



Scientific and technical knowledge of the EU-fisheries, exploited stocks and sensitive marine habitats in the high seas and third countries waters not subject to SFPAs and/or RFMOs jurisdiction

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Final Report Annexes



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Report Annexes

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ANNEX 1 SUMMARY OF ACDR DATA FOR AREA 34

Flag country / Third country / Gear	2018	2019	2020	2021	2022	Grand Total
ESP	982	1,716	919		0	3,617
Congo (Brazzaville)	616	713	502		0	1,831
OTB		713	502			1,215
DPS		460	237			697
ARV		205	218			422
MON		45	43			87
SSH		1	4			6
MNZ		2				2
(blank)	616				0	616
Guinea	366	1,003	417			1,786
OTB		979	417			1,396
DPS		523	215			737
MNZ		282	158			440
SSH		53	37			90
ARV		37	6			42
CTC		42				42
OCC		19				19
GOA		13				13
GPW		6				6
HKX		4	0			4
CGE		1	1			2
TGS		0				0
SOP		0				0
(blank)	366	24				389
ITA	699	858	200			1,757
Guinea	14	274	133			422
OTB		258	133			391
MUX		131	31			162
MSF		36	58			94
MON		60	22			82
CTC		23	18			41
OCC		5	1			6
ARA		1	2			3
SQE		2	1			2
GPW		0				0
(blank)	14	16				30
Sierra Leone	685	584	66			1,335

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OTB		497	66			564
CTC		139	19			158
MUX		122	22			144
OCC		113	10			123
TGS		56	4			60
GPW		35	9			44
MON		31				31
MSF		0	2			2
SQE		1				1
(blank)	685	87				772
PRT			0	0		0
HIGH SEAS			0	0		0
LLS			0	0		0
MON			0	0		0
Grand Total	1,681	2,574	1,119	0	0	5,374

**ANNEX 2 DESCRIPTION OF SPANISH FLEET IN VARIOUS COUNTRIES IN THE GEOGRAPHIC SCOPE OF THIS PROJECT:
VESSEL NUMBERS, DECLARED EFFORT AND LANDINGS PER YEAR AND VMS MAPS BY FAO AREA AND COUNTRY.**

FAO 34 (alphabetic order)

1. Congo

FAO Sub Area 34.3.6

Active Fisheries

State	Metier/Gear Type	Vessel Numbers per year											
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
Spain	OTB_CRU_>=40_0_0/ shrimper bottom otter trawl	NA	NA	4	4	4	4	4	4	4	6	4	2

Source: IEO-CSIC, from logbooks provided by the Spanish Secretariat of Fisheries (SGP).

Fisheries Effort (Declared)

State	Metier/ Gear Type	Effort (fd)										
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Spain	OTB_CRU_>=40_0_0/ shrimper bottom otter trawl	NA	NA	1209	938	1132	1090	949	1108	1054	990	484

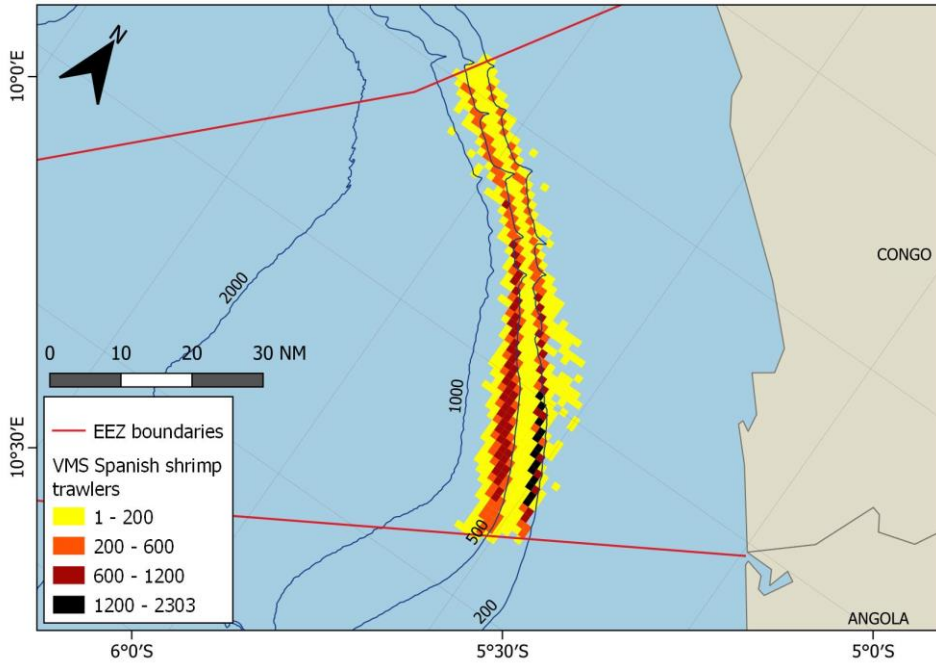
Source: IEO-CSIC, from logbooks provided by the Spanish Secretariat of Fisheries (SGP).

Fisheries Landings (Declared)

State	Metier/ Gear Type	Species (common)	Species (scientific)	Landings (tonnes)										
				2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Spain	OTB_CRU_>=40_0_0/shrimper bottom otter trawl	Deep water rose shrimp	<i>Parapenaeus longirostris</i>	NA	394	687	537	373	541	413	460	237	204	252
Spain	OTB_CRU_>=40_0_0/shrimper bottom otter trawl	Striped red shrimp	<i>Aristeus varidens</i>	NA	66	150	131	148	332	149	212	218	239	67
Spain	OTB_CRU_>=40_0_0/shrimper bottom otter trawl	West African geryon	<i>Chaceon maritae</i>	NA	12	22	19	17	37	16	35	26	67	45
Spain	OTB_CRU_>=40_0_0/shrimper bottom otter trawl	Anglerfishes nei	Lophiidae	NA	2	5	5	5	30	24	48	43	40	17
Spain	OTB_CRU_>=40_0_0/shrimper bottom otter trawl	Scarlet shrimp	<i>Aristaeopsis (Plesiopenaeus) edwardsiana</i>	NA	0	0	0	0	6	4	1	4	11	5
Spain	OTB_CRU_>=40_0_0/shrimper bottom otter trawl	Common octopus	<i>Octopus vulgaris</i>	NA	0	0	0	0	0	0	0	0	1	0
Spain	OTB_CRU_>=40_0_0/shrimper bottom otter trawl	Cuttlefishes nei	<i>Sepia</i> spp	NA	0	0	0	0	0	0	0	0	0.2	0

Source: IEO-CSIC, from logbooks provided by the Spanish Secretariat of Fisheries (SGP).

Figure 1- VMS maps for the Spanish shrimp bottom trawlers (OTB_CRU) in Congo. 2014-2022.



2. Guinea

FAO Sub Area 34.3.13

Active Fisheries

State	Metier/Gear Type	Vessel Numbers per year										
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Spain	OTB_CRU_>=40_0_0/shrimper bottom otter trawl	0 or NA	0 or NA	0	0	0	4	4	6	3	3	0
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	0	4	1	0	0	0	0	0	0	0	0
Spain	OTB_DEF_>=70_0_0/ Bottom otter trawl, Demersal species	0	0	0	0	0	0	4	3	0	0	0

Source: IEO-CSIC, from logbooks provided by the Spanish Secretariat of Fisheries (SGP).

Fisheries Effort (Declared)

State	Metier/ Gear Type	Effort (fd)										
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Spain	OTB_CRU_>=40_0_0/shrimper bottom otter trawl	0 or NA	0 or NA	0	0	0	259	221	811	394	244	0
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	0	256	17	0	0	0	0	0	0	0	0
Spain	OTB_DEF_>=70_0_0/ Bottom otter trawl, Demersal species	0	0	0	0	0	0	280	231	0	0	0

Source: IEO-CSIC, from logbooks provided by the Spanish Secretariat of Fisheries (SGP).

Fisheries Landings (Declared)

State	Metier/ Gear Type	Species (common)	Species (scientific)	Landings (tonnes)										
				2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Spain	OTB_CRU_>=40_0_0/shrimper bottom otter trawl	Deep water rose shrimp	<i>Parapenaeus longirostris</i>	0 or NA	0 or NA	-	-	-	164	154	523	222	49	-
Spain	OTB_CRU_>=40_0_0/shrimper bottom otter trawl	Anglerfishes nei	Lophiidae	0 or NA	0 or NA	-	-	-	50	186	282	168	66	-
Spain	OTB_CRU_>=40_0_0/shrimper bottom otter trawl	Scarlet shrimp	<i>Aristaeopsis (Plesiopenaeus) edwardsiana</i>	0 or NA	0 or NA	-	-	-	22	16	53	39	41	-
Spain	OTB_CRU_>=40_0_0/shrimper bottom otter trawl	Striped red shrimp	<i>Aristeus varidens</i>	0 or NA	0 or NA	-	-	-	9	16	37	7	14	-
Spain	OTB_CRU_>=40_0_0/shrimper bottom otter trawl	Pandalid shrimps nei	Pandalidae	0 or NA	0 or NA	-	-	-	10	6	12	16	18	-
Spain	OTB_CRU_>=40_0_0/shrimper bottom otter trawl	Hakes nei	<i>Merluccius</i> spp	0 or NA	0 or NA	-	-	-	0	1	5	1	0	-
Spain	OTB_CRU_>=40_0_0/shrimper bottom otter trawl	West African geryon	<i>Chaceon maritae</i>	0 or NA	0 or NA	-	-	-	0	0	1	1	1	-
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Dentex	<i>Dentex</i> spp	-	611	43	-	-	-	-	-	-	-	-
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Hakes nei	<i>Merluccius</i> spp	-	165	0	-	-	-	-	-	-	-	-
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Grey triggerfish	<i>Balistes caprisus</i>	-	107	5	-	-	-	-	-	-	-	-
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Goatfishes, red mullets nei	Mullidae	-	88	0	-	-	-	-	-	-	-	-

State	Metier/ Gear Type	Species (common)	Species (scientific)	Landings (tonnes)											
				2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Snappers nei	<i>Lutjanus</i> spp	-	51	4	-	-	-	-	-	-	-	-	
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Red mullet	<i>Mullus barbatus</i>	-	45	0	-	-	-	-	-	-	-	-	
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Common pandora	<i>Pagellus erythrinus</i>	-	43	3	-	-	-	-	-	-	-	-	
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	West African goatfish	<i>Pseudupeneus prayensis</i>	-	37	14	-	-	-	-	-	-	-	-	
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Thornback ray	<i>Raja clavata</i>	-	35	3	-	-	-	-	-	-	-	-	
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Lesser African threadfin	<i>Galeoides decadactylus</i>	-	26	0	-	-	-	-	-	-	-	-	
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Common octopus	<i>Octopus vulgaris</i>	-	15	1	-	-	-	-	-	-	-	-	
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Thor's scaldfish	<i>Arnoglossus thori</i>	-	15	0	-	-	-	-	-	-	-	-	
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Red pandora	<i>Pagellus bellottii</i>	-	14	0	-	-	-	-	-	-	-	-	
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Common cuttlefish	<i>Sepia hierredda</i>	-	13	0	-	-	-	-	-	-	-	-	

State	Metier/ Gear Type	Species (common)	Species (scientific)	Landings (tonnes)											
				2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Senegalese hake	<i>Merluccius senegalensis</i>	-	13	0	-	-	-	-	-	-	-	-	
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	White grouper	<i>Epinephelus aeneus</i>	-	12	0	-	-	-	-	-	-	-	-	
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Atlantic emperor	<i>Lethrinus atlanticus</i>	-	10	0	-	-	-	-	-	-	-	-	
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Cuttlefishes nei	<i>Sepia</i> spp	-	10	1	-	-	-	-	-	-	-	-	
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Wedge sole	<i>Dicologlossa cuneata</i>	-	10	0	-	-	-	-	-	-	-	-	
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Parrot grunt	<i>Pomadasys perotaei</i>	-	9	1	-	-	-	-	-	-	-	-	
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Scorpionfishes, redfishes nei	Scorpaenidae	-	0	8	-	-	-	-	-	-	-	-	
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Jack and horse mackerels nei	<i>Trachurus</i> spp	-	0	4	-	-	-	-	-	-	-	-	
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Solea	<i>Solea</i> spp	-	0	2	-	-	-	-	-	-	-	-	
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Common guitarfish	<i>Rhinobatos rhinobatos</i>	-	0	1	-	-	-	-	-	-	-	-	

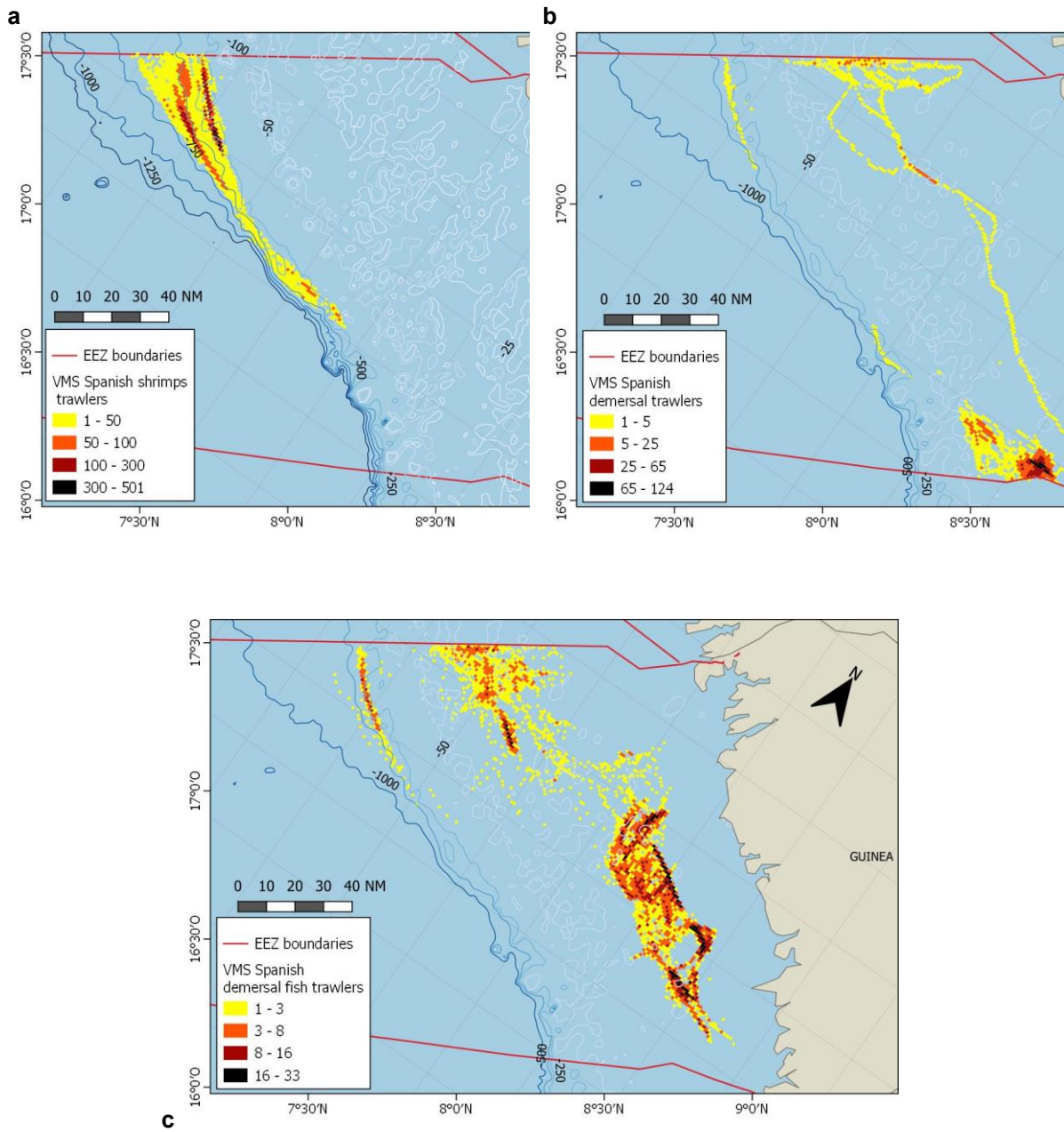
State	Metier/ Gear Type	Species (common)	Species (scientific)	Landings (tonnes)											
				2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Others	Others	-	163	4	-	-	-	-	-	-	-	-	
Spain	OTB_DEF_>=70_0_0/ Bottom otter trawl, Demersal species	Scaldfishes nei	<i>Arnoglossus spp</i>	-	-	-	-	-	-	-	30	31	-	-	
Spain	OTB_DEF_>=70_0_0/ Bottom otter trawl, Demersal species	Grey triggerfish	<i>Balistes capriscus</i>	-	-	-	-	-	-	-	26	10	-	-	
Spain	OTB_DEF_>=70_0_0/ Bottom otter trawl, Demersal species	Zebra tilefish	<i>Branchiostegus semifasciatus</i>	-	-	-	-	-	-	-	21	87	-	-	
Spain	OTB_DEF_>=70_0_0/ Bottom otter trawl, Demersal species	Smoothmouth sea catfish	<i>Carliarius heudelotii</i>	-	-	-	-	-	-	-	21	16	-	-	
Spain	OTB_DEF_>=70_0_0/ Bottom otter trawl, Demersal species	Tonguesoles	<i>Cynoglossus spp</i>	-	-	-	-	-	-	-	73	53	-	-	
Spain	OTB_DEF_>=70_0_0/ Bottom otter trawl, Demersal species	Dentex	<i>Dentex spp</i>	-	-	-	-	-	-	-	255	160	-	-	
Spain	OTB_DEF_>=70_0_0/ Bottom otter trawl, Demersal species	Flagfin mojarra	<i>Eucinostomus melanopterus</i>	-	-	-	-	-	-	-	19	27	-	-	
Spain	OTB_DEF_>=70_0_0/ Bottom otter trawl, Demersal species	Lesser African threadfin	<i>Galeoides decadactylus</i>	-	-	-	-	-	-	-	112	180	-	-	
Spain	OTB_DEF_>=70_0_0/ Bottom otter trawl, Demersal species	Smooth puffer	<i>Lagocephalus laevigatus</i>	-	-	-	-	-	-	-	158	25	-	-	
Spain	OTB_DEF_>=70_0_0/ Bottom otter trawl, Demersal species	Leerfish	<i>Lichia amia</i>	-	-	-	-	-	-	-	39	53	-	-	
Spain	OTB_DEF_>=70_0_0/ Bottom otter trawl, Demersal species	Senegalese hake	<i>Merluccius senegalensis</i>	-	-	-	-	-	-	-	229	0	-	-	

State	Metier/ Gear Type	Species (common)	Species (scientific)	Landings (tonnes)											
				2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
Spain	OTB_DEF_>=70_0_0/ Bottom otter trawl, Demersal species	Red mullet	<i>Mullus barbatus</i>	-	-	-	-	-	-	-	355	199	-	-	-
Spain	OTB_DEF_>=70_0_0/ Bottom otter trawl, Demersal species	Red pandora	<i>Pagellus bellottii</i>	-	-	-	-	-	-	-	165	202	-	-	-
Spain	OTB_DEF_>=70_0_0/ Bottom otter trawl, Demersal species	Common pandora	<i>Pagellus erythrinus</i>	-	-	-	-	-	-	-	31	0	-	-	-
Spain	OTB_DEF_>=70_0_0/ Bottom otter trawl, Demersal species	Red porgy	<i>Pagrus pagrus</i>	-	-	-	-	-	-	-	23	0	-	-	-
Spain	OTB_DEF_>=70_0_0/ Bottom otter trawl, Demersal species	Bastard grunt	<i>Pomadasys incisus</i>	-	-	-	-	-	-	-	21	0	-	-	-
Spain	OTB_DEF_>=70_0_0/ Bottom otter trawl, Demersal species	Sompat grunt	<i>Pomadasys jubelini</i>	-	-	-	-	-	-	-	16	0	-	-	-
Spain	OTB_DEF_>=70_0_0/ Bottom otter trawl, Demersal species	Brown ray	<i>Raja miraletus</i>	-	-	-	-	-	-	-	67	50	-	-	-
Spain	OTB_DEF_>=70_0_0/ Bottom otter trawl, Demersal species	Giant African cuttlefish	<i>Sepia hierredda</i>	-	-	-	-	-	-	-	60	33	-	-	-
Spain	OTB_DEF_>=70_0_0/ Bottom otter trawl, Demersal species	Jack and horse mackerels nei	<i>Trachurus spp</i>	-	-	-	-	-	-	-	16	24	-	-	-
Spain	OTB_DEF_>=70_0_0/ Bottom otter trawl, Demersal species	Alexandria pompano	<i>Alectis alexandrinus</i>	-	-	-	-	-	-	-	0	14	-	-	-
Spain	OTB_DEF_>=70_0_0/ Bottom otter trawl, Demersal species	Tilefishes nei	<i>Branchiostegidae</i>	-	-	-	-	-	-	-	0	29	-	-	-
Spain	OTB_DEF_>=70_0_0/ Bottom otter trawl, Demersal species	Common octopus	<i>Octopus vulgaris</i>	-	-	-	-	-	-	-	0	13	-	-	-
Spain	OTB_DEF_>=70_0_0/ Bottom otter trawl, Demersal species	Common guitarfish	<i>Rhinobatos rhinobatos</i>	-	-	-	-	-	-	-	0	20	-	-	-

State	Metier/ Gear Type	Species (common)	Species (scientific)	Landings (tonnes)											
				2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
Spain	OTB_DEF_>=70_0_0/ Bottom otter trawl, Demersal species	Croakers, drums nei	Sciaenidae	-	-	-	-	-	-	-	0	11	-	-	-
Spain	OTB_DEF_>=70_0_0/ Bottom otter trawl, Demersal species	Others	others	-	-	-	-	-	-	-	177	76	-	-	-

Source: IEO-CSIC, from logbooks provided by the Spanish Secretariat of Fisheries (SGP).

Figure 2- VMS maps for: (a) Spanish shrimp bottom trawlers (OTB_CRU); (b) Spanish mix cephalopods-fish trawlers (c) Spanish fish trawlers (OTB_DEF) in Guinea. 2014-2022.



3. Sierra Leona

FAO Sub Area 34.3.13

Active Fisheries

State	Metier/Gear Type	Vessel Numbers per year											
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	0	0	1	0	0	0	0	0	0	0	0	0

Source: IEO-CSIC, from logbooks provided by the Spanish Secretariat of Fisheries (SGP).

Fisheries Effort (Declared)

State	Metier/ Gear Type	Effort (dp)											
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	0	0	91	0	0	0	0	0	0	0	0	0

Source: IEO-CSIC, from logbooks provided by the Spanish Secretariat of Fisheries (SGP).

Fisheries Landings (Declared)

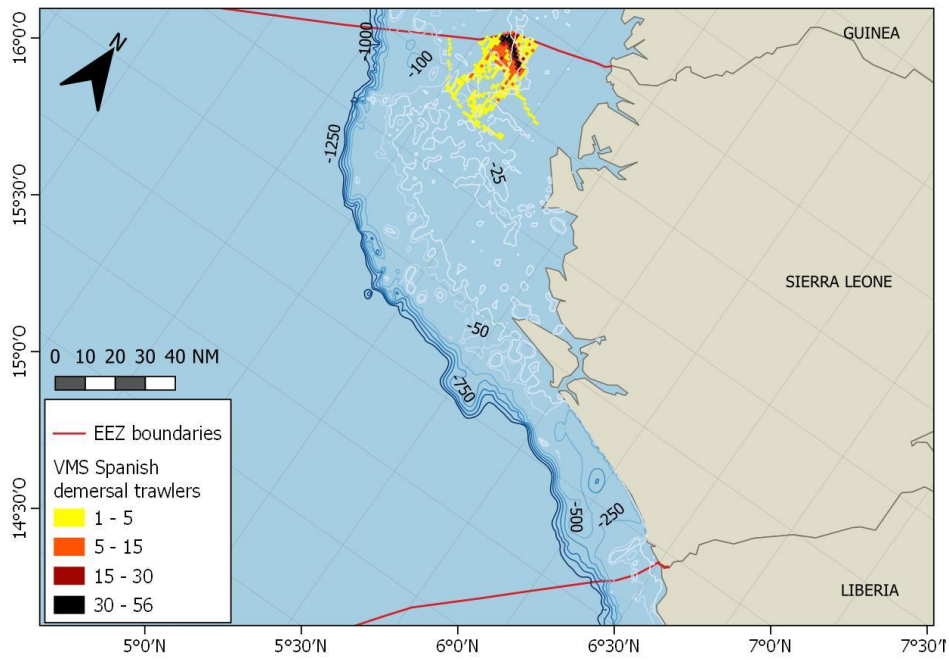
State	Metier/ Gear Type	Species (common)	Species (scientific)	Landings (tonnes)										
				2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	West African goatfish	<i>Pseudupeneus prayensis</i>	0 or NA	-	114	-	-	-	-	-	-	-	-

State	Metier/ Gear Type	Species (common)	Species (scientific)	Landings (tonnes)										
				2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Dentex	<i>Dentex</i> spp	0 or NA	-	59	-	-	-	-	-	-	-	-
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Tonguesoles	<i>Cynoglossus</i> spp	0 or NA	-	50	-	-	-	-	-	-	-	-
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Common octopus	<i>Octopus vulgaris</i>	0 or NA	-	28	-	-	-	-	-	-	-	-
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Goatfishes, red mullets nei	Mullidae	0 or NA	-	22	-	-	-	-	-	-	-	-
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Cuttlefishes nei	<i>Sepia</i> spp	0 or NA	-	16	-	-	-	-	-	-	-	-
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Common cuttlefish	<i>Sepia hierreda</i>	0 or NA	-	14	-	-	-	-	-	-	-	-
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Hakes nei	<i>Merluccius</i> spp	0 or NA	-	12	-	-	-	-	-	-	-	-
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed	Solea	<i>Solea</i> spp	0 or NA	-	11	-	-	-	-	-	-	-	-

State	Metier/ Gear Type	Species (common)	Species (scientific)	Landings (tonnes)										
				2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	cephalopod and demersal species													
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Common pandora	<i>Pagellus erythrinus</i>	0 or NA	-	8	-	-	-	-	-	-	-	-
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Mullets nei	Mugilidae	0 or NA	-	6	-	-	-	-	-	-	-	-
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Raja rays nei	<i>Raja</i> spp	0 or NA	-	6	-	-	-	-	-	-	-	-
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Spotted flounder	<i>Citharus linguatula</i>	0 or NA	-	5	-	-	-	-	-	-	-	-
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Guitarfishes, etc. nei	Rhinobatidae	0 or NA	-	4	-	-	-	-	-	-	-	-
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Nigerian tonguesole	<i>Cynoglossus browni</i>	0 or NA	-	3	-	-	-	-	-	-	-	-
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Scorpionfishes, rockfishes nei	<i>Scorpaena</i> spp	0 or NA	-	3	-	-	-	-	-	-	-	-

State	Metier/ Gear Type	Species (common)	Species (scientific)	Landings (tonnes)										
				2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Thornback ray	<i>Raja clavata</i>	0 or NA	-	3	-	-	-	-	-	-	-	-
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Meagre	<i>Argyrosomus regius</i>	0 or NA	-	2	-	-	-	-	-	-	-	-
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Thor's scaldfish	<i>Arnoglossus thori</i>	0 or NA	-	2	-	-	-	-	-	-	-	-
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	White grouper	<i>Epinephelus aeneus</i>	0 or NA	-	2	-	-	-	-	-	-	-	-
Spain	OTB_MCF_>=70_0_0/ Bottom otter trawl, Mixed cephalopod and demersal species	Others	Others	0 or NA	-	48	-	-	-	-	-	-	-	-

Figure 3- VMS maps for Spanish mixed cephalopods-fish trawlers (OTB_MCF) in Sierra Leone. 2014-2022 (fishery only in 2014).



FAO 47 (alphabetic order)

4. Angola

FAO Sub Areas 47.1.1 + 47.1.2 + 47.1.3

Active Fisheries

State	Metier/Gear Type	Vessel Numbers per year										
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Spain	OTB_CRU_>=40_0_0/shrimper bottom otter trawl	NA	NA	11	12	11	13	11	13	12	11	10
Spain	OTB_DEF_>=70-119_0_0/ bottom otter trawl	NA	2	6	6	6	2	2	2	3	1	0

Source: IEO-CSIC, from logbooks provided by the Spanish Secretariat of Fisheries (SGP).

Fisheries Effort (Declared)

State	Metier/ Gear Type	Effort (fd)										
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Spain	OTB_CRU_>=40_0_0/shrimper bottom otter trawl	NA	NA	2879	2820	2918	2873	2524	2718	2155	2530	2515
Spain	OTB_DEF_>=70-119_0_0/ bottom otter trawl	NA	422	1065	1399	684	218	296	232	287	139	0

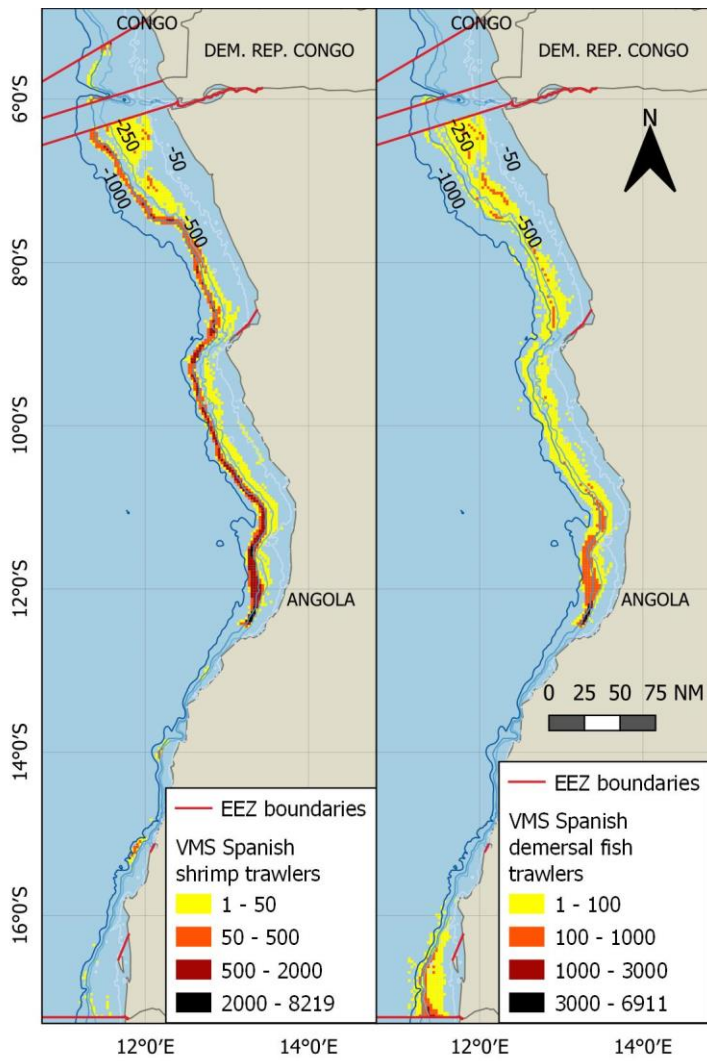
Source: IEO-CSIC, from logbooks provided by the Spanish Secretariat of Fisheries (SGP).

Fisheries Landings (Declared)

State	Metier/ Gear Type	Species (common)	Species (scientific)	Landings (tonnes)										
				2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Spain	OTB_CRU_>=40_0_0/shrimper bottom otter trawl	Striped red shrimp	<i>Aristeus varidens</i>	NA	NA	1408	1323	1106	1350	1117	1091	1298	1524	1387
Spain	OTB_CRU_>=40_0_0/shrimper bottom otter trawl	West African geryon	<i>Chaceon maritae</i>	NA	NA	292	381	281	302	274	471	203	211	175
Spain	OTB_CRU_>=40_0_0/shrimper bottom otter trawl	Deep water rose shrimp	<i>Parapenaeus longirostris</i>	NA	NA	308	245	216	160	109	36	0	0	0
Spain	OTB_CRU_>=40_0_0/shrimper bottom otter trawl	Scarlet shrimp	<i>Aristaeopsis (Plesiopenaeus) edwardsiana</i>	NA	NA	2	0.2	0.4	8	33	42	25	50	44
Spain	OTB_CRU_>=40_0_0/shrimper bottom otter trawl	Anglerfishes nei	Lophiidae	NA	NA	0	0.5	0	0	0	0	0	0	0
Spain	OTB_DEF_>=70-119_0_0/ bottom otter trawl	Cape and Benguela hakes	<i>Merluccius spp</i>	NA	4628	7747	7062	2564	971	877	1464	2944	2222	-
Spain	OTB_DEF_>=70-119_0_0/ bottom otter trawl	Large-eye dentex	<i>Dentex macrophthalmus</i>	NA	386	2086	5475	2412	412	741	428	267	0	-
Spain	OTB_DEF_>=70-119_0_0/ bottom otter trawl	Dentex nei	<i>Dentex spp</i>	NA	0	0	0	318	883	565	398	173	122	-
Spain	OTB_DEF_>=70-119_0_0/ bottom otter trawl	John dory	<i>Zeus faber</i>	NA	169	93	676	325	380	525	262	85	81	-
Spain	OTB_DEF_>=70-119_0_0/ bottom otter trawl	Silvery John dory	<i>Zenopsis conchifer</i>	NA	0	199	540	277	125	320	208	39	0	-
Spain	OTB_DEF_>=70-119_0_0/ bottom otter trawl	Croakers, drums nei	Scianidae	NA	34	306	581	287	237	255	392	467	109	-

State	Metier/ Gear Type	Species (common)	Species (scientific)	Landings (tonnes)										
				2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Spain	OTB_DEF_>=70-119_0_0/ bottom otter trawl	Bearded brotula	<i>Brotula barbata</i>	NA	75	172	650	177	296	310	50	4	3	-
Spain	OTB_DEF_>=70-119_0_0/ bottom otter trawl	Jack and horse mackerels nei	<i>Trachurus spp</i>	NA	120	627	1441	509	433	489	411	428	134	-
Spain	OTB_DEF_>=70-119_0_0/ bottom otter trawl	Bigeye grunt	<i>Brachydeuterus auritus</i>	NA	0	1	0	11	0	0	0	0	0	-
Spain	OTB_DEF_>=70-119_0_0/ bottom otter trawl	Finfishes nei	Osteichthyes	NA	113	601	2008	1014	452	978	478	516	217	-
Spain	OTB_DEF_>=70-119_0_0/ bottom otter trawl	Cephalopods nei	Cephalopoda	NA	50	116	148	202	25	174	410	585	45	-

Figure 4- VMS maps for Spanish shrimp bottom trawlers (OTB_CRU) (left) and demersal fish trawlers (OTB_DEF) (right) in Angola. 2014-2022.



5. Namibia

47.1.4 and 47.1.5

Active Fisheries

State	Metier/Gear Type	Vessel Numbers per year										
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Spain	OTB_DEF_>=70_0_0/Demersal bottom otter trawl	2	3	2	5	3	1	0	0	1	2	1

Source: IEO-CSIC, from logbooks provided by the Spanish Secretariat of Fisheries (SGP).

Fisheries Effort (Declared)

State	Metier/ Gear Type	Effort (fishing hours)										
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022*
Spain	OTB_DEF_>=70_0_0/Demersal bottom otter trawl	4069	7484	6037	9764	10679	4152	0	0	4	5277	154

*Fishing days

Source: IEO-CSIC, from logbooks provided by the Spanish Secretariat of Fisheries (SGP).

Fisheries Landings (Declared)

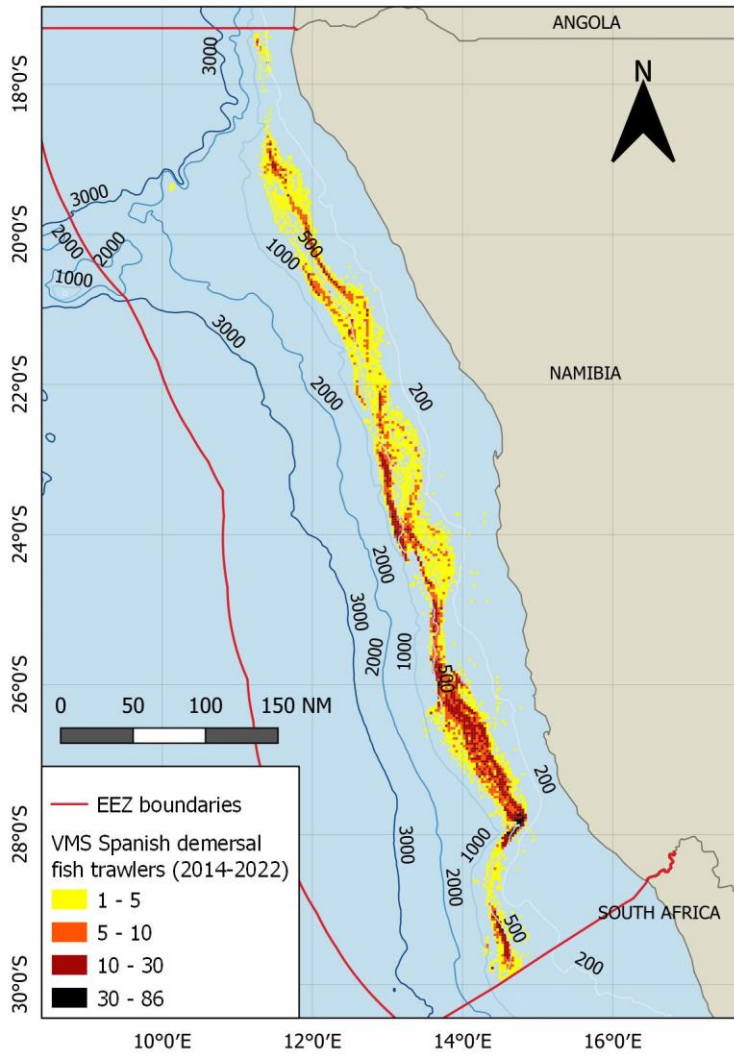
State	Metier/ Gear Type	Species (common)	Species (scientific)	Landings (tonnes)										
				2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Spain	OTB_DEF_>=70_0_0 Demersal bottom otter trawl	Blackbelly rosefish	<i>Helicolenus dactylopterus</i>	0	0	0	24	24	0	-	-	0	19	0

State	Metier/ Gear Type	Species (common)	Species (scientific)	Landings (tonnes)										
				2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Spain	OTB_DEF_>=70_0_0 Demersal bottom otter trawl	Alfonsinos, etc. nei	Berycidae	0	0	0	0	0	0	-	-	0	4	0
Spain	OTB_DEF_>=70_0_0 Demersal bottom otter trawl	Splendid alfonsino	<i>Beryx splendens</i>	0	0	0	0	2	0	-	-	0	0	0
Spain	OTB_DEF_>=70_0_0 Demersal bottom otter trawl	Cape hakes	<i>Merluccius capensis</i> , <i>M.paradoxus</i>	4982	6398	3950	10643	6449	3440	-	-	1	4410	936
Spain	OTB_DEF_>=70_0_0 Demersal bottom otter trawl	Kingklip	<i>Genypterus capensis</i>	173	302	162	295	248	97	-	-	0	70	2
Spain	OTB_DEF_>=70_0_0 Demersal bottom otter trawl	Mackerel	<i>Scomber</i> spp	1	0	0	0	0	0	-	-	0	15	0
Spain	OTB_DEF_>=70_0_0 Demersal bottom otter trawl	Devil anglerfish	<i>Lophius vomerinus</i>	20	27	49	178	34	11	-	-	0	248	0
Spain	OTB_DEF_>=70_0_0 Demersal bottom otter trawl	Orange roughy	<i>Hoplostethus atlanticus</i>	0	0	0	0	314	241	-	-	0	0	0
Spain	OTB_DEF_>=70_0_0 Demersal bottom otter trawl	Atlantic pomfret	<i>Brama brama</i>	34	93	92	114	229	0	-	-	0	4	0

State	Metier/ Gear Type	Species (common)	Species (scientific)	Landings (tonnes)										
				2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Spain	OTB_DEF_>=70_0_0 Demersal bottom otter trawl	Silver scabbardfish	<i>Lepidopus caudatus</i>	0	0	0	0	49	0	-	-	0	0	0
Spain	OTB_DEF_>=70_0_0 Demersal bottom otter trawl	Rays, stingrays, mantas nei	Rajiformes	6	18	12	15	8	7	-	-	0	5	0
Spain	OTB_DEF_>=70_0_0 Demersal bottom otter trawl	Snoek	<i>Thyrsites atun</i>	0	0	0	185	80	0	-	-	0	10	0
Spain	OTB_DEF_>=70_0_0 Demersal bottom otter trawl	Southeast Atlantic soles nei	<i>Austroglossus</i> spp	0	1	0	0	0	0	-	-	0	1	0
Spain	OTB_DEF_>=70_0_0 Demersal bottom otter trawl	Northern shortfin squid	<i>Illex illecebrosus</i>	17	29	29	123	51	0	-	-	0	0	0

Source: IEO-CSIC, from logbooks provided by the Spanish Secretariat of Fisheries (SGP).

Figure 5- VMS maps for Spanish demersal fish trawlers (OTB_DEF) in Namibia. 2014-2022.



FAO 41

State	FAO Sub Area	Effort	Year										
			2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Spain	43.3.1	Fd	2504	2553	2719	2300	2726	3568	3609	3607	3759	3300	4122
		Vn	23	25	23	24	21	22	25	24	26	25	28
Spain	43.3.2	Fd	2337	2427	2792	2507	2048	1650	1392	1970	1742	1592	1452
		Vn	21	23	20	22	18	17	18	15	17	16	11
Spain	TOTAL	Fd	4841	4980	5511	4807	4774	5218	5001	5577	5501	4892	5574
		Vn	23	25	23	24	21	22	26	25	26	25	28

Fd=Fishing days

Vn=Vessel Number

Source: IEO-CSIC, from logbooks provided by the Spanish Secretariat of Fisheries (SGP).

Fisheries Landings (Declared)

State	FAO Sub Area	Species (common)	Species (scientific)	Landings (tonnes)											TOTAL
				2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
Spain	41.3.1			42953	55533	59196	45602	50266	77888	75733	58433	59303	61428	76003	662338
		Argentine hake	<i>Merluccius hubbsi</i>	21041	25914	18658	25091	31560	37004	51866	52922	38460	46088	46922	395527
		Argentine shortfin	<i>Illex argentinus</i>	12564	13412	13080	13166	2466	8692	7901	1647	16447	12422	24782	126578
		Longtail Southern cod	<i>Patagonotothen ramsayi</i>	894	10336	21573	3098	10629	26778	10676	81	122	182	121	84488
		Patagonian squid	<i>Doryteuthis gahi</i>	5788	2235	1365	1529	3362	1565	429	714	1775	815	1661	21237
		Pink cusk-eel	<i>Genypterus blacodes</i>	752	922	1287	1293	964	1230	2016	1330	487	804	803	11888
		Raja rays nei	<i>Raja spp</i>	740	1039	571	900	664	1218	1272	1286	814	654	510	9666
		Others	Others	899	1126	2522	249	337	661	165	198	228	244	1053	7682
		Patagonian grenadier	<i>Macruronus</i>	243	425	87	138	39	524	1152	142	859	122	93	3823
		Tadpole codling	<i>Salilota australis</i>	11	23	50	83	109	144	138	62	75	77	51	824
		Patagonian toothfish	<i>Dissostichus eleginoides</i>	10	53	2	40	37	52	42	32	30	20	6	325
		Southern blue whiting	<i>Micromesistius australis</i>	11	37	2	15	100	11	75	19	6	1	0	277

		Southern hake	<i>Merluccius australis</i>	0	13	-	-	0	10	0	0	0	0	-	23
Spain	41.3.2			67973	51425	72779	64020	45696	33246	33131	63877	53222	60324	61852	607544
		Argentine hake	<i>Merluccius hubbsi</i>	10791	9359	16710	19523	18442	10634	17900	45363	39255	50299	54809	293085
		Longtail Southern cod	<i>Patagonotothen ramsayi</i>	33488	15342	26228	16058	2637	446	422	302	178	67	79	95246
		Patagonian grenadier	<i>Macruronus</i>	7905	8785	4299	5075	8604	3392	3524	6149	5886	1824	3025	58467
		Patagonian squid	<i>Doryteuthis gahi</i>	7299	6870	8700	2683	3018	6782	5044	4096	968	721	683	46863
		Argentine shortfin	<i>Illex argentinus</i>	550	2625	10073	9128	57	2752	1477	1157	2058	3335	505	33717
		Raja rays nei	<i>Raja spp</i>	2601	2543	2127	3974	3217	1628	1200	1249	1157	1276	833	21805
		Tadpole codling	<i>Salilota australis</i>	1932	2407	1898	2530	2138	1023	1097	1395	1118	1016	536	17089
		Pink cusk-eel	<i>Genypterus blacodes</i>	1681	2273	1793	2088	1284	1390	1089	1424	1464	1445	1050	16981
		Southern blue whiting	<i>Micromesistius australis</i>	909	753	548	2234	4365	1807	911	429	51	2	0	12010
		Others	Others	604	269	304	495	1150	2894	239	2047	896	266	300	9464
		Patagonian toothfish	<i>Dissostichus eleginoides</i>	146	108	40	88	331	421	195	200	157	69	31	1787
		Southern hake	<i>Merluccius australis</i>	65	90	59	144	453	78	35	65	35	3	0	1029
Spain	TOTAL			110925	106958	131975	109622	95962	111134	108864	122310	112525	121752	137854	1269881

Source: IEO-CSIC, from logbooks provided by the Spanish Secretariat of Fisheries (SGP).

ANNEX 3 LIST OF 67 FLAG STATES AND TOTAL FISHING HOURS IN AREAS 34, 47 AND 41.

FAO Area	Flag State	Sum of Apparent Fishing hours across 9 years	Average of Apparent Fishing hours across 9 years
34	MAR	398,915.9	8,672.1
34	AGO	2,069.9	94.1
34	ARG	6.1	1.5
34	BES	837.5	139.6
34	BLZ	29,888.3	369.0
34	BRA	21,553.8	1,436.9
34	CAN	8.7	2.9
34	CHN	576,320.9	4,116.6
34	CIV	11,736.0	1,304.0
34	CMR	73,952.5	3,361.5
34	COK	312.4	78.1
34	COM	8,834.3	315.5
34	CPV	5,265.4	585.0
34	CUB	7.3	3.7
34	DEU	7,684.5	591.1
34	DNK	1,160.8	165.8
34	ESP	1,104,615.3	4,264.9
34	FIN	2,797.5	2,797.5
34	FLK	189.3	6.1
34	FRA	19,596.9	384.3
34	FRO	1,040.5	260.1
34	GBR	427.3	38.8
34	GEO	6,213.7	1,242.7
34	GHA	335,212.1	5,406.6
34	GIN	34,378.0	4,297.3
34	GMB	103.5	103.5
34	GNB	2,111.0	140.7
34	GNQ	26.7	13.3
34	GRC	767.9	192.0
34	GRL	14.6	14.6
34	HRV	35.3	35.3
34	HUN	1,803.8	257.7
34	IDN	1,207.4	241.5
34	IRL	116.1	38.7
34	ISL	344.0	86.0
34	ITA	120,672.4	4,469.3
34	JPN	831,146.3	13,192.8
34	KEN	13.5	13.5
34	KNA	17,485.8	499.6

34	KOR	117,622.7	3,459.5
34	LTU	11,981.0	665.6
34	LVA	4,625.3	770.9
34	MRT	4,718.5	100.4
34	NA	112,502.1	1,730.8
34	NAM	1,210.5	57.6
34	NGA	3,713.3	265.2
34	NLD	16,263.9	903.6
34	NOR	1,708.4	41.7
34	NRU	5,562.4	2,781.2
34	NZL	23.0	23.0
34	PAN	1,891.0	171.9
34	POL	445.6	40.5
34	PRT	227,614.9	1,580.7
34	RUS	78,691.1	2,126.8
34	SEN	10,989.9	407.0
34	SLE	278.9	278.9
34	SMR	1,350.2	1,350.2
34	SOM	23.2	23.2
34	SWE	4,084.9	1,361.6
34	TUR	4,972.9	276.3
34	TWN	494,358.4	15,947.0
34	UKR	703.7	351.9
34	USA	34.2	34.2
34	VCT	4,066.1	1,016.5
34	VUT	1.8	1.8
34	WSM	346.4	115.5
34	ZAF	3,157.7	451.1
41	AFG	2,603.1	236.6
41	ALB	192.3	96.1
41	AND	1,365.1	682.5
41	ARE	6,736.3	673.6
41	ARG	4,583,208.2	40,559.4
41	AUT	4,380.9	1,095.2
41	BEL	20.0	20.0
41	BLZ	12,040.8	547.3
41	BOL	248.5	248.5
41	BRA	1,030,105.4	16,095.4
41	CHL	32,080.4	746.1
41	CHN	1,625,920.9	14,388.7
41	CIV	3,594.4	1,198.1
41	CUB	3,434.9	1,145.0
41	CYP	77.9	39.0

41	DEU	347.7	173.9
41	DNK	10,760.1	1,793.4
41	ESP	870,382.9	10,879.8
41	FLK	423,698.6	6,945.9
41	FRO	125.1	125.1
41	GBR	23,601.5	1,123.9
41	GHA	190.8	63.6
41	GRL	3,032.9	1,011.0
41	GUF	60.9	7.6
41	JPN	31,508.6	1,853.4
41	KHM	10,979.0	844.5
41	KIR	427.9	142.6
41	KNA	5,313.1	531.3
41	KOR	800,184.8	6,108.3
41	LKA	26.8	26.8
41	LTU	67.3	33.6
41	MHL	444.9	444.9
41	NA	732,275.7	6,538.2
41	NAM	1,218.2	609.1
41	NOR	2,612.4	137.5
41	NZL	768.8	54.9
41	PAN	2,078.8	297.0
41	PER	350.0	116.7
41	PRT	118,033.6	4,215.5
41	PSE	8,794.3	1,465.7
41	RUS	878.4	62.7
41	SEN	563.2	140.8
41	SHN	173.9	12.4
41	SLB	6,662.4	3,331.2
41	SLE	498.7	166.2
41	SMR	236.5	236.5
41	TCA	40.9	40.9
41	TON	8,391.8	1,398.6
41	TWN	949,965.0	17,923.9
41	UKR	42,757.7	1,096.4
41	URY	1,114,442.4	13,930.5
41	USA	229.1	114.6
41	VCT	12,097.4	2,016.2
41	VEN	1,328.3	332.1
41	VUT	24,652.6	948.2
47	AGO	309,666.8	9,383.8
47	BES	1,945.9	389.2
47	BLZ	9,297.3	774.8

47	CHN	87,627.4	1,200.4
47	CIV	49.4	24.7
47	CMR	606.4	202.1
47	COK	5,174.3	646.8
47	COM	5,925.8	1,185.2
47	DJI	2,309.5	2,309.5
47	DNK	2,572.1	2,572.1
47	ESP	762,269.7	9,410.7
47	FLK	3,555.7	273.5
47	FRA	279.8	70.0
47	GBR	1,680.5	168.0
47	GEO	476.8	119.2
47	GHA	26.3	13.2
47	GMB	37.6	37.6
47	HND	862.1	862.1
47	IRL	275.2	137.6
47	ITA	12,623.5	2,524.7
47	JPN	935,776.4	18,715.5
47	KEN	70.5	35.2
47	KNA	2,474.9	275.0
47	KOR	165,181.3	3,441.3
47	LTU	2,264.5	283.1
47	LVA	24.9	12.4
47	MLI	597.2	199.1
47	MUS	6.3	6.3
47	NA	85,485.0	2,849.5
47	NAM	839,568.6	11,500.9
47	NGA	1.5	1.5
47	NLD	2,307.0	576.7
47	NOR	627.8	125.6
47	NZL	34.7	34.7
47	OMN	294.3	98.1
47	PAN	3,240.1	405.0
47	PER	2,025.9	253.2
47	POL	5,969.9	746.2
47	PRT	65,747.0	2,054.6
47	RUS	6,919.0	494.2
47	SEN	20,474.8	2,559.4
47	SMR	1,078.7	1,078.7
47	SOM	2,113.8	1,056.9
47	SYC	39,667.3	3,051.3
47	TWN	458,731.7	10,194.0
47	TZA	1,043.9	348.0

47	UKR	77.5	11.1
47	VCT	29,501.8	3,687.7
47	VUT	20,586.9	2,941.0
47	ZAF	1,820,203.2	17,502.0

ANNEX 4 SUMMARY OF ACDR DATA FOR AREA 41

Row Labels	2018	2019	2020	2021	2022	Grand Total
ESP	104,384	119,368	110,794	120,904	51,972	507,422
Falklands	32,684	61,634	52,069	59,882	13,727	219,996
(blank)	32,684	61,634	52,069	59,882	13,727	219,996
HKP	17,900	45,367	39,235	50,293	11,707	164,502
GRM	3,556	6,194	5,886	1,778	624	18,038
SQP	5,044	4,098	968	713	115	10,937
SQA	1,477	1,164	2,058	3,344	604	8,647
CUS	1,089	1,458	1,464	1,442	316	5,770
SAO	1,097	1,396	1,118	1,016	151	4,778
SKA	1,097	1,001	976	1,154	147	4,376
POS	911	429	50	2		1,392
PAT	283	261	123	67	58	792
TOP	196	201	157	68	5	627
HKN	35	65	35	3	0	138
HIGH SEAS	71,700	57,735	58,724	61,021	38,246	287,426
(blank)	71,700	57,735	58,724	61,021	38,246	287,426
HKP	51,877	52,922	38,436	46,057	12,919	202,213
SQA	7,901	1,642	16,438	12,536	24,294	62,812
PAT	7,345	44	92	185	55	7,720
CUS	1,976	1,296	487	812	438	5,009
SQP	430	714	1,770	809	278	4,001
SKA	764	861	531	398	163	2,717
GRM	1,153	142	859	126	69	2,349
SAO	136	62	75	76	27	377
TOP	42	32	30	21	1	126
POS	75	19	6	1		102
HKN	0	0	0	0		0
FRA			0			0
HIGH SEAS			0			0
(blank)			0			0
MUX			0			0
CTC			0			0
GBR	4,570	3,258	110			7,937
Falklands	4,282	3,251	110			7,642
(blank)	4,282	3,251	110			7,642

SQP	4,183	2,951	110			7,244
HKP	95	287				382
SAO	0	10				10
CUS	4	2				6
GRM		0				0
HIGH SEAS	288	7				295
(blank)	288	7				295
SQA	222	2				224
HKP	60	4				63
CUS	6	0				6
SQP		1				1
SAO	0					0
LTU					639	639
HIGH SEAS					639	639
(blank)					639	639
SQA					621	621
HKP					18	18
CUS					0	0
PRT			128			128
HIGH SEAS			128			128
OTB			128			128
SQA			65			65
HKP			61			61
SQP			1			1
SKA			1			1
CUS			0			0
Grand Total	108,954	122,626	111,032	120,904	52,611	516,127

ANNEX 5 SUMMARY OF ACDR DATA FOR AREA 47

Row Labels	2018	2019	2020	2021	2022	Grand Total
ESP	1,630	1,656	1,524	18	33	4,861
Angola	1,630	1,656	1,405			4,691
OTB		1,646	1,405			3,050
ARV		1,432	1,298			2,730
CGE		133	74			207
SSH		44	25			68
DPS		36	0			36
SQC		1	7			9
CTC			0			0
OCC		0				0
(blank)	1,630	11				1,640
ARV	1,383	10				1,393
CGE	107					107
DPS	103					103
SSH	33	0				33
OCC	3					3
SQC	0					0
CTC	0					0
HIGH SEAS			119	18	33	171
(blank)			119	18	33	171
TOP			119	18	33	171
PRT	13					13
Angola	13					13
OTB	13					13
SQC	9					9
CTC	4					4
MUX	0					0
MON	0					0
Grand Total	1,642	1,656	1,524	18	33	4,874

ANNEX 6 GLOBAL FISHING WATCH AIS DATA FOR FAO MAJOR FISHING AREA 34. ORGANISED BY COASTAL STATE (INCLUDING HIGH SEAS) AREAS, THE FLAG STATE OF THE VESSEL (INDENTED; N= 67) AND INDICATED GEAR TYPE FROM 2012 TO 2020. VALUES REPRESENT INDICATED FISHING TIME IN HOURS

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
Angolan Exclusive Economic Zone	46.2	425.2	1,239.1	329.3	956.3	1,325.3	590.1	525.9	318.2	5,755.5
AGO				1.1	9.9					11.0
trawlers				1.1	9.9					11.0
COK								3.1	28.6	31.6
trawlers								3.1	28.6	31.6
ESP	46.2			58.7	780.0	568.4	187.9	311.9	40.0	1,993.2
trawlers	46.2			58.7	780.0	568.4	187.9	311.9	40.0	1,993.2
FRA		425.2	1,239.1	269.4	161.1	57.5	62.3	208.8	107.9	2,531.3
other_purse_seines		250.7	1,239.1	269.4						1,759.2
trawlers		174.5			161.1	57.5	62.3	208.8	107.9	772.1
NA						699.4	339.9	2.1	141.7	1,183.1
trawlers						699.4	339.9	2.1	141.7	1,183.1
NAM					5.2					5.2
trawlers					5.2					5.2
Brazilian Exclusive Economic Zone					3.7	4.1	4.9	1,289.6	3,357.0	4,659.3
ARG									3.5	3.5
trawlers									3.5	3.5
BRA								1,256.7	3,348.5	4,605.1
fishing								1,256.7	3,348.5	4,605.1
ESP						4.1	3.1	2.0	2.3	11.5
trawlers						4.1	3.1	2.0	2.3	11.5
FLK					3.7		1.8	27.3	2.8	35.5
trawlers					3.7		1.8	27.3	2.8	35.5

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
GBR								0.2		0.2
trawlers								0.2		0.2
NOR								3.4		3.4
trawlers								3.4		3.4
Cameroonian Exclusive Economic Zone				1,697.8	6,386.2	5,115.3	6,472.0	50,902.7	89,992.5	160,566.4
CHN				71.3	263.9	25.0	454.0	11,257.4	22,677.6	34,749.1
fishing								244.4		244.4
trawlers				71.3	263.9	25.0	454.0	11,013.0	22,677.6	34,504.7
CMR				1,626.5	3,677.6	1,995.6	4,111.5	28,000.4	29,468.1	68,879.7
fishing							1.2			1.2
trawlers				1,626.5	3,677.6	1,995.6	4,110.3	28,000.4	29,468.1	68,878.4
ESP									800.3	800.3
trawlers									800.3	800.3
NA					2,444.7	3,094.7	1,906.5	11,644.9	35,170.6	54,261.4
fishing								35.6		35.6
trawlers					2,444.7	3,094.7	1,906.5	11,609.2	35,170.6	54,225.8
NGA									1,875.9	1,875.9
trawlers									1,875.9	1,875.9
Cape Verdean Exclusive Economic Zone	1,718.1	30.7	107.8	602.6	65.3	82.4	417.8	18.2	281.1	3,323.9
AGO								1.9		1.9
trawlers								1.9		1.9
ARG							0.5			0.5
trawlers							0.5			0.5
BLZ						5.6	28.8	8.0	23.4	65.8
fishing							1.9			1.9
trawlers						5.6	26.9	8.0	23.4	63.9

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
CPV	1,716.2									1,716.2
set_longlines	1,716.2									1,716.2
ESP		30.7	91.0	575.9	10.5	13.2	167.3	1.8	12.5	902.9
fishing		30.7	86.0	575.9	10.5	9.3	55.4	1.8	10.0	779.6
pots_and_traps							108.0			108.0
trawlers			4.9			3.9	3.9		2.5	15.3
FLK					11.5	3.1		6.4	2.4	23.3
trawlers					11.5	3.1		6.4	2.4	23.3
FRA				26.7	43.4	59.8	16.6		0.4	146.9
fishing				26.7	43.4	59.8	16.6		0.4	146.9
ITA							8.5			8.5
trawlers							8.5			8.5
NAM							7.1			7.1
trawlers							7.1			7.1
NLD			16.9							16.9
set_gillnets			16.9							16.9
NOR	1.9					0.6				2.5
trawlers	1.9					0.6				2.5
SEN							189.0		242.5	431.4
fishing							189.0		242.5	431.4
Congolese Exclusive Economic Zone		2,431.4	3,492.2	3,352.6	33,991.4	35,342.2	29,567.7	27,983.7	24,210.0	160,371.2
CHN					8,311.6	10,974.1	7,377.7	1,330.3	69.8	28,063.5
squid_jigger						23.4				23.4
trawlers					8,311.6	10,950.7	7,377.7	1,330.3	69.8	28,040.1
ESP				2,368.1	25,174.2	24,051.9	21,223.0	24,460.3	22,311.9	119,589.4
trawlers				2,368.1	25,174.2	24,051.9	21,223.0	24,460.3	22,311.9	119,589.4

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
FRA		2,431.4	3,492.2	984.5	505.6	316.2	967.0	2,012.8	1,828.3	12,538.0
other_purse_seines		1,380.0	3,492.2	984.5						5,856.7
trawlers		1,051.4			505.6	316.2	967.0	2,012.8	1,828.3	6,681.3
NA								160.8		160.8
trawlers								160.8		160.8
NGA								19.5		19.5
fishing								19.5		19.5
Democratic Republic of the Congo Exclusive Economic Zone	11.7			347.0	851.0	1,316.2	153.3	37.1	3,425.2	6,141.4
AGO					13.9		0.5			14.4
trawlers					13.9		0.5			14.4
COK								27.1	253.7	280.8
trawlers								27.1	253.7	280.8
ESP	11.7			1.5	10.4	29.2	16.6			69.4
trawlers	11.7			1.5	10.4	29.2	16.6			69.4
FRA				345.5	765.2	7.0				1,117.6
trawlers				345.5	765.2	7.0				1,117.6
NA					60.5	1,280.0	136.2	10.0	3,148.2	4,634.9
trawlers					60.5	1,280.0	136.2	10.0	3,148.2	4,634.9
NAM					1.1					1.1
trawlers					1.1					1.1
SOM									23.2	23.2
trawlers									23.2	23.2
Equatorial Guinean Exclusive Economic Zone		2,938.7	2,117.3	320.5	3,034.3	3,007.3	9,161.9	4,625.8	372.5	25,578.2
AGO							1.8			1.8
trawlers							1.8			1.8

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
CHN		2,938.7	2,115.1	253.0	1,141.5	43.9	3,864.4	3,862.6	163.6	14,382.8
fishing								60.7		60.7
trawlers		2,938.7	2,115.1	253.0	1,141.5	43.9	3,864.4	3,801.9	163.6	14,322.1
CMR				42.7	135.7			106.7	196.6	481.7
trawlers				42.7	135.7			106.7	196.6	481.7
ESP			2.2							2.2
trawlers			2.2							2.2
FRA								5.3		5.3
trawlers								5.3		5.3
NA				24.8	1,739.0	2,951.0	5,295.7	651.2	8.7	10,670.5
fishing							508.7	62.8		571.5
set_gillnets							197.3			197.3
trawlers				24.8	1,739.0	2,951.0	4,589.8	588.4	8.7	9,901.7
NGA									3.6	3.6
trawlers									3.6	3.6
PAN					18.0	12.4				30.4
purse_seines					18.0	12.4				30.4
Gabonese Exclusive Economic Zone	17.1	691.1	1,190.7	1,088.5	716.6	718.2	1,373.4	742.8	19,526.3	26,064.8
CHN			839.7	836.0	63.0	285.7	157.1	182.8	19,230.6	21,594.9
fishing				36.5						36.5
squid_jigger						13.7				13.7
trawlers			839.7	799.6	63.0	271.9	157.1	182.8	19,230.6	21,544.7
ESP				5.0	164.4	58.2	72.3	395.8	133.1	828.9
trawlers				5.0	164.4	58.2	72.3	395.8	133.1	828.9
FRA		691.1	58.9				43.6	94.6	91.9	980.1
other_purse_seines		419.9	58.9							478.9

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
trawlers		271.1					43.6	94.6	91.9	501.2
KOR	17.1									17.1
trawlers	17.1									17.1
NA				1.6	124.9	33.3			70.6	230.5
fishing							6.3			6.3
trawlers					1.6	124.9	27.1		70.6	224.2
NGA							1,067.1	69.6		1,136.6
fishing							1,067.1	69.6		1,136.6
PAN				247.4	487.6	249.5				984.5
purse_seines				247.4	487.6	249.5				984.5
VCT			292.1							292.1
trawlers			292.1							292.1
Ghanaian Exclusive Economic Zone	10,635.9	8,185.6	37,615.2	39,886.0	52,014.9	34,260.9	41,880.9	31,734.5	34,302.5	290,516.3
CHN	42.0			2,494.2	2,267.6	5,227.4	1,325.6	833.5	1,994.8	14,185.0
fishing					4.0	776.2	1,090.3	578.3		2,448.8
set_longlines					280.1					280.1
trawlers	42.0			2,494.2	1,983.5	4,451.2	235.3	255.2	1,994.8	11,456.1
ESP						2.2				2.2
fishing						2.2				2.2
GBR							15.3			15.3
trawlers							15.3			15.3
GHA	10,593.9	8,185.6	35,607.0	37,249.6	49,747.3	28,647.0	40,279.2	30,846.9	32,235.1	273,391.5
dredge_fishing			240.1							240.1
fishing	113.5	1,198.5	7,614.7	14,181.8	21,560.9	14,811.4	20,812.3	18,196.9	11,758.4	110,248.5
other_purse_seines			1,576.2	342.2		49.9	1,242.6	70.3	73.3	3,354.6
set_longlines			1,394.4	974.0		47.2	168.7			2,584.4

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
trawlers	10,480.4	6,987.1	24,781.5	21,751.6	28,186.4	13,738.4	18,055.5	12,579.7	20,403.4	156,963.9
NA			2,008.2	142.2		367.0	260.9	52.6		2,830.8
fishing			2,008.2	142.2		71.9	190.2	39.4		2,452.0
set_longlines						74.1	69.6			143.8
trawlers						220.9	1.0	13.1		235.1
NGA						17.4		1.5	72.6	91.5
fishing						17.4		1.5	72.6	91.5
Guinean Exclusive Economic Zone	14,704.6	33,134.3	4,976.4	10,012.9	12,237.5	13,511.9	38,908.3	60,231.9	50,467.2	238,185.0
AGO								22.0		22.0
trawlers								22.0		22.0
BLZ	4.2	827.6					18.8	36.8	57.6	945.0
fishing		46.2								46.2
trawlers	4.2	781.4					18.8	36.8	57.6	898.8
CHN		565.7	770.4	6,299.5	8,354.1	7,050.6	19,195.9	15,570.5	14,140.3	71,947.2
fishing			770.4	2,082.3	995.4	2,103.6	2,181.9	6,447.8	6,911.5	21,493.1
set_longlines						90.2	453.1	37.1	910.1	1,490.5
trawlers		565.7		4,217.2	7,358.7	4,856.8	16,560.9	9,085.6	6,318.7	48,963.6
COM	5.8	332.5	9.4	11.5	223.3	64.2				646.7
fishing						0.1				0.1
other_purse_seines		321.9								321.9
trawlers	5.8	10.6	9.4	11.5	223.3	64.1				324.7
ESP	3,336.6	20,307.7	1,366.1	322.6	501.2	5,027.1	10,321.7	21,831.6	8,752.2	71,767.0
fishing					49.3	22.4				71.7
set_longlines						85.5	243.4	76.9		405.9
trawlers	3,336.6	20,307.7	1,366.1	322.6	451.9	4,919.2	10,078.3	21,754.7	8,752.2	71,289.4
GBR							6.6			6.6

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
trawlers							6.6			6.6
GHA						13.7		232.3		246.0
trawlers						13.7		232.3		246.0
GIN							100.5	14,385.2	19,459.8	33,945.5
trawlers							100.5	14,385.2	19,459.8	33,945.5
GNB						8.4	332.3	134.5	167.6	642.7
trawlers						8.4	332.3	134.5	167.6	642.7
GRC					1.2	2.4				3.6
trawlers					1.2	2.4				3.6
ISL								85.5		85.5
trawlers								85.5		85.5
ITA	358.2	10,014.8	904.5	266.9	799.5	1,155.4	5,024.4	7,012.0	5,957.9	31,493.5
fishing		2,774.4				19.5	235.4	368.2		3,439.4
trawlers	358.2	7,240.4	904.5	266.9	780.0	920.0	4,982.5	6,643.8	5,957.9	28,054.1
KNA	368.8	338.4	1,026.5	1,990.7		109.0				3,833.2
fishing			1,011.7			108.4				1,120.1
trawlers	368.8	338.4	14.8	1,990.7		0.6				2,713.2
KOR	2,230.2	379.7	282.2	883.6	1,611.6		491.6			5,879.0
fishing							491.6			491.6
set_longlines	49.4									49.4
trawlers	2,180.9	379.7	282.2	883.6	1,611.6					5,338.1
LTU	1,818.2	367.8				12.4				2,198.4
trawlers	1,818.2	367.8				12.4				2,198.4
NA	4,496.2						3,216.3	805.9	1,842.8	10,361.3
trawlers	4,496.2						3,216.3	805.9	1,842.8	10,361.3
NAM								4.9		4.9

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
trawlers								4.9		4.9
NOR								1.2		1.2
fishing								1.2		1.2
PRT						2.0				2.0
trawlers						2.0				2.0
RUS	2,086.4	0.2								2,086.6
trawlers	2,086.4	0.2								2,086.6
SEN			617.3	238.1	734.2		198.8	109.4	89.0	1,986.7
trawlers			617.3	238.1	734.2		198.8	109.4	89.0	1,986.7
TUR						79.1				79.1
other_purse_seines						79.1				79.1
WSM							1.5			1.5
trawlers							1.5			1.5
High_Sea	3,763.7	629.7	1,395.8	1,006.0	2,089.3	3,618.6	2,454.9	2,654.8	4,100.3	21,713.3
MAR		0.0					6.6		4.6	11.2
trawlers		0.0					6.6		4.6	11.2
AGO							25.7	5.3	1.6	32.6
other_purse_seines							13.5			13.5
trawlers							12.3	5.3	1.6	19.2
ARG								1.3		1.3
trawlers								1.3		1.3
BLZ	881.0					159.9	438.8	270.4	231.2	1,981.3
fishing							0.6			0.6
trawlers	881.0					159.9	438.2	270.4	231.2	1,980.8
BRA								260.6		260.6
fishing								260.6		260.6

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
CAN									0.7	0.7
trawlers									0.7	0.7
CHN	31.8	113.0	145.7		1,545.0	1,989.7	9.4	590.4	1,470.9	5,895.9
fishing					1,306.4	1,989.7		559.0	1,169.6	5,024.7
squid_jigger									280.8	280.8
trawlers	31.8	113.0	145.7		238.7		9.4	31.4	20.4	590.4
CIV								6.0		6.0
fishing								6.0		6.0
CMR									8.5	8.5
trawlers									8.5	8.5
COM						137.8				137.8
trawlers						137.8				137.8
CUB						1.8				1.8
trawlers						1.8				1.8
DNK							4.9			4.9
trawlers							4.9			4.9
ESP	8.9	96.3	814.0	172.8	176.8	347.5	367.7	245.5	102.2	2,331.7
dredge_fishing		0.7								0.7
fishing			500.8	103.2	165.3	210.2	175.3	17.2	36.2	1,208.1
other_purse_seines				2.0		36.3	0.6		0.7	39.5
set_gillnets						8.1	47.7	99.6		155.4
set_longlines		95.6	274.6						5.8	376.0
trawlers	8.9		38.6	67.6	11.5	93.0	144.1	128.7	59.7	552.0
FLK		0.4		10.0	3.0	3.5	2.0	51.4	14.9	85.2
set_longlines								0.4		0.4
trawlers		0.4		10.0	3.0	3.5	2.0	51.0	14.9	84.8

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
FRA	0.1			82.9	7.5	133.1	8.3			231.9
fishing	0.1			82.9		133.1	8.3			224.5
trawlers					7.5					7.5
GBR									10.7	10.7
fixed_gear									10.7	10.7
GHA	599.1							22.4	140.3	761.7
fishing	599.1							22.4	140.3	761.7
GIN								135.9	284.2	420.1
trawlers								135.9	284.2	420.1
GNB						5.0		55.9	26.6	87.5
trawlers						5.0		55.9	26.6	87.5
GNQ							10.0			10.0
fishing							10.0			10.0
IRL							0.6			0.6
trawlers							0.6			0.6
JPN							47.2			47.2
trawlers							47.2			47.2
KNA	216.2									216.2
fishing	216.2									216.2
KOR	1,905.4					11.0	110.1	2.9		2,029.4
fishing	1,905.4						109.5			2,014.9
trawlers						11.0	0.6	2.9		14.5
LTU				11.4						11.4
trawlers				11.4						11.4
LVA							2.1			2.1
pots_and_traps							2.1			2.1

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
NA							131.6		37.4	169.0
fishing							131.6			131.6
trawlers									37.4	37.4
NAM						3.4	7.8	84.3	26.1	121.6
trawlers						3.4	7.8	84.3	26.1	121.6
NLD	0.2									0.2
trawlers	0.2									0.2
NOR								115.0		115.0
fishing								115.0		115.0
PAN					39.9					39.9
purse_seines					39.9					39.9
PRT	16.6	404.7	407.6	543.3	269.5	705.2	981.2	742.8	1,056.0	5,126.9
fishing	16.6	37.9	306.9	65.4	76.4	34.2	285.5	58.0	295.7	1,176.5
fixed_gear		44.1	87.9	339.2	80.3	671.0	695.7	684.8	760.3	3,363.3
other_purse_seines		322.7								322.7
set_gillnets				9.6	1.9					11.6
set_longlines			12.8	129.0	110.9					252.7
RUS	104.6	15.3	28.5	185.6		120.8		50.3	236.5	741.6
fishing						2.0		8.9		10.9
pots_and_traps						7.8				7.8
trawlers	104.6	15.3	28.5	185.6		111.0		41.4	236.5	722.9
SEN							160.7	14.5	358.7	533.8
fishing							160.7	14.5	358.7	533.8
TUR									23.3	23.3
fishing									23.3	23.3
TWN					47.6		140.1		65.9	253.6

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
fishing					47.6		140.1			187.8
fixed_gear									65.9	65.9
Ivory Coast Exclusive Economic Zone	402.4	108.3	3,655.6	16,795.3	33,303.6	25,595.9	6,338.0	13,883.8	13,515.9	113,598.9
BLZ		0.4				7.5	14.7		1.3	23.8
trawlers		0.4				7.5	14.7		1.3	23.8
CHN	43.8			5,616.3	19,475.2	15,957.4		2,163.9	2,928.9	46,185.5
fishing				2,427.0	11,438.8	6,628.1		1,028.3	657.4	22,179.6
trawlers	43.8			3,189.3	8,036.4	9,329.3		1,135.6	2,271.5	24,005.9
ESP						8.5		1,426.1	202.0	1,636.5
fishing						8.5				8.5
other_purse_seines								1,426.1	202.0	1,628.0
GBR							51.9			51.9
trawlers							51.9			51.9
GHA	243.9	108.0	3,575.2	11,127.4	13,828.4	7,444.4	3,588.1	10,293.9	10,383.7	60,593.0
fishing	46.0		402.3	1,740.6	4,649.7	3,749.6	1,747.3	2,922.2	4,391.3	19,648.9
trawlers	197.9	108.0	3,172.9	9,386.8	9,178.7	3,694.8	1,840.8	7,371.7	5,992.4	40,944.0
GNQ							16.7			16.7
fishing							16.7			16.7
IRL	114.7									114.7
trawlers	114.7									114.7
NA			80.4	51.7			3.8			135.9
fishing			80.4	51.7			3.8			135.9
PAN						6.5				6.5
purse_seines						6.5				6.5
PRT						2,171.7	2,662.8			4,834.4
trawlers						2,171.7	2,662.8			4,834.4

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
Joint regime area Nigeria / Sao Tome and Principe							1.4			1.4
NGA							1.4			1.4
fishing							1.4			1.4
Liberian Exclusive Economic Zone		115.9		1,928.6		28.6	1,734.4	18,112.1	25,040.5	46,960.1
AGO							7.5	2.7		10.2
other_purse_seines							3.2			3.2
trawlers							4.3	2.7		7.0
BLZ								10.6	24.6	35.2
trawlers								10.6	24.6	35.2
CHN				1,928.6			1,711.3	18,043.5	24,976.4	46,659.7
fishing				616.9						616.9
trawlers				1,311.6			1,711.3	18,043.5	24,976.4	46,042.8
ESP						1.9				1.9
fishing						1.9				1.9
FRA							3.8	1.6		5.3
trawlers							3.8	1.6		5.3
GHA		115.9				15.5				131.4
trawlers		115.9				15.5				131.4
GIN									0.5	0.5
trawlers									0.5	0.5
IRL							0.8			0.8
trawlers							0.8			0.8
ITA									0.8	0.8
trawlers									0.8	0.8
KNA						11.3				11.3
fishing						11.3				11.3

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
NA							10.9			10.9
fishing							10.9			10.9
NGA								3.8	30.2	34.0
fishing								3.8	30.2	34.0
PRT									1.0	1.0
trawlers									1.0	1.0
SEN									7.0	7.0
fishing									7.0	7.0
TUR								49.9		49.9
purse_seines								49.9		49.9
Overlapping claim Western Saharan Exclusive Economic Zone	30,111.4	58,716.2	50,722.3	66,136.7	85,778.5	88,408.6	80,404.8	105,801.2	126,208.2	692,287.8
MAR	12,917.6	24,093.5	27,556.0	39,589.6	53,621.6	55,380.9	58,693.0	65,891.3	60,554.2	398,297.7
fishing	2,069.8	2,128.1	3,132.2	4,579.4	6,666.1	5,851.3	6,504.9	6,183.3	5,411.3	42,526.3
other_purse_seines	520.6	91.4	1,625.1	1,832.7	1,214.7	1,004.1	1,212.2	1,593.0	1,421.8	10,515.5
trawlers	10,327.2	21,874.1	22,798.6	33,177.6	45,740.8	48,525.5	50,975.9	58,115.0	53,721.1	345,255.9
AGO						5.3	17.7		1,927.9	1,950.9
trawlers						5.3	17.7		1,927.9	1,950.9
BES							98.4	535.8	190.4	824.5
fishing							98.4			98.4
trawlers								535.8	190.4	726.2
BLZ	805.7	1,964.4	2,635.2	651.1	821.0	943.0	616.1	737.6	2,389.4	11,563.6
fishing	328.4	1,964.4	2,621.3	595.9	757.5	838.6	575.6	95.8	114.0	7,891.5
purse_seines				19.6	47.8				7.9	75.3
trawlers	477.3		13.9	35.6	15.7	104.4	40.5	641.8	2,267.5	3,596.7
CHN	804.7	129.2	226.7	285.5	5,108.6	7,817.6	4,521.3	4,102.6	15,733.4	38,729.5
fishing				67.2	365.2	315.3	559.3	11.2	186.9	1,505.2

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
purse_seines									63.9	63.9
set_longlines							42.7			42.7
trawlers	804.7	129.2	226.7	218.3	4,743.4	7,502.2	3,919.3	4,091.4	15,482.6	37,117.8
CMR				0.8	9.9			229.8	3,983.7	4,224.2
fishing				0.8	9.9				85.6	96.4
other_purse_seines									131.4	131.4
trawlers								229.8	3,766.6	3,996.3
COM	1,560.2	2,504.4	3,063.2	748.8	11.8	33.4				7,921.9
fishing	946.4	2,128.8	2,148.6	105.5						5,329.3
other_purse_seines					8.6	33.4				42.1
trawlers	613.8	375.6	914.5	643.3	3.2					2,550.4
CUB						5.6				5.6
trawlers						5.6				5.6
DEU	1,020.1		696.6	1,278.0	967.8	1,476.5	550.1	705.4	976.7	7,671.3
trawlers	1,020.1		696.6	1,278.0	967.8	1,476.5	550.1	705.4	976.7	7,671.3
DNK					712.8	14.5	313.5		105.1	1,145.9
trawlers					712.8	14.5	313.5		105.1	1,145.9
ESP	237.5	197.6	6,872.5	13,303.1	9,887.8	7,939.5	4,128.8	2,788.8	5,882.6	51,238.3
fishing	199.5	1.8		3,929.2	332.3	131.9		44.2	776.0	5,415.0
set_longlines		27.8	1.6	161.8	916.1	117.3	76.2	100.5		1,401.3
trawlers	37.9	168.0	6,871.0	9,212.1	8,639.4	7,690.2	4,052.7	2,644.1	5,106.6	44,421.9
FIN	2,797.5									2,797.5
trawlers	2,797.5									2,797.5
FLK			6.5	0.7			0.6	3.1	0.6	11.5
trawlers			6.5	0.7			0.6	3.1	0.6	11.5
FRA	63.4			4.6		66.9	292.9	743.9	807.2	1,978.9

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
fishing	63.4			4.6						68.0
trawlers						66.9	292.9	743.9	807.2	1,910.9
FRO				669.3	324.3					993.5
trawlers				669.3	324.3					993.5
GBR	308.4							0.2		308.6
trawlers	308.4							0.2		308.6
GEO							28.2	3,331.2	2,830.7	6,190.0
trawlers							28.2	3,331.2	2,830.7	6,190.0
GNB						7.2	5.6		154.2	167.0
trawlers						7.2	5.6		154.2	167.0
GRC							393.4	370.9		764.3
other_purse_seines							393.4	370.9		764.3
HUN		392.3	568.7				314.1	472.3	2.8	1,750.1
trawlers		392.3	568.7				314.1	472.3	2.8	1,750.1
IDN					102.8	371.3	147.6	360.6	225.1	1,207.4
set_longlines					102.8	371.3	147.6	360.6	225.1	1,207.4
ISL								195.0		195.0
trawlers								195.0		195.0
KNA	117.3	4.9		24.4						146.6
trawlers	117.3	4.9		24.4						146.6
KOR						81.9	0.9			82.8
trawlers						81.9	0.9			82.8
LTU	479.0	80.6	995.1	1,668.7	1,772.3	217.5	19.6	331.2	4,167.2	9,731.3
trawlers	479.0	80.6	995.1	1,668.7	1,772.3	217.5	19.6	331.2	4,167.2	9,731.3
LVA							1.9	748.0	3,857.1	4,607.0
fixed_gear							1.9	748.0	3,857.1	4,607.0

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
trawlers								748.0	3,857.1	4,605.1
MRT			397.0	64.0	31.2	11.0	289.4	1,219.5	2,448.0	4,460.2
fishing						2.5		77.1	4.7	84.3
fixed_gear			168.1	22.2	1.6		3.1			195.1
other_purse_seines							169.9	867.6	86.3	1,123.8
purse_seines			52.8	9.3	15.6	5.2		7.2	22.8	113.0
set_longlines			176.1	32.5	14.0	3.3	2.3	5.4		233.6
trawlers							114.1	262.1	2,334.2	2,710.4
NA						3,339.8	2,125.5	1,425.1	2,148.4	9,038.9
fishing						211.9				211.9
trawlers						3,128.0	2,125.5	1,425.1	2,148.4	8,827.1
NAM					439.3	42.7	64.7	0.0		546.6
fishing							14.6			14.6
trawlers					439.3	42.7	50.1	0.0		532.0
NLD	1,817.4	803.6	3,455.4	3,155.4	1,769.5	1,922.6	252.8	1,548.8	1,473.0	16,198.5
trawlers	1,817.4	803.6	3,455.4	3,155.4	1,769.5	1,922.6	252.8	1,548.8	1,473.0	16,198.5
NOR	91.2	514.6	89.6	9.5	14.2	80.2	57.5	10.3	441.1	1,308.1
fishing	53.9	262.2	89.6						431.6	837.3
other_purse_seines		38.6		7.9	14.2	80.2	41.5	9.2	9.5	201.2
purse_seines				1.6			16.0	1.0		18.6
set_longlines	37.3	213.7								251.0
NRU					1,922.8	3,639.6				5,562.4
trawlers					1,922.8	3,639.6				5,562.4
PAN									0.2	0.2
fishing									0.2	0.2
POL	120.6	33.2	17.8	106.4	12.7	30.1				320.7

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
trawlers	120.6	33.2	17.8	106.4	12.7	30.1				320.7
PRT		34.4	1,501.0	2,639.3	2,541.7	2,271.8	3,045.8	2,088.3	1,413.5	15,535.6
fishing			539.9	2,639.3	1,082.8	2,271.8	3,045.8	2,088.3	1,298.3	12,966.1
set_longlines			961.2		1,458.8					2,420.0
trawlers		34.4							115.1	149.5
RUS	3,644.2	27,216.3	2,641.0	1,937.6	5,699.4	1,847.2	3,897.2	17,795.6	10,540.7	75,219.2
fishing	6.3							488.1		494.4
trawlers	3,637.9	27,216.3	2,641.0	1,937.6	5,699.4	1,847.2	3,897.2	17,307.5	10,540.7	74,724.8
SEN							8.1	11.3		19.4
trawlers							8.1	11.3		19.4
SWE	3,326.6	741.7						16.6		4,084.9
fishing	3,326.6	741.7								4,068.3
trawlers								16.6		16.6
TUR					7.0	862.6	520.1	138.2	3,256.8	4,784.8
fishing						636.5	285.8	137.6	26.9	1,086.7
other_purse_seines					7.0	123.5	51.0	0.6	2,749.9	2,932.0
purse_seines									410.3	410.3
trawlers						102.7	183.3		69.6	355.7
UKR		5.5							698.2	703.7
trawlers		5.5							698.2	703.7
Portuguese Exclusive Economic Zone (Azores)				3.1	3.0	32.0	213.4	1.4		252.9
ESP				3.1						3.1
set_longlines				3.1						3.1
PRT					3.0	32.0	213.4	1.4		249.7
fishing					3.0	32.0	213.4			248.3
trawlers								1.4		1.4

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
Portuguese Exclusive Economic Zone (Madeira)	5.7	740.6	1,745.5	3,147.8	4,229.8	3,088.1	4,114.7	3,783.0	3,066.3	23,921.7
BLZ		3.7								3.7
trawlers		3.7								3.7
ESP		54.0	143.4	58.7	24.4	247.0	985.5	749.9	1,020.4	3,283.3
fishing			30.2	4.2					77.3	111.7
purse_seines					0.1			20.0	24.9	44.9
set_longlines		54.0	113.2	43.6	24.3	226.1	983.1	729.9	918.2	3,092.5
trawlers				10.9		21.0	2.3			34.2
FLK				0.7				6.0	4.2	10.9
set_longlines								1.6		1.6
trawlers				0.7				4.4	4.2	9.3
FRA		1.4					3.0			4.3
other_purse_seines		1.4								1.4
set_longlines							3.0			3.0
GBR					8.4				9.3	17.7
fixed_gear									9.3	9.3
trawlers					8.4					8.4
MRT									0.2	0.2
trawlers									0.2	0.2
NLD	3.3									3.3
trawlers	3.3									3.3
NOR								1.2		1.2
other_purse_seines								1.2		1.2
PRT		681.6	1,598.0	3,088.3	4,197.0	2,841.1	3,120.2	3,025.8	2,028.1	20,580.1
dredge_fishing							25.3			25.3
fishing		600.2	506.8	192.6	169.9	309.3	286.4	299.2	598.2	2,962.7

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
fixed_gear		0.0		319.4	63.4	264.9	359.0	575.7	466.2	2,048.6
other_purse_seines		66.6	945.1	2,190.1	3,349.2	2,266.9	2,449.4	2,150.9	962.8	14,381.1
set_gillnets		14.7								14.7
set_longlines			146.0	386.3	614.5					1,146.8
trawlers									0.8	0.8
RUS	2.3		4.1	0.1			6.1		4.0	16.7
trawlers	2.3		4.1	0.1			6.1		4.0	16.7
SEN									0.0	0.0
trawlers									0.0	0.0
Sao Tome and Principe Exclusive Economic Zone				33.5		12.0				45.6
ESP						12.0				12.0
fishing						12.0				12.0
PAN				33.5						33.5
purse_seines				33.5						33.5
Sierra Leonian Exclusive Economic Zone	31.4	1,906.1	3,510.0	9,150.4	28,562.7	28,220.8	21,290.6	12,294.9	4,518.5	109,485.3
AGO							2.1	2.8	1.2	6.1
trawlers							2.1	2.8	1.2	6.1
BLZ							108.6	10.1	23.7	142.4
trawlers							108.6	10.1	23.7	142.4
CHN						612.6	514.9	1,153.9	2,086.4	4,367.8
fishing								1,056.7		1,056.7
set_longlines						394.8	514.9	97.2		1,006.9
trawlers						217.8			2,086.4	2,304.2
ESP			612.2		3,661.7	15.8				4,289.7
fishing					3,661.7	13.4				3,675.1
set_longlines						2.4				2.4

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
trawlers			612.2							612.2
GIN								11.4		11.4
trawlers								11.4		11.4
GNB							900.1			900.1
trawlers							900.1			900.1
ITA				4,495.5	24,663.1	27,507.1	18,890.7	11,101.6	2,371.2	89,029.3
fishing					4,666.2	6,303.5	4,085.1			15,054.9
trawlers				4,495.5	19,996.9	21,203.6	14,805.6	11,101.6	2,371.2	73,974.4
KNA			718.1	1,957.9	56.1	85.3				2,817.4
fishing			55.7			36.7				92.4
trawlers			662.3	1,957.9	56.1	48.7				2,725.0
KOR	31.4	1,906.1	2,179.7	2,619.0	4.5					6,740.7
trawlers	31.4	1,906.1	2,179.7	2,619.0	4.5					6,740.7
NA							22.3		32.9	55.1
fishing							22.3			22.3
trawlers									32.9	32.9
NAM								14.3		14.3
trawlers								14.3		14.3
NGA							228.0			228.0
trawlers							228.0			228.0
PAN				78.0						78.0
purse_seines				78.0						78.0
PRT									3.0	3.0
trawlers									3.0	3.0
SEN					177.2					177.2
trawlers					177.2					177.2

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
SLE							278.9			278.9
trawlers							278.9			278.9
TUR								0.9		0.9
purse_seines								0.9		0.9
WSM							344.9			344.9
fishing							84.8			84.8
trawlers							260.1			260.1
Spanish Exclusive Economic Zone (Canary Islands)	215.4	1,743.9	5,321.4	6,565.0	6,750.2	6,735.2	9,239.4	11,955.8	13,299.9	61,826.1
MAR	18.9	71.9	9.9	36.4	236.1	74.7	39.1	73.0	47.1	607.0
fishing		0.6		0.5	4.9	0.4	1.4	1.6		9.4
other_purse_seines									7.0	7.0
trawlers	18.9	71.3	9.9	35.9	231.2	74.2	37.6	71.4	40.1	590.6
AGO							2.1		16.7	18.8
trawlers							2.1		16.7	18.8
ARG							0.8			0.8
trawlers							0.8			0.8
BES							8.7	3.4	0.8	12.9
fishing							8.7			8.7
trawlers								3.4	0.8	4.2
BLZ	23.6	9.9	61.4	22.2	87.2	1.9		26.8	55.4	288.4
fishing		3.0		21.8		1.9		10.5		37.2
trawlers	23.6	6.9	61.4	0.5	87.2			16.3	55.4	251.2
CAN				1.3					6.7	8.0
trawlers				1.3					6.7	8.0
CHN	18.1	97.8	41.8	22.6	3.6			0.3	23.7	208.1
trawlers	18.1	97.8	41.8	22.6	3.6			0.3	23.7	208.1

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
CMR								0.5	357.9	358.4
fishing									240.6	240.6
other_purse_seines									105.5	105.5
trawlers								0.5	11.7	12.3
COM	2.2	0.5	72.6	10.8	41.0	0.9				127.9
fishing			67.9							67.9
other_purse_seines					35.1					35.1
trawlers	2.2	0.5	4.8	10.8	5.9	0.9				25.0
DEU				5.8	0.1	6.8	0.2		0.3	13.2
trawlers				5.8	0.1	6.8	0.2		0.3	13.2
DNK			1.0				9.0			10.0
trawlers			1.0				9.0			10.0
ESP		1,349.3	4,438.1	4,350.9	6,144.9	6,333.1	8,883.3	11,623.3	11,796.6	54,919.5
fishing				418.4	336.2	1,462.5	3,478.3	4,754.8	5,128.2	15,578.4
fixed_gear		28.6	41.8	66.3	158.1					295.0
other_purse_seines			704.0	148.0						852.1
purse_seines		35.7	1,031.4	252.6	447.8	468.5	355.8	1,201.7	1,646.6	5,439.9
set_longlines		1,246.4	2,629.3	3,464.7	5,179.4	4,389.7	5,026.0	5,663.2	5,004.2	32,602.8
trawlers		38.6	31.6	0.7	23.4	12.5	23.1	3.7	17.6	151.3
FLK		3.8		1.0		2.6	9.1	4.5	1.9	22.9
trawlers		3.8		1.0		2.6	9.1	4.5	1.9	22.9
FRA			22.8	1.3		33.1				57.2
set_longlines			22.8							22.8
trawlers				1.3		33.1				34.4
FRO				13.5	33.5					47.0
trawlers				13.5	33.5					47.0

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
GBR							3.4			3.4
trawlers							3.4			3.4
GEO								10.8	12.9	23.7
trawlers								10.8	12.9	23.7
GHA	10.5									10.5
fishing	10.5									10.5
GIN									0.6	0.6
trawlers									0.6	0.6
GNB						4.5	6.4	0.7	302.1	313.7
trawlers						4.5	6.4	0.7	302.1	313.7
GRL				14.6						14.6
set_longlines				14.6						14.6
HUN			9.2				44.5			53.7
trawlers			9.2				44.5			53.7
ISL						63.5				63.5
fishing						48.7				48.7
trawlers						14.8				14.8
JPN						7.0			9.6	16.6
set_longlines									1.0	1.0
trawlers						7.0			8.6	15.6
KNA	0.2	6.4		38.7	5.6	0.9				51.8
fishing				28.7						28.7
trawlers	0.2	6.4		10.0	5.6	0.9				23.1
KOR	0.7									0.7
set_longlines	0.7									0.7
LTU	15.3	4.2	19.9			0.6	0.1			40.0

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
trawlers	15.3	4.2	19.9			0.6	0.1			40.0
LVA							16.2			16.2
fishing							14.1			14.1
fixed_gear							2.1			2.1
MRT		19.4	63.3	2.6	122.7	21.4	23.3	1.4	4.0	258.1
fishing					4.9	21.4				26.3
fixed_gear		19.4	1.1	0.6	0.3		1.1	0.6		23.1
other_purse_seines							1.1			1.1
purse_seines			16.0	0.6	90.9		11.9	0.7	3.7	123.7
set_longlines			46.2	1.4	26.6		9.2	0.1		83.6
trawlers									0.3	0.3
NAM						20.0	0.0		0.6	20.6
trawlers						20.0	0.0		0.6	20.6
NGA							0.2			0.2
trawlers							0.2			0.2
NLD	4.6	0.5	32.4	0.8		5.3			1.3	45.0
set_gillnets			32.4							32.4
trawlers	4.6	0.5		0.8		5.3			1.3	12.6
NOR	37.2	38.7	6.6	2.0	4.9	18.0	137.3	10.4	21.8	276.9
fishing	21.8	19.2	0.4						15.6	57.1
other_purse_seines				2.0	4.9	16.6	6.6	6.4	6.2	42.7
purse_seines							113.9	1.3		115.3
set_longlines	14.4	19.5								33.9
trawlers	0.9		6.2			1.3	16.9	2.7		28.0
NZL					23.0					23.0
trawlers					23.0					23.0

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
POL	0.3		1.6		2.8	2.3		117.8		124.8
fishing								117.8		117.8
trawlers	0.3		1.6		2.8	2.3				7.0
PRT		61.9	372.9	1,969.8	2.1	96.0	37.7	0.7	521.8	3,063.0
fishing			108.8		2.1	96.0	37.7	0.7	521.8	767.2
other_purse_seines		34.7								34.7
set_gillnets		27.2								27.2
set_longlines			264.1	1,969.8						2,233.9
RUS	83.9	79.4	133.5	70.7	40.7	7.7	17.9	82.3	110.9	627.1
trawlers	83.9	79.4	133.5	70.7	40.7	7.7	17.9	82.3	110.9	627.1
SEN									7.1	7.1
trawlers									7.1	7.1
TUR						34.9				34.9
other_purse_seines						34.9				34.9
USA			34.2							34.2
set_gillnets			34.2							34.2
VUT					1.8					1.8
trawlers					1.8					1.8
Togolese Exclusive Economic Zone		12.8			0.8	2,024.3	3,025.2	3,702.0	3,883.0	12,648.1
CHN							3.0			3.0
fishing							3.0			3.0
GHA		12.8			0.8	6.2	0.2	40.0	18.0	78.0
fishing		11.2			0.8	6.2	0.2	31.0	18.0	67.4
trawlers		1.6						9.0		10.6
NA						2,018.1	3,022.0	3,662.0	3,542.3	12,244.4
trawlers						2,018.1	3,022.0	3,662.0	3,542.3	12,244.4

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
NGA									322.7	322.7
fishing									322.7	322.7
Grand Total	61,663.6	111,810.4	117,089.5	162,403.6	270,975.0	252,447.9	257,346.9	350,281.1	419,885.2	2,003,903.2

ANNEX 7 GLOBAL FISHING WATCH AIS DATA FOR FAO MAJOR FISHING AREA 41. ORGANISED BY COASTAL STATE (INCLUDING HIGH SEAS) AREAS, THE FLAG STATE OF THE VESSEL (INDENTED; N = 55) AND INDICATED GEAR TYPE FROM 2012 TO 2020. VALUES REPRESENT INDICATED FISHING TIME IN HOURS

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
Argentinean Exclusive Economic Zone	415,593.3	489,949.3	516,274.7	508,489.9	566,245.8	577,385.8	630,031.3	644,402.3	590,784.3	4,939,156.8
AFG						699.8	695.4			1,395.2
ALB						68.7				68.7
squid_jigger						68.7				68.7
AND									19.2	19.2
trawlers									19.2	19.2
ARE	580.0	1,086.4	990.4		2,219.5	1,239.8		97.2		6,213.2
squid_jigger	580.0	1,086.4	990.4							2,656.8
trawlers					2,219.5	1,239.8		97.2		3,556.4
ARG	373,741.2	454,588.7	460,759.7	454,615.0	501,046.8	516,021.5	564,243.3	584,206.1	520,244.8	4,429,467.0
fishing	23,248.5	31,655.8	28,940.6	27,633.2	25,628.4	15,105.9	16,149.6	13,483.0	11,358.3	193,203.4
fixed_gear	11,489.0	9,886.6	9,153.5	11,266.3	9,960.9	9,689.5	10,758.5	11,005.9	9,388.8	92,599.2
set_longlines	916.5	1,744.5								2,661.1
squid_jigger	34,919.0	54,600.2	48,621.2	32,397.3	46,875.4	40,018.8	45,440.8	41,067.1	71,135.1	415,074.8
trawlers	303,168.1	356,701.5	374,044.3	383,318.2	418,582.0	451,207.4	491,894.4	518,650.2	428,362.5	3,725,928.6
BLZ			60.8				989.9	1,126.1	209.4	2,386.3
fishing							239.9	563.2		803.1
squid_jigger			60.8							60.8
trawlers							750.0	562.9	209.4	1,522.4
CHL	210.8	61.8	16.8	15.4	414.0	295.4	349.1	31.7	44.4	1,439.4
set_longlines	205.5	52.5	16.8	11.9	34.5	11.3	36.0	26.1	29.9	424.6
trawlers	5.3	9.3		3.5	379.5	284.0	313.0	5.7	14.5	1,014.8
CHN	141.4	1,874.5	4,924.7	8,737.5	13,974.6	4,605.6	4,375.4	3,580.5	17,229.5	59,443.8

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
fishing			52.2	35.1	1,076.9	617.3	186.2	332.7	1,438.8	3,739.2
fixed_gear									4.2	4.2
squid_jigger	141.3	1,874.5	4,017.8	7,810.4	12,367.9	3,907.4	4,147.3	3,221.7	13,454.4	50,942.6
trawlers	0.2		854.8	892.0	529.9	80.8	41.9	26.1	2,332.1	4,757.8
CUB						569.3				569.3
trawlers						569.3				569.3
CYP						5.1				5.1
squid_jigger						5.1				5.1
DEU					17.5					17.5
squid_jigger					17.5					17.5
ESP	36.7	358.2	538.3	308.4	458.8	1,868.0	6,164.8	1,945.0	2,498.7	14,176.8
set_longlines			1.3							1.3
trawlers	36.7	358.2	537.0	308.4	458.8	1,868.0	6,164.8	1,945.0	2,498.7	14,175.5
FLK	33.8	42.3	30.2	41.1	24.1	179.6	1,255.8	202.8	104.3	1,914.0
trawlers	33.8	42.3	30.2	41.1	24.1	179.6	1,255.8	202.8	104.3	1,914.0
GBR						20.3	148.5	3.4	8.7	180.9
trawlers						20.3	148.5	3.4	8.7	180.9
KHM	40.2	118.8	61.4	2.0	193.1					415.4
squid_jigger	40.2	118.8	61.4	2.0	193.1					415.4
KIR							258.5	163.1		421.5
squid_jigger							258.5	163.1		421.5
KOR	1,010.8	1,451.4	2,525.3	3,443.9	3,202.2	2,993.3	3,672.2	3,135.1	2,445.0	23,879.2
fishing	43.3	26.7	38.0	113.3	177.8				2.7	401.8
set_longlines	12.1	76.1	276.1	332.4	207.0	172.8	325.6	260.4	38.6	1,701.1
squid_jigger	937.2	1,332.9	1,997.9	2,874.0	2,639.9	2,209.3	2,931.0	1,338.7	1,176.7	17,437.6
trawlers	18.2	15.6	213.2	124.2	177.6	611.2	415.6	1,536.0	1,227.0	4,338.7

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
LTU						15.7				15.7
trawlers						15.7				15.7
NA	548.2	711.0	184.9	332.7	246.2	331.9	311.7	254.7	137.0	3,058.2
fishing		73.7	12.3	10.5	0.0	28.3	117.1	92.6	21.7	356.1
other_purse_seines	303.2									303.2
squid_jigger	244.9	283.0	125.0	208.8	203.8	24.4	193.9	162.0	115.4	1,561.3
trawlers		354.2	47.7	113.4	42.4	279.2	0.7			837.6
NZL						1.1			0.5	1.7
set_longlines						1.1			0.5	1.7
PER	129.4									129.4
purse_seines	129.4									129.4
PRT							812.6		64.9	877.6
fishing									64.9	64.9
trawlers							812.6			812.6
RUS	1.6	6.4						4.2	3.1	15.3
squid_jigger	1.6	6.4								8.0
trawlers								4.2	3.1	7.3
SHN					7.1	2.5				9.6
set_longlines					7.1	2.5				9.6
SLE	13.7									13.7
squid_jigger	13.7									13.7
TON	1,755.7	636.9	304.8							2,697.4
trawlers	1,755.7	636.9	304.8							2,697.4
TWN	1,265.5	1,526.4	493.0	115.8	1,276.7	707.2	4,988.3	2,506.4	1,368.1	14,247.3
fishing	14.8									14.8
squid_jigger	1,250.7	1,526.4	493.0	115.8	1,276.7	707.2	4,988.3	2,506.4	1,368.1	14,232.5

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
UKR	12.9	4.6	76.4	56.1	41.4	82.9	20.1		50.2	344.7
set_longlines	12.9	4.6	76.4	56.1	17.5	82.9	20.1		50.2	320.8
trawlers					23.9					23.9
URY	36,071.4	27,472.3	45,308.0	40,822.1	42,944.2	46,999.3	41,487.1	47,008.8	46,228.2	374,341.4
fishing	1,383.3	3,789.3	1,191.0	1,693.3	1,612.6	2,139.1	2,911.7	633.3		15,353.6
set_longlines		2.0	10.3	1,357.1	5,298.2	858.7	1,740.7	1,539.3	244.9	11,051.2
trawlers	34,688.1	23,681.0	44,106.7	37,771.7	36,033.4	44,001.5	36,834.8	44,836.2	45,983.4	347,936.7
VUT		9.8			179.7	678.8	258.8	137.2	128.1	1,392.4
squid_jigger		9.8			179.7	82.5	258.8	137.2	128.1	796.2
trawlers						596.3				596.3
Brazilian Exclusive Economic Zone	1,906.5	1,108.1	5,574.5	27,733.1	51,366.4	152,815.9	363,368.2	435,873.9	469,491.0	1,509,237.6
AFG				469.1	283.9	95.9		307.7	36.1	1,192.7
ARG							0.4		2,614.0	2,614.4
trawlers							0.4		2,614.0	2,614.4
BLZ							2.2	20.4		22.5
fishing								20.4		20.4
trawlers							2.2			2.2
BOL							248.5			248.5
trawlers							248.5			248.5
BRA		134.7	2,566.3	13,329.3	26,448.6	80,896.5	185,491.1	257,487.2	298,028.9	864,382.6
fishing					2,164.8	9,349.9	17,859.0	24,783.2	21,580.1	75,737.0
fixed_gear							469.9			469.9
other_purse_seines				493.6	1,285.7	1,555.0	1,994.9	1,425.0	1,653.6	8,407.9
set_gillnets						346.2	436.0	282.9	497.9	1,563.0
set_longlines			24.3	2,502.3	3,931.7	11,722.3	41,964.8	44,339.0	51,299.7	155,784.1
trawlers		134.7	2,542.0	10,333.4	19,066.4	57,923.1	122,766.5	186,657.0	222,997.5	622,420.7

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
CHL									473.8	473.8
trawlers									473.8	473.8
CHN			11.6	2.4		5.6	56.8			76.4
squid_jigger				2.0						2.0
trawlers			11.6	0.4		5.6	56.8			74.4
CUB						1.4				1.4
trawlers						1.4				1.4
DNK							1,841.2	1,466.7		3,307.9
trawlers							1,841.2	1,466.7		3,307.9
ESP					2.2	3.0	1.8	27.9	7.5	42.4
trawlers					2.2	3.0	1.8	27.9	7.5	42.4
FLK		5.4	20.6	6.2	6.6	11.3	9.3	16.2	16.6	92.2
set_longlines				4.7						4.7
trawlers		5.4	20.6	1.5	6.6	11.3	9.3	16.2	16.6	87.5
FRO								125.1		125.1
trawlers								125.1		125.1
GRL						175.7	2,487.5	369.6		3,032.9
set_longlines						175.7	2,487.5	369.6		3,032.9
GUF		3.3	1.9	2.0	21.7	2.9	5.6	2.9	20.7	60.9
trawlers		3.3	1.9	2.0	21.7	2.9	5.6	2.9	20.7	60.9
KOR								5.2		5.2
trawlers								5.2		5.2
MHL									444.9	444.9
fishing									444.9	444.9
NA		931.8	2,949.5	13,922.8	24,603.3	69,150.3	168,349.6	171,559.9	162,867.5	614,334.9
fishing		145.3	1,630.3	5,187.9	8,360.5	7,204.6	11,659.3	14,149.7	10,852.4	59,190.2

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
set_gillnets						227.8	4,443.4	2,044.6	165.7	6,881.5
set_longlines		521.6	846.6	3,373.4	3,732.5	16,530.2	49,978.5	56,052.3	49,255.1	180,290.3
trawlers		264.9	472.7	5,361.4	12,510.3	45,187.6	102,268.4	99,313.2	102,594.3	367,972.9
NOR	1,896.8	3.3				1.3				1,901.3
fishing	1,896.8	3.3								1,900.1
trawlers						1.3				1.3
NZL						425.3		35.6		460.9
trawlers						425.3		35.6		460.9
PRT									1.9	1.9
fishing									1.9	1.9
PSE						2,036.3	4,855.2	1,541.8	360.9	8,794.3
set_longlines							685.8	881.8		1,567.6
trawlers						2,036.3	4,169.5	659.9	360.9	7,226.6
SHN							5.9			5.9
set_longlines							5.9			5.9
SLB								2,902.4	3,760.0	6,662.4
trawlers								2,902.4	3,760.0	6,662.4
URY	9.7	29.7	24.6	1.2		10.3	13.0	5.4	1.2	95.1
fishing									1.2	1.2
set_longlines			6.7			1.7	6.6			14.9
trawlers	9.7	29.7	17.9	1.2		8.6	6.4	5.4		79.0
VEN									856.9	856.9
fishing									536.3	536.3
set_longlines									320.7	320.7
Brazilian Exclusive Economic Zone (Trindade)							134.4	384.2	162.7	681.2
NA							134.4	343.3	162.7	640.3

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
trawlers							134.4	343.3	162.7	640.3
NZL								40.9		40.9
trawlers								40.9		40.9
High Seas	68,091.4	149,766.8	244,675.2	344,007.0	332,998.4	284,823.5	324,306.0	258,801.6	321,214.5	2,328,684.4
ALB						123.6				123.6
squid_jigger						123.6				123.6
AND									1,345.9	1,345.9
trawlers									1,345.9	1,345.9
ARE	58.0									58.0
squid_jigger	58.0									58.0
ARG	1,385.9	1,181.0	1,147.5	726.2	148.7	329.4	1,053.0	961.6	641.5	7,574.8
fishing			1.3	18.6	19.9	12.8	29.7		0.2	82.4
squid_jigger	1,281.3	171.3	639.9	185.7	21.3	130.5	186.7	43.8	127.5	2,788.1
trawlers	104.6	1,009.7	506.3	522.0	107.5	186.1	836.6	917.8	513.8	4,704.3
BLZ			1,049.8				2,751.3	3,614.4	2,050.3	9,465.8
fishing							1,326.5	1,772.4		3,099.0
squid_jigger			1,049.8					50.9		1,100.7
trawlers							1,424.8	1,791.1	2,050.3	5,266.1
BRA								286.6		286.6
fishing								286.6		286.6
CHL		1,225.5	6,107.4	4,592.9	6,714.2	2,879.1	4,454.8	1,368.3	81.2	27,423.4
set_longlines		1,225.5	6,107.4	4,505.2	4,180.2	120.2	2,227.4	1,343.7		19,709.6
trawlers				87.8	2,534.0	2,758.8	2,227.5	24.6	81.2	7,713.8
CHN	11,755.9	57,425.0	118,727.0	247,753.6	206,880.9	177,800.2	195,580.0	156,369.5	214,032.8	1,386,324.9
fishing			5,763.2	16,314.1	34,165.9	18,548.6	22,847.9	14,312.8	33,815.4	145,767.9
fixed_gear									26.4	26.4

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
pots_and_traps					7.0					7.0
set_longlines						25.2				25.2
squid_jigger	11,674.9	54,769.6	82,140.8	174,884.8	131,933.9	118,609.0	142,479.2	121,179.5	117,790.4	955,462.1
trawlers	81.0	2,655.4	30,823.1	56,554.7	40,774.0	40,617.3	30,252.8	20,877.2	62,400.7	285,036.3
CUB						2,864.2				2,864.2
trawlers						2,864.2				2,864.2
CYP						72.9				72.9
squid_jigger						72.9				72.9
DEU					330.2					330.2
squid_jigger					330.2					330.2
ESP	1,223.9	7,508.9	7,685.1	4,813.2	6,016.0	16,080.1	22,181.1	10,272.8	24,225.2	100,006.4
set_longlines	19.9		10.2							30.1
trawlers	1,204.0	7,508.9	7,674.9	4,813.2	6,016.0	16,080.1	22,181.1	10,272.8	24,225.2	99,976.3
FLK	2,107.5	2,900.5	2,118.6	3,075.3	929.8	2,000.2	4,053.2	1,049.9	1,431.6	19,666.7
set_longlines	4.8		29.3			1.8	6.4	14.2	66.1	122.6
trawlers	2,102.7	2,900.5	2,089.3	3,075.3	929.8	1,998.4	4,046.8	1,035.7	1,365.5	19,544.1
GBR		2.4		4.5		125.1	447.7	26.2	135.0	741.0
trawlers		2.4		4.5		125.1	447.7	26.2	135.0	741.0
GHA	188.4							0.0	2.3	190.8
fishing	188.4							0.0	2.3	190.8
JPN									10.3	10.3
set_longlines									10.3	10.3
KHM	1,546.8	1,915.1	1,930.1	1,693.3	1,195.1					8,280.3
squid_jigger	1,546.8	1,915.1	1,930.1	1,693.3	1,195.1					8,280.3
KIR								6.4		6.4
squid_jigger								6.4		6.4

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
KNA	91.5									91.5
fishing	91.5									91.5
KOR	28,053.4	39,497.4	73,483.6	56,308.6	78,525.6	62,771.0	60,303.2	63,502.8	59,012.0	521,457.5
fishing	4,332.9	786.9	4,095.1	195.7	1,143.0				302.0	10,855.5
set_longlines	6,111.6	12,546.5	32,624.1	31,167.8	35,115.8	32,275.5	35,629.3	30,853.3	20,383.9	236,707.9
squid_jigger	11,721.7	14,932.3	16,575.2	10,384.3	27,285.9	13,947.6	9,185.6	8,944.4	13,421.4	126,398.3
trawlers	5,887.2	11,231.6	20,189.3	14,560.8	14,981.0	16,547.9	15,488.3	23,705.1	24,904.7	147,495.8
LTU				51.6						51.6
trawlers				51.6						51.6
NA	448.6	695.0	12,495.7	11,666.4	6,549.1	6,251.0	15,839.0	8,272.3	4,373.0	66,590.1
fishing		695.0	10,145.3	6,023.9	2,900.5	972.3	9,951.5	4,071.5	2,337.5	37,097.6
squid_jigger	448.6		2,350.4	5,334.1	1,919.7	4,240.4	5,278.9	3,400.0	1,289.1	24,261.0
trawlers				308.4	1,728.9	1,038.3	608.7	800.9	746.5	5,231.6
NOR		3.4		12.9		1.8	15.3	51.9	63.8	149.1
fishing								24.2		24.2
trawlers		3.4		12.9		1.8	15.3	27.7	63.8	124.9
NZL	0.0					7.4		187.3	23.8	218.4
set_longlines	0.0					7.4			23.8	31.2
trawlers								187.3		187.3
PER	211.9									211.9
purse_seines	211.9									211.9
PRT							1,272.5		364.9	1,637.4
fishing									364.9	364.9
trawlers							1,272.5			1,272.5
RUS	29.5	42.8		598.1	12.5			91.1	33.5	807.6
set_longlines		10.0		598.1	12.5					620.5

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
squid_jigger	29.5	32.8								62.4
trawlers								91.1	33.5	124.7
SEN								19.5	14.0	33.5
fishing								19.5	14.0	33.5
SHN		12.1			17.4	4.4			2.0	35.9
set_longlines		12.1			17.4	4.4			2.0	35.9
SLE	358.3									358.3
squid_jigger	358.3									358.3
TWN	12,079.6	28,192.5	11,913.0	6,851.0	19,009.9	7,341.2	13,220.5	12,186.3	11,878.4	122,672.5
fishing	309.8						1.4			311.2
squid_jigger	11,769.8	28,192.5	11,913.0	6,851.0	19,009.9	7,341.2	13,219.1	12,186.3	11,878.4	122,361.2
UKR	5,413.7	8,635.2	6,768.5	5,294.7	5,352.3	5,687.4	2,945.9	141.9	917.8	41,157.5
set_longlines	5,413.7	8,635.2	6,767.0	5,294.7	5,300.1	5,683.5	2,940.9	141.3	897.6	41,074.0
trawlers			1.6		52.2	3.9	5.0	0.6	20.2	83.5
URY	3,125.7	13.8	226.3	552.0		32.0	2.0	8.1	20.4	3,980.2
fishing	2,085.2									2,085.2
set_longlines		13.8	226.3	552.0		32.0	2.0	8.1	14.7	848.7
trawlers	1,040.5								5.8	1,046.3
VUT	12.7	516.1	1,022.5	12.5	1,316.6	452.9	186.5	384.8	554.7	4,459.4
squid_jigger	12.7	516.1	1,022.5	12.5	1,316.6	452.9	186.5	384.8	554.7	4,459.4
Overlapping claim Falkland / Malvinas Islands: UK / Argentina	215,644.8	183,818.7	199,362.7	201,864.1	106,757.9	159,293.4	154,225.4	154,130.5	167,458.0	1,542,555.6
ARE	215.5	104.3	145.3							465.1
squid_jigger	215.5	104.3	145.3							465.1
ARG	24,978.8	18,298.3	16,544.6	16,452.0	5,801.6	10,445.8	5,620.8	8,334.7	11,066.7	117,543.4
fishing	1,249.4	1,159.3	693.1	349.6	16.9	691.7	258.7	38.2	82.8	4,539.7
set_longlines	150.2	111.2								261.4

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
squid_jigger	12,751.4	10,297.8	7,555.5	8,958.4	138.7	5,762.2	2,337.7	2,663.1	4,841.8	55,306.5
trawlers	10,827.8	6,730.0	8,296.0	7,144.1	5,646.1	3,991.9	3,024.4	5,633.4	6,142.0	57,435.8
BLZ									22.1	22.1
trawlers									22.1	22.1
CHL			1,083.9	453.0	21.1	1,089.5	20.7	31.1	22.3	2,721.6
set_longlines			1,083.9	453.0	21.1	1,089.2	10.9	31.1	22.3	2,711.5
trawlers						0.3	9.8			10.1
CHN		13.9	67.0	697.6	12.6	136.8	201.2	56.6	352.1	1,537.8
fishing				20.5		75.4	1.5			97.4
squid_jigger		13.9	12.8	676.9		1.8			196.4	901.6
trawlers			54.3	0.1	12.6	59.6	199.7	56.6	155.7	538.7
ESP	48,925.9	41,415.5	50,453.9	45,445.8	32,167.4	30,215.6	26,616.8	42,566.1	37,177.3	354,984.4
set_longlines								0.1	40.6	40.7
trawlers	48,925.9	41,415.5	50,453.9	45,445.8	32,167.4	30,215.6	26,616.8	42,566.0	37,136.7	354,943.6
FLK	48,268.5	55,874.5	47,288.5	42,832.9	48,448.4	41,897.7	43,664.2	33,854.6	39,691.3	401,820.6
set_longlines	4,623.9	6,705.1	4,467.0	4,422.1	3,663.0	1,697.3	1,840.9	2,132.0	1,992.0	31,543.3
trawlers	43,644.6	49,169.4	42,821.6	38,410.8	44,785.4	40,200.4	41,823.3	31,722.6	37,699.3	370,277.3
GBR	2,074.8	2,684.7	2,518.1	2,652.2	2,938.3	2,505.3	2,466.2	2,009.6	2,407.3	22,256.4
trawlers	2,074.8	2,684.7	2,518.1	2,652.2	2,938.3	2,505.3	2,466.2	2,009.6	2,407.3	22,256.4
JPN									0.4	0.4
set_longlines									0.4	0.4
KHM	1,068.5	472.2	742.6							2,283.3
squid_jigger	1,068.5	472.2	742.6							2,283.3
KOR	32,176.7	24,757.5	32,064.7	34,461.0	5,420.2	28,540.9	24,243.7	24,964.2	22,778.4	229,407.3
fishing	842.3	847.9	1,657.5	2,192.5					708.9	6,249.1
set_longlines	266.1	436.8	360.7	218.1	1,112.1	1,663.2	1,505.2	1,108.1	774.2	7,444.4

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
squid_jigger	26,213.6	19,955.9	25,391.2	29,340.4	1,253.1	23,561.1	20,991.7	22,949.6	20,575.8	190,232.6
trawlers	4,854.7	3,516.9	4,655.3	2,710.0	3,055.0	3,316.6	1,746.8	906.5	719.4	25,481.2
LKA									26.8	26.8
squid_jigger									26.8	26.8
NA	1,239.7			12.0						1,251.6
squid_jigger	1,239.7			12.0						1,251.6
NOR						8.6	4.4	1.1		14.1
fishing							4.4			4.4
trawlers						8.6		1.1		9.7
NZL			9.7	17.6		8.0		9.5	2.2	46.9
set_longlines			9.7	17.6		8.0		9.5	2.2	46.9
RUS									0.6	0.6
trawlers									0.6	0.6
SHN				0.1	33.5	5.5		3.6	29.5	72.2
set_longlines				0.1	33.5	5.5		3.6	29.5	72.2
SLE	126.7									126.7
squid_jigger	126.7									126.7
TWN	54,456.8	38,730.1	46,021.2	56,444.8	11,323.8	41,879.0	48,304.8	39,850.0	52,470.5	389,480.9
squid_jigger	54,456.8	38,730.1	46,021.2	56,444.8	11,323.8	41,879.0	48,304.8	39,850.0	52,470.5	389,480.9
UKR	61.1	10.6	151.3	115.2	73.7	41.7	73.1		2.6	529.4
set_longlines	61.1	10.6	57.3	115.2	70.4	41.7	73.1		2.6	432.1
trawlers			94.0		3.3					97.3
URY			0.2	8.4		65.8	8.8	1.5	5.4	90.2
set_longlines			0.2	8.4		65.8	8.8	1.5	5.4	90.2
VUT	2,052.0	1,457.2	2,271.7	2,271.4	517.3	2,453.4	3,000.6	2,447.8	1,402.5	17,874.0
squid_jigger	2,052.0	1,457.2	2,271.7	2,271.4	517.3	2,453.4	3,000.6	2,447.8	1,402.5	17,874.0

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
Uruguayan Exclusive Economic Zone	85,556.1	84,907.7	102,054.5	86,095.9	72,786.3	95,077.9	98,596.7	91,392.8	76,599.6	793,067.4
AFG				1.6	13.5					15.2
ARG	22.4	2,143.0	2,857.8	2,905.4	3,858.0	2,871.0	2,522.8	6,230.6	2,597.6	26,008.6
fishing		52.9					33.4	681.6		767.9
fixed_gear		1.8			0.3	0.7	2.3	1.3		6.4
squid_jigger	7.6				12.3				26.0	45.9
trawlers	14.8	2,088.3	2,857.8	2,905.4	3,845.4	2,870.3	2,487.0	5,547.7	2,571.6	25,188.3
BLZ							87.1	33.9	21.4	142.4
fishing							68.8	32.5		101.3
trawlers							18.3	1.4	21.4	41.1
BRA							23.9	119.5	158.9	302.3
fishing								38.4	54.2	92.6
set_longlines								14.8	24.2	39.0
trawlers							23.9	66.2	80.5	170.7
CHL			17.9				2.1	2.4		22.3
set_longlines							2.1	2.4		4.4
trawlers			17.9							17.9
CHN	17.3	32.9	656.1	615.7	379.1	273.4	705.9	484.2	1,306.3	4,470.9
fishing			15.7	77.3	332.3	31.5	187.2	9.7	728.9	1,382.7
squid_jigger				43.2	40.5	6.5				90.2
trawlers	17.3	32.9	640.4	495.2	6.3	235.5	518.6	474.4	577.4	2,998.0
ESP	49.2	199.8	352.0	340.9	245.4	610.0	526.3	370.2	363.3	3,056.9
trawlers	49.2	199.8	352.0	340.9	245.4	610.0	526.3	370.2	363.3	3,056.9
FLK		7.9	0.4	1.5	28.1	42.8	27.9	67.2	29.4	205.1
set_longlines		0.4	0.4		22.5					23.3
trawlers		7.5		1.5	5.6	42.8	27.9	67.2	29.4	181.9

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
GBR									0.2	0.2
trawlers									0.2	0.2
KOR	46.9	233.2	627.5	263.8	84.9	192.6	240.6	289.0	154.8	2,133.4
fishing			338.4							338.4
set_longlines		7.5	101.0	158.0	11.0	11.2	40.2	22.0	8.5	359.3
squid_jigger	4.3	145.4	36.3	22.6		22.0				230.5
trawlers	42.7	80.3	151.9	83.2	73.9	159.4	200.4	267.0	146.4	1,205.3
NA	536.6	18.0	1,344.0	3,208.3	1,430.3	3,033.5	2,764.8	228.7	128.6	12,692.7
fishing		16.7	74.3	95.1	18.8	148.7	10.8	27.9	33.0	425.3
other_purse_seines	536.6									536.6
set_longlines									25.6	25.6
trawlers		1.3	1,269.7	3,113.2	1,411.4	2,884.8	2,754.0	200.7	70.1	11,705.2
NOR		140.0	4.3	150.4			137.3	69.8	46.2	547.9
set_longlines			4.3							4.3
trawlers		140.0		150.4			137.3	69.8	46.2	543.7
PER	8.6									8.6
fishing	8.6									8.6
PRT							19.7		39.2	58.9
fishing									39.2	39.2
trawlers							19.7			19.7
RUS					9.2				45.8	55.0
set_longlines					9.2					9.2
trawlers									45.8	45.8
SHN		3.1							47.3	50.4
set_longlines		3.1							47.3	50.4
TON	2,269.9	2,267.8	1,156.8							5,694.5

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
trawlers	2,269.9	2,267.8	1,156.8							5,694.5
TWN		13.5								13.5
squid_jigger		13.5								13.5
UKR		56.9	452.6	4.0	200.1	12.6				726.1
trawlers		56.9	452.6	4.0	200.1	12.6				726.1
URY	82,605.3	79,791.6	94,585.2	78,604.3	66,537.7	87,115.1	91,538.4	83,497.4	71,660.5	735,935.5
fishing	1,956.9	1,879.8	1,584.8	2,403.1	2,584.3	6,309.8	9,502.7	5,030.0	267.5	31,518.9
fixed_gear									163.6	163.6
set_gillnets						68.0				68.0
set_longlines		756.7	1,723.3	1,114.7	2,263.8	3,607.4	1,478.4	1,203.0	2,600.3	14,747.6
trawlers	80,648.4	77,155.1	91,277.2	75,086.4	61,689.6	77,130.0	80,557.3	77,264.4	68,629.1	689,437.4
VUT						926.9				926.9
trawlers						926.9				926.9
Grand Total	786,792.1	909,550.7	1,067,941.6	1,168,190.0	1,130,154.8	1,269,396.6	1,570,662.0	1,584,985.2	1,625,710.0	11,113,383.0

ANNEX 8. GLOBAL FISHING WATCH AIS DATA FOR FAO MAJOR FISHING AREA 47. ORGANISED BY COASTAL STATE (INCLUDING HIGH SEAS) AREAS, THE FLAG STATE OF THE VESSEL (INDENTED; N = 50) AND INDICATED GEAR TYPE FROM 2012 TO 2020. VALUES REPRESENT INDICATED FISHING TIME IN HOURS

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
Angolan Exclusive Economic Zone	2,489.0	11,228.7	13,501.8	42,196.1	117,440.7	144,476.6	179,002.0	139,938.8	136,555.5	786,829.2
AGO				17,655.9	38,241.8	57,483.7	77,579.2	54,803.0	59,342.8	305,106.4
fishing						1,562.9	1,557.4	3,133.0	3,529.8	9,783.2
other_purse_seines					347.2	352.9	2,702.7	3,308.2	2,836.4	9,547.4
purse_seines					87.0	46.8	2,408.3	2,554.4	1,847.5	6,944.0
trawlers				17,655.9	37,807.6	55,521.0	70,911.0	45,807.4	51,129.0	278,831.9
BES	285.1	67.3	881.9	710.9						1,945.2
trawlers	285.1	67.3	881.9	710.9						1,945.2
BLZ		240.7			0.9	3.2				244.8
trawlers		240.7			0.9	3.2				244.8
CHN				991.8	5,688.0	11,442.8	13,826.6	3,539.4	419.5	35,908.1
fishing				991.8	4,157.4	8,498.5	6,635.3	1,195.2	4.5	21,482.7
trawlers					1,530.6	2,944.2	7,191.3	2,344.2	415.1	14,425.4
CMR									567.0	567.0
trawlers									567.0	567.0
COK								60.9	249.4	310.2
trawlers								60.9	249.4	310.2
DJI							2,309.5			2,309.5
trawlers							2,309.5			2,309.5
ESP	1,596.9	4,266.5	4,919.1	12,598.1	59,840.8	55,458.8	54,688.1	53,233.4	47,467.6	294,069.4
other_purse_seines							97.4			97.4
set_longlines					385.4	263.6				649.0
trawlers	1,596.9	4,266.5	4,919.1	12,598.1	59,455.4	55,195.2	54,590.7	53,233.4	47,467.6	293,323.0
FRA						188.1				188.1

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
trawlers						188.1				188.1
GBR				150.4						150.4
fishing				150.4						150.4
GEO							441.8	4.7		446.5
trawlers							441.8	4.7		446.5
IRL							4.2			4.2
trawlers							4.2			4.2
ITA		5,568.8	6,996.5							12,565.2
trawlers		5,568.8	6,996.5							12,565.2
JPN						1,080.2	3,086.1	3,378.2	1,490.8	9,035.3
set_longlines						1,080.2	3,086.1	3,378.2	1,490.8	9,035.3
KNA			11.5	0.8						12.2
trawlers			11.5	0.8						12.2
KOR							29.1			29.1
trawlers							29.1			29.1
LTU				4.9	702.1	666.0		200.5	677.6	2,251.1
trawlers				4.9	702.1	666.0		200.5	677.6	2,251.1
MLI	510.0									510.0
fishing	510.0									510.0
NA					70.2	988.8	9,875.9	7,904.7	9,552.3	28,391.8
trawlers					70.2	988.8	9,875.9	7,904.7	9,552.3	28,391.8
NAM		2.6	658.4	10,011.8	12,194.2	15,022.6	14,172.9	16,812.6	15,161.3	84,036.4
fishing					126.0	711.7				837.7
purse_seines					93.9	353.6	153.5	73.8		674.8
trawlers		2.6	658.4	10,011.8	11,974.3	13,957.4	14,019.4	16,738.8	15,161.3	82,523.9
NGA								1.5		1.5
fishing								1.5		1.5
NLD		6.1								6.1

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
trawlers		6.1								6.1
NOR				63.8	540.0	2.5				606.3
other_purse_seines				63.8	540.0	2.5				606.3
PAN					162.2					162.2
purse_seines					162.2					162.2
PER		1.6	16.9	6.7						25.2
trawlers		1.6	16.9	6.7						25.2
POL			17.3	1.1		0.9				19.3
trawlers			17.3	1.1		0.9				19.3
PRT		1,072.3				1,051.4	1,372.1		736.5	4,232.2
fishing						1,051.4	1,372.1			2,423.5
trawlers		1,072.3							736.5	1,808.7
RUS					0.5	870.3	1,439.8		783.8	3,094.3
pots_and_traps						730.9	1,117.3			1,848.2
trawlers					0.5	139.3	322.5		783.8	1,246.2
SOM									107.1	107.1
trawlers									107.1	107.1
VCT	97.0	2.8	0.2							100.0
trawlers	97.0	2.8	0.2							100.0
ZAF						217.4	176.7			394.1
fishing						217.4	123.5			340.9
other_purse_seines							53.2			53.2
Ascension Exclusive Economic Zone						1.6				1.6
CHN						1.6				1.6
fishing						1.6				1.6
Democratic Republic of the Congo Exclusive Economic Zone	120.8	191.8	131.8	1,698.7	4,843.2	11,365.1	8,400.7	11,493.7	10,838.5	49,084.4
AGO				930.1	1,715.3	662.1	802.2	276.2	23.3	4,409.2

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
fishing						6.1				6.1
trawlers				930.1	1,715.3	656.0	802.2	276.2	23.3	4,403.2
CHN						16.1				16.1
trawlers						16.1				16.1
COK								1,736.8	3,015.7	4,752.5
trawlers								1,736.8	3,015.7	4,752.5
ESP	120.8	1.9	89.9	664.7	1,261.3	2,180.9	186.0	28.3	1.4	4,535.2
trawlers	120.8	1.9	89.9	664.7	1,261.3	2,180.9	186.0	28.3	1.4	4,535.2
FRA				0.0	65.8	25.8				91.7
trawlers				0.0	65.8	25.8				91.7
ITA		13.0	41.9							54.9
trawlers		13.0	41.9							54.9
NA					1,000.0	8,298.4	7,390.6	9,446.8	5,791.3	31,927.2
trawlers					1,000.0	8,298.4	7,390.6	9,446.8	5,791.3	31,927.2
NAM				103.9	799.0	181.8	21.9	5.6		1,112.2
trawlers				103.9	799.0	181.8	21.9	5.6		1,112.2
PAN					1.8					1.8
purse_seines					1.8					1.8
PRT		176.9								176.9
trawlers		176.9								176.9
SOM									2,006.7	2,006.7
trawlers									2,006.7	2,006.7
High_Seas	2,279.0	40.5	136.6	1,313.2	1,110.6	4,090.1	1,477.8	2,966.2	1,645.0	15,059.0
AGO								0.8		0.8
trawlers								0.8		0.8
BLZ								0.6		0.6
trawlers								0.6		0.6
CHN	5.4		113.7	543.7	1,077.4	1,721.6	123.9	2,420.2	111.0	6,116.9

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
fishing				271.9	825.6	1,647.4	4.4	2,352.9	0.3	5,102.5
squid_jigger			71.5	92.4	245.2	20.2	105.3	6.8	84.5	625.8
trawlers	5.4		42.2	179.4	6.5	54.1	14.2	60.5	26.2	388.6
CIV								5.5		5.5
fishing								5.5		5.5
COK								67.7		67.7
fishing								67.7		67.7
COM				7.0						7.0
trawlers				7.0						7.0
ESP					9.9	25.5	49.8	15.1		100.4
set_longlines							5.5	15.1		20.6
trawlers					9.9	25.5	44.3			79.7
FLK	6.0					2.0	4.4	2.5		14.9
set_longlines	6.0					2.0				8.0
trawlers							4.4	2.5		6.9
GHA	25.0							1.3		26.3
fishing	25.0							1.3		26.3
HND	862.1									862.1
set_longlines	862.1									862.1
JPN									627.8	627.8
set_longlines									627.8	627.8
KOR	3.3			710.8		7.8	3.5	25.4	62.4	813.1
fishing									2.3	2.3
set_longlines	3.3			705.8		0.6		3.6	44.9	758.1
squid_jigger								19.1		19.1
trawlers				5.0		7.2	3.5	2.7	15.2	33.6
LTU				10.5						10.5
trawlers				10.5						10.5

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
LVA							24.9			24.9
fixed_gear							22.4			22.4
pots_and_traps							2.5			2.5
NA								1.6	73.5	75.1
fishing								1.6		1.6
trawlers									73.5	73.5
NAM					2.6	2,237.6	1,219.8	269.1	551.3	4,280.4
fishing					2.6	2,237.6	1,217.8	259.0	549.7	4,266.6
trawlers							2.1	10.1	1.5	13.7
NOR								19.0		19.0
trawlers								19.0		19.0
PRT						43.1	7.1			50.2
fishing						43.1	7.1			50.2
SEN									63.8	63.8
fishing									63.8	63.8
TWN		5.9		17.8	14.4	12.5	16.8	2.2	101.1	170.6
fishing									35.4	35.4
squid_jigger		5.9		17.8	14.4	12.5	16.8	2.2	65.7	135.2
UKR							15.9	5.3	29.9	51.1
trawlers							15.9	5.3	29.9	51.1
VUT							11.8			11.8
squid_jigger							11.8			11.8
ZAF	1,377.2	34.6	22.9	23.3	6.4	40.1		129.8	24.2	1,658.5
fishing			22.9					22.1		45.0
set_longlines	1,377.2			23.3	6.4	40.1		107.7	24.2	1,578.9
trawlers		34.6								34.6
Namibian Exclusive Economic Zone	14,391.4	24,748.4	34,097.0	49,609.8	87,489.8	98,629.1	144,415.2	195,409.1	176,408.7	825,198.5
AGO						1.8	134.8	10.4	3.5	150.5

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
fishing							52.4			52.4
trawlers						1.8	82.4	10.4	3.5	98.1
BES									0.7	0.7
fishing									0.7	0.7
BLZ					434.0	2,628.6	2,537.5	199.9	111.0	5,910.9
trawlers					434.0	2,628.6	2,537.5	199.9	111.0	5,910.9
CHN				1,296.9		26.2		2.2	16.1	1,341.4
fishing								2.2	16.1	18.3
trawlers				1,296.9		26.2				1,323.1
CMR									5.8	5.8
trawlers									5.8	5.8
COM	965.3			681.1	1,914.5	2,357.9				5,918.8
trawlers	965.3			681.1	1,914.5	2,357.9				5,918.8
ESP		2,148.2	1,305.3	3,836.2	2,983.3	149.1	28.6	7.8	434.0	10,892.5
fishing		2,141.5								2,141.5
set_longlines					7.4					7.4
trawlers		6.7	1,305.3	3,836.2	2,975.9	149.1	28.6	7.8	434.0	8,743.6
FLK	963.8	617.9			0.2		0.1			1,582.0
trawlers	963.8	617.9			0.2		0.1			1,582.0
GEO							20.7			20.7
trawlers							20.7			20.7
IRL			271.0							271.0
trawlers			271.0							271.0
ITA			3.4							3.4
trawlers			3.4							3.4
JPN									12.0	12.0
set_longlines									12.0	12.0
KNA			387.0	75.4	387.9	1,040.7	71.9			1,963.0

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
trawlers			387.0	75.4	387.9	1,040.7	71.9			1,963.0
KOR		5,043.3	2,233.4	4,144.6	2,966.8	34.0				14,422.1
fishing		79.0								79.0
set_longlines		4,072.2	2,233.4	4,144.6	2,966.8	34.0				13,451.0
trawlers		892.1								892.1
LTU				2.1	0.8					2.9
trawlers				2.1	0.8					2.9
MLI	47.4									47.4
fishing	47.4									47.4
NA					1,476.0	280.4	1,129.8	3,229.1	132.4	6,247.7
set_longlines					691.4					691.4
trawlers					784.6	280.4	1,129.8	3,229.1	132.4	5,556.3
NAM	4,291.0	5,565.5	22,218.0	31,991.4	76,210.2	89,604.3	137,904.8	189,865.9	174,349.9	732,001.0
fishing			112.8	355.0	15,031.1	24,715.8	30,629.3	34,573.7	20,957.2	126,375.0
purse_seines		273.6	153.8	63.4	83.1	110.8	11.8			696.6
set_longlines						1,104.2	11,502.5	15,735.6	11,153.5	39,495.9
trawlers	4,291.0	5,291.9	21,951.4	31,573.0	61,096.0	63,673.4	95,761.2	139,556.6	142,239.2	565,433.5
NLD		2,064.5	230.9							2,295.4
trawlers		2,064.5	230.9							2,295.4
NOR								2.4		2.4
trawlers								2.4		2.4
NZL									34.7	34.7
trawlers									34.7	34.7
PER		933.0	226.5	169.8	550.5	121.0				2,000.8
trawlers		933.0	226.5	169.8	550.5	121.0				2,000.8
POL			255.3	498.0	564.6	2,068.4	2,564.4			5,950.7
trawlers			255.3	498.0	564.6	2,068.4	2,564.4			5,950.7
PRT						4.2				4.2

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
fishing						4.2				4.2
RUS	130.9					294.3	18.6	2,084.1	1,296.7	3,824.7
pots_and_traps						21.5	18.6	2,006.4	1,198.9	3,245.4
trawlers	130.9					272.8		77.7	97.8	579.2
VCT	7,993.1	8,371.2	6,966.3	5,876.6						29,207.2
trawlers	7,993.1	8,371.2	6,966.3	5,876.6						29,207.2
VUT									8.4	8.4
squid_jigger									8.4	8.4
ZAF		4.8		1,037.6	1.0	18.1	4.1	7.2	3.6	1,076.4
fishing				1,037.0		18.1	4.1	6.4	1.5	1,067.1
set_longlines								0.8	2.1	2.9
trawlers		4.8		0.6	1.0					6.4
South African Exclusive Economic Zone	2,526.1	31,610.2	49,883.5	120,696.6	266,898.4	280,279.6	277,209.9	292,697.9	297,636.6	1,619,438.9
BLZ						285.2	1,451.5	1,404.5		3,141.2
trawlers						285.2	1,451.5	1,404.5		3,141.2
CHN			56.8	94.9	7.7	84.2	250.2	52.7	295.2	841.7
fishing				0.5		27.1	188.8	39.0	281.9	537.5
squid_jigger			39.3	74.3	7.7	41.6				163.0
trawlers			17.5	20.0		15.4	61.3	13.6	13.3	141.3
CIV								43.9		43.9
fishing								43.9		43.9
CMR									33.6	33.6
trawlers									33.6	33.6
COK					15.2	26.2			2.4	43.8
fishing					15.2	26.2			2.4	43.8
ESP					24.6	0.6	13.1	13.7		52.1
fishing					15.1					15.1

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
set_longlines					5.4	0.6	13.1	13.7		32.8
trawlers					4.2					4.2
GBR						0.3				0.3
fixed_gear						0.3				0.3
GEO								9.7		9.7
trawlers								9.7		9.7
JPN							0.1			0.1
set_longlines							0.1			0.1
KOR		14.9	1.9	5.8			0.2	2.5	31.1	56.4
fishing		0.7								0.7
set_longlines		7.3		5.8				0.4	31.1	44.6
trawlers		6.9	1.9				0.2	2.1		11.1
MLI	39.8									39.8
fishing	39.8									39.8
NA					96.4				45.5	141.9
set_longlines									45.5	45.5
trawlers					96.4					96.4
NAM				11.8	1.4	3.9	582.9	588.2	332.6	1,520.8
fishing						3.9	582.9	585.0	278.0	1,449.8
trawlers				11.8	1.4			3.2	54.5	71.0
NLD			5.5							5.5
trawlers			5.5							5.5
TWN	23.8	13.1	14.3	13.4	28.0		20.3	22.9	37.8	173.7
squid_jigger	23.8	13.1	14.3	13.4	28.0		20.3	22.9	37.8	173.7
UKR							8.5	12.2		20.7
trawlers							8.5	12.2		20.7
VUT			14.5						9.8	24.3
squid_jigger			14.5						9.8	24.3

Coastal states and High seas areas with flag states (indented) fishing within them and gear used	2012	2013	2014	2015	2016	2017	2018	2019	2020	Grand Total
ZAF	2,462.5	31,582.1	49,790.5	120,570.7	266,725.2	279,879.3	274,883.1	290,547.5	296,848.5	1,613,289.4
fishing	232.1	9,321.4	21,535.5	55,294.6	86,267.3	90,103.6	92,666.3	95,138.2	91,273.5	541,832.4
fixed_gear					202.2	374.1	187.7	78.9	291.7	1,134.5
other_purse_seines	65.5	1,115.1	4,474.6	5,367.9	9,898.8	9,607.7	11,957.9	8,261.5	10,651.0	61,400.1
pots_and_traps						54.3				54.3
purse_seines				43.5	99.7	169.7	118.9	107.9	185.1	724.9
set_gillnets						225.3	1,005.7	790.6	865.9	2,887.5
set_longlines	629.6	5,101.4	2,023.9	11,138.2	12,626.9	18,330.4	21,641.0	21,807.6	18,076.6	111,375.5
trawlers	1,535.3	16,044.1	21,756.6	48,726.5	157,630.4	161,014.2	147,305.6	164,362.7	175,504.7	893,880.1
Tristan Da Cunha Exclusive Economic Zone	8.6	6.4	14.4	809.6	418.4	304.9	210.2	1,042.1	571.5	3,386.1
CHN			14.4	8.5	11.1	0.2	38.7		14.2	87.1
fishing							22.8			22.8
squid_jigger			14.4	8.5	11.1		15.9		14.2	64.1
trawlers						0.2				0.2
FLK				801.2	407.4	278.1	146.9	325.3		1,958.8
trawlers				801.2	407.4	278.1	146.9	325.3		1,958.8
GBR							24.6	716.0	552.3	1,292.9
set_gillnets							17.4	209.8	125.0	352.2
set_longlines							7.2	46.7		53.9
trawlers								459.5	427.3	886.8
KOR						26.7				26.7
trawlers						26.7				26.7
TWN	8.6	6.4								15.0
squid_jigger	8.6	6.4								15.0
UKR								0.8	5.0	5.8
trawlers								0.8	5.0	5.8
Grand Total	21,815.0	67,826.0	97,765.1	216,324.1	478,201.2	539,147.0	610,715.9	643,547.8	623,655.7	3,298,997.7

ANNEX 9. ASSESSMENT METHODS TO BE USED WITH CONCEPTUAL FRAMEWORK

The assessment may be conducted using indicators, or by a quantitative assessment based on a Bayesian State-Space Surplus Production Model framework, 'Just Another Bayesian Biomass Assessment' (JABBA, Winker et al., 2018). JABBA has been applied in stock assessments around the world, and presents a unifying, flexible framework for biomass dynamic modelling, runs quickly, and generates reproducible stock status estimates and diagnostic tools. Biomass dynamic assessment models use as inputs total removals and indices of relative abundance. They also require priors, which will be based on those developed in Level 1 to ensure risk equivalence and consideration of Risk Equivalence.

Bayesian biomass dynamic models, such as JABBA, can be fitted to as little as two observations of annual abundance indices, thus enabling a transition from a data-poor indicator-based approach to a data-moderate assessment. For example, data sources include length data, which can be used as a proxy for fishing mortality (e.g. Mithé et al., 2019) or relative depletion (Froese et al., 2018), and economic data as a proxy for fishing effort. Length data are potentially available for many fisheries, and even data from a single year could be used in an assessment model to provide an estimate of exploitation level. While port collection schemes could be established to monitor trends in size composition and catch-per-unit and hence exploitation and abundance indices. This way, an initial catch-only model can be adapted and updated with new data as those become available and eventually be validated (Kell et al., 2022b).

The advice framework requires estimates of population growth rate (r) and fishing mortality targets (FMSY) and limits (Flim) for use in the PSA and indicators, and to derive priors for quantitative assessments. These can be derived from life history parameters, (e.g. Linfinity and k from the Von Bertalanffy growth equation, and length at maturity (L_{mat})). Parameters may be available from the stock of concern or from related stock and species. In this context a related stock would be one from the same region of the same or similar species. This has been highlighted in section 5 of the main report, where research programmes have been considered that encompass the species identified in SMEFF across the three FAO regions, i.e. including non-SMEFF countries where data could be available on SMEFF species.

The level of information will therefore be reflected in priors used in the assessments. This will ensure risk equivalence, i.e. that a lack of knowledge should not permit higher risks of failing to meet management objectives. As other sources of data, such as length data, become available over time and through development of the fishery, these can be added to the model to provide better estimates.

As with all stock assessments, conducting these will require sufficient expertise, and assessments will need reviewing, which should follow a benchmark/peer review process as conducted by ICES or RFMOs.

Most of the methods are available in or can be run using R, allowing them to be run using a common database and outputs to be compared. R is a freely available open-source environment and language for statistical computing and graphics which provides a wide variety of statistical and graphical techniques, modelling, and statistics tools.

The framework can therefore be implemented in R, using a number of supporting libraries that are available from either the Cran (<https://cran.r-project.org/>) or contributor's websites. It can also be extended by contributions in the form of libraries for specific tasks. Many of the methods needed to allow quantitative analysis are routinely used by various bodies to conduct stock assessments and are available from the Fisheries Libraries in R project (FLR; <https://flr-project.org/>). This project has been developing and providing fishery scientists with a powerful and flexible platform for quantitative fisheries science based on the R statistical language. The guiding principles of FLR are openness, through community involvement and the open-source ethos, with the aim of providing good quality, open source, flexible software in all areas of quantitative fisheries research and management advice. These libraries can be used with the Application Programming Interfaces (APIs) and other packages, such as FishLife (<https://github.com/James-Thorson-NOAA/FishLife>) and SPMpriors (<https://github.com/Henning-Winker/SPMpriors>) for developing priors and estimating biological reference points. FishLife is a package for life history parameter (growth, maturity, mortality) (Thorson et al.,

2017); juvenile productivity (stock-recruit parameters); life-cycle characteristics (generation time and intrinsic growth rate); spawning, behavioural, reproductive, and foraging traits; morphometric characteristics. It also provides an interface to FishBase (<https://www.fishbase.se/search.php>) and SeaLifeBase (<https://www.sealifebase.ca>).

FishBase is a global species database of fish species (specifically finfish). It is the largest and most extensively accessed online database on adult finfish on the web (Froese and Pauly, 2023). Over time it has "evolved into a dynamic and versatile ecological tool" that is widely cited in scholarly publications. SeaLifeBase is a global online database of information about marine life. It aims to provide key information on the taxonomy, distribution and ecology of all marine species in the world apart from finfish.

The framework is implemented in the form of a vignettes and Rmarkdown files (including code for cleaning the input data, and R libraries used for the analysis). Vignettes are framed around specific problems; a package is designed to solve and show a workflow that solves a particular problem. Vignettes offer different opportunities than online help, as a developer has more control over code integration and shows how multiple functions work together, and different tasks can be linked. The intention is that the vignettes be integrated into FLR. Advantages of using Rmarkdown is that it makes the research reproducible, facilitating others to scrutinise and adjust the code, enabling the analysis to be shared with others, and code examples be provided to other who wish to extend the research. Reproducibility refers to the ability to duplicate the results of a prior study using the same materials used by the original investigator. Reproducibility is a minimum necessary condition for a finding to be considered rigorous, believable and informative.

Beyond the current project, the prototype tool could be converted to an online interactive application using 'R Shiny' with automated API connections to online data sources such as FishBase (Froese and Pauly, 2023) and SeaLifeBase (Palomeres and Pauly, 2023) (for Productivity attributes), and Global Fishing Watch (Global Fishing Watch, 2023), AquaMaps and other online resources (for Susceptibility indices). Conversion to a centralised online version will increase accessibility and aid version control as improvements are made and new data sources become available.

Eventually, this framework could be made available to Member States authorities and scientists for processing SMEFF requests (in 3rd countries and high seas) from their operators. The framework will be applied to data-limited stocks impacted by EU fisheries in order to produce a preliminary conservation status assessment.

Practical application of the framework

In the following sections, we show how a Level 1 analysis can be conducted and the role of Member States to update the "default" analysis to move from Level 1 to Level 2 and eventually Level 3.

A hierarchical assessment and management framework based on risk equivalence will be used to assess fisheries sustainability based on conservation status, exploitation levels and other biological information. The burden of proof is on the proposer to show that the stock is and can be exploited within safe biological limits. To do this there are three Levels with a responsibility on those exploiting the fishery to provide data and other evidence that fishing is sustainable. Level 1 is based on a PSA, acts as a screening exercise to identify the evidence and knowledge base that must be provided by a Member State. Level 2 identifies limits and targets based on management objectives and how uncertainty may affect achieving them. This requires Member States to develop a plan that will be peer reviewed before fishing commences and progress of the plan in meeting the stated objects reviewed three years after fishing has commenced. At Level 3, a quantitative assessment or review of indicators is conducted at the end of the fishing period to ensure that objectives are being achieved. This will also include a review of the operation of the fishery and the monitoring programme. Before renewal of permission, the report must be peer reviewed. Any recommendations will then be taken into account in the next fishing period, i.e. as conditions.

Level 1: By default, data required, e.g. life history parameters from the literature for a species or stock, can be collated using the R based tools detailed under Section **Error! Reference source not found.** of the main report. This can be done by the scientific institutions within Member States with assistance from an expert. Web-based tools (e.g. FishBase, GFW and Aquamaps) will be used to classify stocks with respect to productivity and vulnerability to fishing. This can be performed by suitably trained scientists / managers under the guidance of appropriate experts. This will identify data gaps and, if a stock, species or fishery can move to the next level. The data quality categorisation will be used to score the data available, i.e. more emphasis is given to the

judgment of experts on particular stocks being assessed. Therefore, the analysis should be done by national scientific institute then passed to Member States, for a decision on whether fishing can proceed.

Level 2: Before moving to Level 2, a plan has to be prepared of what data will be collated and how this will be used in an assessment at Level 3, e.g. using a method from the hierarchical assessment framework. This plan has to be developed by the Member States, and then reviewed by an external expert. After a period of operation of the fishery (e.g. 3 years), the progress against the plan will be reviewed, taking into account all available data for the stock i.e. including other fisheries impacting the same stock.

The operator applying for the SMEFF licence, along with national and external experts, will be responsible for collating the appropriate data. Based on these data the national experts will develop priors for quantities such as natural mortality and population growth rate, and develop reference points e.g. F_{MSY} , B_{MSY} , B_{lim} and F_{crash} .

Level 2 considers specifications for a stock assessment in the future and i.e. what data should be collected in order to review fishing under Level 3. Therefore, how data will be used to estimate stock status relative to reference points needs to be specified, e.g. using methods such as Length Based Indicators (Kell *et al.*, 2022a) or a biomass dynamic assessment model with suitable priors (Kell *et al.*, 2022b). The proposal will be reviewed by the DG-MARE and appropriate experts to assess whether fishing can proceed. Management measures may include restrictions on catches or effort, gear, and spatial and temporal measures.

Level 3: At the end of the permission period, an implementation review will be conducted, and a stock assessment conducted based on either a quantitative assessment or indicators. This will be conducted by Member States but will require peer review and possibly assistance from external experts.

A quantitative stock assessment is required e.g. based on a biomass dynamic model, e.g. JABBA with appropriate diagnostics (Carvalho *et al.*, 2022). Alternatively, if Indicators are proposed then Management Strategy Evaluation should have been conducted to show that management objectives are met (e.g. Kell *et al.*, submitted).

The inherent level of risk can be assessed using the available data, even if a quantitative assessment is not available. Data such as catch and effort, size frequency, or spatial distribution can be used to identify trends to establish the current stock status. For example, if catch rates are continuing to drop given a constant level of effort, mean size of the catch is close to length at first maturity was shown to have declined significantly, or the spatial range has contracted these could be seen as signs of concern.

Report Annexes

ANNEX 10 RECOMMENDATIONS FOR IMPROVEMENTS TO PROGRAMMES

Specific recommendations for improvements in data collection, analysis and sample size/coverage by research programmes for species/area combinations. N.B. There is an assumption within the programme types identified that where they include observer programmes, logbook data is available. Green indications are indicative of species area combinations where data suggest an ICES stock assessment level of 1 or 2. Yellow indications are made for species area combinations where data suggest an ICES stock assessment level of 3 or 4. Red indications are provided for species area combinations where data indicates and ICES stock assessment level of 5 or 6.

Programme types identified	FAO Area	Species (Code / Scientific Name)	Specific recommendations for data collection improvements	Specific recommendations for data analysis improvements	Specific recommendations for sample size and coverage improvements	Data Indicator
Independent surveys, observer programmes, and 5 years of ACDR data	41	SQA / <i>Illex argentinus</i>	<p>Category 1</p> <p>To retain category 1 status: Data collection and quality currently meet category 1 requirements. Data quality and coverage improvements may only be required.</p>	<p>Category 1</p> <p>To retain category 1 status: Stock assessment appropriate to the stock biology and fisheries management practices, including the provision of forecasting (either within year or for subsequent years). Analysis of catch, effort, biological (from observer data and fisheries surveys) and other data are full defined and feed into the stock assessment and management processes.</p> <p>Improvements to depletion model suggested due to straddling nature of South Patagonian Stock of <i>Illex</i> within the Falklands and neighbouring waters.</p> <p>Recommendation – Combination of depletion models across entire stock from Argentine, High Seas and Falkland Island waters.</p>	<p>Category 1</p> <p>Continued monitoring of data quality and sampling to ensure high quality is maintained. Observer coverage should remain at least 5%.</p>	

Programme types identified	FAO Area	Species (Code / Scientific Name)	Specific recommendations for data collection improvements	Specific recommendations for data analysis improvements	Specific recommendations for sample size and coverage improvements	Data Indicator
Independent surveys and observer programmes and 5 years of ACDR	41	SQP / <i>Doryteuthis (Loligo) gahi</i>	Category 1 To retain category 1 status: Data collection and quality currently meet category 1 requirements. Data quality and coverage improvements may only be required.	Category 1 To retain category 1 status: Stock assessment appropriate to the stock biology and fisheries management practices, including the provision of forecasting (either within year or for subsequent years). Analysis of catch, effort, biological (from observer data and fisheries surveys) and other data are full defined and feed into the stock assessment and management processes.	Category 1 Continued monitoring of data quality and sampling to ensure high quality is maintained. Observer coverage should remain at least 5%.	
Independent surveys and observer programmes and 4 years of ACDR	41	POS / <i>Micromesistius australis</i>	Category 1 To retain category 1 status: Data collection and quality currently meet category 1 requirements. Data quality and coverage improvements may only be required.	Category 1 To retain category 1 status: Stock assessment appropriate to the stock biology and fisheries management practices, including the provision of forecasting (either within year or for subsequent years). Analysis of catch, effort, biological (from observer data and fisheries surveys) and other data are full defined and feed into the stock assessment and management processes.	Category 1 Continued monitoring of data quality and sampling to ensure high quality is maintained. Observer coverage should remain at least 5%.	
Independent surveys and observer programmes and 5 years of ACDR	41	TOP / <i>Dissostichus eleginoides</i>	Category 1 To retain category 1 status: Data collection and quality currently meet category 1 requirements. Data quality and coverage improvements may only be required.	Category 1 To retain category 1 status: Stock assessment appropriate to the stock biology and fisheries management practices, including the provision of forecasting (either within year or for subsequent years). Analysis of catch, effort, biological (from observer data and fisheries surveys) and other data are full defined and feed into the stock assessment and management processes.	Category 1 Continued monitoring of data quality and sampling to ensure high quality is maintained. Observer coverage should remain at least 5%.	
3 years of ACDR data	47	CGE / <i>Chaceon maritae</i>	Category 2 To move to category 1:	Category 2 To move to category 1:	Category 2 To move to category 1:	

Programme types identified	FAO Area	Species (Code / Scientific Name)	Specific recommendations for data collection improvements	Specific recommendations for data analysis improvements	Specific recommendations for sample size and coverage improvements	Data Indicator
			Modelling methods developed for the species targeted and data collected to populate models (and those caught as bycatch) that can provide forecasts.	Stock assessment appropriate to the stock biology and fisheries management practices, forecasting (either within year or for subsequent years) should be included into the stock assessment process. Analysis of catch, effort, biological (from observer data and fisheries surveys) and other data are full defined and feed into the stock assessment and management processes. New data may be required to develop the forecasting process.	Stock assessment appropriate to the stock biology and fisheries management practices, forecasting (either within year or for subsequent years) should be included into the stock assessment process. Analysis of catch, effort, biological (from observer data and fisheries surveys) and other data are full defined and feed into the stock assessment and management processes. New data may be required to develop the forecasting process.	
3 years of ACDR data	47	<i>DPS Parapenaeus longirostris</i>	Category 2 To move to category 1: Modelling methods developed for the species targeted and data collected to populate models (and those caught as bycatch) that can provide forecasts.	Category 2 To move to category 1: Stock assessment appropriate to the stock biology and fisheries management practices, forecasting (either within year or for subsequent years) should be included into the stock assessment process. Analysis of catch, effort, biological (from observer data and fisheries surveys) and other data are full defined and feed into the stock assessment and management processes. New data may be required to develop the forecasting process.	Category 2 To move to category 1: Stock assessment appropriate to the stock biology and fisheries management practices, forecasting (either within year or for subsequent years) should be included into the stock assessment process. Analysis of catch, effort, biological (from observer data and fisheries surveys) and other data are full defined and feed into the stock assessment and management processes. New data may be required to develop the forecasting process.	
Port sampling, independent surveys and 3 years of ACDR data	34	<i>OCC Octopus vulgaris</i>	Category 2 To move to category 1: Modelling methods developed for the species targeted and data collected to populate models (and those caught as bycatch) that can provide forecasts. Five biological stocks being assessed in A34 according to FIRMS. Mauritanian	Category 2 To move to category 1: Stock assessment appropriate to the stock biology and fisheries management practices, forecasting (either within year or for subsequent years) should be included into the stock assessment process. Analysis of catch, effort, biological (from observer data and fisheries surveys) and	Category 2 To move to category 2: Monitoring of data quality to identify areas of limited quality or coverage and adjust data collection programme to remedy any issues identified.	

Programme types identified	FAO Area	Species (Code / Scientific Name)	Specific recommendations for data collection improvements	Specific recommendations for data analysis improvements	Specific recommendations for sample size and coverage improvements	Data Indicator
			assessment indicates advice provided through specialised modelling of time-series data, signifying existence of catch data that is used for modelling. With multiple biological stocks across the FAO Area, and largely port sampling found in the region, the addition of an observer programme (10%) and/or independent surveys would enable stepping up an ICES category. Independent surveys would have to be carefully considered given the specific type of gear utilised to target octopus.	other data are full defined and feed into the stock assessment and management processes. New data may be required to develop the forecasting process.		
Observer programme, independent surveys and 5 years of ACDR data (No HKZ, only HKE, HKN, HKP available with HKE a probable ID mistake. HKE found in Europe, not Patagonia)	41	HKZ / <i>Merluccius spp</i>	<p>Category 1</p> <p>To retain category 1 status: Data quality and coverage improvements may only be required.</p> <p>Data quality and coverage appear to be sufficient. Combining data from Argentine and Falklands fisheries would benefit a single approach to fisheries stock assessment and management on a regional basis.</p>	<p>Category 1</p> <p>To retain category 1: Stock assessment appropriate to the stock biology and fisheries management practices, including the provision of forecasting (either within year or for subsequent years). Analysis of catch, effort, biological (from observer data and fisheries surveys) and other data are fully defined and feed into the stock assessment and management processes.</p> <p>Recommendations from Falklands are to further data collection of information pertinent to stock structure, as currently this is lacking and could be the same stock as Argentina and Chile exploits.</p>	<p>Category 1.</p> <p>Continued monitoring of data quality and sampling to ensure high quality is maintained.</p>	
Observer programme, independent surveys and 5 years of ACDR data	41	GRM / <i>Macrourus magellanicus</i>	<p>Category 2</p> <p>To move to category 1: Modelling methods developed for the species targeted and data collected to populate models (and those caught as bycatch) that can provide forecasts.</p>	<p>Category 2</p> <p>To move to category 1: Stock assessment appropriate to the stock biology and fisheries management practices, forecasting (either within year or for subsequent years) should be included into the stock assessment process.</p>	<p>Category 2</p> <p>Monitoring of data collected to identify issues with: High variation – Increased sampling Low confidence – Increase sampling, adjust training (e.g. species</p>	

Programme types identified	FAO Area	Species (Code / Scientific Name)	Specific recommendations for data collection improvements	Specific recommendations for data analysis improvements	Specific recommendations for sample size and coverage improvements	Data Indicator
			Information from The Falklands indicate existence of catch information and independent surveys. Specific recommendations from the Falklands include further lifecycle studies (migration, feeding, trophic relations), stock identification as well as improvements in application of current assessment models without knowledge of Argentinian part of stock. As for hake above, combining data from Argentine and Falklands fisheries would benefit a single approach to fisheries stock assessment and management on a regional basis.	Analysis of catch, effort, biological (from observer data and fisheries surveys) and other data are full defined and feed into the stock assessment and management processes. New data may be required to develop the forecasting process.	identification or specific training on sex, maturity or diet). Missing data – Identify particular data gaps and add focussed elements to the data collection programme. Sample collection and storage improved e.g., gonad and stomach content analysis.	
Observer programme and fisher self-sampling	47	ARS / <i>Aristaeom orpha foliacea</i>	<p>Category 5 To move to category 4:</p> <ul style="list-style-type: none"> Catch and effort data from logbooks to be collected over long time series, minimum three years. Observer programme data (minimum 10% coverage) and port inspection data (minimum 5% coverage) to verify and supplement logbook data. Modelling methods appropriate to the species targeted (and those caught as bycatch) developed that utilise the time series catch and effort data. <p>Data for PSA collected: for all target and bycatch species including growth rate, size frequency data, length-weight data and selectivity estimates.</p> <p>Programmes only in South Africa as part of an observer programme and fisher self-sampling, this research was not able to identify stock assessments in the Area 47 region. The existence of an</p>	<p>Category 5 To move to category 4:</p> <p>Analysis of totals and trends for fishery/stock. No actual assessment is currently conducted. No ACDR data available for the region.</p>	<p>Category 5 Establish base level data quality requirements and build into programme for key target and bycatch species, identify any VME or PET species.</p> <p>Establish alternative estimates based on likely values from similar species in related fisheries as a first point of reference.</p> <p>Good observer training to improve accuracy and precision of data. This will lead to better estimates of biological and fishery parameters, reducing variation.</p>	

Programme types identified	FAO Area	Species (Code / Scientific Name)	Specific recommendations for data collection improvements	Specific recommendations for data analysis improvements	Specific recommendations for sample size and coverage improvements	Data Indicator
			observer programme suggests this would have at least a category of 4.			
Independent surveys and Observer Programme (one year/entry of MON in 47, probable mistake in ACDR data as MON is found in Europe)	47	MNZ / <i>Lophius spp</i>	<p>Category 1 To retain category 1 status: Data quality and coverage improvements may only be required.</p> <p>Evidence of stock assessment using historical time-series as well as Nansen independent surveys indicate appropriate data collection. Further recommendations would include further transparency of observer coverage where observers are deployed.</p>	<p>Category 1 To retain category 1 status: Stock assessment appropriate to the stock biology and fisheries management practices, including the provision of forecasting (either within year or for subsequent years). Analysis of catch, effort, biological (from observer data and fisheries surveys) and other data are full defined and feed into the stock assessment and management processes. Projections included in the assessment process e.g. $p(B/B_{MSY} > 1 \text{ in } 20 \text{ years}) \geq 0.5$.</p>	<p>Category 1 Monitoring of data collected to identify issues with: High variation – Increased sampling Low confidence – Increase sampling, adjust training (e.g. species identification or specific training on sex, maturity or diet). Missing data – Identify particular data gaps and add focussed elements to the data collection programme. Sample collection and storage improved e.g. gonad and stomach content analysis.</p> <p>(5 years of ACDR available)</p>	
Independent surveys and 4 years of ACDR data	34	ARV / <i>Aristeus varidens</i>	<p>Category 2 Analytical assessments possible, but forecasts treated qualitatively (as trends)</p> <p>To move to category 1: Modelling methods developed for the species targeted and data collected to populate models (and those caught as bycatch) that can provide forecasts.</p>	<p>Category 2 Analytical assessments possible, but forecasts treated qualitatively (as trends).</p> <p>To move to category 1: Stock assessment appropriate to the stock biology and fisheries management practices, forecasting (either within year or for subsequent years) should be included into the stock assessment process. Analysis of catch, effort, biological (from observer data and fisheries surveys) and other data are full defined and feed into the stock assessment and management processes. New data may be required to develop the forecasting process.</p>	<p>Category 2 (Adequate data) Information with limited coverage and corroboration, or for some other reason deemed not as reliable as Tier 1 data.</p> <p>To move to category 1: Monitoring of data quality to identify areas of limited quality or coverage and adjust data collection programme to remedy any issues identified.</p>	
Independent surveys and 3 years of ACDR data	47	ARV / <i>Aristeus varidens</i>	<p>Category 2 To move to category 1: Modelling methods developed for the species targeted and data collected to</p>	<p>Category 2 Analytical assessments possible, but forecasts treated qualitatively (as trends).</p>	<p>To move to category 2: Monitoring of data collected to identify issues with:</p>	

Programme types identified	FAO Area	Species (Code / Scientific Name)	Specific recommendations for data collection improvements	Specific recommendations for data analysis improvements	Specific recommendations for sample size and coverage improvements	Data Indicator
4 years of ACDR data	34	SSH / <i>Aristaeopsis edwardsiana</i>	populate models (and those caught as bycatch) that can provide forecasts. The existence of 3 or more years of logbook data indicates that developing specialist models for analytical assessments is possible with trends treated qualitatively.	To move to category 1: Stock assessment appropriate to the stock biology and fisheries management practices, forecasting (either within year or for subsequent years) should be included into the stock assessment process. Analysis of catch, effort, biological (from observer data and fisheries surveys) and other data are full defined and feed into the stock assessment and management processes. New data may be required to develop the forecasting process.	High variation – Increased sampling Low confidence – Increase region specific sampling, adjust training (e.g. species identification or specific training on sex, maturity). Missing data – Identify particular data gaps and add focussed elements to the data collection programme. Sample collection and storage improved e.g. gonad.	
3 years of ACDR data	34	CET / <i>Dicologlossa cuneata</i>				
3 years of ACDR data	34	ARS / <i>Aristaeomorpha foliacea</i>				
3 years of ACDR data	47	SSH / <i>Aristaeopsis edwardsiana</i>				
3 years of ACDR data	34	GER / <i>Chaceon spp</i>				
3 years of ACDR data	34	LKW / <i>Plesionika edwardsii</i>				
3 years of ACDR data	47	GER / <i>Chaceon spp</i>				
3 years of ACDR data	41	SQR / <i>Loligo vulgaris</i>				
2 years of ACDR data	47	CTC / <i>Sepia officinalis</i>	For all species where there are no or limited available catch data, then we will require an exploratory fishery with an appropriate level of observer coverage to determine level of abundance and a baseline of biological characteristics for a PSA.			
2 years of ACDR data	41	HVP / <i>Merluccius patagonicus</i>	Suggestion to Commission to request catch and effort data, on a haul-by-haul basis moving forward, from all interested parties (coastal States, flag States) catching that species.			
2 years of ACDR	34	DPS / <i>Parapanae</i>				

Programme types identified	FAO Area	Species (Code / Scientific Name)	Specific recommendations for data collection improvements	Specific recommendations for data analysis improvements	Specific recommendations for sample size and coverage improvements	Data Indicator
		<i>us longirostris</i>				
2 years of ACDR data	41	FOX / <i>Phycis spp</i>				
1 years of ACDR data	47	MUX / <i>Mullus spp</i>				
1 years of ACDR data	47	OCC / <i>Octopus vulgaris</i>				
1 years of ACDR data	34	GPW / <i>Epinephelus aeneus</i>				
1 years of ACDR data	41	MCH / <i>Macrourus holotrachys</i>				
1 years of ACDR data	34	MWU / <i>Mullus argentinae</i>				
1 years of ACDR data (one year with one observation of MON in 47, probable mistake in ACDR data as MON is found in Europe)	47	MON / <i>Lophius piscatorius</i>				
None found	41	OPJ / <i>Cirrhoscyllium japonicum</i>				
None found	47	MSF / <i>Arnoglossus laterna</i>				

Programme types identified	FAO Area	Species (Code / Scientific Name)	Specific recommendations for data collection improvements	Specific recommendations for data analysis improvements	Specific recommendations for sample size and coverage improvements	Data Indicator
None found	47	MWU / <i>Mullus argentinae</i>				
None found	47	SOP / <i>Penaeus notialis</i>				
None found	47	SQE / <i>Todarodes sagittatus</i>				
None found	47	GUS / <i>Parapenaeopsis atlantica</i>				
None found	47	LKW / <i>Plesionika edwardsii</i>				
None found	47	ARA / <i>Aristeus antennatus</i>				
None found	47	CET / <i>Dicologlossa cuneata</i>				
None found	47	GPW / <i>Epinephelus aeneus</i>				
None found	47	GOA / <i>Pseudupeneus prayensis</i>				
None found	47	TGS / <i>Penaeus kerathurus</i>				
None found	41	CTL / <i>Sepiidae, Sepiolidae</i>				
None found	41	GFB / <i>Phycis blennoides</i>				

ANNEX 11 DESCRIPTION OF EACH FISHERIES RESEARCH PROGRAMME TYPE FOUND IN THE SEARCH FOR RESEARCH PROGRAMMES IN CHAPTER ERROR! REFERENCE SOURCE NOT FOUND.

Fisher Self-Sampling

Fisher Self-Sampling is a cost- and resource-effective fisheries sampling method where fishers are responsible for recording their own data. This may relate to effort and catch metrics and may be as simple as recording hours or days fished or as complex as taking biological data such as otoliths. Generally, these programs are voluntary meaning obtaining data that are representative of the entire fleet can be challenging. Resource inputs for self-sampling are often low, though training of fishers may be required where complex sampling strategies are in place. Fishers typically report the outputs of this sampling as part of logbook entries made during their trips to sea. While there are advantages to self-sampling such as cost and resource effectiveness, there are some potential disadvantages. As mentioned above, its often-voluntary nature means fleet representation may be brought into question. Also, when self-sampling, fishers do not act as independent data collectors as they have a potential conflict of interest between reporting and maximising TACs and quota. Fisher self-sampling is best suited to developed fisheries where a suite of other management measures are in place. For example, fishers in St Helena's recreational and commercial fisheries must fill out logbooks with measurements from a portion of their catch while underwater visual surveys also take place. Self-sampling may also be used as supplementary measure where data from other sources are lacking or resources are stretched, however it is still rarely used. Across FAO Area 34 only one fisher self-sampling program was found, in the artisanal fishery in Bonny Nigeria – though this was an experimental sampling strategy.

Fisher Self-Sampling may fit well as part of a wider suite of sampling and management measures in a fishery. It may also be used as a tool where funding for fisheries management and assessment is low. However, other sampling methods that yield more representative data from independent sources should be carried out where possible.

Fisheries independent survey

Fisheries independent surveys look to assess the status of commercial stocks and marine habitats without using data from the fishing industry. They typically require high resource input, often using research vessels, while also taking longer to complete than other survey methods. Data collection methods employed in these surveys include hydroacoustics, experimental fishing using pelagic and benthic trawls and longlines, and analysis of towed and ROV video. Fisheries independent surveys produce high quality data for understanding stock health and allowing stock assessments. Whereas fisheries dependent data relies on sampling from fishing vessels, fisheries independent surveys employ sampling strategies specifically designed to answer research questions about stocks and marine habitats. These programs are typically funded by governmental and inter-governmental agencies or may be completed by RFMOs. In some cases, surveys are completed in the waters of developing nations with funding from international agencies such as the UN. One such example is the EAF Nansen project which has carried out fisheries independent surveys in developing nations across Africa, particularly along its west coast. Originally funded by the FAO, the program is now funded by the NORAD (Norwegian Agency for Development Cooperation). Other examples of fisheries independent programs found in our research were run nationally by governmental departments for fisheries, such as the CRODT in Senegal. This department has its own research vessel (INSERT VESSEL NAME) and has carried out surveys in Senegal's waters and the waters of neighbouring nations.

Fisheries independent surveys should be considered one of the more powerful tools when assessing the status of fisheries. The high costs associated with these surveys mean they are often not a viable option for some nations with less resources for fisheries management. Where this is the case, operations such as the EAF Nansen programme may conduct these surveys themselves allowing better management of stocks in these nations. Where they are viable, fisheries independent surveys should be carried out to provide high quality data towards stock assessments.

Observer Programme

Observer programs are a fisheries dependent sampling method where 'observers' take data on fishing effort, catches, and biological data on catches such as a length frequency data, otoliths, or fin measurement. Observers may also record data on vessel and crew conditions. Observer programmes may be costly where extensive training is required and where observer coverage, that is the proportion of observers to active fishing vessels, is high. Compared to other more active sampling strategies like fisheries independent surveys, observer programmes require a relatively low amount of equipment aside from personnel. Highest data quality from these programmes is achieved with extensive observer training which facilitates more standardized sampling methods with greater repeatability across the fleet and allows more complex sampling methods to be employed (e.g. otolith sampling). It is also important that observers remain independent from the fleet they are sampling from. This may not be the case where observers are funded by the fishing fleet they sample. This has been an issue in some nations across FAO Area 34, with observers' allowances being paid by fishers themselves. Recent changes in some countries have fixed this, with fisher licensing being used to raise funds to pay independent observers. Obtaining high observer coverage is also important to ensure that data recorded is representative of the fishery being sampled. Where these conditions are met, observer data quality should be high enough to contribute to more complex fisheries assessments such as individual stock assessments.

Observer programmes are a valuable tool to any fisheries management agency of any level of funding. They act as both a monitoring and compliance tool while allowing the collection of potentially high-quality data. Their utility is reflected in their widespread application throughout FAO Areas 34, 41, and 47.

Port Sampling

Port sampling is a generic term that applies to fisheries dependent sampling that takes place on shore. This may occur at landing sites or at markets, wherever fish are being landed. Typically, higher quality data comes from sampling closest to where fish are being landed, for instance at landing sites where fish are unloaded from fishing vessels. Port sampling is a low-cost method of fisheries dependent sampling, with the only resource inputs being personnel and potentially a base level of training on data collection methods. Port sampling, while useful, should be seen as a lesser alternative to observer programmes. Having observers in situ on vessels allows data collection on discards and bycatch, while sampling from port will miss all information on discards and may miss out on data on bycatch as well. Our research found port sampling to be the most applied survey method to artisanal fisheries, particularly throughout FAO Area 34. This is often due to artisanal vessels not recording high enough catches to warrant observers, while still require some level of monitoring and data collection. Where port sampling covers enough landing sites it can be an efficient tool for gaining representative fleet-wide data on catches for a lower cost than running an observer programme. The majority of port sampling programmes found in our research were conducted in FAO Area 34, with only two being completed in FAO Area 47, and none in FAO Area 41. This is likely the result of differing amounts of funding towards fisheries management seen in countries in FAO Area 34 compared to those in 41 and 47. Besides fisher self-sampling, port sampling is the most cost-effective fisheries sampling strategy that may yield representative data. In fact, data from port sampling may be of high enough quality to be applied in stock assessments. For example, our research encountered a research programme covering 114 small pelagic species, across eight countries in FAO Area 34, for which stock assessments were carried out. This applied FAO data from landing sites, obtained through port sampling, taken between 1950 and 2010. This demonstrates that while port sampling may not produce as high-quality data as observer programmes or fisheries independent surveys, where data collection is consistent and thorough it is possible to produce stock assessments.

Underwater visual survey

Underwater visual surveys are a less commonly applied survey method. These may be completed by divers following a transect, producing a very localized understanding of fish abundance and diversity, or may be completed on larger scales by towed video cameras or ROV cameras. The former is less suited to fisheries application while the latter may be important for assessing the presence of vulnerable marine ecosystems. The EAF Nansen Project conducted ROV surveys off the coast of Senegal and Mauritania to assess VMEs. This programme found rare *Lophelia* soft corals, improving understanding of the distribution of sensitive ecosystems along West Africa. While underwater visual surveys can play an important role in understanding the distribution and extent of VMEs, they are not extensively used as a tool in fisheries management.

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