 Chinese-flagged vessels conducted 69% of the visible fishing** activity (Table 1).
- Nearly 200 vessels flagged to South Korea, Spain, and Taiwan fished for 251,000 hours, approximately 26% of all of the visible fishing during this time.

- **Squid jiggers, targeting the Argentinian shortfin squid, were the dominant gear type** used in this region, making up more than **two-thirds of vessels and over half of all the visible fishing hours** at 575,294 hours.
- **Trawlers, which could be targeting Argentinian hake and red shrimp, conducted much of the remaining fishing effort** at 255,455 visible fishing hours.
- In comparison to the foreign fleets, 145 of Argentina's fishing vessels conducted 9,269 visible fishing hours in this area during this same period — **less than 1% of the total** amount.
- While some degree of fishing occurred year-round, more than **three-quarters of all fishing hours were conducted between January and May**, when mature Argentine shortfin squid are migrating.

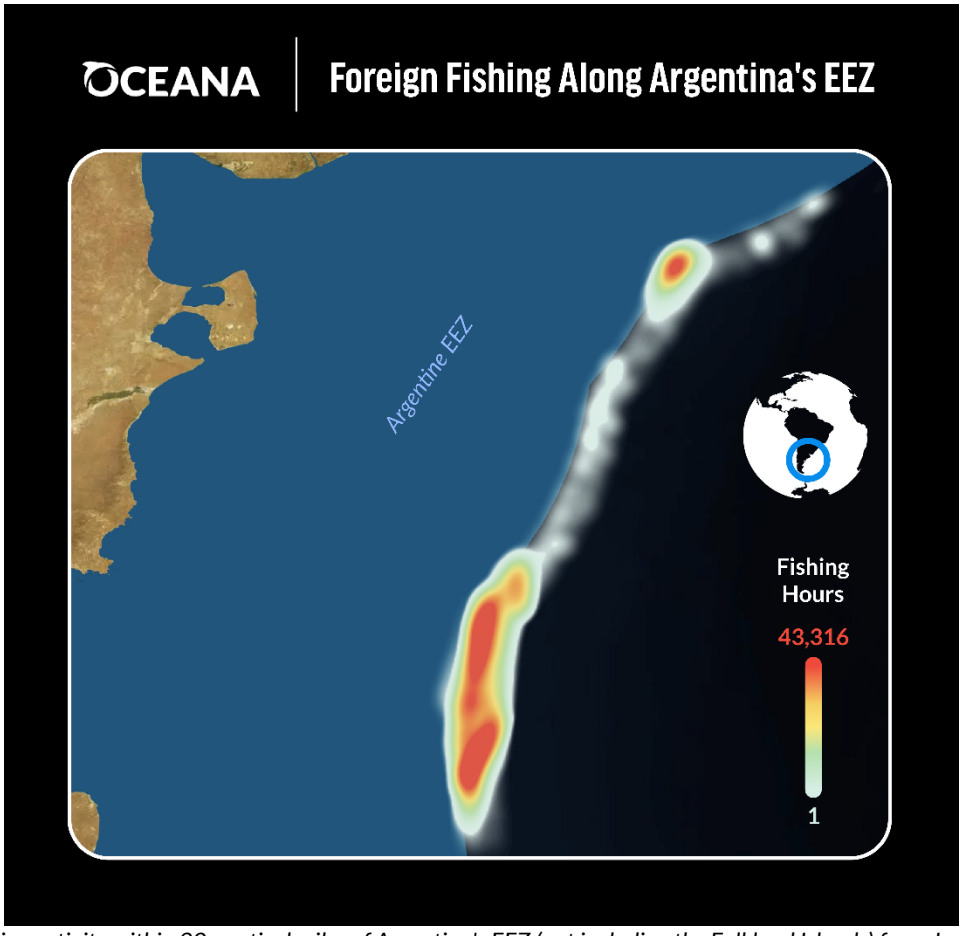

Figure 1. Fishing activity within 20 nautical miles of Argentina's EEZ (not including the Falkland Islands) from January 2018 to April 2021. Fishing activity is distributed between latitudes of -41 and -48 degrees where target species are located.

While poor satellite reception can cause a vessel to temporarily lose its signal, this analysis considers the lack of AIS transmission for an extended time as a "gap event" and could indicate a

deliberate attempt to avoid tracking.[iii] To compensate for any reception issues, a vessel was only declared "dark" when its AIS signal was not detected for more than 24 hours. During gap events, it is nearly impossible to monitor where the vessels are going or what they are doing; so by disabling AIS, vessels can go "dark" and hide illegal fishing activity from public view. As a result, it is particularly concerning and possibly suspicious when fishing vessels have AIS gap events near the edge of a marine protected area or another country's waters, areas that are typically off limits to fishing for those vessels.

Key Findings: Gap Events

- Gap events are any instance in which a vessel's AIS signal is not detected for at least 24 hours.
- From January 2018 to April 2021, there were **6,227 instances in which a fishing vessel's AIS was not detected for at least 24 hours** near Argentina's EEZ.
- **Over half of the foreign vessels that were visibly fishing in this region had at least one gap event.** In total, these vessels appeared to have their **AIS off for over 600,000 hours**.
- The majority of these vessels appeared to have their **AIS off for one to four days at a time**. Most vessels do not go "dark" right on the border of Argentina's EEZ; rather the vessels **disappear approximately 5 nautical miles away**.
- The incidence of gaps was highest when the Chinese fleet congregates around Argentina from November through April every year; the **Chinese fleet was responsible for 66% of all gap events**. Other major flag states with gaps were Spain (20%) and South Korea (8%).
- While China had the highest total number of gaps, **the Spanish fleet appeared to have the worst AIS compliance on a per-vessel basis**. Nine out of the 10 fishing vessels that spent the most time with their AIS off were flagged to Spain, despite constant AIS operation being mandatory under European Union law.[22]
- Nearly **90% of Spanish vessels that fished around Argentina's EEZ border also had at least one gap event,** and **Spanish vessels spent nearly twice as long with no AIS signal as they did visibly fishing**.
- Furthermore, all Spanish vessels with gaps were using the stronger and more reliable type of AIS transponder, decreasing the likelihood that the signal was lost due to reception issues rather than possible **intentional disabling**. On the fleet level, **Spain had the highest number of gaps per vessel by a factor of three and the greatest amount of time spent "dark" per vessel by a factor of four.**

[iii] In this case, a gap event refers to an instance in which the vessel did not have any position messages in the data available to Global Fishing Watch for at least 24 hours. We further excluded events where the vessel would have had to average a speed faster than 10 knots to get from the position where its signal was lost to where it was picked up again, as the vessel was unlikely to have time to do anything besides transit. Additional AIS datasets exist that were not used in this analysis because they are not accessible via Global Fishing Watch.

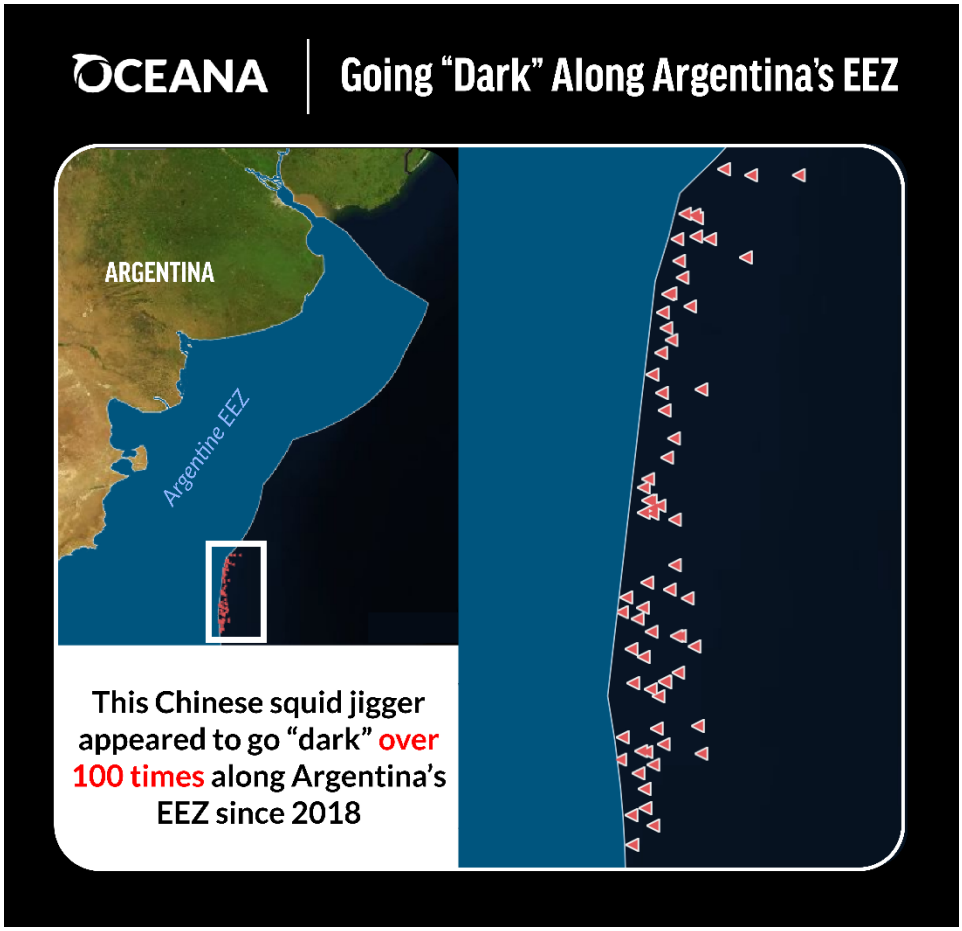

Figure 2. A subset of one Chinese squid jigger's gap events. This vessel appeared to go "dark" over 100 times along Argentina's EEZ between January 2018 and April 2021. Red arrows indicate locations where this vessel's AIS tracking signal disappeared.

Vessel Activity from Top 5 Flag States and Argentina

Flag State	Total Number of Visible Vessels	Visible Fishing Hours	Number of Vessels with Gaps in AIS Transmission	Number of Gaps in AIS Transmission
China	433	679,067	319	4,110
South Korea	53	121,054	36	507
Spain	30	81,848	27	1,215
Taiwan	112	48,447	71	244
Unknown	13	19,507	5	49
Argentina	145	9,270	5	5

Table 1. Vessel activity by the top five foreign flag states and Argentina within 20 nautical miles of Argentina's EEZ from January 2018 to April 2021. If vessels are not properly transmitting valid codes to identify their flag state, they are classified as "unknown."

Port Visits and Transshipments

Ports provide a rare opportunity for direct monitoring and enforcement of fishing vessels, their crew, and their catch. When vessels avoid entering ports, it can be an indicator of potential human rights abuses.[25] Transshipment allows fishing vessels to remain at sea for longer periods of time by enabling the transfer of their catch to refrigerated cargo vessels, or "reefers." Reefers are massive vessels that can rendezvous with multiple fishing vessels before returning to port. These vessels also resupply fishing vessels with fresh crew, water, and fuel. While transshipping can be legal, it can also be a weak link in the seafood supply chain. Transshipping that occurs at sea away from the scrutiny of port officials and fisheries managers, increases the risk of illegal and harmful practices at sea. The catch from these vessels is often combined with catch from other vessels, a practice that can facilitate fish laundering, where illegally caught fish are mixed with legally caught fish and sold as such.

Key Findings

- Between January 2018 and April 2021, **56% of the vessels that appeared to go "dark" encountered another vessel within a month of the AIS gap event**.
- While South Korean-flagged fishing vessels were only responsible for a small portion of gap events, **78% of their vessels appeared to engage in transshipment within a month of their gap event**.
- Flags of Convenience (FOC), are vessels owned in one country that **pay to use the flag of another country, often in exchange for reduced regulations**.[23] Panama and Liberia are the two largest FOC registries in the world.[24] Approximately **42% of the vessels that encountered a fishing vessel outside of Argentina's EEZ were flagged to Panama**. Chinese and Liberian-flagged vessels were also actively engaged in transshipments in the area.
- Over the three-and-a-half years, **only seven "dark" vessels entered port in Argentina at the end of their trip**.
- Of the vessels that went "dark," **31% visited the Port of Montevideo, Uruguay,** at the end of their trip. Montevideo has been suspected to be a port favored by vessels engaging in illegal fishing activity.[26,27]
- Other frequent "dark" vessel destinations were Punta Arenas, Chile (12%), Singapore (12%), and Callao, Peru (7%).
- "Dark" vessels primarily started their trips from Montevideo (33%), Punta Arenas (27%), and Singapore (17%).
- With the combination of gaps, transshipping, and avoidance of ports with strong oversight, **it is nearly impossible to ensure that these vessels have fished legally**.

A Need for Global Transparency

Global transparency at sea is essential to improve the monitoring of distant-water fleets, highlight suspicious activities, and end IUU fishing.

All countries engaging in distant-water fishing should:

- **Mandate Transparency by Requiring AIS Use**: Governments and regional fishery management organizations should require the constant use of tamper-resistant AIS devices on all fishing vessels. These tracking systems are essential for transparency and public accountability of global fishing operations. In addition, they improve maritime safety, help combat illegal fishing, and increase compliance of laws and regulations.
- **Publicly Release VMS Data:** Public sharing of VMS data helps improve surveillance and encourages vessels to comply with regulations. Unauthorized vessels, and those with a history of non-compliance, can be identified more easily and prioritized for inspections, while vessels that turn off tracking devices can be held accountable when they come into port.
- **Disclose Fishing Authorizations to the 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.
- **Prohibit Transshipment at Sea**: Governments and fishery managers should require that transshipping only occur at ports where authorities can closely monitor the exchange. This would reduce the incidence of illegal transshipments that are not only associated with IUU fishing, but with drug and human trafficking as well.
- **Improve Monitoring and Enforcement**: Governments should monitor and enforce relevant fishing regulations for their fleets worldwide. Coastal states should monitor and control foreign vessels that they allow to fish in their national waters.

Note: Global Fishing Watch (GFW), a provider of open data for use in this report, 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 report are those of the authors, which are not connected with or sponsored, endorsed, or granted official status by GFW. By creating and publicly sharing map visualizations, data, and analysis tools, GFW aims to enable scientific research and transform the way our ocean is managed.

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