



Strengthening Cooperation and Management of Global Trawl and Jig Squid Fisheries

Report

7 September 2026

Executive Summary

In February 2025 and June 2026, the Korean Maritime Institute (KMI) and the Australian National Centre for Ocean Resources and Security (ANCORS) convened informal dialogues between officials, stakeholders, scientists and experts to share information on high seas trawl and jig fisheries where there is no mandated regional fisheries management organization or arrangement (RFMO/A). These dialogues identified opportunities to strengthen cooperation and examined prevailing barriers and challenges to achieving such cooperation. Participants identified three interconnected priorities for improving the management of fisheries that occur outside existing RFMO/As mandates.

1. Participants emphasised a need for science and data-led collaboration, noting that no single actor holds sufficient information and that shared scientific work offers a low-risk, constructive entry point for cooperation.
2. Ensuring sustainability was seen as the central goal, with participants stressing that effective management depends on robust reporting.
3. Participants highlighted the importance of building trust and engagement among industry, States, fishing entities and other stakeholders, noting that momentum can be generated through transparent dialogue and collaborative scientific initiatives.

Data-sharing was identified as a key challenge to strengthening cooperation and improving science and management, due to confidentiality concerns, government restrictions, and a strong need for industry engagement.

Persistent confusion around the term ‘Illegal, Unreported and Unregulated (IUU) Fishing’ was also identified as undermining trust and accurate reporting, initially prompting calls to clarify the terminology, but ultimately the dialogues agreed to focus on strengthening cooperation rather than diverting into defining IUU fishing.

Participants also noted that the lack of a RFMO/A was a critical weakness, limiting science, data and management cooperation and coordination, and was inconsistent with the international legal framework established by the UN Convention on the Law of the Sea. States hold a duty to cooperate with each other, including through the establishment of subregional or regional fisheries organisations. Where there is no RFMO/A, States shall cooperate to establish a RFMO/A to ensure conservation and management and shall participate in the work of the organization or arrangement.

The lack of an RFMO/A also carries economic and trade implications: For instance, the WTO Agreement on Fisheries Subsidies requires members to demonstrate that subsidised fishing only occurs

within regulated fisheries, – meaning that the absence of a RFMO/A could affect access to certain subsidies or markets.

Together, these issues further underscore the need for cooperation. In this context, the second dialogue in June 2026 agreed to establish the Global Research Cooperative for High Seas Fisheries (**GRC High Seas**) as an initial mechanism to strengthen cooperation in high seas fisheries beyond the jurisdiction of existing RFMO/As, with an initial focus on the South-West Atlantic (FAO Area 41).

Squid fisheries have grown in global significance over recent decades. As of 2020, cephalopod catches constitute over 4% of all global marine catches by volume and ~7% by value. South-West Atlantic fisheries primarily target two squid species; Argentine shortfin squid and Patagonian squid. The fleets that target these fisheries are trans-oceanic, regularly fishing multiple oceans and fishing grounds in different seasons.

Fishing vessels shift between the South-East Pacific and the South-West Atlantic Ocean because of their relatively close proximity and the compatibility of their fishing seasons. While vessels that fish the North-West Indian Ocean appear to focus effort more narrowly in that region, with fewer vessels conducting seasonal shifts to other fishing regions.

In recent years, both the North Pacific Fisheries Commission (NPFC) and the South Pacific Regional Fisheries Management Organisation (SPRFMO) have begun to adopt regulations for squid fisheries. However, the lack of any RFMO/A in the North-West Indian and South-West Atlantic Oceans has so far prevented any cooperation in these regions.

The South-West Atlantic is one of the largest remaining high seas regions uncovered by a RFMO/A mandate. This governance gap is particularly significant given the intensity and transboundary mobility of the global trawl and jig fleets that target squid. In the absence of a RFMO/A, flag State and fishing entities regulations and policies are the sole mechanism for managing high seas fisheries. **GRC High Seas** shared information on relevant arrangements applicable to the fleets of China, Korea, Japan, Spain and Chinese Taipei. GRC High Seas was also provided with data regarding vessels licensed by the Falkland Islands Government. Compulsory VMS and e-reporting are being implemented by all fleets, while seasonal moratoriums, AIS, scientific observers and other measures are also required for some fleets.

Within the two key fleets targeting squid, squid jiggers vastly outnumber trawling vessels, however both fleets have seen substantial growth in recent years. Observations from the Global Fishing Watch (GFW) AIS database estimate that the number of squid jiggers that are globally active on the high seas has grown from 327 vessels in 2019 to 1246 vessels in 2025, while the number of trawlers has increased from 38 vessels in 2019 to 179 vessels in 2025. These figures are indicative estimates derived from

AIS-based analysis and should be independently validated against authoritative flag State and vessel-registry data before being used for policy or compliance purposes.

Beginning cooperation through the scientific community was viewed as relatively low-risk and highly valuable. This informal approach could lay the groundwork for longer-term engagement, helping to bridge gaps in understanding, build trust, and enabling more coordinated action. Similarly, the dialogues identified opportunities to coordinate existing domestic arrangements and strengthen cooperation through the voluntary adoption of harmonised minimum standards for flag State regulations for these fisheries.

GRC High Seas welcomed the participation of stakeholders in its dialogues and agreed that industry engagement is critical, particularly in the context of growing market concerns regarding IUU fishing and calls for enhanced transparency. Engagement should be incentivised through inclusive dialogue and collaborative scientific initiatives which can act as a constructive starting point for future cooperation.

The dialogues noted useful precedents for scientific cooperation in the absence of a RFMO/A. For example, the Standing Committee on Tuna and Billfish (SCTB) was established in 1989 as an open forum for scientists and others with an interest in the western and central pacific tuna fisheries to discuss scientific issues related to data, research and stock assessment. It was eventually replaced in 2004 by the Scientific Committee of the Western and Central Pacific Fisheries Commission (WCPFC).

With this in mind, the Second Busan Dialogue agreed to establish **GRC High Seas** as an informal cooperation mechanism to support cooperation among flag States and fishing entities with an interest in high seas squid fisheries beyond the jurisdiction of existing RFMO/As. GRC High Seas partners will initially include:

- Korea Maritime Institute (KMI)
- Shanghai Ocean University (SHOU)
- National Sun Yat-sen University, Graduate Institute of Marine Affairs (GIMA)
- Ocean Policy and Research Institute (OPRI)
- Spanish Institute of Oceanography of Spanish National Research Council (IEO-CSIC)
- Umineko Sustainability Institute (USI)
- Australian National Centre for Ocean Resources and Security (ANCORS)

Recommendations

GRC High Seas prioritised the establishment of science and policy groups, the development of an agreed template for annual reporting, collaborative stock assessment for South-West Atlantic squid

fisheries, development of minimum standards for flag State control, and the initiation of negotiations towards the establishment of a RFMO/A or other cooperative arrangement for the South-West Atlantic high seas squid and associated fisheries. Any such cooperation or future negotiation should be without prejudice to the sovereignty positions of participating States and should not constitute a precedent or concession regarding any territorial or maritime dispute.

The Second Busan Dialogue on Strengthening Cooperation on Science and Management of High Seas Fisheries beyond the jurisdiction of existing regional fisheries management organisations and arrangements, recommends, on a voluntary and non-binding basis, that:

1. A scientific group be established, with an initial focus on States and fishing entities whose vessels participate/d in the Argentine shortfin squid fishery in the South-West Atlantic high seas. The scientific group discuss, among others, data needs, scientific methodologies to support the assessment of the stock status of Argentine shortfin squid, and any other science-related matters relevant to the fishery. The scientific group shall initially be chaired by Prof. Fan Zhang from Shanghai Ocean University. The chair will convene a virtual meeting in late 2026 to confirm its membership of relevant scientists from partner institutions, identify independent experts to be invited to join the group, and begin the development of a workplan.
2. In parallel, a policy group be established, with an initial focus on flag States and fishing entities whose vessels participate/d in the Argentine shortfin squid fishery in the South-West Atlantic high seas. The policy group shall exchange information on relevant national policies and regulations and explore opportunities for voluntary cooperation and coordination, as appropriate. The policy group shall initially be chaired by Prof. Quentin Hanich from the Australian National Centre for Ocean Resources and Security (ANCORS). The chair will convene a virtual meeting in late 2026 to confirm its membership of relevant policy experts from partner institutions, identify independent experts to be invited to join the group, and begin the development of a workplan.
3. Relevant international organizations, market representatives and independent experts may be invited as observers or partners, subject to agreement by the group.
4. The Korean Maritime Institute (KMI) and the Australian National Centre for Ocean Resources and Security (ANCORS) serve as coordinators for this process.
5. States and fishing entities wishing to participate in this process designate contact liaison officers for each group and indicate their support for the process in a form they consider appropriate and send this information to the coordinators. In order to inform science and policy discussions, the relevant contact liaison officers will assist with the provision of appropriate information on the South-West Atlantic.

PROJECT TIMELINE

Global Research Cooperative for High Seas Fisheries (GRC High Seas)

2026

2027

2028

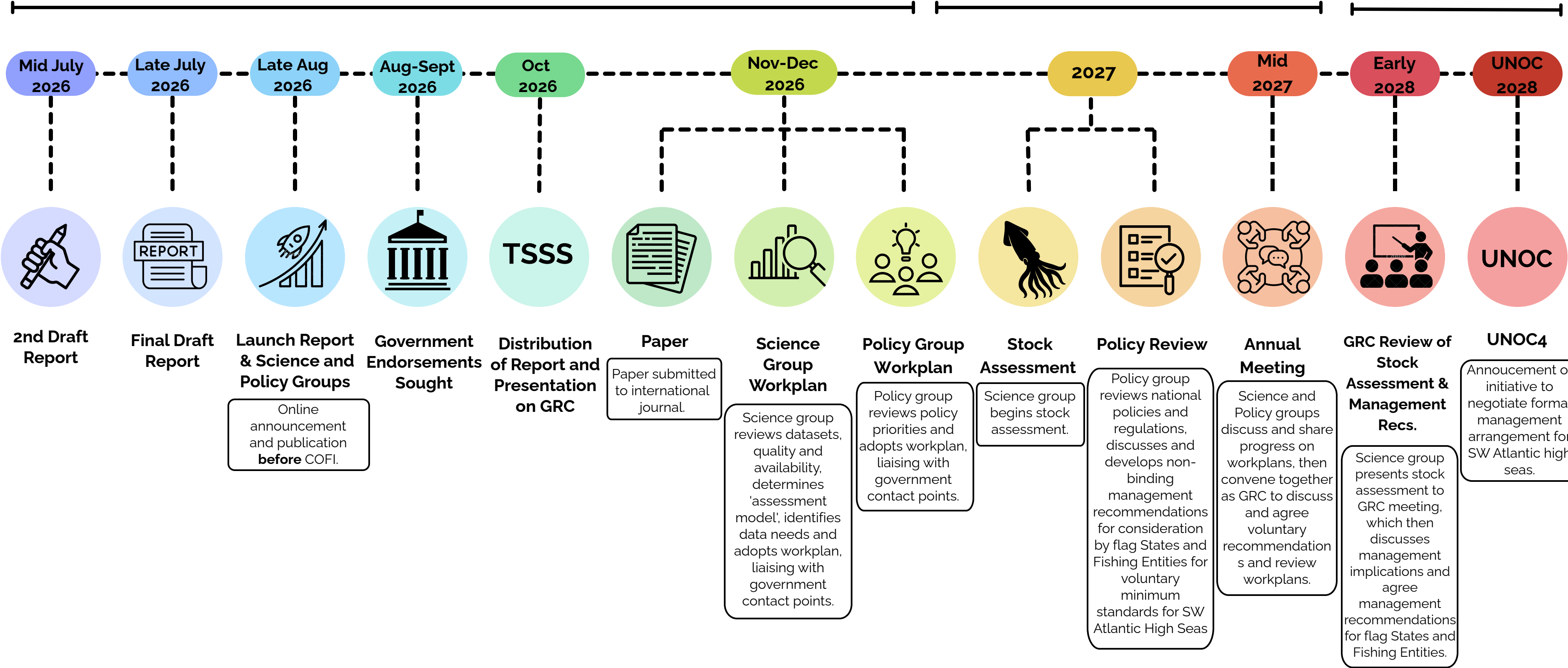


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Strengthening Cooperation and Management of Global Jig and Trawl Squid Fisheries Report

Introduction

Squid fisheries are critically important and have grown in global significance over the past several decades (Alexander I Arkhipkin et al., 2015). As of 2020, cephalopod catches constitute over 4% of all global marine catches by volume and about 7% by value (FAO, 2020). Squid products are also important and sought-after components of many cultural cuisines, such as in Asian (*Illex* squids) and Mediterranean (*Loligo* squids) cuisines, and they represent important dietary contributions, especially in the light of declining finfish catches (Alexander I Arkhipkin et al., 2015). Yet, despite their scale, as well as cultural and economic significance, these fleets operate within governance landscapes marked by severe data limitations, limited flag States cooperation mechanisms, and scarce regulatory frameworks (S., Friedman, & Fabra, 2025). In recognition of both their significance and the limitations in their management to date, squid fisheries have recently experienced a growing degree of regulation, aimed at ensuring adequate conservation and management of stocks. In November 2019, the North Pacific Fisheries Commission (NPFC) began regulating squid fisheries in the broad North Pacific with the passage of effort controls in CMM 2019-11 (NPFC, 2019). Additionally, in 2020 the South Pacific Regional Fisheries Management Organization (SPRFMO) began regulating squid fisheries when CMM 18-2020 came into force in 2020 (Labraña-Cornejo, Alonso-Población, Gozzer-Wuest, Ferreiro-Velasco, & Roa-Ureta, 2023; SPRFMO, 2020a, 2020b). These developments signal a growing recognition of the importance of squid stocks, and a pressing need for more collaborative management to ensure their sustainable exploitation in the future. However, despite this progress, many areas of the global ocean remain unregulated for squid, and evidence suggests that fleets may preferentially fish in areas with fewer or no regulations to maximize catch (Palacios-Abrantes et al., 2026; Seto et al., 2023). With this in mind, this report examines the structure, behaviour, and characteristics of global high seas trawl and squid jigging fleets, focusing specifically on the squid fishing activities that occur in the South-West Atlantic (FAO Area 41), one of the world's most dynamic squid fishing regions (Silva, Friedman, & Fabra, 2025)

Report Context and Background

Regulatory and Management Gaps

Despite the obligations set under LOSC and the UNFSA for States to cooperate in the management and conservation of relevant fish stocks (United Nations, 1982) (Art 118; Art 63; Art 64), notably via the establishment of RFMO/As (Art 8) (United Nations, 1995) significant regulatory and management gaps persist globally in the governance of high seas fisheries (FAO, 2025, 2026a). While many major stocks fall under the mandate of a regional body, coverage remains uneven across ocean basins, with certain species groups and high-effort fisheries operating beyond any RFMO/A competence. These gaps are particularly apparent in fast-growing fisheries, such as trawl and jig squid fisheries, where rapid growth in fishing effort and highly mobile fleets often outpace the establishment of coordinated management and regulatory frameworks. In such contexts, the absence of a regional mechanism capable of aggregating scientific data, harmonising conservation measures, and supporting collective decision-making and monitoring, control and surveillance (MCS) create fragmented management landscapes, limiting transparency across fleets and jeopardising the sustainability of the fisheries.

These issues are particularly salient in the South-West Atlantic (FAO Area 41), our focal case study area, which stands out as one of the largest remaining high seas regions uncovered by an RFMO/A mandate (Palacios-Abrantes et al., 2026). This governance gap is particularly significant given the intensity and transboundary mobility of the trawl and jig fleets operating there. Without a regional platform for cooperation, fishing pressure is managed primarily through unilateral national measures rather than through a collective framework, creating uncertainty around stock status and limiting the long-term resilience of the fishery (S. et al., 2025).

Governance gaps may heighten tensions between fishing flag States and coastal States, particularly where fishing effort interacts with areas of coastal State interest or where differing national policies and standards constrain cooperation (A. I. Arkhipkin, Nigmatullin, Parkyn, Winter, & Csirke, 2023; Carvalho et al., 2025). They can also increase the risk of ecological unsustainability, and contribute to persistent knowledge gaps, reducing transparency and hindering effective oversight (SFP, 2026; Silva et al., 2025). Finally, these gaps may also carry economic and trade implications. For instance, under the World Trade Organisation (WTO) Agreement on Fisheries Subsidies, entered into force in 2025, Members must now demonstrate that subsidised fishing only occurs within regulated fisheries, – meaning that the absence of agreed conservation and management measures (CMM) could, in some circumstances, affect access to certain subsidies or markets (World Trade Organization, 2022). Together, these issues further underscore the value of exploring cooperative approaches capable of

improving transparency, strengthening scientific collaboration, and supporting more sustainable practices in Area 41 and other high seas fisheries that occur beyond existing RFMO/As.

Emerging cooperation among flag States and fishing entities

This report draws on collaborative efforts among researchers and scientists from key flag States and fishing entities actively engaged in global squid fisheries – namely China, Korea, Japan, Spain, Chinese Taipei and the Falkland Islands Government – plus other fisheries governance experts. Research and institutional partners include: the Korean Maritime Institute (KMI), the Australian National Centre for Ocean Resources and Security (ANCORS), Shanghai Oceans University (SHOU), National Sun Yat-sen University’s Graduate Institute of Marine Affairs (GIMA), the Spanish Institute of Oceanography of Spanish National Research Council (IEO-CSIC), the Umineko Sustainability Institute (USI) and the Ocean Policy Research Institute (OPRI).

In February 2025, the Korean Maritime Institute (KMI) and the Australian National Centre for Ocean Resources and Security (ANCORS) co-hosted an informal workshop of officials, stakeholders and experts to share information on flag State and fishing entity regulations and policies for distant water fishing fleets operating in high seas fisheries that are not covered by a mandated regional fisheries management organisation (RFMO). The discussions of the workshop held in Busan, Korea, identified opportunities to enhance cooperation and examined prevailing barriers and challenges to achieving such cooperation. FAO Area 41 in the South-Western Atlantic Ocean was selected as the pilot case for this collaborative study.

The workshop participants identified three interconnected priorities for improving the management of fisheries that occur outside the jurisdiction of existing RFMO/As. First, participants emphasised a need for science- and data-led collaboration, noting that no single actor holds sufficient information and that shared scientific work offers a low-risk, constructive entry point for cooperation. Second, ensuring sustainability was seen as the central goal, with participants stressing that effective management depends on robust reporting and attention to all three dimensions of ‘I and U and U’ fishing, as improvements in any area strengthen long-term ecological and economic outcomes. Third, participants highlighted the importance of building trust and engagement among industry, States, fishing entities and other stakeholders, arguing that momentum can be generated through transparent dialogue, clearer use of the IUU terminology, and collaborative scientific initiatives. They also pointed to formal avenues, like the FAO Sub-Committee on Fisheries Management, and existing precedents like the Standing Committee on Tuna and Billfish, as valuable models for fostering inclusive and coordinated action in unregulated fisheries.

Among the key challenges identified to achieve strengthened management and enhanced cooperation were barriers to data-sharing, due to confidentiality concerns, government restrictions and industry reluctance – which participants suggested could be alleviated by sharing outputs (as opposed to raw and potentially sensitive data). Moreover, persistent confusion around the term ‘IUU’ fishing was identified as undermining trust and accurate reporting, prompting calls to clarify the terminology through continued engagement with stakeholders to establish a shared understanding. Lastly, participants noted that governance gaps limit coordination efforts, seen as in the absence of an RFMO or other regional management framework established in FAO Area 41, cooperative efforts strictly rely on the goodwill of participating flag States and fishing entities and remain weak.

High-Level Overview of Global Trawl and Jig Squid Fisheries

In this section, we begin with a brief overview of the key fleets across ocean basins, using the Global Fishing Watch (GFW) general fishing model of Automatic Identification Systems (AIS) to visualize fleet presence and movements. The GFW general fishing model is a convolutional neural network that detects apparent fishing activity from vessel tracking data and outputs a prediction of fishing or not fishing for each of those positions (Kroodsma et al., 2018; Turner et al., 2025). While the GFW model has proven robust across diverse settings, limitations include its varying levels of accuracy for vessels across diverse locations and behaviours, as well as the inherent limitations of transponder data (Turner et al., 2025). Key regions for the target of high seas squid jigging vessels include the NW Pacific, SE Pacific, NW Indian, and SW Atlantic Oceans. However, effort is not static in these areas, rather vessels move between regions seasonally, shifting fishing effort across broad swaths of ocean multiple times each year (Figure 1).

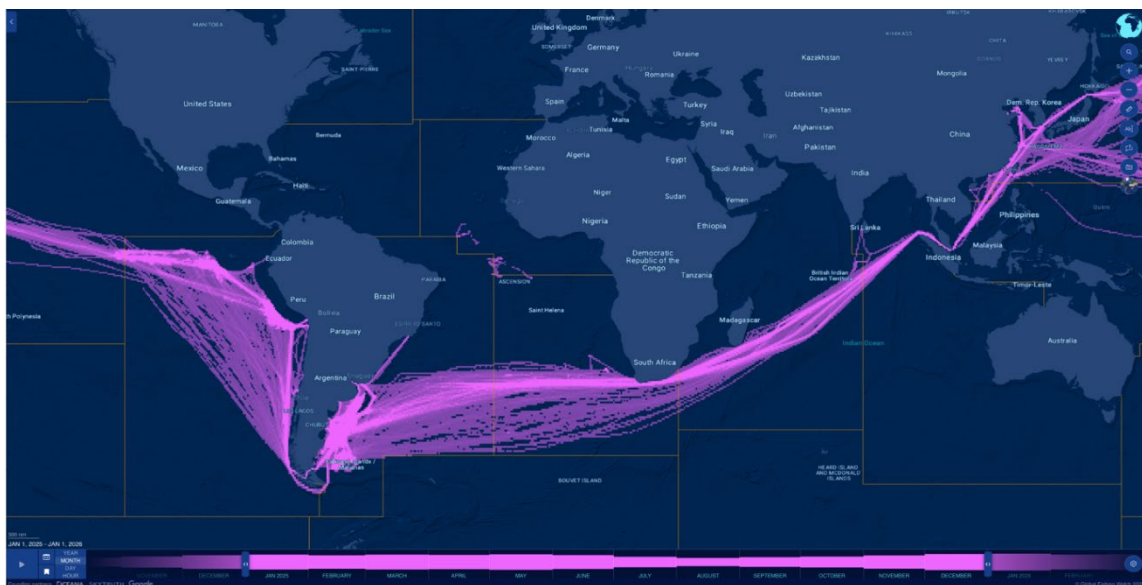


Figure 1: A global, interconnected fleet—vessel locations in 2025, for all vessels identified in GFW AIS with apparent squid jigging hours in the SW Atlantic in 2025.

Seasonally, high seas squid fishing vessel numbers are highest in the NW Pacific, where effort is relatively high and stable for most months of the year (Figure 2). Effort is highest and focuses most intensely on the SW Atlantic in the early months (Jan-April) before dropping substantially in May and June and remaining low until rising again in December. This season is in sharp contrast to the seasonal trends of the NW Pacific, which remains low until the mid-year months, peaking in the last quarter of the year before dropping again at year's end. The NW Indian Ocean experiences its highest fishing levels in the months bridging years (October-May), with lowest effort occurring in the third quarter (Figure 2).

Area	Month												Unique Vessels
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
nw_pacific	4.1	2.9	11	72	181	254	304	347	350	293	252	80	1,338
se_pacific	306	286	283	286	306	347	334	338	369	412	440	426	1,000
sw_atlantic	372	442	371	325	273	134	74	58	53	50	62	233	1,071
nw_indian	175	170	168	162	138	21	5.0	13	94	159	176	197	1,097

Figure 2: Fishing hours by region and month for squid jigging and trawling vessels as observed in GFW AIS data

In particular, vessels tend to shift frequently between the SE Pacific and the SW Atlantic Oceans (Figure 2), likely because of the relatively close proximity of these two regions and the compatibility of fishing in both regions' peak seasons. A substantial exchange of vessels also occurs between both the SE Pacific and SW Atlantic on the one side, and the NW Pacific on the other. Notably, the vessels that fish the NW Indian Ocean often focus effort more narrowly in that region, with substantially fewer vessels conducting seasonal shifts to other squid fishing regions.

We next provide an overview of high seas squid fisheries, considering the key major actors, regions, and trends. We use data provided by the major global high seas squid fishing flag-states and fishing entity (China, Korea, Japan, Spain and Chinese Taipei) to estimate vessels across regions and years.

Within the two key fleets targeting squid in these areas, squid jiggers vastly outnumber trawling vessels, however trawlers have seen growth in recent years, whereas jiggers operated by the major high seas squid fishing fleets have slightly declined. The number of squid jiggers that are active on the high seas declined slowly but consistently from 948 vessels in 2019 to 806 vessels in 2025 (Figure 3; Table 1). The highest number of squid jiggers are Chinese flagged vessels, followed by Chinese Taipei. Japan, Korea (Figure 3; Table 1). In contrast, trawlers observed fishing for squid that were active on the high seas grew from 80 vessels in 2019 to 96 vessels in 2025 (Figure 4; Table 1).

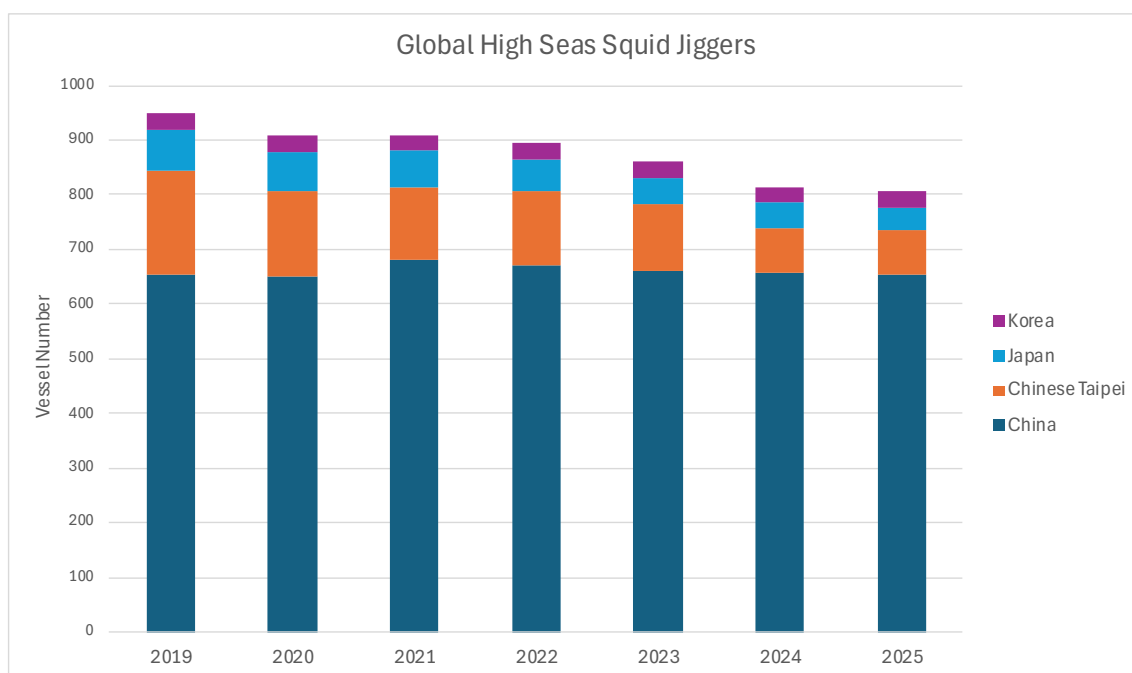


Figure 3: High seas squid jiggers by year and flag State/fishing entity as provided by the major global high seas squid fishing flag-states and fishing entity (China, Korea, Japan, Falkland Islands Government, Spain, and Chinese Taipei). Notably, Falkland Islands Government and Spain do not employ a high seas squid jigger fleet. Of note, data from Chinese Taipei represents vessels from Pacific high seas; data from Korea represents estimates derived from information provided by the Korea Overseas Fisheries Association (KOFA) and official fisheries statistics; data from Japan and Korea are provisional for 2025.



Figure 4: High seas squid trawlers by year and flag State/fishing entity as provided by the major global high seas squid trawling flag States/fishing entities (China, Korea, Japan, Falkland Islands Government, Spain, and Chinese Taipei). Notably, Chinese Taipei and Japan do not employ a high seas squid trawler fleet. Of note, data from Korea represents estimates derived from information provided by the Korea Overseas Fisheries Association (KOFA) and official fisheries statistics.

Table 1: Catch & vessel data for high seas squid fisheries for 2019-2025, as provided by the major global high seas squid fishing flag States/fishing entity (China, Korea, Japan, Falkland Islands Government, Spain and Chinese Taipei). Of note, data from Chinese Taipei represents vessels & catches from Pacific high seas; data from Korea represent estimates derived from information provided by the Korea Overseas Fisheries Association (KOFA) and official fisheries statistics; data from Japan & Korea are provisional for 2025.

Year	# Jiggers	# Trawlers	All Catch Squid Jiggers (t)	All Catch Squid Trawlers (t)	Fleet
2019	654	33	394,480	5,708	China
2020	649	27	450,100	50,866	China
2021	682	23	550,727	47,937	China
2022	671	34	623,900	67,193	China
2023	661	34	642,969	41,186	China
2024	658	34	456,273	43,638	China
2025	653	38	584,869	57,230	China
2019	0	13	0	153	Falkland Islands Government
2020	0	12	0	462	Falkland Islands Government
2021	0	15	0	3,047	Falkland Islands Government
2022	0	17	0	2,671	Falkland Islands Government
2023	0	18	0	3,865	Falkland Islands Government
2024	0	17	0	9,703	Falkland Islands Government
2025	0	20	0	6,861	Falkland Islands Government
2019	75	0	7,138	0	Japan
2020	71	0	7,638	0	Japan
2021	69	0	4,289	0	Japan
2022	58	0	3,458	0	Japan
2023	47	0	3,454	0	Japan
2024	46	0	3,441	0	Japan
2025	42	0	5,768	0	Japan
2019	29	10	15,042	5,024	Korea
2020	30	10	17,277	19,264	Korea
2021	27	7	50,947	17,354	Korea
2022	30	10	28,091	20,071	Korea
2023	29	11	17,112	14,308	Korea
2024	29	11	39,942	23,215	Korea
2025	29	11	26,560	25,540	Korea
2019	0	24	0	2,360	Spain
2020	0	26	0	18,222	Spain
2021	0	25	0	13,355	Spain
2022	0	28	0	26,443	Spain
2023	0	26	0	15,513	Spain
2024	0	27	0	19,066	Spain
2025	0	27	0	13982	Spain
2019	190	0	38,929	0	Chinese Taipei
2020	159	0	53,615	0	Chinese Taipei
2021	130	0	146,577	0	Chinese Taipei
2022	136	0	64,394	0	Chinese Taipei
2023	123	0	39,274	0	Chinese Taipei
2024	82	0	123,408	0	Chinese Taipei
2025	82	0	61,731	0	Chinese Taipei

Trends in transshipment and port landings differ substantially between the major high seas squid fishing flag states and fishing entities. For example, Chinese Taipei squid jigging vessels are allowed to transship, but are largely limited to landing catches in ports in the South Atlantic, Korea or Chinese Taipei. In contrast, Japanese squid fishing vessels are not permitted to transship catches, and landings are concentrated in the specific domestic ports of Hachinohe, Hakodate, and Hanasaki.

High seas trawl and jig fisheries, focusing on the South Atlantic

Background

Industrial squid fisheries in the South-West Atlantic developed rapidly from the late 1970s and 1980s, targeting primarily two squid species, namely Argentine shortfin squid (*Illex argentinus*) and Patagonian squid (*Doryteuthis gahi*) (A I Arkhipkin, Winter, & Nigmatullin, 2021). Early distant water fishing fleets played a central role in establishing the fishery. Soviet jig fisheries operated in the South-West Atlantic in the mid-1980s (A I Arkhipkin et al., 2021), while Japanese fleets were among the first to industrialise squid fishing in the region from the late 1970s, particularly off the coast of Argentina, where they operated seasonally to extend their domestic jig fishing season (Sonu, 1993). By the 1980s, Japanese catches reached very high levels, including a peak of around 240,000 tonnes of *I. argentinus* in 1987 (Sonu, 1993). This period coincided with a broader global expansion of squid fisheries worldwide, and by 1990 the South-West Atlantic accounted for roughly 31% of global squid landings (Sonu, 1993).

Since the 1990s, the composition of fleets in the SW Atlantic has shifted, with China emerging as a dominant actor, while the number of Japanese vessels sharply declined (Sonu, 1993). Chinese jigging operations began in the region in 1997 and expanded rapidly so that by 2025, no more than 300 squid jigging vessels were reportedly active in the region (Chen, Liu, & Chen, 2008). In addition, a Chinese ‘high seas trawling fishery for *I. argentinus* squid began in 2008, and in recent years about 30 trawl vessels have been fishing in the region (Chen et al., 2008). Within coastal waters, Argentina has dominated historical catches, taking roughly 25% of landings between 1950 and 2010, while the Falkland Islands Government has played a growing role since its establishment of conservation zones around the islands in the mid-1980s (Alexander I Arkhipkin et al., 2015). Of the distant-water fleets, those from China, Chinese Taipei, Korea, Japan, Poland, Russia, and Spain, have played a critical role, with production from the region (Alexander I Arkhipkin et al., 2015; Sonu, 1993).

Overall SW Atlantic squid fishing

Within the broad context of global high seas squid fishing, we focus here on the activities that occur within the SW Atlantic Ocean, specifically in the high seas of FAO Area 41, where effort is most concentrated (Figure 5; for national flag state maps, see Appendix II). We do so to highlight the dynamics in one of the world's most heavily fished regions and one of the two key high seas regions that are outside the jurisdiction of existing RFMO/As for squid fisheries (FAO, 2025, 2026a). Similar to the section above, data are provided by the major high seas squid fishing flag-States and fishing entities active in the SW Atlantic (China, Korea, Japan, Spain, Chinese Taipei and the Falkland Islands Government). Additionally, Global Fishing Watch (GFW) Automatic Information System (AIS) data is used to visualize fishing operations by vessels not flagged to the main fishing fleets.

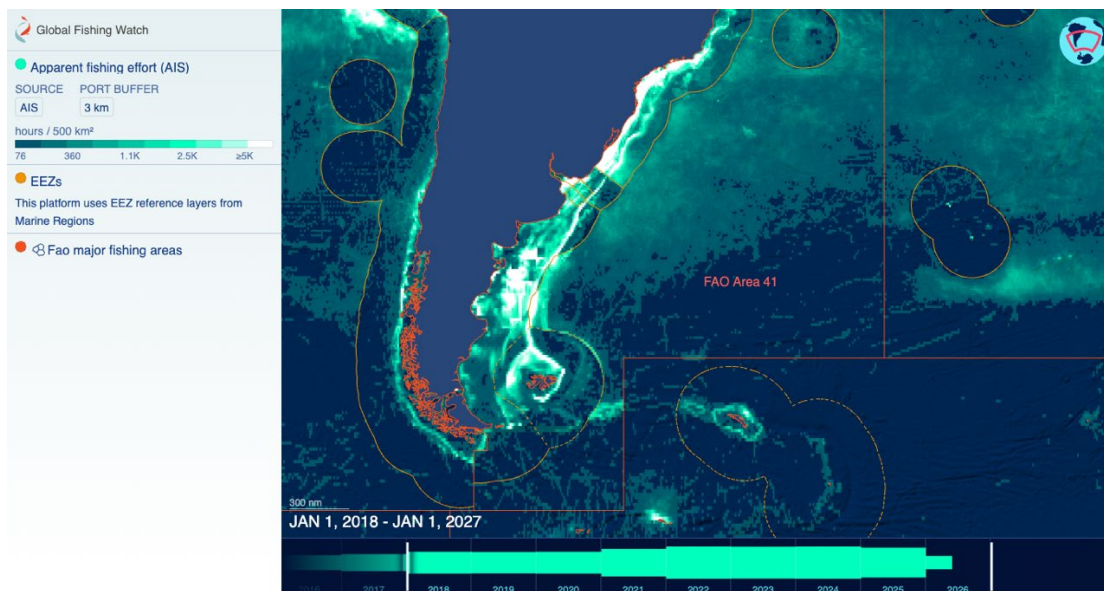


Figure 5: Heat map of apparent fishing effort identified in AIS in and near FAO Area 41 using GFW data 2018-2026.

In addition to high levels of fishing, this region also represents an area with strong interchange of vessels between other more regulated regions (e.g. NPFC and SPRFMO areas of competence) and a potential opportunity for improved collaborative management (FAO, 2025, 2026a). Within the SW Atlantic, the majority of squid fishing vessels were flagged to China at 297 in 2025, followed by Chinese Taipei at 77, Korea at 40, Spain at 27, Falkland Islands Government at 20 (Table 2), Vanuatu at 17 (Figure 6). Across the largest fleets, flagged to China, Chinese Taipei, and Korea, squid jiggers greatly outnumber trawl vessels; however, vessels flagged to Spain and the Falkland Islands Government focus exclusively on trawling and have seen overall growth in recent years.

Table 2: Catch and vessel data for SW Atlantic high seas squid fisheries for 2019-2025, as provided by the major SW Atlantic high seas squid fishing flag-states and fishing entities (China, Korea, Japan, Falkland Islands Government, Spain and Chinese Taipei). Of note, data from Chinese Taipei represents vessels and catches from both the high seas and EEZs within FAO Area 41; data from Korea is provisional for 2025; catches for China represent only *Illex argentinus*, omitting other squid species.

Year	# Jiggers	# Trawlers	All Catch Squid Jiggers (t)	All Catch Squid Trawlers (t)	Flag State
2019	279	33	20,880	5,708	China
2020	221	27	60,000	50,866	China
2021	291	23	139,727	47,937	China
2022	287	34	75,000	67,193	China
2023	290	34	128,000	41,186	China
2024	236	34	131,000	43,638	China
2025	259	38	147,200	57,230	China
2019	0	13	0	153	Falkland Islands Government
2020	0	12	0	462	Falkland Islands Government
2021	0	15	0	3,047	Falkland Islands Government
2022	0	17	0	2,671	Falkland Islands Government
2023	0	18	0	3,865	Falkland Islands Government
2024	0	17	0	9,703	Falkland Islands Government
2025	0	20	0	6,861	Falkland Islands Government
2019	0	0	0	0	Japan
2020	0	0	0	0	Japan
2021	0	0	0	0	Japan
2022	0	0	0	0	Japan
2023	0	0	0	0	Japan
2024	0	0	0	0	Japan
2025	0	0	0	0	Japan
2019	28	10	9,436	5,024	Korea
2020	30	10	16,274	19,264	Korea
2021	27	7	50,865	17,354	Korea
2022	30	10	28,022	20,071	Korea
2023	29	11	17,112	14,308	Korea
2024	29	11	39,795	23,215	Korea
2025	29	11	26,560	25,540	Korea
2019	0	24	0	2,360	Spain
2020	0	26	0	18,222	Spain
2021	0	25	0	13,355	Spain
2022	0	28	0	26,443	Spain
2023	0	26	0	15,513	Spain
2024	0	27	0	19,066	Spain
2025	0	27	0	13,982	Spain
2019	89	0	34,000	0	Chinese Taipei
2020	77	0	51,135	0	Chinese Taipei
2021	76	0	145,797	0	Chinese Taipei
2022	72	0	64,196	0	Chinese Taipei
2023	76	0	38,955	0	Chinese Taipei
2024	76	0	123,401	0	Chinese Taipei
2025	77	0	61,411	0	Chinese Taipei



Figure 6: Count of squid jiggers and trawlers active in the SW Atlantic high seas, by year and flag state, as provided by the major SW Atlantic high seas squid fishing flag-states and fishing entities (China, Korea, Japan, Falkland Islands Government, Spain and Chinese Taipei) and GFW (Vanuatu). Of note, data from Chinese Taipei represents vessels from both the high seas and EEZs within FAO Area 41; data from Korea is provisional for 2025

Current trends in SW Atlantic squid trawling

Notably, squid trawling operations overall in the SW Atlantic have grown substantially in recent years, with particular growth from new entrants/flag States (Figure 7). While vessels flagged to Spain, China, and Korea have remained relatively steady for many years, increased vessel numbers from new entrants have driven the overall growth in the last four years. Specifically, the number of vessels flagged to Vanuatu has grown in the area, with the most substantial increase from Vanuatu at approximately 20 trawl vessels in the last two years (Figure 7).

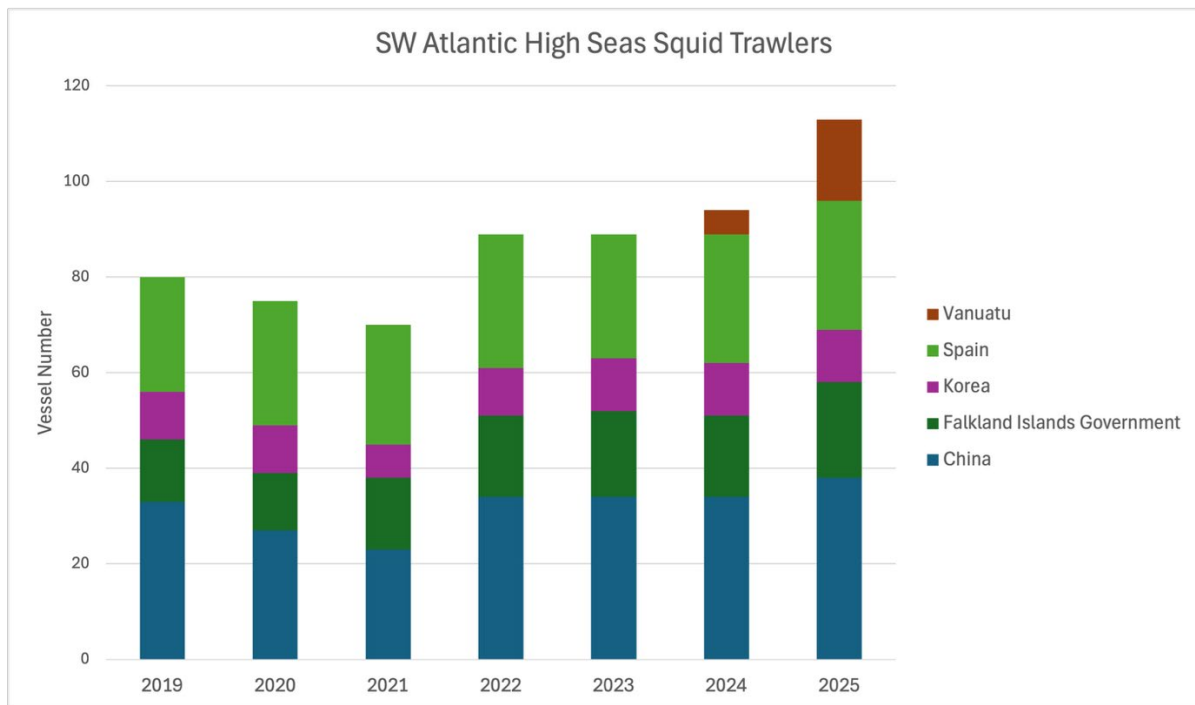


Figure 7: Distinct squid trawlers operating in the SW Atlantic by year and flag state, as provided by the major SW Atlantic high seas squid fishing flag-states and fishing entities (China, Korea, Japan, Falkland Islands Government, Spain and Chinese Taipei) and GFW (Vanuatu). Notably, Chinese Taipei and Japan do not employ a high seas squid trawler fleet. Of note, data from Korea are provisional for 2025.

The greatest increases in recent squid trawl effort in the SW Atlantic are attributed to vessels flagged, initially, to Cameroon and Vanuatu, then Tanzania. Across 2024-2025 the number of trawlers flagged to Vanuatu and operating in the SW Atlantic increased by a factor of ten. These fleets have caused some controversy with global media reports of illegal fishing, prosecutions, heavy fines, and official requests for cooperation circulated through the Indian Ocean Tuna Commission (IOTC) (Read, 2026; Sheehy, 2026).

According to cited sources, it appears that Vanuatu initially registered at least 41 fishing vessels that were constructed in China in 2024 and 2025. Following construction, these vessels then sailed west through the Indian Ocean to the South Atlantic (Figure 8). In November 2025, the Indian Ocean Tuna Commission (IOTC) circulated a Note Verbale (IOTC, 2025a) from the Government of Vanuatu alerting IOTC members that twenty Vanuatu flagged trawlers did not hold an International Authorisation to Fish Certificate from Vanuatu's Competent Authority, and that eight of these vessels were believed to be transiting through the IOTC Area, possibly en-route to the Atlantic Ocean. As these vessels were not authorised to fish under Vanuatu's authority, the government of Vanuatu brought this information to the attention of IOTC Members and Cooperating Non-Contracting Parties. However, soon after, on the 1st December, the IOTC circulated a request from Vanuatu to recall this Note Verbale (IOTC, 2025b). No explanation was provided and the circular has since been withdrawn and is no longer available on the IOTC website.



Figure 8: GFW AIS tracks of Xinrun Ocean Vanuatu fleet operations October 2024-June 2025

Some vessels were briefly flagged to Cameroon, before re-flagging to Vanuatu. This shuffle of registries may have been caused by the European Union’s identification in 2023 of Cameroon as non-cooperating in the fight against Illegal, Unreported and Unregulated (IUU) fishing, thereby requiring EU Member States to refuse any importation of fishery products from Cameroon even when accompanied by Cameroon authorised catch certificates (European Commission, 2023). It now appears that many vessels from this fleet have now moved their registry from Vanuatu to Tanzania. At least 18 vessels have re-flagged to Tanzania through Tanzania-domiciled companies.

While vessel lists can be identified, the use of shell companies and open registries quickly renders this information out-of-date and is not included here as it will likely be incorrect again before the report is printed. Critically, these corporate and registry manipulations demonstrate the need for effective cooperation among flag States and fishing entities that maintain a genuine link to their vessels and require a new approach to ensure effective control over all fishing fleets.

The state of current science and stocks in the SW Atlantic

In the absence of regional science bodies, national scientific programs, collaborations, and reports serve as one of the main sources of scientific information regarding squid stocks and related species and ecosystems. Notably, a recent series of workshops—the International Scientific Workshops for the Argentine Shortfin Squid—hosted by the Center for Applied Ecology & Sustainability of the Pontificia Universidad Católica de Chile made significant progress in assessing the science to date around *Illex argentinus* (Roa-Ureta & Wiff, 2022, 2024). These workshops, which were held between 2022-2024 and convened key representatives from government research centers and universities, made significant progress toward the establishment of a regional database for stock assessment that could inform

management (Roa-Ureta & Wiff, 2024). The outputs from these workshops provide useful baselines for stock science on *Illex argentinus* in the SW Atlantic, and the groundwork on which regional science cooperation should be built.¹

In June 2025, the first International Symposium on Squid Resource Conservation and Management, hosted by Shanghai Ocean University and guided by the Bureau of Fisheries of the Ministry of Agriculture and Rural Affairs, was successfully held in Shanghai. More than 50 government officials, scientific researchers and industry representatives from China, Chile, Peru, Argentina and other countries gathered to discuss core issues concerning the sustainable utilization of squid resources. The symposium adopted the Shanghai Proposal for the Sustainable Development of Global Squid Fishery. Cutting-edge topics such as the effectiveness of China's voluntary high-seas fishing moratorium, squid resource assessment models, and transboundary fisheries management are presented and discussed. In July 2026, the second International Symposium on Squid Resource Conservation and Management was held again in Shanghai. Centering on the challenges and opportunities for the sustainable development of squid resources, the symposium carried out in-depth discussions and exchanges over topics including scientific resource assessment, compliance-based supervision of distant-water fisheries, whole-industrial-chain upgrading, and aquatic product trade and circulation. Government officials, experts, scholars and industry representatives from China, Chile, Peru, Australia and other countries attended the meeting and delivered presentations. The symposium established a new platform for international cooperation in the governance of global squid fisheries.

In addition to the information gathered through the international scientific workshops/symposium, national scientific information can also reinforce or supplement the existing stock assessment data. Appendix III represents a preliminary, but incomplete, list of national scientific programs and reports for SW Atlantic trawl and jig fishing by key flag States and fishing entities. Notably, because Japanese jig fisheries do not operate in the South-West Atlantic, and no Japanese distant-water trawl fisheries target squid, no Japanese scientific reports have been published for SW Atlantic squid stocks.

Policies and regulations of flag States and fishing entities

In the absence of consistent multilateral management institutions, flag State and fishing entity regulations and policies serve as the primary mechanisms of managing fishing effort and catch in the high seas of the SW Atlantic. The table below summarises the existing arrangements of China, Spain, Japan, Korea, Falkland Islands Government and Chinese Taipei. A comprehensive summary is provided in Appendix IV.

¹ A 4th International *Illex* Workshop is now being organised for 30 September -2 October in Vigo, Spain and intends to build on this earlier work.

Table 3: Summary Table of primary SW Atlantic flag-States/fishing entities (China, Korea, Japan, Falkland Islands Government, Spain and Chinese Taipei) regulations and policies relevant to high seas squid trawl and jig vessels. For full details see Appendix IV.

Logbook and/or e-reporting	VMS/AIS	Observers and/or e-monitoring	Landings and/or transshipment	Conservation and Management	Crew Welfare	Science
All require some form of e-reporting and logbooks	All require VMS, some also require AIS	Some require observers and/or e-monitoring	PSMA is applied. Some prohibit transshipment, while others regulate	Some apply unilateral restrictions on fishing capacity, moratorium and other measures	Various regulations. Some apply Work in Fishing Convention C188	Some data and science requirements

International responsibilities

In addition to the regulations described above, some multilateral international and regional instruments also have the potential to influence fishing effort and catch on the high seas. The UN Convention on the Law of the Sea, UN Fish Stocks Agreement, RFMOs/RFMAs, Port State Measures Agreement, and WTO Agreement on Fisheries Subsidies are each described below for their potential mechanisms of influencing high seas fishing in the region.

The United Nations Convention on the Law of the Sea (LOSC)

The international legal framework for high seas fisheries begins with the *United Nations Convention on the Law of the Sea* (LOSC) (United Nations, 1982), which balances the freedom of fishing with duties to conserve and cooperate. These obligations are particularly relevant in the context of currently unregulated trawl and jig squid fisheries, where the absence of regional management arrangements heightens the importance of States' responsibilities under international law. The freedom of fishing on the high seas is guaranteed for all States under Art 87 (1)(e) of the LOSC. However, this freedom is not absolute and is subject to conditions outlined in the Convention. Importantly, the freedom of fishing on the high seas must be exercised by States 'with due regard for the interest of other States in their exercise of the freedom of the high seas' (Art 87) (United Nations, 1982). This legal requirement highlights the reciprocal nature of the high seas' regime and the interdependent relationships between the various States undertaking activities in this maritime zone.

While the right for all States to fish on the high seas is further embedded under Article 116 of the LOSC, three sets of limitations to that freedom apply, namely: (1) other treaty obligations (i.e., restrictions upon fishing rights in the high seas contained in relevant agreements ratified by State parties to the LOSC); (2) the rights and duties as well as the interests of coastal States (notably with respect to

straddling stocks (Art 63) and highly migratory fish stocks (Art 64)); and (3) other provisions (i.e., Art 117-120) regarding the conservation and management of living resources in the high seas (United Nations, 1982). In this context, States' duties to cooperate with each other (Art 117), including, 'as appropriate', through the establishment of subregional or regional fisheries organisations (Art 118), and to underpin conservation measures through the exchange of scientific information via competent international organisations (Art 119), are of particular importance (United Nations, 1982). Those provide the primary legal mechanisms through which States can collectively address sustainability risks in the absence of regulatory frameworks. As such, these provisions represent key legal avenues for collective action in areas beyond the competence of existing RFMO/As such as squid fisheries in FAO Area 41. It should also be noted that States' duty to cooperate is further strengthened in relation to the conservation and management of straddling and highly migratory stocks (see Art. 63(2) for straddling stocks; and Art. 64 for highly migratory species)(United Nations, 1982). These provisions reinforce the general obligations set under the high seas framework to cooperate and, where necessary, to establish or participate in (sub)regional organisations for effective conservation and management of relevant stocks.

For fisheries occurring exclusively in the high seas, the LOSC provides that States should determine an allowable catch and take measures based on the best scientific evidence available to maintain and restore populations of harvested species at levels that can produce the MSY (Art 119)(United Nations, 1982). It further highlights States' obligation to contribute and exchange scientific information, catch, fishing effort and other relevant data 'on a regular basis through competent international organizations, whether subregional, regional or global, where appropriate and with participation by all States concerned' (Art 119(2))(United Nations, 1982). These provisions constitute an important international law basis for scientific data-sharing and cooperative research initiatives in areas currently lacking formal management arrangements, including for unregulated squid stocks in the South-West Atlantic. Article 119 LOSC thus provides a clear basis for advancing joint scientific initiatives as a necessary precursor to effective conservation and management measures of high seas stocks.

The UN Fish Stocks Agreement (UNFSA)

While the LOSC provides a broad legal framework governing high seas fishing, the *UN Fish Stocks Agreement* (UNFSA) builds upon it by translating States' general duty to cooperate into more concrete collaboration and management obligations for States and RFMO/As regarding the conservation and management of straddling and highly migratory fish stocks. The UNFSA seeks to promote the optimum utilisation of such stocks, while applying a precautionary and ecosystem-focused approach to marine living resource conservation (United Nations, 1995). As such, the Agreement requires coastal States and States fishing for straddling and highly migratory fish species to adopt measures to ensure their

long-term sustainability and optimum utilisation, take measures according to the best scientific evidence, apply the precautionary and ecosystem approaches, minimise pollution and by-catch, protect marine biodiversity, eliminate overfishing and overcapacity, collect and share fisheries data, promote and conduct scientific research supporting the fisheries' sustainability, and implement and enforce conservation measures by effective monitoring, control and enforcement (United Nations, 1995). These requirements provide a normative benchmark against which State practice can be assessed. They also point to the need for enhanced scientific cooperation and coordinated management efforts as a practical pathway towards compliance with the UNFSA.

Importantly, the UNFSA dedicates one of its key provisions to the precautionary principle (Art 6), highlighting that States 'shall apply the precautionary approach widely to conservation, management and exploitation of straddling fish stocks and highly migratory fish stocks [and] be more cautious when information is uncertain, unreliable or inadequate' (Art 6) (United Nations, 1995). It further underscores that the lack of adequate scientific information shall not be invoked as a justification for postponing or failing to adopt conservation and management measures (Art 6) (United Nations, 1995). This principle is critically relevant to unregulated high seas fisheries, where scientific uncertainty and data gaps persist, and where cooperative and prudent management is necessary to avoid adverse, or worse, irreversible, impacts on fish stocks and their associated ecosystems. Taken together, the precautionary principle set under the UNFSA and States' duty of due regard to the rights and interests of other States when fishing in the high seas under the LOSC, translate into a heightened responsibility for States to implement robust CMMs and to actively enhance data collection and sharing, as well as cooperation mechanisms.

Another noteworthy principle of the UNFSA is that of compatibility. The latter is articulated under Article 7, which requires States to agree upon compatible CMMs applying to the Exclusive Economic Zones (EEZs) and the high seas, to ensure the effective and consistent conservation and management of the straddling and highly migratory fish stocks in their entirety. This means that, in the case of the South-West Atlantic high seas unregulated squid fisheries, both coastal and distant water fishing States should seek to work together to elaborate compatible, coherent measures for the conservation and management of squid stocks, so as not to undermine the effectiveness of existing measures applying in neighbouring EEZs. Such cooperation not only promotes effective fisheries management but is also likely to prevent conflict between coastal and distant water fishing States.

Part III of the UNFSA further details the mechanisms for international cooperation concerning straddling and highly migratory stocks. It reiterates the duty established under the LOSC for States to cooperate 'either directly or through appropriate subregional or regional fisheries management organizations or arrangements', requiring State parties to give effect to this duty by joining such bodies (Art 8)(United Nations, 1995). Importantly, where there is no RFMO/A with competence to establish

relevant CMMs, coastal and other States fishing in the high seas are to cooperate to establish such organisations or arrangements (Art 8) (United Nations, 1995). This requirement is especially important in the context of unregulated high seas fisheries targeting straddling or highly migratory stocks, such as squid, as it makes clear that high seas fishing for these species is contingent upon cooperation through RFMO/As. Accordingly, the establishment of such bodies should be treated as a priority where gaps remain by State parties eager to comply with their international law obligations.

RFMOs and RFMAs as cooperation mechanisms – Overview of key distinctions and similarities

While UNCLOS broadly refers to States' duty to cooperate in the conservation and management of living resources of the high seas, including, 'as appropriate' through the establishment of 'subregional or regional fisheries organizations to this end' (Art 118) and refers to scientific data-sharing via 'competent international organizations' (Art 119), it does not define the terms 'regional fisheries management organisation' (RFMOs) or 'regional fisheries management arrangements' (RFMAs). The UNFSA offers more guidance, defining an RFMA as 'a cooperative mechanism established in accordance with the Convention [UNCLOS] and this Agreement by two or more States for the purpose, inter alia, of establishing conservation and management measures in a subregion or region for one or more straddling fish stocks or highly migratory stocks' (Art 1(1d) UNFSA). The UNFSA further recognizes RFMAs and RFMOs as cooperative mechanisms through which States could fulfil their obligations to cooperation in the management of straddling and highly migratory fishing stocks (Art 8(5)).

Yet, varying interpretations remain about RFMAs' exact mandate, with some commentators noting that despite the UNFSA specifications, there persists a lack of a generally accepted definition of the concept of an RFMA (Molenaar, 2020). Dissenting views exist on whether a RFMA has the authority to adopt legally binding CMMs as argued by Molenaar (2020) or whether RFMAs may also encompass instruments that 'may be of both binding and non-binding character' (Logchem, 2025; Molenaar, 2020). Despite such differing interpretations, RFMAs have been viewed as a functionally comparable mechanism to RFMOs for implementing States' obligations to cooperate in fisheries management, with the principal distinction lying in their institutional structure rather than their management functions. While a RFMO is established as an intergovernmental organisation, endowed with legal personality enabling its permanent organ to operate autonomously (Logchem, 2025), a RFMA is an organization cooperative arrangement in which decisions are taken directly by Parties through relevant meetings (usually called 'Conference of the Parties' or 'Meeting of the Parties').

Table 4: Summary of Key Commonalities and Differences between RFMOs and RFMAs, C Rambourg, based on Molenaar and van Logchem

	RFMO	RFMA
Commonalities	• Subsets of RFBs concerned with marine capture fisheries' conservation and management • Focused on fish and fish harvest rather than broader marine ecosystem • Identical functions: adopt CMMs, obtain and access scientific data, set national quotas, establish control, conduct surveillance, ensure compliance with CMMs through relevant enforcement mechanisms • Equal standing conferred by UNFSA (Art 8(5)) • Bodies through which the obligation to cooperate in relation to high seas fisheries (UNCLOS, Art 118; UNFSA, Art 8) is often exercised by States via the adoption of relevant CMMs – thereby increasing the likelihood of regulatory coverage of relevant stocks/areas.	
Differences	Rudimentary definition under UNFSA.	More elaborate definition under UNFSA (Art 1(1d))
	Considered as an intergovernmental organisation. Typical features include: Institutionalisation; legal personality; permanent organ taking decisions autonomously on behalf of its members/parties.	Not considered as an intergovernmental organisation, does not have legal personality. Members/parties make decisions through COPs or MOPs.

Both RFMO/As offer practical pathways for cooperation, improved compliance with international law obligations, and coordinated management for shared fish stocks such as global trawl and jig squid fisheries in Area 41. A RFMA offers a more flexible institutional structure through which States can develop a cooperative framework that fills current governance gaps without necessarily establishing a new intergovernmental organisation. At the same time, a RFMA can facilitate scientific collaboration and data exchange, provide a platform for ongoing dialogue and trust-building, and support the development of common approaches to ensure a level playing field for the sustainable and regulated use of the squid resource. Existing examples of existing RFMAs include, *inter alia*, the CAOFA Agreement (Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean (MOP)), the CBS Convention (Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea (COP)) and SIOFA (Southern Indian Ocean Fisheries Agreement (MOP)).

The UNFSA further addresses flag State responsibilities in relation to high seas fisheries. Part V of the Agreement requires flag States to exercise effective control and supervision over vessels flying their flag and to ensure that such vessels do not undermine CMMs adopted by RFMO/As (United Nations, 1995). Part VI requires flag States to ensure compliance by vessels flying their flag with RFMO/As' measures and to establish a framework for international cooperation in compliance and enforcement (United Nations, 1995). As noted by Rothwell and Stephens, 'it also sets out an innovative [boardings and inspections] system for improved regional cooperation in enforcement in high seas areas' and 'affords port States [inspection rights and the ability to] prohibit landings and transshipments ... where it is established that the catch has been taken in a manner which undermines the effectiveness of conservation measures' (Rothwell & Stephens, 2010).

Taken together, the UNFSA provisions reinforce that the absence of a dedicated RFMO/A does not relieve States of their responsibilities under international fisheries law. In the context of unregulated high seas squid fisheries, they underscore the cooperation duties of coastal, flag and port States aimed at preventing fishing activities that undermine conservation and management objectives, while highlighting the limits of unilateral action in the absence of cooperative frameworks.

FAO Agreement on Port State Measures (PSMA)

The Port State Measures Agreement is the first legally binding international instrument specifically aimed at preventing, deterring, and eliminating illegal, unreported and unregulated (IUU) fishing by preventing vessels engaged in IUU fishing from using ports and landing their catches (FAO 2009). The provisions of the PSMA apply to vessels seeking entry into a designated port of a State which is different from their flag State.

Unlike instruments that directly govern fishing activities at sea, the PSMA operates through a port-based approach, targeting post-harvest stages of fishing operations. The effectiveness of the PSMA is grounded in a set of procedural and operational requirements, including advanced request for port entry, inspection, information exchange, and the denial of port entry or port services where there is sufficient evidence of IUU fishing. Some provisions set out in PSMA are groundbreaking. A port State could deny the use of its ports when a vessel has not obtained authorisation to fish from its flag State, or when the flag state does not confirm within a reasonable period of time and upon request by the port State, that the fish on board was taken in accordance with applicable requirements of a relevant RFMO. The PSMA also requires flag States to take investigation and enforcement action to vessels where there are clear grounds to believe its vessel has engaged in IUU fishing, following port State inspection (Selig et al., 2025).

As the PSMA requires information exchange, the Global Information Exchange System (GIES) was launched in 2023 to support the implementation of the instrument. Operational information, including the advance request for port entry, port entry or use denial, port inspection report and actions undertaken by port and flag States following inspection, is exchanged through GIES, with access only granted to relevant stakeholders as per requirements of the PSMA for confidentiality purposes.

In this sense, the Agreement functions as an enforcement mechanism that relies on the ability of port States to identify high-risk vessels to be prioritized for inspection, and to take corresponding measures subject to findings of inspections. Implementation of the PSMA, coupled with improved flag State performance, supported by effective MCS systems and market access and trade measures, would strengthen international efforts to curb IUU fishing and enhance fisheries management and governance at all levels.

Port-based control mechanism and its operational logic

At its core, the PSMA is built on the assumption that IUU fishing can be effectively constrained by limiting access to ports, which are essential nodes for landing, transshipment, and supply (Selig et al. 2025). By shifting enforcement from the high seas to ports, the Agreement reduces reliance on at-sea monitoring and instead concentrates control efforts at geographically fixed locations (FAO, 2009).

However, the operation of this mechanism depends critically on the ability of port States to identify vessels that may have engaged in IUU fishing. This requires effective verification of information regarding vessel identity, fishing activities, and compliance status as submitted by vessels applying for entry, as well as the capacity to assess and act upon such information in a timely manner. Hence there has been an ongoing need for capacity building to support the best practices in the implementation of Port State Measures (FAO, 2026b).

Limitations in ABNJ without RFMO/A coverage

In ABNJ without RFMO/A coverage, the effectiveness of the PSMA faces structural limitations that are closely linked to information availability and institutional coordination. A central challenge lies in the absence of regionally coordinated monitoring systems and IUU vessel lists. Without RFMO/A frameworks, there is no consolidated source of verified information on vessel activities or compliance status in these areas. This might limit port States' ability to determine whether a vessel has engaged in IUU fishing, particularly when activities occur in high seas where surveillance is weak. In such contexts, the identification of high-risk vessels depends more heavily on flag-State reporting, voluntary information sharing, and indirect indicators. Despite the mandatory information sharing requirements

in the PSMA, the sources of information may be incomplete, delayed, outdated, or inconsistent, and quality of inspection reports may vary considerably due to differences in port State capacity, thereby reducing the reliability of risk assessments conducted by port authorities.

WTO Agreement on Fisheries Subsidies

The Agreement on Fisheries Subsidies (FSA) introduces a set of trade-based disciplines that indirectly regulate fishing practices by constraining government subsidies. Rather than providing a comprehensive fisheries management framework, the Agreement establishes targeted rules linking subsidy eligibility to sustainability considerations, supported by transparency obligations and capacity-building provisions (World Trade Organization, 2022).

While the Agreement contains multiple disciplines, its relevance to fishing activities in areas beyond national jurisdiction (ABNJ) without RFMO/A coverage is concentrated in a subset of provisions that operate through distinct regulatory mechanisms.

Spatial prohibition as the primary constraint

The most direct discipline in this context is established under Article 5.1, which prohibits subsidies for fishing or fishing-related activities taking place in areas beyond national jurisdiction and outside the competence of any RFMO/A. This provision prohibits or removes subsidy eligibility for activities occurring in unregulated high seas areas and therefore constitutes the primary point of entry for the Agreement in ABNJ contexts.

However, the practical application of this spatial prohibition is complicated by the nature of fishing operations. Vessels may operate across multiple jurisdictions within a single fishing cycle, combining activities in both regulated and unregulated areas. Under such mixed-operation conditions, the key implementation issue is not the existence of the prohibition itself, but whether, in cases where subsidies are provided, subsidy systems are capable of distinguishing and attributing financial support to specific fishing activities. Where subsidies are allocated at the level of vessels, firms, or annual operations, rather than on the basis of spatially disaggregated fishing effort, isolating the portion associated with unregulated high seas activities becomes operationally challenging (Guggisberg, Jaeckel, & Stephens, 2022).

IUU-based discipline as a cross-cutting constraint

Article 3 of the Agreement prohibits subsidies to vessels or operators that have been affirmatively determined to have engaged in IUU fishing, thereby conditioning subsidy eligibility on compliance status rather than on the characteristics of specific fishing activities.

The effectiveness of the Article 3 subsidy prohibition depends critically on Members or RFMO/As' capacity to detect and affirmatively determine IUU fishing. In ABNJ without RFMO/A coverage, the absence of regionally coordinated monitoring systems, shared IUU vessel lists, and standardised determination procedures means that both detection and recognition of IUU activities rely predominantly on flag-State processes.

In practice, this reliance exposes two key limitations. First, the detection of IUU fishing in distant high seas areas is contingent upon the monitoring capacity of flag States, including their ability to track and verify fishing activities across large and often remote ocean spaces. Second, even where potentially non-compliant behaviour is identified, the translation of such findings into affirmative IUU determinations depends on the existence of appropriate legal frameworks and administrative procedures at the national level. Where such mechanisms are underdeveloped or absent, flag States may be unable to produce the formal determinations required to activate Article 3 (Lee, 2019).

These capacity constraints are likely to impede the effective implementation of the IUU-based subsidy prohibition (Yu & Liu, 2024). Their implications become particularly evident in mixed-operation scenarios, where vessels operate both in regulated areas and in unregulated high seas areas while receiving subsidies. Although subsidies may be lawfully granted for activities conducted in regulated areas, the occurrence of IUU fishing in unregulated areas could, in principle, trigger the prohibition under Article 3 and affect the vessel's overall subsidy eligibility. In this sense, the IUU-based discipline has the potential to function as a cross-cutting, status-based constraint that extends beyond the spatial limitation of Article 5.1.

Subsidies to non-flagged vessels and risk amplification

The Agreement's requirement of "special care" in relation to subsidies to vessels not flying the flag of the subsidising Member further highlights the challenges associated with information asymmetry in ABNJ contexts. Where vessels operate across multiple jurisdictions and supply chains are geographically dispersed, subsidising States may have limited visibility overfishing locations, effort distribution, and compliance status.

These conditions increase the risk that subsidies may inadvertently support activities that fall within the scope of Article 5.1 or Article 3. Empirical evidence suggests that a substantial share of fisheries subsidies is associated with distant-water fishing activities, including operations in foreign waters and on the high seas, reinforcing the importance of accurately identifying the spatial footprint of subsidised fishing (Skerritt et al., 2023).

Transparency as an enabling condition for implementation

In ABNJ without RFMO/A coverage, the effectiveness of the FSA is closely tied to the operation of its transparency provisions. The central issue is not simply whether Members submit notifications, but whether they possess the data systems and analytical capacity required to interpret and act upon the information.

In particular, implementation depends on the ability to identify whether subsidised vessels have operated in unregulated high seas areas, estimate the proportion of fishing effort associated with such activities, and determine whether vessels or operators have been subject to IUU determinations. These tasks require the integration of multiple data streams, including vessel monitoring systems, catch records, and compliance information. In the absence of such integrated systems, transparency obligations may be formally satisfied while remaining substantively limited in their contribution to enforcement (Guggisberg et al., 2022).

Taken together, the application of the FSA in ABNJ without RFMO/A coverage reveals a pattern in which legal disciplines are clearly defined but unevenly operationalised. The spatial prohibition under Article 5.1 establishes a clear boundary, yet its effectiveness depends on the capacity to attribute subsidies to specific fishing activities. The IUU-based discipline under Article 3 provides a potentially broader constraint, but relies on the existence of credible determination mechanisms. Requirements relating to non-flagged vessels and transparency further highlight the importance of information availability and institutional capacity.

BBNJ Agreement

While the recently entered into force *Agreement under the United Nations Convention on the Law of the Sea on the Conservation and Sustainable Use of Marine Biological Diversity of Areas Beyond National Jurisdiction* (hereafter, ‘BBNJ Agreement’) does not directly regulate high seas fishing, it nonetheless establishes binding obligations upon State parties that are relevant to fishing activities in areas beyond national jurisdiction (ABNJs), which include both the high seas and the Area (Kim, 2024; United Nations, 2023).

The BBNJ Agreement's goal is to 'ensure the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, for the present and in the long term' (United Nations, 2023). As such, the instrument is inextricably linked to fisheries operating on the high seas, which exploit such marine biodiversity. Unlike the UNFSA, which promotes sustainability without defining the concept, the BBNJ Agreement provides an explicit definition of 'sustainable use' as 'the use of components of biological diversity in a way and at a rate that does not lead to a long-term decline of biological diversity' (Art 1(13)). It is also worth noting that the BBNJ Agreement further entrenches the precautionary and ecosystem approaches, building on those reflected in the UNFSA, and in doing so extends the application of these principles beyond straddling and highly migratory species to marine biodiversity more broadly in the high seas. This places an obligation upon State parties to consider and apply these environmental conservation-focused approaches to high seas fisheries management measures generally.

Similarly to the UNFSA, the Agreement also puts significant emphasis on States' duty to cooperate (Art 8). States are required to cooperate for the conservation and sustainable use of marine biological diversity in ABNJ and to promote such cooperation among relevant legal instruments and frameworks and relevant global, regional, subregional and sectoral bodies (hereafter, 'IFBs') (Art 8(1)). In the case of high seas fisheries, RFMO/As whose mandates include areas and/or species present on the high seas will therefore be key platforms for States to engage in such cooperation. It is also worth noting that the BBNJ objectives are to be promoted 'as appropriate' by State parties when taking decisions under relevant IFBs (United Nations, 2023). This means that, when deciding on relevant CMMs applying to high seas fisheries, State parties to both the BBNJ Agreement and relevant RFMO/As now have a duty to put forward sustainability and conservation objectives, for the present and in the long-term, when taking decisions regarding CMMs in RFMO/As. The Agreement also places an obligation upon States to enhance cooperation in marine scientific research (United Nations, 2023), further reinforcing existing duties under the LOSC and UNFSA. Overall, these new legal benchmarks strengthen States' general obligation to engage in international cooperation to achieve sustainability in fisheries management. In the context of unregulated high seas fisheries, these benchmarks make clear that continued fishing in the absence of regulatory measures and/or RFMO/As, sits uneasily with State parties' international obligations. Importantly, the obligations set under the BBNJ Agreement apply to States parties irrespective of the existence of an RFMO/A, meaning that the principles of sustainable use, precaution, ecosystem-based management, and focus on the conservation of marine biodiversity in ABNJ govern high seas fishing activities even where formal fisheries management arrangements are absent.

Part II of the Agreement focuses on marine genetic resources (MGRs), specifically excluding its scope of application from fishing and fishing-related activities (United Nations, 2023). Part III however focuses on area-based management tools (ABMTs) (including marine protected areas (MPAs)), which

is of relevance to high seas fisheries due to the potential impacts – or even overlaps – of ABMTs with high seas fishing grounds. The Agreement once again emphasises States’ obligation to cooperate and coordinate, both among themselves and with relevant IFBs, for the establishment and use of area-based management tools (United Nations, 2023). Coastal States and other States fishing for marine species on the high seas will have to ensure that fishing activities are conducted consistently with ABMTs adopted under the BBNJ framework.

A key feature of the BBNJ Agreement is its introduction of a modernised environmental impact assessments (EIAs) regime to ensure that activities undertaken in ABNJ ‘are assessed and conducted to prevent, mitigate and manage significant adverse impacts for the purpose of protecting and preserving the marine environment’. The Agreement establishes requirements for States to conduct EIAs for planned activities under their jurisdiction or control that may have more than minor or transitory effects (or the effects of the activity are unknown or poorly understood) on marine biodiversity in ABNJ (United Nations, 2023), a requirement potentially applicable to certain high seas fishing activities and cumulative fishing impacts. It is also important to note that States that are parties to the BBNJ as well as relevant RFMO/As, have a duty to promote the adoption by those organisations of the EIA standards and procedures set under the BBNJ Agreement (United Nations, 2023). The objective behind this obligation is to both modernise and harmonise the EIA frameworks applicable to high seas activities globally, for more integrated high seas governance.

Some commentators have argued that the BBNJ Agreement may offer added value for high seas fisheries governance by promoting a more coordinated and harmonised approach to management (Wang & Xue, 2026), particularly in light of the fragmented and uneven coverage of existing RFMO/As. In the context of unregulated high seas squid fisheries, the Agreement may provide a framework for enhancing coherence, data-sharing, and biodiversity-focused cooperation among States operating in the absence of dedicated fisheries management arrangements

Discussion and Recommendations

In February 2025 and June 2026, the Korean Maritime Institute (KMI) and the Australian National Centre for Ocean Resources and Security (ANCORS) convened informal dialogues between officials, stakeholders, scientists and experts to share information on high seas trawl and jig fisheries where there is no mandated RFMO/A. These dialogues identified opportunities to strengthen cooperation and examined prevailing barriers and challenges to achieving such cooperation. Participants identified three interconnected priorities for improving the management of fisheries that occur outside existing RFMO/As mandates.

1. Participants emphasised a need for science and data-led collaboration, noting that no single actor holds sufficient information and that shared scientific work offers a low-risk, constructive entry point for cooperation.
2. Ensuring sustainability was seen as the central goal, with participants stressing that effective management depends on robust reporting.
3. Participants highlighted the importance of building trust and engagement among industry, States, and other stakeholders, noting that momentum can be generated through transparent dialogue and collaborative scientific initiatives.

Data-sharing was identified as a key challenge to strengthening cooperation and improving science and management, due to confidentiality concerns, government restrictions, and a strong need for industry engagement.

Persistent confusion around the term ‘Illegal, Unreported and Unregulated (IUU) Fishing’ was also identified as undermining trust and accurate reporting, initially prompting calls to clarify the terminology, but ultimately the dialogues agreed to focus on strengthening cooperation rather than diverting into defining IUU.

Participants also noted that the absence of a RFMO/A represents a significant governance gap, that limits science, data and management cooperation and coordination, underscoring the importance of giving effect to the duty of cooperation established under the UN Convention on the Law of the Sea and the UN Fish Stocks Agreement. States hold a duty to cooperate with each other, including, as appropriate, through the establishment of subregional or regional fisheries organisations or arrangements. Under the UN Fish Stocks Agreement, where there is no RFMO/A for a particular straddling fish stock or highly migratory fish stock, relevant State Parties shall cooperate to establish a RFMO/A or other cooperative arrangement capable of supporting conservation and management, and shall participate in the work of the organization or arrangement.

The lack of an RFMO/A also carries economic and trade implications. For example, the WTO Agreement on Fisheries Subsidies may also have economic and trade implications for fishing in areas beyond national jurisdiction that fall outside the competence of an RFMO/A, particularly in relation to the availability of certain fisheries subsidies. Growing market expectations regarding legality, traceability, labour conditions and supply-chain due diligence further increase the urgency of establishing transparent scientific cooperation and voluntary management standards.

Together, these issues further underscore the need for cooperation. This was also noted by the Second Session of the FAO Sub-Committee on Fisheries Management which (among other things) (FAO, 2026c):

Para 62. recognized persistent data gaps and inconsistencies in reporting, including in high-seas areas beyond RFMO mandates for non-target or unregulated species; and called for national, regional and global reporting processes to be streamlined, harmonized and interoperable, as far as possible, to facilitate greater regional collaboration in science and data;

Para 66. invited FAO Members to strengthen cooperation in areas of the high seas where no subregional or RFMOs or arrangements have been established;

In this context, the second dialogue agreed to establish the informal Global Research Cooperative for High Seas Fisheries (***GRC High Seas***) as an initial mechanism to strengthen cooperation in high seas fisheries beyond the jurisdiction of existing RFMO/As, with an initial focus on the South-West Atlantic (FAO Area 41).

Beginning cooperation through the scientific community was viewed as relatively low-risk and highly valuable. This informal approach could lay the groundwork for longer-term engagement, helping to bridge gaps in understanding, build trust, and enabling more coordinated action. Similarly, the dialogues identified opportunities to coordinate existing domestic arrangements and strengthen cooperation through the voluntary adoption of harmonised minimum standards for flag State and fishing entity regulations for these fisheries.

GRC High Seas welcomed the participation of stakeholders in its dialogues and agreed that industry engagement is critical, particularly in the context of growing market concerns regarding IUU fishing and calls for enhanced transparency. Engagement should be incentivised through inclusive dialogue and collaborative scientific initiatives which can act as a constructive starting point for future cooperation.

The dialogues noted useful precedents for scientific cooperation in the absence of a RFMO/A. For example, the Standing Committee on Tuna and Billfish (SCTB) was established in 1989 as an open forum for scientists and others with an interest in the western and central pacific tuna fisheries to discuss scientific issues related to data, research and stock assessment. It was eventually replaced in 2004 by the Scientific Committee of the Western and Central Pacific Fisheries Commission (WCPFC).

With this in mind, the Second Busan Dialogue agreed to establish ***GRC High Seas*** as an informal cooperation mechanism to support cooperation among flag States and fishing entities with an interest in high seas squid fisheries beyond the jurisdiction of existing RFMO/As. ***GRC High Seas*** partners initially include:

- Korea Maritime Institute (KMI)
- Shanghai Ocean University (SHOU)
- National Sun Yat-sen University's Graduate Institute of Marine Affairs (GIMA),
- Ocean Policy and Research Institute (OPRI)
- Spanish Institute of Oceanography of Spanish National Research Council (IEO-CSIC)
- Umineko Sustainability Institute (USI)
- Australian National Centre for Ocean Resources and Security (ANCORS)

GRC High Seas prioritised the establishment of science and policy groups, the development of an agreed template for annual reporting, collaborative stock assessment for South-West Atlantic squid fisheries, development of minimum standards for flag State control, and the initiation of negotiations towards the establishment of a RFMO/A or other cooperative arrangement for the South-West Atlantic high seas squid and associated fisheries. Any such cooperation or future negotiation should be without prejudice to the sovereignty positions of participating States and should not constitute a precedent or concession regarding any territorial or maritime dispute. A timeline for the initiative was agreed, and the second workshop outcome is provided below and on the following page.

The Second Busan Dialogue on Strengthening Cooperation on Science and Management of High Seas Fisheries beyond the jurisdiction of existing regional fisheries management organisations and arrangements, recommends, on a voluntary and non-binding basis, that:

1. A scientific group be established, with an initial focus on States and fishing entities whose vessels participate/d in the Argentine shortfin squid fishery in the South-West Atlantic high seas. The scientific group discuss, among others, data needs, scientific methodologies to support the assessment of the stock status of Argentine shortfin squid, and any other science-related matters relevant to the fishery. The scientific group shall initially be chaired by Prof. Fan Zhang from Shanghai Ocean University. The chair will convene a virtual meeting in late 2026 to confirm its membership of relevant scientists from partner institutions, identify independent experts to be invited to join the group, and begin the development of a workplan.
2. In parallel, a policy group be established, with an initial focus on flag States and fishing entities whose vessels participate/d in the Argentine shortfin squid fishery in the South-West Atlantic high seas. The policy group shall exchange information on relevant national policies and regulations and explore opportunities for voluntary cooperation and coordination, as appropriate. The policy group shall initially be chaired by Prof. Quentin Hanich from the Australian National Centre for Ocean Resources and Security (ANCORS). The chair will convene a virtual meeting in late 2026 to confirm its membership of relevant policy experts

from partner institutions, identify independent experts to be invited to join the group, and begin the development of a workplan.

3. Relevant international organizations, market representatives and independent experts may be invited as observers or partners, subject to agreement by the group.
4. The Korean Maritime Institute (KMI) and the Australian National Centre for Ocean Resources and Security (ANCORS) serve as coordinators for this process.
5. States and fishing entities wishing to participate in this process designate contact liaison officers for each group and indicate their support for the process in a form they consider appropriate and send this information to the coordinators. In order to inform science and policy discussions, the relevant contact liaison officers will assist with the provision of appropriate information on the South-West Atlantic.

Conclusion

Our study underscores the importance and timeliness of improving management arrangements to safeguard the environmental and economic sustainability of a fishery that is rapidly expanding and evolving. It further identifies opportunities to develop cooperative regional management frameworks capable of regulating these fisheries more effectively in areas where existing regional fisheries management organisations (RFMOs) mandates are extremely limited or non-existent.

By integrating multiple datasets and reviewing the regulatory landscape of key State actors, we analyse similarities and differences in existing management policies, how different gear types operate, the scale and distribution of effort, and the implications for sustainable resource management. Our goal is to support ongoing regional policy conversations by providing an evidence base and by highlighting pathways for strengthening transboundary cooperation, improving transparency, and supporting effective stewardship of squid fisheries beyond current RFMO frameworks.

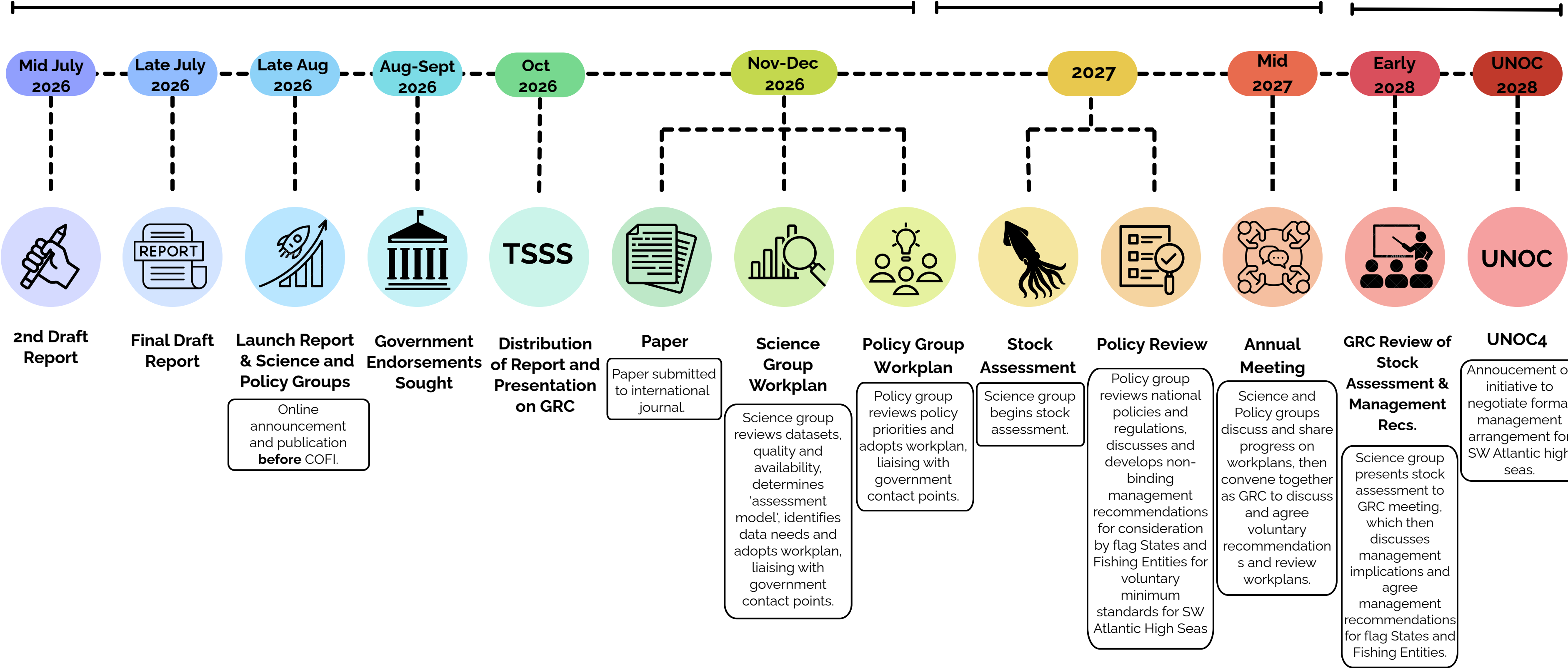
PROJECT TIMELINE

Global Research Cooperative for High Seas Fisheries (GRC High Seas)

2026

2027

2028



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Appendix I – Research Partners Introductions

Australian National Centre for Ocean Resources & Security (ANCORS)

ANCORS is the only multidisciplinary university-based centre of its type in the Southern Hemisphere dedicated to delivering specialised research, advisory services, education and training in ocean law and policy, maritime security, and marine resources management. Originally established as the Centre for Maritime Policy in 1994, ANCORS has developed an unrivalled reputation for ocean research, education and capacity building. Offering a wide range of ocean-related expertise and professional experience, ANCORS has forged a strong reputation as a leading source of authoritative policy development advice and other support services to government, non-government and inter-governmental and agencies in the Indo-Pacific region and beyond.

Korea Maritime Institute (KMI)

The Korea Maritime Institute (KMI) is a government-funded national policy research institute of the Republic of Korea established to support the development of maritime and fisheries policies. KMI conducts interdisciplinary research and policy analysis covering ocean governance, fisheries, maritime affairs, shipping, ports, logistics, and fishing communities. In the fisheries sector, KMI's research focuses on sustainable fisheries, international fisheries governance, and responses to emerging international fisheries issues. Through evidence-based research, policy advisory services, and international cooperation, KMI supports government decision-making and works closely with government agencies and relevant stakeholders to promote sustainable fisheries management and effective fisheries policies.

National Sun Yat-sen University, Graduate Institute of Marine Affairs (GIMA),

The Graduate Institute of Marine Affairs (GIMA) at National Sun Yat-sen University is an interdisciplinary research and education institute within the College of Marine Sciences, focusing on ocean governance, marine policy, and the sustainable use of marine resources. Established in 2006, GIMA brings together expertise in marine science, fisheries, law, economics, policy, and social sciences to address complex marine and fisheries issues. Its work covers areas such as international ocean governance, fisheries management, marine conservation, blue economy, marine spatial planning, and environmental change and adaptation. GIMA also maintains close engagement with government agencies, industry, and international organisations, providing policy-relevant research and expertise on domestic and international marine affairs.

Shanghai Ocean University (SHOU)

Shanghai Ocean University (SHOU) is a multidisciplinary, applied research university, co-established by the State Oceanic Administration, the Ministry of Agriculture and Rural Affairs, and the Shanghai Municipal People's Government. In September 2017, it was elected into the World First-Class Disciplines Project for higher education in China. SHOU is one of the top research institutions in China for fisheries research, particularly for China's distant water fisheries. It is equipped with a number of research platforms, including the National Engineering Research Center for Distant-Water Fisheries, the Key Laboratory of Sustainable Exploitation of Oceanic Fisheries Resources under the Ministry of Education, the Key Laboratory of Oceanic Fisheries Exploitation under the Ministry of Agriculture and Rural Affairs, China Distant-Water Fisheries Data Center, and the Distant-Water Fisheries Training Center of the Ministry of Agriculture and Rural Affairs.

Spanish Institute of Oceanography (IEO)

The Spanish Institute of Oceanography (IEO, CSIC) is a National Research Center of the Spanish National Research Council (CSIC), under the Ministry of Science, Innovation and Universities, dedicated to research in marine science, especially in relation to scientific knowledge of the oceans, sustainability of fishing resources and the marine environment. The IEO was founded in 1914 and provides scientific advice to administrations in matters related to oceanography, marine sciences and multidisciplinary study of the sea, as well as other services for scientific-technological development and maintenance of industrial, social and business activities, with the aim of increasing scientific knowledge of the oceans and the sustainable use of them.

The IEO is a public research organization and distributes its tasks mainly in three major areas: fishing, marine environment and aquaculture. In all of this, it carries out basic and applied research, scientific and technological advice to the different administrations in matters related to oceanography and marine sciences and it is the research and advisory body for the fisheries sector policy of the Government. The IEO is also the advisory body of the Ministry of Agriculture, Fisheries and Food, in relation to the Law on Protection of the Marine Environment. In addition, it is the scientific and technological representative of Spain in most of the forums and international science organizations related to the sea and its resources.

Umineko Sustainability Institute (USI)

Umineko Sustainability Institute (USI) is a research institute dedicated to advancing sustainable fisheries policies and conserving and restoring marine biodiversity. USI was founded in Sapporo, Japan, in 2021 by a former official of Japan's Ministry of Agriculture, Forestry and Fisheries. The institute convenes discussion groups composed of former government officials, researchers, fishers, and civil

society organizations to develop policy proposals aimed at promoting sustainable, science-based fisheries management and expanding effectively managed marine protected areas in Japan.

Ocean Policy Research Institute (OPRI)

"As a Think, Do, and Innovate-Tank, Ocean Policy Research Institute (OPRI) takes a comprehensive view on a wide range of ocean-related issues, analyzing challenges through a scientific approach that integrates the natural and social sciences as well as the humanities. We propose feasible strategies to serve as reference for policymakers in the international community and strive to engender an environment conducive to making these policies a reality. At OPRI, we are committed to using policy research approaches to assist in resolving the myriad marine challenges we face and help establish a new ocean governance so that we may ensure future generations can enjoy healthy waters for years to come."

Appendix II –Flag State and Fishing Entity Maps of Apparent Fishing Effort in SW Atlantic

Maps in this appendix have been created using vessel monitoring system (VMS) data (China) or GFW AIS data (Korea, Japan, Spain, Chinese Taipei and Falkland Islands Government), and they are intended as a broad representation of the spatial extent of squid fishing by fleets in a given year, and not as a precise representation of fishing hours and locations. Notably, the Falkland Islands Government, Japan, and Spain do not have any observed jigging hours in the region, and Chinese Taipei does not have any observed trawling hours in the region.

Jig Fisheries

China

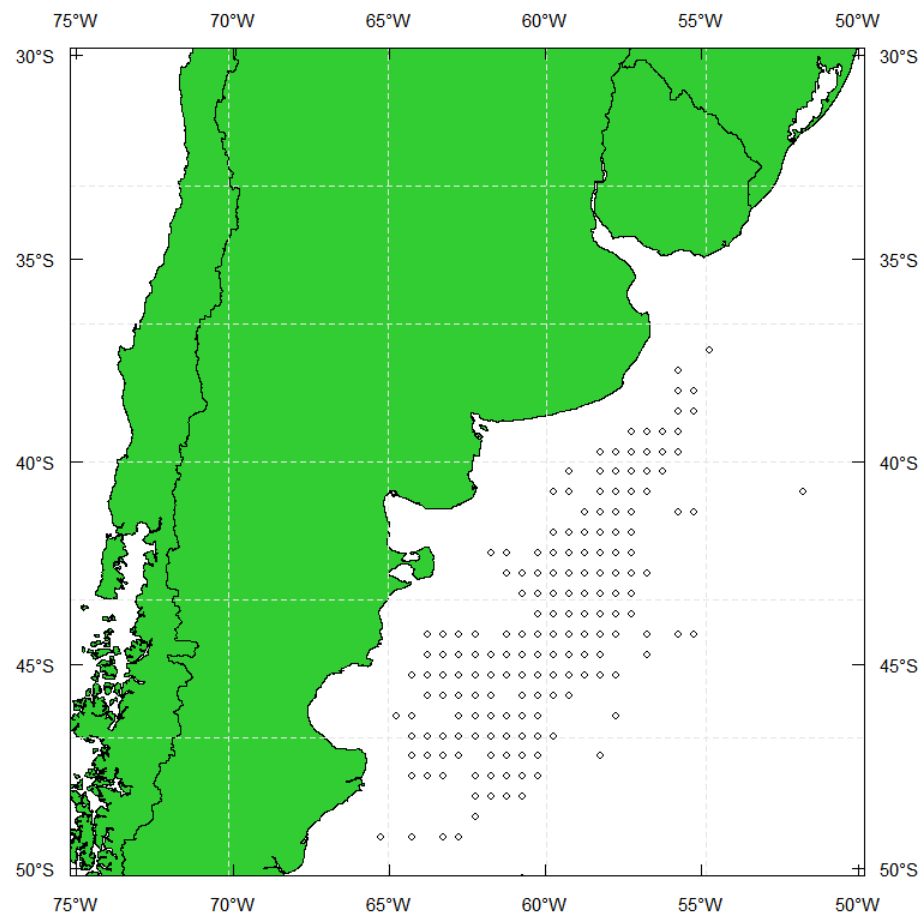


Figure 1. Chinese jig fishing ground distribution of *Illex argentinus* in the South-West Atlantic in 2024

Chinese Taipei

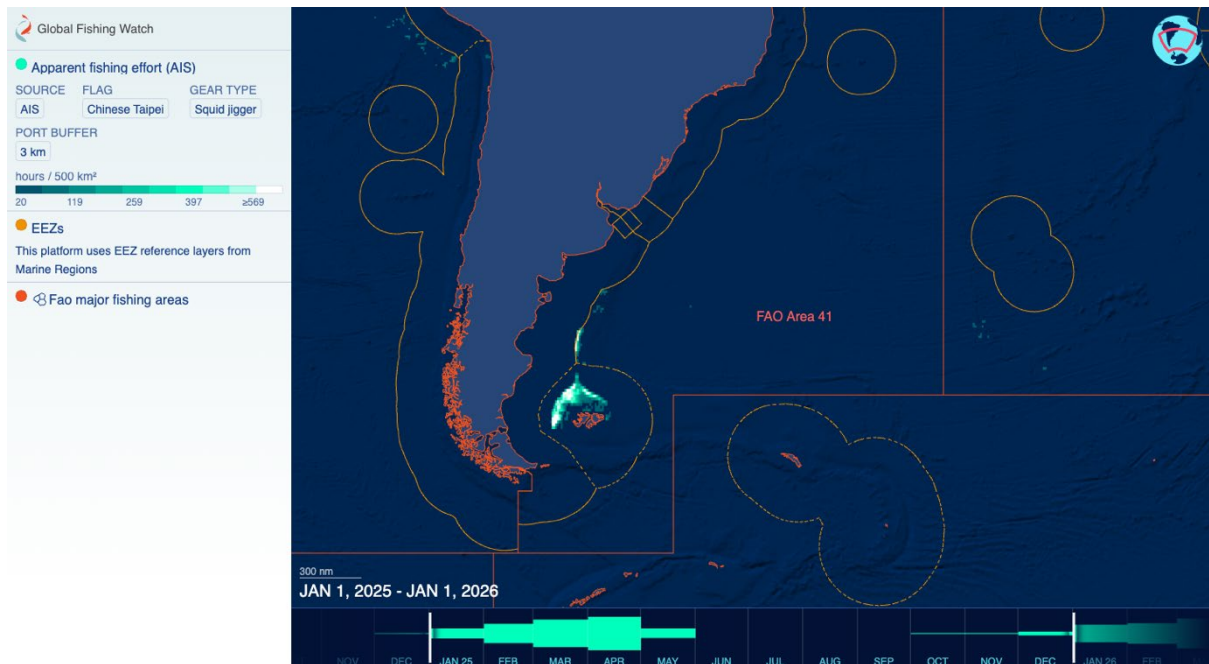


Figure 2. Heat map of apparent Chinese Taipei jig fishing effort identified in AIS in and near FAO Area 41 using GFW data in 2025

Korea

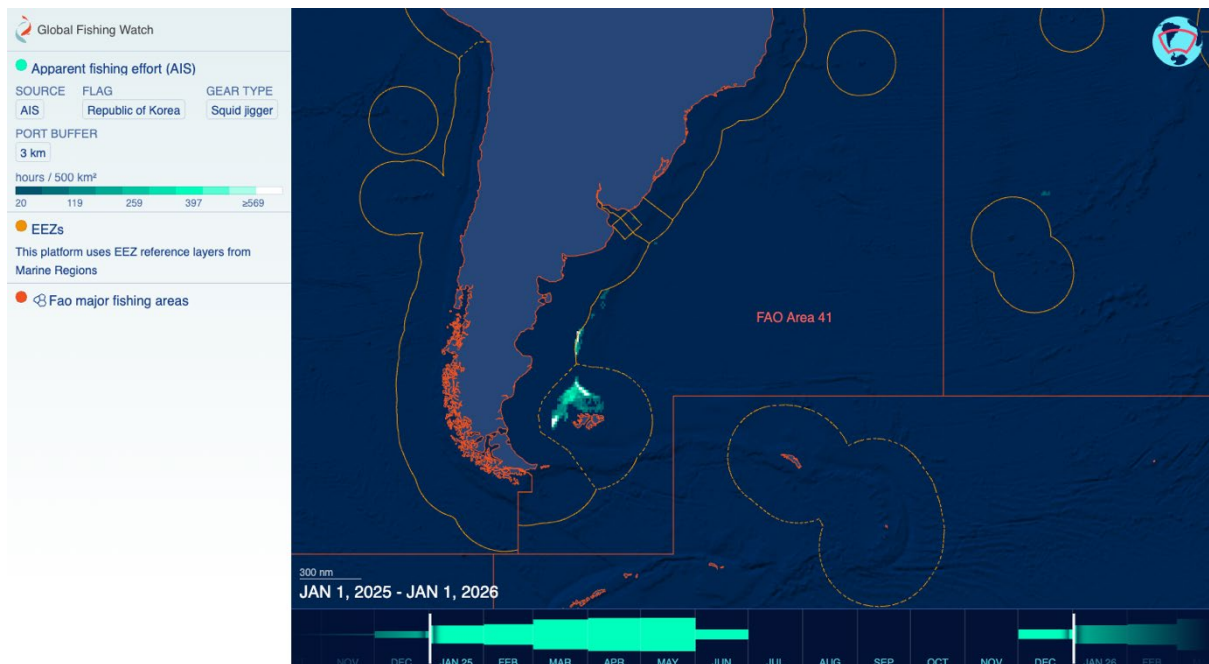


Figure 4. Heat map of apparent Korean jig fishing effort identified in AIS in and near FAO Area 41 using GFW data in 2025

Trawl Fisheries

China

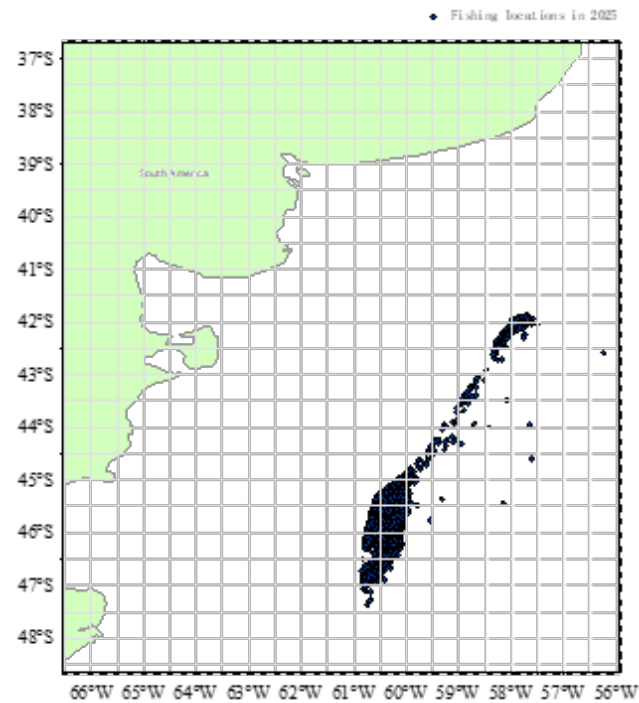


Fig.6 Spatial distribution of trawl fishing locations in the South-West Atlantic in 2025

Falkland Islands Government

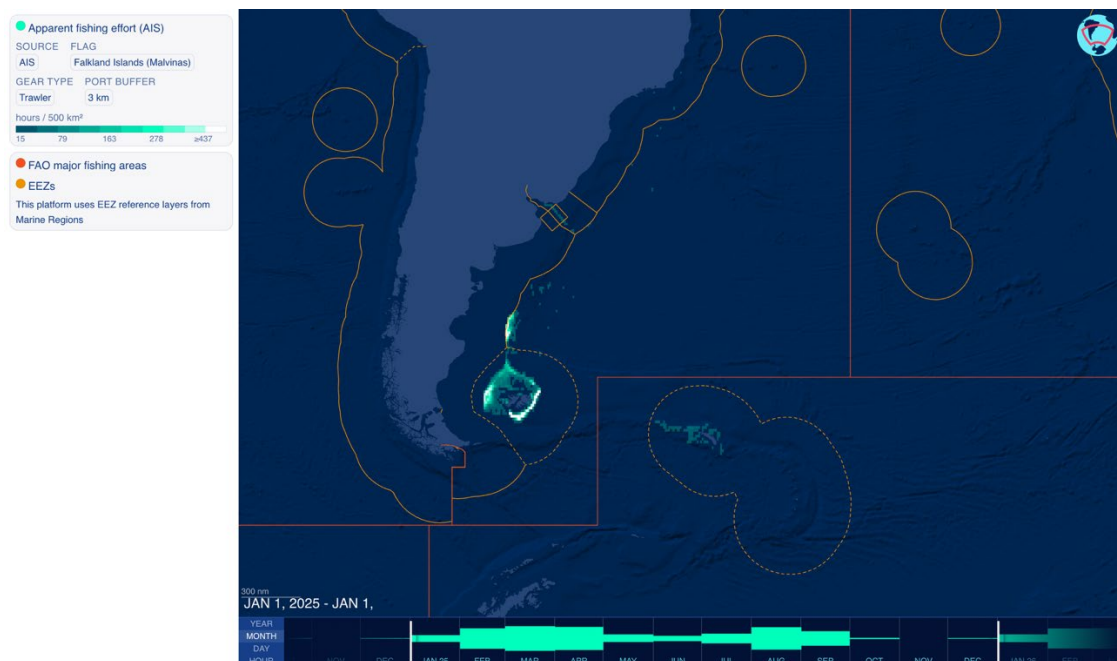


Figure 8. Heat map of apparent Falkland Islands Government registered trawl fishing effort identified in AIS in and near FAO Area 41 using GFW data in 2025

Korea

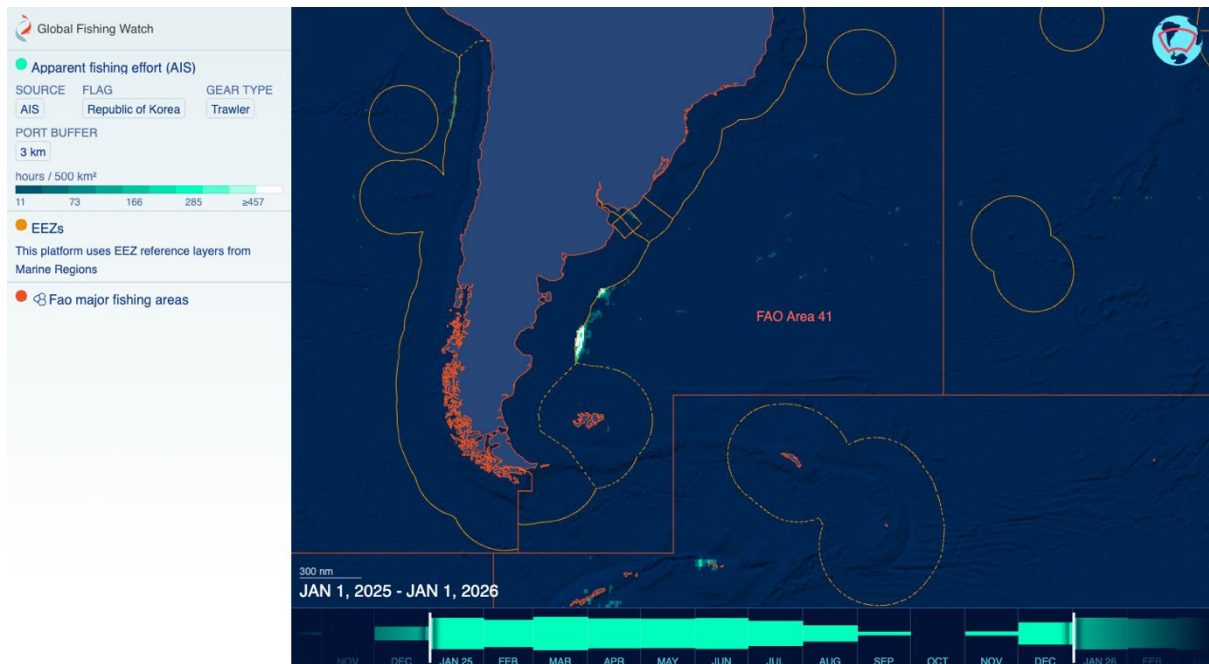


Figure 10. Heat map of apparent Korean trawl fishing effort identified in AIS in and near FAO Area 41 using GFW data in 2025

Spain

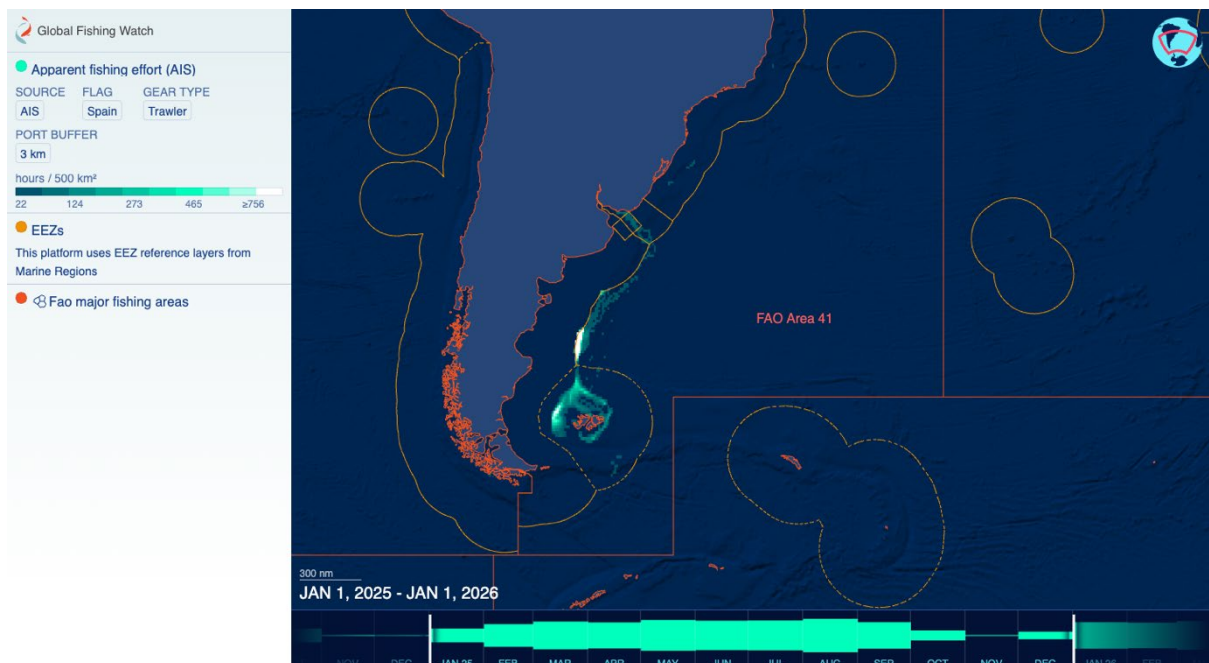


Figure 11. Heat map of apparent Spanish trawl fishing effort identified in AIS in and near FAO Area 41 using GFW data in 2025

Appendix III –Flag State and Fishing Entity Scientific Programs and Reports for SW Atlantic Trawl and Jig Fishing

Spain

Scientific monitoring of Spanish fishing in SW Atlantic

In 1989, the Long-Distance Fisheries Programme of Spanish Institute of Oceanography (IEO) based on its Oceanographic Centre in Vigo (IEO-COV) started the study of the fishing activities carried out by the Spanish fleet in the South-West Atlantic (FAO 41). This systematic monitoring has been carried out continuously to the present. The scientific monitoring of Spanish fisheries in area FAO 41 includes the collection of commercial information from fishing companies and a programme of scientific observers on board Spanish commercial vessels operating in those fishing grounds. The main objectives of this observer programme are to collect commercial and scientific data for monitoring fishing activities and to improve the knowledge on the biology and the abundance/distribution of the main commercial stocks. The selected scientific observers received a specialized training course at IEO-COV before its deployment to the fishing area. During their stay in the fishing grounds, the observers recorded in a haul by haul basis data on fishing activity such as catch and discards of all target species, effort data, position, depth, biological and length frequency samples (for both retained and discarded species) and collected biological samples such as otoliths, scales, stomachs, gonads, etc., for further analysis in the laboratory.

Study on Marine Vulnerable Ecosystems in SW Atlantic (Project ATLANTIS)

Following the recommendations of the United Nations (UNGA Resolutions 59/25 and 61/105) and the International Guidelines for the Management of Deep Sea Fisheries in the High Seas (FAO, 2008), the Spanish Institute of Oceanography in collaboration with the Secretariat General of the Fisheries (SGP), conducted a series of multidisciplinary research surveys in international waters of the South-West Atlantic (FAO 41), onboard of the R/V Miguel Oliver. These surveys were part of the activities of the IEO ATLANTIS Project, which aimed to study the fisheries and marine resources in the waters of South-West Atlantic. The overall objective of the surveys was to characterize and locate Vulnerable Marine Ecosystems (VMEs), and to propose a series of possible marine protected areas, based on both biological and geological criteria, to limit the impact of bottom trawling on VMEs. 13 multidisciplinary research surveys were conducted between October 2007 and April 2010, in the international waters of the South-West Atlantic between parallels 42° and 48° S and up to 1500 m deep, beyond the 200 nm EEZs of adjacent coastal States.

The main tasks performed during the surveys were: mapping the seabed, description of types of sea floors and benthic fauna, obtaining indices of biomass and abundance of species of greatest commercial interest and, finally, localization and characterization of sensitive habitats. The work done during 347 days at sea during multidisciplinary surveys were:

- Prospecting for a total area of 59,105 km².
- Performing a total of 91,905 km of geophysical profiles.
- 102 samples with rock dredge.
- 209 samples with Box-Corer dredge.
- 519 CTD stations.
- 413 fishing hauls.
- 413 sediment samples collected with the net.
- Collection of several thousand batches of samples of benthos representing hundreds of thousands of specimens and / or colonies.
- Realization of thousands of photographs of benthic species, hundreds of high-resolution digital images and dozens of hours of video made with a remote observation underwater vehicle (ROV).

With the information and data obtained from these research surveys, from the pilot studies of experimental fisheries and from the scientific observer program, a proposal was developed based on the biological and geological criteria adopted for quantitative, qualitative and geographical description of the areas in which the existence of organisms classified as vulnerable had been observed. The final result was the proposal of 9 protection areas or regions that reach a total area of approximately 41.300 km², and were designated as candidate areas for closure to bottom fishing. On the basis of this scientific advice, the Spanish Government closed to bottom fishing by Spanish vessels from 1 July 2011. In September 2011, the work performed by Spain (the only country that has promoted it) in the South Atlantic was presented to the UN Headquarters (New York) and included as an example on the reports of NGOs in the context of a workshop (informal consultation) to review the implementation of paragraphs 80 and 83-87 of resolution 61/105 and paragraphs 117 and 119-127 of Resolution 64/72 on sustainable fisheries, which deal with the effects of fishery in sea floor on vulnerable marine ecosystems and the long-term sustainability of fish stocks in high seas in the frame of the ongoing review of the above mentioned resolutions on sustainable fisheries. Below is a list of references to some of the scientific studies done in SWA, using data both from the observer's programme and the ATLANTIS Project:

- Del Río, J.L., Acosta, J., Cristobo, J., Portela, J.M., Parra, S., Tel, E., Viñas, L., Muñoz, A., Vilela, R., Elvira, E., Ibarrola, T., Pilar Ríos, P., Almón, B., Blanco, R., Murillo, J., Polonio, V., Fernández, J., Cabanas, J.M., Gago, J., González-Nuevo, G., Cabrero, A., Besada, V., Schultze, F., Franco, A., Bargiela, J. y García, X. 2012. Estudio de los Ecosistemas Marinos

Vulnerables en aguas internacionales del Atlántico Sudoccidental. Temas de Oceanografía N° 6. ISBN: 978-84-95877-24-6. Edita: Instituto Español de Oceanografía. Ministerio de Economía y Competitividad. 238 páginas.

- Durán Muñoz, P., Sayago-Gil, M., Murillo, F.J., Del Río, J.L., López-Abellán, L.J., Sacau, M., and Sarralde, R. 2011. Actions taken by fishing Nations towards identification and protection of vulnerable marine ecosystems in the high seas: the Spanish case (Atlantic Ocean). *Marine Policy*, 36: 536-543.
- J.M. Portela, G.J Pierce., J.L. Del Río, M. Sacau, T. Patrocinio and R. Vilela. 2010. Preliminary description of the overlap between squid fisheries and VMEs on the high seas of the Patagonian Shelf. *Fisheries Research*, 106: 229-238.
- Muñoz, A., Cristobo, J., Ríos, P., Druet, M., Polonio, V., Uchupi, E., Acosta, J., Iglesias, S., Portela, J., Del Río, J.L., Parra, S., Sacau, M., Vilela, R., Patrocinio, T., Almón, B., Elvira, E., Jiménez, P., Fontán, A., Alcalá, C. and López, V. 2012. Sediment drifts and cold-water coral reefs in the Patagonian upper and middle continental slope. *Marine and Petroleum Geology*. Volume 36, 70-78.
- Muñoz, A., Acosta, J., Cristobo, J., Druet, M., Uchupi, E., Iglesias, S., Portela, J., Del Río, J.L., Parra, S., Sacau, M., Vilela, R., Patrocinio, T., Ríos, P., Almón, B., Elvira, E., Jiménez, P., Fontán, A., Alcalá, C. and López, V. 2013. Geomorphology and shallow structure of a segment of the Atlantic Patagonian margin. *Earth-Science Reviews* 121 (2013), 73–95.
- Portela, J., Acosta, J., Cristobo, J., Muñoz, A., Parra, S., Ibarrola, T., Del Río, J.L., Vilela, R., Pilar Ríos, P., Blanco, R., Almón, B., Tel, E., Besada, V., Viñas, L., Polonio, V., Barba, M. and Marín, P. 2012. Management Strategies to Limit the Impact of Bottom Trawling on VMEs in the High Seas of the SW Atlantic. *Marine Ecosystems*. Dr. Antonio Cruzado (Ed.). ISBN: 978-953-51-0176-5. Publisher: InTech. 310 pages.
- Rosas-Luis, R., Sánchez, P., Portela, J.M. and Del Río, J.L. 2014. Feeding habits and trophic interactions of *Doryteuthis gahi*, *Illex argentinus* and *Onykia ingens* in the marine ecosystem off the Patagonian Shelf. *Fisheries Research*, 152: 37-44.
- R. Vilela, D. Conesa, J.L. del Río, A. López-Quílez, J. Portela and J.M. Bellido. 2018. Integrating fishing spatial patterns and strategies to improve high seas fisheries management. *Marine Policy*, 94: 132-142.
- Tingley, G., Del Río Iglesias, J.L. and Cristobo, J. 2016. South-West Atlantic Ocean. Pages 69-76 in FAO (2016): *Vulnerable Marine Ecosystems: Processes and Practices in the High Seas*. Thompson, A., Sanders, J., Tandstad, M., Carocci, F., and Fuller, J. (eds). FAO Fisheries and Aquaculture Technical Paper No. 595. ISBN: 978-92-5-109340-5. Rome, Italy. 200 pp

China

China has conducted several research and scientific survey programs in recent years to support efforts in understanding the stock status and structure of squids in the SW Atlantic. Below is a partial list of references to some of the scientific studies done in SWA:

- Chen, X., Liu, B., Chen, Y. 2008. A review of the development of Chinese distant-water squid jigging fisheries. *Fisheries Research*, 2008, 89: 211–221.
- Chen X., Lu H., Li S., Liu B., Chen Y. 2012. Species identification of *Ommastrephes bartramii*, *Dosidicus gigas*, *Sthenoteuthis oualaniensis* and *Illex argentinus* (Ommastrephidae) by beak characters. *Scientia Marina*, 76(3): 473-481.
- Chen, X., Lu, H., Liu, B. 2012. Sexual dimorphism of statolith growth for *Illex argentinus* off the Exclusive Economic Zone of Argentinean waters. *Bulletin of Marine Science*, 88(2): 353-362.
- Zang, N., Lin, D., Punt, A., Chen, X. 2023. Nutrient allocation to eggs in female Argentine shortfin squid, *Illex argentinus* using fatty acids as nutrient indicator. *Canadian Journal of Zoology*, 101(19): 709-719.
- Zhang, L., Feng, Z., Jin, P., Yu, W. 2025. Evaluating non-stationary impacts of climate and environmental conditions on Argentine shortfin squid (*Illex argentinus*) in the southwest Atlantic Ocean. *Marine Environmental Research*, 107585.
- Lin, D., Zang, N., Wei, S., Punt, A., Gong, Y., Li, G., Chen, X. 2025. Dietary specialization among individual squid: using *Illex argentinus* as a case and meta-analysis for other squid species. *Proceedings of the Royal Society B*, 292:2042.
- Lin, D., Chen, X., Wei, Y., Chen, Y. 2017. The energy accumulation of somatic tissue and reproductive organs in post-recruit female *Illex argentinus* and the relationship with sea surface oceanography. *Fisheries Research*, 185:102-114.
- Jintao W., Yuqing, J., Junbo, Z., Chen, X. 2020. Catch per unit effort (CPUE) standardization of Argentine shortfin squid (*Illex argentinus*) in the Southwest Atlantic Ocean using a habitat-based model. *International Journal of Remote Sensing*, 41(24):9309-9327.
- Yan, L., Xiumei, Z., You, Z., & Ming, S. 2012. An analysis of biological characteristics of Argentine shortfin squid *Illex argentinus* collected by trawl in South-West Atlantic in 2011. *South China Fisheries Science*, 8(3), 39-47.
- Wei, Y., Hewei, L., Chen, X. 2024. A review of fishery ecosystems and their responses to climate variability in South-West Atlantic Ocean. *Journal of Shanghai Ocean University*, 33(1): 211-229.
- Shang, C., Han, H., Jiang, K., Shi, Y., Fan, W., Tang, F., ... & Cui, X. 2025. Construction and Comparison of Different Models to Forecast Central Fishing Grounds for Trawl Fishery

Targeting Argentine Shortfin Squid (*Illex argentinus*) in the South-West Atlantic. *Fishes*, 10(12), 610.

- Hao, Y., Wan, R., Zhou, C., Ye, X., Guan, Q., & Zhang, X. 2022. Hydrodynamic performance of Argentine shortfin squid (*Illex argentinus*) bottom trawl. *South China Fisheries Science*, 18(5): 118-127.

Chinese Taipei

In Chinese Taipei, there have been several research projects on squid stock assessment and biology from national scientific programmes and reports in the SW Atlantic, however, neither is considered publicly available. Brief information on those projects is available on the government website, see for example:

- [Research on Marine Conditions and Resources of Squid Fishing in Argentina. 2014. Government of Taiwan.](#)
- [Research on the marine conditions and resources of squid fishing in Argentina. 2013. Government of Taiwan](#)
- [Marine conditions and resources of squid fishing in Argentina \(100\). 2011. Government of Taiwan](#)

Additional information from related programs can be found through the following:

- Overseas Fisheries Development Council. *Taiwan Squid & Saury Fisheries Association South-West Atlantic Argentine Shortfin Squid Fishery Improvement Project Needs Assessment Report*. (2022).
- Chen, Chih-Hsin . 2019. Research on the resources of Argentine squid and giant red squid. Fisheries Agency, Council of Agriculture, Executive Yuan.
- Chen, Chih-Hsin . 2018. Biological and resource studies of squid and saury (1) Resource studies of Argentine squid and giant red squid. Fisheries Agency, Council of Agriculture, Executive Yuan.
- Chen, Chih-Hsin . 2017. Biological and resource studies of squid and saury (2) Resource studies of Argentine squid and giant red squid. Fisheries Agency, Council of Agriculture, Executive Yuan.
- Chen, Chih-Hsin. 2016. Biological and resource research on squid and saury - resource research on Argentine squid and giant red squid. Fisheries Agency, Council of Agriculture, Executive Yuan.

Falkland Islands Government

The only available stock assessment report on *Illex argentinus* is found at the reference below. The fishery statistics are publicly available in the Falkland Islands Annual Bulletins, available at <https://www.gov.fk/fisheries/publications/bulletins/>. While these cover Illex catches in the EEZ in considerable detail (fleet structure, etc.), they do not extend to high seas catches. Annual catches by vessels flagged to the Falklands Islands Government are also available through FAO, though FAO figures since 2012 appear to exclude high seas catches as well. Beyond the above, we are not aware of any Falkland Islands Government reports specifically covering the Illex fishery on the high seas.

- Winter, Andreas. 2019. Joint Survey and Stock Assessment Shortfin squid *Illex argentinus*. SA-2019-ILL. Natural Resources – Fisheries Falkland Islands Government. Stanley, Falkland Islands.

Appendix IV - Flag State and Fishing Entity Regulations and Policies for Trawl and Jig Vessels in High Seas Squid and Associated Fisheries beyond existing RFMO jurisdiction (i.e Unregulated but legal)

In the absence of consistent multilateral management institutions, flag State and fishing entity regulations and policies serve as one of the primary mechanisms of managing fishing effort and catch in the high seas of the SW Atlantic. The table below is a preliminary summary of the existing flag State regulations of key fleets fishing squid in the region, and includes all global policies/regulations for fleets, with further detail on specific measures that only apply to Area 41 such as seasonal moratoria etc.

	Logbook and/or e-Reporting	VMS / AIS	Observers and/or e-Monitoring	Landing and/or Transshipment (i.e PSMA, reporting, notifications, etc)	Conservation, Management (i.e capacity limits, gear restrictions, bycatch, moratoria)	Crew Welfare	Science
China	Fisheries Law/Regulations on the Management of Distant Water Fisheries – Establishes fishing logbooks requirements for DWF vessels. Records to be kept for 2 years min. Circular of the Ministry of Agriculture and Rural Affairs on the Implementation of	Fisheries Law – Establishes VMS installation requirement for fishing vessels + Prohibits tempering, concealing and destruction of VMS and navigation data. Fisheries Law / Regulations on the Management of Distant Water Fisheries)– Establish	Regulations on the Management of Distant-Water Fisheries/Rules for the Management and Implementation of National Observers for Distant Water Fisheries, MARA General Office (Fisheries), Document No. 72 [2016] – DWF vessels must accept and cooperate with	Fisheries Law – Medium and large vessels must accurately complete and retain fishing logbooks incl. info on transshipment operations for 2 years min, with offences subject to penalties. Regulations on the Management of Distant Water Fisheries – Requirement for fishing enterprises to report monthly catch data.	Fishing licence Fisheries Law – Vessels must hold a valid fishing license, comply with all license conditions, and face confiscation, fines, or license revocation for unlicensed or unauthorized fishing. Management measures for squid MARA Circular on Implementing the High Seas Voluntary Fishing Moratorium Measures – During the high-seas voluntary moratorium	Regulations on the Management of Distant-Water Fisheries – Requires DWF enterprises to contract directly with crew or authorized agencies, ensure insurance and timely wages, protect crew rights, and prohibit unreasonable fees.	MARA Circular on Strengthening the Conservation of High Seas Squid Resources and Promoting the Sustainable Development of Distant-Water Fisheries, MARA Fisheries Bureau, Document No. 16 [2020] – Provides for strengthening of partnerships between research institutions and DWF enterprises

	Electronic Fishing Logbook Management Measures for High Seas Fisheries, MARA General Office (Fisheries), Document No. 9 [2022] – All high seas fishing vessels shall implement electronic fishing logbooks as of 1 January 2024. MARA Circular on Strengthening the Protection of Bycatch Species in Distant-Water Fisheries, MARA Fisheries Bureau(Distant-Water Fisheries), Letter No. 116 [2021] – Establishes requirement (since Jan 2022) for relevant DWF vessels to submit Key Bycatch Species Monitoring Record to the China Distant-	requirement for DWF vessels to have functioning VMS report location at frequency of no less than 24x per day. Measures for the Administration of Vessel Position Monitoring of Distant Water Fishing Vessels, MARA Fisheries Bureau, Document No. 22 [2019 –] – Requires AIS use where vessel position monitoring installation is prohibited and forbids tampering with vessel monitoring equipment.	relevant RFMO/national observers and not assign them to unrelated tasks. MARA Circular on Strengthening the Management of High Seas Transshipment in Distant-Water Fisheries, MARA Fisheries Bureau, Document No. 12 [2020]]/Rules for the Management and Implementation of National Observers for Distant Water Fisheries, MARA General Office (Fisheries), Document No. 72 [2016] – Requires carrier vessels engaged in high-seas transshipment to take MARA observers or use approved electronic monitoring,	MARA Circular on Strengthening the Management of Transshipment in the High Seas for Distant-Water Fisheries, (MARA Fisheries Bureau, Document No. 12 [2020] – Requires (since Jan 2021) for all HS transshipment activities to be reported – both prior and after transshipment occurs.	(since 2020), squid vessels must not fish, remain in, or transit designated areas except in reported emergencies. No permitted increased in numbers of squid jigging vessels on HS. MARA Circular on Strengthening the Conservation of High Seas Squid Resources and Promoting the Sustainable Development of my country's Distant-Water Fisheries –Encourages development of environmentally friendly squid fishing gear and methods – particularly for squid trawlers in SW Atlantic, which are advised to convert to purse seine or squid jigging vessels to reduce adverse environmental impacts. IUU fishing Regulation on the management of distant water fisheries – DWF	Circular from the Ministry of Agriculture and Rural Affairs, the Ministry of Foreign Affairs, and the National Immigration Administration on Further Strengthening the Management and Services for Foreign Crew Members of Distant-Water Fisheries, MARA Fisheries Bureau, Document No. 13 [2024] – Provides for the non-discrimination and equal conditions for all seafarers, provides proper safety equipment and medical care, and requires timely reporting and assistance for any serious crew injury or illness.	on resource surveys and assessments. MARA Circular on Implementing the 2023 High Seas Voluntary Fishing Moratorium Measures – Calls for scientific monitoring during the moratorium to collect and analyse resource and catch data, assess effectiveness, and provide evidence for policy improvement. White Paper on China's Distant-Water Fisheries Compliance to international fishery- related instruments – Promotes long-term high-seas resource monitoring, scientific participation in
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	Water Fisheries Data Center within 7 days.		submit e-monitoring data and reports, and fully support observer duties.		vessels operating in RFMO areas must comply with relevant RFMO(s) CMMs. Fisheries law enforcement agencies to strengthen coordination to combat IUU fishing. Strict penalties apply to vessels engaging in IUU fishing + individuals involved in serious law violations and regulations shall be blacklisted and prohibited from working in DWF industry for 3 years min. Protection of Marine mammals and bycatch species MARAs Circular on Strengthening the Protection of Marine Mammals/Bycatch Species in Distant Water Fisheries, MARA Fisheries Bureau (Distant-Water Fisheries), Letter No. 116 [2021] – Requires releasing and recording marine mammals, using bycatch-reduction tools,		assessments and RFMOs, and full data sharing to support ecosystem-based, sustainable fisheries management.
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					and prohibiting retention or transshipment of protected species. MARA Circular on Strengthening Distant Water Fishing Safety at Sea and Preventing Violations of Foreign Laws and Regulations, MARA Office (Fisheries), Document No. 80 [2018] Penalties for non-compliance and infringements Penalties apply for unauthorized fishing, violating approved area/gear/species/quota rules, using prohibited gear or taking protected species, falsifying or failing required reports, refusing observers, tampering with VMS/AIS, and engaging in IUU fishing.		
Falkland Islands Government	<u>Fisheries (Conservation and Management) Ordinance 2005</u> – Makes provision for the collection of statistics relating to fish	<u>Fisheries (Conservation and Management) Ordinance 2005</u> – Makes provision for the monitoring,	<u>Fisheries (Conservation and Management) Ordinance 2005</u> – Makes provision for the establishment of	<u>Fisheries (Conservation and Management) Ordinance 2005</u> – Makes provision for granting of a transshipment license to a fishing vessel transferring	<u>Fisheries (Conservation and Management) Ordinance 2005</u> – Prohibits fishing on the high seas by Falkland Islands fishing vessels except under the	<u>The Fishing Vessels (Codes of Practice) Regulations 2017</u> – Sets out requirements for minimum dimensions of	<u>Fisheries (Conservation and Management) Ordinance 2005</u> – Makes provision for granting a scientific permit,

	stocks and fishing on the high seas, including fishing areas, catches and landings. <u>High Seas Fishing Licence</u> – Requires licensed high seas fishing vessels to daily record and report fishing area, effort and catch to the Falkland Islands Fisheries Department.	control and surveillance of the operations of Falkland Islands fishing vessels on the high seas. Requires the installation, maintenance in working order, and operation of a satellite-tracking device. <u>High Seas Fishing Licence</u> – Requires licensed high-seas fishing vessels to operate a VMS.	an observer program, including the powers of observers, the obligations of fishing vessels carrying observers, and the types of information that may be collected and must be provided upon request by observers. <u>High Seas Fishing Licence</u> – Requires the master of the vessel to facilitate the embarkation, accommodation and work of an observer if requested by the Director of Fisheries.	fish or to a vessel receiving fish. <u>Fishing, Trans-shipment and Export Regulations 2022</u> – Specifies the particulars to be included in the license, as well as the applicable license fee. <u>License to Tranship</u> – Sets out the time periods and areas within which trans-shipment is authorised. Requires a 24-hour advance notification prior to all trans-shipments, and obliges the trans-shipment vessel to complete the Trans-shipment Log and the receiving vessel to complete the Reefer Acceptance Log.	authority of a high seas fishing licence. Makes provision for restrictions on high seas fishing licences, including the fishing area, period, target species, and method of fishing. <u>High Seas Fishing Licence</u> – Specifies permitted fishing gear, fishing area, fishing period, and target species. Sets out required mitigation measures to reduce seabird mortalities. Fishing for <i>Illex argentinus</i> is permitted from 1 January to 15 June in FAO Area 41, south of 38°S.	crew sleeping quarters, recreational facilities, fishermen’s work agreements, food quality and quantity, payment of fishers, health and safety standards, and maintenance of the crew list. <u>Maritime Ordinance 2017</u> – Establishes minimum manning requirements, provisions for medical care for fishers, and maintenance of the crew list.	authorising the use of a fishing vessel for scientific research in a specified area of the fishing waters or within a specified fishery.
Korea	Distant Water Fisheries Development Act – Requires distant-water fishing vessels to report	Distant Water Fisheries Development Act – Requires authorized distant-water	Distant Water Fisheries Development Act – Provides for fisheries observer programs to	Distant Water Fisheries Development Act – Requires the reporting of landings and transshipment activities and prohibits	Distant Water Fisheries Development Act – Establishes a licensing system for distant-water fisheries and requires compliance with	Seafarers’ Act and related subordinate regulations – provide the legal framework for the	Distant Water Fisheries Development Act – provides the legal basis for fisheries research,

	fishing operations, catches, landings, transshipment, and sales through the national fisheries reporting system. Reported information supports fisheries monitoring, compliance, and fisheries statistics.	fishing vessels to install and continuously operate a vessel monitoring system (VMS). VMS information is used to monitor fishing activities and support fisheries compliance and enforcement.	collect scientific information and monitor compliance with fisheries conservation and management measures. Observer programs also support international fisheries cooperation and scientific research / EM is implemented through Ministry-led pilot	unauthorized transshipment and transshipment associated with illegal, unreported and unregulated (IUU) fishing / the FAO Port State Measures Agreement (PSMA) is implemented at the national level	applicable conservation and management measures adopted by coastal States, RFMOs, and other international fisheries obligations. The Act also identifies serious fisheries violations, including unauthorized fishing, false reporting, prohibited fishing methods, and illegal transshipment.	protection of crew rights, working conditions, and welfare / Ministry of Oceans and Fisheries policies support the welfare of distant-water fishing crews	data collection, and scientific surveys in international waters, including the operation of observer programs and participation in international scientific cooperation
Japan	Fisheries Act – requires licensed fishers to submit catch reports electronically on a monthly basis	Fisheries Act – requires VMS for all fishing vessels engaged in distant water fisheries. AIS is not required for fishing vessels	Observers and/or e-Monitoring are not required	Fisheries Act and related subordinances – prohibits transshipment for distant water jig vessels. Japan has also ratified PSMA and follows it rules	Fisheries Act – provides a licensing and entry control system, with license conditions defining fishing areas, target species, and authorized gear. Distant water jig vessels are allowed to operate only in NPFC area, and it follows NPFC Conservation and Management Measures	Seamen’s Act – regulates working hours, rest periods, wages, safety, and medical care of crew members onboard vessels.	Fisheries Act – regulates distant water jig vessels to operate only in NPFC area and it follows NPFC Conservation and Management Measures
Spain / EU	The Law 14/2014 on Maritime Navigation and EU regulations apply	AIS is mandatory in Spain for all fishing vessels over 15 meters	IEO Observer Programme (Spain);	Landings under the rules of the PSMA agreement. All landing information must be included in the	The regulation of the Spanish fishing fleet in international waters is governed by a	International Convention for the Safety of Life at Sea (SOLAS);	IEO Observer Programme for monitoring of

	strict monitoring. Vessels are required to have Electronic Logbooks (ERS) and submit them daily. The use of logbooks is regulated by Council Regulation (EC) No 1224/2009 and the Spanish Order ARM/3145/2009, which outlines the implementation of electronic recording for Spanish fishing vessels.	in length, following international SOLAS regulations and Spanish legislation (Royal Decree 210/2004), for fisheries management and safety. According to the EU Regulation 2371/2002 and current Common Fisheries Policy (CFP) the VMS is mandatory for all fishing vessels with an overall length of 12 metres or more to ensure sustainable fishing practices and monitor compliance with regulations.	VME Observer Programme (Council Regulation (EC) No 734/2008)	e-logbooks (Council Regulation No 1224/2009) Transshipment and bunkering is forbidden (Spanish national administration/General Secretariat of Fisheries)	combination of Spanish, European Union (EU), and international law. Management Framework: The Law 5/2023 on Sustainable Fishing and Fisheries Research serves as the main legal framework, focusing on sustainable practices and the management of fishing opportunities for Spanish vessels. Spanish Government closed 9 areas in the high seas of FAO 41 to bottom fishing by Spanish vessels from 2011 to protect VMEs. Fleet Management (Royal Decree 1044/2022): This decree regulates the, structural management, classification, and authorization of vessels, including those operating in international waters. EU common fisheries policy: Council Regulation (EC) No 1224/2009 of 20 November 2009 establishing a	International Convention on Maritime Search and Rescue (SAR); ILO Work in Fishing Convention C188; Royal Decree 1216/1997, of July 18, establishing the minimum safety and health requirements for work on board fishing vessels.	fishing activities (Spain). Project ATLANTIS: scientific surveys were carried out in the high seas areas of FAO 41 to detect and map Vulnerable Marine Ecosystems (VME)
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					Community control system for ensuring compliance with the rules of the common fisheries policy. Sustainable Management of External Fishing Fleets (SMEFF) Regulation: Regulation (EU) 2017/2403 of the European Parliament and of the Council of 12 December 2017 on the sustainable management of external fishing fleets, and repealing Council Regulation (EC) No 1006/2008, OJ L 347, 28.12.2017, p. 81. VME Regulation: Council Regulation (EC) No 734/2008 of 15 July 2008 on the protection of vulnerable marine ecosystems in the high seas from the adverse impacts of bottom fishing gears, OJ L 201, 30.7.2008, p. 8. Authorized species Regulation: Council Regulation (EC) No 1368/2006 of 27 June 2006 amending		
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					Regulation (EC) No 1035/2001 establishing a catch documentation scheme for <i>Dissostichus spp.</i> Illegal Fishing (IUU): Spain has strengthened regulations to combat Illegal, Unreported, and Unregulated (IUU) fishing, modernization of control systems, and tougher penalties.		
Chinese Taipei	Regulations for Fishing Vessels Conducting Squid Jigging Fishery– requires the captain to submit daily report catch data through the E-logbook system, and shall also fill in the logbooks.	Act for Distant Water Fisheries– requires any fishing vessel of distant water fisheries to be installed with a functional VMS and at least one spare set on board.	Regulations for Fishing Vessels Conducting Squid Jigging Fishery– requires captain of the vessel to facilitate the embarkation and disembarkation of observer, the work and accommodation of observer and ensure the safety of observer onboard. E-Monitoring generally is not required for authorized fishing vessels	Regulations for Fishing Vessels Conducting Squid Jigging Fishery– requires landing notification and declaration. PSMA-relevant policy adopted. Landing is required to be conducted at designated ports.	Regulations for Fishing Vessels Conducting Squid Jigging Fishery– establishes an authorization and monitoring framework for distant water jigging vessels, specifying permitted gears, fishing areas, authorized periods, and bycatch management regulations	Regulations on the Authorization and Management of Overseas Employment of Foreign Crew Members– provides labor protection for foreign crew members, including bilingual standard contracts, minimum wages, insurance coverage, medical care, and rest requirements Action Plan for Fisheries and Human Rights–	Act for Distant Water Fisheries– provides the legal basis of promoting the development of research on science and technology related to distant water fisheries.

						implements the action plan to strengthen labor rights protection, improve living and working conditions, enhance monitoring and enforcement mechanisms, and deepen international cooperation, reflecting the principles of the ILO Work in Fishing Convention (C188)	
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