

EUROPEAN UNION REPORT FOR THE SCIENTIFIC COMMITTEE OF THE INDIAN OCEAN TUNA COMMISSION, 2024 (2023 DATA)

Laura Marot

Directorate-General for Maritime Affairs and Fisheries of the European Commission

<p>In accordance with IOTC Resolution 15/02 (and other data related CMMs as noted below), final scientific data for the previous year were provided to the IOTC Secretariat by 30 June of the current year, for all fleets other than longline [e.g., for a National Report submitted to the IOTC Secretariat in 2023, final data for the 2022 calendar year must be provided to the Secretariat by 30 June 2023)</p>	<p>YES</p>
<p>In accordance with IOTC Resolution 15/02, provisional longline data for the previous year was provided to the IOTC Secretariat by 30 June of the current year [e.g., for a National Report submitted to the IOTC Secretariat in 2023, preliminary data for the 2022 calendar year were provided to the IOTC Secretariat by 30 June 2023).</p> <p>REMEMBER: Final data for the past year on longliners are expected at the IOTC Secretariat before 30 December of the current year (e.g.: for a national report submitted to the IOTC Secretariat in 2022, the final data for calendar year 2021 must have been provided to the Secretariat by 30 December 2022).</p>	<p>YES</p>



SUMMARY

The EU fleet fishing in the waters of the Indian Ocean is composed of two main segments. The first is an offshore segment including:

- Purse seiners treating the three species of tropical tunas:
 - 25 active vessels
 - 199,653 t of catch of tropical tunas
 - YFT 31 %
 - SKJ 60 %
 - BET 9 %
- Longliners swordfish with significant associated catches of some pelagic shark species
 - 16 active vessels
 - 3,865 * 10⁶ Hooks
 - 8,690 t of catch
 - SWO 42 %
 - BSH 49 %
 - SMA 6 %
- Longliners swordfish with significant associated catches of tunas (La Réunion)
 - 20 active vessels (≥ 12 m)
 - 3,67 * 10⁶ Hooks
 - 2.032 t of catch
 - SWO 46 %
 - YFT & BET 29 %
 - ALB 18 %

The second is a coastal segment, understanding vessels of less than 12 m fishing for and testing broad pelagic species and associated species, some of which use anchored fish aggregating devices (AFADs) over Mayotte and La Réunion Islands, the two outermost regions of the European Union of the Indian Ocean.

This coastal segment corresponds to the following:

- Longliners
 - 23 vessels in La Réunion (< 12m)
 - 0,42 * 10⁶ Hooks
 - 539,8 t of catch
 - SWO 30 %
 - YFT & BET 32 %



- ALB 18 %
 - 2 vessels in Mayotte
 - 67.5 t of catch
 - YFT 56 %
 - SWO 35 %
 - Trolling line and handlines
 - La Réunion: 118 vessels
 - 403.2 t of catch
 - Mayotte : 142 vessels
 - 578 t of catch

The fishing capacity of the EU fleet authorised to deploy a fishing activity for large pelagic species in the IOTC Convention Area is managed by provisions on capacity limits set out in the IOTC Resolution and by European Union legislation.

Furthermore, the conditions of access to certain fishing areas in waters under the jurisdiction of coastal states of the South West Indian Ocean are subject to specific provisions defined in public agreements engaging the European Union and named Sustainable Fisheries Partnership Agreements (SFPA).

In accordance with IOTC Resolution 15/02, flag EU Member States (Spain, France, Italy and Portugal) have undertaken scientific data characterising the activity of the EU fleet fishing in 2023 in the IOTC area of competence and enabling the IOTC Scientific Committee to conduct its work.

Detailed national reports for each EU Member States are available as annexes of this report.



NATIONAL REPORTS

ANNEX 1 EU-FRANCE: NATIONAL REPORT TO THE SCIENTIFIC COMMITTEE OF THE INDIAN OCEAN TUNA COMMISSION, 2024

ANNEX 2 EU-SPAIN NATIONAL REPORT TO THE SCIENTIFIC COMMITTEE OF THE INDIAN OCEAN TUNA COMMISSION, 2024

ANNEX 3 EU-PORTUGAL NATIONAL REPORT TO THE SCIENTIFIC COMMITTEE OF THE INDIAN OCEAN TUNA COMMISSION, 2024

ANNEX 4 EU-ITALY NATIONAL REPORT TO THE SCIENTIFIC COMMITTEE OF THE INDIAN OCEAN TUNA COMMISSION, 2024



UE-FRANCE Rapport national destiné au Comité Scientifique de la Commission des Thons de l'Océan Indien, 2024

BONHOMMEAU S.¹, JAC C.², LEBRANCHU J.³, SABARROS P. S.⁴

¹ IFREMER-La Réunion, Le Port, Réunion (France)

² OFB-PNMM, Pamandzi, Mayotte (France)

³ IRD, MARBEC, Ob7, IRD@SFA, Victoria, Seychelles

⁴ IRD, MARBEC, Ob7, Sète, France

INFORMATIONS SUR LES PÊCHERIES, LES RECHERCHES ET LES STATISTIQUES

<p>Conformément à la Résolution 15/02 de la CTOI (et aux autres MCG en lien avec les données comme indiqué ci-après), les données scientifiques finales de l'année écoulée concernant toutes les flottilles, sauf celles des palangriers, ont été soumises au Secrétariat de la CTOI avant le 30 juin de l'année en cours (p. ex. : pour un Rapport national soumis au Secrétariat de la CTOI en 2024, les données finales de l'année calendaire 2023 doivent avoir été fournies au Secrétariat avant le 30 juin 2024).</p>	<p>OUI</p>
<p>Conformément à la Résolution CTOI 15/02, les données provisoires de l'année écoulée concernant les palangriers ont été soumises au Secrétariat de la CTOI avant le 30 juin de l'année en cours (p. ex. : pour un Rapport national soumis au Secrétariat de la CTOI en 2024, les données provisoires de l'année calendaire 2023 doivent avoir été fournies au Secrétariat avant le 30 juin 2024).</p> <p>RAPPEL : Les données finales de l'année écoulée concernant les palangriers sont attendues au Secrétariat de la CTOI avant le 30 décembre de l'année en cours (p. ex. : pour un Rapport national soumis au Secrétariat de la CTOI en 2024, les données finales de l'année calendaire 2023 doivent avoir été fournies au Secrétariat avant le 30 décembre 2024).</p>	<p>OUI</p>
<p>Si vous avez répondu NON à l'une des questions, merci d'en indiquer les raisons et les actions prévues :</p>	



Cinq flottilles françaises ont été actives dans l'océan Indien en 2023 :

1 - La flottille thonière pratiquant la senne tournante comporte senneurs et bateaux d'assistance représentant une CC totale de 10398 tonnes. Les captures débarquées se sont élevées à 60644 tonnes, représentant une diminution de -18.22% par rapport à la moyenne 71695.6 de la période de référence 2018-2022, avec une proportion respective des espèces majeures YFT, SKJ et BET de 33.82%, 57.5% et 7.21%. L'effort de pêche atteint 1896 jours durant lesquels 2560 opérations de pêche ont été réalisées avec 2079 (81.21%) sur FOB et 481 (18.79%) sur bancs libres. Le nombre de FAD déployés par les 13 navires s'élève à 4280 (soit 329 FAD/bateau). Les programmes observateurs embarqués contribuent à une couverture de l'effort de pêche de 45% en 2023.

2 - La flottille palangrière basée à La Réunion avec 43 navires actifs. Les débarquements totaux de la flottille s'élèvent à 2 572 tonnes pour un effort total estimé de 4,314 millions d'hameçons. L'espadaon représentent 42.7% des débarquements et la contribution des thons (albacore, patudo et germon) s'élève à 47.7%. Le programme observateur, auto-échantillonnage inclus, a couvert 15% de l'effort de pêche.

3 - La petite pêche côtière réunionnaise concerne une flottille de 118 unités qui a débarqué 403.2 tonnes de grands pélagiques.

4 - La flottille palangrière mahoraise comprend 2 unités et a débarqué 67.5 tonnes. Il est à noter que pour l'un des deux bateaux, les captures ne sont pas disponibles dans le flux de données déclaratif.

5 - La petite pêche mahoraise représente 77 unités actives qui ont débarqué 292 tonnes de grands pélagiques. De la même manière, le nombre de navire et les captures ne sont pas disponibles dans le flux de données déclaratif (problème d'inscription des navires aux FPC - fichier flotte).

La France en lien avec les priorités de recherche de la CTOI mène divers projets à des niveaux national, européen et international. La France a participé activement à tous les groupes de travail organisés par la CTOI en 2023 et a présenté 28 contributions scientifiques.



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1. CONTEXTE/INFORMATIONS GÉNÉRALES SUR LES PÊCHERIES [OBLIGATOIRE]

Au niveau français, on distingue cinq pêcheries dites thonières (en fait ciblant les grands pélagiques) dans l'océan Indien en référence au type d'activités de pêche et aux ports d'attache des unités :

1. des senneurs tropicaux opérant pour l'essentiel à partir des Seychelles et de l'île Maurice,
2. des palangriers basés à La Réunion,
3. de la petite pêche réunionnaise,
4. des palangriers mahorais et
5. de la petite pêche mahoraise.

Elles seront traitées séparément dans ce rapport.

Les senneurs tropicaux sont des navires de grande taille (entre 60 et 90 m de longueur HT) à long rayon d'action opérant au large principalement dans le sud-ouest de l'océan Indien. Cette flottille cible les thons majeurs à savoir le thon albacore (*Thunnus albacares*), le listao (*Katsuwonus pelamis*) et le thon obèse (*Thunnus obesus*) qu'ils encerclent à l'aide d'une senne tournante d'environ 1 500 m de longueur et 250 m de chute munie d'une coulisse dans sa partie inférieure. Depuis le début de la pêche dans cette région en 1981, deux modes de pêche distincts se sont progressivement développés : la pêche sur bancs libres et la pêche sous objets flottants dérivants (DCP = dispositifs de concentration de poissons) pour partie naturels (billes de bois et autres débris) et pour partie artificiels comme des radeaux équipés de balises que les pêcheurs déploient eux-mêmes. Les débarquements récents se font principalement à Victoria (Seychelles). Les produits de cette pêche sont destinés principalement à la conserve mais depuis ces dernières années se développe également une filière du surgelé. Le développement potentiel d'un marché local de thons mineurs dans les ports de débarquements fait l'objet d'une étude par les équipes d'enquêteurs.

Les palangriers hauturiers de La Réunion de plus de 10 m et de moins de 24 m représentent 43 unités de pêches organisées en 2 flottilles : l'une artisanale (23 unités inférieures à 15 m) et l'autre semi-industrielle (9 unités de longueur inférieure à 15 m, 10 unités comprise entre 15 m et 24 m et 1 unité dans la classe 24-40 m). Les unités du segment semi-industriel opèrent au-delà des 20 milles marins, et potentiellement sur l'ensemble du sud-ouest de l'océan Indien (SOOI). Cette flottille active depuis le début des années 1990 cible l'espadon en utilisant la technique de la palangre dérivante de surface. La palangre est constituée d'une ligne mère en nylon monofilament sur laquelle des avançons d'une longueur de 12 à 20 mètres sont fixés au moyen d'attaches rapides. Les avançons espacés de plusieurs dizaines de mètres portent un hameçon à leur extrémité (hameçons de types thon, droit et/ou circulaire en règle générale mélangés sur une même ligne) qui est appâté avec du calamar ou maquereau. Des flotteurs répartis régulièrement sur la palangre (généralement tous les 6/8 hameçons) assurent sa flottabilité. La distribution de la profondeur des hameçons dans la colonne d'eau dépend du mode de filage de la ligne mais aussi des conditions d'hydrodynamisme. La profondeur de pêche maximum est généralement comprise entre 30 et 150 mètres. Suivant la taille du navire, la longueur de la ligne mère varie de 20 à 100 km.

La flottille côtière réunionnaise de moins de 12 m est composée d'une part des palangriers côtiers du segment artisanal, et d'autre part des navires de la petite pêche côtière. Les palangriers côtiers (23 unités) opérant dans une zone comprise entre les 12 et les 20 milles de la côte ont une technique de pêche similaire aux palangriers hauturiers. La petite pêche côtière (118 unités) opère à l'intérieur des 12 milles. La plupart de ces navires pratiquent les métiers de la ligne (lignes de traîne, lignes à main, lignes mécanisées, palangres dérivantes ou calées).

Les palangriers mahorais sont tous des unités de moins de 12 m, opérant dans la zone côtière et la zone contiguë de Mayotte. Cette flottille comprenant 2 bateaux cible l'espadon (*Xyphias gladius*) mais capture également une proportion équivalente de thons, thon jaune, thon obèse et thon germon. La technique utilisée est la palangre horizontale dérivante. Les navires effectuent des marées de deux à trois jours, pendant lesquels ils effectuent deux à trois filages d'une palangre grée d'environ 300 à 600 hameçons. Les lignes sont filées de manière à pêcher entre 30 et 120 m de profondeur.



Cette flottille est suivie par l'analyse des notes de vente des coopératives de pêche et intégrée au Système d'Information Halieutique (SIH).

La flottille côtière mahoraise est composée en 2023 de 77 barques essentiellement de type « Yamaha », homologuées en pêche professionnelle par dérogation (il à noter un problème sur l'inscription de certains de ces bateaux au fichier FPC). Un effort est en train d'être fait pour sa modernisation. Ces navires cohabitent avec plus de 300 à 400 barques non-homologuées en pêche professionnelle mais exerçant une activité de pêche à stratégie similaire (même métiers, mêmes espèces cibles, mêmes zones de pêche, activité légèrement réduite). L'ensemble de ces navires non-professionnels exerce une activité qualifiée de vivrière, bien qu'une proportion difficile à quantifier fasse l'objet d'une commercialisation informelle. Les navires ciblant les espèces pélagiques pratiquent majoritairement la pêche à la traîne, sur des zones assez larges en dehors du lagon, dans la zone côtière et la zone contigüe (jusqu'à 24 milles des côtes environ). On observe également des pratiques de pêche à la palangrotte à grands pélagiques sur DCP fixe, parfois également en pleine eau à l'aide d'amorce. Les espèces principalement ciblées sont la bonite à ventre rayé ou listao (*Katsuwonus pelamis*), le thon albacore (*Thunnus albacares*) et le thon obèse (*Thunnus obesus*). On observe également régulièrement des débarquements de thon blanc (*Thunnus alalunga*), d'autres scombridés comme le thazard (*Scomberomorus commerson*) ou le wahoo (*Acanthocybium solandrii*). Cette flottille est suivie depuis 2012 par la mise en place du SIH (Système d'Informations Halieutiques) par le Parc naturel marin de Mayotte. Les obligations de déclaration de captures ne sont en vigueur à Mayotte que depuis 2013.

Le suivi de l'activité de ces flottilles et la collecte des données de pêche et d'observations humaines sont réalisées dans le cadre du programme de collecte des données européennes de la pêche tel que défini par le règlement du conseil n°199/2008.

2. STRUCTURE DES FLOTTILLES [OBLIGATOIRE]

2.1 Les senneurs tropicaux

Le nombre de navires composant la flottille des senneurs français dans l'océan Indien a globalement diminué sur la période 1990-2022 avec maximum de 21 en 1990 et un minimum de 10 en 2022, et malgré une augmentation temporaire à 18 et 19 navires sur la période 2005-2008 liée au passage de 5 senneurs pêchant habituellement dans l'océan Atlantique (Tableau 1a). A l'inverse, la taille des navires a progressivement augmenté sur les 30 dernières années. Le nombre de petits navires (capacité < 600 GRT) a diminué tout au long des années 1990 pour disparaître totalement au début des années 2000. Les navires de taille moyenne (capacité comprise entre 601-800 GRT) ont également disparu progressivement de la pêcherie à la fin des années 2000. Depuis 2009, les senneurs français ont tous des capacités comprises entre 800 et 2000 GRT.

En support de la flottille de senneurs, il y a deux navires d'assistance pour l'année 2023.

2.2 Les palangriers hauturiers de plus de 12 m basés à La Réunion

Les palangriers hauturiers actifs de la flottille semi-industrielle de plus de 12 m représentaient une flottille de 28 unités en 2009 (Tableau 1b). En 2023, il ne reste plus que 20 unités actives représentant 14 % du nombre de navires réunionnais actifs ayant des grands pélagiques (espadon, thonidés, marlins, dorade coryphène et wahoo) comme espèces commerciales (cibles et prises accessoires).

2.3 La flottille côtière réunionnaise

La flottille côtière représente en 2023, 86 % du nombre de bateaux de pêche actifs à La Réunion (Tableau 1b). Elle est composée de deux segments :

- Les palangriers côtiers à espadons (palangres de surface) de moins de 12 mètres (limite de taille de segment considérée à partir de 2015), au nombre de 23 navires actifs, ils représentent 15 % de la flottille côtière active.
- Les 118 navires de la petite pêche côtière (de moins de 12 m), avec :
 - o 46 barques faiblement motorisées (moteurs hors-bord de moins de 20 KW) et d'une longueur inférieure à 6 mètres (36 % de l'ensemble de la flottille côtière active),
 - o 72 vedettes, plus puissantes (50 à 200 KW) d'une longueur comprise entre 6 et 12 m. Elles représentent 47 % de l'ensemble de la flottille côtière active.



Plus de 97% de ces navires pratiquent les métiers de la ligne (traîne et palangre verticale).

On peut noter une forte diminution du nombre de navires actifs appartenant à la petite pêche côtière : de 206 bateaux en 2006 à 118 en 2023 (réduction de 43%). En revanche, le nombre de palangriers côtiers a augmenté de 11 bateaux en 2004 à 23 en 2023 (augmentation de 110%).

2.4 La flottille palangrière basée à Mayotte

Des six palangriers ciblant l'espadon actifs en 2014 à l'aide de la palangre dérivante monofilament, seuls deux étaient en activité en 2023 (Tableau 1c).

2.5 La flottille artisanale mahoraise

L'essentiel de la flottille de pêche artisanale côtière mahoraise est composé de 77 barques non-pontées faiblement motorisées (de 20 à 40 CV, parfois 2x40 CV pour les navires allant pêcher sur les bancs éloignés) caractérisant le segment de la flottille des barques professionnelles (Tableau 1c). Les autres sont immatriculées en plaisance et ne peuvent pas exercer une activité professionnelle. Les stratégies et techniques de pêche entre ces deux catégories de navires sont très similaires, ce qui permet d'y appliquer les mêmes méthodes de suivi et de disposer de données sur l'ensemble de la pêche artisanale mahoraise. Une partie des pêcheurs en barque cible les ressources de grands pélagiques à proximité des côtes : bonite à ventre rayé (*Katsuwonus pelamis*), thon albacore (*Thunnus albacares*), thon obèse (*Thunnus obesus*), thons mineurs et istiophoridés. Ces espèces sont majoritairement capturées en pêche à la traîne, mais parfois également à la palangrotte autour des quelques ancres toujours en fonctionnement autour de l'île. Mais cette pratique n'est pas nécessairement exclusive et est souvent associée à de la pêche récifale. L'évolution du nombre total de barques entre 2014 et 2022 reflète plus une stabilisation progressive du référentiel « navires » que d'une réelle évolution de la flottille sur ces années. Pour les 2023, la mise à jour du fichier flotte est nécessaire pour suivre l'évolution de la flottille.

Tableau 1a. Nombre de senneurs par catégories de capacité de charge (CC en m3) et navires assistance français dans la zone de compétence de la (période 1990 - 2023).

Année	N. senneurs (400 < CC < 1200)	N senneurs (1200 < CC < 2000)	Total senneurs	N. navires assistance	Total CC senneurs (m3)
1990	21	0	21	0	12788
1991	17	1	18	0	12828
1992	15	2	17	0	14101
1993	15	2	17	0	14061
1994	15	2	17	0	13624
1995	15	2	17	0	14080
1996	15	2	17	0	13223
1997	16	3	19	0	13932
1998	13	3	16	0	13105
1999	12	3	15	0	12554
2000	12	3	15	0	12767
2001	15	4	19	0	13276
2002	11	5	16	0	14323
2003	9	5	14	0	13697
2004	10	5	15	0	14123
2005	11	5	16	0	13851
2006	13	5	18	0	17268
2007	14	5	19	0	19098
2008	14	5	19	0	18176
2009	15	3	18	0	13253
2010	11	2	13	0	12416
2011	11	2	13	0	14123
2012	13	2	15	0	13697
2013	11	2	13	0	14973
2014	11	2	13	0	14795
2015	11	1	12	0	13751
2016	11	1	12	0	13596
2017	11	1	12	0	13754
2018	11	1	12	1	13346
2019	11	1	12	3	12118
2020	7	3	10	3	10626
2021	8	3	11	2	10874
2022	7	3	10	2	10648
2023	8	3	11	2	10329

Tableau 1b. Nombre d'unités par segment (LHT = longueur hors tout) pratiquant la pêche à la palangre pélagique et le métier de l'hameçon à La Réunion dans la zone de compétence de la CTOI (période 2000 - 2023).

Année	Métier de l'hameçon			Pêche palangrière pélagique		
	Barques (LHT < 6 m)	Vedettes (6 < LHT < 12 m)	Total petite pêche cotière	Palangriers côtiers (LHT < 12m)	Palangriers (LHT > 12 m)	Total palangrier
2004	101	59	160	11	22	33
2005	119	66	185	13	24	37
2006	119	73	192	15	25	40
2007	126	71	197	16	29	45
2008	120	72	192	16	28	44
2009	96	78	174	15	28	43
2010	86	67	153	13	26	39
2011	85	73	158	13	26	39
2012	81	71	152	13	21	34
2013	85	76	161	15	17	32
2014	71	68	139	19	18	37
2015	52	68	120	20	19	39
2016	61	70	131	22	19	41
2017	78	74	152	24	17	41
2018	60	71	131	21	19	40
2019	61	64	125	22	19	41
2020	62	62	124	20	17	37
2021	47	62	109	21	19	40
2022	44	63	107	22	21	43
2023	46	72	118	23	20	43

Tableau 1c. Nombre d'unités de pêche mahoraises par segment (LHT = longueur hors tout) pratiquant la pêche à la palangre pélagique et le métier de l'hameçon dans la zone de compétence de la CTOI (période 2012 - 2023).

Année	Pirogues	Barques non-professionnelles	Barques professionnelles	Palangriers
2012	754	284	160	4
2013	732	324	165	5
2014	696*	396	137	6
2015	735	393	144	4
2016	729	369	145	3
2017	791	n/a	141	3
2018	794	n/a	141	3
2019	794	n/a	143	4
2020	762	n/a	140	4
2021	n/a	n/a	142	2
2022	n/a	n/a	132	2
2023	631**	n/a	142	2

* Problèmes pendant le recensement des pirogues en 2014 qui explique la diminution subite du nombre de pirogue par rapport aux années antérieures et postérieures.

*** La forte diminution du nombre de pirogue entre 2020 et 2023 est probablement lié à l'augmentation des contrôles en mer sur cette période et à la saisie régulière de ce type de navire en lien avec de nombreuses infractions à la navigation.*

3. PRISES ET EFFORT (PAR ESPÈCE ET PÊCHERIE) [OBLIGATOIRE]

3.1 Les débarquements des différentes flottilles

3.1.1 La pêche tropicale à la senne

Les débarquements totaux (toutes espèces) des senneurs tropicaux français en 2023 se sont élevés à 60 544 tonnes (Figure 1a) représentant une diminution de 18.22% par rapport à la moyenne 71 956 de la période de référence 2018-2022. Les captures par espèces de la flottille en 2022 sont présentées pour les deux modes de pêche rassemblées ainsi que par type de bancs objets et libres (Tableau 2a, Figure 1b). L'estimation de la composition spécifique des débarquements est basée sur la réalisation d'échantillons de taille et de composition spécifique à l'échelle des cuves des senneurs (cf. Partie 6 du rapport) et les calculs ont conduit à une estimation de la composition spécifique avec 33.82% de thon jaune, 57.50% de listao et 7.21% de thon obèse correspondant à un volume respectif en tonnes de 20 512, 34 872 et 4 374.

3.1.2 La pêche palangrière réunionnaise

Les débarquements des palangriers de la flottille semi-industrielle pour la période 2000-2023 sont présentés sur la Figure 1c et le Tableau 2b présente un extrait des données de débarquements pour les 5 dernières années (2018 – 2022). Mis à part un léger pic observable en 2005, on peut noter une diminution progressive des captures (3 300 tonnes en 2007 à 2 032 tonnes en 2023) pour des efforts variables compris entre environ 3 et 4.2 millions d'hameçons. La composition spécifique des captures pour les espèces commerciales principales en 2023 est de 43 % d'espadon, 16% de thon jaune, 7 % de thon obèse et 14 % de germon (Tableau 2b, Figure 1c).

3.1.3 La flottille côtière réunionnaise

Les palangriers côtiers de moins de 12 m

Pour cette flottille, les estimations sont réalisées à partir de fiches déclaratives considérées comme fiables. On note que les captures sont relativement stables avec une baisse en 2017. En 2023, l'effort de pêche s'est élevé à 0.642 millions hameçons pour une production débarquée estimée de 540.0 t, chiffre relativement par rapport à 2018 (Tableau 2c). L'espadon, espèce cible de la flottille, représente 30% des débarquements.

La petite pêche côtière des unités de moins de 12 m

Les données de débarquements présentées pour la petite pêche côtière réunionnaise (Tableau 2d) sont issues d'estimations basées sur des enquêtes aux débarquements et sur l'activité des unités de pêche enquêtées.

3.1.4 La flottille côtière mahoraise

Les palangriers côtiers Mahorais

La quantification des captures se fait sur la base des déclarations de l'armement et des notes de ventes lorsqu'elles existent. En 2023, 2 navires étaient en activité, ils avaient réalisé une capture totale de 67,5 tonnes (Tableau 2e). En 2020, aucune vente a été réalisée à la coopérative et l'armement, ayant deux navires actifs, n'a pas désiré partager ses données de captures et d'efforts.

La petite pêche côtière mahoraise

Les données d'estimation de cette flottille sont issues des observations aux débarquements dans le cadre du programme OBSDEB. En début d'année 2024, à la suite d'une forte dégradation du climat social (blocage de l'île pendant quasiment 2 mois), les données d'activité des navires n'ont pas pu être renseigné à temps et donc l'estimation des captures de l'année 2023 a été repoussée à la fin de l'année 2024. Ces données ne donc seront disponibles qu'en décembre.

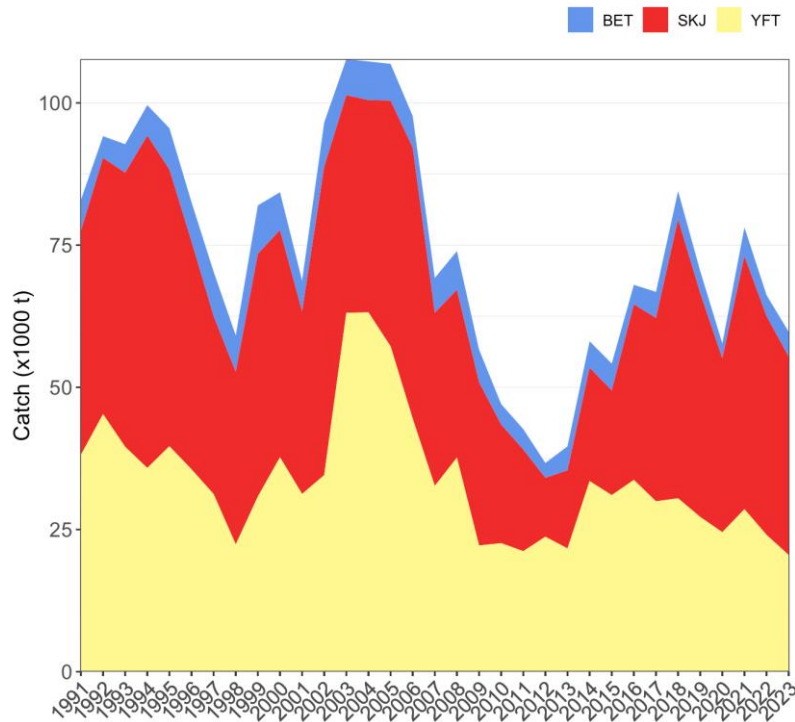


Figure 1a. Prises annuelles historiques par espèce de la flottille à la senne dans la zone de compétence de la CTOI.

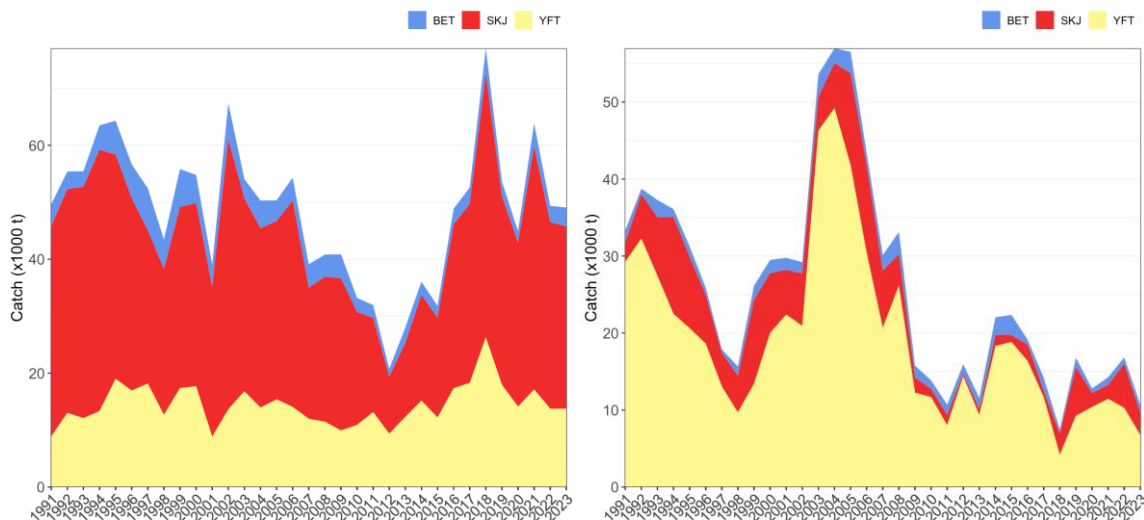


Figure 1b. Prises annuelles historiques par espèce et par mode de pêche (A gauche - Objet flottants = FOB, A droite - banc libre = FSC) de la flottille à la senne dans la zone de compétence de la CTOI.

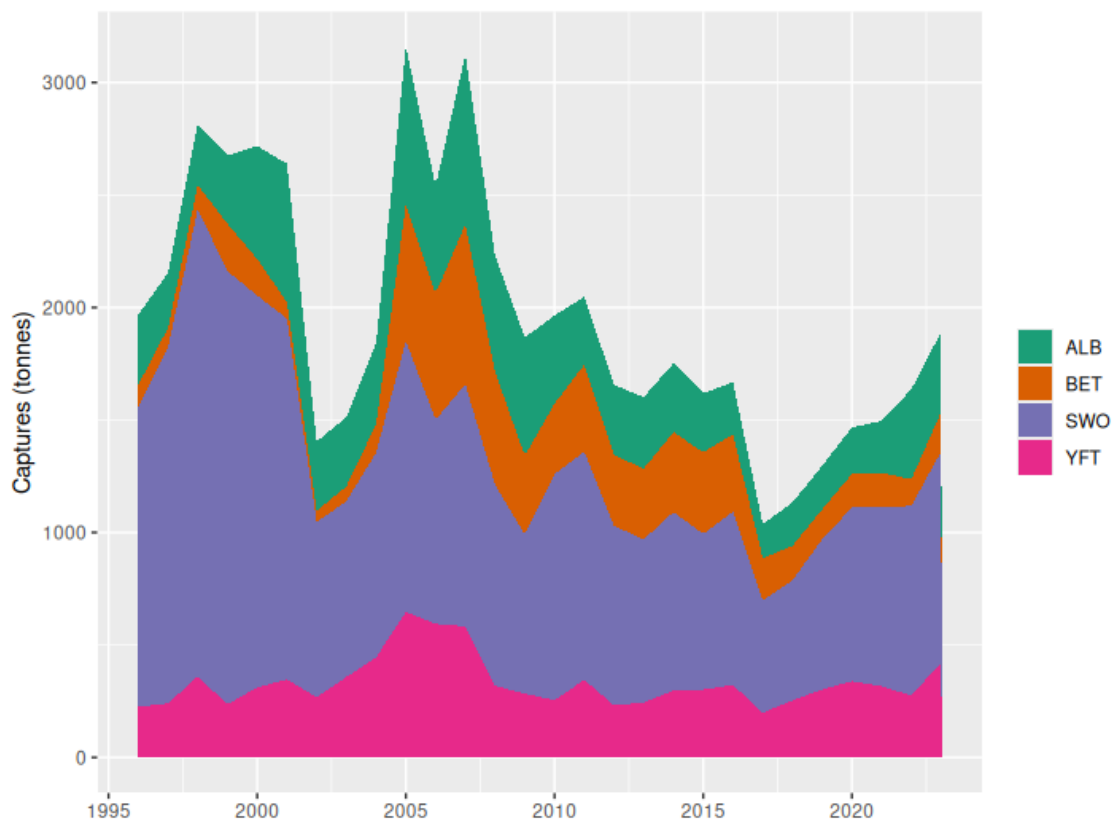


Figure 1c. Prises annuelles historiques par espèce de la flottille palangrière hauturière réunionnaise (LHT > 12 m) dans la zone de compétence de la CTOI.

Tableau 2a. Débarquements par espèce et effort annuels de la flottille de senneurs (2018 – 2023) dans la zone de compétence de la CTOI.

	Année	Nombre de coup de pêche	YFT	SKJ	BET	ALB	NCA (*)	TOTAL
Total	2018	2723 (2478)	30500	49001	4998	71	158	84729
	2019	2561 (2186)	27208	39357	3890	56	111	70622
	2020	2414 (2102)	24525	30569	2621	101	332	58149
	2021	2561 (2234)	28572	44484	5067	61	123	78307
	2022	2316 (1973)	24052	38454	3711	23	431	66671
	2023	2560 (2240)	20512	34872	4374	11	874	60644
Bancs objets	2018	2463 (2317)	26312	46275	4446	66	158	77257
	2019	1919 (1802)	17949	33007	2698	41	110	53805
	2020	1895 (1805)	14135	28768	2017	14	331	45265
	2021	2012 (1894)	17128	42645	4080	43	123	64020
	2022	1629 (1573)	13766	32734	2874	12	415	49802
	2023	2079 (1980)	13747	32004	3324	6	847	49928
	2018	260 (161)	4188	2726	553	5	0	7472

Bancs libres	2019	642 (384)	9259	6350	1192	15	1	16817
	2020	516 (297)	10391	1801	604	88	1	12884
	2021	549 (340)	11444	1839	987	18	0	14287
	2022	687 (400)	10285	5719	836	11	16	16869
	2023	481 (260)	6765	2868	1051	5	27	10716

(*) Catégorie « non comprises ailleurs - NCA » pour toutes les autres captures combinées

Tableau 2b. Débarquements (en tonne) par espèce (ou groupe d'espèces) et effort de pêche (millions d'hameçons) annuels de la flottille des palangriers hauturiers réunionnais (LHT > 12 m) pour la période 2015 – 2022 dans la zone de compétence de la CTOI.

Année	Espadon	Thon jaune	Germon	Thon obèse	Autres	Total	Effort (*10 ⁶)
2015	692	302	263	362	193	1812	3.53
2016	771	322	232	343	217	1885	4
2017	500	199	151	187	134	1171	3.1
2018	533	253	193	154	149	1282	3.3
2019	668.5	302.4	193.3	132	123.7	1419.9	4.05
2020	771.3	338.9	207.6	149.5	145.0	1613.0	3.69
2021	793.9	316.6	230.6	154.2	168.4	1663.6	3.42
2022	843.8	275.1	400.1	117.8	139.3	1776.1	3.61
2023	937.5	422.1	356.0	175.9	140.6	2032.1	3.67

Tableau 2c. Débarquements (en tonne) par espèce (ou groupe d'espèces) et effort de pêche (millions d'hameçons) annuels de la flottille des palangriers réunionnais côtiers (LHT < 12 m) pour la période 2015 – 2022 dans la zone de compétence de la CTOI.

Année	Espadon	Thon jaune	Germon	Thon obèse	Autres	Total	Effort (*10 ⁶)
2015	145.1	102.7	75.2	29.2	76.1	428.3	0.662
2016	161.4	94.5	73.7	19.8	93.5	442.9	0.614
2017	116	61	53	12	63	305	0.733
2018	144	95	65	19	84	407	0.688
2019	159.9	85.3	55	14.6	61.9	376.7	0.521
2020	125.4	102.2	60.4	14.5	86.2	388.6	0.488
2021	120.4	110.0	90.1	22.1	100.4	443.0	0.454
2022	157.4	118.6	111.8	22.5	91.6	501.9	0.601
2023	161.0	150.7	98.8	22.8	106.5	539.8	0.42

Tableau 2d. Débarquements (en tonne) par espèce de la petite pêche côtière à La Réunion pour la période 2015 – 2022 dans la zone de compétence de la CTOI (estimations Obsdeb en 2022).

Année	Thon jaune	Germon	Listao	Marlins	Dorade	Wahoo	Autres	Total
2015	222.4	30.3	8.2	62.1	108.1	41.4	22	494.5



2016	310.7	13.3	17.5	67	154.4	68.8	2.9	634.6
2017	277.1	67.2	28.3	86.1	158.2	55.3	4.4	676.6
2018	275.5	18.7	34.5	186.7	157.5	104.1	4.1	781.1
2019	166.3	20.6	15.3	75.5	104.2	81.1	4.75	467.75
2020	208.1	17.8	23.5	189.7	52.8	45.1	2.1	539.4
2021	235.2	16.5	30.3	82.7	101.7	38.0	11.2	515.6
2022	114.7	21.0	8.9	32.7	78.1	14.6		274.1
2023	171.0	36.0	20.1	60.1	83.1	30.4	2.5	403.2

Tableau 2e. Débarquements en tonnes des palangriers de Mayotte dans la période 2015-2023 dans la zone de la CTOI (source notes de vente et déclaration des armements)

Année	TUN	YFT	ALB	BET	BIL	BLM	BUM	SFA	SWO	DOL	Autres	TOTAL
2015	20.7				1.7			1.5	16.3	1.0	0.5	41.7
2016	32.8				1.6			2.6	21.9	0.4	0.4	59.7
2018		6.8	2.3	7.9		0.5	0.2	1.2	19.6	0.7	0.1	39.3
2019		26.6	0.4	9.9		0.1	1.2	0.9	21.1	0.1	0.1	60.4
2020												
2021		9.0	0.1	0.9		0.3	0.1	0.4	6.4	0.1		17.3
2022		39.1	0.7	5.1		1.5		1.6	22.9	0.6		71.5
2023		37,6	0,3	1,9		2,6		1,3	23,5	0,3		67,5

Tableau 2f. Débarquements (en tonnes) par espèce de la petite pêche côtière mahoraise et effort de pêche en nombre de marées pour la période 2015-2023 dans la zone de compétence de la CTOI (estimations obsdeb 2022).

Année	YFT	DOL	SWO	ALB	SKJ	BIL	BET	Autre	Nombre de marées
2015	56.6	1.3	0.6	0.9	37.8	0.2	11.8	21.2	2566
2016	38.5	2.9			82.7	61.7	4.1	56.9	2654
2017	108.2	8.6	11.0		127.2	7.2	7.6	18.4	3179
2018	50.3	2.7	1.5	0.6	146.9	0.2	0.3	22.9	2894
2019	57.6	1.9	8.2	9.8	53.7			15.3	4111
2020	57.9	2.3	1.4		61.4	0.1	28.2	41.0	2673
2021	151.4	0.9	0.7	0.2	112.4	13.4	2.5	50.1	6264
2022	145.3	1.2		0.3	95.5	15.0	0.2	24.1	5772
2023	220.0	6.3	0.0	8.9	29.3	0.0	5.74	307.8	5220

3.2 L'effort de pêche des différentes flottilles

3.2.1 La flottille des senneurs

Le nombre de jours de pêche a été de 1896 en 2023, en comparaison avec la moyenne de la période 2018-2022 (1993.6 jours), on constate une évolution de -4.9%. Le temps des calées en jour est estimé à 414 jours soit 21.84% des jours de pêche.

En 2023, 4280 DCPs ont été déployés par les senneurs et les navires d'assistance, soit une moyenne de 329 par navires, cette moyenne était de 319 en 2020. Le nombre de DCPs déployé correspond à une augmentation de 10,4% par rapport à 2020. Les 2 navires assistances ont contribué à 25,9% de l'effectif des DCPs déployés.

Le nombre total de calées réalisées en 2023 par la flottille française est de 2560 dont 2240 positives et 320 dites nulles. On constate une évolution de 1.79% du nombre total de calées, en comparaison avec la moyenne (2515) de la période 2018-2022,

Entre 2009 et 2011, le pourcentage de calées sous objets flottants (FOB) était devenu dominant et avait atteint 68% en 2010 pour atteindre un maximum de 90% en 2018. En 2023, il est constaté une augmentation de 3.05% (81%) par rapport à la moyenne de la période de référence 2018-2022 (78.6%). Le taux de succès des coups de pêche est de 95.24% pour les FOBs et 54.05% pour les bancs libres (FSC).

Les représentations géographiques de l'effort de pêche (en jours de recherche) pour la flottille de senneurs pour 2023 et la période 2018-2022 sont portées sur les figures 2a-1 et 2b-1, respectivement. Les cartes de la distribution géographique des captures pour les espèces cibles (listao, albacore et patudo) sont reportées sur les figures 3a-1 et 3b-1, respectivement.

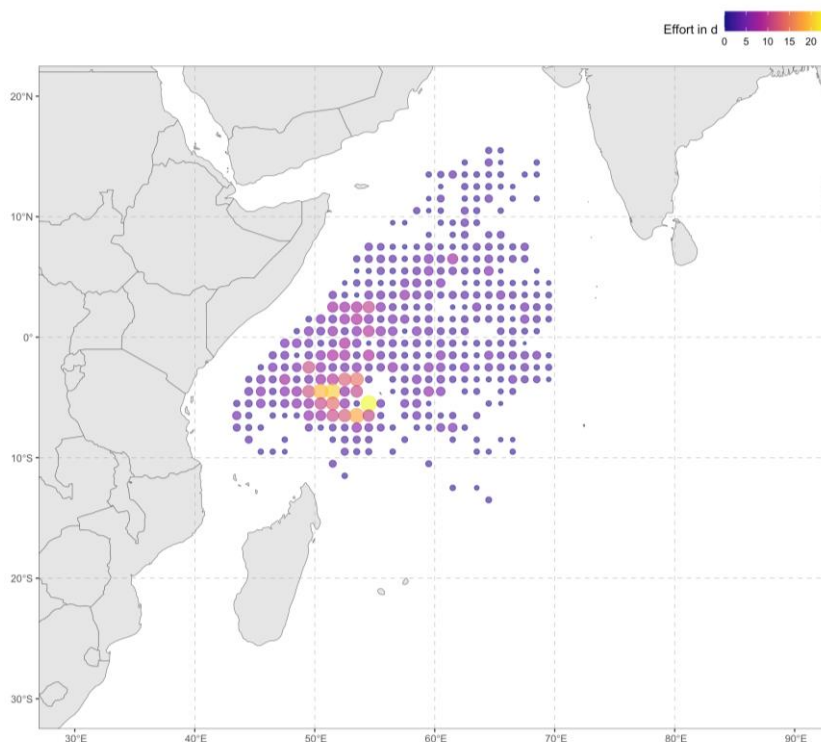


Figure 2a-1. Carte de la répartition de l'effort de pêche (jours de recherche) des senneurs français en 2023 dans la zone de compétence de la CTOI.

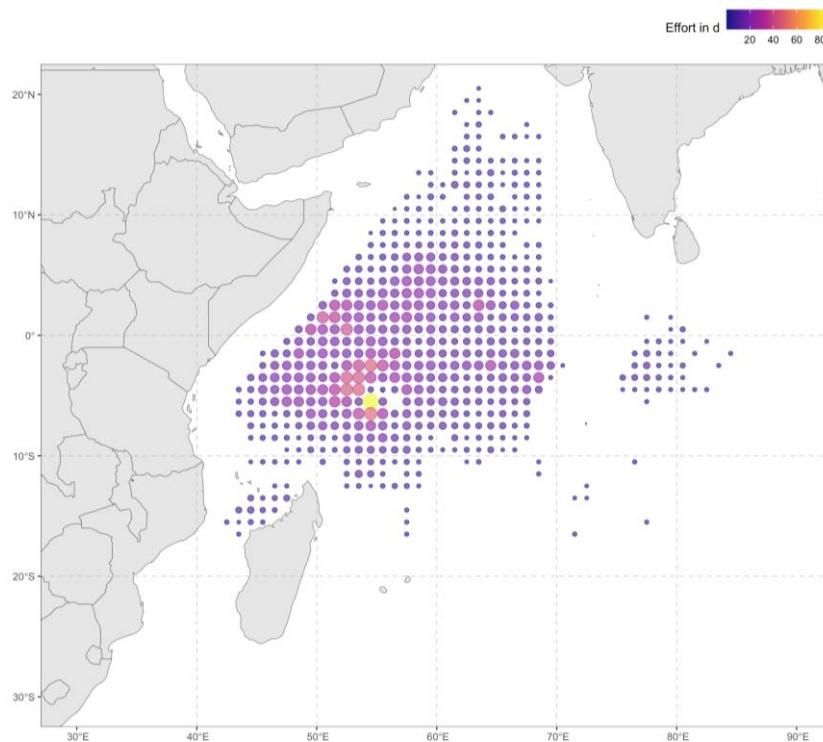


Figure 2b-1. Carte de la répartition de l'effort de pêche moyen (jours de recherche) des senneurs français pour les années 2017 à 2022 dans la zone de compétence de la CTOI.

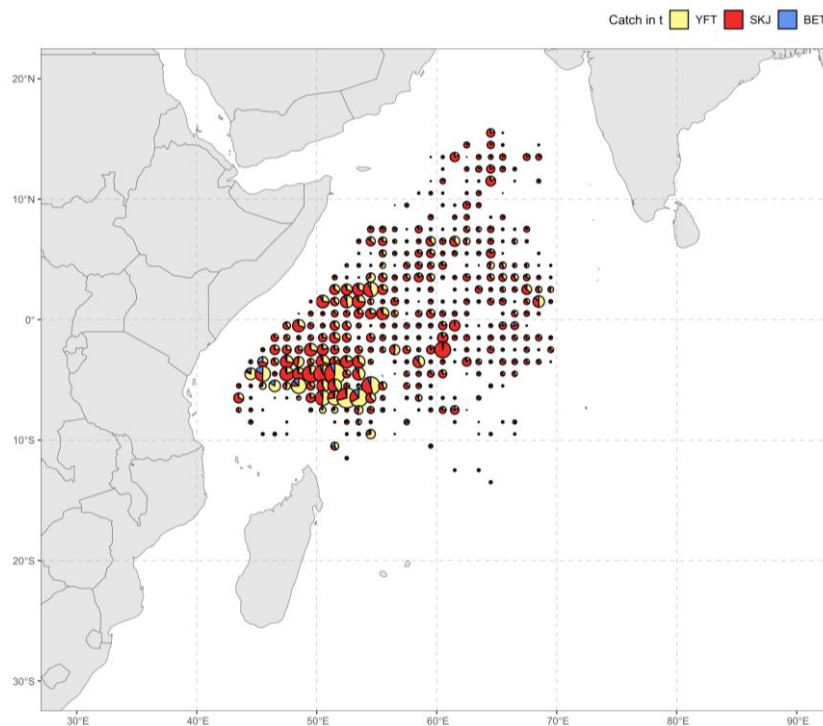


Figure 3a-1. Carte de la répartition des prises par espèces (listao, SKJ ; albacore, YFT ; patudo, BET) en 2023 pour les senneurs français dans la zone de compétence de la CTOI.

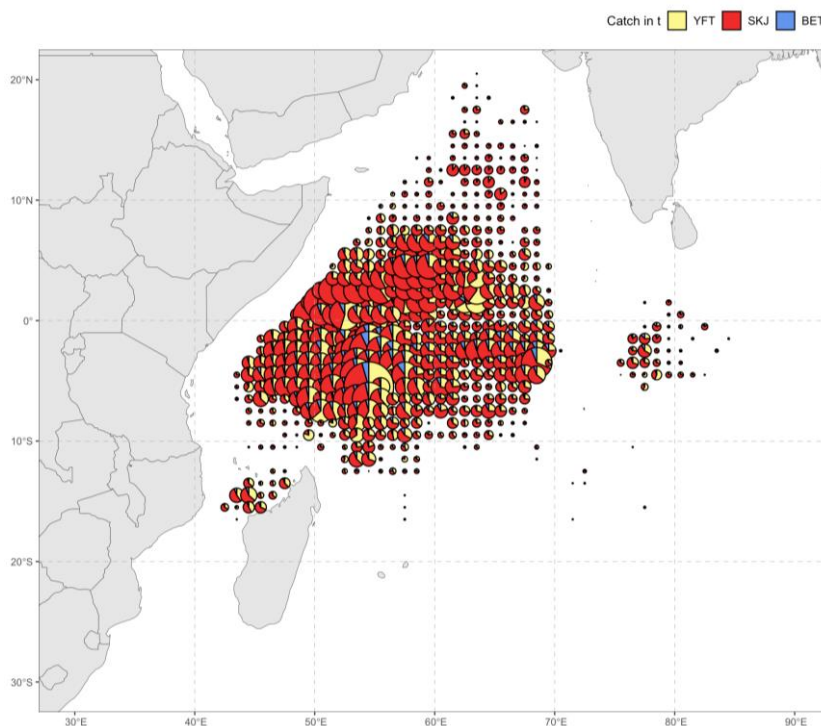


Figure 3b-1. Carte de la répartition moyenne des prises par espèce (listao, SKJ ; albacore, YFT ; patudo, BET) sur la période 2017-2022 pour les senneurs français dans la zone de compétence de la CTOI.

3.2.2 La flottille des palangriers

Pour les palangriers hauturiers de plus de 12 m basés à La Réunion, en 2023, l'effort de pêche atteint 3.67 millions d'hameçons et le niveau des débarquements s'élève à environ 2 032 tonnes soit une augmentation de l'effort et des captures totales par rapport à 2021 de 22% et 7% respectivement. Les représentations géographiques de l'effort de pêche (en nombre d'hameçons) pour cette flottille de palangriers pour 2021 et la période 2015 - 2019 sont portées sur les figures 2a-2 et 2b-2, respectivement. Les cartes de la distribution géographique des captures pour les espèces cibles (espadon) et accessoires à valeur commerciale (germon, albacore et patudo) sont portées sur les figures 3a-2 et 3b-2, respectivement.

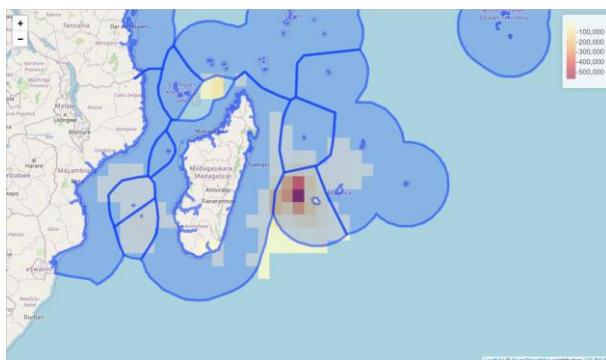


Figure 2a-2. Carte de la répartition de l'effort de pêche (nombre d'hameçons) des palangriers hauturiers français basés à La Réunion en 2022 dans la zone de compétence de la CTOI.

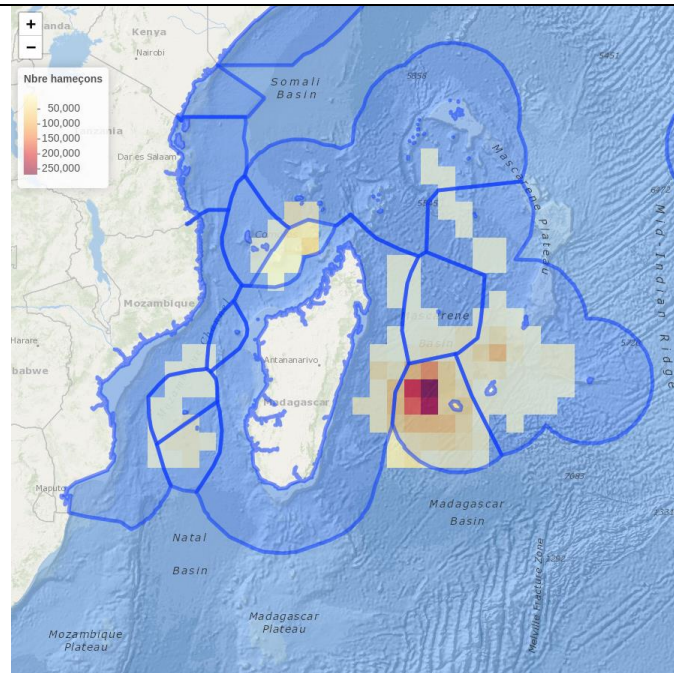


Figure 2b-2. Carte de la répartition de l'effort de pêche moyen (nombre d'hameçons) des palangriers hauturiers français basés à La Réunion pour les années 2018 à 2022 dans la zone de compétence de la CTOI.

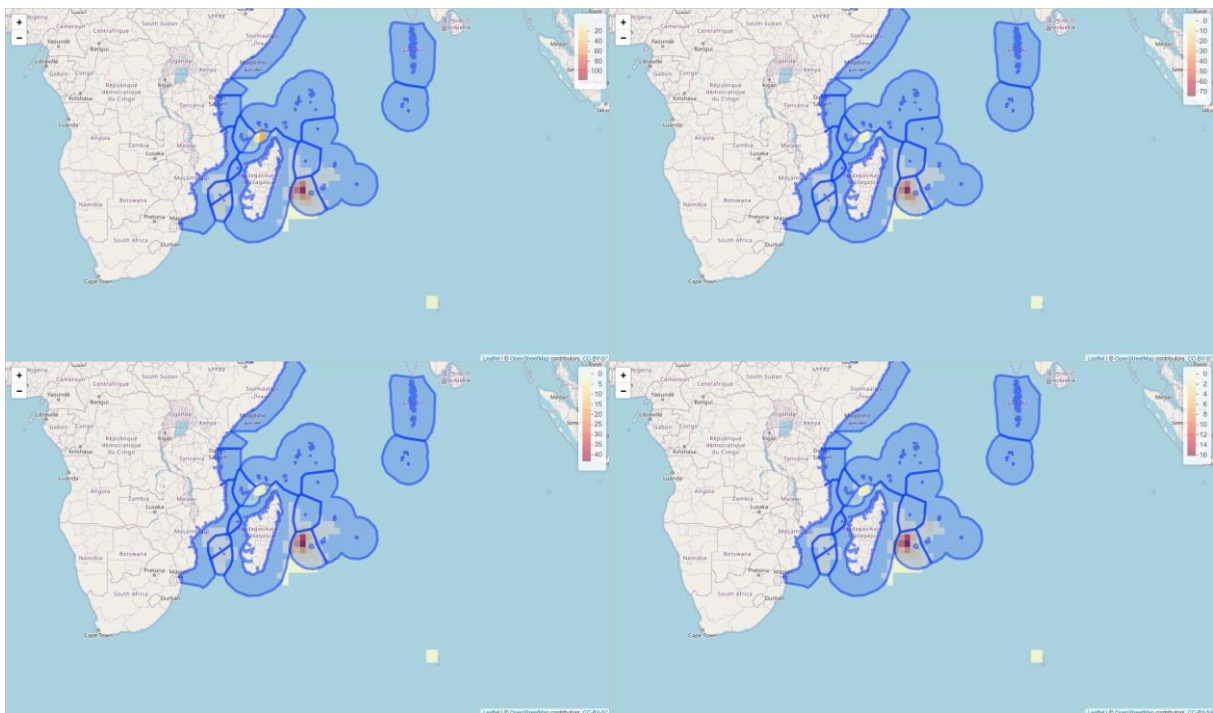


Figure 3b-2. Carte de la répartition des prises par espèce, pour la flottille palangrière dans la zone de compétence de la CTOI (2023) en haut à gauche pour l'espadon, en haut à droite pour le germon, en bas à gauche pour l'albacore et en bas à droite pour le thon obèse. **[Obligatoire]**

4. PÊCHERIE RÉCRÉATIVE [OBLIGATOIRE]

Il n'y a pas de suivi de la pêche récréative à l'heure actuelle à La Réunion et à Mayotte. Des projets sont en cours avec la Direction de la mer sud océan Indien (DMSOI) à La Réunion et avec le Parc à Mayotte afin de suivre cette pêche. Une enquête réalisée par IPSOS a été menée pour estimer les niveaux de captures en lien avec la pêche récréative.

5. ÉCOSYSTÈMES ET PRISES ACCESSOIRES [OBLIGATOIRE]

5.1 Requins [Obligatoire]

5.1.1 PAN-requins [Souhaitable]

L'Union Européenne a été développée en 2009 en PAN-requins (COM(2009) 40 ; SEC(2009) 103 ; SEC(2009) 104 ; SEC(2009) 106).

5.1.2 Requin peau bleue [Obligatoire]

Les requins peau bleue ne sont pas conservés par les senneurs français (Tableau 3a). Dans cette pêche, les prises de requins peau bleue sont rares et ces derniers sont toujours rejetés en mer morts ou vivants (Tableaux 3a et 4a). En revanche, les captures de requins peau bleue sont fréquentes dans la pêche palangrière réunionnaise ciblant (Tableau 3b). Les requins peau bleue ne sont généralement pas montés à bord et sont majoritairement rejetés vivants (Tableau 4b).

Dans les deux cas, les programmes d'observation en mer, couvrant une fraction de l'effort de pêche (réglementairement un minimum de 5% selon la Résolution 22/04 de la CTOI et le règlement UE 2022/2343), permettent de vérifier ces pratiques et d'estimer les quantités de requins peau bleue conservées et rejetées. Ce sont par ailleurs ces données "observateur" qui sont utilisées comme source pour la restitution à la CTOI des données concernant les rejets des espèces accessoires.

Tableau 3a. Nombre observé de requins et raies, par espèce, conservés par les senneurs français opérant dans la zone de compétence de la CTOI (pour les 5 années les plus récentes au minimum, p. ex. 2019–2023). Ces données correspondent aux données brutes "observateur" sans élévation à l'effort total de pêche.

Senne		Années	2019	2020	2021	2022	2023
Couverture observateur (%)			44	25	20	27	45
Groupe	Espèce	Code FAO	N Conservés				
Requins	<i>Alopias pelagicus</i>	PTH	0	0	0	0	0
	<i>Alopias spp</i>	THR	0	0	0	0	0

<i>Alopias superciliosus</i>	BTH	0	0	0	0	0
Carcharhinidae	RSK	0	0	0	0	0
<i>Carcharhinus albimarginatus</i>	ALS	0	0	0	0	0
<i>Carcharhinus falciformis</i>	FAL	99	0	0	0	1
<i>Carcharhinus longimanus</i>	OCS	0	0	0	0	0
<i>Carcharhinus</i> spp	CWZ	0	0	0	0	0
<i>Galeocerdo cuvier</i>	TIG	0	0	0	0	0
<i>Isurus oxyrinchus</i>	SMA	0	0	0	0	0
<i>Isurus</i> spp	MAK	0	0	0	0	0
<i>Lamna nasus</i>	POR	0	0	0	0	0
<i>Prionace glauca</i>	BSH	0	0	0	0	0
<i>Pseudocarcharias kamoharai</i>	PSK	0	0	0	0	0
<i>Rhincodon typus</i>	RHN	0	0	0	0	0
Selachimorpha	SKH	0	0	0	0	0
<i>Sphyrna lewini</i>	SPL	0	0	0	0	0
<i>Sphyrna mokarran</i>	SPK	0	0	0	0	0



	<i>Sphyrna</i> spp	SPN	0	0	0	0	0
	<i>Sphyrna zygaena</i>	SPZ	0	0	0	0	0
Raies	<i>Manta</i> spp	MNT	0	0	0	0	0
	<i>Mobula birostris</i>	RMB	0	0	0	0	0
	<i>Mobula mobular</i>	RMM	0	0	0	0	0
	<i>Mobula</i> spp	RMV	0	0	0	0	0
	<i>Mobula tarapacana</i>	RMT	0	0	0	0	0
	Mobulidae	MAN	0	0	0	0	0
	<i>Pteroplatytrygon violacea</i>	PLS	0	0	0	2	0
	Rajiformes	SRX	0	0	0	0	0

Tableau 3b. Nombre observé de requins et raies, par espèce, conservés par les palangriers français opérant dans la zone de compétence de la CTOI (pour les 5 années les plus récentes au minimum, p. ex. 2019–2023). Ces données correspondent aux données brutes “observateur” sans élévation à l’effort total de pêche.

Palangre		Années	2019	2020	2021	2022	2023
		Couverture observateur (%)	10,5	11,9	14,7	13,7	15
Groupe	Espèce	Code FAO	N Conservés				
Requins	<i>Alopias pelagicus</i>	PTH	0	0	0	0	0
	<i>Alopias spp</i>	THR	0	0	0	0	0
	<i>Alopias superciliosus</i>	BTH	0	0	0	0	0
	Carcharhinidae	RSK	0	0	0	0	0
	<i>Carcharhinus albimarginatus</i>	ALS	0	0	0	0	0
	<i>Carcharhinus falciformis</i>	FAL	12	1	4	3	4
	<i>Carcharhinus longimanus</i>	OCS	3	1	9	0	1
	<i>Carcharhinus spp</i>	CWZ	0	0	0	0	0
	<i>Galeocerdo cuvier</i>	TIG	0	0	0	0	0
	<i>Isurus oxyrinchus</i>	SMA	8	2	6	6	3
	<i>Isurus spp</i>	MAK	12	7	9	2	4
	<i>Lamna nasus</i>	POR	0	0	0	0	0



	<i>Prionace glauca</i>	BSH	106	185	360	306	291
	<i>Pseudocarcharias kamoharai</i>	PSK	0	0	0	0	0
	<i>Rhincodon typus</i>	RHN	0	0	0	0	0
	Selachimorpha	SKH	0	1	0	0	0
	<i>Sphyrna lewini</i>	SPL	0	0	0	0	0
	<i>Sphyrna mokarran</i>	SPK	0	0	0	0	0
	<i>Sphyrna spp</i>	SPN	0	0	0	0	1
	<i>Sphyrna zygaena</i>	SPZ	0	0	0	0	0
Raies	<i>Manta spp</i>	MNT	0	0	0	0	0
	<i>Mobula birostris</i>	RMB	0	0	0	0	0
	<i>Mobula mobular</i>	RMM	0	0	0	0	0
	<i>Mobula spp</i>	RMV	0	0	0	0	0
	<i>Mobula tarapacana</i>	RMT	0	0	0	0	0
	Mobulidae	MAN	0	0	0	0	0
	<i>Pteroplatytrygon violacea</i>	PLS	1	13	20	0	1
	Rajiformes	SRX	0	0	0	0	0

Tableau 4a. Nombre observé de requins et raies, par espèce, relâchés ou rejetés par les senneurs français opérant dans la zone de compétence de la CTOI (pour les 5 années les plus récentes au minimum, p. ex. 2019–2023). Inclure l'état des animaux à la remise à l'eau/rejet, si possible. Ces données correspondent aux données brutes "observateur" sans élévation à l'effort total de pêche. "R. viv." : rejetés vivants ; "R. mor." : rejetés morts ; "% viv." : pourcentage rejeté vivant

Senne		Années	2019			2020			2021			2022			2023		
Couverture observateur (%)			45			47			44			25			45		
Groupe	Espèce	Code FAO	R. viv.	R. mor.	% viv.	R. viv.	R. mor.	% viv.	R. viv.	R. mor.	% viv.	R. viv.	R. mor.	% viv.	R. viv.	R. mor.	% viv.
Requins	<i>Alopias pelagicus</i>	PTH	0	1	0	0	1	0	0	0	-	0	0	-	0	1	0
	<i>Alopias spp</i>	THR	0	0	-	0	0	-	0	0	-	0	0	-	2	0	100
	<i>Alopias superciliosus</i>	BTH	0	0	-	0	1	0	0	0	-	0	0	-	0	0	-
	Carcharhinidae	RSK	0	0	-	0	0	-	0	0	-	0	0	-	12	7	63
	<i>Carcharhinus albimarginatus</i>	ALS	0	0	-	0	0	-	0	0	-	0	0	-	0	0	-
	<i>Carcharhinus falciformis</i>	FAL	3125	3627	46	1192	3397	26	1235	1949	39	1987	3014	40	2257	3360	40
	<i>Carcharhinus longimanus</i>	OCS	28	13	68	18	4	82	18	6	75	31	9	78	101	25	80



<i>Carcharhinus spp</i>	CWZ	0	0	-	0	0	-	0	0	-	0	0	-	0	0	-
<i>Galeocerdo cuvier</i>	TIG	0	0	-	0	0	-	0	0	-	0	0	-	0	0	-
<i>Isurus oxyrinchus</i>	SMA	0	0	-	0	1	0	1	0	100	2	1	67	0	0	-
<i>Isurus spp</i>	MAK	0	0	-	0	0	-	0	0	-	0	0	-	0	0	-
<i>Lamna nasus</i>	POR	0	0	-	0	0	-	0	0	-	0	0	-	0	0	-
<i>Prionace glauca</i>	BSH	0	0	-	1	0	100	0	1	0	0	0	-	0	0	-
<i>Pseudocarcharias kamoharai</i>	PSK	0	0	-	0	0	-	0	0	-	0	0	-	0	0	-
<i>Rhincodon typus</i>	RHN	24	0	100	0	0	-	14	0	100	3	0	100	0	0	-
Selachimorpha	SKH	0	0	-	0	0	-	0	0	-	0	0	-	0	0	-
<i>Sphyrna lewini</i>	SPL	0	0	-	0	0	-	0	0	-	0	0	-	0	0	-
<i>Sphyrna mokarran</i>	SPK	0	0	-	0	0	-	0	0	-	0	0	-	0	0	-



	<i>Sphyrna</i> spp	SPN	0	1	0	0	0	-	0	0	-	0	0	-	0	0	-
	<i>Sphyrna zygaena</i>	SPZ	3	0	100	0	0	-	0	0	-	0	0	-	0	0	-
Raies	<i>Manta</i> spp	MNT	0	0	-	0	0	-	0	0	-	0	0	-	0	0	-
	<i>Mobula birostris</i>	RMB	5	1	83	2	0	100	0	0	-	0	0	-	3	0	100
	<i>Mobula mobular</i>	RMM	7	1	88	3	2	60	2	0	100	0	0	-	13	2	87
	<i>Mobula</i> spp	RMV	1	0	100	4	1	80	0	0	-	0	0	-	6	0	100
	<i>Mobula tarapacana</i>	RMT	3	1	75	2	3	40	0	3	0	0	0	-	1	1	50
	Mobulidae	MAN	0	0	-	0	0	-	0	0	-	0	0	-	1	0	100
	<i>Pteroplatytrygon violacea</i>	PLS	0	0	-	2	19	10	9	11	45	0	0	-	15	23	39
	Rajiformes	SRX	0	0	-	0	0	-	0	0	-	0	0	-	0	0	-

Tableau 4b. Nombre observé de requins et raies, par espèce, relâchés ou rejetés par les palangriers pélagiques français opérant dans la zone de compétence de la CTOI (pour les 5 années les plus récentes au minimum, p. ex. 2019–2023). Inclure l'état des animaux à la remise à l'eau/rejet, si possible. Ces données correspondent aux données brutes "observateur" sans élévation à l'effort total de pêche. "R. viv." : rejetés vivants ; "R. mor." : rejetés morts ; "% viv." : pourcentage rejeté vivant

Palangre		Années	2019			2020			2021			2022			2023		
Couverture observateur (%)			14,1			10,5			11,9			14,7			15,0		
Groupe	Espèce	Code FAO	R. viv.	R. mor.	% viv.	R. viv.	R. mor.	% viv.	R. viv.	R. mor.	% viv.	R. viv.	R. mor.	% viv.	R. viv.	R. mor.	% viv.
Requins	<i>Alopias pelagicus</i>	PTH	1	0	100	0	0	-	0	0	-	1	0	100	0	0	-
	<i>Alopias spp</i>	THR	6	2	75	15	8	65	3	1	75	8	0	100	21	1	95
	<i>Alopias superciliosus</i>	BTH	2	1	67	0	1	0	0	1	0	1	0	100	2	0	100
	Carcharhinidae	RSK	0	0	-	0	0	-	0	0	-	0	0	-	0	0	-
	<i>Carcharhinus albimarginatus</i>	ALS	0	0	-	0	0	-	0	0	-	0	0	-	0	0	-
	<i>Carcharhinus falciformis</i>	FAL	42	57	42	101	27	79	51	96	35	108	48	69	474	197	71



<i>Carcharhinus longimanus</i>	OCS	77	32	71	175	24	88	170	33	84	141	36	80	251	32	89
<i>Carcharhinus spp</i>	CWZ	0	0	-	1	1	50	42	3	93	95	82	54	58	16	78
<i>Galeocerdo cuvier</i>	TIG	6	1	86	16	1	94	21	1	95	15	1	94	23	2	92
<i>Isistius brasiliensis</i>	ISB	0	0	-	0	0	-	0	0	-	1	1	50	4	0	100
<i>Isurus oxyrinchus</i>	SMA	4	0	100	3	1	75	19	9	68	6	3	67	23	13	66
<i>Isurus spp</i>	MAK	6	8	43	21	1	95	11	3	79	30	5	86	16	6	73
<i>Lamna nasus</i>	POR	0	0	-	0	0	-	0	0	-	1	0	100	0	0	-
<i>Prionace glauca</i>	BSH	857	156	85	877	157	85	1064	165	87	1091	95	92	1391	157	90
<i>Pseudocarcharias kamoharai</i>	PSK	2	0	100	0	3	0	0	0	-	0	0	-	0	0	-
<i>Rhincodon typus</i>	RHN	0	0	-	0	0	-	0	0	-	0	0	-	0	0	-
Selachimorpha	SKH	64	30	68	189	30	86	35	6	85	6	0	100	4	1	80



	<i>Sphyrna lewini</i>	SPL	1	1	50	0	0	-	0	2	0	0	0	-	1	2	33
	<i>Sphyrna mokarran</i>	SPK	0	0	-	0	0	-	0	0	-	0	1	0	0	0	-
	<i>Sphyrna spp</i>	SPN	2	8	20	12	3	80	3	0	100	11	2	85	24	10	71
	<i>Sphyrna zygaena</i>	SPZ	0	1	0	0	2	0	1	1	50	1	0	100	0	0	-
	<i>Zameus squamulosus</i>	SSQ	0	0	-	0	0	-	0	0	-	0	1	0	0	0	-
Raies	<i>Manta spp</i>	MNT	0	0	-	0	0	-	0	0	-	0	0	-	0	0	-
	<i>Mobula birostris</i>	RMB	0	0	-	0	0	-	0	1	0	0	0	-	1	0	100
	<i>Mobula mobular</i>	RMM	0	0	-	0	0	-	0	0	-	11	0	100	0	0	-
	<i>Mobula spp</i>	RMV	2	2	50	0	0	-	1	1	50	2	0	100	1	0	100
	<i>Mobula tarapacana</i>	RMT	0	0	-	0	0	-	1	0	100	2	0	100	0	0	-
	Mobulidae	MAN	0	2	0	0	8	0	2	3	40	1	0	100	0	0	-



<i>Pteroplatytrygon violacea</i>	PLS	59	525	10	20	895	2	157	1028	13	0	0	-	127	2	98
Rajiformes	SRX	0	0	-	0	0	-	0	0	-	0	0	-	1	0	100

5.2 Oiseaux de mer [Obligatoire]

1. Combien de navires ont opéré au sud de 25°S pendant la période couverte par ce rapport ?
2. Parmi ces navires, combien ont utilisé des lignes d'effarouchement des oiseaux (exprimé en pourcentage de l'effort total) ?
3. Parmi ces navires, combien ont utilisé le lestage des lignes (exprimé en pourcentage de l'effort total) ?
4. Parmi ces navires, combien ont utilisé le filage de nuit (exprimé en pourcentage de l'effort total) ?

La pêche palangrière française du sud-ouest de l'Océan Indien (basée à la Réunion ainsi que Mayotte) n'est pas concernée par la Résolution 12/06 car elle opère au-dessus de 25°S. De plus, aucune capture d'oiseaux marins n'est à déplorer pour cette pêche (Tableau 5b). Par ailleurs, la palangre ciblant l'espadon est pratiquée avec des filages le soir ou de nuit, avec des lignes (avançons) généralement lestées à 80 g, sans lignes d'effarouchement des oiseaux.

La senne tropicale française n'est pas non plus concernée par la Résolution 12/06 et ne déplore également aucune capture accidentelle d'oiseaux marins (Tableau 5a).

Les programmes d'observation en mer sur les deux pêcheries permettent la récupération d'informations sur les captures d'oiseaux marins, si tant est qu'il y en ait.

5.3 Tortues marines [Obligatoire]

La Résolution 12/04 de la CTOI sur la conservation des tortues marines est appliquée à l'échelle nationale pour les deux pêcheries tropicales concernées : la senne et la palangre pélagiques. Les tortues sont manipulées selon les pratiques recommandées et systématiquement rejetées à la mer (Tableaux 5a et 5b).

Dans le cas de la pêche palangrière réunionnaise, lorsque les tortues sont blessées ou lorsque celles-ci ont avalé l'hameçon et que ce dernier ne peut être retiré à l'aide du kit d'extraction dédié (distribué à tous les pêcheurs), les tortues sont ramenées à terre et remises au centre de soin réunionnais Kelonia.

Les programmes d'observation en mer sur les deux pêcheries permettent la récupération d'informations sur les captures de tortues marines, et c'est cette source de données qui est utilisée pour la fourniture de données annuelle à la CTOI. On retrouvera les rejets de tortues dans les formulaires 1DI ainsi que ROS pour les deux engins de pêche.

5.4 Autres espèces d'intérêt écologique (p. ex. : cétacés, raies Mobulidae, requins-baleines) [Souhaitable]

Les différentes résolutions de la CTOI concernant les requins et raies (Rés. 12/04 ; 13/05 ; 13/06 ; 17/05 ; 18/02 ; 19/02 ; 19/03 ; 23/06) sont appliquées à l'échelle nationale pour les deux pêcheries tropicales françaises de l'Océan Indien : la senne et la palangre pélagique.

Pour la senne, les programmes d'observation à bord (45 % de couverture de l'effort total de pêche en 2023) indiquent qu'aucun requin et aucune raie n'a été conservé en 2023 (Tableau 3a). Certaines espèces de requins et raies ont été capturées mais les individus ont tous été rejetés, vivants ou morts (Tableau 4a).

Pour la palangre réunionnaise, les programmes d'observation, avec 15 % de couverture de l'effort total de pêche, indiquent qu'en 2023 certains individus des espèces suivantes ont été conservés : *Carcharhinus falciformis* (4), *Carcharhinus logimanus* (1), *Isurus oxyrinchus* (3), *Isurus spp* (4), *Prionace glauca* (291), *Sphyrna spp* (1), et



Pteroplatytrygon violacea (1) (Tableau 3b). Autrement, les requins et raies sont rejetés, généralement vivants (Tableau 4b).

La Résolution 23/06 de la CTOI concernant la conservation des mammifères marins a été appliquée à l'échelle nationale pour les deux pêcheries tropicales françaises concernées : la senne et la palangre pélagique.

Pour les senneurs, les coups de pêche sur baleines et autres cétacés sont proscrits mais de très rares interactions arrivent tout de même lorsque ceux-ci n'ont pu être vus avant. Aucune interaction avec un cétacé n'est à déplorer en 2023 (Tableau 5a).

Pour les palangriers, les interactions avec les cétacés (captures sur la ligne) sont également peu fréquentes et ces derniers sont toujours relâchés vivants (Tableau 5b). A titre d'exemple, 2 interactions avec des cétacés ont été notées en 2023.

La Résolution 13/05 concernant la conservation des requins-baleine interdit d'effectuer un coup de pêche sur un requin-baleine. On retrouve cependant parfois des requins-baleine dans les filets des senneurs lorsque ces individus n'ont pu être détectés avant, et ceux-ci sont systématiquement relâchés vivants (Tableau 4a) en suivant le guide des bonnes pratiques de remise à l'eau qui a été développé dans le cadre du projet MADE en 2012 et validé par la CTOI. Aucune interaction avec des requins-baleine n'est à déplorer en 2023.



Tableau 5a. Rejets annuels observés d'espèces d'intérêt particulier, par espèce (oiseaux de mer, tortues marines et mammifères marins) des senneurs français opérant dans la zone de compétence de la CTOI (pour les 5 années les plus récentes au minimum, p. ex. 2019–2023, ou pour la plus longue période possible).

Senne		Années	2019			2020			2021			2022			2023		
Couverture observateur (%)			45			47			44			25			45		
Groupe	Espèce	Code FAO	R. viv.	R. mor.	% viv.	R. viv.	R. mor.	% viv.	R. viv.	R. mor.	% viv.	R. viv.	R. mor.	% viv.	R. viv.	R. mor.	% viv.
Tortues	<i>Caretta caretta</i>	TTL	0	0	-	1	0	100	0	0	-	4	0	100	0	0	-
	<i>Chelonia mydas</i>	TUG	7	0	100	8	0	100	5	0	100	6	0	100	9	1	90
	<i>Dermochelys coriacea</i>	DKK	0	0	-	0	0	-	1	0	100	0	0	-	0	0	-
	<i>Eretmochelys imbricata</i>	TTH	4	0	100	1	0	100	0	0	-	0	0	-	0	0	-
	<i>Lepidochelys olivacea</i>	LKV	11	0	100	5	0	100	5	1	83	4	1	80	5	0	100
	Testudinata	TTX	3	0	100	1	0	100	1	0	100	1	2	33	1	0	100
Cétacés	<i>Balaenoptera physalus</i>	FIW	0	0	-	0	0	-	5	0	100	0	0	-	0	0	-



	Delphinidae	DLP	0	0	-	0	0	-	0	0	-	0	0	-	0	0	-
	<i>Globocephala macrorhynchus</i>	SHW	0	0	-	0	0	-	0	0	-	1	0	100	0	0	-
	<i>Globocephala spp</i>	GLO	0	0	-	0	0	-	0	0	-	0	0	-	0	0	-
	<i>Grampus griseus</i>	DRR	0	0	-	0	0	-	0	0	-	0	0	-	0	0	-
	<i>Megaptera novaeangliae</i>	HUW	0	0	-	0	0	-	0	0	-	0	0	-	0	0	-
	Mystoceti	MYS	0	0	-	1	0	100	0	0	-	0	0	-	0	0	-
	Odontoceti	ODN	0	0	-	0	0	-	0	0	-	0	0	-	0	0	-
	<i>Pseudorca crassidens</i>	FAW	0	0	-	0	0	-	0	0	-	0	0	-	0	0	-
Oiseaux	Oiseaux divers	SBD*	0	0	-	0	0	-	0	0	-	0	0	-	0	0	-

Tableau 5b. Rejets annuels observés d'espèces d'intérêt particulier, par espèce (oiseaux de mer, tortues marines et mammifères marins) des palangriers pélagiques français opérant dans la zone de compétence de la CTOI (pour les 5 années les plus récentes au minimum, p. ex. 2019–2023, ou pour la plus longue période possible)

Palangre		Années	2019			2020			2021			2022			2023		
Couverture observateur (%)			14,1			10,5			11,9			14,7			15,0		
Groupe	Espèce	Code FAO	R. viv.	R. mor.	% viv.	R. viv.	R. mor.	% viv.	R. viv.	R. mor.	% viv.	R. viv.	R. mor.	% viv.	R. viv.	R. mor.	% viv.
Tortues	<i>Caretta caretta</i>	TTL	6	4	60	3	5	38	21	1	95	10	2	83	11	2	85
	<i>Chelonia mydas</i>	TUG	2	2	50	0	0	-	0	1	0	1	0	100	2	1	67
	<i>Dermochelys coriacea</i>	DKK	6	0	100	4	0	100	2	0	100	5	0	100	1	1	50
	<i>Eretmochelys imbricata</i>	TTH	0	0	-	0	1	0	0	1	0	0	0	-	0	0	-
	<i>Lepidochelys olivacea</i>	LKV	1	2	33	0	0	-	0	0	-	1	1	50	0	0	-
	Testudinata	TTX	0	0	-	0	1	0	1	0	100	1	1	50	2	0	100
Cétacés	<i>Balaenoptera physalus</i>	FIW	0	0	-	0	0	-	0	0	-	0	0	-	0	0	-



	Delphinidae	DLP	0	0	-	0	0	-	1	0	100	0	0	-	1	0	100
	<i>Globocephala macrorhynchus</i>	SHW	0	0	-	0	0	-	0	0	-	0	0	-	0	0	-
	<i>Globocephala</i> spp	GLO	0	0	-	1	0	100	0	0	-	0	0	-	0	0	-
	<i>Grampus griseus</i>	DRR	0	0	-	0	0	-	0	0	-	0	0	-	0	0	-
	<i>Megaptera novaeangliae</i>	HUW	0	0	-	0	0	-	0	0	-	0	0	-	0	0	-
	Mystoceti	MYS	0	0	-	0	0	-	0	0	-	0	0	-	0	0	-
	Odontoceti	ODN	0	0	-	0	0	-	1	0	100	0	0	-	0	0	-
	<i>Pseudorca crassidens</i>	FAW	0	0	-	0	0	-	0	0	-	0	0	-	0	0	-
Oiseaux	Oiseaux divers	SBD*	0	0	-	0	0	-	0	0	-	0	0	-	0	0	-

6. SYSTÈMES NATIONAUX DE COLLECTE ET DE TRAITEMENT DES DONNÉES [OBLIGATOIRE]

6.1 Collecte et vérification des données issues des fiches de pêche (y compris date de début et état de la mise en œuvre)

6.1.1 Les senneurs tropicaux

Depuis 2002, les données des flottilles européennes (Espagne et France) sont collectées dans le cadre du « Règlement sur la Collecte des Données » de l'UE (DCR, Reg. 1543/2000 et 1639/2001), remplacé en 2008 par le « Cadre communautaire pour la collecte, la gestion et l'utilisation de données dans le secteur de la pêche et le soutien aux avis scientifiques sur la politique commune de la pêche » (DCF, Reg 2017/1004 and 2016/1251) en collaboration avec la SFA (Seychelles Fisheries Authority) ; l'Unité Statistique Thonière d'Antsiranana (USTA, Madagascar) et Albion Fisheries Research Centre (AFRC, Maurice). L'observatoire des écosystèmes tropicaux exploités (Ob7) de l'IRD coordonne les activités de collecte, analyse, archivage et transmission des données de la pêche thonière tropicale français. Les fiches de pêche font l'objet d'une couverture à 100 % et d'une vérification de cohérence avec les fiches de débarquement et avec les données du système de suivi satellite (VMS = Vessel Monitoring System) qui équipe les navires depuis 2001.

La chaîne de collecte des données d'activité, contrôle, échantillonnage des tailles et traitement des données est représentée sur la figure 6 ci-dessous.

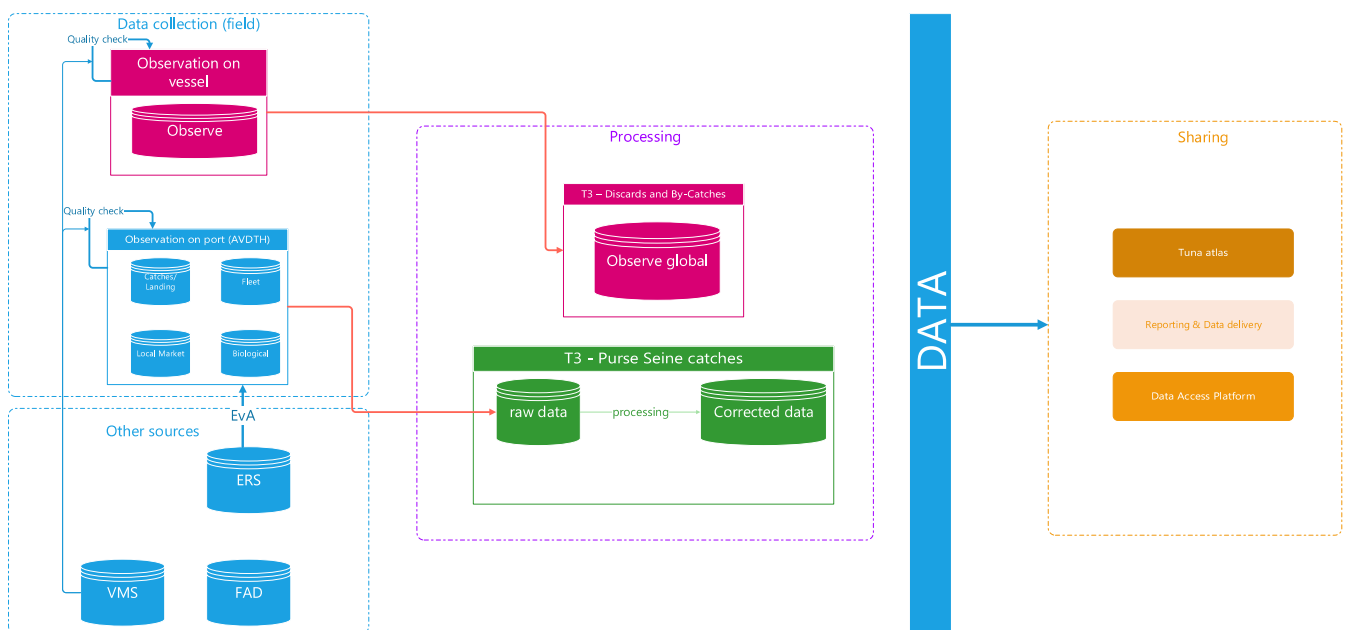


Figure 6. Schématisation du système d'information mis en place à l'IRD pour la gestion des données de la pêche thonière tropicale à la senne de leur collecte jusqu'à leur traitement et restitution.

6.1.2 Les palangriers hauturiers réunionnais de plus de 12 m

La mise en place du SIH à La Réunion débuté en 2005 est désormais achevée et le réseau est opérationnel depuis 2007. Néanmoins, suite à la mise en place par la DPMA du Système d'Information des Pêches et de l'Aquaculture (SIPA) et des JBE (journal de bord électronique), de nombreux changements sont intervenus entre 2009 et 2012-2013 sur l'organisation de la collecte et de la saisie des documents déclaratifs. Tout d'abord, une nouvelle application de saisie des documents déclaratifs a été développée par la DPMA en collaboration avec les services informatiques du Ministère de l'Agriculture et de la Pêche (CERIT). L'interface de saisie, nommée « SACAPT », a pris en charge dans sa version initiale à partir de 2009 la saisie du journal de bord européen et de la fiche de pêche nationale. La saisie des documents déclaratifs n'a dans un premier temps donc plus été opérée par l'Ifremer, mais par la société France AgriMer. Dans un second temps, grâce au JBE, les données ont pu être intégrées directement et sans saisie à partir de 2012-2013. Seule la réalisation des enquêtes d'activité, les

observations et les échantillonnages au débarquement, ainsi que les synthèses et avis, à partir des données fournies via « SACROIS » (Figure 9), incombent dorénavant à l'Ifremer.

La mise en place progressive des JBE en 2012-2013 a donc permis une validation des données beaucoup plus rapide à partir de 2014. Les données spatialisées de captures et d'efforts dans les rectangles statistiques CTOI sont obtenues à partir des données VMS.

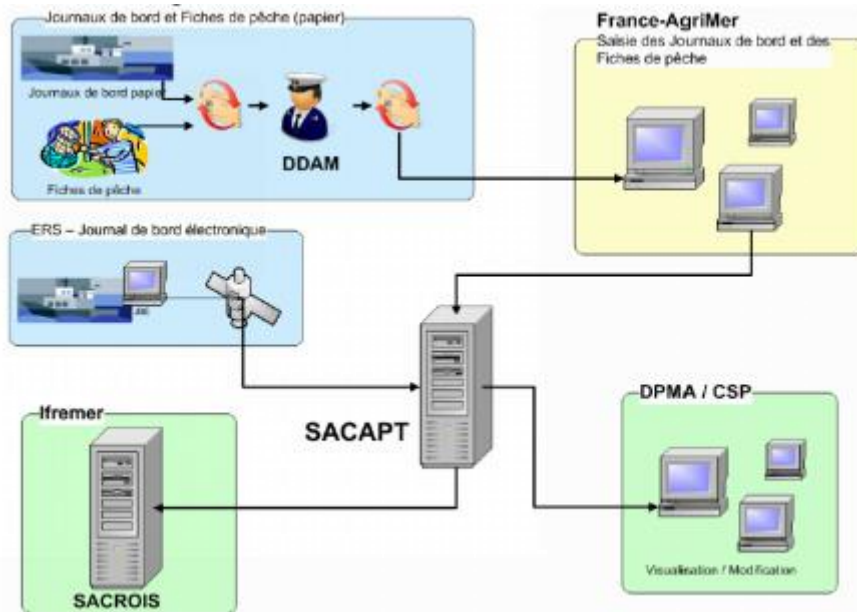


Figure 9. Organisation de la collecte et de la saisie des documents déclaratifs pour les palangriers français mise en place depuis 2009.

6.1.3 La petite pêche côtière de la Réunion

Le programme d'observation des marées au débarquement, appelé « ObsDEB », contribue à l'estimation de l'effort de pêche et des captures des flottes de pêche réunionnaises notamment celles pratiquant les métiers de la ligne de traîne et de la ligne à main.

Seuls les navires de moins de 12 mètres appartenant à la petite pêche côtière sont suivis par enquête au débarquement (OBSDEB).

6.1.4 La flottille palangrière de Mayotte

Comme évoqué précédemment, les flottilles de pêche mahoraises sont suivies depuis 2012 par le SIH, mis en place par le Parc naturel marin de Mayotte (Agence des Aires Marines Protégées, devenue Agence Française pour la Biodiversité en 2017 puis l'Office Française de la Biodiversité en 2020), en partenariat avec l'Ifremer, l'IRD et la DGAMPA, sur fonds propres à l'AAMP. Le SIH bénéficie d'une aide FEAMP depuis 2017 pour la collecte des données de pêche à Mayotte.

6.1.5 La flottille côtière de Mayotte

L'ensemble des navires de pêche de Mayotte professionnels et « vivriers » est suivi par le SIH Mayotte depuis 2012. L'intégralité des barques de pêche (à l'exception des navires de pêche purement récréative) font l'objet d'enquêtes annuelles d'activité. Les captures sont estimées grâce à des observations au débarquement quotidiennes, opérées par une équipe d'agents de terrain du Parc dédiés au SIH. Depuis 2012 cette équipe est composée de 4 agents de terrain et d'un coordinateur. L'équipe a été complétée par quatre nouveaux agents en 2015 grâce à l'aide d'un financement Xème FED régional, puis s'est stabilisée à 6 agents de terrain en 2020 sur fonds FEAMP.

L'ensemble des protocoles déployés pour le suivi des activités et des captures des flottilles de pêche artisanales mahoraises est issu du programme SIH de l'Ifremer : calendriers annuels d'activité des navires et action « ObsDeb ». Les enquêtes annuelles d'activité permettent de définir une typologie des flottilles de pêche, ainsi qu'un effort de pêche global en nombre de mois d'activité et de nombre de sorties par métier. Les observations au débarquement permettent de déterminer la composition moyenne, en volume et en espèces, des captures par métier. Ces paniers moyens sont ensuite extrapolés au nombre de sorties estimées par métier.

Ces actions viennent pallier les lacunes dans le système de déclaration des captures par fiches de pêche de navires de moins de 10m. En effet une minorité d'armateurs répondent à cette obligation de déclaration, et les données déclarées ne sont pas encore versées aux bases de données nationales. En l'absence de systèmes de géolocalisation embarqués, la spatialisation des activités de pêche est permise grâce à l'intégration aux référentiels de la liste des sites de pêche connus et fréquentés par les pêcheurs. Ainsi l'information collectée par les observateurs lors des enquêtes (nom « traditionnel » d'un site de pêche) peut être intégrée dans la base Harmonie de l'Ifremer.

Les données d'activité permettent la production de fiches synthétiques (fiches quartier), qui présentent un certain nombre d'indicateurs sur les navires de pêche et sur les caractéristiques de leurs activités de pêche : ports d'attache, techniques déployées, nombre de marins embarqués.... Les données d'observation des débarquements permettent la production de synthèses par métier et à l'échelle du périmètre du Parc, d'estimations des volumes de débarquement et de rendements, flottille par flottille.

- 6.2 Mécanisme d'observateurs** (y compris date de début et état ; nombre d'observateurs, inclure le pourcentage de couverture par pêcherie. De même, une description des protocoles soutenant les programmes d'observateurs et les mécanismes d'échantillonnage visés aux paragraphes 3, 5, 7 et 8 de la Rés. 22/04)

6.2.1 Les senneurs tropicaux

Le programme d'observateurs scientifiques embarqués a été mis en place en 2005 sur les senneurs tropicaux avec un objectif de couverture de l'UE de 10-20 % de l'effort de pêche en nombre de calées sachant que le minimum demandé par la CTOI est de 5 % (Rés. 10/04 remplacée par la Rés. 11/04, puis 22/04, et finalement 24/04). Mis en suspend mi-2009 en raison d'actes de piraterie dont faisait l'objet la pêcherie, il a repris en 2011 suite à la sécurisation des navires (présence de militaires ou d'agents de sécurité privés à bord) et à une collaboration mise en place avec les TAAF (Terres Australes et Antarctiques Françaises) gérant les ZEE des îles Éparses. Les observateurs embarqués inscrits sur la liste des observateurs nationaux transmise à la CTOI sont formés par Bureau Veritas Living Resources (ex-Oceanic Développement) et les TAAFs.

En 2023, les données "observateur" ont été collectées dans le cadre de 2 programmes :

- le programme européen « Data Collection Framework » piloté par l'IRD dans lequel intervient un maître d'œuvre, Bureau Veritas Living Resources (ex-Oceanic Développement), et qui a contribué à hauteur de 465 calées observées, soit 18 % de couverture des opérations de pêche.
- le programme « Observateur Commun Unique et Permanent » (OCUP) mis en place par l'organisation professionnelle « Orthongel » depuis 2013 a apporté une contribution à la couverture de l'observation des activités de pêche de la flottille avec 687 opérations de pêche observées soit 27 % de l'effort total de pêche.

Ainsi en 2023, 1152 opérations de pêche ont été observées représentant un taux de couverture de 45 % (Tableau 6a). La Figure 4a-1 présente la distribution géographique des opérations de pêche observées par les 2 programmes DCF et OCUP en 2023. La Figure 4a-2 représente l'historique du taux de couverture des observations des activités de pêche de la pêche française à la senne par des observateurs embarqués dans le cadre du programme européen DCF ainsi que d'OCUP entre 2005 et 2023.

Des données d'observations complémentaires sont collectées à partir d'un suivi électronique réalisé dans le cadre du programme « Optimisation de l'Œil Électronique » coordonné par l'organisation professionnelle Orthongel en collaboration avec Bureau Veritas Living Resources et l'IRD. A l'heure actuelle, ces données ne sont pas fournies à la CTOI ni comptabilisées dans le taux de couverture de l'observation à bord des navires. Ce programme couvre cependant le reste de l'effort de pêche non couvert par les observateurs embarqués.

Tableau 3a. Nombre de calées observées et taux de couverture (%) réalisés par les programmes “observateur” de la pêche française à la senne dans l’Océan Indien : programme européen DCF et programme Orthongel OCUP en 2023.

Programme	Calées observées	Couverture (%)
DCF Senne (IRD - BVLR)	465	18
OCUP (ORTHONGEL)	687	27
TOTAL	1152	45

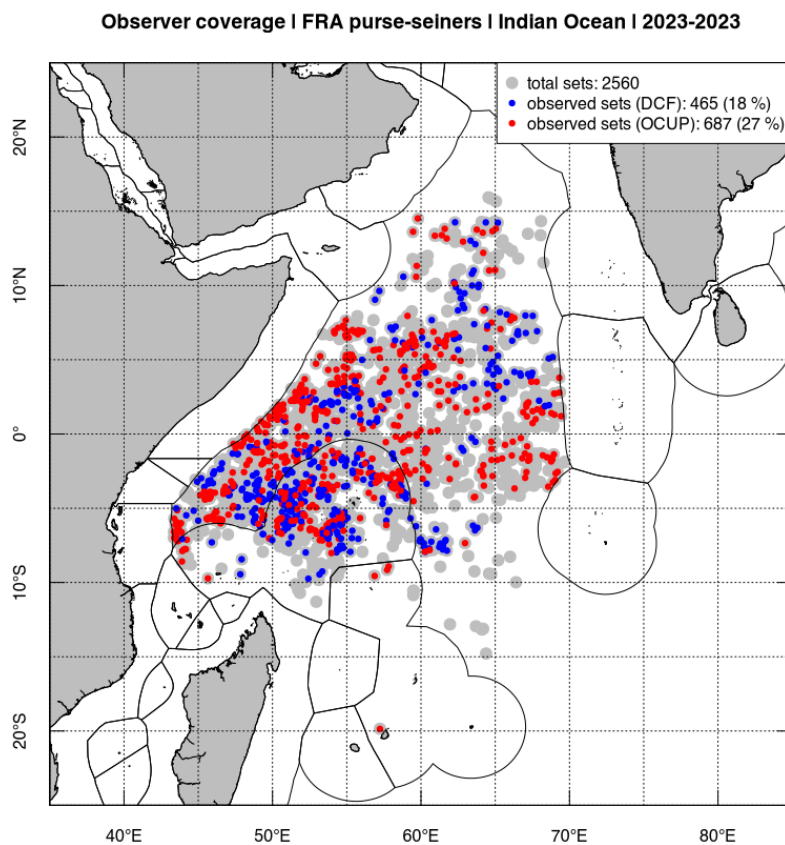


Figure 4a-1. Carte de la répartition spatiale des opérations de pêche observées dans le cadre des programmes “observateur” senne de la DCF (IRD) et d’OCUP (Orthongel) en 2023.

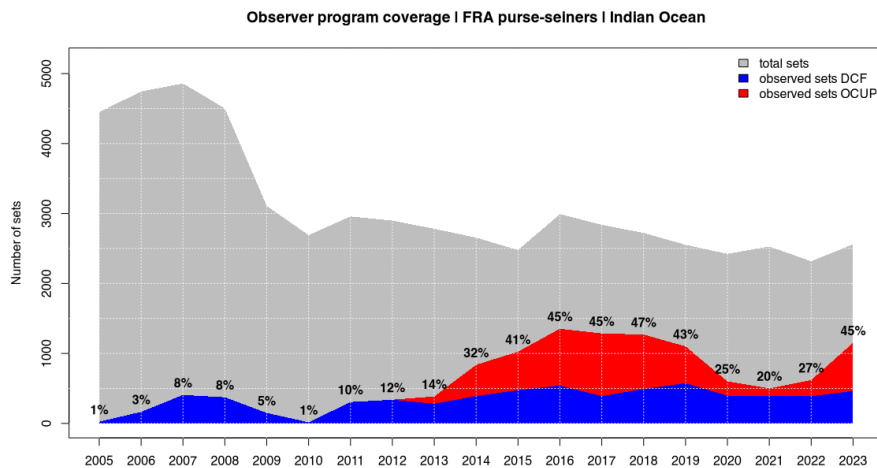


Figure 4a-2 Série temporelle (2005 à 2023) du nombre de calées réalisées et de la couverture “observateur” (%) dans le cadre du programme européen DCF et du programme Orthongel OCUP pour les senneurs tropicaux français dans l’Océan Indien.

6.2.2 Les palangriers hauturiers réunionnais de plus de 12 m

Les observations en mer (incluant l’auto-échantillonnage) couvrent à minima 10 % de l’effort de pêche (en nombre d’hameçons déployés) pour satisfaire aux obligations de l’UE sachant que le minimum imposé par la CTOI est de 5% pour les navires de moins de 24 m opérant hors de leur ZEE de pavillonnage.

Les observateurs embarqués et les patrons de pêche impliqués dans l’auto-échantillonnage du programme DCF, coordonné par l’IRD et réalisé par le prestataire CITEB, collectent des informations sur les caractéristiques des opérations de pêche (date, position, gréement de l’engin de pêche), sur les captures et rejets vivants ou morts (toute espèce), ainsi que sur la déprédation.

En 2023, les observateurs embarqués ont permis de couvrir 4,5 % de l’effort total de pêche (en nombre d’hameçons déployés) et l’auto-échantillonnage 10,5 % (Figure 4b-1) soit une couverture totale de 15,0 % (Figures 4b-1 et 4b-2).

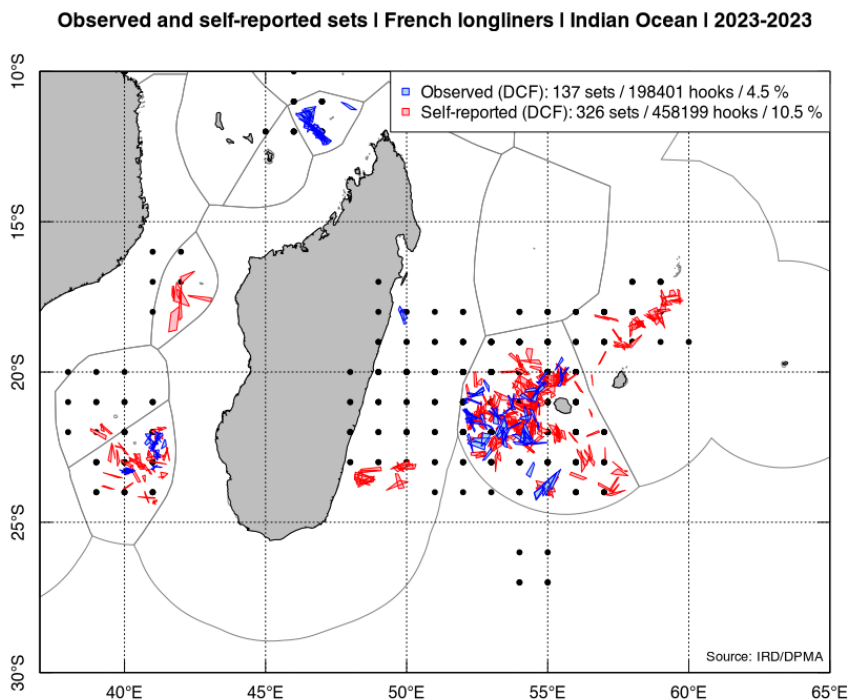


Figure 4b-1. Carte de la répartition spatiale des opérations de pêche de palangre observées par des observateurs embarqués et l'auto-échantillonnage (programme DCF) pour la Réunion en 2023.

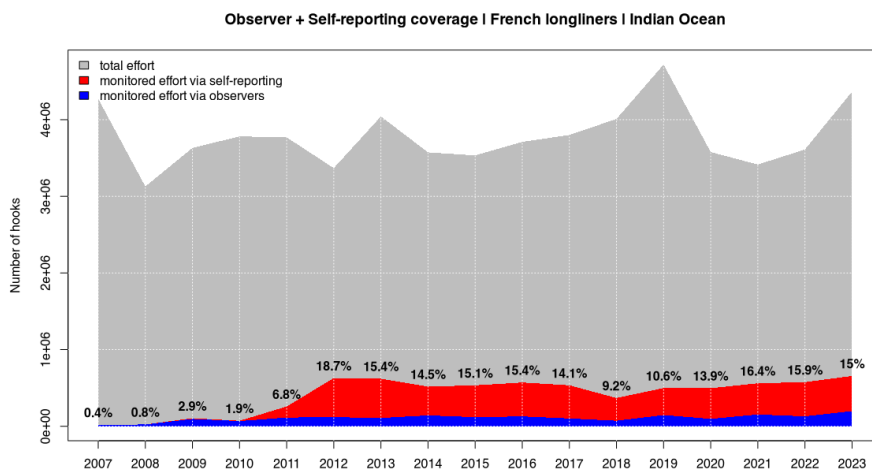


Figure 4b-2. Série temporelle de la couverture de l'effort de pêche par les observateurs embarqués et l'auto-échantillonnage sur les palangriers français entre 2007 et 2023 dans le cadre du programme européen DCF.

Les observateurs embarqués participent également à la collecte de données de taille pour les espèces cibles (Tableau 6b) permettant ainsi de compléter la collecte des données au port réalisée par l'Ifremer.

Tableau 6b. Nombre d'individus mesurés pour les espèces cibles et les prises accessoires commercialisées par les observateurs embarqués sur les palangriers à La Réunion en 2023.

Groupe	Espèce	Code FAO	N mesurés
Poissons à rostre	<i>Istiompax indica</i>	BLM	1
	<i>Istiophorus platypterus</i>	SFA	30
	<i>Kajikia audax</i>	MLS	8
	<i>Makaira nigricans</i>	BUM	62
	<i>Tetrapturus angustirostris</i>	SSP	31
	<i>Xiphias gladius</i>	SWO	2601
Autre poissons osseux	<i>Acanthocybium solandri</i>	WAH	11
	<i>Alepisaurus ferox</i>	ALX	165
	<i>Coryphaena hippurus</i>	DOL	90
	<i>Cubiceps capensis</i>	UBP	4
	<i>Diodontidae</i>	DIO	1
	<i>Elagatis bipinnulata</i>	RRU	1
	<i>Gempylus serpens</i>	GES	113
	<i>Lagocephalus lagocephalus</i>	LGH	48
	<i>Lampris guttatus</i>	LAG	1
	<i>Lepidocybium flavobrunneum</i>	LEC	278
	<i>Lobotes surinamensis</i>	LOB	1
	<i>Masturus lanceolatus</i>	MRW	1
	<i>Mola mola</i>	MOX	1
	<i>Promethichthys prometheus</i>	PRP	1
	<i>Naucrates ductor</i>	NAU	0
	<i>Ruvettus pretiosus</i>	OIL	24
	<i>Sphyraena barracuda</i>	GBA	44
	<i>Taractichthys steindachneri</i>	TST	0
Raies	<i>Pteroplatytrygon violacea</i>	PLS	126
Requins	<i>Alopias superciliosus</i>	BTH	0
	<i>Carcharhinus falciformis</i>	FAL	219
	<i>Carcharhinus longimanus</i>	OCS	13
	<i>Carcharhinus spp</i>	CWZ	2
	<i>Isistius brasiliensis</i>	ISB	4
	<i>Isurus oxyrinchus</i>	SMA	7
	<i>Prionace glauca</i>	BSH	64
	<i>Sphyrna lewini</i>	SPL	2
Thons	<i>Katsuwonus pelamis</i>	SKJ	7
	<i>Thunnus alalunga</i>	ALB	477
	<i>Thunnus albacares</i>	YFT	663
	<i>Thunnus obesus</i>	BET	225
Tortues	<i>Caretta caretta</i>	TTL	12
	<i>Chelonia mydas</i>	TUG	4
	<i>Testudinata</i>	TTX	2

6.2.3 La petite pêche côtière de la Réunion

Non concerné.

6.2.4 La flottille palangrière de Mayotte

Le programme « observateur » mis en place par l'IRD à La Réunion a été déployé à Mayotte en phase expérimentale en 2015, et est pleinement intégré au programme de collecte de données depuis 2017. Ce programme est opéré en régie par le Parc naturel marin, les données sont saisies à l'aide du logiciel Observe développé par l'IRD et bancarisées dans la base de données « Observe » de l'IRD. Depuis 2020 suite à la crise du Covid, ce suivi n'a pas été possible. L'évolution à venir de la flottille avec des unités prévues trop petites pour accepter un observateur. Un programme d'échantillonnages aux débarquements est en cours de discussion avec les armements locaux.

6.2.5 La flottille côtière de Mayotte

Non concerné.

6.3 Programme d'échantillonnage au port [Obligatoire]

6.3.1 Les senneurs tropicaux

La composition spécifique de la capture des senneurs tropicaux est estimée après correction des fiches de pêche en fonction d'un échantillonnage spécifique au sein de strates prédéfinies selon des procédures décrites ci-après. Les échantillonnages des débarquements ont été régulièrement réalisés depuis le début de la présence des senneurs dans l'océan Indien, avec un double objectif : d'une part estimer la structure démographique des captures des principales espèces, de l'autre corriger la composition spécifique des débarquements dont les catégories commerciales sont hétérogènes. Il est mené grâce aux Fonds Européens de la DCF en étroite collaboration entre l'IRD (France) et la SFA (Seychelles). La procédure actuellement mise en œuvre est basée sur un échantillonnage stratifié de l'ensemble des senneurs européens (Espagne, France, Italie) et assimilés (navires d'armements européens battant un pavillon tiers). Pour la composante « pêche française à la senne » en 2023, 134388 individus ont été identifiés et comptés parmi lesquels 48293 ont été mesurés aux débarquements. Parmi les échantillons d'individus identifiés et comptés, le listao (SKJ), le thon jaune (YFT) et le thon obèse (BET) représentent respectivement 43%, 42% et 11% des individus mesurés (Tableau 5a).

Tableau 4a. Nombre de sorties de navires ou de navires actifs surveillés, par espèce et engin en 2023

	Engin	Nombre de marée
Thons majeurs	PS	129

Tableau 5a. Nombre d'individus mesurés et comptés par espèce dans le cadre du programme UE de collecte des données pour les senneurs français dans l'océan Indien en 2023.

Espèce	Mensurations au port	
	Mesurés	Comptés
<i>Auxis thazard</i> (FRI)	2150	2151
<i>Katsuwonus pelamis</i> (SKJ)	20593	76716
<i>Thunnus albacares</i> (YFT)	20356	48424
<i>Thunnus obesus</i> (BET)	5194	7097
TOTAL	48293	134388

L'effort d'échantillonnage des cuves des senneurs au débarquement est standardisé selon des critères de qualité et de représentativité de la flotte. Les cuves ne contenant qu'une seule calée sont prioritairement échantillonnées. Lorsque plusieurs calées sont mélangées, le mode de pêche (banc libre ou banc objet uniquement), la localisation

(<5°) et la date (<15 jours) de capture sont pris en compte pour assurer la cohérence de la composition des captures dans l'échantillon. A plus large échelle, l'effort d'échantillonnage est optimisé en continue et en fonction de l'activité de pêche pour assurer une couverture spatiale (carré de 5°) et temporelle (trimestre) des captures toute au long de l'année. Le nombre d'échantillons minimum et à atteindre est de 15 (BL) et 25 (BO), par strates, respectivement. Dans ce cas une strate est considérée comme homogène dans sa composition spécifique et pour la distribution des tailles spécifiques (Pallarès et Hallier, 1997).

6.3.2 Les palangriers hauturiers réunionnais de plus de 12 m

Depuis 2009, toutes les espèces débarquées par les palangriers hauturiers et côtiers réunionnais sont mesurées. En 2022, 2465 individus ont été mesurés aux débarquements (pour des marées non couvertes par les observateurs embarqués) dont 892 espadons (SWO), 962 thons germons (ALB), 208 thons jaunes (YFT) et 135 thons obèses pour les espèces dominantes dans les débarquements (Tableau 5b).

Tableau 4b. Nombre de sorties de navires ou de navires actifs surveillés, par espèce et engin

	Engin	Nombre de marée
Thons majeurs	LLSI	24

Tableau 5b. Nombre d'individus mesurés aux débarquements, par espèce pour la flottille palangrière hauturière et côtière réunionnaise en 2022.

Code FAO	Nom scientifique	N. mensurations
ALB	<i>Thunnus alalunga</i>	969
BET	<i>Thunnus obesus</i>	135
SWO	<i>Xiphias gladius</i>	892
YFT	<i>Thunnus albacares</i>	208
WAH	<i>Acanthocybium solandri</i>	7
DOL	<i>Coryphanena hippurus</i>	162
BLM	<i>Istiompax indica</i>	4
BUM	<i>Makaira nigricans</i>	50
SSP	<i>Tetrapturus angustirotris</i>	13
SFA	<i>Istiophorus platypterus</i>	20
MLS	<i>Tetrapturus audax</i>	5
	TOTAL	2465

Pour le moment, les données de mensurations des poissons collectées par les observateurs embarqués n'ont pu être fusionnées à celles collectées aux débarquements. Ce travail qui permettra une augmentation du taux de couverture des marées pour cette activité de collecte devrait être réalisé prochainement et une nouvelle soumission des données de fréquence de taille au secrétariat de la CTOI sera effectuée pour des espèces telles qu'espadon, thon jaune, thon obèse, germon, marlin bleu, marlin rayé, marlin noir et marlin voilier.

6.3.3 La petite pêche côtière de la Réunion

Les enquêteurs du SIH présents sur les quais dans le cadre de ce programme « ObsDEB » en profitent pour mesurer des grands pélagiques débarqués par la petite pêche côtière. En 2022, pour le métier de la ligne à main, 676 poissons ont été mesurés par les enquêteurs, dont 262 dorades coryphènes (DOL), 271 thons jaunes (YFT) et 55 wahoo (WAH) pour les espèces les plus abondantes (Tableau 5c).

Tableau 5c. Nombre d'individus mesurés aux débarquements, par espèce pour la petite pêche côtière réunionnaise en 2021.

Code FAO	Nom scientifique	N. mensurations
ALB	<i>Thunnus alalunga</i>	18

YFT	<i>Thunnus albacares</i>	271
WAH	<i>Acanthocybium solandri</i>	55
DOL	<i>Coryphaena hippurus</i>	262
BLM	<i>Istiompax indica</i>	1
BUM	<i>Makaira nigricans</i>	19
SFA	<i>Istiophorus platypterus</i>	2
MLS	<i>Tetrapturus audax</i>	0
SKJ	<i>Katsuwonus pelamis</i>	41
KAW	<i>Euthynnus affinis</i>	5
SWO	<i>Xiphias gladius</i>	2
	TOTAL	676

6.3.4 Les palangriers côtiers réunionnais

Depuis 2009, toutes les espèces débarquées par les palangriers hauturiers et côtiers réunionnais sont mesurées. En 2022, 213 individus ont été mesurés aux débarquements (pour des marées non couvertes par les observateurs embarqués) dont 44 espadons (SWO), 46 thons germons (ALB), 60 thons jaunes (YFT) et 8 thons obèses pour les espèces dominantes dans les débarquements (Tableau 5d).

Tableau 4d. Nombre de sorties de navires ou de navires actifs surveillés, par espèce et engin

	Engin	Nombre de marée
Thons majeurs	LLCO	24

Tableau 5d. Nombre d'individus mesurés aux débarquements, par espèce pour la flottille palangrière côtière réunionnaise en 2021.

Code FAO	Nom scientifique	N. mensurations
ALB	<i>Thunnus alalunga</i>	46
BET	<i>Thunnus obesus</i>	8
SWO	<i>Xiphias gladius</i>	44
YFT	<i>Thunnus albacares</i>	60
DOL	<i>Coryphaena hippurus</i>	32
BLM	<i>Makaira indica</i>	0
BUM	<i>Makaira nigricans</i>	7
SSP	<i>Tetrapturus angustirostris</i>	4
SFA	<i>Istiophorus platypterus</i>	4
MLS	<i>Tetrapturus audax</i>	0
SMA	<i>Isurus oxyrinchus</i>	
WAH	<i>Acanthocybium solandri</i>	7
	TOTAL	213

6.3.5 La flottille palangrière de Mayotte

Comme évoqué précédemment, les flottilles de pêche mahoraises sont suivies depuis 2012 par le SIH, mis en place par le Parc naturel marin de Mayotte (Agence des Aires Marines Protégées, devenue Agence Française pour la Biodiversité en 2017 puis l'Office Française de la Biodiversité en 2020), en partenariat avec l'Ifremer, l'IRD et

la DPMA, sur fonds propres à l'AAMP. Le SIH bénéficie d'une aide FEAMP depuis 2017 pour la collecte des données de pêche à Mayotte.

Les données concernant les palangriers sont obtenues grâce aux notes de vente de la coopérative de pêche de Mayotte (COPEMAY) où ces navires débarquaient l'intégralité de leurs captures jusqu'à 2015. A partir de 2015, ces données ont été complétées par les fiches de pêche des navires ne débarquant pas leurs captures à la coopérative. A l'heure actuelle, les palangriers ne débarquant plus à la COPEMAY, les données collectées proviennent des fiches de pêche des navires et des données de l'armateur d'un des navires. Le faible nombre d'unités permet de connaître précisément le nombre de sorties et les captures débarquées.

6.3.6 La flottille côtière de Mayotte

La flottille côtière mahoraise est suivie par le programme d'observation aux débarquements (ObsDeb) développé par l'Ifremer et opéré par le Parc naturel marin. En 2022, un échantillon de 891 marées ont été observées concernant 240 navires dont 53 navires de pêche professionnelle.

Tableau 4e. Nombre de sorties de navires surveillés, par espèce et engin

Espèces	LHP	LTL
ALB	5	1
BET	1	0
COM	26	4
DOL	3	6
DOT	26	1
KAW	7	3
SFA	3	1
SKJ	6	58
SWO	0	3
WAH	4	2
YFT	43	59

Le programme d'échantillonnage des ventes (Obsventes) sur les sites de débarquement permet la prise de mesures sur les captures.

Tableau 5e. Nombre d'individus mesurés, par espèce et engin

Espèces	LHP	LTL
COM	2	7
DOT	4	
KAW	7	2

6.4 Mesures prises en vue de surveiller les captures et gérer les pêcheries de marlin rayé, marlin noir, marlin bleu et voilier indopacifique [Obligatoire]

Les captures sont suivies via le flux déclaratif. Des essais de développement d'indice d'abondance à partir de captures par unité d'effort sont en cours.

6.5 Suivi et couverture par les observateurs de la pêche au filet maillant [Souhaitable]

Non concerné

6.6 Plans d'échantillonnage pour les raies Mobulidae [Obligatoire]



Les captures accidentelles de Mobulidae dans la senne française et la palangre réunionnaise sont rares (Tableaux 4a et 4b). Les programmes d'observateurs embarqués permettent de suivre ces captures à hauteur de leur taux de couverture respectifs. Les données sont soumises à la CTOI dans les formulaires 1DI et ROS.

7. PROGRAMMES NATIONAUX DE RECHERCHE [SOUHAITABLE]

7.1 Programmes nationaux de recherche sur le requin peau bleue

Le projet ASUR dédié à l'étude de la survie après libération des requins capturés accidentellement par les palangriers réunionnais inclut le requin peau bleue (Tableau 6).

7.2 Programmes nationaux de recherche sur le marlin rayé, le marlin noir, le marlin bleu et le voilier indopacifique

Il n'y a pas de programmes de recherche visant spécifiquement les Istiophoridae mis à part le projet FEAMP FLOPPED qui s'est terminé en 2023.

7.3 Programmes nationaux de recherche sur les requins

Le projet ASUR vise à étudier la survie après libération des requins capturés accidentellement par les palangriers réunionnais (Tableau 6). Le projet POREMO est également dédié à l'étude de la survie après libération du requin océanique capturé accidentellement par les senneurs et palangriers français (Tableau 6). Le projet BEHAVE visera quant à lui à l'étude de la survie après libération du requin soyeux et des raies de la famille des Mobulidae capturés par les senneurs en lien à le développement de dispositifs de remise à l'eau (Tableau 6).

7.4 Programmes nationaux de recherche sur les requins océaniques

Le projet POREMO est également dédié à l'étude de la survie après libération du requin océanique capturé accidentellement par les senneurs et palangriers français (Tableau 6).

7.5 Programmes nationaux de recherche sur les tortues marines

Il n'y a actuellement pas de programmes de recherche visant spécifiquement les tortues marines.

7.6 Programmes nationaux de recherche sur les requins renards

Il n'y a actuellement pas de programmes de recherche portant sur les requins renards portés par la France. En revanche, les scientifiques français de l'IRD participent au projet de recherche IOTC BTH PRM porté par la CTOI dédié à l'étude de la survie après libération du requin renard à gros yeux capturés accidentellement par les palangriers réunionnais.



Tableau 6. Tableau résumant les programmes de recherche nationaux, y compris leurs dates.

Nom du projet	Période	Pays impliqués	Budget total	Origine des fonds	Objectifs	Brève description
SIH (Système d'information Halieutique) – Mesure 77 FEAMP	2005- pérenne	France	Variable de l'ordre de 150 K€/an sur La Réunion	Ifremer, DPMA & UE	Réseau de suivi de l'activité halieutique française (hors thoniers senneurs et palangriers pêche australe).	Acquisition, stockage, gestion et synthèse des données halieutiques nationales
Ob7 - Collecte des données Pêche Thons Tropicaux- Mesure 77 FEAMP	1981 - pérenne	France	Environ 1,8M€/an pour les océans Indien et Atlantique	IRD, DPMA, UE	Suivi activité de pêche des senneurs tropicaux français des océans Indien et Atlantique. Coordination des programmes Observateurs embarqués pour la senne (OI et OA) et des palangriers à La Réunion.	Acquisition des journaux de bord, échantillonnage au Port, acquisition des données Observateurs. Archivage de l'ensemble des données dans des bases de données dédiées.
SIH Mayotte	2012- pérenne	France	130 K€	FEAMP	Suivi de l'activité halieutique dans la ZEE de Mayotte.	Coopération Ifremer / IRD / DPMA / OFB pour la mise en place d'un suivi pérenne des activités de pêche dans la ZEE de Mayotte. Compile les données de pêche thonière et les données de la pêche artisanale mahoraise collectées localement par le Parc Naturel Marin de Mayotte.
POREMO – Post Release Mortality	2017 – 2019 <i>Prolongation jusqu'en mi-2022</i>	France, Espagne, Portugal	100 K€	UE, IRD (FEAMP 77 – Etude pilote)	Étude de la mortalité après rejet de requins	Évaluation de la mesure d'interdiction de conservation à bord d requin pointe blanche océanique à partir de l'étude de la



					pointe blanche océanique.	mortalité après rejet d'individus capturés par la pêche à la senne et à la palangre pélagique et remis à la l'eau avec une marque électronique de type miniPAT ou survivorship PAT (WildLife Computers). Voir rubrique C, ci-dessus
PARADEP	2018-2022	France	750 K€	UE (FEAMP 39)	Développement dispositif de réduction de la déprédation	Étude du phénomène de déprédation et développement d'un dispositif - de de réduction de la déprédation. https://paradep.com Voir rubrique C, ci-dessus
FLOPPED	2019-2022	France	1.6 M€	UE (FEAMP mesure 40)	Identification des zones de reproduction et des tailles de population reproductrices des porte-épées dans l'Océan Indien	Approche multidisciplinaire combinant biométrie, génétique, marquage et modélisation afin d'identifier les zones et périodes de reproduction des poissons à rostre dans l'océan Indien. Voir rubrique D, ci-dessus
ASUR	2020-2022	France		UE (FEAMP 39)	Amélioration de la survie des requins après rejets	https://asur-allcut.com/ Voir rubrique F ci-dessus
TALE	2021-2022	France	833 k€	UE (FEAMP mesure 40)	Identification des zones de reproduction et des tailles de population reproductrices des germons dans l'Océan Indien	Approche multidisciplinaire combinant biométrie, génétique, marquage et modélisation afin d'identifier les zones et périodes de reproduction des poissons à rostre dans l'océan Indien. Voir rubrique F, ci-dessus
ACCOBIOM	2021-2023	France		AFD/IFREMER	Collecte d'échantillons biologiques sur les petites pêches	Mise en place d'un réseau pour collecter des échantillons biologiques de grands pélagiques sur la petite pêche côtière réunionnaise.



					côtières réunionnaises	
ESCOD	12/2021 au 06/2023	La Réunion	136 k€	FEAMP	Éco- sensibilisation par rapport aux conflits odontocètes - pêcheurs	Voir rubrique H ci-dessus
BEHAVE	2024-2026	France	462 k€	UE - FEAMPA (OS 1.1)	Best practices, habitat et survival rate of elasmobranchs caught in French tropical tuna purse seine fisheries	Développement et amélioration des dispositifs de remise à l'eau pour les élastombranches capturés par les senneurs, et étude de la survie après remise à l'eau des élastombranches

8. MISE EN PLACE DES RECOMMANDATIONS DU COMITÉ SCIENTIFIQUE ET DES RÉSOLUTIONS DE LA CTOI CONCERNANT LE CS [OBLIGATOIRE]

Tableau 9. Exigences scientifiques contenues dans les Résolutions de la Commission, adoptées entre 2012 et 2023.

Rés. n°	Résolution	Exigence scientifique	Progrès de la CPC
12/04	Sur la conservation des tortues marines	Paragraphe 3, 4, 6-10	<p>Des kit d'extraction d'hameçon ont été distribué à l'ensemble des palangriers réunionnais en novembre 2014, permettant à la France (La Réunion) de répondre à la Résolution CTOI 12/04 (paragraphe 6), qui stipule que les pays contractant exigeront des équipages à bord des navires qui pêchent des espèces sous mandat de la CTOI qu'ils amènent à bord dans les meilleurs délais, lorsque c'est possible, toute tortue marine capturée et inanimée ou inactive et fassent tout ce qui est possible (y compris la ranimer) pour la remettre à l'eau vivante.</p> <p>1- l'élaboration des fiches d'identification des tortues marines en collaboration avec la CTOI. Ces fiches ont été distribuées aux pêcheurs réunionnais, mais seront également distribuées par la CTOI à l'ensemble des flottilles palangrières et thonières en activité dans la zone de compétence de la CTOI</p> <p>2- l'existence d'un centre de soin à la Réunion (Kelonía) permet de prendre en charge les tortues marines capturées accidentellement par la pêche palangrière réunionnaise.</p> <p>3- la réalisation d'un guide des bonnes pratiques visant à réduire la mortalité des requins et des raies capturées accidentellement par la pêche thonière tropicale (IOTC-2012-WPEB08-INFO08) et incluant une partie sur les tortues marines.</p>
12/09	Sur la conservation des requins-renards (famille des <i>Alopiidæ</i>) capturés par les pêcheries dans la zone de compétence de la CTOI	Paragraphe 4-8	Les individus de cette espèce sont très rarement capturés et sont systématiquement remis à l'eau le plus rapidement possible selon le guide de bonnes pratiques.



Rés. n°	Résolution	Exigence scientifique	Progrès de la CPC
			Les données des observateurs embarqués concernant les captures accidentelles des pêcheries à la senne et à la palangre sont transmises pour l'année N en juin de l'année N+1 à la CTOI dans les formulaires ROS.
13/04	Sur la conservation des cétacés	Paragraphes 7-9	Études des interactions de la pêche à la senne avec les mammifères marins sur la base des données historiques disponibles des logbooks et des programmes observateurs (Thèse de L. Escalle (2016)). Projet national PARADEP en cours (2018 - 2020) de développement d'un dispositif de protection physique des captures sur les palangres pélagiques.
13/05	Sur la conservation des requins-baleines (<i>Rhincodon typus</i>)	Paragraphes 7-9	Études des interactions de la pêche à la senne avec les requins baleines sur la base des données historiques disponibles des logbooks et des programmes observateurs. Thèse de L. Escalle (2016). Établissement d'un guide de bonnes pratiques pour relâcher les requins baleine capturés accidentellement et formation des équipages
13/06	Sur un cadre scientifique et de gestion pour la conservation des requins capturés en association avec des pêcheries gérées par la CTOI	Paragraphes 5-6	Données scientifiques collectées par les programmes d'observation en mer pour la senne et la palangre et transmises à la CTOI. Programme de marquage pour l'étude de la mortalité après rejet du requin pointe blanche océanique (POREMO) financé par un projet pilote FEAMP Mesure 77 dans le cadre de la DCF lancé en 2018 (acquisition des marques en cours). Présentation des déploiements à bord de senneurs et palangriers d'individus marqués lors des WPs Prises accessoires et Écosystèmes en 2018 et 2019. UE-FR coordonne le projet ASUR d'étude et d'amélioration de la survie des requins après rejets.
15/01	Concernant l'enregistrement des captures et de l'effort par les navires de pêche dans la zone de compétence de la CTOI	Paragraphes 1-10	Les livres de bord (papier et/ou électroniques) sont en place dans les pêcheries de senneurs depuis 1981 en océan Indien, et depuis 2004 sur les palangriers réunionnais de plus de 24 m, avec un taux de remplissage de 100%.



Rés. n°	Résolution	Exigence scientifique	Progrès de la CPC
15/02	Statistiques exigibles des Parties contractantes et Parties coopérantes non contractantes (CPC) de la CTOI	Paragraphe 1-7	<p>Prises totales : estimations réalistes de tous les segments de flottilles (industriel, semi-industriel, artisanal) et remises avant la date butoir à la CTOI. Données à jour.</p> <p>Captures et effort : données des senneurs remises à la CTOI par carré de 1° depuis 1981 ; données des palangriers remises à la CTOI par carré de 5° de 1994 à 2008 et par carré de 1° depuis 2009. Données de la flottille côtière disponible par 5°.</p> <p>Données de taille : échantillonnages au débarquement suivant un protocole statistique et échantillonnage à bord, pour senneurs et palangriers, sont à jours. Mensurations pour ces 2 engins par carré de 5°.</p> <p>DCP : Les nombres de DCP déployés par trimestre et type de DCP ont été fournis à la CTOI pour la période 2010-2015. Livres de bord des senneurs français ont été étendus dès janvier 2013 puis fin 2015 pour incorporer la typologie des FADs et les activités liées à la pêche sous FAD.</p> <p>Les formulaires Observateurs ont aussi été modifiés pour une harmonisation de la collecte des données.</p>
17/05	Sur la conservation des requins capturés en association avec les pêcheries gérées par la CTOI	Paragraphe 6, 9, 11	<p>Pour certains aspects de cette mesure, voir les commentaires apportés pour les Rés. 12/01, 12/09, 13/06 et 15/02.</p> <p>En référence au point 4, la libération des requins vivants est encouragée pour les pêcheries à la senne et à la palangre. Le taux de rejet vivant est relativement élevé et la phase de rejet respecte la mise en œuvre de bonnes pratiques notamment pour la pêche à la senne. Pour la pêche à la palangre, les individus sont relâchés alors qu'ils se trouvent encore dans l'eau.</p> <p>Parag. 2 – Débarqués frais, les requins doivent être munis de leurs nageoires.</p> <p>Parag. 8 – Les individus de requin pointe blanche océanique capturés vivants dans la ZEE de La Réunion sont la plupart du temps rejetés vivants.</p> <p>Parag. 11 – UE-FR coordonne le projet POREMO (cf. paragraphe 8.5) et participe au projet IOTC-BTH d'étude de la mortalité après rejets des pêcheries à la senne et à la palangre du requin pointe blanche océanique et du requin renard à gros yeux. UE-FR coordonne le projet ASUR d'étude et d'amélioration de la survie des requins après rejets.</p>



Rés. n°	Résolution	Exigence scientifique	Progrès de la CPC
18/02	Sur des mesures de gestion pour la conservation des requins peau bleue capturés en association avec les pêcheries de la CTOI	Paragraphe 2 - 5	UE-FR concernée pour sa flottille de palangriers en activité à La Réunion et à Mayotte. Collecte des données de capture dans les journaux de bord des palangriers pour les individus (carcasses et ailerons) débarqués. Pour les rejets, suivi par les observateurs et l'auto-échantillonnage. Etat du poisson lors de la remise à l'eau enregistré lorsque l'information peut être collecté. Collecte de données de taille par les observateurs scientifiques. Informations sur la collecte des données de captures et rejets précisées dans ce rapport. Travail sur l'âgeage et la croissance en cours de valorisation.
18/05	Sur des mesures de gestion pour la conservation des poissons porte-épées : marlin rayé, marlin noir, marlin bleu et voilier indopacifique	Paragraphe 7 - 11	UE-FR est concernée pour ses flottilles de senneurs et de palangriers. Suivi des captures par espèce aux débarquements des palangriers et des senneurs (marché local à Victoria). Collecte de données de captures par espèce et de taille par les observateurs embarqués. Déclaration des données à la CTOI en conformité avec la Résolution 15/02 sur les déclarations statistiques.
18/07	Sur les mesures applicables en cas de non-respect des obligations de déclarations à la CTOI	Paragraphe 1, 4	
19/01	Sur un plan provisoire pour reconstituer le stock d'albacore de l'océan Indien dans la zone de compétence de la CTOI (<i>si non prévues en vertu de la Rés. 21-01 ci-dessous</i>)	Paragraphe 22	UE-FR concernée pour sa flottille de senneurs et navires auxiliaires. Collecte de données détaillées sur les FADs et leur déploiement suivant les recommandations du programme européen CECOFAD1. Réduction du nombre de DCP déployés par navire. Augmentation des échantillons aux débarquements et développement d'une nouvelle version de l'analyse de la composition spécifique des captures (T3) permettant d'améliorer la précision des estimations des captures par espèce.
19/03	Sur la conservation des raies Mobulidae capturées en association avec les pêcheries dans la zone de compétence de la CTOI	Paragraphe 11	Interdiction de coups de pêche sur des bancs associés avec des Mobulidés lorsque la raie a pu être détectée. Mise en œuvre de DCP non maillants depuis plusieurs années. Mise en place de bonnes pratiques pour maximiser la survie des Mobulidés capturés accidentellement par la senne.



Rés. n°	Résolution	Exigence scientifique	Progrès de la CPC
			Forte couverture de l'observation des activités de pêche (notamment pour la pêche à la senne à partir d'observateurs humains et de l'observation électronique) pour le suivi de l'occurrence et l'abondance des captures de Mobulidés.
21/01	Sur un plan provisoire pour reconstituer le stock d'albacore de l'océan Indien dans la zone de compétence de la CTOI (<i>si non prévues en vertu de la Rés. 19-01 ci-dessus</i>)	Paragraphe 23	
22/04	Sur un Mécanisme régional d'observateurs	Paragraphe 12	<p>La CTOI requiert l'observation d'un minimum de 5% de l'effort de pêche pour les navires > 24 m ainsi que tous les navires opérant hors de leur ZEE.</p> <p>Senneurs tropicaux</p> <p>Un programme d'observateurs scientifiques embarqués financé par l'UE (DCF IRD) a été mis en place en 2005 sur les senneurs tropicaux. Ce programme vise entre 10 et 20% de couverture de l'effort de pêche. Stoppé en 2009 pour motif de manque de sécurité liée à la piraterie, ce programme a repris ses activités en 2011 et a atteint en 2013 un taux de couverture supérieur à la cible de 10 %. Depuis 2014, un programme observateur financé par l'industrie (programme OCUP = Observateur Commun Unique et Permanent) complète le programme observateur sus-mentionné.</p> <p>La liste des observateurs habilités ainsi que les données collectées par ces derniers sont envoyées annuellement au Secrétariat de la CTOI.</p> <p>En 2023, les programmes d'observation embarquée financés par l'UE (DCF IRD) et par l'industrie (OCUP) ont contribué à un taux de couverture de l'effort total de pêcheurs de 45 %.</p> <p>Le suivi électronique par vidéo (<i>Electronic Monitoring System</i>) à titre expérimental a débuté en 2014 et se fait sur plusieurs navires français à l'initiative de l'industrie dans le cadre du projet ORTHONGEL OCUP. Les résultats issus de cette étude pilote ont été présentés à divers groupes de travail (WPEB et WPDCS) de la CTOI. Les données issues de ce programme seront transmises à la CTOI une fois les normes minimales pour l'EMS finalisées.</p>



Rés. n°	Résolution	Exigence scientifique	Progrès de la CPC
			<p>Palangriers Un programme d'observateurs embarqués financé par l'UE (DCF IRD) a été mis en place en 2007 sur les palangriers de plus de 16 mètres pouvant prendre à bord des observateurs. Pour les navires de moins de 16 m (ne pouvant embarquer d'observateurs), les observations des prises accessoires et les rejets se font par le biais de l'auto-échantillonnage. La liste des observateurs habilités est transmise à la CTOI. En 2023, le taux de couverture de l'effort de pêche par les observateurs et l'auto-échantillonnage est de 15,0 %.</p> <p>L'envoi des données sous la forme des rapports observateurs et plus récemment selon le modèle ST09 (v2017) de l'ICCAT a désormais été remplacé par l'envoi des données sous forme électronique selon le modèle ROS (PS et LL) récemment développés par le Secrétariat de la CTOI (2022). Cet envoi des données est effectué au 30/06 de l'année N+1.</p>
23/ 07	Sur la réduction des captures accidentelles d'oiseaux de mer dans les pêcheries palangrières	Paragraphe 3-7	

9. RÉFÉRENCES BIBLIOGRAPHIQUES [OBLIGATOIRE]

1. L'estimation de la mortalité après remise à l'eau des requins océaniques capturés par les senneurs. Sabarros, P.S., Mollier, E., Tolotti, M., Romanov, E.V., Krug, I., Bach, P., 2023. Post-release mortality of oceanic whitetip sharks caught by purse seiners – POREMO project. IOTC-2023-WPEB19-18_Rev1
2. L'estimation de la mortalité après remise à l'eau des requins-renards à gros yeux capturés par les palangriers. Romanov, E.V., 2023. An update on the recent development of IOTC BTH PRM Project. IOTC-2023-WPEB19-19
3. L'estimation de CPUE standardisées pour 7 requins dans l'Océan Indien. Gee, E., Romanov, E.V., Curnick, D., Block, B., Ferretti, F., 2023. Historical standardized CPUEs of seven shark species in the Indian Ocean with preliminary catch estimation. IOTC-2023-WPEB19-20
4. L'élaboration d'un nouveau dispositif visant à réduire les captures et la mortalité des prises accessoires sur les palangriers. Nieblas, A.E., Rouyer, T., Bonhommeau, S., Boyer, A., Chanut, J., Derridj, O., Brisset, B., Evano, H., Wendling, B., Boguais, A., Peressinotti, K., Kerzerho, V., 2023. SMARTSNAP: A new device to aid in the reduction of bycatch mortality in longline fisheries. IOTC-2023-WPEB19-22
5. L'utilisation d'images satellites et de l'intelligence artificielle pour le suivi des pêcheries artisanales. Elliott, B., Johnston, D.W., Bonhommeau, S., Talpaert Daudon, J., Kiszka, J.J., Umer, J., Khan, M., Salahuddin, G., Shahid, U., Barde, J., Lent, R., Larsen, G., LaVelle, A., Read, A.J., 2023. Drift gillnet vessels from space: leveraging low-cost methodologies for enhanced understanding of a data-poor fishery. IOTC-2023-WPEB19-28
6. Un indicateur d'abondance pour le requin soyeux à partir des données déclaratives et observateur de la senne tropicale française. Kaplan, D.M., Travassos Tolotti, M., 2023. Silky shark abundance index based on CPUE standardization of French Indian Ocean tropical tuna purse seine observer bycatch data. IOTC-2023-WPEB19-34_Rev1
7. La version traduite en anglais du guide d'identification des espèces capturées dans les pêcheries tropicales. Sabarros, P.S., Moussy, F., Mollier, E., 2023. Identification guide for species caught in pelagic tropical fisheries - v2.1. IOTC-2023-WPEB19-INF01
8. La modélisation de la distribution spatio-temporelle des captures accidentelles de requins océaniques juvéniles dans l'ouest de l'Océan Indien. Lopetegui-Eguren, L., Poos, J.J., Arrizabalaga, H., Guirhem, G.L., Murua, H., Lezama-Ochoa, N., Griffiths, S.P., Gondra, J.R., Sabarros, P.S., Báez, J.C., Juan-Jordá, M.J.,
9. Spatio-Temporal Distribution of Juvenile Oceanic Whitetip Shark Incidental Catch in the Western Indian Ocean. IOTC-2023-WPEB19-INF05 CR-France-IOTC-2023-WPEB19-v1
10. Les nouvelles technologies permettant de diminuer les prises accessoires dans les pêcheries thonières. Poisson, F., Budan, P., Coudray, S., Gilman, E., Kojima, T., Musyl, M., Takagi, T., 2023. New technologies to improve bycatch mitigation in industrial tuna fisheries. IOTC-2023-WPEB19-INF15
11. Les avantages d'attribuer des DOI aux documents et jeux de données de la CTOI. Pierre, L., Barde, J. Benefits of assigning DOIs to IOTC documents and data. IOTC-2023-WPDCS19-18
12. La collecte de données via l'observation électronique sur les senneurs français et la faisabilité (et les challenges) pour collecter les informations requises par la CTOI dans le cadre du programme régional d'observation. Briand, K., Maufroy, A., Sabarros, P.S., Wain, G., Bonnieux, A., Le Couls, S., Godefroy, R., Moelo, P., Bettali, T., Goujon, M., Lebranchu, J. The feasibility and challenges of collecting electronic monitoring systems (EMS) data on French pruse seiners in relation to IOTC minimum standards. IOTC-2023-WPDCS19-25
13. Le statut de l'atlas océanique digital des Seychelles. Marsac, F., Noel, E. Status of the Seychelles Digital Ocean Atlas (SDOA) in 2023. IOTC-2023-WPDCS19-33
14. IOTC-2023-WGFAD04-06: Update on biodegradable dFADS: current status and prospects – Zudaire I, Moreno G, Murua J, Murua H, Tolotti M, Roman M, Hall M, Lopez J, Grande M, Merino G, Escalle L, Hamer P, Basurko O, Capello M, Dagorn L, Ramos ML, Abascal F, Báez JC, Pascual Alayón P, Déniz S, Santiago J.
15. IOTC-2023-WGFAD04-09: No evidence from long-term analysis of yellowfin tuna condition that Drifting Fish Aggregating Devices act as ecological traps – Dupaix A, Dagorn L, Duparc A, Guillou A, Deneubourg J-L, Capello M. CR-France-CTOI-2023-GTDCP04
16. IOTC-2023-WGFAD04-10: Review of strategies for reducing the negative environmental impacts of dFADS - Kaplan D et Duparc A et al.

17. IOTC-2023-WPTT25-08: CPUE standardization for skipjack tuna (*Katsuwonus pelamis*) of the EU purse-seine fishery on floating objects (FOB) in the Indian Ocean (Kaplan D, Grande M, Morón G, Lourdes M, Alonso R, Báez J, Uranga J, Duparc A, Imzilen T, Floch L, Santiago J)
18. IOTC-2023-WPTT25-18: Preliminary analysis of observer data on the presence of mesh in floating objects used by the French purse seine fleets in the Atlantic and Indian Oceans (Kaplan D, Cauquil P, Duparc A, Imzilen T, Sabarros, P)
19. IOTC-2023-WPTT25-20: Updating the estimation of age and growth of yellowfin tuna (*Thunnus albacares*) in the Indian Ocean using otoliths (Farley J, Krusic-Golub K, Eveson P, Luque P, Fraile I, Artetxe-Arrate I, Zudaire I, Romanov E, Shahid U, Abdul Razzaque S, Parker D, Clear N, Murua H, Marsac F, Merino G)
20. IOTC-2023-WPTT25-21: Otolith stable isotopes suggest limited east to west connectivity of yellowfin tuna (*Thunnus albacares*) in the Indian Ocean (Artetxe-Arrate I, Fraile I, LastraLuque P, Farley J, Urtizbera A, Shahid U, Razzaque S, Clear N, Marsac F, Murua H, Merino G, Zudaire I)
21. IOTC-2023-WPTT25-22: Environmental signal in skipjack recruitment in the Indian Ocean: An updated analysis using the SS3-assessment outputs of 2023 (Marsac F)
22. IOTC-2023-WPTT25-INF07: Complementary information on the Associative Behavior- Based abundance Index (ABBI) for western Indian Ocean skipjack tuna (*Katsuwonus pelamis*) obtained from echosounder buoys data (Baidai Y, Dupaix A, Duparc A, Dagorn L Deneubourg JL, Capello M).
23. L'étude de la structure de la population d'espadon dans l'Océan Indien par analyse génétique. Chevrier, T., Cowart, D.A., Nieblas, A.-E., Charrier, G., Bernard, S., Evano, H., Brisset, B., Chanut, J., Bonhommeau, S., 2023. Population structural dynamics of the swordfish, *Xiphias gladius*, across the Indian Ocean using Next Generation Sequencing. IOTC-2023-WPB21-11
24. L'estimation de la taille de la population d'espadon par identification de la parenté génétique dans la population (méthode CKMR). Chevrier, T., Cowart, D.A., Nieblas, A.-E., Baylis, S., Bernard, S., Evano, H., Brisset, B., Chanut, J., 2023. Population size estimation of swordfish through Close-Kin Mark Recapture. IOTC-2023-WPB21-17
25. L'étude de l'habitat et du comportement de l'espadon à partir de marquages électroniques. Romanov, E.V., Sabarros, P.S., Guillon, N., Le Foulgoc, L., Dardalhon, C., Bach, P., Marsac, F., 2023. Habitat and movements of the swordfish *Xiphias gladius* in the southern Indian Ocean oligotrophic gyre and beyond: preliminary results of swordfish tagging experiments in Reunion Island. IOTC-2023-WPB21-23
26. La distribution des larves d'istiophoridés dans l'ouest de l'Océan Indien . Shiroza, A., Chevrier, T., Bonhommeau, S., 2023. Larval billfish abundance in the Western Indian Ocean and future research endeavors. IOTC-2023-WPB21-25_Rev1
27. Les travaux de marquages électroniques sur 5 espèces de poissons à rostre. Nieblas, A.E., Bernard, S., Big Game Fishing Réunion, Brisset, B., Bury, M., Chanut, J., Chevrier, T., Coelho, R., Colas, Y., Evano, H., Faure, C., Hervé, G., Kerzérho, V., Nithard, A., Newton, R., Newton, T., Rouyer, T., Tracey, S., Worthington, J., Bonhommeau, S., 2023. Findings from 101 satellite tags deployed on Indian Ocean billfish during the FLOPPED project. IOTC-2023-WPB21-27
28. L'inclusion du makaira à rostre court dans les espèces gérées par la CTOI. Romanov, E., Ramos Alonso, M.L., Baez Barrionuevo, J.C., Coelho, R., Ruiz Gondra, J., Sabarros, P.S., Merino, G., 2023. Shortbill spearfish *Tetrapturus angustirostris*: a note on the distribution and occurrence in the Indian Ocean fisheries. IOTC-2023-WPB21-29



EU.SPAIN National Report to the Scientific Committee of the Indian Ocean Tuna Commission, 2024

Authors

IEO.CSIC¹ & SGP²

1 Instituto Español de Oceanografía, Consejo Superior de Investigaciones Científicas, Spain

2 Secretaría General de Pesca, Ministerio de Agricultura, Pesca y Alimentación, Spain

INFORMATION ON FISHERIES, RESEARCH AND STATISTICS

<p>In accordance with IOTC Resolution 15/02 (and other data related CMMs as noted below), final scientific data for the previous year were provided to the IOTC Secretariat by 30 June of the current year, for all fleets other than longline [e.g., for a National Report submitted to the IOTC Secretariat in 2024, final data for the 2023 calendar year must be provided to the Secretariat by 30 June 2024)</p>	No
<p>In accordance with IOTC Resolution 15/02, provisional longline data for the previous year was provided to the IOTC Secretariat by 30 June of the current year [e.g., for a National Report submitted to the IOTC Secretariat in 2024, preliminary data for the 2023 calendar year were provided to the IOTC Secretariat by 30 June 2024).</p> <p>REMINDER: Final longline data for the previous year are due to the IOTC Secretariat by 30 Dec of the current year [e.g., for a National Report submitted to the IOTC Secretariat in 2024, final data for the 2023 calendar year must be provided to the Secretariat by 30 December 2024).</p>	Yes
<p>If no, please indicate the reason(s) and intended actions:</p> <p>In 2024, the scientific team experienced several unexpected losses, which disrupted the group's dynamics. Additionally, many of the new forms are complex and time-consuming to complete, leading to delays in submissions. However, the workflow has now been automated, and we anticipate improvements in future submissions. The scientific team has been increased and further automation of data extraction and validation processes will be developed and refined to align with the new templates and requirements. As a result, shorter data reporting times are expected.</p>	

Executive Summary [Mandatory]

In 2023, the Spanish fleets operating in the IOTC area of competence included:

1. Surface longline fisheries: This fleet consisted of 14 active vessels. The technical characteristics of the vessels were 180 TRB, 32 m in length and 557 HP. The total swordfish catch reached 2,954 tons, with a total fishing effort of 3,212 thousand hooks. Swordfish (*SWO-Xiphias gladius*) accounted for 42% of the catch, sharks (*BSH-Prionace glauca* and *SMA-Isurus oxyrinchus*) for 55%, and tunas (*YFT-Thunnus albacares*, *BET-Thunnus obesus*, and *ALB-Thunnus alalunga*) made up 1.3%. Billfish and other species were also minor contributors, representing less than 1.7% of the total catch. The scientific observer programs, run by IEO.CSIC and the General Fisheries Secretariat, monitored 270.9 thousand hooks, covering a 8% of the total fishing effort.
2. Tropical purse seine fisheries: In 2023, this fleet was comprised by 13 active vessels, primarily based in Victoria, Seychelles. The fleet's carrying capacity remained stable, with 11 vessels having capacities between 1,200 m³ and 2,000 m³, while 2 vessels exceeded 2,000 m³. Having 2022 as a reference, the capacity of the PS fleet has decreased by 4000 m³. In 2023, 4 supply vessels supported the fleet's activities. The total catch for the three target species -29% YFT, 11% BET, and 60% SKJ (*Katsuwonus pelamis*)- totalled approximately 133,400 tons, a 9% decrease from 2022 with the same proportion by species. The fleet operated for 3,660 days, conducting 4,291 sets (79% on log-associated schools and 21% on free-swimming schools). A total of 6,973 Fishing Aggregating Devices (FADs) were deployed. Observer coverage decreased to 28.6% of total sets, compared to 39.7% in 2022.

The performance of the 2023 fishing trips, mainly for purse seiners, has been driven by the underlying Ministerial Order APA/1137/2023 (Official State Gazette "BOE" No. 251, of April 20th, 2023), which regulates the exercise of tropical tuna fishing under the Spanish flag during the 2023 campaign in the Indian Ocean. It follows the Order APA/332/2022 (Official State Gazette "BOE" No. 92, of April 18th, 2022) and the original order APA/25/2021 (Official State Gazette "BOE" No. 18, of January 19th, 2021).

This new order is issued due to exceptional circumstances affecting the Spanish fleet in the Indian Ocean. In 2022, the yellowfin tuna quota was reduced by 21% compared to 2014, leading to 2,739 tons decrease from 2021. As a result, two purse seine freezer vessels were exported to Mauritius and Seychelles. Additionally, the Russia-Ukraine conflict has caused fluctuations in fuel costs, severely impacting the fishing sector, with some fleets forced to dock due to low profitability. Given these challenges, the 2023 Ministerial Order APA/1137/2023 activated the joint management mechanism for fishing opportunities in order to help to maximize the use of available resources and improving overall fishery management.



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1. BACKGROUND/GENERAL FISHERY INFORMATION [MANDATORY]

1.1 Purse Seine

A total of 13 Spanish tuna purse seine vessels operated in the area. The fleet's carrying capacity decreased by 9% compared to the previous year. The average catch over the past five years (2018-2022), approximately 165,000 tons, was about 19% higher than the catch recorded during the 2023 season. This decline primarily affected skipjack tuna and yellowfin tuna.

With a fishing effort of 3,660 days, 79% of the sets targeted log-associated schools. These sets surrounded a FAD and the associated tuna school—mainly SKJ, YFT, and BET—with a net approximately 1,500 meters long and 250 meters deep. The remaining sets focused on free-swimming schools of tropical tunas. As in 2022, in 2023 most sets occurred between 50° and 60° East, distributed between 10°S and 10°N. Since 2018, the fleet has been extending the fishing ground to the North, further than 10°N, performing some activity next to Mozambique Channel but following a decrease trend. For 2023, some activity has been recovered next to this area, at the North of Madagascar. For free-school sets in particular, the fleet concentrated next to Seychelles, in areas close to Africa coast, performing also some sets further North.

All catches are frozen or deep-frozen onboard, and landings are monitored at port by sampling teams coordinated by research centers.

1.2 Longline

The Spanish longline fishery targeting swordfish (SWO – *Xiphias gladius*) in the international waters of the Indian Ocean began in 1993. In 2023, a total of 14 longline vessels operated in the Indian Ocean, some of them alternating between the Indian and Atlantic oceans.

2. FLEET STRUCTURE [MANDATORY]

2.1 Purse Seine

Table 1 shows the number of Spanish purse seiners fishing in the Indian Ocean in the period 2008-2023. During 2019, a new vessel has been incorporated into the Spanish freezer purse seine fleet, increasing the carrying capacity by more than 2400 m³, and for 2021 two more movements has decreased it by 1%. In 2022, the number of tuna purse seiners has been the same as 2021. At the end of the third quarter of 2023 two vessels changed their flag, which has supposed a decrease of the national carrying capacity by nearly 4000 m³.

2.2 Longline

Table 1 shows the number of Spanish longliners operating in the Indian Ocean during between 2008 and 2023. The technical characteristics of the vessels were 180 TRB, 32 m in length and 557 HP. Since 2000, the traditional Spanish multifilament longline type has been replaced by the American monofilament (Florida style), which uses an average of around 1,200 hooks per set, less than the traditional longline but slightly more than the Florida-style longline.

Table 1: Number of Spanish purse seiners and surface longliners operating in the IOTC area of competence during the period 2008-2023, by gear type (purse seine & longline) and size categories (C.Cap.- carrying capacity in m³). Data of previous years have been already reported.

Year/Class	PURSE SEINE							LONGLINE		
	50-400	401-600	601-800	801-1200	1201-2000	>2000	total	# Supply vessels	C.Cap.	# SHIPS
2008	0	0	0	3	10	4	17	11	24212	19
2009	0	0	0	2	9	4	15	11	20805	15
2010	0	0	0	1	8	4	13	6	20677	12
2011	0	0	0	1	8	4	13	7	20458	14
2012	0	0	0	1	9	4	14	6	21657	18
2013	0	0	0	1	9	4	14	4	22056	22
2014	0	0	0	2	9	4	15	7	20761	21
2015	0	0	0	1	11	5	17	10	23251	18
2016	0	0	0	0	10	4	14	11	23507	13
2017	0	0	0	0	10	4	14	10	22811	14
2018	0	0	0	0	10	4	14	6	22811	11
2019	0	0	0	0	10	5	15	6	24061	11
2020	0	0	0	0	10	5	15	5	24061	11
2021	0	0	0	0	12	3	15	5	22716	8
2022	0	0	0	0	12	3	15	4	22716	8
2023	0	0	0	0	11	2	13	4	18816	14

3. CATCH AND EFFORT (BY SPECIES AND FISHERY) [Mandatory]

3.1 Purse Seine

The number of associated school sets (FADs and logs) has steadily increased since the early period (1984–1990), when 31.9% of sets were focused on FOB (floating object)-associated schools, rising to approximately 76% in recent years (2008–2017). A peak was recorded in 2018 with 96% of sets targeting FOB-associated schools (Báez et al., 2020), followed by 83% in 2019. In 2023, more than 3,400 sets were reported, accounting for 79% of total sets by the fleet, compared to 90% in 2020.

Fishing effort, measured in both fishing days and searching days, hit its lowest point in the historical series in 2021 (**Table 2.a**), slightly increasing in 2022 and returning to levels seen during the 2017–2020 period in 2023. Although the number of sets in 2022 was lower than in previous years—averaging 4,417 sets between 2011 and 2021 compared to 3,934 sets in 2022, the lowest of the past decade—the fleet performed over 4,000 sets in 2023, returning to the average despite a reduction in carrying capacity. However, despite this brief recovery, the number of sets continues to decline year on year.

Since 2017, the Indian Ocean yellowfin tuna stock has been subject to an interim Rebuilding Plan (IOTC Resolution 21/01, currently in force for the EU). In 2021, the Spanish General Fisheries Secretariat (SGP) introduced Individual Vessel Quotas for total tropical tuna (Order APA/25/2021; <https://www.boe.es/buscar/act.php?id=BOE-A-2021-885>), which are allocated according to the quotas shown in **Supplementary Table SS1**.

Supplementary Table SS1: 2023 total tropical tuna quotas per authorized purse seiner vessel, as outlined in Ministerial Order APA/25/2021. Key: “Buque” - Spanish purse seiner name; “% Posibilidades de pesca YFT/IOTC del grupo” - Upper catch limit for YFT/IOTC (as %); “Cuota 2023 YFT (kg)” - 2023 Yellowfin tuna upper catch limit (in kg).

ANEXO

Censo específico de atuneros cerqueros congeladores autorizados a la pesca de atún tropical en el Océano Índico (CATI) 2023

Número	Código	Buque	% Posibilidades pesca YFT/IOTC del grupo	Cuota 2023 YFT (kg)
1	26547	ALAKRANA.	8,998334	3.825.513
2	755	ALBACORA CUATRO.	6,056392	2.574.788
3	23164	ALBACORA UNO.	6,192534	2.632.667
4	25923	ALBATUN DOS.	11,414919	4.852.890
5	26123	ALBATUN TRES.	3,831671	1.628.980
6	100101	ATERPE ALAI.	5,196625	2.209.271
7	23194	DONIENE.	5,813358	2.471.466
8	22462	ELAI ALAI.	4,937255	2.099.003
9	27547	ITSAS TXORI.	4,684114	1.991.384
10	26158	IZURDIA.	8,013992	3.407.034
11	20232	PLAYA DE NOJA.	2,877444	1.223.304
12	27578	PLAYA DE RIS.	7,032823	2.989.904
13	25900	TXORI ARGÍ.	9,601612	4.081.988
14	27068	TXORI GORRI.	7,758237	3.298.304
15	27691	TXORI ZURI.	7,59069	3.227.073
Total			100	42.513.570

By species, a total of 80,066.81 tonnes of skipjack tuna (SKJ), 39,205.65 tonnes of yellowfin tuna (YFT), and 14,111 tonnes of bigeye tuna have been caught (**Table 2.a**). Among these three main tropical tuna species, skipjack tuna has shown the most significant decline in recent years. The 5-year average catch of SKJ between 2018 and 2022 was 103,968 tonnes, compared to 80,067 tonnes in 2023. Since 1984, the highest SKJ catches were recorded in 2018 and 2019, respectively. The sixth-highest catch occurred in 2021, and the eighth-highest in 2020. Notably, over the past 10 years, five new historical peaks have been recorded since 2017.

Figure 1.a illustrates the historical catch quantities by the main tropical tuna species and the corresponding effort (measured in searching days), revealing a declining trend for all species over the past two years, while the number of searching days has increased. **Figure 2.a(i)** shows the spatial distribution of fishing effort (in fishing days) for 2023, broken down by quarter and fishing mode. **Figure 2.b(i)** presents this distribution in 1°x1° grid squares, reflecting the average from 2019 to 2023.

Figures 3.a (i to iii) display the distribution of catches by the main tropical species for 2023, segmented by quarter and fishing mode. Additionally, **Figures 3.b (i to iii)** map the average distribution of catches by species in 5°x5° grid squares over the 2019–2023 period.

3.2 Longline

The historical trend of annual swordfish (*Xiphias gladius*) catches by the Spanish longline fleet within the IOTC area of competence is depicted in **Figure 1.b**. In 2023, a total of 2,954 tonnes of swordfish (round weight) were caught, with an overall nominal catch rate of 919.6 kg (round weight) per thousand hooks. All species caught are dressed, frozen, and stowed on board.

Table 2.b provides the total annual swordfish catches by year, reported both in the number of fish and in kilograms of round weight (RW), alongside the nominal fishing effort (measured in thousands of hooks) for the 2008–2023 period. **Figure 1.c** illustrates the annual nominal fishing effort since 2008, while **Figure 2.a(ii)** shows the distribution of nominal effort in 2023, represented by 5°x5° grid squares.

Figure 2.b(ii) shows the average of the nominal effort (thousand hooks) by 5°x5° grid squares of the years 2019–2023.

In 2023, a total of 3,212 thousand hooks (**Figure 1.c**) were deployed by 14 longliners. **Figure 3.a(iv)** shows the distribution of swordfish catches (in kg of round weight) by 5°x5° grid squares for the Spanish surface longline fleet in 2023. **Figure 3.a(v)** displays the spatial distribution of the nominal catch (in kg of round weight) of swordfish landed per thousand hooks set by the Spanish surface longline fleet in the Indian Ocean during 2023.

Additionally, **Figures 3.b(iv)** and **3.b(v)** map the distribution of swordfish catches (in kg of round weight) and the nominal catch per unit effort (CPUE, in round weight per thousand hooks) by 5°x5° grid squares, respectively, for the years 2019–2023.

Table 2.a: Spanish purse seiners total catch (in tons) by year and primary species, and nominal fishing effort in fishing days and searching days of the purse seine Spanish fleet in the IOTC area of competence during the period 2008–2023 (data of previous years have been already reported).

YEAR	TOTAL CATCH BY SPECIES			NOMINAL FISHING EFFORT	
	YFT	SKJ	BET	Fishing Days	Searching Days
2008	46051	65096	12490	4792	3882
2009	33511	66570	11781	3784	2992
2010	45209	75131	10022	3825	2938
2011	52256	67247	10702	3851	2944
2012	57745	42892	7589	3991	3150
2013	68352	64632	13880	4224	3326
2014	57892	66597	8988	4185	3340
2015	52631	58283	9832	4157	3287
2016	51489	75264	9371	4261	3268
2017	54513	84432	12345	3512	2618
2018	46991	132986	28167	3633	2632
2019	42273	119138	11303	3397	2567
2020	44246	85193	13338	3797	2838
2021	44347	94165	16190	3182	2277
2022	42173	88992	16154	3216	2384
2023	39206	80067	14111	3660	2775

Table 2.b: Catch in number of fish and in kg of round weight of swordfish (SWO) obtained by the Spanish surface longline fishery and total number of hooks (in thousands) set in the IOTC area of competence during the period 2008–2023 (data of previous years have been already reported).

YEAR	TOTAL CATCH of SWO		NOMINAL FISHING EFFORT
	Number of fish	Kg RW	Hooks*1000
2008	76882	3924743	4885
2009	66000	3306663	3634
2010	61100	3116458	3174
2011	63165	3191553	3758
2012	85472	4396670	4674
2013	92909	4766588	6263
2014	79373	4164218	6107
2015	64698	3421352	4509
2016	66952	3354291	4427
2017	58671	2897902	3579
2018	39803	1971026	2822
2019	41713	2097373	2992
2020	33378	1601720	2654
2021	30639	1491681	2087
2022	32974	1621333	1983
2023	58327	2953878	3212

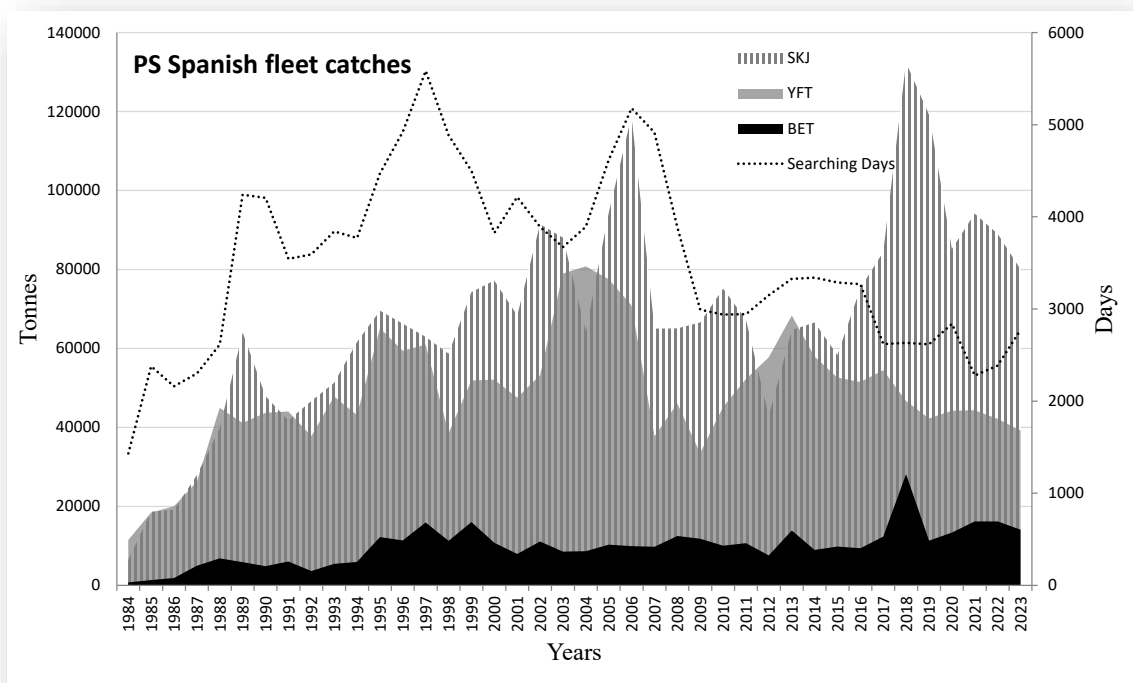


Figure 1.a. Historical annual catch and effort (searching days) of the Spanish purse seine fleet, by main tropical tuna species, in the IOTC area of competence since 1984 to 2023.

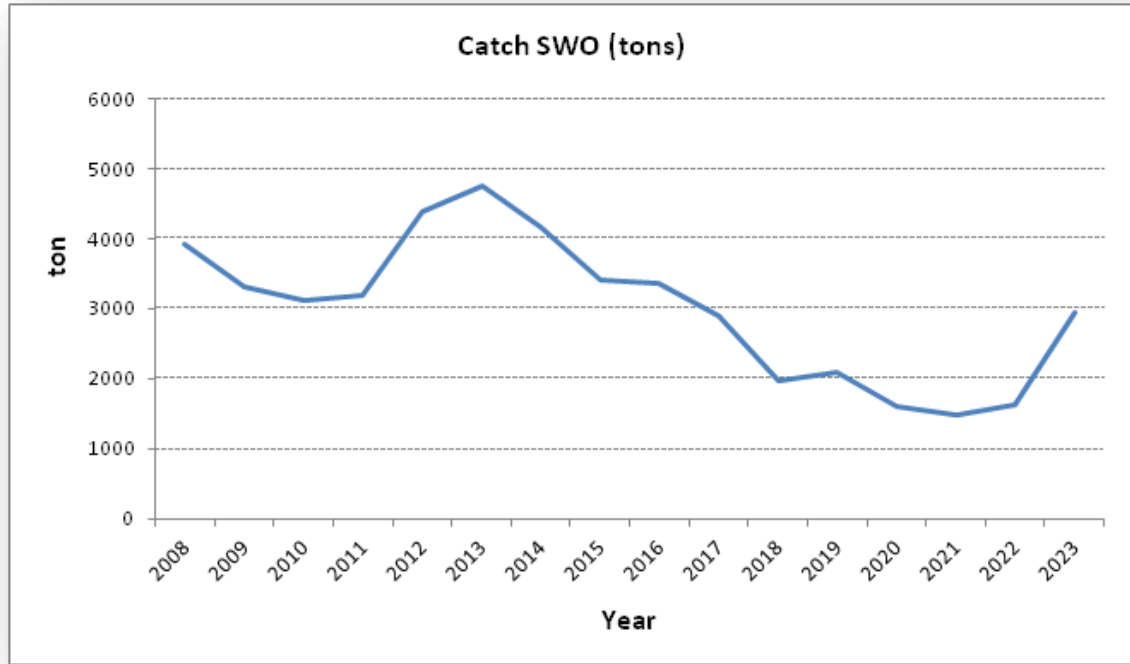


Figure 1.b. Historical annual swordfish catches (tons of RW) of the Spanish longline fleet, for the IOTC area of competence since 2008 to 2023.

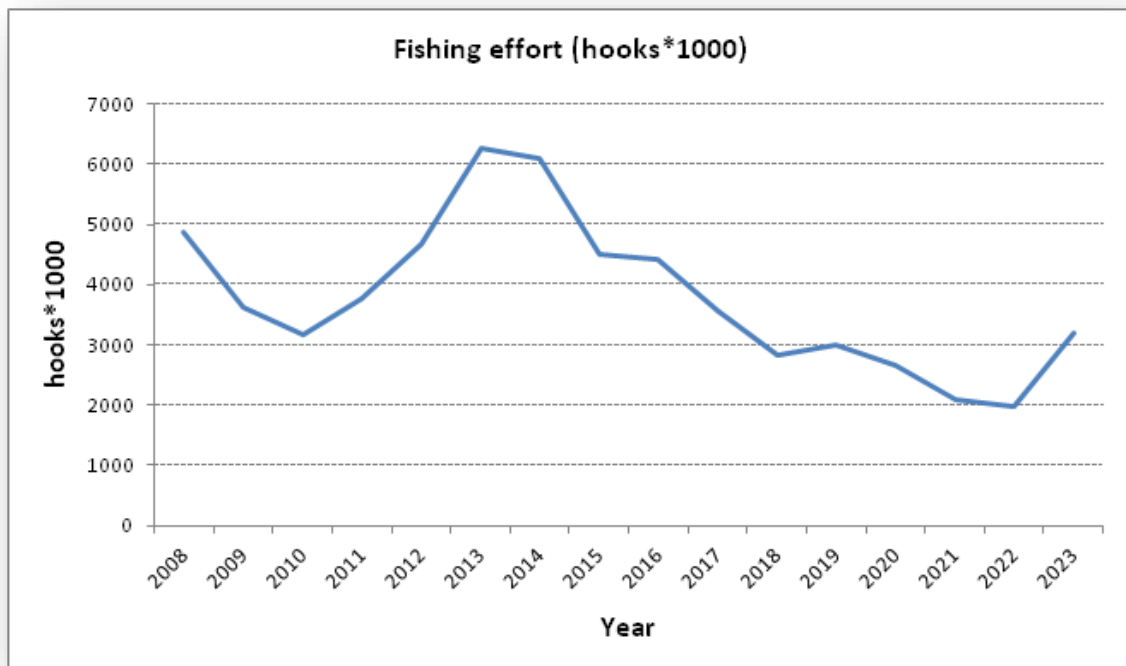


Figure 1.c. Historical annual nominal effort (in thousands of hooks) of the Spanish surface longline fleet, in the IOTC area of competence since 2008 to 2023.

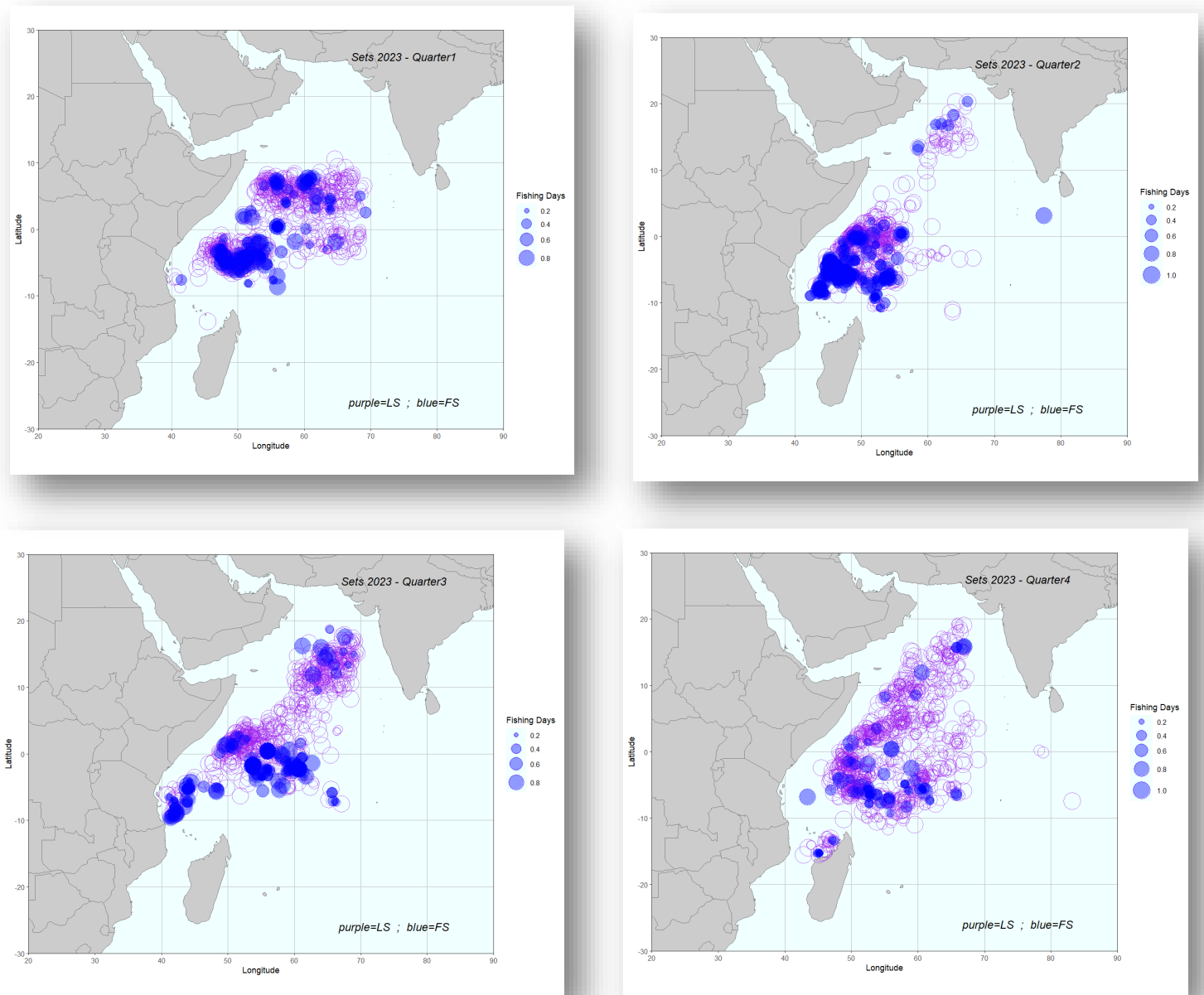


Figure 2.a(i). Map of the distribution of the fishing effort (fishing days) of the Spanish purse seine fleet in 2023, per quarter and fishing mode, in the IOTC area of competence. Key: Purple, Log School associated sets; Blue: Free-Swimming School sets.

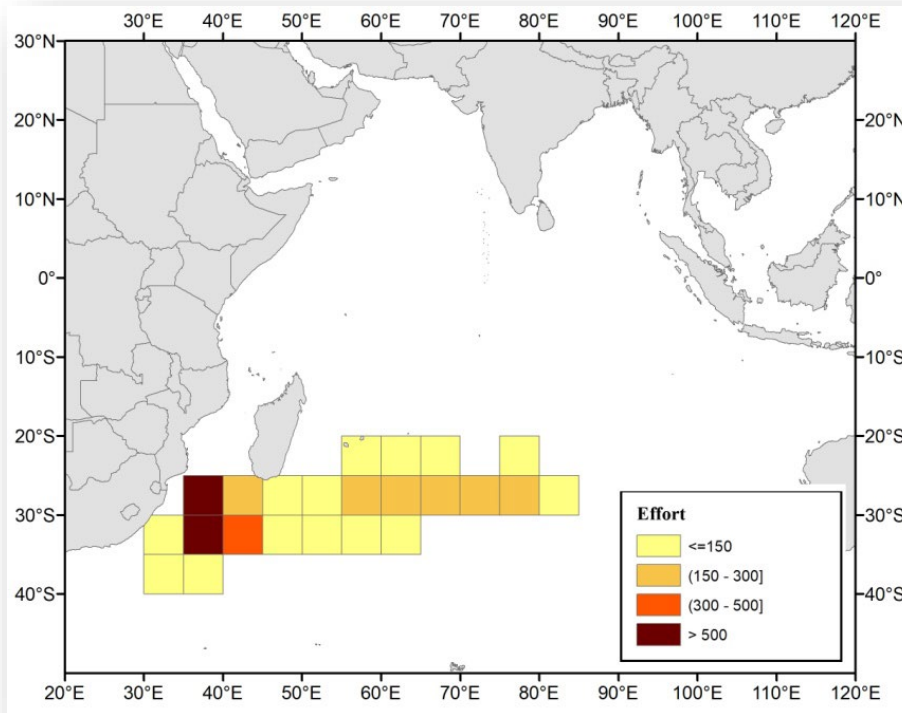


Figure 2.a(ii). Map of the distribution of the nominal fishing effort (thousand hooks), by 5°x5° grid squares, of the Spanish longline fleet during the year 2023 in the IOTC area of competence.

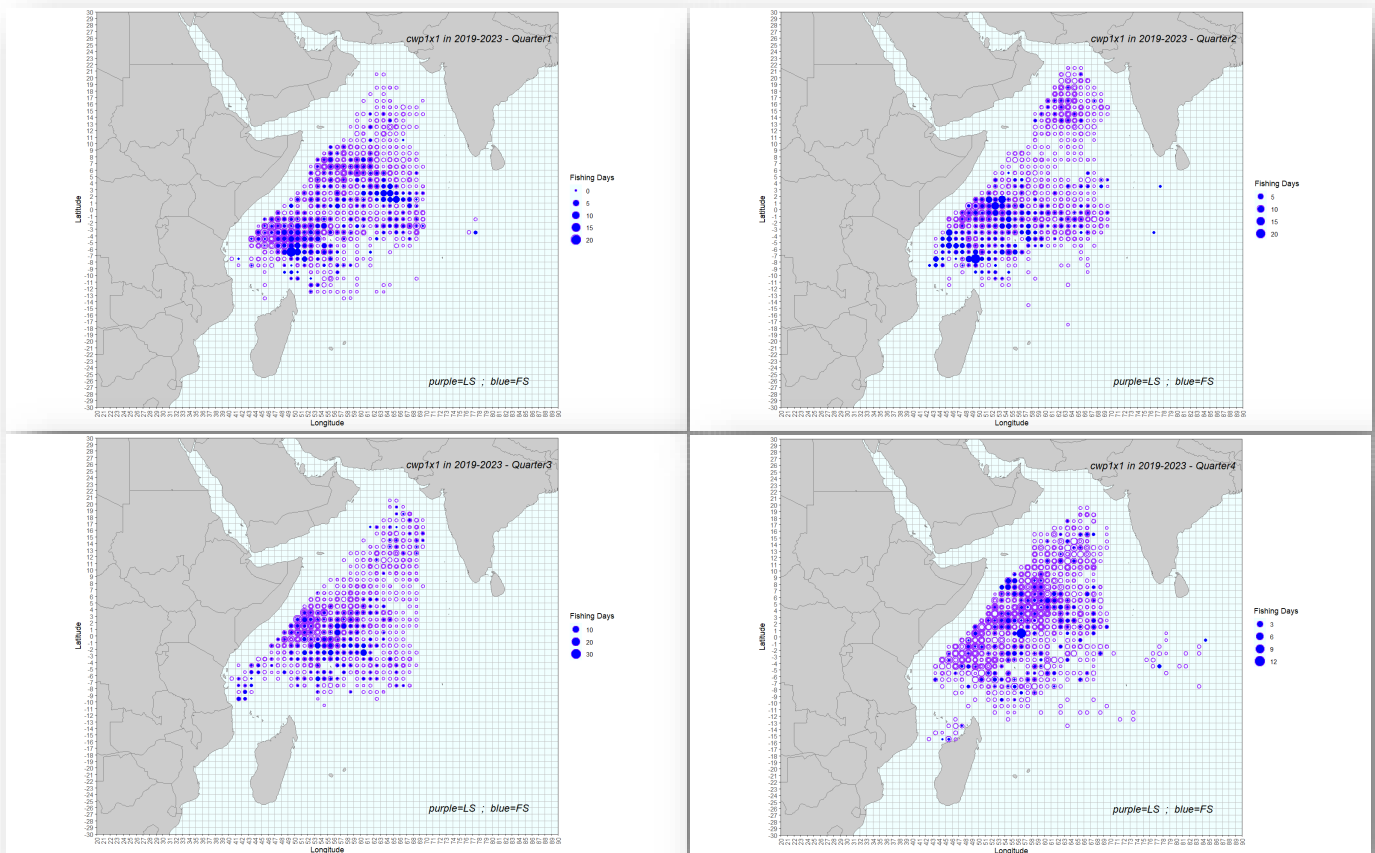


Figure 2.b(i). Map of the distribution of fishing effort (fishing days), by cwp1x1, of the purse seine Spanish fleet in 2019-2023 (average of the 5 most recent years), per quarter and fishing mode, in the IOTC area of competence. Key: Purple, Log School associated sets; Blue, Free-swimming School sets-

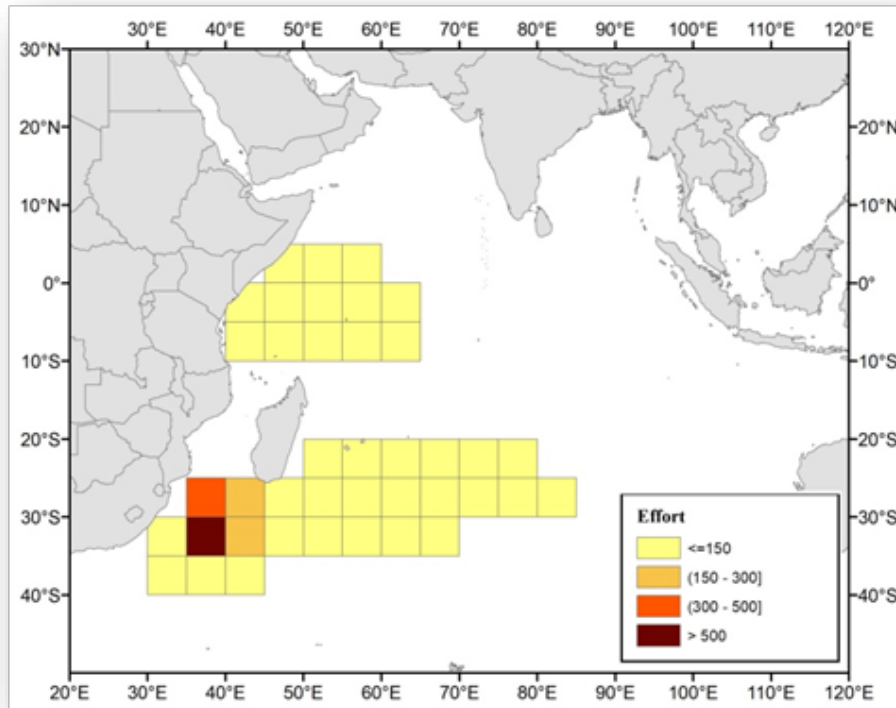


Figure 2.b(ii). Distribution of the nominal fishing effort (thousand hooks) by 5°x5° grid squares carried out by the Spanish surface longline fleet in the Indian Ocean (average of the 5 previous years 2019-2023).

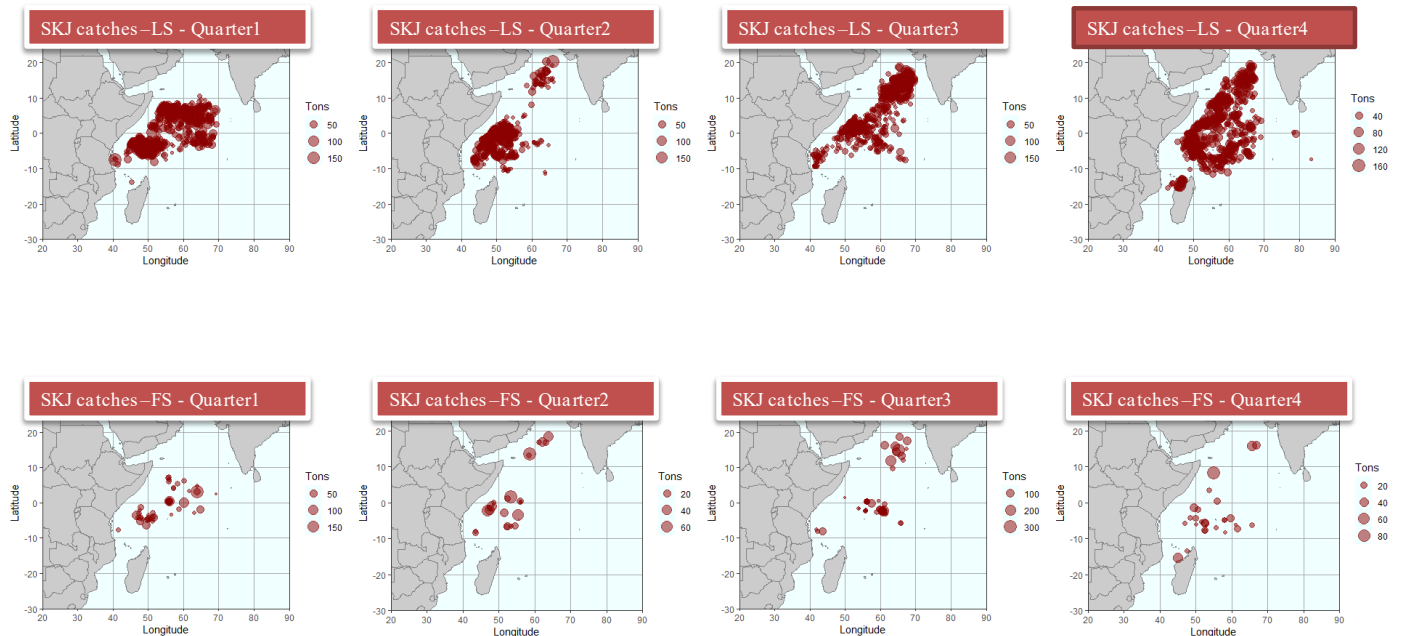


Figure 3.a(i). Map of distribution of SKJ catches of the Spanish purse seine fleet in 2023, in the IOTC area of competence, per quarter and fishing mode. Key: LS = Log Schools associated sets; FS = Free-swimming Schools sets.

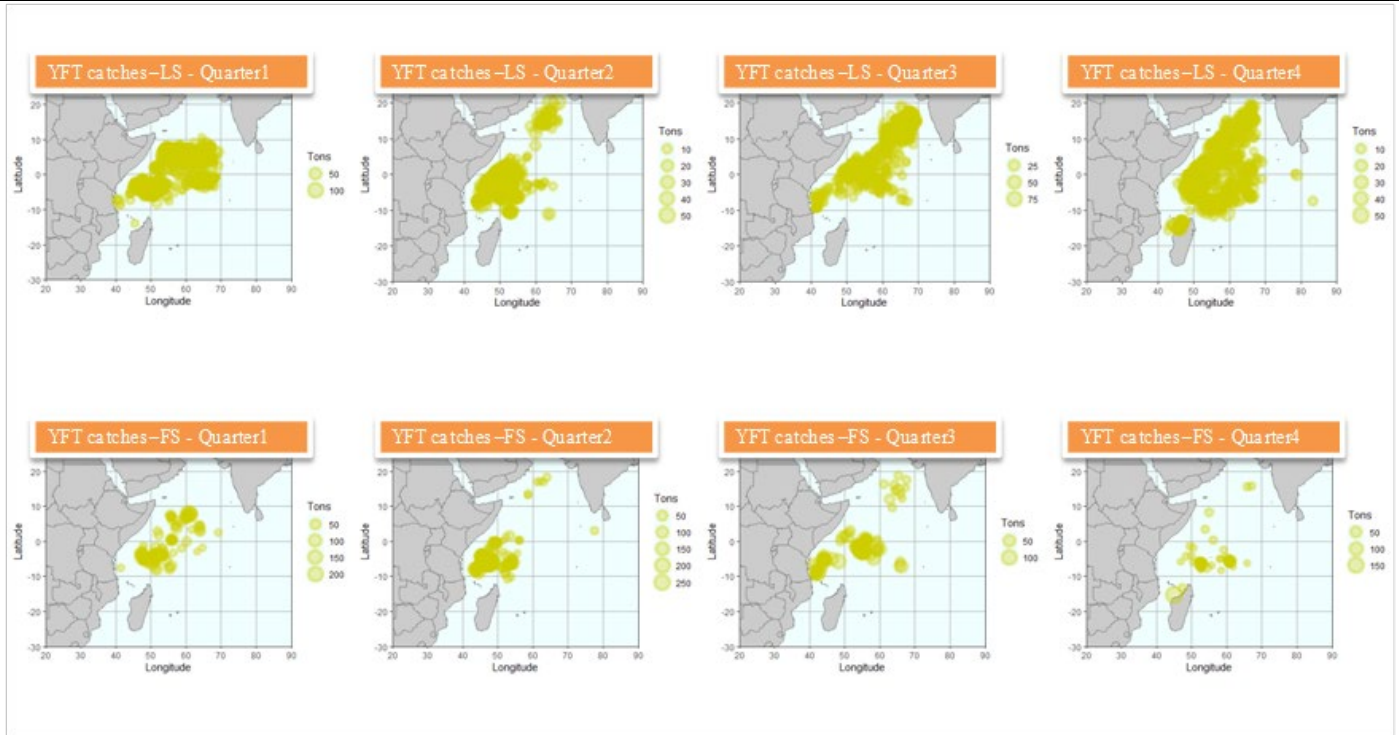


Figure 3.a(ii). Map of distribution of YFT catches of the Spanish purse seine fleet in 2023, in the IOTC area of competence, per quarter and fishing mode. Key: LS = Log Schools associated sets; FS = Free-swimming Schools sets.

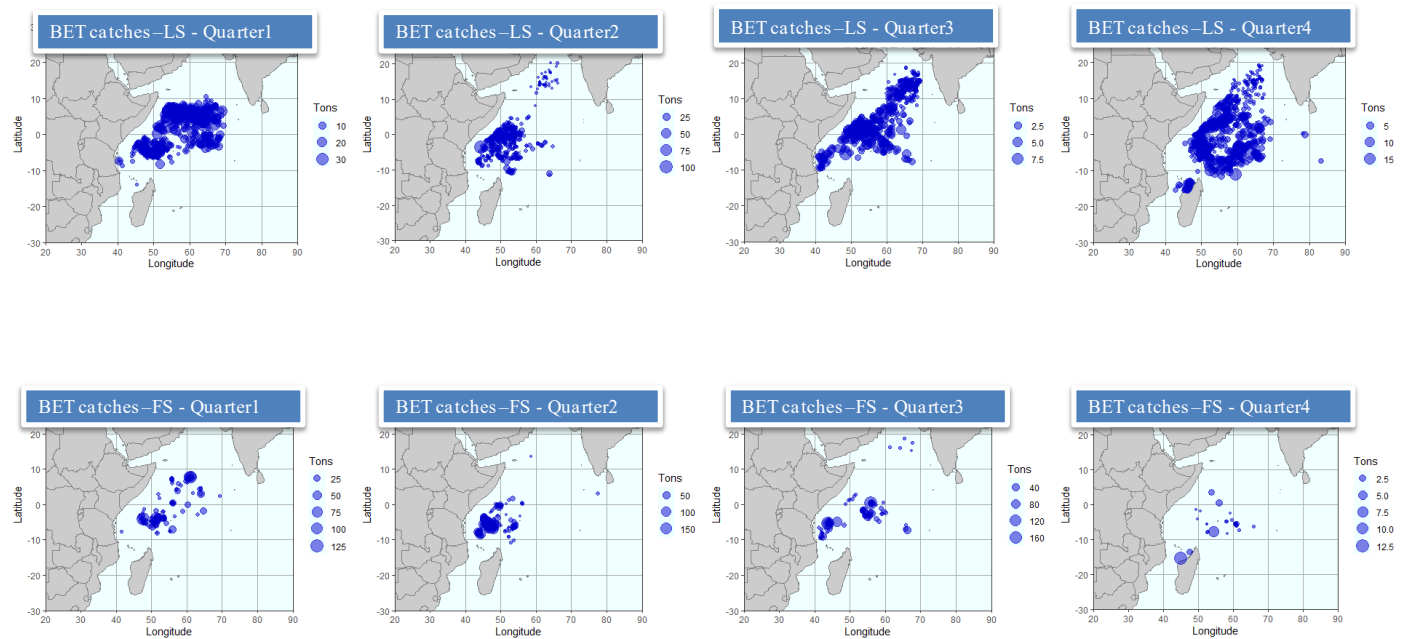


Figure 3.a(iii). Map of distribution of BET catches of the Spanish purse seine fleet in 2023, in the IOTC area of competence, per quarter and fishing mode. Key: LS = Log Schools associated sets; FS = Free-swimming Schools sets.

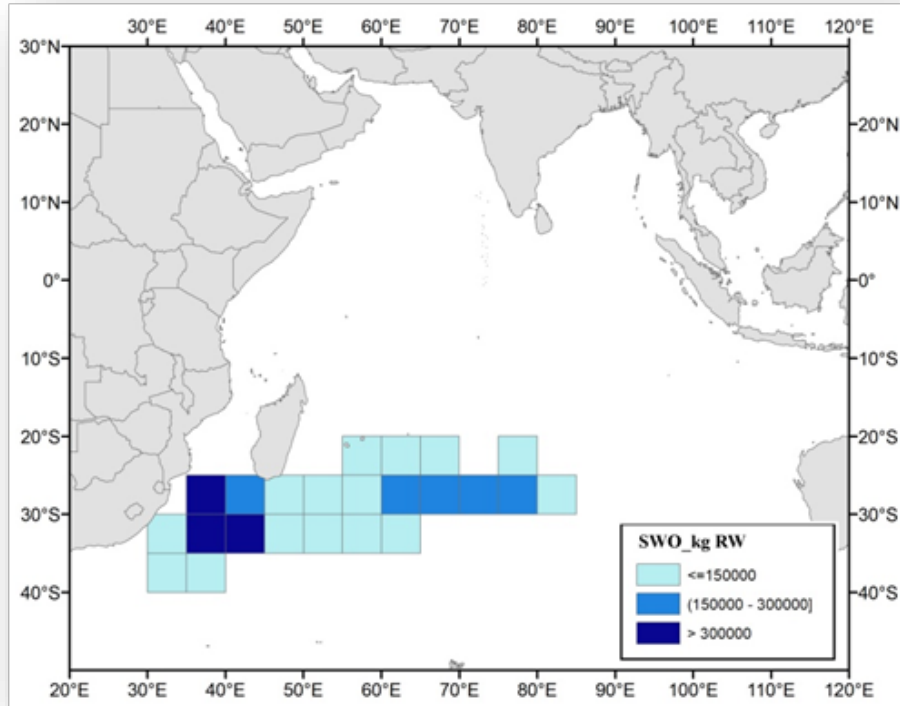


Figure 3.a(iv). Map of distribution of SWO catches (kg of round weight) of the Spanish surface longline fleet in 2023, by 5°x5° grid squares, in the IOTC area of competence.

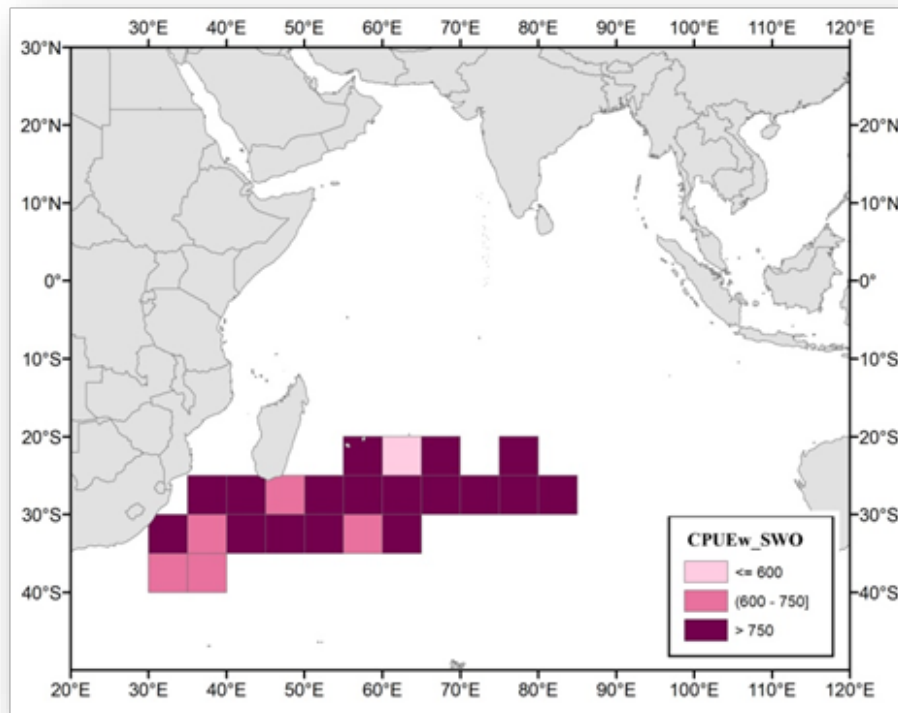


Figure 3.a(v). Map of distribution of the nominal CPUEw in kg (round weight) of SWO landed per thousand hooks set by 5°x5° grid squares, carried out by the Spanish surface longline fleet in 2023, in the IOTC area of competence.

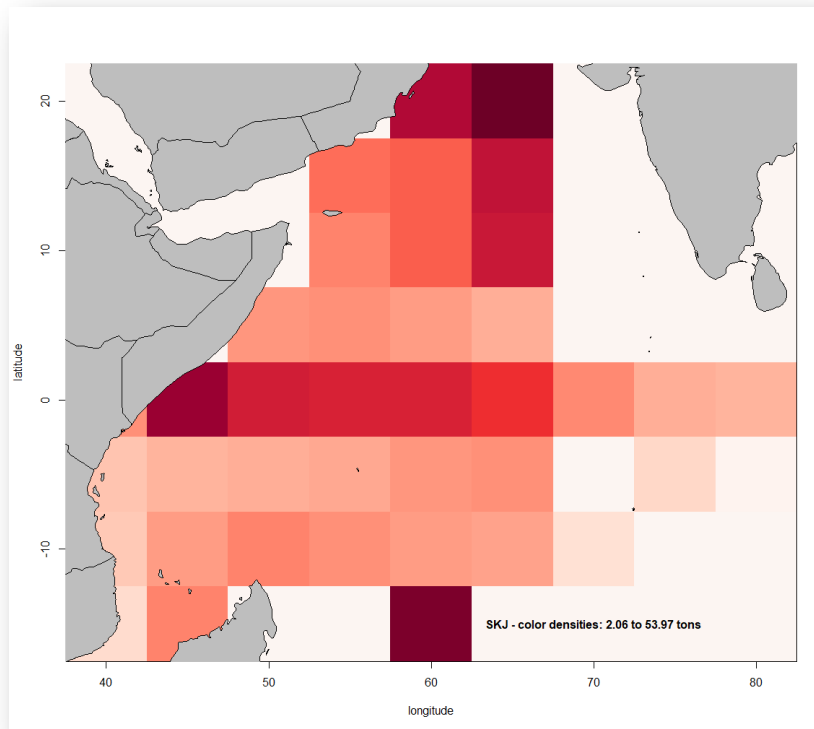


Figure 3.b(i). Map of distribution of SKJ catches, in cwp5x5 squares, by the Spanish purse seine fleet, in the IOTC area of competence (average of the 5 previous years: 2019–2023).

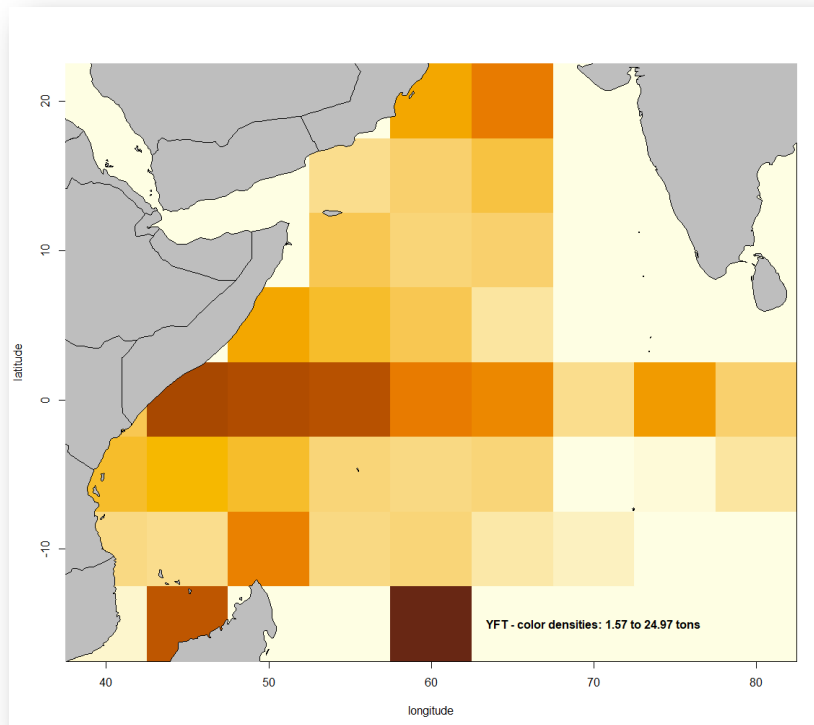


Figure 3.b(ii). Map of distribution of YFT catches, in cwp5x5 squares, by the Spanish purse seine fleet, in the IOTC area of competence (average of the 5 previous years: 2019–2023).

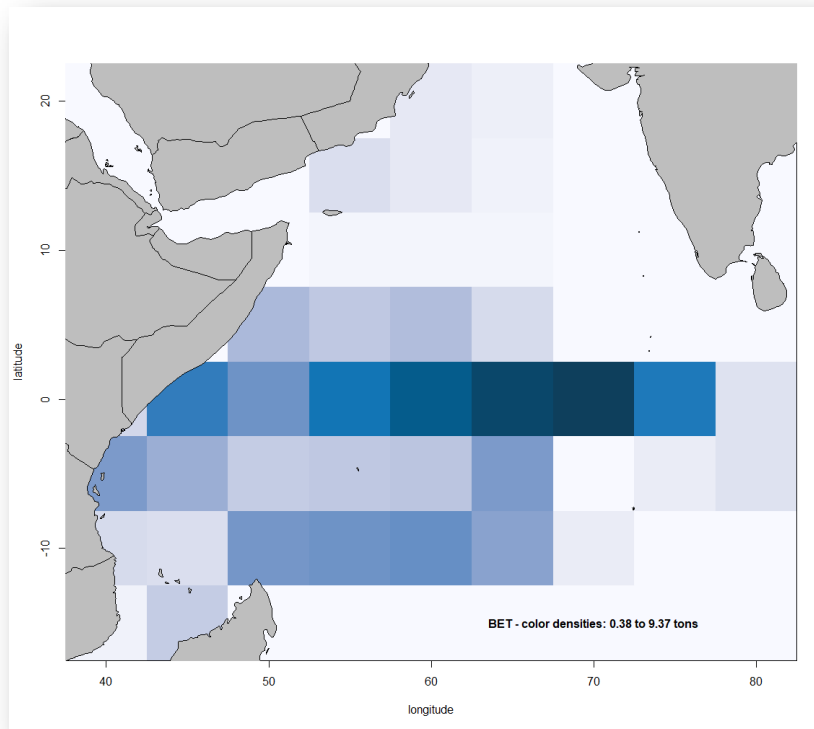


Figure 3.b(iii). Map of distribution of BET catches, in $5^\circ \times 5^\circ$ grid squares, by the Spanish purse seine fleet, in the IOTC area of competence (average of the 5 previous years: 2019–2023).

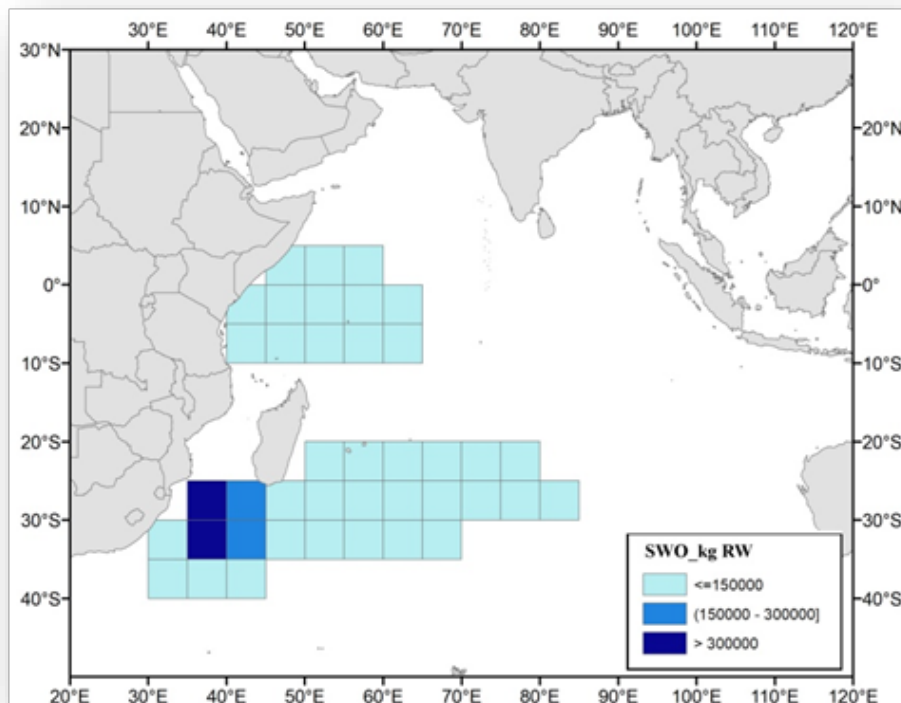


Figure 3.b(iv). Map of distribution of SWO catches (kg of round weight), in $5^\circ \times 5^\circ$ squares, by the Spanish surface longline fleet, in the IOTC area of competence (average of the 5 previous years: 2019–2023).

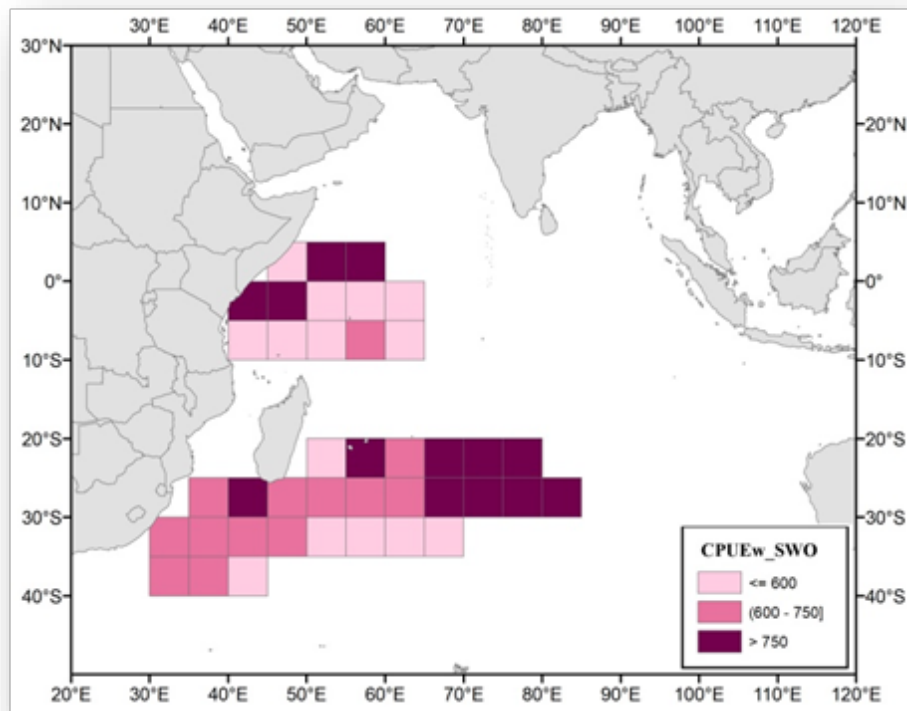


Figure 3.b(v). Map of distribution of the nominal CPUE in kg (round weight) of SWO landed per thousand hooks set, in 5°x5° squares, by the Spanish surface longline fleet, in the IOTC area of competence (average of the 5 previous years: 2019-2023).

4. RECREATIONAL FISHERY [Mandatory]

There are no recreational fishing activities of Spanish vessels in the IOTC area.

5. ECOSYSTEM AND BYCATCH ISSUES [Mandatory]

Purse Seine

A total of 41 trips (approximately a 26.8 % of the total trips performed by this fleet) and 1227 sets (a 28.6% of the total sets) on board 11 of the 13 Spanish tropical tuna purse seiners present in the Indian Ocean have been carried out. They are shown in the **Table 3**, stating the number of days at sea and the number of sets (on free schools or object schools) by vessel performed in 2023. All the sets performed (1014 on object schools and 213 on free schools) were sampled by the observers on board.

Table 3: Observed effort on board Spanish PS in 2023. Per vessel, the number of days at sea, the number of trips and the number of set types are stated.

IOTC vessel code	Days at sea	N sets on Free schools	N sets on Object schools	Total number of sets	Number of trips
IOTC00907	125	39	153	192	6
IOTC000164	58	4	68	72	3
IOTC000161	156	55	155	210	6
IOTC017253	134	34	151	185	7
IOTC000172	26	5	44	49	1
IOTC000175	78	1	98	99	5
IOTC015353	110	1	29	30	1
IOTC015569	162	67	166	233	8
IOTC000812	17	31	3	34	1
IOTC008281	53	4	87	91	2
IOTC016254	33	0	32	32	1
TOTAL	952	213	1014	1227	41

Apart from tuna species, a total of 65 species and taxa belonging to species groups associated to tropical tuna fisheries have been identified and measured during the sampled trips, having an approximate global retained catch of 1514758.6 kg, an equivalent to 30128 individuals. The discarded fraction of these taxa reached an estimation of 119043 individuals. A total of 18387 individuals were sampled (from the retained and the discarded fraction), most of them belonging to the species DOL (*Coryphaena hippurus*), CNT (*Canthidermis maculata*), RRU (*Elagatis bipinnulata*), FAL (*Carcharhinus falciformis*) and WAH (*Acanthocybium solandri*).

The highest amount of discarded associated catches, considering the number of individuals, corresponds to the species, in order: CNT (*Canthidermis maculata*), RRU (*Elagatis bipinnulata*), ALM (*Aluterus monoceros*), DOL (*Coryphaena hippurus*) and FAL (*Carcharhinus falciformis*).

For the retained fraction, the most numerous species were: DOL (*Coryphaena hippurus*), CNT (*Canthidermis maculata*), RRU (*Elagatis bipinnulata*), and WAH (*Acanthocybium solandri*). Considering only the weight retained, the highest amount observed corresponds to, in order: DOL (*Coryphaena hippurus*), RRU (*Elagatis bipinnulata*), WAH (*Acanthocybium solandri*), GBA (*Sphyrna barracuda*) and CNT (*Canthidermis maculata*).

The **table 4.a** shows specifically the number of sharks observed in the discarded fraction, by species and condition when released.

A total of 16 sea turtles were observed interacting with purse seiners, all of them were released alive. The turtles were related with sets on floating objects (FOBs), except for one of them that interacted during a fishing operation on free schools.

The global resulting interaction and mortality rates were 0.0130 turtles per observed set and 0, respectively. Total interaction rate was highest than to last year's (2022) bycatch ratio (0.0028) for marine turtles (see **Table 5.b(i)**).

The observers on board the Spanish purse seine fleet in the Indian Ocean have also recorded 4 turtles not involved in the sets but interacting with not-owned FOBs: all were entangled alive, one of them (unidentified at species level) in the rope connecting the satellite buoy and another (*Lepidochelys olivacea*) in a drifting piece of net found by the vessel, the other two unknowns. All of them were released alive in good conditions and the FOBs were replaced. The ratio of turtles observed was 0.0012, having observed 3199 visits to FOBs.

- There were NO records of interactions with seabirds
- There were NO records of interactions with cetaceans, except for an opportunistic sighting of a single Odontoceti specimen swimming free and feeding next to a FOB. There were NO fishing operations on the FOB
 - There were NO records of interactions with whale sharks
 - There were 29 records of interactions with *Mobulids* during the sets. 25 of them were part of the bycatch of FOB sets, while 4 were associated to free school sets. 26 of the 29 *Mobulids* were released alive and 2 were discarded dead. The species were: 7 *Mobula* spp., 11 *Mobula mobular*, 3 *Mobula birostris* and 8 *Mobulidae*

Longline

The scientific monitoring of the swordfish fishery and some research was conducted to find out what species are captured as by-catch or incidental interactions occurred.

This report includes data of bycatch data obtained during the year 2023. The catches of the bycatch by species since the beginning of this fishery in 1993 have been described in several scientific papers previously presented and also provided by reports of the National Fishing Authority. Total catch of sharks was estimated as 3,868t (see **table 4.b**), 95t of tuna, 68t of billfish and 56t for other species in the year 2023.

Studies about the interaction between seabirds and the Spanish surface longline targeting swordfish were carried out following the scientific recommendations of the SC and reported in several papers in previous years.

A total 270,966 hooks were observed and analyzed in the Spanish surface longline fishery targeting swordfish in the Indian Ocean during the year 2023, which corresponded to a total of 253 days at sea. See **figures 4.a** and **4.b** showing the geographical distribution of the observed sets for both: human observation on board and EMS respectively.

In this period 8 interactions with marine turtles were reported, the species found were *Caretta caretta* (6 individuals), 1 *Dermochelys coriacea* and 1 non-identified.

All the specimens were released alive except for 1 non-identified that was released dead. Taking this into consideration, the global resulting observed interaction rate was $2.952E^{-05}$ per hook and the mortality rate per hook has been $3.690E^{-06}$ (see **table 5.b(ii)**)

- There has been one record of interaction with a cetacean identified as *Delphinidae*. It was captured and released alive the 16th of June at 29.29S-040.42E. The rate of interaction was $3.690E^{-06}$ per hook and the mortality rate has been null
- There was a record of interaction with a seabird (*Diomedeidae*) the 2nd of August at 28.98S-043.34E. The seabird was captured and released dead. The rate of interaction was $3.690E^{-06}$ per hook
- There were NO records of interactions with basking or whale sharks
- 12 records of interactions with *Mobulids* were observed during the sets. 9 of the 12 were released alive and the 3 were discarded dead

5.1 Sharks

For the **purse seine** fishery, shark bycatch, while not significant globally compared to other fishing gears, is tried to be avoided by the implementation of good practices, such as the application of appropriate handling and release protocols. The fleet is strictly regarding the practice of shark finning, which is completely prohibited.

For the surface **longline** fishery, the profitable use of the different parts of the sharks is regularly better than that most bony fish species. The sharks are processed on board as trunks or carcass with their respective fins naturally attached, frozen and stowed on board, and landed for human consumption. Bycatch data of sharks is summarized in **table 4.b** for 2012-2023 periods. It was not feasible to obtain a scientifically robust data by extensive area-time stratification due to the low occurrence of most bycatch species. However, total catches of all bycatch species are scientifically estimated and reported for assessment.

5.1 Sharks [Mandatory]

Electronic Reporting System (ERS) is mandatory for all Spanish vessels operating in the IOTC area, according to the Regulation 1224/2009, establishing a Community control system for ensuring compliance with the rules of the common fisheries policy. Blue shark has no special regulation related to the report of its catches. Catches of blue sharks have to be reported by ERS as for the rest of the species.

Table 4.a: Total number of sharks observed on board, by species, released/discarded by the purse seiner national fleet in the IOTC area of competence (for the most recent five years at a minimum, e.g. 2018–2023). Life status upon released/discard is indicated. Observer coverage, in number of sets is indicated.

Species	2018_22%sets		2019_23%sets		2020_14%sets		2021_24%sets		2022_40%sets		2023_29%sets	
	No. Released Dead	No. Released Alive	No. Released Dead	No. Released Alive	No. Released Dead	No. Released Dead	No. Released Alive	No. Released Dead	No. Released Alive	No. Released Dead	No. Released Dead	No. Released Alive
<i>Carcharhinidae</i>									1		44	12
<i>Carcharhiniformes</i>			11					11				
<i>Carcharhinus falciformis</i>	2985	3910	1621	2223	894	2985	3910	1621	2223	894	2200	2870
<i>Carcharhinus longimanus</i>	26	20	7	14	5	26	20	7	14	5	41	145
<i>Isurus oxyrinchus</i>			1					1				
<i>Lamnidae</i>												1
<i>Prionace glauca</i>												
<i>Rhincodon typus</i>		5					5					
<i>Rhyna</i>												
<i>Sphynidae</i>												1

Table 4.b: Scientific estimation of sharks by species, of the annual bycatch landings (tons of round weight) retained by the Spanish surface longline fleet in the Indian Ocean for the 2012-2023 period.

SPECIES/YEAR	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
<i>Carcharhinus falciformis</i>	25	0.5	0	0	0	0	4	0.9	0	0	0	0
<i>Isurus oxyrinchus</i>	561	620	823	441	450	532	399	424	348	390	285	397
<i>Isurus paucus</i>	0.2	0.7	0.1	0	0.1	0	0.8	0.6	0	0	0	0
<i>Prionace glauca</i>	3686	414	4657	3701	3592	3059	2162	2646	2417	2125	2026	3471

5.1.1. NPOA sharks [Desirable]

Regulation n°2021-47 of 9th of July 2021 legislating tuna and tuna-like species fisheries includes marine species protection measures, especially in its Annex 2, aiming to reduce the impact on marine turtles, sea birds and sharks.

Sharks: Approved on 05-Feb-2009 and it is currently being implemented.

Seabirds: The EU adopted on Friday 16 November 2012 an Action Plan to address the problem of incidental catches of seabirds in fishing gears. A specific national plan of action has been published for Albatrosses which runs from 2018-2027.

Marine turtles: European Union Council Regulation (EC) No 520/2007 of 7 May 2007 lay down technical measures for the conservation of marine turtles including articles and provisions to reduce marine turtle bycatch. The regulation urges Member States to do their utmost to reduce the impact of fishing on sea turtles, in particular by applying the measures provided for in paragraphs 2, 3 and 4 of the resolution.

5.1.2. Blue shark [Mandatory]

Electronic Reporting System is mandatory for all Spanish vessels operating in the IOTC area, according to the Regulation 1224/2009, establishing a Community control system for ensuring compliance with the rules of the common fisheries policy. Blue shark has no special regulation related to the report of its catches. Catches of blue sharks have to be reported by ERS as for the rest of the species.

5.2 Seabirds [Mandatory]

There was a record of interaction with a seabird (*Diomedidae*) the 2nd of August at 28.98S-043.34E. The seabird was captured and released dead. The rate of interaction was $3.690E^{-06}$ per hook.

5.3 Marine Turtles [Mandatory]

The national strategy on marine turtles is based on international, European and Spanish regulation. The main acts are the following:

- Resolution IOTC 12/04 on the conservation of marine turtles
- Regulation (EC) No. 520/2007, of the Council, of May 7, 2007, which establishes technical measures for the conservation of certain populations of highly migratory fish species and which repeals Regulation (EC) No. 973/2001. Specifically, the provisions of articles 15, 20 and 27 (relating to sea turtles)
- Order APM / 1057/2017, of October 30, which modifies Order AAA/658/2014, of April 22, which regulates fishing with surface longline gear for the capture of highly migratory species, and which repeals Order ARM / 1647/2009, of June 15, which regulates the fishing of highly migratory species (BOE of November 3, 2017)
- Order AAA / 658/2014, of April 22, regulating surface longline fishing for the capture of highly migratory species and creating the unified surface longline census
- FAO Guidelines to reduce the mortality of sea turtles in fishing operations (2009)

Spanish mitigation measures on sea turtles are carried out through Temporary Fishing Licences (PTP) issued by the General Fisheries Secretariat (SGP) which is mandatory for all Spanish vessels operating in the IOTC area, both for the purse-seine fishery and for the surface longline fishery. The mentioned licences have an annex that includes the obligation to comply with the regulations issued by IOTC, mandatory measures on sea turtles and the obligation to record the interactions that occur with them.

These licences are reviewed and updated annually to include the new provisions that emanate from regulations approved by the IOTC Commission, as well as other European and national regulations.

There are other mitigation measures on marine turtles:

- Management Plan on Fisheries Aggregation Devices (FAD): established by the Spanish administration as mandatory since 2010. It includes mitigation measures on non-target species as marine turtles, through the use of non-entangling FADs.
- This plan is updated annually to incorporate new regulation.
- “Code of Good Practices on board purse seiners”: it includes the design and use of non-entangling FADs that reduce entanglement mortality of vulnerable species such as sea turtles, among others; best practices for their release and, the application of a FAD management system through the implementation of a FAD logbook and responsible use of active FADs.
- Training sessions on Mitigation measures on marine turtles by the industry and the administration and projects involved in this action field.

Table 5.b(i): Rates of interaction and mortality of marine turtles by species and total, obtained during the year 2023 in the Indian Ocean by the observers sampling programs on board the Spanish purse seine fleet.

Species	Year	Interaction rate (turtles/sets observed)	Mortality rate	Number of turtles
<i>Eretmochelys imbricata</i>	2023	0.0024	0	3
<i>Lepidochelys olivacea</i>	2023	0.0041	0	5
<i>Chelonia mydas</i>	2023	0.0065	0	8
Total turtles	2023	0.0130	0	16

Table 5.b(ii): Observed annual interactions rates of surface longline gear by the LL Spanish fleet on marine turtles for the 2010-2023 period and number of individuals observed during the sets coordinated by the IEO.CSIC (A Coruña) and under the framework of the IEO.CSIC-SGP program.

	Year	Interaction rate	Mortality rate	Number
TURTLES	2010	0	0	0
	2011	0	0	0
	2012	0	0	0
	2013	1.49E ⁻⁰⁴	2.76E ⁻⁰⁵	27
	2014	7.07E ⁻⁰⁵	0	5
	2015	4.37E ⁻⁰⁵	0	2
	2016	3.78E ⁻⁰⁵	9.44E ⁻⁰⁶	4
	2017	3.34E ⁻⁰⁵	0	2
	2018	0	0	0
	2019	2.10E ⁻⁰⁵	0	1
	2020	6.038E ⁻⁰⁵	0	3
	2021	1.979E ⁻⁰⁵	0	3
	2022	9.701E ⁻⁰⁵	9.701E ⁻⁰⁶	10
	2023	2.952E ⁻⁰⁵	3.690E ⁻⁰⁶	8

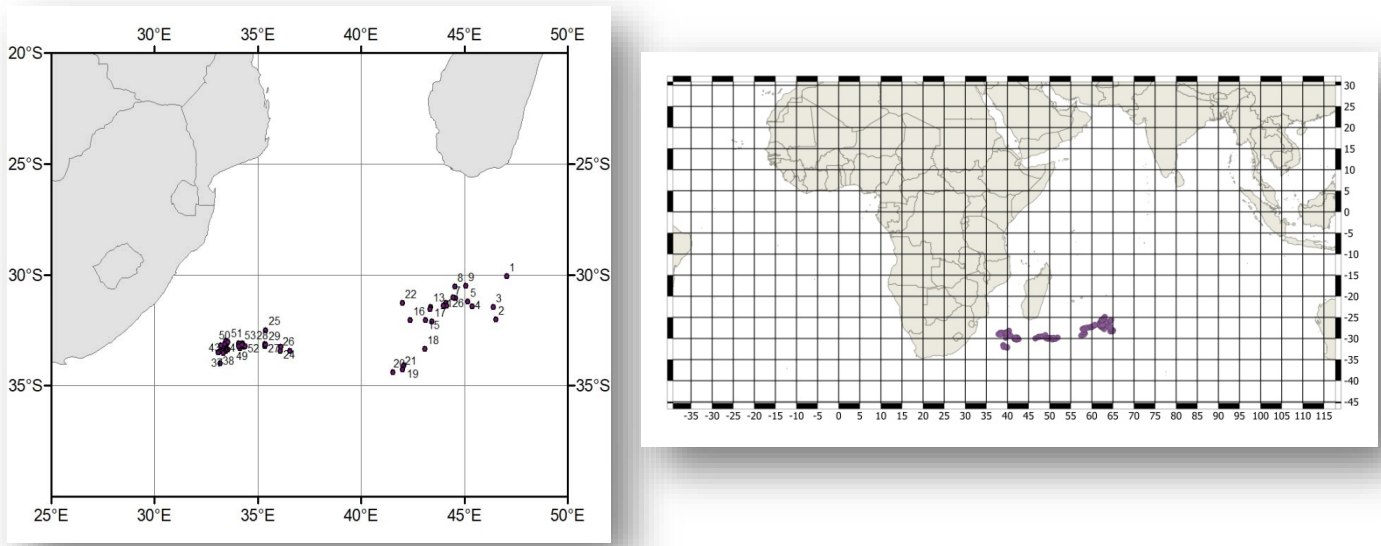


Figure 4.a: Maps showing the spatial distribution of observer coverage by Human Observation, for both: IEO.CSIC (A Coruña) on the left and IEO.CSIC-SGP Program on the right, on board Spanish longline vessels in 2023

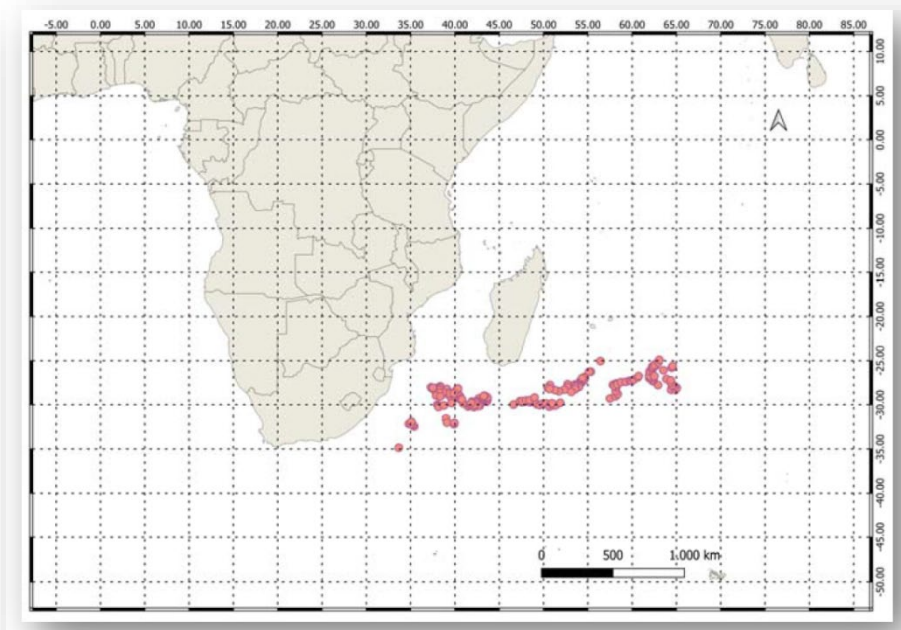


Figure 4.b: Map showing the spatial distribution of observer coverage the IEO.CSIC-SGP on board Spanish longline vessels in 2023 by EMS

5.4 Other ecologically related species (e.g., cetaceans, mobulid rays, whale sharks) [Desirable]

Purse seine

- There were NO records of interactions with cetaceans, except for an opportunistic sighting of a single Odontoceti specimen swimming free and feeding next to a FOB. There were NO fishing operations on the FOB
 - There were NO records of interactions with whale sharks
 - There were 29 records of interactions with *Mobulids* during the sets. 25 of them were part of the bycatch of FOB sets, while 4 were associated to free school sets. 26 of the 29 *Mobulids* were released alive and 2 were discarded dead. The species were: 7 *Mobula* spp., 11 *Mobula mobular*, 3 *Mobula birostris* and 8 *Mobulidae*

Longline

- There has been one record of interaction with a cetacean identified as *Delphinidae*. It was captured and released alive the 16th of June at 29.29S-040.42E. The rate of interaction was $3.690E^{-06}$ per hook and the mortality rate has been null
 - There were NO records of interactions with basking or whale sharks
 - 12 records of interactions with *Mobulids* were observed during the sets. 9 of the 12 were released alive and the 3 were discarded dead

6. NATIONAL DATA COLLECTION AND PROCESSING SYSTEMS [Mandatory]

Purse seine: During 2020, the sampling activities of the landings in Port Victoria (Seychelles) (that are subsequently used in the catch correction process), currently under Spanish coordination, has been stopped due to the outbreak of COVID19 pandemic. This activity was resumed in 2021.

In 2023, A total of 41 trips (approximately a 26.8 % of the total trips performed by this fleet) and 1227 sets (a 28.6% of the total sets) on board 11 of the 13 Spanish tropical tuna purse seiners present in the Indian Ocean have been carried out. They are shown in the **Table 3**, stating the number of days at sea and the number of sets (on free schools or object schools) by vessel performed in 2023. All the sets performed (1014 on object schools and 213 on free schools) were sampled by the observers on board.

Longline: Since the beginning of this fishery in the Indian Ocean in 1993, the implementation of an Information and Sampling Network (IEO.CSIC, A Coruña) has provided the basic data for the study research and for estimating the annual statistics for swordfish by 5°x5° grid squares up to the year 2023. Same size-sex variables of swordfish and blue shark were obtained. The voluntary tagging program is still being carried out tentatively on both, swordfish and bycatch species. Information about interaction with marine turtles, seabirds or others incidental unwanted captures continues being collecting.

Besides, since 2017 the Fisheries General Secretariat carries out an additional National Program of Observers onboard longliners in the IOTC area which continued developed these observations in 2023.

6.1. Logsheet data collection and verification (including date commenced and status of implementation)

The Electronic Fisheries Reporting Logbook was implemented in Spanish fleet according to Council Regulation (EC) No 1224/2009 of 20 November 2009 establishing a Community control system for ensuring compliance with the rules of the common fisheries policy, according to the following calendar:

- since 2010 in fishing vessels of 24 metres' length overall or more
- since 2011 in fishing vessels of 15 metres' length overall or more and less than 24 metres' length overall
- since 2012 in fishing vessels of 12 metres' length overall or more and less than 15 metres' length overall

Currently, at the national level, more than 21% of the vessels use the Electronic Reporting Logbook (Diario Electrónico de Abordo, DEA).

Purse Seine: The Spanish General Fisheries Secretariat (SGP) has implemented a new module of the Electronic Fisheries Reporting Logbook, where the captains and fishing patterns indicate the type of fishing mode (school free or associated), and total catch by species among other information.

6.2. Observer scheme (including date commenced and status; number of observer, include percentage of coverage by fishery. Also, a description of the protocols supporting the observer programs and sampling schemes mentioned in paragraphs 3, 5, 7 and 8 of Res [22-04])

Purse Seine: The EU establishes a Union framework for the collection, management and use of data in the fisheries sector and support for scientific advice regarding the common fisheries policy (CFP) through the ²Regulation (UE) 2017/1004 of the European Parliament and of the Council of 17 May 2017.

Under the coordination of the Spanish General Fisheries Secretariat (SGP), a multi-annual data collection program (PNDB – *Programa Nacional de Datos Básicos*) is implemented with the collaboration of various research centres since 2003.

The Spanish Institute of Oceanography (IEO.CSIC), together with the AZTI Foundation, are in charge of the implementation concerning the '*National Program of Tropical Tuna Fishing*'. Commercial vessels are sampled with Scientific Observers to estimate the bycatch and discards of Spanish-flagged tuna purse seiners operating in tropical waters of the Atlantic and Indian Oceans.

In addition to PNDB, a Memorandum of Understanding (MoU) for the deployment of fisheries observers on tuna purse-seine fleet between TAAF, Mauritius Ministry of Fisheries, Seychelles Fisheries Authority (SFA) and AZTI Foundation was signed in 2014. This agreement has allowed placing local observers on board instructed with the directives of the PNDB.

² Regulation (EU) 2017/1004 of the European Parliament and of the Council of 17 May 2017 on the establishment of a Union framework for the collection, management and use of data in the fisheries sector and support for scientific advice regarding the common fisheries policy and repealing Council Regulation (EC) No 199/2008 (recast). ELI: <http://data.europa.eu/eli/reg/2017/1004/oj>

During each trip, the observers on board must collect the required data by filling in the following FORMS:

- ✓ Form TRIP: general characteristics of the trip (start date, end date, port...)
- ✓ FORM A: route and environmental parameters (types of activity, coordinates, temperature...)
- ✓ FORM B: fishing characteristics (type of banc, tuna discards, bycatch, catch, destiny...)
- ✓ FORM C1: tuna discards length sampling
- ✓ FORM C2: bycatch length and sex sampling
- ✓ FORM D: description and components of floating objects

The main tasks to be performed by these scientific observers during the set follow a PRIORITY order, which is:

✓ 1st Tuna discards and estimation of bycatch:

Tuna discards by species

Tuna Length sampling (FL to the lowest nearest cm)

Bycatch estimation (weight or number) by species

✓ 2nd Sampling of other species:

The whole bycatch will be sampled or a representative sample will be selected whenever its quantity is high. Sampling will be done following a list of priorities by species group, measuring always the size to the lowest nearest cm:

- Sharks and rays
- Turtles
- Billfishes
- Other fishes

✓ 3rd Tuna catch:

The data collected will be obtained from the information provided by the skipper and/or the main engineer, registering the catch weight (in tonnes) by species and the destiny well/s. If any discrepancy were observed, it will be described in the comments of the suitable form.

1. COVERAGE:

The number of sets sampled supposes approximately a 40% of the total number of sets performed by the Spanish tropical tuna purse seiner fleet in the Indian Ocean in 2022.

2. VESSELS AND SETS SAMPLED:

A total of 65 trips (approximately a 44 % of the total trips performed by this fleet) and 1560 sets (a 39,7% of the total sets) on board 11 of the 15 Spanish tropical tuna purse seiners in the Indian Ocean have been carried out (**Table 6.a**). They are shown in the following table, stating the number of days at sea and the number of sets (on free schools or object schools) by vessel performed in 2022. All the sets performed (1241 on object schools and 319 on free schools) were sampled by the observers on board.

Table 6.a: Effort of scientific observation on board Spanish purse seiner fleet, by vessel, indicating the days at sea, the number of sets by fishing mode and the number of trips (unloadings).

IOTC vessel code	Days at sea	N sets on Free schools	N sets on Object schools	Total number of sets	Number of trips
IOTC00907	125	39	153	192	6
IOTC000164	58	4	68	72	3
IOTC000161	156	55	155	210	6
IOTC017253	134	34	151	185	7
IOTC000172	26	5	44	49	1
IOTC000175	78	1	98	99	5
IOTC015353	110	1	29	30	1
IOTC015569	162	67	166	233	8
IOTC000812	17	31	3	34	1
IOTC008281	53	4	87	91	2
IOTC016254	33	0	32	32	1
TOTAL	952	213	1014	1227	41

3. FISHING GROUND:

The following figure shows the position of the sets performed in the 41 trips sampled, including a graphical distinction between free schools (FSC-in yellow) and object schools (FOB-in blue), over the whole fleet effort in 2023 (3418 FOB-set positions represented in grey and 873 FSC-set positions represented in light blue):

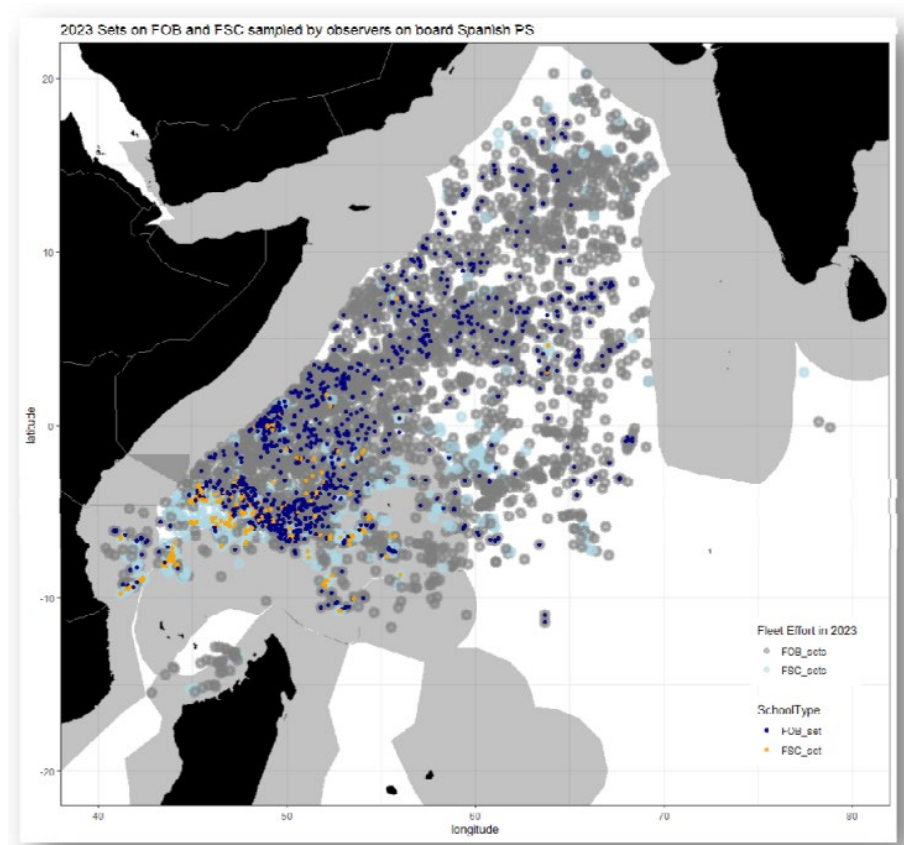


Figure 5: Distribution of the observed sets on board Spanish purse seiners in 2023. Key: Grey, Total Log School associated sets (FOB); Light blue, Total Free-Swimming School sets (FSC); Blue, Observed FOB sets; Yellow, Observed FSC sets.

4. TARGET CATCHES AND DISCARDS:

The following table (**Table 6.b**) specifies the observed tuna catches by species (in kilograms), depending on whether they have been retained or discarded, and the number and weight of the individuals sampled by scientific observers.

Table 6.b: Observed tuna catches and discards (in Kg) by species on board tropical tuna purse seiner vessels in 2023. The number and weight (kg) of individuals measured is included.

Tuna species	Observed retained catches (Kg)	Observed Discards (Kg)	No of individuals measured*	Weight (Kg) of the measured individuals*
ALB (<i>Thunnus alalunga</i>)	1200	-	-	-
BET (<i>Thunnus obesus</i>)	3725969	30305	1245	621.716
BLT (<i>Auxis rochei</i>)	-	4220	8	7.7
FRI (<i>Auxis thazard</i>)	171500	88720.1	2604	929.996
FRZ (<i>Auxis spp.</i>)	87600	25472	2006	778.892
KAW (<i>Euthynnus affinis</i>)	7000	5.5	176	57.502
SKJ (<i>Katsuwonus pelamis</i>)	19132612	165107.6	4044	1511.245
YFT (<i>Thunnus albacares</i>)	11010048	44540	1955	827.607

* all measurements of tuna species belong to discarded fraction

5. BYCATCH:

Apart from tuna species, a total of 65 species and taxa belonging to species groups associated to tropical tuna fisheries have been identified and measured during the sampled trips, having an approximate global retained catch of 1514758.6 kg, an equivalent to 30128 individuals.

The discarded fraction of these taxa reached an estimation of 119043 individuals. A total of 18387 individuals were sampled (from the retained and the discarded fraction), most of them belonging to the species DOL (*Coryphaena hippurus*), CNT (*Canthidermis maculata*), RRU (*Elagatis bipinnulata*), FAL (*Carcharhinus falciformis*) and WAH (*Acanthocybium solandri*).

The highest amount of discarded associated catches, considering the number of individuals, corresponds to the species, in order: CNT (*Canthidermis maculata*), RRU (*Elagatis bipinnulata*), ALM (*Aluterus monoceros*), DOL (*Coryphaena hippurus*) and FAL (*Carcharhinus falciformis*).

For the retained fraction, the most numerous species were: DOL (*Coryphaena hippurus*), CNT (*Canthidermis maculata*), RRU (*Elagatis bipinnulata*), and WAH (*Acanthocybium solandri*).

Considering only the weight retained, the highest amount observed corresponds to, in order: DOL (*Coryphaena hippurus*), RRU (*Elagatis bipinnulata*), WAH (*Acanthocybium solandri*), GBA (*Sphyræna barracuda*) and CNT (*Canthidermis maculata*).

Longline: Since the beginning of this fishery in the Indian Ocean in 1993, the implementation of an Information and Sampling Network (IEO.CSIC, A Coruña) has provided the basic data for the study research and for estimating the annual statistics for swordfish by 5°x5° grid squares up to the year 2023, including an observer's program. The main task is to collect catch and effort data, as well as to sample the size of target species, the species composition of catches to the most detailed taxonomic level possible, and to observe

interactions with by-catch and incidental species. At the same time, information on fishing operations and gear configuration was collected. The scientific work protocol of the samplers is based on recording catches of target species, collecting biological and biometric information and sampling for various studies. They also record the number of individuals affected by false killer whale attacks. In the case of sharks, reproductive factors and the presence/absence of embryos are sometimes also studied.

Since 2017 the Fisheries General Secretariat carries out an additional National Program of Observers onboard longline vessels in the IOTC area, which continued developed these observations in 2023. The observed sets are being covered by EMS (Electronic Monitoring Systems) and human observers on board.

The observed coverage by year and gear is shown in **Table 6.c**.

Table 6.c: Annual observed coverage in number of sets (purse seine) or number of hooks (longline) for the last 5-year period (2019-2023)

	Purse Seine	Longline
YEAR	% coverage (nsets)	% coverage (Hooks*1000)
2019	23	2
2020	14	2
2021	24	7
2022	40	5
2023	29	8

6.3. Port sampling programme [Mandatory]

In January 2019, Spain reinforced its sampling team at the port of Victoria (Seychelles), the main discharge port for the Spanish freezer purse seine fleet. Data for 2020 could not be provided due to the COVID-19 pandemic and a disagreement between the Spanish private companies—who provided services to the Spanish administration—and the administration itself.

Currently, the port sampling team consists of a Spanish coordinator, three local samplers, and one Spanish IT technician responsible for managing the databases. In 2023, a total of 131,650 tuna were sampled during landings by the Spanish purse seine fleet in Victoria. Considering that the EU-Spanish purse seiner fleet made 148 landings in Victoria, the sampling effort covered approximately 76% of the yearly unloading (112 landings).

Regarding the longline fleet, Spain has not established a port sampling program.

Table 7 displays the number of fishes sampled and counted at port, along with the number of fishing trips, vessels, and sets by species and month.

Table 7: Number of vessel trips and fish sampled at port by species during 2023 in landings by the Spanish purse seine fleet in Victoria, Seychelles. The number of sets where the species were sampled is also indicated.

FAO code	Species	N length measures at port	N fishes counted at port	n fishing trips sampled	n unique vessels sampled
ALB	<i>Thunnus alalunga</i>	51	51	3	2
BET	<i>Thunnus obesus</i>	6744	6744	90	13
FRI	<i>Auxis thazard</i>	5453	5453	75	13
KAW	<i>Euthynnus affinis</i>	16	16	7	5
SKJ	<i>Katsuwonus pelamis</i>	22849	85886	89	13
YFT	<i>Thunnus albacares</i>	33500	33500	103	13
Total		68613	131650		

6.4. Actions taken to monitor catches & manage fisheries for Striped Marlin, Black Marlin, Blue Marlin and Indo-pacific Sailfish [Mandatory]

In purse seiner and longline fisheries, catches of these billfish species are monitored by onboard human observers, with coverage rates of 40% and 5%, respectively. Additionally, fishermen are required to report all catches through the ERS, which is overseen by the SGP.

Table 8: Quantities (tons) by species and gear landed in ports located in the IOTC area competence.

Species (AL3)	Purse seiner (t)	Longliner (t)
ALB	27.09	2.53
ALM	0.58	0.00
ALN	0.03	0.00
BAO	0.00	0.00
BAT	0.01	0.00
BEN	3.57	0.00
BET	14,111.00	50.17
BIL	0.02	0.00
BLM	4.65	10.65
BLT	0.16	0.00
BSH	0.07	3,471.26
BTS	0.09	0.00
BUM	3.28	2.75
CFW	4.82	0.00
CGX	0.59	0.00
CNT	4.82	0.00
CXS	0.59	0.00
DOL	94.39	11.96
FRZ	1,072.23	0.00
GBA	5.22	0.00
KAW	0.59	0.00
KYC	0.03	0.00
KYP	0.04	0.00
KYV	0.11	0.00
LEC	0.00	41.13
LOB	1.33	0.00
MLS	2.38	13.77
MSD	0.48	0.00
NAU	0.01	0.00
NGT	0.02	0.00
OIL	0.00	1.88
RRU	16.63	0.00
SDX	0.11	0.00
SFA	0.15	32.22

Species (AL3)	Purse seiner (t)	Longliner (t)
SKJ	80,066.81	0.03
SMA	0.00	396.59
SSP	0.00	8.92
SWO	0.00	2,953.88
UDD	0.03	0.00
UKK	0.03	0.00
URU	0.00	0.00
USE	0.05	0.00
WAH	11.76	1.06
YFT	39,205.65	42.28
YTL	0.26	0.00

Table 9: Quantities (tons) by species and gear transhipped at ports located in the IOTC area of competence:

Gear	Species (AL3)	TOTAL
LONGLINER	ALB	2.29
LONGLINER	BET	38.81
LONGLINER	BLM	23.74
LONGLINER	BSH	1,564.26
LONGLINER	BUM	0.65
LONGLINER	DOL	9.19
LONGLINER	GBA	0.07
LONGLINER	LEC	32.37
LONGLINER	MLS	8.18
LONGLINER	OIL	1.38
LONGLINER	SAI	0.45
LONGLINER	SFA	11.90
LONGLINER	SMA	302.40
LONGLINER	SPF	1.81
LONGLINER	SSP	2.70
LONGLINER	SWO	2,008.23
LONGLINER	WAH	0.79
LONGLINER	YFT	33.85
PURSE SEINER	ALB	19.16
PURSE SEINER	BET	13,307.45
PURSE SEINER	BIL	6.10
PURSE SEINER	BLM	0.30
PURSE SEINER	DOL	45.38
PURSE SEINER	FRI	122.94
PURSE SEINER	SKJ	67,350.43
PURSE SEINER	WAH	1.47
PURSE SEINER	YFT	30,461.32

6.5. Gillnet observer coverage and monitoring [Desirable]

EU.Spain gillnetters are absent in the Indian Ocean.

6.6 Sampling plans for mobulid rays [Mandatory]

As there are no *Mobulids* retained catches, there is no plan regarding this species.

The observer programs on board longline and purse seiner vessels monitor all the incidental catches of these species, take some biological parameters (straight disk length and sex) and record their destiny (alive or dead) when possible. If a tagging program is active, onboard observers are responsible for placing the tags and recording all available information in the event of a recovery.

7. NATIONAL RESEARCH PROGRAMS [Desirable]

Several internal projects at the Spanish Institute of Oceanography (IEO.CSIC) are responsible for the scientific monitoring of Spanish tuna fisheries in the Indian Ocean.

7.1. National research programs on blue shark

National Program not available

7.2. National research programs on Striped Marlin, Black Marlin, Blue Marlin and Indo-pacific Sailfish

National Program not available

7.3. National research programs on sharks

National Program not available

7.4. National research programs on oceanic whitetip sharks

National Program not available

7.5. National research programs on marine turtles

National Plan for the reduction of by-catches is carried out by MITERD (the Spanish Ministry for Environmental Affairs), approved in 2022. Among the implied species, the turtles are included.

In addition, MITERD, works in coordination with the SGP and in the framework of a Marine Biodiversity Working Group of the Interministerial Commission for Marine Strategies that meets periodically.

7.6. National research programs on thresher sharks

National Program not available

**8. IMPLEMENTATION OF SCIENTIFIC COMMITTEE RECOMMENDATIONS AND RESOLUTIONS OF THE IOTC RELEVANT TO THE SC.
[Mandatory]**

Respond with progress made to recommendations of the SC and specific Resolutions relevant to the work of the Scientific Committee [to be updated annually to include most recent Conservation and Management Measures adopted by the Commission].

Purse seine: Vessels are tracked by the Spanish National Fishery Authority and are also required to fill in EU fishery logbooks system to be presented to the pertinent authorities and well as VMS and other requirements for fishing.

This surface longline fleet consists of vessels that operate far from their home ports, sometimes not returning for several years. These vessels share similar structural and operational characteristics, undertaking exceptionally long trips. They may even shift between oceans between trips, depending on their administrative permissions.

Longline: Vessels are tracked by the Spanish National Fishery Authority and are also required to fill in EU fishery logbooks system to be presented to the pertinent authorities and well as VMS and other requirements for fishing.

Table 9. Scientific requirements contained in Resolutions of the Commission, adopted between 2012 and 2023.

Res. No.	Resolution	Scientific requirement	CPC progress
12/04	On the conservation of marine turtles	Paragraphs 3, 4, 6–10	<p>Each year the report of the implemented measures and the interaction with sea turtles is provided by Spanish Fisheries Secretariat. The report of the interaction in 2023 with marine turtles was provided on 26/07/2024.</p> <p>Interactions and mortality in marine turtles are annually reported by Spain. The associations are involved in projects to inform the fishermen with the best techniques to release and to manage turtles in accordance with FAO requirements (achieved thanks to different initiatives such as FIP in longline fleet, “Código de Buenas Prácticas” for purse seine fleet)</p> <p>The Instituto Español de Oceanografía (IEO.CSIC) elaborates studies related to marine turtles’ interactions and measures to reduce the impact of fishing in them.</p> <p>Reference of the studies about bycatch:</p> <p>Ruiz J., F.J. Abascal, P. Bach, J.C. Báez, P. Cauquil, M. Grande, I. Krug, J. Lucas, H. Murua, M. L. Ramos Alonso & P.S. Sabarros (2018). Bycatch of the European, and associated flag, purse-seine tuna fishery in the Indian Ocean for the period 2008-2017. IOTC-2018-WPEB14-15. Working Party on Ecosystems and Bycatch (WPEB), Mon, 10/09/2018 (All day) to Fri, 14/09/2018. Cape Town, South Africa.</p> <p>Báez J.C., M^a. L. Ramos & I.A. Czerwinski (2019). Analysing the bycatch taxonomic structure changes from observers’ data on board Spanish purse seiners in the Indian Ocean. IOTC-2019-WPEB15-40. Working Party on Ecosystems and Bycatch (WPEB), IOTC meeting, 03/09/2019 to 07/09/2019, La Reunión (France).</p>
12/09	On the conservation of thresher sharks (family alopiidae) caught in association with fisheries in the IOTC area of competence	Paragraphs 4–8	<p>Thresher shark is a forbidden species to be caught according to the temporary fishing permission for longliners fishing in the Indian Ocean (a permission mandatory to fish in the IOTC area) and the Spanish law (Orden ARM/2689/2009 & Orden AAA/658/2014).</p> <p>If accidentally caught, it is mandatory to report the catches in the ERS.</p> <p>As the Spanish fleet is not directed to catch these species, nor there are no interactions reported, these species aren’t, by the moment, subject of study for the IEO.CSIC.</p>
13/04	On the conservation of cetaceans	Paragraphs 7–9	<p>Cetaceans are a prohibited species for fishing in Spain. Since the Spanish fleet does not catch these species and no interactions have been reported, they are currently not a subject of study for the IEO.CSIC. National plan for the reduction of by-catches is carried out by MITERD (the Spanish</p>

Res. No.	Resolution	Scientific requirement	CPC progress
			Ministry for Environmental Affairs), approved in 2022. Among the implied species, cetaceans are included.
13/05	On the conservation of whale sharks (<i>Rhincodon typus</i>)	Paragraphs 7– 9	Whale sharks are a prohibited species for fishing under the TAC/Quota regulation. Since the Spanish fleet does not catch these species and no interactions have been reported, they are currently not a subject of study for the IEO.CSIC.
13/06	On a scientific and management framework on the conservation of shark species caught in association with IOTC managed fisheries	Paragraph 5–6	<p>It is forbidden to catch whitetip sharks, and it is mandatory to report bycatches of all species daily in the Electronic Reporting System. Additionally, efforts must be made to release whitetip sharks in a manner that minimizes harm.</p> <p>Reference of the studies about whitetip sharks: Ramos-Cartelle, A., B. García-Cortés, J. Fernández-Costa, J. Mejuto (2012). Standardized catch rates of the oceanic whitetip shark (<i>Carcharhinus longimanus</i>) from observations of the Spanish longline fishery targeting swordfish in the Indian Ocean during the 1998-2011 period. IOTC-2012-WPEB08-27 (2012).</p> <p>García-Cortés, B., A. Ramos-Cartelle, I. González-González, J. Mejuto (2012). Biological observations of oceanic whitetip shark (<i>Carcharhinus longimanus</i>) on Spanish surface longline fishery targeting swordfish in the Indian Ocean over the period 1993-2011. IOTC-2012-WPEB08-25 (2012).</p> <p>Lopetegui L., Poos J.J, Arrizabalaga H., Guirhem G., Murua H., Lezama-Ochoa N., Griffiths S., Ruiz Gondra J., Sabarros P.S., Báez J.C. & Juan-Jordá, M.J. (2021). A preliminary habitat suitability model for oceanic whitetip shark in the western Indian Ocean. 17th Working Party on Ecosystems and Bycatch: Assessment Meeting, 13-17th September online. IOTC-2021-WPEB17(AS)-25.</p> <p>Báez J.C., A.M. Barbosa, M.L. Ramos, P. Pascual, J. Ruiz, P.S. Sabarros, M.Tolotti, P. Bach, H. Murua & F. Abascal (2019). Forecasting Oceanic Whitetip shark potential global distribution in a context of climatic change. Joint t-RFMO By-catch WG Doc. No. BYC-13/2019 December 11, 2019. Oporto (Portugal) 16-18 de diciembre 2019. Resumen</p> <p>Pérez, A., Ramos, M-L., Sierra, V. and Báez, J-C (2024). Undetected silky sharks (<i>Carcharhinus falciformis</i>) in the wells of the tropical tuna purse seine fleet in the Indian Ocean. Fisheries Research 278 (2024) 107109</p>
15/01	On the recording of catch and effort by fishing vessels in the IOTC area of competence	Paragraphs 1–10	<p>Electronic Reporting System is mandatory in accordance with Regulation 1224/2009.</p> <p>The updated logbook template was sent to the EU Commission on 06/09/2021, and has not been requested in this context since then.</p>
15/02	Mandatory statistical reporting	Paragraphs 1–7	1. Estimated catches are sent as part of the

Res. No.	Resolution	Scientific requirement	CPC progress
	requirements for IOTC Contracting Parties and Cooperating Non-Contracting Parties (CPCs)		<p>obligations each year. 2023 Estimated catches provided 26/07/2024.</p> <p>2. Reports of the interaction and measures implemented related to sea birds and marine turtles are sent regularly. For 2023, there was one record of interaction with sea birds. Marine turtles interactions were, together with sea birds interactions, reported on 26/07/2024. There were 24 interactions with marine turtles and 1 interaction with sea birds.</p> <p>4. ERS is mandatory for Spanish vessels.</p> <p>5. Size data has been provided regularly, for 2023, data provided on 26/07/2024.</p> <p>6. FADs obligations are fulfilled every year, in 2023, active vessels 31/01/2024, information about the daily FADs use provided monthly.</p> <p>7. Timeliness fulfilled or causes reported.</p>
17/05	On the conservation of sharks caught in association with fisheries managed by IOTC	Paragraphs 6, 9, 11	<p>The statistical requirements about sharks are sent annually to the EU Commission. Estimated catches provided for sharks were fully (PS+LL) sent on 26/07/2024.</p> <p>Reference of the studies about sharks in IOTC area: Murua, H., Abascal, F.J., Amade, J., Ariz, J., Bach, P., Chavance, P., Coelho, R., Korta, M., Poisson, F., Neves, M., Seret, B. (2013). Provision of scientific advice for the purpose of the implementation of the EUPOA sharks. Final Report. European Commission, Studies for Carrying out the Common Fisheries Policy (MARE/2010/11 - LOT 2).</p> <p>Poisson, F., Abascal, F., Ellis, J.R., Chavance, P., Bach, P., Santos, M.N., Séret, B., Korta, M., Coelho, R., Ariz, J., Murua, H. (2016). Technical mitigation measures for sharks and rays in tuna and tuna-like fisheries: turning possibility into reality. Aquatic Living Resources 29, 402</p> <p>García-Cortés, B., Ramos-Cardelle, A., Mejuto, J., Carroceda A. and Fernández-Costa, J. (2021). Biological observations of shortfin mako shark (<i>Isurus oxyrinchus</i>) on Spanish surface longline fishery targeting swordfish. IOTC-2021-WPEB17(AS)-INF07.</p> <p>Queiroz, N., Humphries, N.E., Couto, A., Vedor, M., da Costa, I, Sequeira, A.M.M., Mucientes, G., Santos, A.M., Abascal, F.J. et al. (2019) Global spatial risk assessment of sharks under the footprint of fisheries. Nature 572, 461-466.</p> <p>Brunel T., R. Coelho, G. Merino, J. Ortiz De Urbina, D. Rosa, C. Santos & H. Murua, P. Bach, S. Saber & D. Macias (2018). A preliminary stock assessment for the shortfin mako shark in the Indian ocean using a data-limited approach. IOTC-WPEB14-2018-033. Working Party on Ecosystems and Bycatch (WPEB), Mon, 10/09/2018 (All day) to Fri, 14/09/2018. Cape</p>

Res. No.	Resolution	Scientific requirement	CPC progress
			<p>Town, South Africa.</p> <p>Murua, H., J. Santiago, R. Coelho, I. Zudaire, C. Neves, D. Rosa., I. Zudaire, Y. Semba, Z. Geng., P. Bach, H. Arrizabalaga, P. Bach, J.C. Baez, M.L. Ramos, J.F. Zhu & J. Ruiz (2018). Updated Ecological Risk Assessment (ERA) for shark species caught in fisheries managed by the Indian Ocean Tuna Commission (IOTC). Submitted to 21th IOTC Scientific Committee. IOTC-2018-SC21-14_Rev.1.</p> <p>Diallo A, Travassos T.M., Sabarros P., Dagorn L., Deneubourg J.L., Murua H., Ruiz J., Ramos M.L., Báez J.C., Abascal F., Pascual P. & Capello M. (2019). Silky Shark Population Trend In The Indian Ocean Derived From Its Associative Behaviour With Floating Objects. IOTC-2019-WPEB15-23. Working Party on Ecosystems and Bycatch (WPEB), IOTC meeting, 03/09/2019 to 07/09/2019, La Reunion (France).</p> <p>Diallo A., M.T. Tolotti, P. Sabarros, L. Dagorn, J.L. Deneubourg, H. Murua, J. Ruiz, M.L. Ramos, J.C. Báez, F.J. Abascal, P.J. Pascual & M. Capello (2019). Deriving abundance indices for pelagic sharks based on their associative behaviour with floating objects. Joint t-RFMO By-catch WG Doc. No. BYC-23/2019. Oporto (Portugal) 16-18 de diciembre 2019.</p> <p>Tolotti, M., Sabarros, P.S., Bach, P., Grande, M., Ruiz, J., Murua, H., Coelho, R., Abascal, F., Báez, J.C., Pascual, P., Ramos, M.L., Shahid, U. and Juan-Jordá, M.J. (2019). In support of the IOTC ecosystem report card: Indicators for non-retained sharks and rays. 15th Working Party on Ecosystems and Bycatch. Indian Ocean Tuna Commission. IOTC-2019-WPEB15-25_Rev1</p> <p>Fernández-Costa, J., A. Ramos-Cartelle, B. García-Cortés and J. Mejuto (2024). Updated standardized catch rates of shortfin mako (<i>Isurus oxyrinchus</i>) inferred from the Spanish surface longline fishery in the Indian Ocean during the period 2001-2022. IOTC-2024-WPEB20(DP)-21</p>
18/02	On management measures for the conservation of blue shark caught in association with IOTC fisheries	Paragraphs 2-5	<p>It is mandatory to notify all the catches and bycatch in the ERS, according to Regulation 1224/2009.</p> <p>Fernández-Costa J., A. Ramos-Cartelle, B. García-Cortés, J. Mejuto. (2015). Standardized catch rates for the blue shark (<i>Prionace glauca</i>) caught by the Spanish longline in the Indian Ocean during the 2001-2013 period. IOTC-2015-WPEB11-25.</p> <p>Reference of the studies about blue sharks:</p> <p>Coelho, R., J. Mejuto, A. Domingo, K. Liu, E. Cortés, K. Yokawa, F. Hazin, F. Arocha, Ch. da Silva, B. García-Cortés, A.M. Ramos-Cartelle, P. Lino, R. Forselledo, S. Ohshimo, F. Carvalho, M. Neves. (2018). Distribution patterns and population structure of the blue shark (<i>Prionace glauca</i>) in the Atlantic and Indian Oceans. Fish and Fisheries. 19(1):</p>

Res. No.	Resolution	Scientific requirement	CPC progress
			90-106 (https://doi.org/10.1111/faf.12238). Fernández-Costa, J., Ramos-Cartelle, A. and Mejuto, J. (2021). Updated standardized catch rates in biomass for the blue shark (<i>Prionace glauca</i>) caught by the Spanish surface longline fleet in the Indian Ocean during the 2001-2019 period. IOTC-2021-WPEB17(DP)-09.
18/05	On management measures for the conservation of the Billfishes: Striped marlin, black marlin, blue marlin and Indo-Pacific sailfish	Paragraphs 7 – 11	It is mandatory to notify all the catches and bycatches in the ERS, according to Regulation 1224/2009 Data on discards and retained catches provided (26/07/2024).
18/07	On measures applicable in case of non-fulfilment of reporting obligations in the IOTC	Paragraphs 1, 4	Report of Implementation is annually sent to the EU Commission. For 2023, report of implementation sent on 18/03/2024. Nominal catches provided in 2023 as stated by the IOTC for purse seiners and longliners (26/07/2024).
19/01	On an Interim Plan for Rebuilding the Indian Ocean Yellowfin Tuna Stock in the IOTC Area of Competence (<i>If not provided under Res 21/01 below</i>)	Paragraph 22	European CPCs have made an effort in order to understand YFT dynamics and produce CPUE abundance indexes and catch estimates by fishery type: Correa, G., Uranga, J., Kaplan D., Merino, G. and Ramos, M-L. (2024). Standardized catch per unit effort of yellowfin tuna in the Indian Ocean for the European purse seiner fleet operating in floating objects. IOTC-2024-WPTT26(DP)-11. Kaplan, D., Correa, G., Ramos, M-L., Duparc, A., Uranga, J., Santiago, J., Floch, L., Báez, J-C., Rojo, V., Pascual, P. and Merino, G. (2024). Standardized CPUE abundance indices for adult yellowfin tuna caught in free-swimming school sets by European purse-seine fleet in the Indian Ocean, 1991-2022. IOTC-2024-WPTT26(DP)-13. Abascal, F., Kaplan, D., Gaertner, D., Ramos, M-L., Duparc, A., Depetris, M. and Báez J-C. Scientific catch estimation for the global FAD tropical purse seine fishery in the Indian Ocean
19/03	On the Conservation of Mobulid Rays Caught in Association with Fisheries in the IOTC Area of Competence	Paragraph 11	There were 39 interactions of Mobulids by Spanish fleet between in 2023 in the Indian Ocean, all the individuals were released
21/01	On an Interim Plan for Rebuilding the Indian Ocean Yellowfin Tuna Stock in the IOTC Area of Competence (<i>If not provided under Res 19/01 above</i>)	Paragraph 23	European CPCs have made an effort in order to understand YFT dynamics and produce CPUE abundance indexes and catch estimates by fishery type: Correa, G., Uranga, J., Kaplan D., Merino, G. and Ramos, M-L. (2024). Standardized catch per unit effort of yellowfin tuna in the Indian Ocean for the European purse seiner fleet operating in floating objects. IOTC-2024-WPTT26(DP)-11. Kaplan, D., Correa, G., Ramos, M-L., Duparc, A., Uranga, J., Santiago, J., Floch, L., Báez, J-C., Rojo, V., Pascual, P. and Merino, G. (2024). Standardized



Res. No.	Resolution	Scientific requirement	CPC progress
			<p>CPUE abundance indices for adult yellowfin tuna caught in free-swimming school sets by European purse-seine fleet in the Indian Ocean, 1991-2022. IOTC-2024-WPTT26(DP)-13.</p> <p>Abascal, F., Kaplan, D., Gaertner, D., Ramos, M-L., Duparc, A., Depetris, M. and Báez J-C. Scientific catch estimation for the global FAD tropical purse seine fishery in the Indian Ocean</p>
22/04	On a regional observer scheme	Paragraph 12	<p>Since 2017 an observer program is implemented in the longliners fleet, to reach the 5% of mandatory observation in that fleet.</p> <p>In the purse seine fleet, the observation reaches a 100%, according to their “<i>Código de Buenas Prácticas</i>”.</p> <p>The achievement of the observation in each fleet has been positive, with the exemption of problems in 2020 due to the COVID pandemic.</p>
23/07	On reducing the incidental bycatch of seabirds in longline fisheries.	Paragraphs 3–7	<p>Each year the report of interaction with sea birds is provided by Spanish Fisheries Secretariat. The report of the interaction in 2023 with sea birds was provided on 26/07/2024. National plan for the reduction of by-catches is carried out by MITERD (the Spanish Ministry for Environmental Affairs), approved in 2022. Among the implied species, sea birds are included</p> <p>On the other hand, the Spanish vessels are required to annually fill out a form to include measures that will be carried out in order to prevent the interactions with sea birds.</p>

9. LITERATURE CITED [Mandatory]

9. LITERATURE CITED

- BÁEZ, J.C., M^a.L. RAMOS, M- HERRERA, H. MURUA, J.L. CORT, S. DENIZ, V. ROJO, J. RUIZ, P.J. PASCUAL-ALAYÓN, A. MUNIATEGI, A. PEREZ SAN JUAN, J. ARIZ, F. FERNÁNDEZ & F. ABASCAL (2020). Monitoring of Spanish flagged purse seine fishery targeting tropical tuna in the Indian ocean: Timeline and history. *Marine Policy*, 119: 104094. <https://doi.org/10.1016/j.marpol.2020.104094>
- Coelho, R., J. Mejuto, A., K. Liu, E. Cortés, K. Yokawa, F. Hazin, F. Arocha, Ch. da Silva, B. García-Cortés, A.M. Ramos-Cartelle, P. Lino, R. Forselledo, S. Ohshimo, F. Carvalho, M. Neves. 2017. Distribution patterns and population structure of the blue shark (*Prionace glauca*) in the Atlantic and Indian Oceans. *Fish and Fisheries* 207; 00:1-17 Vol 19 Issue 1, pages: 90-106 (<https://doi.org/10-1111/faf:12238>).
- COUNCIL REGULATION (EC) No 1185/2003 of 26 June 2003 on the removal of fins of sharks on board vessels, amended by COUNCIL REGULATION (EC) No 605/2013
- Espino, D., B. García-Cortés, J. Mejuto. 2010. Relationships between size, body weights and fin weight of the blue shark (*Prionace glauca*) caught as bycatch in the Spanish surface longline fishery in the Indian ocean. *Collect. Vol. Sci. Pap. ICCAT*, 65(6): 2183-2194 (2010).
- Fernández-Costa J., A. Ramos-Cartelle, B. García-Cortés, J. Mejuto. 2014. Standardized catch rates for the Swordfish (*Xiphias gladius*) caught by the Spanish longline in the Indian ocean during the 2001-2012 period. IOTC-2014-WPB12-20 (2014).
- Fernández-Costa J., A. Ramos-Cartelle, B. García-Cortés, J. Mejuto. 2015. Standardized catch rates for the blue shark (*Prionace glauca*) caught by the Spanish longline in the Indian Ocean during the 2001-2013 period. IOTC-2015-WPEB11-25.
- Fernández-Costa J., B. García-Cortés, A. Ramos-Cartelle, J. Mejuto. 2017. Updated standardized catch rates of swordfish (*Xiphias gladius*) caught by the Spanish surface longline fleet in the Indian ocean during the 2001-2015 period. IOTC-2017-WPEB15-16.
- García-Cortés, B., J. Mejuto. 2000. A general overview on the activity of the Spanish surface longline fleet targeting swordfish (*Xiphias gladius*) in the Indian Ocean for the period 1993-1999. IOTC Proceedings no.3 (2000): 140-153, WPB-00-01 (2000).
- García-Cortés, B., J. Mejuto. 2001. Preliminary scientific estimations of by-catches landed by the Spanish surface longline fleet targeting swordfish (*Xiphias gladius*) in the Indian Ocean: years 1993-2000. IOTC WPB Proceedings no.4:19-23, WPDCS01-02 (2001).
- García-Cortés, B., J. Mejuto. 2002. Size-weight relationships of the swordfish (*Xiphias gladius*) and several pelagic shark species caught in the Spanish surface longline fishery in the Atlantic, Indian and Pacific Ocean. *Collect. Vol. Sci. Pap. ICCAT*, 54(4):1132-1149 (2002).
- García-Cortés, B., J. Mejuto, A. Ramos-Cartelle. 2003. A description of the activity of the Spanish surface longline fleet targeting swordfish (*Xiphias gladius*) in the Indian ocean with special reference to the year 2001. IOTC WPB-2003 IOTC Proceedings no.6:280-286 (2003).
- García-Cortés, B., J. Mejuto. 2003. Sex ratio patterns and gonadal indices of the swordfish (*Xiphias gladius*) caught by the Spanish surface longline fleet in the Indian Ocean. IOTC WPB-2003-04. Proceedings no.6:287-299 (2003).
- García-Cortés, B., J. Mejuto, A. Ramos-Cartelle. 2004. A general overview of the activity of the Spanish surface longline fleet targeting swordfish (*Xiphias gladius*) in the Indian Ocean during the year 2002. IOTC-2004-WPB-05 (2004).
- García-Cortés, B., J. Mejuto. 2005. Scientific estimations of bycatch landed by the Spanish surface longline fleet targeting swordfish (*Xiphias gladius*) in the Indian Ocean: 2001-2003 period. IOTC-2005-WPBy-14 (2005).
- García-Cortés, B., J. Mejuto, A. Ramos-Cartelle. 2008. Activity of the Spanish surface longline fleet targeting swordfish (*Xiphias gladius*) in the Indian Ocean during the period 2003-2006. IOTC-2008-WPB-05 (2008).
- García-Cortés, B., Ramos-Cartelle, A. and Mejuto, J. 2008. Activity of the Spanish surface longline fleet targeting swordfish (*Xiphias gladius*) in the Indian Ocean during the period 2003-2006. IOTC-2008-WPB-05: 12pp.

- García-Cortés, B., A. Ramos-Cartelle, I. González-González, J. Mejuto. 2012. Biological observations of oceanic whitetip shark (*Carcharhinus longimanus*) on Spanish surface longline fishery targeting swordfish in the Indian Ocean over the period 1993-2011. IOTC-2012-WPEB08-25 (2012).
- Kasapidis, P., X. Valeiras, B. García-Cortés, A. Magoulas, J. Mejuto. 2008. Genetic and growth profiles of several specimens of swordfish (*Xiphias gladius*) tagged and recaptured in the Atlantic, Indian and Pacific oceans. Collect. Vol. Sci. Pap. ICCAT, 62(4):1142-1151 (2008).
- Mejuto, J., J.M. de la Serna, B. García-Cortés. 1995. An overview of the sex-ratio at size of the swordfish (*Xiphias gladius* L.) around the world: similarity between different strata. Collect. Vol. Sci. Pap. ICCAT, 44(3):197-205 (1995).
- Mejuto, J., B. García-Cortés. 2005a. Reproductive and reproduction parameters of the blue shark *Prionace glauca*, on the basis of on-board observations at sea in the Atlantic, Indian and Pacific Oceans. Collect. Vol. Sci. Pap. ICCAT, 58(3):951-973 (2005).
- Mejuto, J., B. García-Cortés, A. Ramos-Cartelle. 2005b. Tagging-recapture activities of large pelagic sharks carried out by Spain or in collaboration with the tagging programs of other countries. IOTC 2005-WPBy-INF02 (2005).
- Mejuto, J., B. García-Cortés, A. Ramos-Cartelle. 2006a. An overview of research activities on swordfish (*Xiphias gladius*) and the by-catch species, caught by the Spanish longline fleet in the Indian ocean. IOTC 2006-WPB-2006-11:1-23 (2006).
- Mejuto, J., B. García-Cortés, A. Ramos-Cartelle. 2006b. Annex an overview of research activities on swordfish (*Xiphias gladius*) and the by-catch species, caught by the Spanish longline fleet in the Indian ocean. IOTC 2006-WPB-2006-11-ANNEX (2006).
- Mejuto, J., B. García-Cortés, A. Ramos-Cartelle. 2008. Standardized catch rates in biomass for the swordfish (*Xiphias gladius*) caught by the Spanish longline fleet in the Indian Ocean for the period 1993-2007. IOTC-2008-WPB-06 (2008).
- Order APA/25/2021; <https://www.boe.es/buscar/act.php?id=BOE-A-2021-885>
- Order APA/332/2022; https://www.boe.es/diario_boe/txt.php?id=BOE-A-2022-6381
- Order APA/1137/2023; https://www.boe.es/diario_boe/txt.php?id=BOE-A-2023-21645
- Ramos-Cartelle, A., B. García-Cortés, J. Mejuto. 2008. Scientific estimates of bycatch landed by the Spanish surface longline fleet targeting swordfish (*Xiphias gladius*) in the Indian Ocean with special reference to the 2004-2006 period. IOTC, 2008-WPEB-03 (2008).
- Ramos-Cartelle, A., B. García-Cortés, J. Fernández, J. Mejuto 2009. Scientific catch estimations of bycatch species landed by the Spanish surface longline fleet targeting swordfish (*Xiphias gladius*) in the Indian Ocean with special reference to the years 2007 and 2008. IOTC-2009-WPEB-03 (2009).
- Ramos-Cartelle, A., B. García-Cortés, J. Fernández-Costa, J. Mejuto. 2011. Standardized catch rates for the swordfish (*Xiphias gladius*) caught by the Spanish longline in the Indian Ocean during the period 2001-2010. IOTC-2011-WPB09-23, 19pp (2011).
- Ramos-Cartelle, A., B. García-Cortés, J. Fernández-Costa, J. Mejuto. 2012. Standardized catch rates of the oceanic whitetip shark (*Carcharhinus longimanus*) from observations of the Spanish longline fishery targeting swordfish in the Indian Ocean during the 1998-2011 period. IOTC-2012- WPEB08-27 (2012).
- Ramos-Cartelle, A., J. Mejuto. 2007. Interaction of the false killer whale (*Pseudorca crassidens*) and depredation on the swordfish catches of the Spanish surface longline fleet with special reference to the Indian ocean. *IOTC Workshop on the Depredation in the Tuna Longline Fisheries in the Indian Ocean, 9-10 July, 2007*.
- Regulation (EU) 2017/1004 of the European Parliament and of the Council of 17 May 2017 on the establishment of a Union framework for the collection, management and use of data in the fisheries sector and support for scientific advice regarding the common fisheries policy and repealing Council Regulation (EC) No 199/2008 (recast). ELI: <http://data.europa.eu/eli/reg/2017/1004/oj>

Annex I

Table A1 displays, in a 5°x5° grid squares, the marine turtles catch performed by the purse seiner fleet in 2023. The observation on board has covered most of the 5°x5° squares where the fleet has been working.

Table A2 displays, in a 5°x5° grid squares, the marine turtles catch performed by the longline fleet in 2023. The observation on board has covered most of the 5°x5° squares where the fleet has been working.

Table A1. Marine turtle bycatch of the Spanish purse seiner fleet in 2023 from observers' data, in 5°x5° grid squares, by species and destiny.

Year	cwp5x5	Total effort fleet (number of set ^{e1})	Total effort observed (number of set)	Species	nCaptures	Nmortalities	nLiveReleases
2023	6100045	115	53				
2023	6100050	398	95	<i>Chelonia mydas</i>	1	0	1
2023	6100055	247	50	<i>Chelonia mydas</i>	1	0	1
2023	6100060	103	28				
2023	6100065	51	12				
2023	6100075	2	0				
2023	6105050	63	7				
2023	6105055	240	88				
2023	6105060	155	40				
2023	6105065	49	22				
2023	6110055	31	11	<i>Lepidochelys olivacea</i>	1	0	1
2023	6110060	170	25	<i>Lepidochelys olivacea</i>	1	0	1
2023	6110065	113	2				
2023	6115055	2	0				
2023	6115060	50	10	<i>Lepidochelys olivacea</i>	3	0	3
2023	6115065	80	0				
2023	6120060	1	0				
2023	6120065	2	0				
2023	6200040	29	5				
2023	6200045	623	217	<i>Eretmochelys imbricata</i>	2	0	2
2023	6200050	516	192	<i>Chelonia mydas</i>	2	0	2
2023	6200055	155	19				
2023	6200060	167	6				
2023	6200065	41	14				
2023	6200075	1	0				
2023	6205040	173	67				
2023	6205045	228	121	<i>Chelonia mydas</i>	4	0	4
2023	6205050	261	107	<i>Eretmochelys imbricata</i>	1	0	1
2023	6205055	98	16				
2023	6205060	36	6				
2023	6205065	23	0				
2023	6205080	1	0				
2023	6210040	3	0				
2023	6210045	25	0				
2023	6210050	15	12				
2023	6210055	6	0				
2023	6210060	2	2				
2023	6215040	2	0				
2023	6215045	14	0				

Table A2. Spanish longline fleet effort and observed interactions with marine turtles in 2023 from observers' data, by species and destiny in 5°x5° grid squares.

Year	cwp5x5	Total effort fleet (number of hooks)	Total effort observed (number of hooks)	Species	nCaptures	Nmortalities	nLiveReleases
2023	6220055	16500	0				
2023	6220060	28860	1560	<i>Caretta caretta</i>	1	0	1
2023	6220065	8400	0				
2023	6220075	39600	0				
2023	6225035	576381	41640	<i>Caretta caretta</i>	1	0	1
2023	6225040	258129	36483				
2023	6225045	37967	14310				
2023	6225050	71911	35248				
2023	6225055	152242	17010	<i>Caretta caretta</i>	1	0	1
2023	6225060	188462	31335	<i>Caretta caretta</i>	2	0	2
2023	6225065	212802	845				
2023	6225070	190662	0				
2023	6225075	158400	0				
2023	6225080	27000	0				
2023	6230030	98275	32675	<i>Caretta caretta</i>	1	0	1
"	"	"	"	<i>Dermochelys coriacea</i>	1	0	1
"	"	"	"	Unidentified turtle	1	1	0
2023	6230035	515903	21525				
2023	6230040	369213	28210				
2023	6230045	114100	7330				
2023	6230050	55376	2795				
2023	6230055	40870	0				
2023	6230060	18932	0				
2023	6235030	7000	0				
2023	6235035	25100	0				



EU.Portugal National Report to the Scientific Committee of the Indian Ocean Tuna Commission, 2024

Rui Coelho

IPMA - Portuguese Institute for the Ocean and Atmosphere, I.P.

INFORMATION ON FISHERIES, RESEARCH AND STATISTICS

<p>In accordance with IOTC Resolution 15/02 (and other data related CMMs as noted below), final scientific data for the previous year were provided to the IOTC Secretariat by 30 June of the current year, for all fleets other than longline [e.g., for a National Report submitted to the IOTC Secretariat in 2024, final data for the 2023 calendar year must be provided to the Secretariat by 30 June 2024)</p>	<p>NO</p> <p>Note: EU.Portugal does not have any fleets (other than LL) operating in the IOTC area</p>
<p>In accordance with IOTC Resolution 15/02, provisional longline data for the previous year was provided to the IOTC Secretariat by 30 June of the current year [e.g., for a National Report submitted to the IOTC Secretariat in 2024, preliminary data for the 2023 calendar year were provided to the IOTC Secretariat by 30 June 2024].</p> <p>REMINDER: Final longline data for the previous year are due to the IOTC Secretariat by 30 Dec of the current year [e.g., for a National Report submitted to the IOTC Secretariat in 2024, final data for the 2023 calendar year must be provided to the Secretariat by 30 December 2024].</p>	<p>YES</p>
<p>If no, please indicate the reason(s) and intended actions:</p>	

Executive Summary

During 2023, the active fishing fleet of EU-Portugal operating in the IOTC convention area consisted of only 2 pelagic longliners targeting swordfish and blue shark, mostly in the temperate southwest Indian Ocean. Overall, a total of 1,649 MT was caught, of which 728 MT corresponded to swordfish, 773 MT to blue shark and the remaining to other species. In 2023, EU-Portugal kept implementing the data collection program based on electronic logbooks and the national onboard fishery observer program. In 2022, and within the EU data collection framework, EU-Portugal continued the collection and revision of fisheries and biological data, including catch, effort, and size data, which were provided to IOTC Secretariat. EU-Portugal scientists produced and participated in several relevant working documents to several IOTC Working Parties, which are described in this report.

1. BACKGROUND/GENERAL FISHERY INFORMATION

The Portuguese fishing fleet operating in the IOTC area of competence consist only of pelagic longline vessels, which started their activities in 1998. Since then, there have been some changes and variability on the fleet composition, as after a sharp increase on the number of active vessels, after 2007 the active fleet was substantially reduced. Currently, the fleet uses semi-automatic pelagic longlines (Florida style gear), using J-hooks baited with squid and/or mackerel, depending on abundance of the target species as well as availability and price of the baits. Moreover, wire traces are sometimes used, particularly in areas and/or seasons with higher abundance of blue shark. More recently the number of active fishing vessels has been substantially reduced, with only 2 active vessels operating in recent years.

2. FLEET STRUCTURE

The Portuguese fishing vessels operating in the IOTC area of competence consist only of pelagic longline vessels targeting mainly swordfish. The number of vessels licensed increased from the beginning of the fishery in 1998 (5 vessels) until 2009 (24 vessels). The number of active vessels followed a similar trend, with a peak in 2006 (17 vessels). However, during the last years, the active vessels in the convention area decreased to as low as three (in 2009 and 2012), and now also more recently to only 2 active vessels. One of the main reasons for some of the previous decreasing trends on the number of active vessels, specifically the drop seen between 2008 and 2012, was piracy in the Mozambique Channel, which traditionally was a major fishing area for the Portuguese fleet operating in the IOTC Convention area. Then, for several years, specifically in 2013 and 2014, the number of active vessels increased again to 7. But since then and to the present date it has continued to decrease and currently there are only 2 active vessels (**Table 1**). The fishing operations are surface pelagic drifting longlines, set in shallow waters with night setting and targeting mainly swordfish and blue shark.

Table 1: Number of vessels operating in the IOTC area of competence, by gear type and size class

Year	No. licensed vessels	No. active vessels
1998	5	1
1999	8	3
2000	9	3
2001	9	6
2002	11	7
2003	12	6
2004	14	5
2005	16	7
2006	18	17
2007	17	15
2008	21	4
2009	24	3
2010	18	4
2011	16	4
2012	16	3
2013	16	7
2014	18	7
2015	18	6
2016	18	6

2017	18	6
2018	18	3
2019	18	3
2020	20	3
2021	20	2
2022	20	2
2023	20	2

3. CATCH AND EFFORT (BY SPECIES AND FISHERY)

The overall catch had a peak in 2006 (3,646 MT), followed by a sharp decrease in 2008. In recent years an increasing trend has been observed until 2017, followed by reductions in the most recent years of 2018 and 2019. The 2023 overall production was 1,649 MT.

The Portuguese fleet has swordfish and blue shark as the main target species. The peak of the catches of swordfish was in 2006 with 1,857 MT. In 2023, a total of 728 MT of swordfish were caught (**Table 2** and **Figure 1**). After a sharp decrease on the catches in 2008, most species groups followed an increasing trend up to 2017, which are followed by decreases in the most recent years. Among the pelagic sharks, the blue shark is the main species, and in 2023 the catch was 773 MT (**Table 2** and **Figure 1**).

Table 2. Total EU-Portugal longline annual catch (MT - metric tons) and effort (x 10³ hooks) and catch for the primary species (or group of species) in the IOTC area of competence, for the period 2019 to 2023. SWO – swordfish; BSH – blue shark; TUS – tuna; BIL – other billfishes; NEI – not elsewhere included, category for all other species combined.

Year	Total effort	Total catch	SWO	BSH	TUS	BIL	NEI
2019	809	1544	629	711	52	21	17
2020	592	1102	443	499	26	20	9
2021	646	1383	458	742	42	21	8
2022	589	1452	554	746	28	15	13
2023	653	1649	728	773	16	17	8

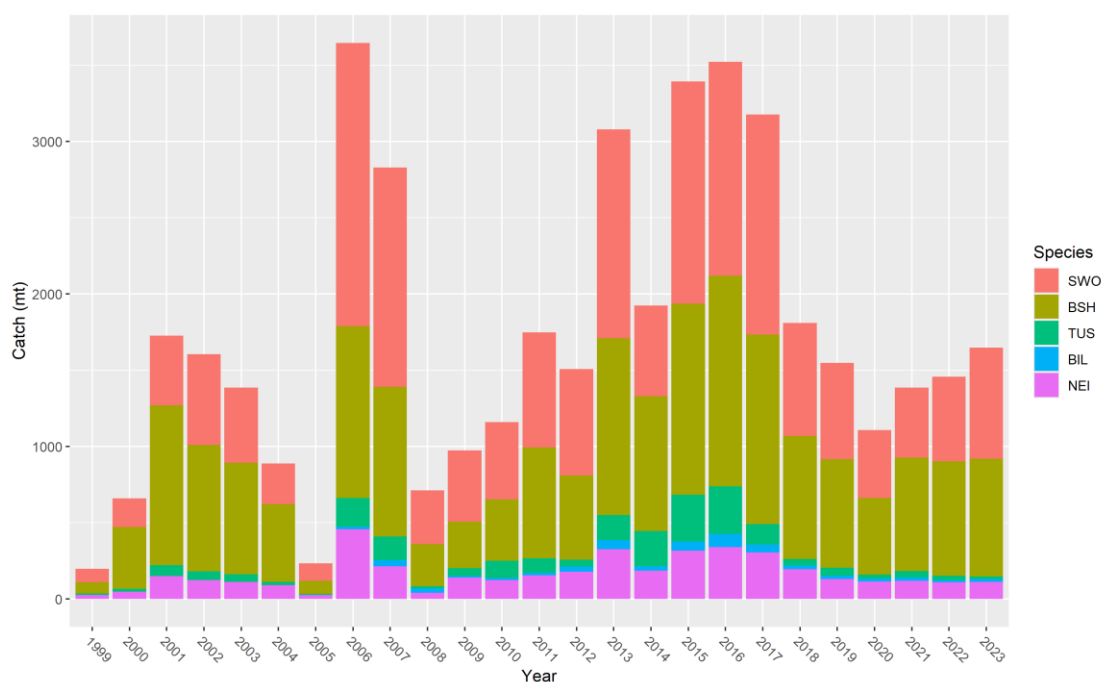


Figure 1. Historical annual catch for the Portuguese longline fleet, by primary species (or groups of species), for the IOTC area of competence for the entire history of the fishery (1999-2023). SWO – swordfish; BSH – blue shark; TUS – tuna; BIL – billfishes; NEI - category for all other species combined.

During 2023 the overall fishing effort was 653 thousand hooks, with the SW Indian Ocean area being the most heavily fished (**Figure 2a**). During the first years of the fishery the fishing effort was concentrated in the SW Indian Ocean, but then developed towards the Central and Eastern regions of the convention area (**Figure 2b**). However, in recent years due to several reasons (including piracy, oil price and the decreased number of active boats), most of the fishing activity occurred in the SW area of the Indian Ocean. **Figure 3a** shows the spatial distribution of the catch for the main species (swordfish and blue shark) in 2023. **Figure 3b** shows the geographical distribution of the catch (MT) for the two most important species during the period 2019-2023.

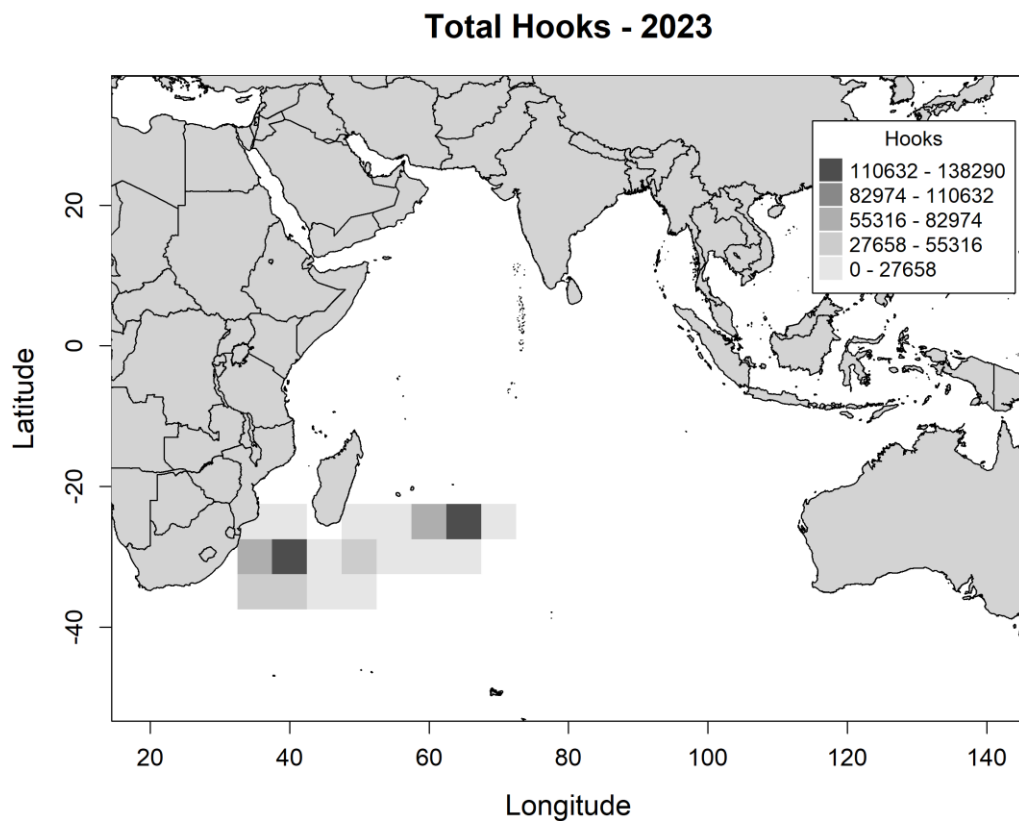


Figure 2a. Map of the distribution of fishing effort (number of hooks deployed), by the Portuguese longline fleet operating in the IOTC area of competence during 2023.

Mean Hooks - 2019-2023

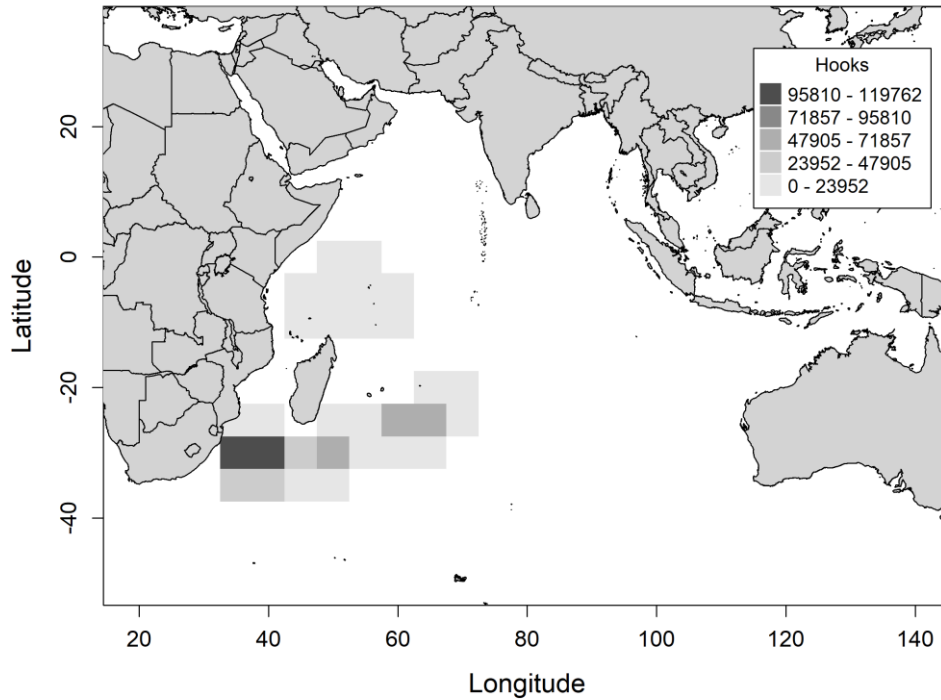
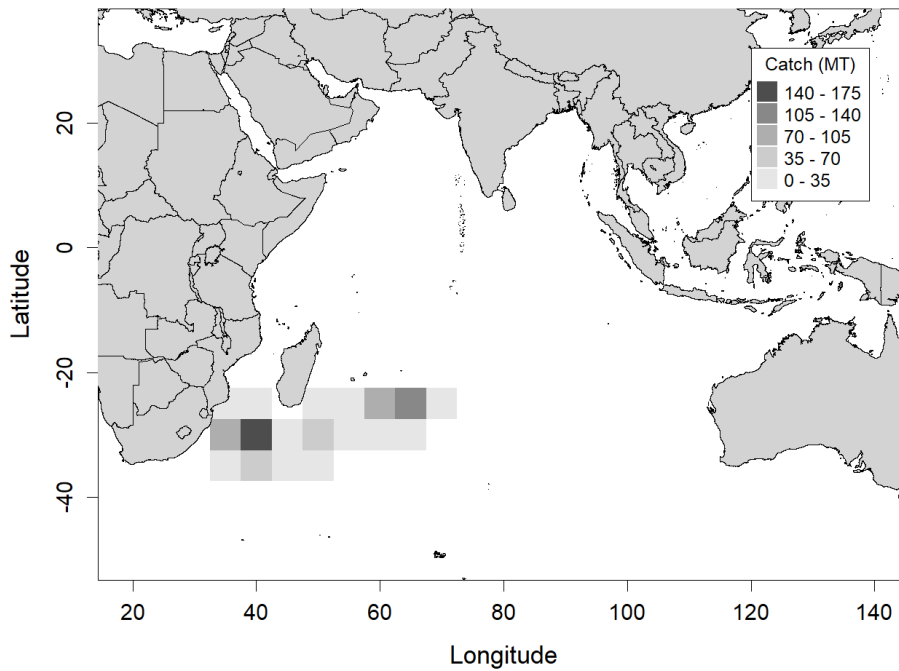


Figure 2b. Map of the distribution of mean fishing effort (number of hooks deployed), by the Portuguese longline fleet operating in the IOTC area of competence during the period 2019-2023.

SWO - 2023



BSH - 2023

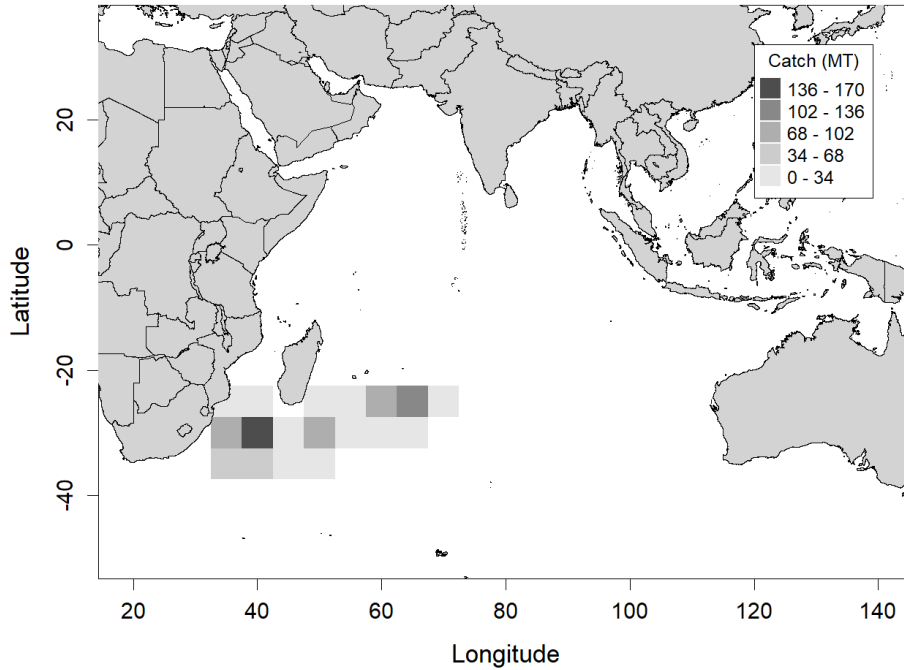
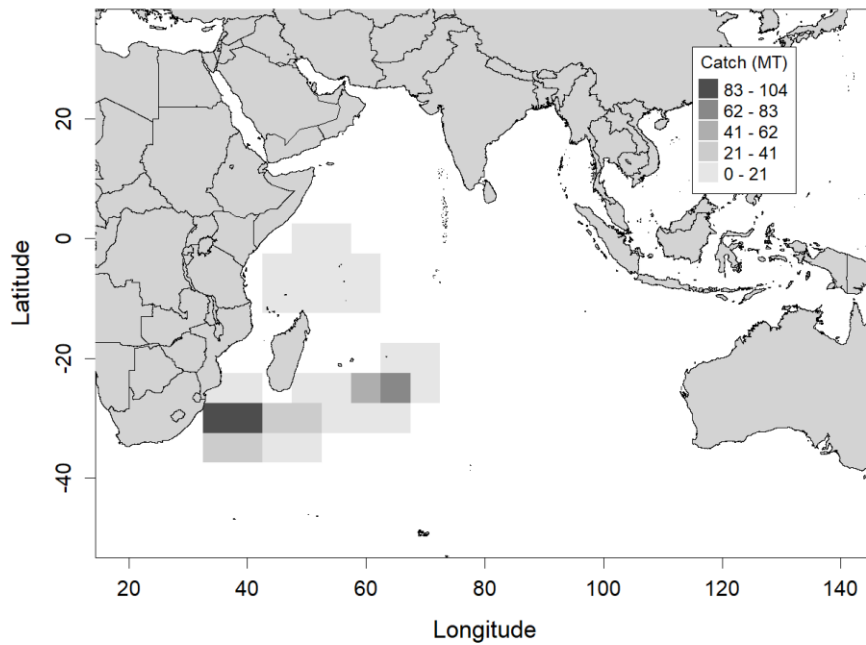


Figure 3a. Map of distribution of the catches (MT) by major species in the IOTC area of competence in 2023: SWO (swordfish) – *Xiphias gladius*; BSH (blue shark) – *Prionace glauca*. Note: different catch scales.

SWO mean - 2019-2023



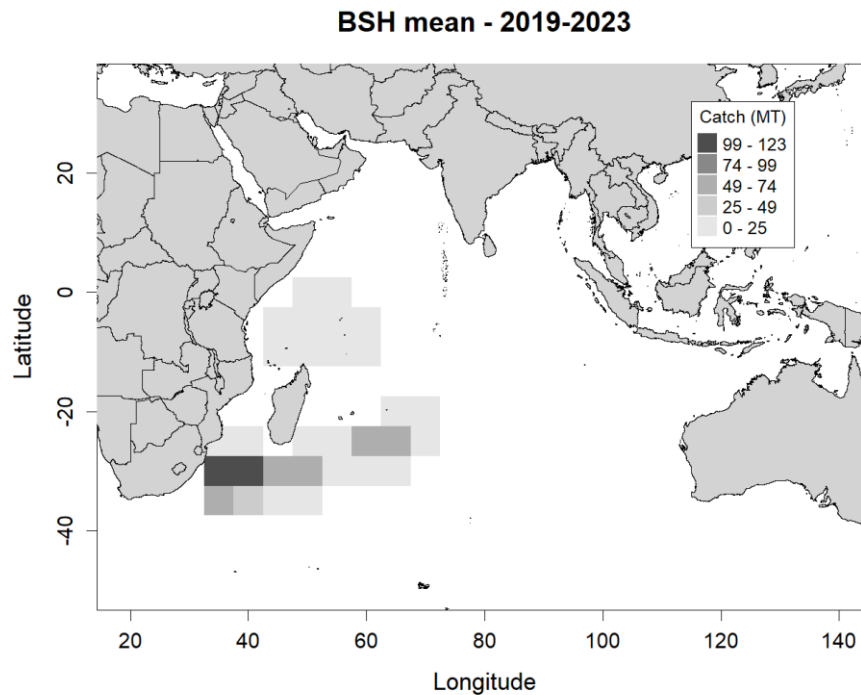


Figure 3b. Map of distribution of mean catches (MT) by major species in the IOTC area of competence during the period 2019-2023: SWO (swordfish) – *Xiphias gladius*; BSH (blue shark) – *Prionace glauca*. Note: different scales in the colour codes.

4. RECREATIONAL FISHERY

No activity concerning recreational fishery by Portuguese vessels in the IOTC Convention area have been carried out for the last years.

5. ECOSYSTEM AND BYCATCH ISSUES

All IOTC Resolutions and Recommendations concerning Sharks, Seabirds and Marine Turtles are broadly publicized among fishermen operating in the IOTC convention area. The recently IOTC ID guides are being distributed as Portuguese and/or Spanish printed translations are made available when requested by the fleet. IPMA has participated in the Shark Ecological Risk Assessments that were presented and discussed by the WPEB in 2015. IPMA also participates regularly in the stock assessments that are carried out for shark species in the IOTC area.

5.1 Sharks

Major shark species catches are reported annually. Fishermen are encouraged to release by-catch species that are alive at-haulback, as well as juvenile specimens. The fleet must comply with the EU regulations on shark finning and fins-attached policy. Blue shark belly has been observed as being occasionally used as bait, particularly in areas/seasons when high shark bycatch occurs. Accordingly, wire traces are also sometimes used. Shark catches have increased between 2014 and 2017 but dropped substantially especially after 2017. Currently, only blue shark is retained by the national fleet and commercialized, while the other species are discarded due to International and/or EU regulations. Those other species are therefore not retained nor landed, but are recorded and reported by the onboard observer programs when interactions occur.

5.1.1. NPOA sharks

The EU has presented and implemented a NPOA for sharks. This was approved in 2009 and it is currently being implemented.

5.1.2. Blue shark

All vessels have electronic logbooks and major shark species catches, of which blue shark is the main species followed by shortfin mako, are recorded and reported annually.

5.2 Seabirds

IOTC recommendations on seabirds have been made available to the fishermen operating longline gear. Skippers are asked to adopt mitigation measures, namely the use of tori lines, line weights and to conduct night gear setting with minimum deck lights, when fishing south of 25° South or whenever interaction with seabirds is foreseen. Moreover, within the scope of the EU data collection framework (EU-Portugal mainland component), skippers are encouraged to report the incidental catches of sea birds. The recently IOTC ID sea-bird guides are distributed to the fleet whenever there are requests.

The EU adopted in 2012 an Action Plan to address the problem of incidental catches of seabirds in fishing gears of its fishing fleets, that also applies to Portuguese vessels operating in the IOTC.

EU-Portugal fully complied with the Data Call for seabirds according to IOTC circular 2016/043 and submitted the requested data within the established deadlines (full datasets from 2011-2015). This full data is more complete than the data requested to be submitted in the tables for the IOTC National Reports.

Additionally, EU. Portugal has provided every year the interactions observer by fishery observers, when the fishery observer program is operating. Specifically for 2023, no seabirds were recorded on the national observer program.

It is also noted that EU.Portugal scientists have participated in a collaborative work to evaluate the effectiveness of mitigation measures for sea-birds, that included raw detailed data analysis from various longline fleets operating in the southwest Indian Ocean and southern Atlantic (Jiménez et al., 2020).

5.3 Marine Turtles

Fishermen are encouraged to carefully handle marine turtles accidentally caught, and immediately release them after gear removal. IPMA has provided guidance on how to safely handle and release the turtles, as well as ID guides. Within the scope of the EU data collection framework (EU-Portugal mainland component), skippers are encouraged to report the incidental catches of marine turtles.

The EU Council Regulation (EC) No 520/2007 of 7 May 2007 lay down technical measures for the conservation of migratory species including marine turtles incorporating articles and provisions to reduce marine turtle bycatch on EU member states fisheries. This also applies to EU.Portugal vessels operating in the IOTC area.

In the 2020 SC report, and as requested by the WPEB and SC, we provided a table with detailed data on sea turtle captures and releases, using data from the Portuguese pelagic fishery observer program, that included data between 2016 and 2019.

Additionally, EU.Portugal has provided every year the interactions observer by fishery observers when the fishery observer programs are carried out. This data has been provided already for the 2023 data.

5.4 Other ecologically related species (e.g., cetaceans, mobulid rays, whale sharks)

The accidental catch of other species such as marine mammals are considered extremely rare. Whenever such animals are caught, fishermen are encouraged to immediately and safely release them. The catch of whale sharks does not occur in the EU.Portugal pelagic longline fishery.

EU.Portugal has provided every year the interactions of other ecologically related species observed by fishery observers when the observer program is working. The data referring to 2023 has already been provided.

6. NATIONAL DATA COLLECTION AND PROCESSING SYSTEMS

6.1. Logsheet data collection and verification

All longline vessels operating in the area have records of their catches registered on official logbooks, since the year they have beginning the fisheries operations in the area. In 2012 electronic logbooks became mandatory. All logbooks are transmitted to the Portuguese Fisheries Administration (DGRM), which processes the data and transmit it to IOTC Secretariat through the European Commission.

Since 1998 all Portuguese vessels over 15 meters long are obliged to have VMS equipment on board. Thereby all Portuguese vessels operating in the convention area are monitored by a tracking satellite VMS. The specific national legislation that regulates the use of VMS in EU.Portugal vessels is Decreto-Lei n.º 310/98, from 14 October 1998.

6.2. Observer scheme

Since 2011 an observer program was fully implemented by IPMA. Until 2018 the onboard fishery observers were part of the technical staff of IPMA, but since 2019 the onboard observers are hired through a private company. IPMA provides the training to the observers from the company and those are required to use IPMA protocols and forms for data collections. The program aims to cover a minimum of 5% of the longline fishing effort. **Table 3** provides the coverage of the program by year calculated both in number of hooks and sets since the start of the program in 2011.

Eight observers have received the necessary training to collect a wide range of fisheries data, to fulfil all fields covered by the IOTC Observer Trip Report. Starting in 2011, the observers started collecting information on all specimens caught, which includes: ID to the most detailed taxonomic possible level; size; sex; the condition at-haulback (alive / dead); fate (retained/discarded); and, condition if discarded (alive/dead). Finally, biological samples were collected for some of the major shark and bony fish species, aiming a number of studies focusing on: life history issues (ages, growth and reproduction); genetics (population structure and paternity; and, morphometrics (weight:length, length:length, weight:weight relationships).

It is noted that the EU.Portugal observer program could not be executed during 2020, 2021 and 2022. In 2020 and 2021 was mostly due to restrictions related with Covid-19, specifically restrictions to place fishery observers onboard and restrictions related with international travelling. In 2022 it was mostly related with administrative issues. The program was deployed and took place in 2023, and the data has been provided to the IOCT Secretariat. And it is summarised in this national report.

Table 3. Annual observer coverage of the Portuguese pelagic longline fleet since it was established in 2011, measured as a percentage of the total effort in number of hooks and sets, for the period 2011–2023 (*: impossibility to deploy fishery observers onboard in those years).

Year	Gear	Observer coverage		Size data coverage
		Hooks (%)	Sets (%)	
2011	Pelagic longline	17.9	16.3	
2012	Pelagic longline	10.7	10.9	
2013	Pelagic longline	11.0	9.9	
2014	Pelagic longline	7.3	5.7	
2015	Pelagic longline	11.1	8.2	
2016	Pelagic longline	9.1	7.2	Sizes are taken for all retained specimens and dead discards
2017	Pelagic longline	7.9	7.0	
2018	Pelagic longline	15.5	13.9	
2019	Pelagic longline	17.4	16.1	
2020*	Pelagic longline	0	0	
2021*	Pelagic longline	0	0	
2022*	Pelagic longline	0	0	
2023	Pelagic longline	18.2	17.3	

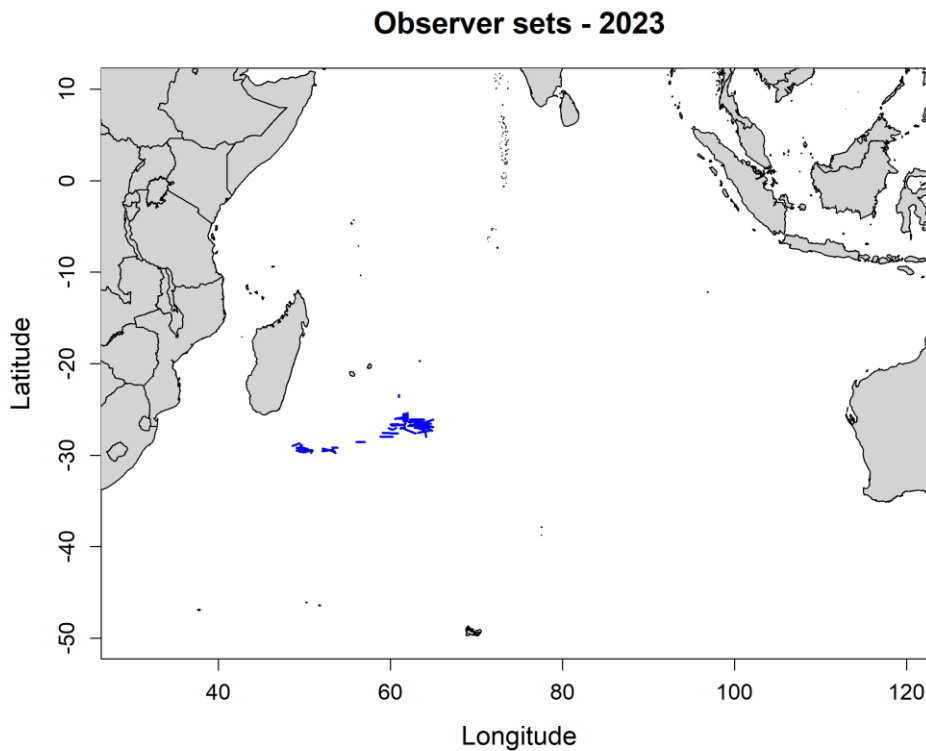


Figure 4. Map showing the spatial distribution of observer coverage carried out by the EU.Portugal LL fleet in the IOTC area in 2024. The map shows the precise fishing set locations.

6.3. Port sampling programme

Catches from Portuguese vessels operating in the IOTC convention area are usually moved to containers in ports and shipped to non-Portuguese ports in Europe (mostly Vigo, Spain). Thus, the current port sampling program for the Portuguese longline fleet does not cover those vessels operating in the IOTC conventional area. As such, **Tables 4 and 5** do not apply to this fleet. Nonetheless, in **Table 5** we provide a summary of the specimens that were measured for the fleet under the national observer programs.

Table 4. Number of vessel trips or vessels active monitored, by species and fishery. Does not apply to EU.Portugal as there is no port-sampling in the IOTC area, only onboard observer programs and the detailed coverage details are provided in **Table 3**.

Table 5. Number of fish measured, by species, for the Portuguese pelagic longline fishery in the IOTC area, from the onboard national observer program, carried out in 2023

FAO Code	Species	N Measured
SWO	<i>Xiphias gladius</i>	2044
BSH	<i>Prionace glauca</i>	1468
SMA	<i>Isurus oxyrinchus</i>	133
LEC	<i>Lepidocybium flavobrunneum</i>	116
BLM	<i>Makaira indica</i>	49
DOL	<i>Coryphaena hippurus</i>	46
SFA	<i>Istiophorus platypterus</i>	41
YFT	<i>Thunnus albacares</i>	13
LMA	<i>Isurus paucus</i>	5
ALX	<i>Alepisaurus ferox</i>	4
WAH	<i>Acanthocybium solandri</i>	3
ALB	<i>Thunnus alalunga</i>	2
BET	<i>Thunnus obesus</i>	2

POA	<i>Brama brama</i>	2
BTH	<i>Alopias superciliosus</i>	1
FAL	<i>Carcharhinus falciformis</i>	1
GBA	<i>Sphyrna barracuda</i>	1
OIL	<i>Ruvettus pretiosus</i>	1

6.4. Actions taken to monitor catches & manage fisheries for Striped Marlin, Black Marlin, Blue Marlin and Indo-pacific Sailfish

In terms of species identification, the onboard observers and skippers are distributed with the IOTC Billfish identification cards, as well as material like dichotomic keys prepared by IPMA- Portugal.

In terms of data recording, all catch of all species including marlins, are recorded and reported in the electronic logbooks. Additionally, all catches, including retained species, alive and dead discards, are recorded in the observer program and dully reported in electronic format to the IOTC Secretariat by the established deadlines. This includes all billfish species when those are captured. It was not possible to conduct observer trips between 2020 and 2022 , but the 2023 data was recorded and transmitted to IOTC.

6.5. Gillnet observer coverage and monitoring

This point does not apply to EU.Portugal, as EU.Portugal does not have any gillnets fisheries in the IOTC convention area.

6.6 Sampling plans for mobulid rays

This point is mostly related with subsistence and artisanal fisheries and therefore does not apply to EU.Portugal fleet.

However, we can add that all mobulids rays from the EU.Portugal longline fleet are released. In terms of data recording and reporting, and as mentioned previously, all catch for all species (including retained species, alive and dead discards) are recorded in the observer program and dully reported in electronic format to the IOTC Secretariat by the established deadlines. This includes all mobulid rays when those are captured and discarded. As stated previously, there were no trips carried out in 2020 to 2022, but there was a trip in 2023 and the data has been transmitted to IOTC Secretariat.

7. NATIONAL RESEARCH PROGRAMS

The Portuguese research program carried out by IPMA, I.P., for highly migratory species begun in 2010. The programme covers 3 main research lines: fisheries, fleet dynamics and biological studies. The fisheries research lines involves: i) revisiting historical official logbook data and the collection of skippers logbooks and VMS data; ii) spatial-temporal analysis of fishing effort and catch at size for major species caught; and iii) haulback mortality. The fleet dynamics involves: i) the spatial-temporal analysis of the fishing activity and catches; and ii) investigating the link between gear configuration/characteristics and target vs. by-catch of sharks. Finally, the biological studies focus all major species, but primarily on pelagic sharks, namely in terms of: i) life history parameters (age, growth and reproduction); ii) genetics (population structure and paternity); iii) morphometrics (weight:length, length:length and weight:weight relationships); and iv) movements and habitat use. Among shark species, particular attention is being provided to the two most important species caught (blue shark and shortfin mako), and to a less extent to other species, including threshers, hammerheads, oceanic whitetip and silky sharks. It is also worth noting that IPMA scientists have participated in the technical work for the development of MSE for the Indian Ocean swordfish, and involved in several other EU funded projects that have focused migratory species in the Indian Ocean, such as tagging sea-turtles and swordfish.

7.1. National research programs on blue shark

As mentioned before, the biological studies carried out at IPMA focus all major species, but primarily on pelagic sharks, namely in terms of: i) life history parameters (age, growth and reproduction); ii) genetics (population

structure and paternity); iii) morphometrics (weight:length, length:length and weight:weight relationships); and iv) movements and habitat use. Among shark species, particular attention is being provided to the two most important species caught (blue shark and shortfin mako), and to a less extent to other species, including threshers, hammerheads, oceanic whitetip and silky sharks.

One recent work specific to blue shark was estimating ages and modelling growth in the SW Indian Ocean. The results from that work have been shown to the WPEB (Andrade et al., 2017) and published in the peer-reviewed literature (Andrade et al., 2019).

Another major contribution was a revision for catch-at-size data for both the Indian Ocean and Atlantic, that has been provided to the WPEB and used in the 2017 stock assessment, to inform the size distribution in the integrated assessment models. This work has in the meanwhile been published in the peer-reviewed literature (Coelho et al., 2018).

In the first blue shark stock assessment (2017), EU.Portugal scientists have worked and provide to the WPEB an alternative catch series based on ratios (Coelho and Rosa, 2017), as well as developing priors for population dynamic parameters (Rosa and Coelho, 2016), that were used in the stock assessment. In 2021, the WPEB carried out a new blue shark stock assessment and EU.Portugal provided updated CPUE series and size data information for informing the new assessment models (Coelho et al., 2021).

Finally, EU.Portugal has lead a EU project (Coelho et al., 2019) that worked with several shark case studies, including a preliminary works for MSE and length-based indicators for blue shark in the Indian Ocean, that were also presented to the WPEB (Ortiz de Urbina et al., 2018; Walker et al., 2018).

7.2. National research programs on Striped Marlin, Black Marlin, Blue Marlin and Indo-pacific Sailfish

All billfish interactions are recorded in the observer program and reported to IOTC. Those interactions are relatively rare, so at this stage EU.Portugal only does some opportunistic, but not systematic, biological sampling on those species. A program has started a few years ago to collect spines and otoliths of swordfish and that could be expanded to other billfishes in the future.

EU.Portugal has in the past provided to the WPB observations on the Indo-Pacific sailfish from the Portuguese fleet in the Indian Ocean, and updates can be further provided if and when requested by the WPB (Rosa et al., 2015). Additionally, EU.Portugal has provided samples to a large scale effort for population genetics on sailfish, that has been accepted in the peer-reviewed literature (Ferrette et al., 2021).

Finally, EU.Portugal/IPMA is participating in a EU project lead by Ifremer (EU.France) to tag swordfish and marlins in the Indian Ocean (update provided in Nieblas et al., 2020).

7.3. National research programs on sharks

As mentioned before, the biological studies carried out at IPMA focus all major species, but primarily on pelagic sharks, namely in terms of: i) life history parameters (age, growth and reproduction); ii) genetics (population structure and paternity); iii) morphometrics (weight:length, length:length and weight:weight relationships); and iv) movements and habitat use. Among shark species, particular attention is being provided to the two most important species caught (blue shark and shortfin mako), and to a less extent to other species, including threshers, hammerheads, oceanic whitetip and silky sharks.

Some experimental work has been done with the use of monofilament versus wire leaders in the pelagic longline configuration, which has been presented to the WPEB (Santos et al., 2014) and published in the peer review literature (Santos et al., 2017).

Additionally, EU.Portugal recently lead a EU Project on a meta-analysis for the effects of hook, bait and leader type effects on surface pelagic longline retention and mortality rates, comparing target, bycatch and

vulnerable fauna interactions. The last update made to the WPEB is provided in Santos et al. (2019). That project final report is available from Coelho et al. (2020).

7.4. National research programs on oceanic whitetip sharks

See point 7.3 above for a general description on the research carried out in sharks, with some aspects also applying to oceanic whitetip sharks.

EU.Portugal (IPMA) has participated in some previous studies focusing on oceanic whitetip sharks, including with samples from the Indian ocean (Mendes et al., 2015, Camargo et al., 2016). However, and with regards to biological samples, it is worth noting that since the inclusion of oceanic whitetip shark in CITES in 2014, all biological sampling has stopped (e.g., tissue for genetics and vertebrae). So only samples collected before the CITES listing are now being used.

IPMA has also carried out work focused on the hooking mortality of oceanic whitetip shark, in an attempt to provide information in the effectiveness of the no-retention of that species and at the request of the WPEB. That work has been presented to the WPEB (Coelho, 2016) and updates can be further provided in and when requested by the WPEB.

Finally, EU.Portugal/IPMA participates in a collaborative project on oceanic whitetip shark habitat use and post-release mortality using satellite telemetry (Bach et al., 2021).

7.5. National research programs on marine turtles

All sea turtle interactions are recorded in the observer program and reported to IOTC.

EU.Portugal is currently participating in a collaborative research that includes the Atlantic (ICCAT) and Indian Ocean (IOTC) scientists and data. This work is currently in the final revision stages of a peer-review publication in the scientific literature.

Furthermore, since 2016 IPMA has been collaborating with projects from Ifremer (EU.France) and NGOs to deploy satellite tags on sea turtles to study their movements and migrations in the Indian Ocean. A scientific paper has been produced with the results of this research (Monsinjon et al., 2023).

7.6. National research programs on thresher sharks

See point 7.3 above for a general description on the research carried out in sharks, with some aspects also applying to thresher sharks.

EU.Portugal/IPMA has participated in a bigeye thresher sharks study on population genetics for the Atlantic and Indian oceans (Morales et al., 2018). With regards to biological samples, it is worth noting that since the inclusion of thresher sharks in CITES in 2017, all biological sampling has stopped (e.g., tissue for genetics and vertebrae), due to complications in sample transportation. As such, only samples collected previous to CITES inclusion are currently being used.

Since 2018, IPMA has been collaborating with IOTC projects to deploy satellite tags on bigeye thresher sharks to study movement patterns and migrations, and determine post-release mortality (Romanov et al., 2020).

Table 6. Summary table of national (EU-Portugal) research projects focusing migratory species in the Indian Ocean, that were ongoing in 2023.

Project title	Period	Countries involved	Budget total	Funding source	Objectives	Short description
National Program for Biological Sampling (PNAB)	2011-2022	Portugal	~50,000€ (yearly)	EU (DCF – Data Colletion	Data collection and reporting of data for the Portuguese	This yearly program involves the collection of data, reporting and

				Framework) and National funds	pelagic longline fleet.	scientific work to provide advice in the IOTC area of competence.
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Based on the data collected in 2023 and in previous years, one working document was prepared and co-authored by the Portuguese research team during several 2023 IOTC meetings. Those also include technical documents produced within international cooperative initiatives, either involving other EU colleagues or having a broader international scope.

The technical papers presented to IOTC in 2023 with EU/Portugal participation:

- Coelho, R., Rosa, D., Lino, P.G., 2023. Update of the swordfish catch, effort and standardized CPUEs by the Portuguese pelagic longline fleet operating in the Indian Ocean, between 1998 and 2022. Working Party on Billfish (WPB), 6-9 September 2023, Hybrid / Reunion Island, France. IOTC Document: IOTC-2023-WPB21-12.
- Romanov, E., Ramos, M.L., Baez, J.C., Coelho, R., Ruiz, J., Sabarros, P., Merino, G., 2023. Shortbill spearfish *Tetrapturus angustirostris*: a note on the distribution and occurrence in the Indian Ocean fisheries. Working Party on Billfish (WPB), 6-9 September 2023, Hybrid / Reunion Island, France. IOTC Document: IOTC-2023-WPEB21.

8. IMPLEMENTATION OF SCIENTIFIC COMMITTEE RECOMMENDATIONS AND RESOLUTIONS OF THE IOTC RELEVANT TO THE SC.

Table 9. Scientific requirements contained in Resolutions of the Commission, adopted between 2012 and 2023.

Res. No.	Resolution	Scientific requirement	CPC progress
12/04	On the conservation of marine turtles	Paragraphs 3, 4, 6–10	Incidental interaction with marine turtles are recorded by onboard observers. The information is fully submitted and provided to the IOTC Secretariat in the fishery observer reports and datasets. Fishermen are encouraged to carefully handle marine turtles accidentally caught, and immediately release them after gear removal. They are aware of and use proper mitigation, handling and de-hooking techniques and should keep onboard all necessary equipment for the release of marine turtles (including line cutters and de-hookers), in accordance with IOTC and FAO handling guidelines. Furthermore, since 2016 IPMA has been collaborating with projects from Ifremer (EU/France) and NGOs to deploy satellite tags on sea turtles to study their movements and migrations in the Indian Ocean. A peer-review paper has been produced with those results (Monsinjon et al., 2023).
12/09	On the conservation of thresher sharks (family alopiidae) caught in association with fisheries in the IOTC area of competence	Paragraphs 4–8	Fishers are encouraged to release thresher sharks if recognised on the line before bringing them onboard the vessel. Skippers are requested to record and report incidental catches as well as live releases of thresher sharks. Scientific observers from IPMA used to collect biological samples (vertebrae and tissues) from thresher sharks taken in the IOTC area of competence that were dead at haulback, as part of a research project approved by the IOTC Scientific Committee. The information compiled by IPMA has been presented to the WPEB. Given than thresher sharks were listed in CITES in 2016, IPMA had to completely stop all sampling on this species, due to complications in sample transportation. Since 2018, IPMA has been collaborating with IOTC projects to deploy satellite tags on bigeye thresher sharks to study movement patterns and migrations, and determine post-release mortality.

Res. No.	Resolution	Scientific requirement	CPC progress
13/04	On the conservation of cetaceans	Paragraphs 7–9	EU.Portugal does not have purse seiners operating in the IOTC area of competence. For other gears, namely pelagic longlines, interactions with cetaceans are rare. If such animals are caught, fishermen are encouraged to immediately and safely release them. IPMA fishery observers record all interactions with cetaceans, which are reported in the observer trips and electronic data submitted to IOTC in due time.
13/05	On the conservation of whale sharks (<i>Rhincodon typus</i>)	Paragraphs 7–9	EU.Portugal does not have purse seiners operating in the IOTC area of competence. For other gears, namely pelagic longlines, such interactions are extremely rare (almost non-existent). In the extremely unlikely event of such animals being caught, fishermen are encouraged to immediately and safely release them. IPMA fishery observers would record any possible interaction with whale sharks, which if happened would be reported in the observer trips submitted to IOTC in due time.
13/06	On a scientific and management framework on the conservation of shark species caught in association with IOTC managed fisheries	Paragraph 5–6	Fishers are encouraged to release oceanic whitetip sharks if recognised on the line before bringing them onboard the vessel. Skippers are requested to record and report incidental catches as well as live releases of oceanic whitetip sharks. Scientific observers from IPMA used to collected biological samples (vertebrae and tissues) from oceanic whitetip sharks taken in the IOTC area of competence that were dead at haulback, as part of a research project approved by the IOTC Scientific Committee and before inclusion of this species in CITES in 2014. However, after 2014 all biological sampling on this species stopped after the CITES listings due to complications in sample transportation internationally. Since 2018, IPMA has been collaborating with IOTC projects to deploy satellite tags on oceanic whitetip sharks to study movement patterns and migrations, and determine post-release mortality.
15/01	On the recording of catch and effort by fishing vessels in the IOTC area of competence	Paragraphs 1–10	All operating longline vessels have records of their catches registered on official logbooks, since the year they have begun the fisheries operations in the IOTC convention area. In 2012 electronic logbooks became mandatory. All logbooks are transmitted to the Portuguese Fisheries Administration (DGRM), which processes the data and transmit it to European Commission (EU). EU is responsible for providing the data to the IOTC Secretariat.
15/02	Mandatory statistical reporting requirements for IOTC Contracting Parties and Cooperating Non-Contracting Parties (CPCs)	Paragraphs 1–7	Since 2009 catch by species in weight and effort in number of hooks deployed has been provided by 5° x 5° grid area.
17/05	On the conservation of sharks caught in association with fisheries managed by IOTC	Paragraphs 6, 9, 11	EU. Portugal reports all data for catches of sharks, in accordance with IOTC data reporting requirements and procedures. Additionally, all data from sharks recorded by the onboard observers is also fully reported and submitted to the IOTC Secretariat in electronic format. Furthermore, IPMA continues several lines of research on sharks, including: <ul style="list-style-type: none"> • Fishing gear selectivity • Improvement of knowledge on biological parameters • Shark tagging studies aiming to identify habitat use. • Shark tagging studies for post-release mortality. Finally, fishermen, operating in the area, are made aware of practices that should be put in place, namely:

Res. No.	Resolution	Scientific requirement	CPC progress
			<ul style="list-style-type: none"> Shark species catches need to be reported annually; Shark finning is banned on all licensed vessels; commercial sharks that are retained must be landed with the fins attached <p>Bycatch species are released, and should use the best handling practices.</p>
18/02	On management measures for the conservation of blue shark caught in association with IOTC fisheries	Paragraphs 2-5	<p>The EU.Portugal longline fleet is aware that all major sharks, including blue shark catches, have to be fully reported. Portugal has an electronic logbook system and uses VMS data for preparing nominal catches and catch and effort data, respectively, that is fully submitted to the IOTC Secretariat.</p> <p>Additionally, EU.Portugal has an ongoing onboard observer program that records all shark species catches, including blue shark. All detailed data from the observer program is fully submitted to IOTC Secretariat in electronic format.</p> <p>IPMA continues scientific research in all shark species, including blue shark, especially for life history characteristics, and the information is made available to the WPFB.</p>
18/05	On management measures for the conservation of the Billfishes: Striped marlin, black marlin, blue marlin and Indo-Pacific sailfish	Paragraphs 7 – 11	<p>Fishers are encouraged to release any stripped, black or blue marlins that are captured or brought alive alongside the vessel. Skippers are requested to record and report incidental catches as well as live releases of those marlin species. Scientific observers from IPMA record all catches of marlins as well as their status when captured and when released in trips with onboard observers. The information is fully provided to the IOTC Secretariat in the observer trip reports and data.</p>
18/07	On measures applicable in case of non-fulfilment of reporting obligations in the IOTC	Paragraphs 1, 4	<p>EU-Portugal reports annually the catches, catch and effort and size samples of the main IOTC species, including sharks and other bycatch. Besides the official statistics, skippers are encouraged to report data using the self-sampling program, and all data is reported to the IOTC Secretariat. Additionally, EU-Portugal has been fully reporting in due time the observer trip reports, providing full details on the operations and catches (including all bycatch) since the start of the fishery observer program in 2011.</p> <p>These reporting obligations are included in the Portuguese National Data Collection Framework under the EU legislation (article 25, of EU Regulation 1380/2013, of 11 December). Still according to EU rules, the failure by a Member State to collect and /or provide data in a timely manner may result in a proportionate suspension or interruption of relevant Union financial assistance to that Member State. Thus, according to EU Regulation 665/2008, of 14 July the proportion of reduction is 1% of the total Community financial assistance per failure to satisfy a demand.</p>
19/01	On an Interim Plan for Rebuilding the Indian Ocean Yellowfin Tuna Stock in the IOTC Area of Competence (<i>If not provided under Res 21/01 below</i>)	Paragraph 22	<p>Tropical tunas are only an occasional bycatch of the EU.Portugal pelagic longline fleet that is mostly targeting swordfish and blue shark.</p>
19/03	On the Conservation of Mobulid Rays Caught in Association with Fisheries in the IOTC Area of Competence	Paragraph 11	<p>All mobulid rays incidentally captured by the EU.Portugal longline fleet are released. In terms of data recording and reporting, all interactions with those species are recorded in the observer program and dully reported in electronic</p>

Res. No.	Resolution	Scientific requirement	CPC progress
			format to the IOTC Secretariat by the established deadlines, including data on the status at discarding (dead or alive).
21/01	On an Interim Plan for Rebuilding the Indian Ocean Yellowfin Tuna Stock in the IOTC Area of Competence (<i>If not provided under Res 19/01 above</i>)	Paragraph 23	As stated under Res 19/01 above, tropical tunas are only an occasional bycatch of the EU.Portugal pelagic longline fleet that is mostly targeting swordfish and blue shark.
22/04	On a regional observer scheme	Paragraph 12	In late 2010 a national observer program was approved under the EU data collection framework. The observer program has been fully implemented since 2011 and is currently ongoing. The trip reports have always been submitted in due time to the IOTC Secretariat. Since 2017, all data has been fully transmitted in electronic format. Since 2019 the onboard observers are no longer part of the IPMA staff but hired through a private company. Still, all training and data protocols and forms used are from IPMA, and IPMA is still responsible for the implementation, data compilation and quality check, and data transmission to IOTC. It is noted that in 2020, 2021 and 2022, it was not possible to have onboard observers in this fleet. In 2020 and 2021 was mostly due to covid-19 related restrictions to have onboard observers and restrictions in international traveling, while in 2022 mostly due to administrative issues. In 2023 there was again observer trips covered and the data transmitted to the IOTC Secretariat.
23/07	On reducing the incidental bycatch of seabirds in longline fisheries.	Paragraphs 3–7	<p>IOTC recommendations on seabirds have been made available to the fishermen operating longline gear. Skippers are asked to adopt mitigation measures, namely the use of tori lines, line weights and to conduct night gear setting with minimum deck lights, when fishing south of 25° South or whenever interaction with seabirds is foreseen. Moreover, within the scope of the EU data collection framework (EU-Portugal mainland component), skippers are encouraged to report the incidental catches of sea birds. The recently IOTC ID sea-bird guides are distributed to the fleet whenever there are requests.</p> <p>The EU adopted in 2012 an Action Plan to address the problem of incidental catches of seabirds in fishing gears of its fishing fleets, that also applies to Portuguese vessels operating in the IOTC.</p> <p>It is also noted that EU.Portugal scientists have participated in a collaborative work to evaluate the effectiveness of mitigation measures for sea-birds, that included raw detailed data analysis from various longline fleets operating in the southwest Indian Ocean and southern Atlantic (Jiménez et al., 2020).</p>

9. LITERATURE CITED

Andrade, I., Rosa, D., Lechuga, R., Coelho, R. 2017. Age and growth of blue shark in the Indian Ocean. 13th Working Party on Ecosystems and Bycatch, 4-8 September, San Sebastian, Spain. IOTC Document, IOTC–2017–WPEB13–20. 15pp.

Andrade, I., Rosa, D., Muñoz-Lechuga, R., Coelho, R. 2019. Age and growth of the blue shark (*Prionace glauca*) in the Indian Ocean. *Fisheries Research*, 211: 238–246.

Bach, P., Sabarros, P.S., Romanov, E.V., Coelho, R., Guillon, N., Massey, Y., Murua, H. 2021. Third progress report on tag deployments to investigate the post-release mortality of oceanic white sharks discarded by EU

purse seine and pelagic longline fisheries in the South-West Indian Ocean (POREMO project). 17th Working Party on Ecosystems and Bycatch: Assessment Meeting (WPEB17-AS). 6-10 September 2021, Online Meeting. IOTC Document, IOTC-2021-WPEB17-AS-26_rev1. 9pp

Camargo SM, Coelho R, Chapman D, Howey-Jordan L, Brooks EJ, Fernando D, et al. 2016. Structure and Genetic Variability of the Oceanic Whitetip Shark, *Carcharhinus longimanus*, Determined Using Mitochondrial DNA. PLoS ONE 11(5): e0155623. <https://doi.org/10.1371/journal.pone.0155623>

Coelho, R. 2016. Hooking mortality of oceanic whitetip sharks caught in a pelagic longline fishery targeting swordfish in the SW Indian Ocean: comments on the efficiency of no-retention measures. 12th Working Party on Ecosystems and Bycatch, 12-16 September, Victoria, Seychelles. IOTC Document, IOTC-2016-WPEB12-26. 7pp.

Coelho, R., Rosa, D. 2017. Catch reconstruction for the Indian Ocean blue shark: an alternative hypothesis based on ratios. 13th Working Party on Ecosystems and Bycatch, 4-8 September, San Sebastian, Spain. IOTC Document, IOTC-2017-WPEB13-22. 15pp.

Coelho, R., Mejuto, J., Domingo, A., Yokawa, K., Liu, K-M., Cortés, E., Romanov, E., da Silva, C., Hazin, F., Arocha, F., Mwilima, A.M., Bach, P., Ortiz de Zarate, V., Roche, W., Lino, P.G., García-Cortés, B., Ramos-Cartelle, A.M., Forselledo, R., Mas, F., Ohshimo, S., Courtney, D., Sabarros, P.S., Perez, B., Wogerbauer, C., Tsai, W-P., Carvalho, F., Santos, M.N. 2018. Oceanic-wide distribution patterns and population structure of blue shark (*Prionace glauca*) in the Atlantic and Indian oceans. *Fish and Fisheries*, 19: 90–106.

Coelho, R., Apostolaki, P., Bach, P., Brunel, T., Davies, T., Díez, G., Ellis, J., Escalle, L., Lopez, J., Merino, G., Mitchell, R., Macias, D., Murua, H., Overzee, H., Poos, J.J., Richardson, H., Rosa, D., Sánchez, S., Santos, C., Séret, B., Urbina, J.O., Walker, N. 2019. Improving scientific advice for the conservation and management of oceanic sharks and rays. Final Report. European Commission. Specific Contract No. 1 under Framework Contract No. EASME/EMFF/2016/008. 620 pp + Anexes. DOI: 10.2826/229340. Available at: <https://publications.europa.eu/en/publication-detail/-/publication/bb27e867-6185-11e9-b6eb-01aa75ed71a1/language-en>.

Coelho, R., Bach, P., Santos, C.C., Rosa, D., Romanov, E., Infante, P., Massey, Y., Mees, C., Arrizabalaga, H. 2020. Evaluation of the effects of hooks' shape & size on the catchability, yields and mortality of target and bycatch species, in the Atlantic Ocean and adjacent seas surface longline fisheries. Final Report. European Commission. Specific Contract No. 16 under Framework Contract No. EASME/EMFF/2016/008. 143 pp + XI Appendices. Available at: <https://op.europa.eu/en/publication-detail/-/publication/da6d2ad9-1418-11eb-b57e-01aa75ed71a1/language-en/format-PDF/source-167066032>.

Coelho, R., Santos, C.C., Rosa, D., Lino, P.G. 2021. Updated blue shark catches and standardized CPUE for the Portuguese pelagic longline fleet in the Indian Ocean. 17th Working Party on Ecosystems and Bycatch Data Preparatory Meeting (WPEB17-DP). 12-14 April 2021, Online Meeting. IOTC Document, IOTC-2021-WPEB17-DP-10. 17pp.

Coelho, R., Rosa, D., Lino, P.G., 2023. Update of the swordfish catch, effort and standardized CPUEs by the Portuguese pelagic longline fleet operating in the Indian Ocean, between 1998 and 2022. Working Party on Billfish (WPB), 6-9 September 2023, Hybrid / Reunion Island, France. IOTC Document: IOTC-2023-WPB21-12.

Ferrette, B.L.S., Mourato, B., Hazin, F.H.V., Arocha, F., Williams, S.M., Rodrigues-Jr, C.E., Porto-Foresti, F., Amorim, A.F., Rotundo, M.M., Coelho, R., Hoolihan, J.P., Sow, F.N., Diaha, N.C., Romanov, E.V., Domingues, R.R., Oliveira, C., Foresti, F., Mendonça, F.F. 2021-In press. Global phylogeography of sailfish: evolutionary lineages with implications for fisheries management. *Hydrobiologia*.

Jiménez, S., Domingo, A., Winker, H., Parker, D., Gianuca, D., Neves, T., Coelho, R., Kerwath, S. 2020. Towards mitigation of seabird bycatch: large-scale effectiveness of night setting and tori lines across multiple pelagic longline fleets. *Biological Conservation*, 247: 108642. DOI: <https://doi.org/10.1016/j.biocon.2020.108642>

Mendes, N.J., Cruz, V.P., Mendonça, F.F., Pardo, B.G., Coelho, R., Ashikaga, F.Y., Camargo, S.M., Martínez, P., Oliveira, C., Santos, M.N., Foresti, F. 2015. Microsatellite loci in the oceanic whitetip shark and cross-species amplification using pyrosequencing technology. *Conservation Genetics Resources*, 7: 585–589.

Monsinjon, J.R., Laforge, A., Gaspar, P., Barat, A., Bousquet, O., Ciccione, S., Jean, C., Ballorain, K., Dalleau, D., Coelho, R., Bonhommeau, S., Bourjea, J., Loggerhead turtle oceanic-neritic habitat shift reveals key foraging areas in the Western Indian Ocean. *Frontiers in Marine Science*, 10: 1204664. DOI:10.3389/fmars.2023.1204664

Morales, M.J.A., Mendonça, F.F., Magalhães, C.O., Oliveira, C., Coelho, R., Santos, M.N., Cruz, V.P., Piercy, A., Burgess, G., Hazin, F.H.V., Foresti, F. 2018. Population genetics of the bigeye thresher shark *Alopias superciliosus* in the Atlantic and Indian Oceans: implications for conservation. *Reviews in Fish Biology and Fisheries*, 28: 941–951.

Nieblas, A.E., Bonhommeau, S., Brisset, B., Bernard, S., Chanut, J., Coelho, R., Colas, Y., Evano, H., Faure, C., Hervé, G., Kerzerho, V., Rouyer, T., 2020. First results of the FLOPPED project : satellite tagging of billfish around the Indian Ocean. 16th Working Party on Data Collection and Statistics (WPDCS 16). 30 November – 3 December 2020, Online Meeting. IOTC Document, IOTC-2020-WPDCS16-15. 9pp

Ortiz de Urbina, J., Carruthers, T., Coelho, R., Rosa, D., Murua, H., Saber, S., Macias, D. 2018. Preliminary management strategy evaluation for blue shark in the Indian Ocean using a data-limited approach. 14th Working Party on Ecosystems and Bycatch, 10-14 September, Cape Town, South Africa. IOTC Document, IOTC-2018-WPEB14-36. 27pp.

Romanov, E.V., Bach, P., Bonhommeau, S., Coelho, R., DeBruyn, P., Martin, S., Murua, H., Norman, S., Sabarros, P.S., Semba, Y., Silva, C., Tsai, W.-P., Zhu, J. 2020. The third progress report on the implementation of the IOTC bigeye thresher shark post-release mortality study project (IOTC BTH PRM Project). 16th Working Party on Ecosystems and Bycatch (WPEB16). 7-10 September 2020, Online Meeting. IOTC Document, IOTC-2020-WPEB16-INF1. 13pp.

Romanov, E., Ramos, M.L., Baez, J.C., Coelho, R., Ruiz, J., Sabarros, P., Merino, G., 2023. Shortbill spearfish *Tetrapturus angustirostris*: a note on the distribution and occurrence in the Indian Ocean fisheries. Working Party on Billfish (WPB), 6-9 September 2023, Hybrid / Reunion Island, France. IOTC Document: IOTC-2023-WPEB21.

Rosa, D., Coelho, R. 2016. Estimates of intrinsic rate of population change and steepness for blue shark (*Prionace glauca*) in the Indian Ocean. 12th Working Party on Ecosystems and Bycatch, 12-16 September, Victoria, Seychelles. IOTC Document, IOTC-2016-WPEB12-18. 7pp.

Rosa, D., Coelho, R., Lino, P.G., Santos, M.N. 2015. Observations on the Indo-Pacific sailfish, *Istiophorus platypterus*, from the Portuguese pelagic longline fleet in the southwest Indian Ocean. 13th Working Party on Billfishes, 1-5 September, Olhão, Portugal. (IOTC Document: IOTC-2015-WPB13-23_Rev1). 18pp.

Santos, C.C., Rosa, D., Coelho, R., 2019. Hook, bait and leader type effects on surface pelagic longline retention and mortality rates: a meta-analysis with comparisons for target, bycatch and vulnerable fauna interactions. 15th Working Party on Ecosystems and Bycatch (WPEB). 3-7 September 2019, La Reunion Island. IOTC Document, IOTC-2019-WPEB15-39. 23pp.

Santos, M.N., Coelho, R., Lino, P.G. 2014. Preliminary results of the LL-Sharks Project: A comparison of wire versus monofilament leaders in the Portuguese pelagic swordfish fishery in the southwestern Indian Ocean.



10th Working Party on Ecosystems and Bycatch, 27-31 October, Yokohama, Japan. IOTC Document, IOTC-2014-WPEB10-18. 13pp.

Santos, M.N., Lino, P.G., Coelho, R. 2017. Effects of leader material on catches of shallow pelagic longline fisheries in the southwest Indian Ocean. *Fishery Bulletin*, 115(2): 219-232.

Walker, N., Ellis, J., Coelho, R., Murua, H., Rosa, D. 2018. Exploring the use of length based indicators for blue shark in the Indian Ocean. 14th Working Party on Ecosystems and Bycatch, 10-14 September, Cape Town, South Africa. IOTC Document, IOTC-2018-WPEB14-35. 21pp.



EU-ITALY National Report to the Scientific Committee of the Indian Ocean Tuna Commission, 2024

Authors

Directorate-General for Maritime Fisheries and Aquaculture

INFORMATION ON FISHERIES, RESEARCH AND STATISTICS

<p>In accordance with IOTC Resolution 15/02 (and other data related CMMs as noted below), final scientific data for the previous year were provided to the IOTC Secretariat by 30 June of the current year, for all fleets other than longline [e.g., for a National Report submitted to the IOTC Secretariat in 2024, final data for the 2023 calendar year must be provided to the Secretariat by 30 June 2024)</p>	<p>Yes</p>
<p>In accordance with IOTC Resolution 15/02, provisional longline data for the previous year was provided to the IOTC Secretariat by 30 June of the current year [e.g., for a National Report submitted to the IOTC Secretariat in 2024, preliminary data for the 2023 calendar year were provided to the IOTC Secretariat by 30 June 2024].</p> <p>REMINDER: Final longline data for the previous year are due to the IOTC Secretariat by 30 Dec of the current year [e.g., for a National Report submitted to the IOTC Secretariat in 2024, final data for the 2023 calendar year must be provided to the Secretariat by 30 December 2024].</p>	<p>No</p> <p>Not applicable for EU-Italy</p>
<p>If no, please indicate the reason(s) and intended actions:</p>	

Executive Summary [Mandatory]

The report regards the fishing activities of "Torre Italia", the single vessel belonging to the Italian fishing fleet which operates in the IOTC area, during the 2023 fishing campaign. Data comes either from the reports issued by onboard scientific observers or by analysing the video footages recorded during a fishing trip, in the framework of a scientific programme developed by ORTHONGEL and under the technical responsibility of the BUREAU VERITAS LIVING RESOURCES based in Rennes – France

1. BACKGROUND/GENERAL FISHERY INFORMATION [MANDATORY]

The Italian fleet operating in the Indian Ocean includes a single fishing vessel named "**Torre Italia**", registered as "Torre Giulia" until September 2019. During the whole fishing season, the vessel was equipped with a purse seine and, in 2023, it operated within both the IOTC area, International waters and the EEZs, mainly close to the Seychelles islands and Madagascar.

2. FLEET STRUCTURE [MANDATORY]

The F/V has a length of 81,90 meters and a width of 13,70 meters. The gear equipped on board is a purse seine (PS). The capacity of the hold is 1.794 m³ and the boat is able to freeze about 1.280 tons of fish. The boat was built in 1997 at the PIRIOU shipyard. During the year up to 30 crew members from different nationalities have been employed on board.

Technical characteristics:

- Construction year: 1997
- Length overall: 79,59 mt
- Length between perpendiculars: 70,82 m
- Width: 13,79 m Draft: 6,60 m
- Number of fish holds: 17 (16 deck offsets + one big (1-2 on bow))
- Storage capacity: 1794 m³ (1280 t)
- Capacity of fuel tanks: 620 m³
- Main engine power: 3690 KW
- Peak speed: 14 knots
- Cruising speed: 12 knots

A total of n° 10 fishing trips have been monitored by an observer on board. The average duration of the fishing trip is 33 days, with a minimum of 3 days at sea and a maximum of 54 days at sea. The average number of the fishing days is 27 for a total of n° 269 fishing operations. Some details as follow:

- 1) TRIP I: 08/01/2023 - 26/02/2023 - (observer on board) departure and arrival port **Victoria (Seychelles)**;
- 2) TRIP II: 02/03/2023 - 04/03/2023 - (observer on board; just streaming and no catches) departure port **Victoria (Seychelles)** and arrival port **Diego Suarez (Madagascar)**;
- 3) TRIP III: 09/03/2023 - 03/04/2023 - (observer on board) departure and arrival port **Diego Suarez (Madagascar)**;
- 4) TRIP IV: 06/04/2023 - 24/04/2023 - (observer on board) departure port **Diego Suarez (Madagascar)** and arrival port **Victoria (Seychelles)**;
- 5) TRIP V: 28/04/2023 - 20/06/2023 - (observer on board) departure and arrival port **Victoria (Seychelles)**;
- 6) TRIP VI: 24/06/2023 - 13/08/2023 - (observer on board) departure and arrival port **Victoria (Seychelles)**;

- 7) TRIP VII: 18/08/2023 – 04/10/2023 - (observer on board) departure and arrival port **Victoria (Seychelles)**.
No map distributions for this trip are available due to an issue with the electronic system. A different map has been drafted in order to represent the trip data;
- 8) TRIP VIII: 12/10/2023 - 15/10/2023 - (observer on board) departure port **Victoria (Seychelles)** and arrival port **Diego Suarez (Madagascar)**;
- 9) TRIP IX: 21/10/2023 - 05/12/2023 - (observer on board) departure port **Diego Suarez (Madagascar)** and arrival port **Victoria (Seychelles)**;
- 10) TRIP X: 12/12/2023 - 30/01/2024 - (observer on board) departure and arrival port **Victoria (Seychelles)**.

Table 1: Number of vessels operating in the IOTC area of competence, by gear type and size class

	2019	2020	2021	2022	2023
PS > 25mt	1	1	1	1	1

3. CATCH AND EFFORT (BY SPECIES AND FISHERY) [Mandatory]

The fishing activities have been carried out between the northern Madagascar area, the Seychelles islands and the Eastern coasts of the Africa. The fishing operations were fully conducted with the “purse seine” fishing gear (PS) and the caught species were mainly: *Katsuwonus pelamis* (SKJ), *Thunnus albacares* (YFT) and *Thunnus obesus* (BET), representing around 95% of the total catches. The majority of the catches were collected using the FADs gear for a total of 86% of the fishing operations.

Table 2. Annual catch and effort by fishery and primary species in the IOTC area of competence [Mandatory]

Tab. 2a - Annual catches by gear, primary species and type of fish distribution (2019-2023) in tons

Year	Gear	Primary Species									
		YFT		SKJ		BET		ALB		Others	
		FAD	Free School	FAD	Free School	FAD	Free School	FAD	Free School	FAD	Free School
2019	PS	1.333	1.091	566	2.104	103	395	36	1	0	5
2020	PS	734	461	759	1.134	79	105	5	0	10	5,25
2021	PS	1.927	1.001	4.889	157	810	40	5	0	26	0
2022	PS	1.419	767	2.677	158	325	18	2	0	61	0
2023	PS	1.362,5	546,5	3.809,8	355,2	431,34	5,66	1	0	211,83	7,52
TOTAL		10.642		16.609		2.312		50		326,6	

Tab 2a.1 - Annual catches by gear and type of association (2019-2024) in tons

Haul	Gear	Year				
		2019	2020	2021	2022	2023
Free school	Purse seine	2036	1575	1.198	943	915
FADs	Purse seine	3596	4683	7.657	4.484	5.816,5
Whale sharks	Purse seine	10	19	0	10	0

Tab. 2b - Annual effort by days at sea (2019-2023)

Year	Gear	Fishing Effort (days at sea)
2019	Purse seine	241
2020	Purse seine	165
2021	Purse seine	208
2022	Purse seine	166
2023	Purse seine	246

Figure 1. Historical annual catch for the national fisheries by primary species, for the IOTC area of competence for the entire history of the fisheries. **[Mandatory]**

Fishing Gear: PS

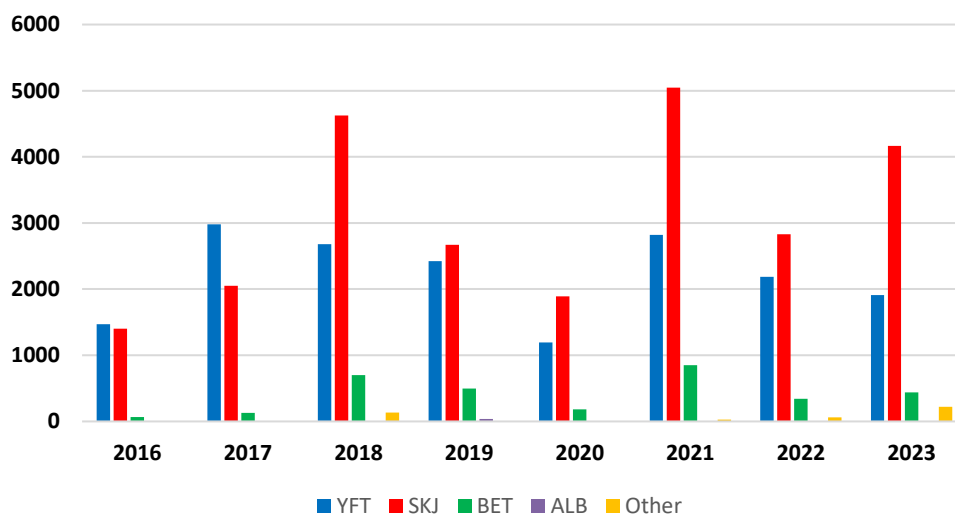
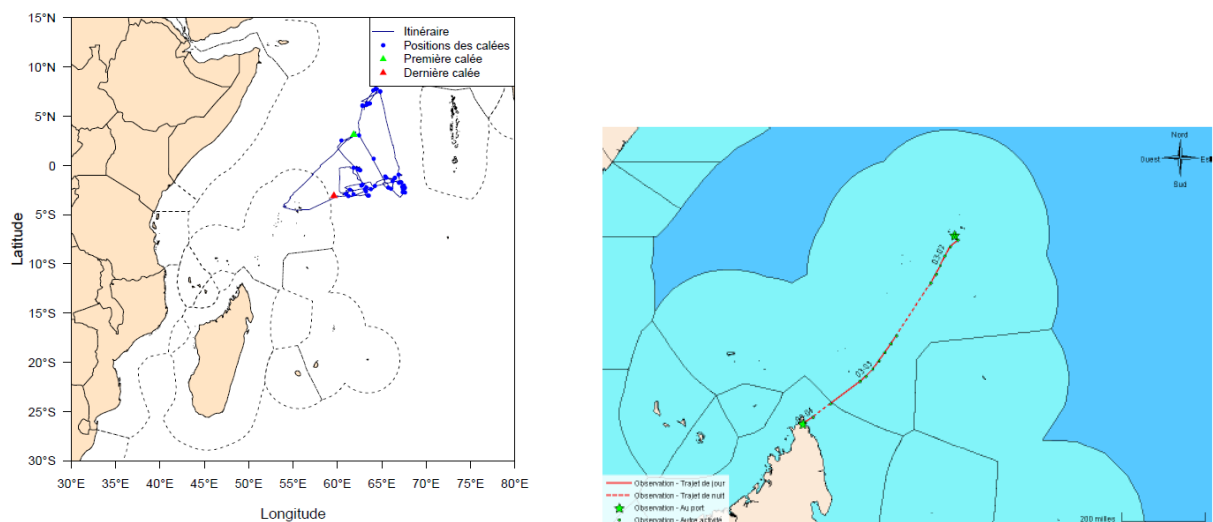
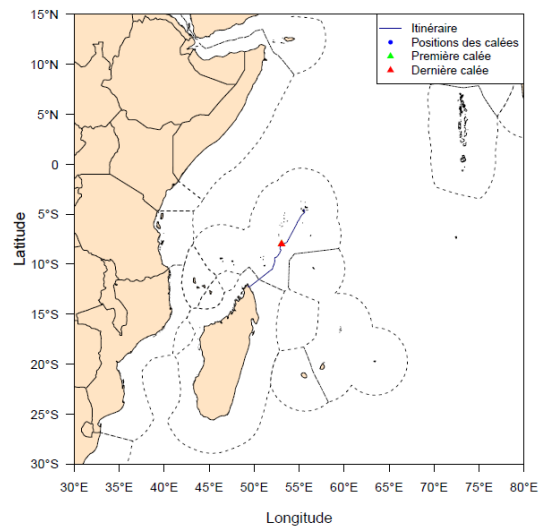
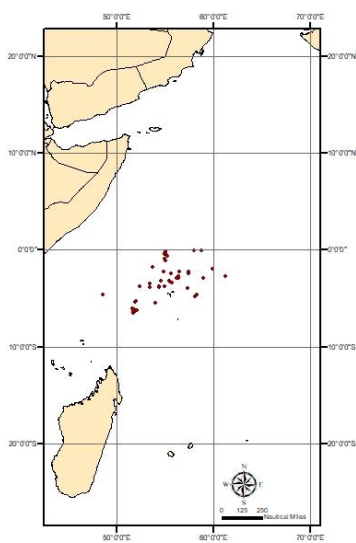
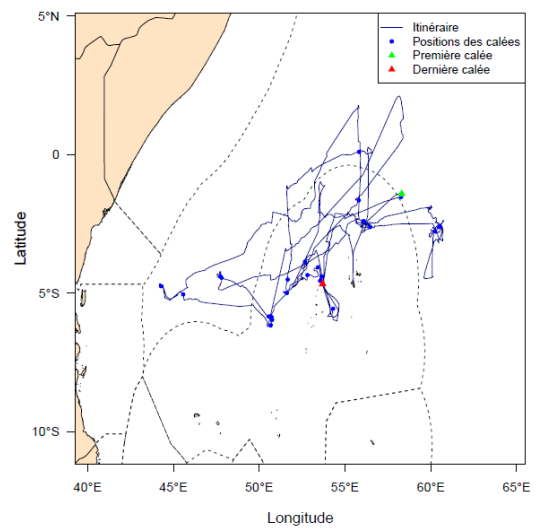
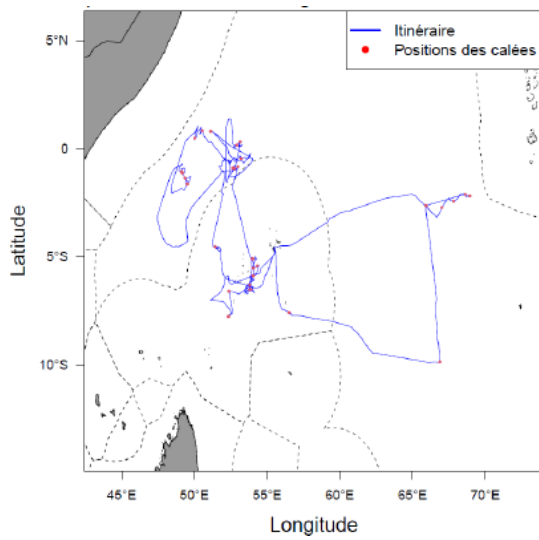
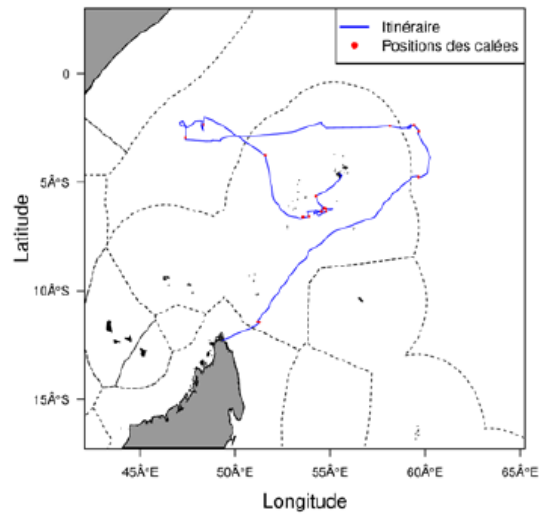
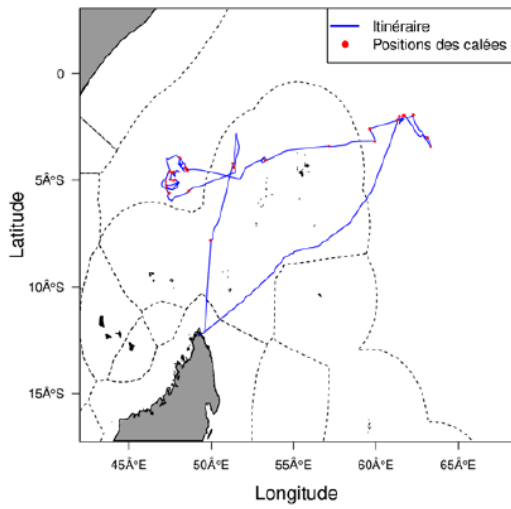


Figure 2a. Map of the distribution of fishing effort, by national fishery in the IOTC area of competence (most recent year e.g., 2023) (A total of V Fishing Trips was carried out in 2023) . **[Mandatory]**





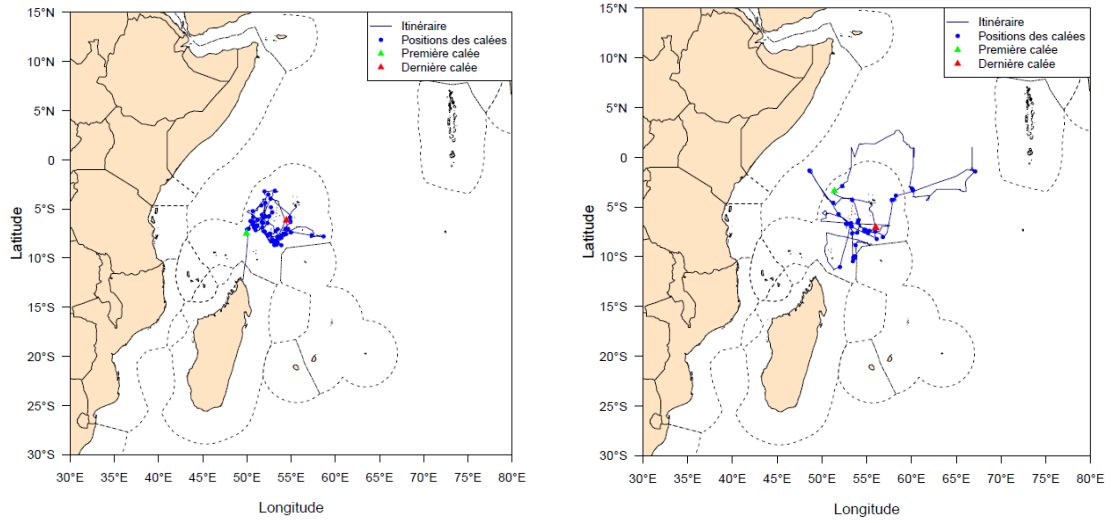
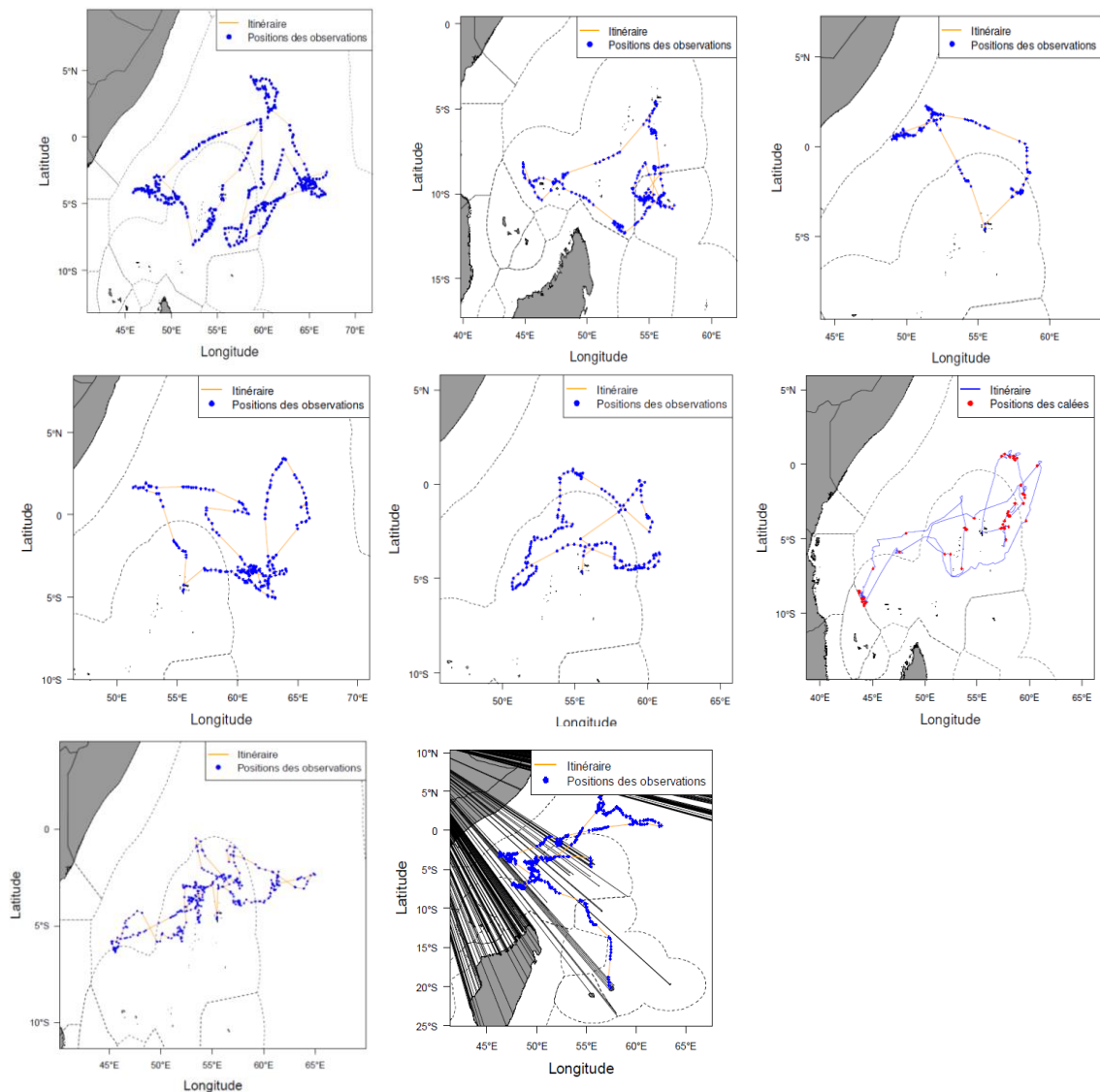
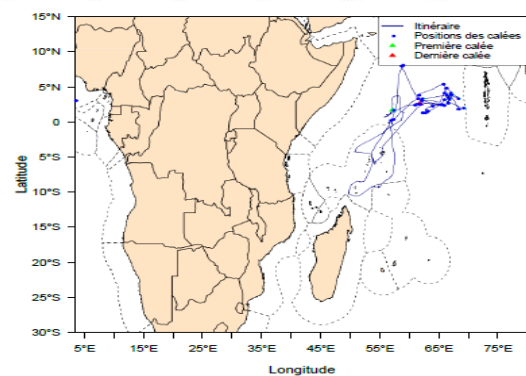
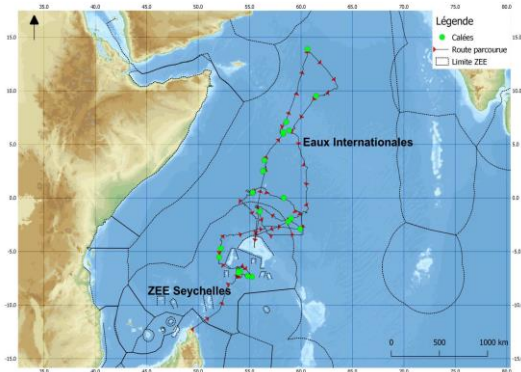
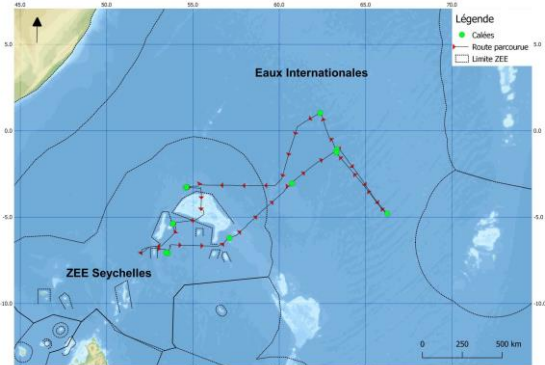
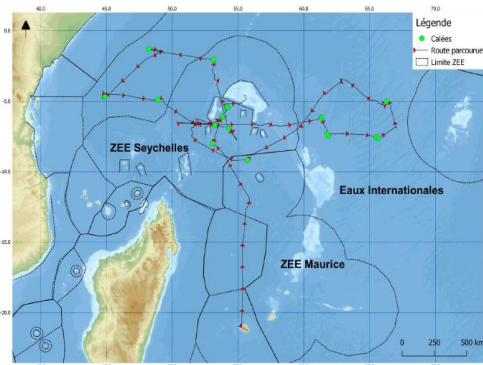
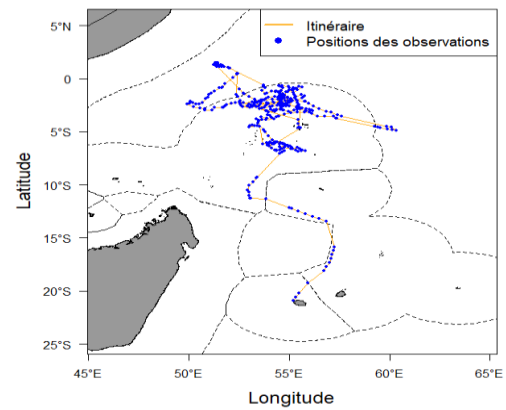
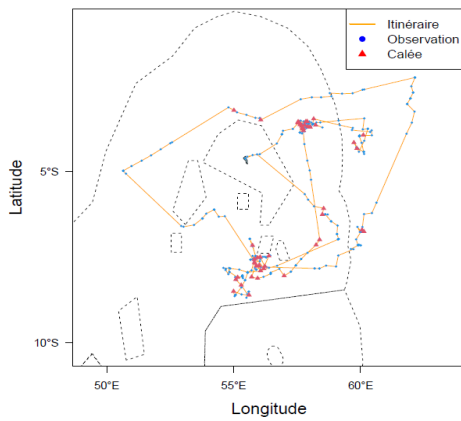
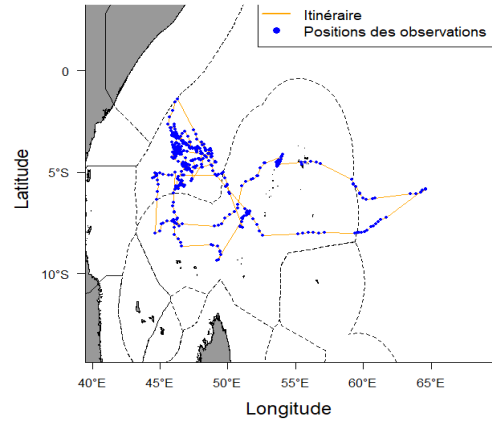
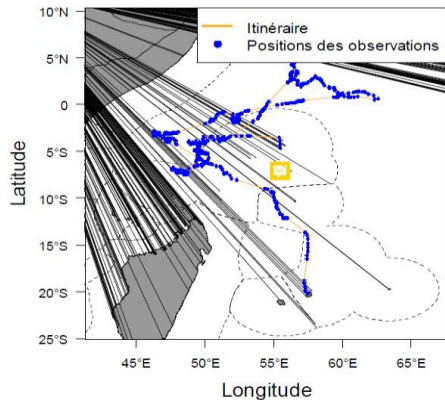


Figure 2b. Map of the distribution of fishing effort, by national fishery in the IOTC area of competence (average of the 5 previous years e.g., 2019–2023). **[Mandatory]**

2019 - (A total of VIII Fishing Trips was carried out in 2019)

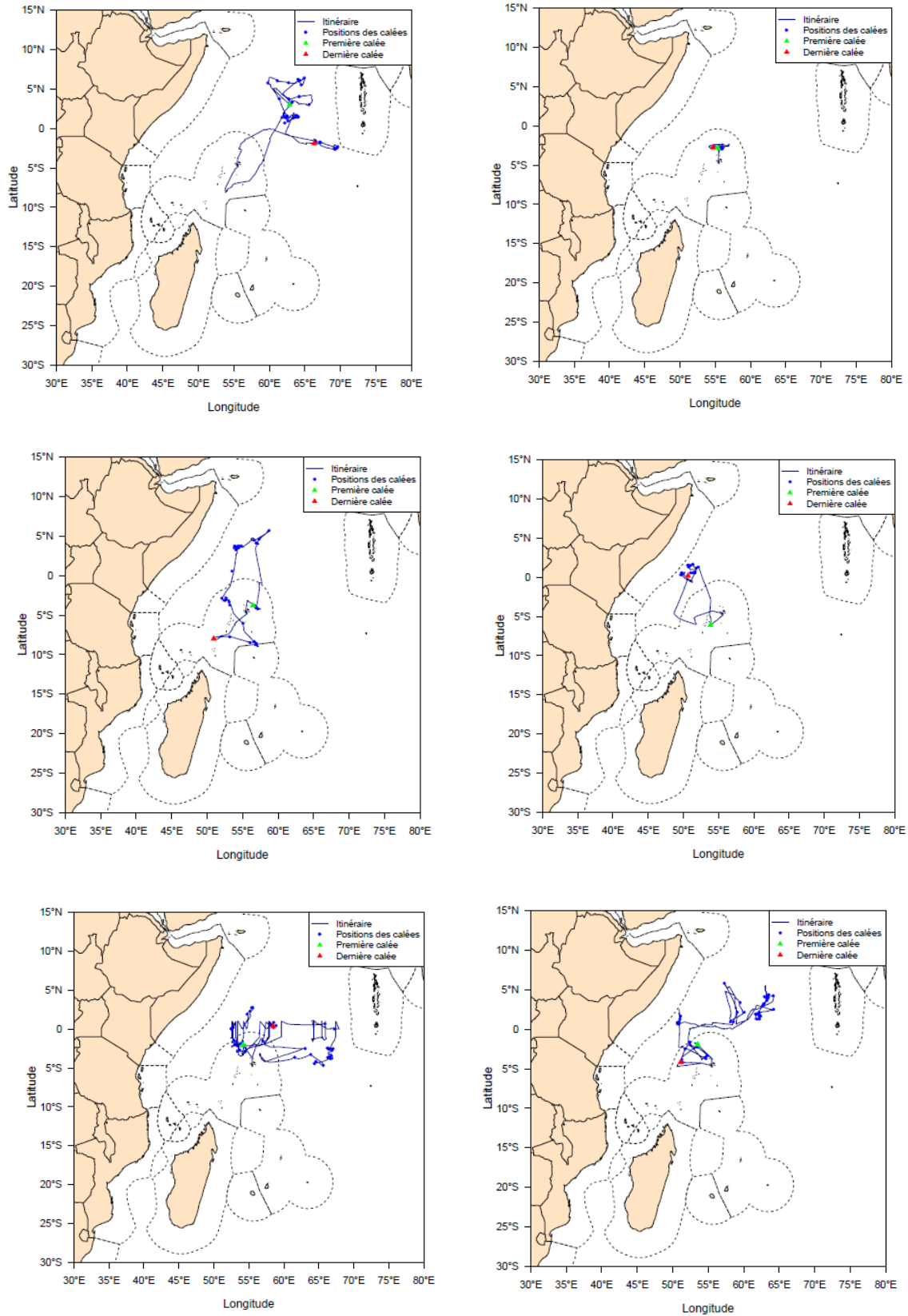


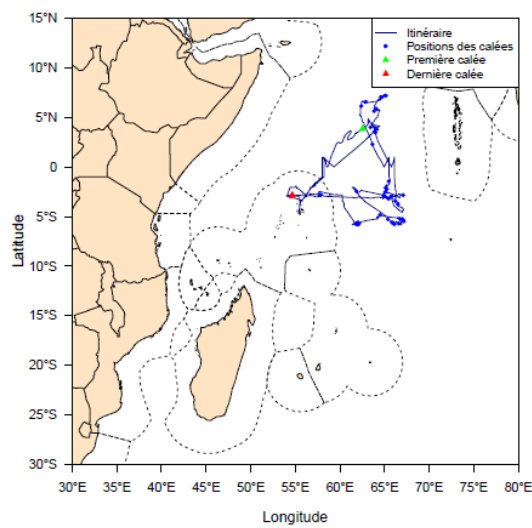
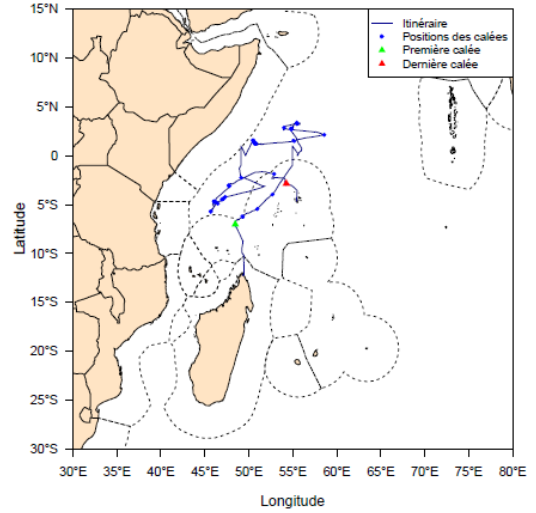
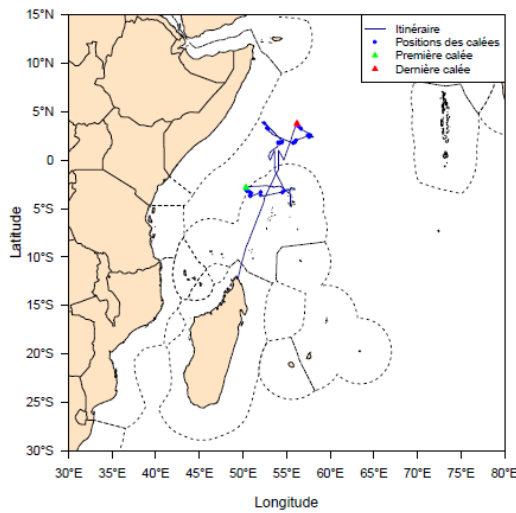
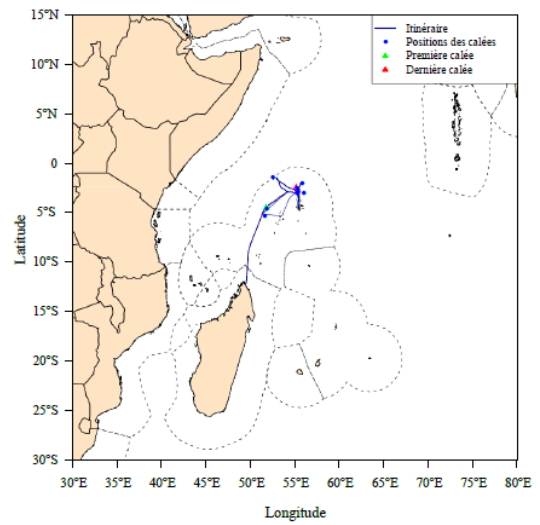
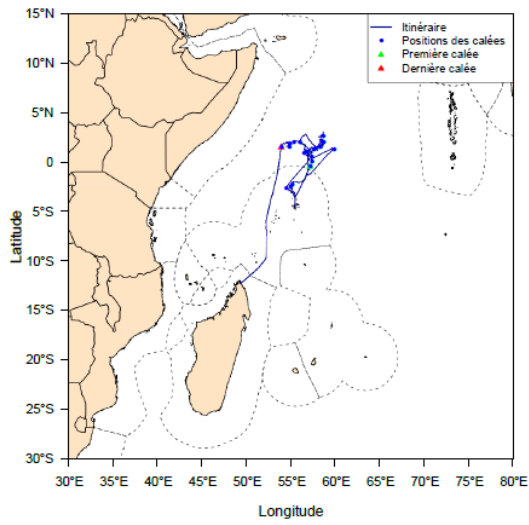
2020 - (A total of VIII Fishing Trips was carried out in 2020)



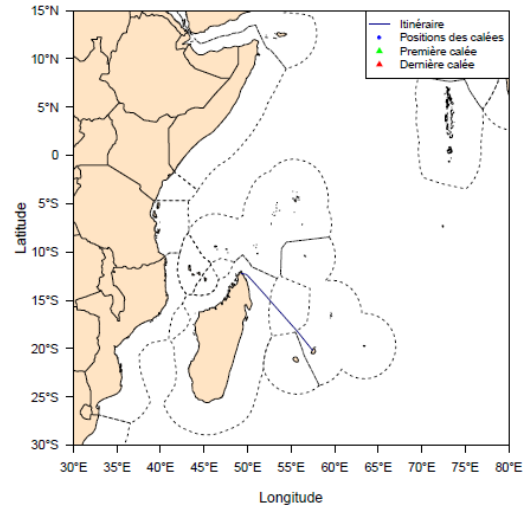
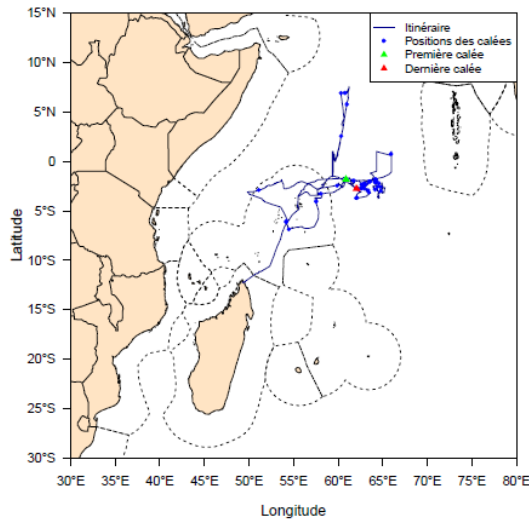
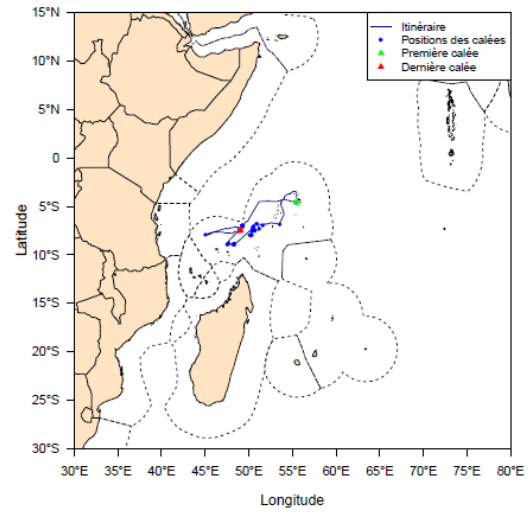
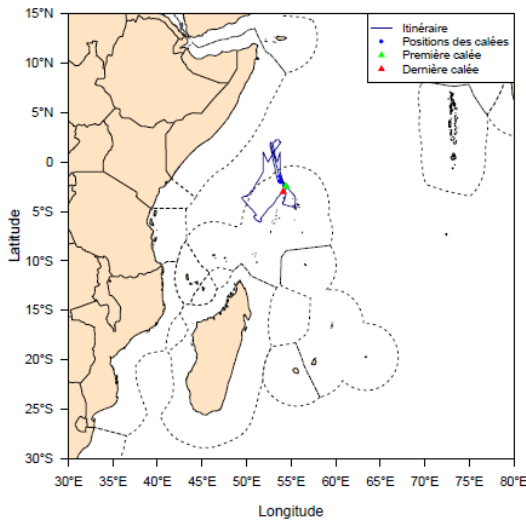
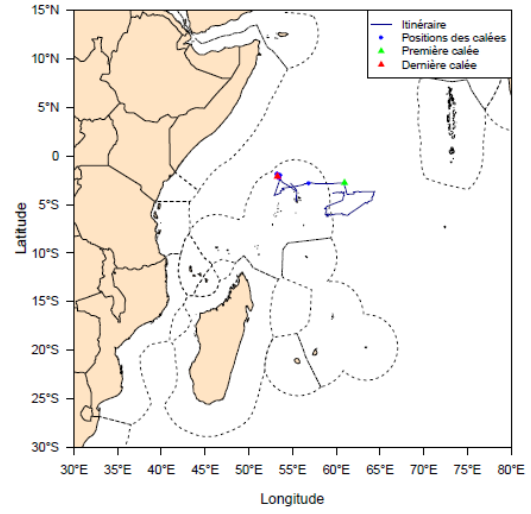
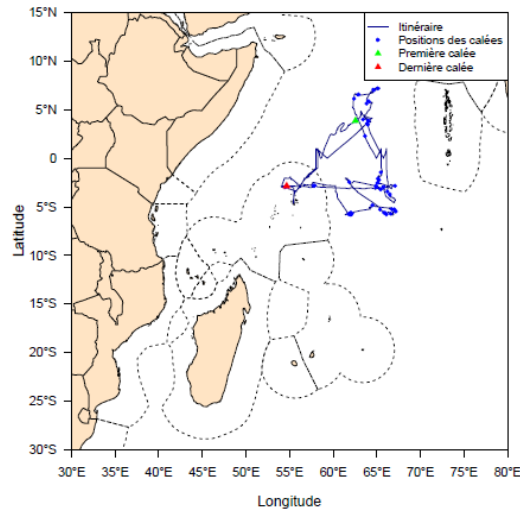
From July to December 2020, the distribution of the fishing effort is not available through maps, since data have been recorded through CCTV system onboard the vessel.

2021 - (A total of XI Fishing Trips was carried out in 2021)





2022 - (A total of XI Fishing Trips was carried out in 2022)



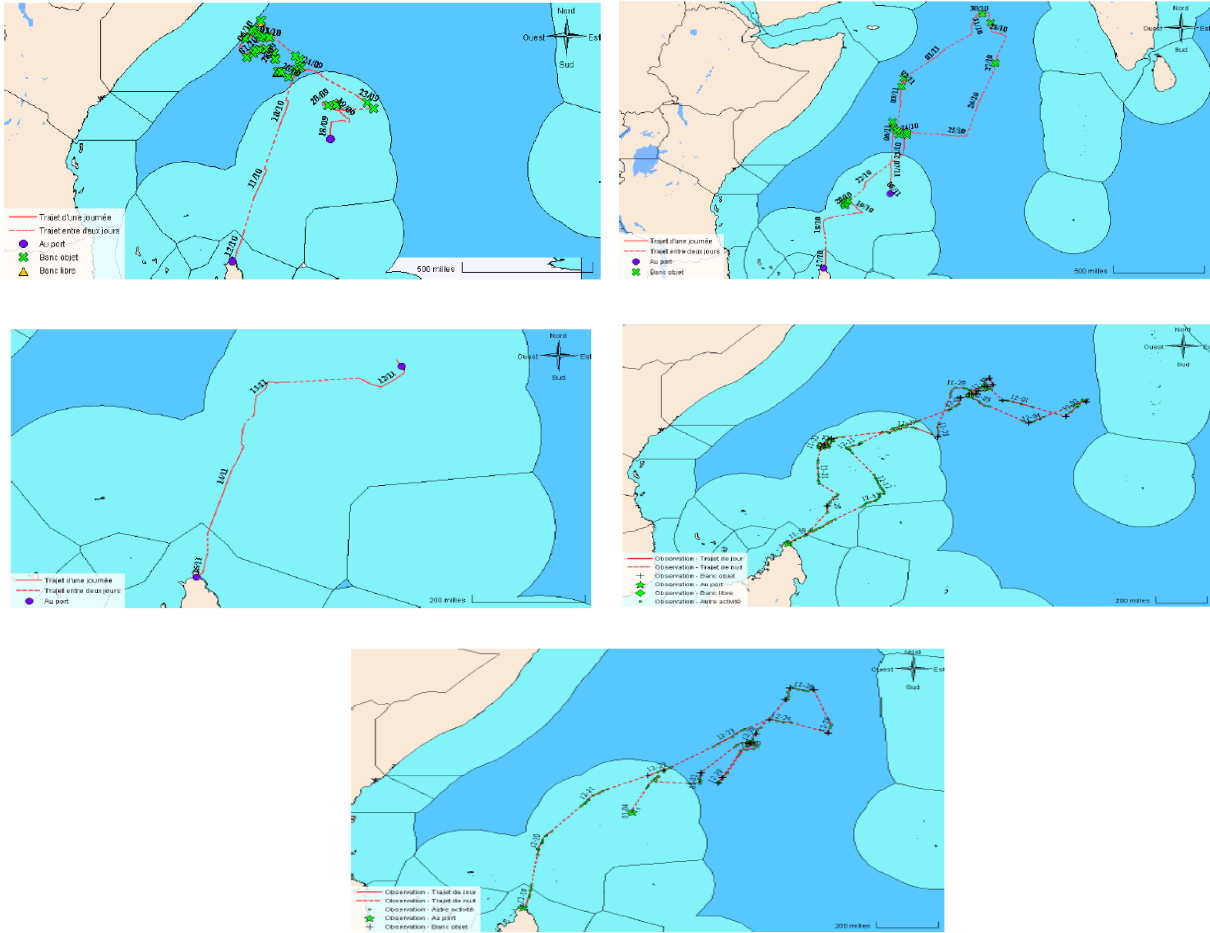
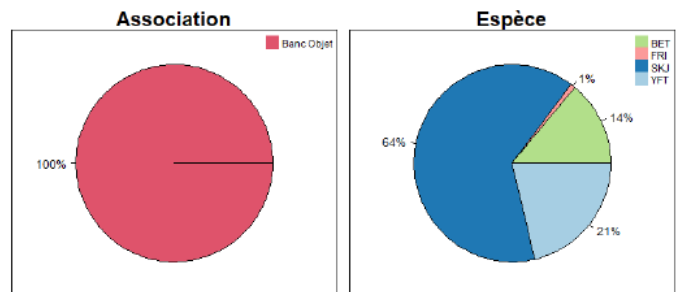
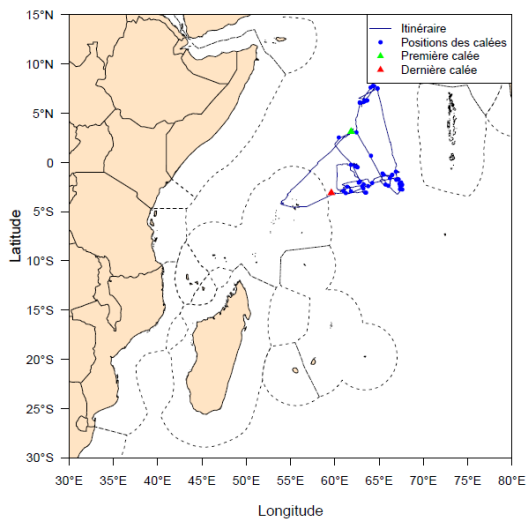
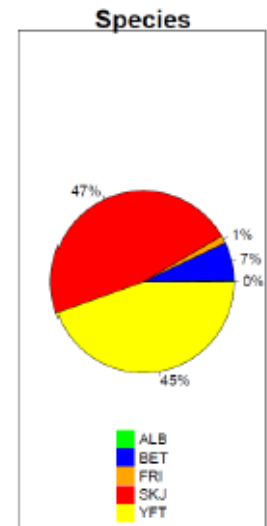
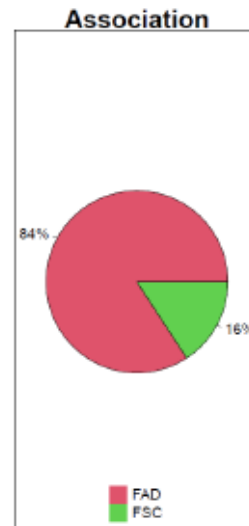
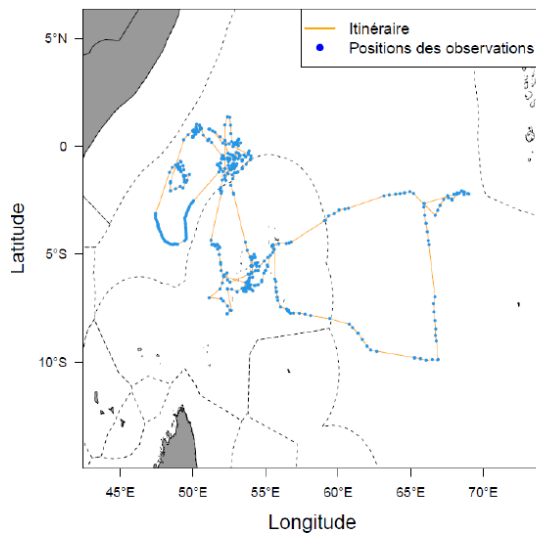
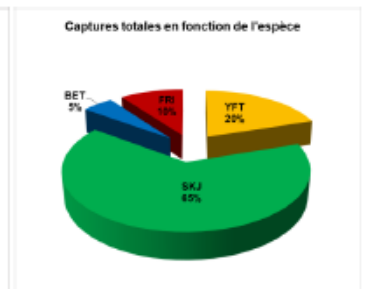
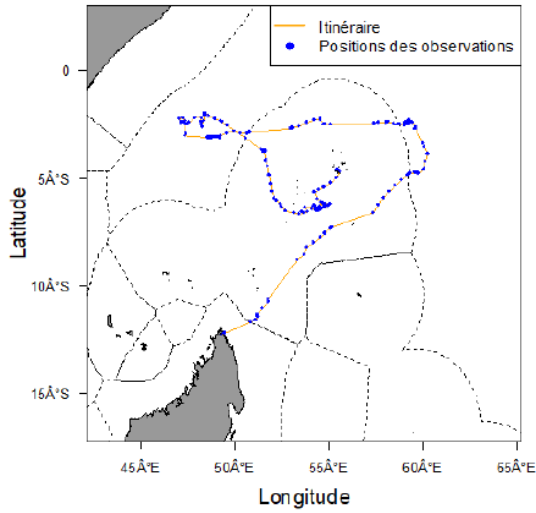
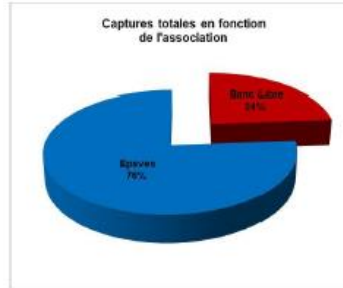
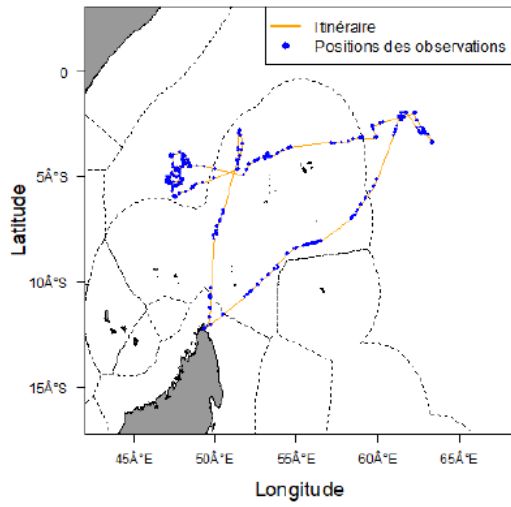
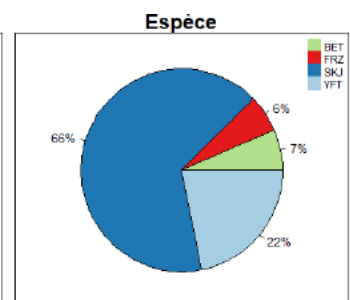
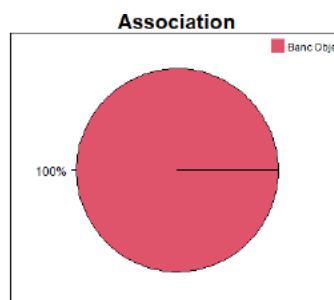
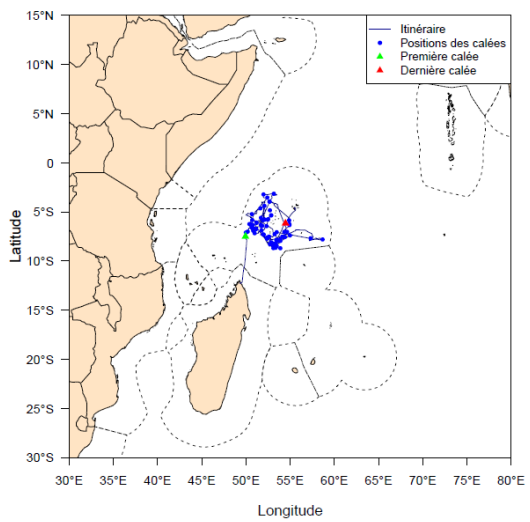
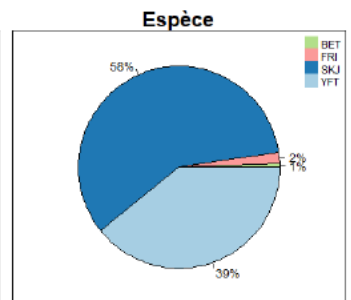
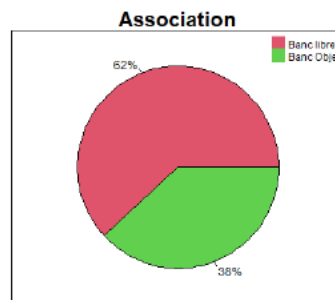
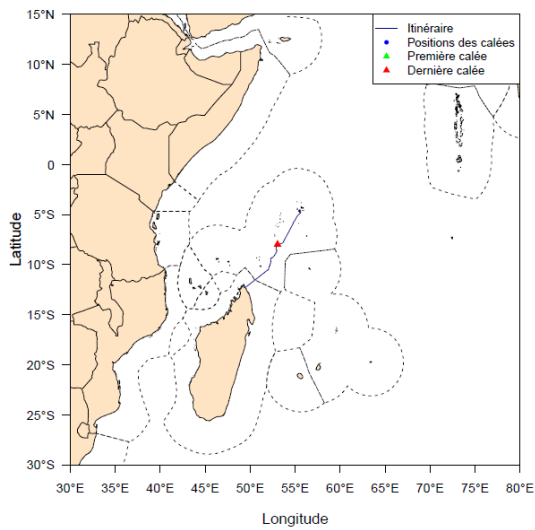
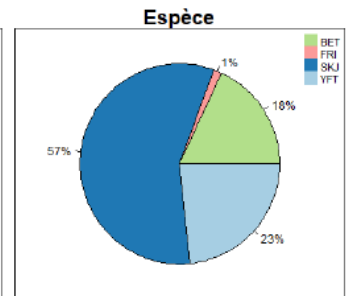
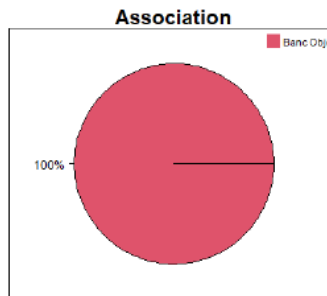
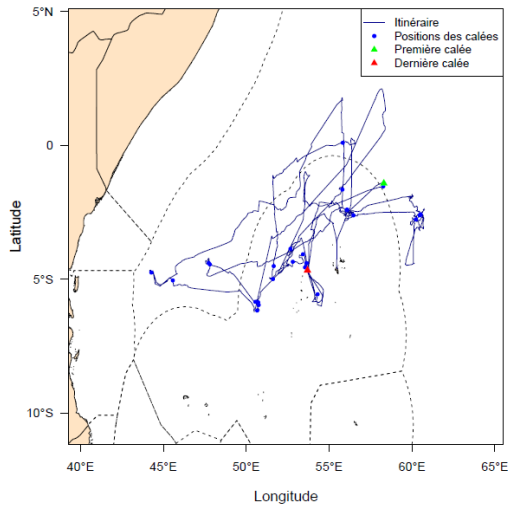


Figure 3a. Map of distribution of fishing catch, by species for the national fisheries, in the IOTC area of competence (most recent year e.g., 2023). **[Mandatory]**







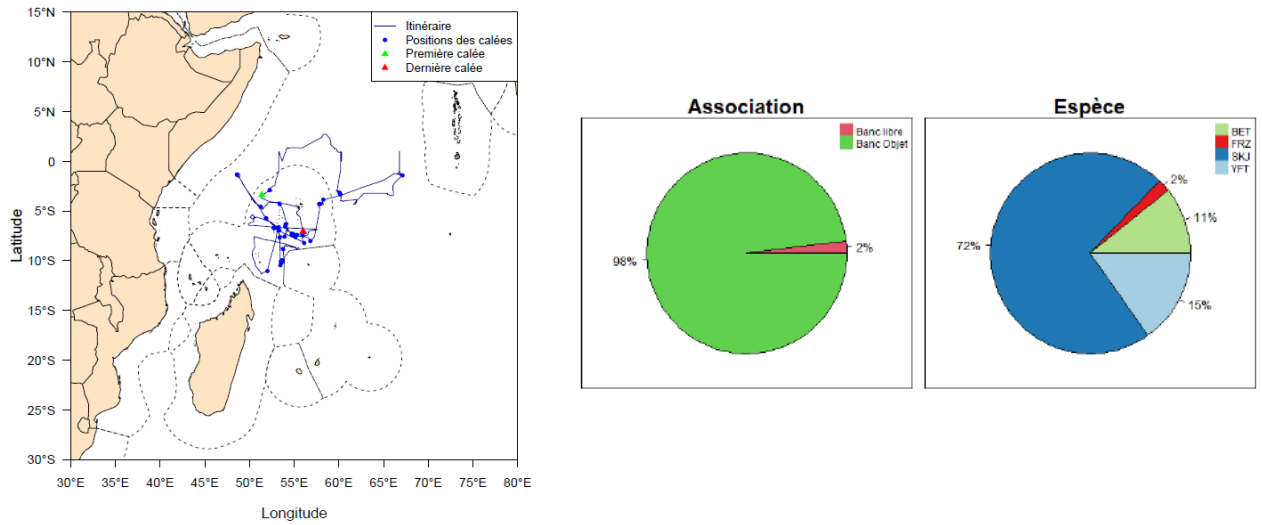
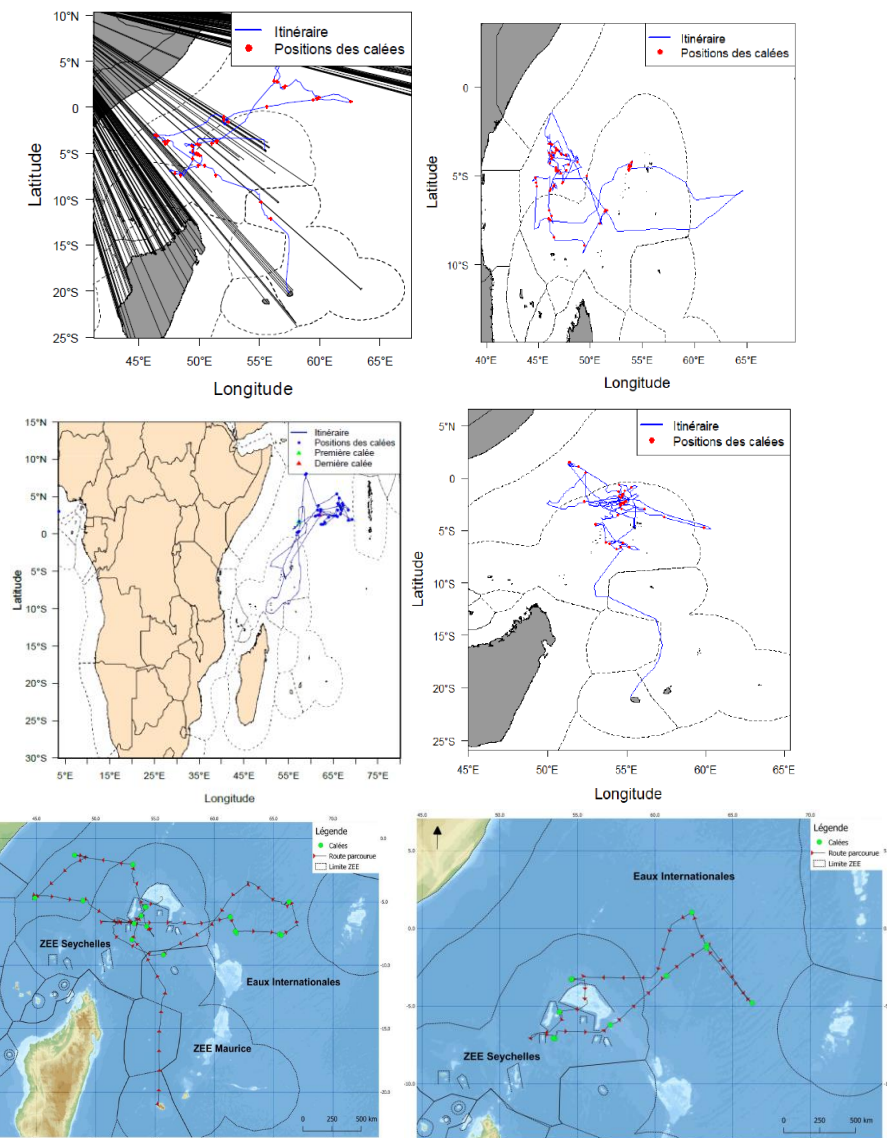
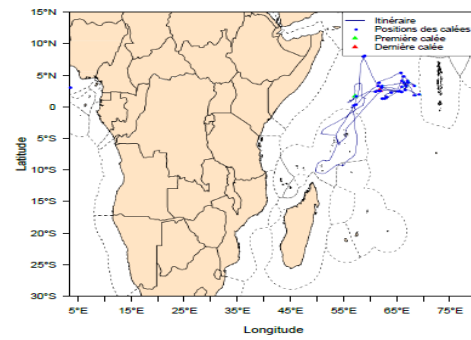
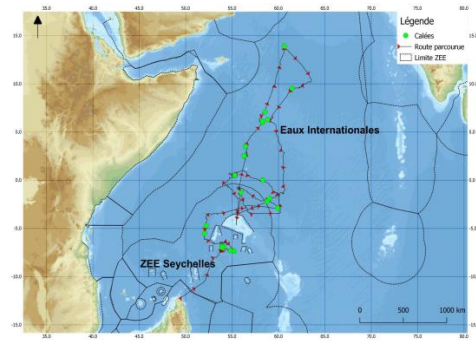


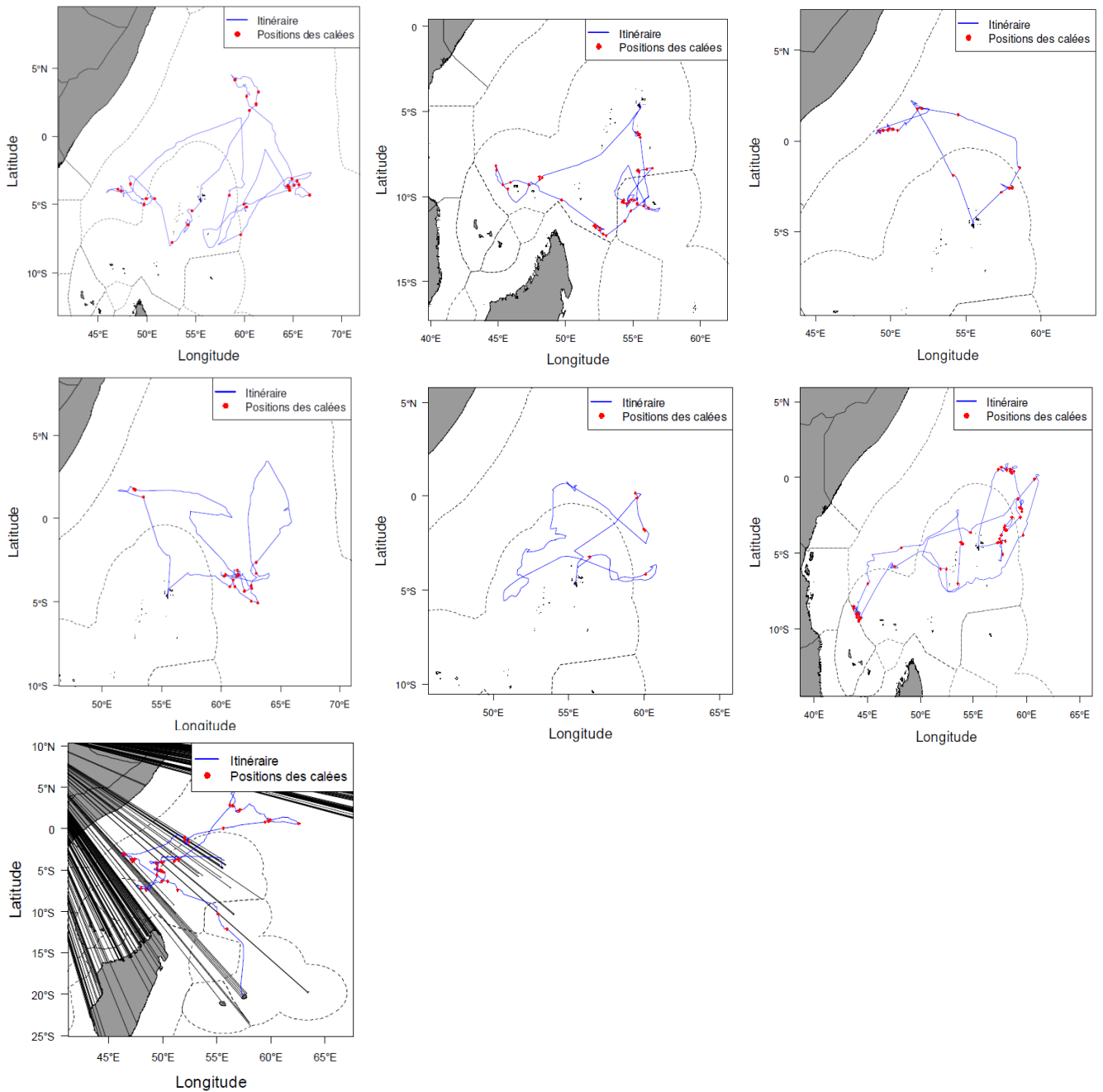
Figure 3b. Map of distribution of fishing catch, by species for the national fisheries, in the IOTC area of competence (average of the 5 previous years e.g., 2019–2023). **[Mandatory]**

2019 – (A total of VIII Fishing Trips was carried out in 2019)

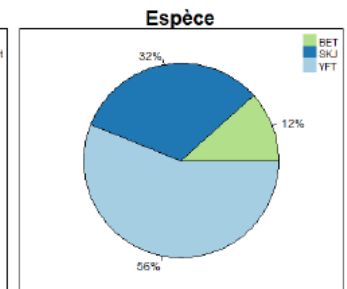
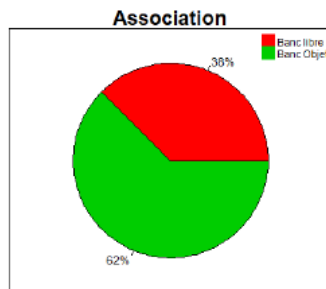
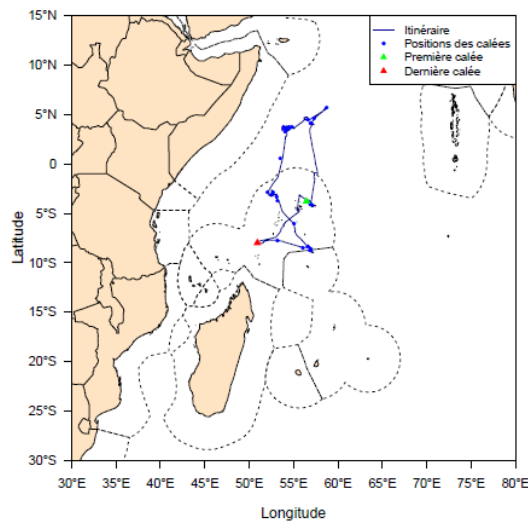
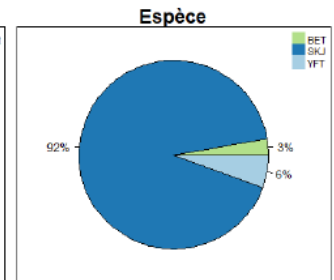
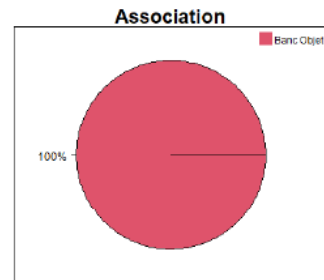
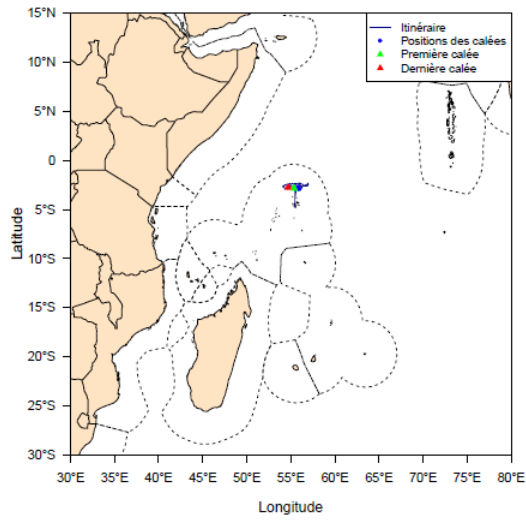
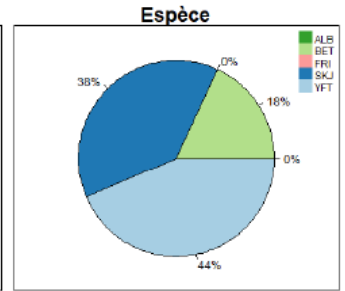
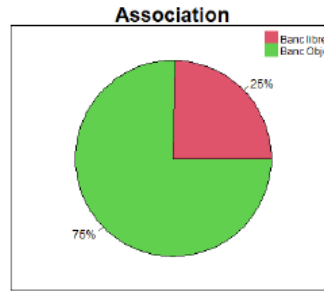
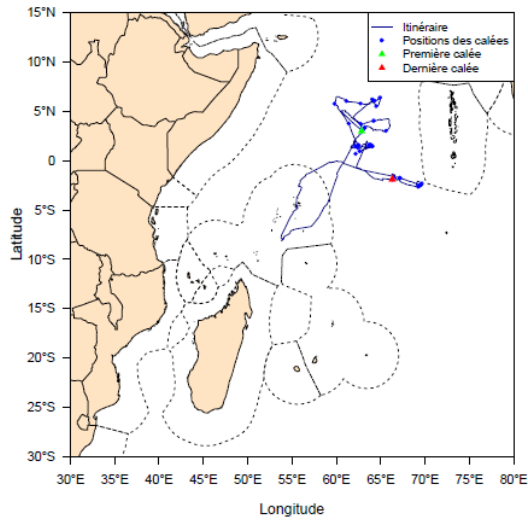


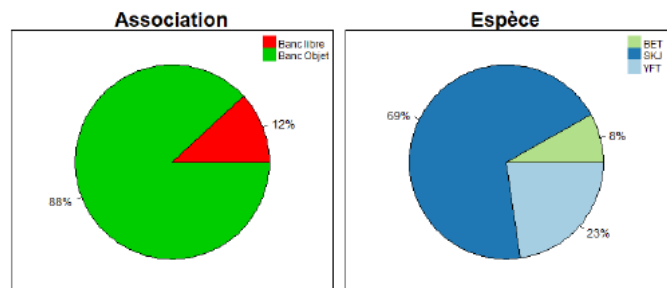
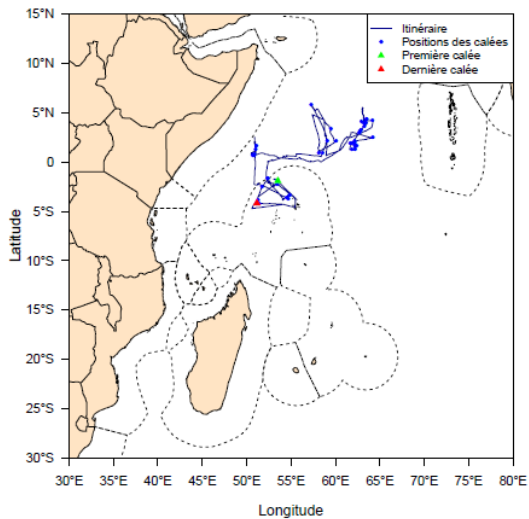
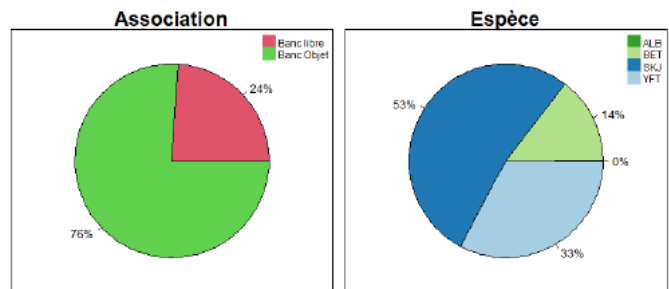
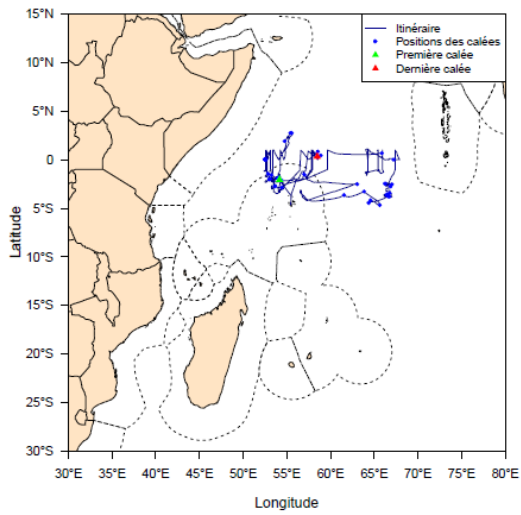
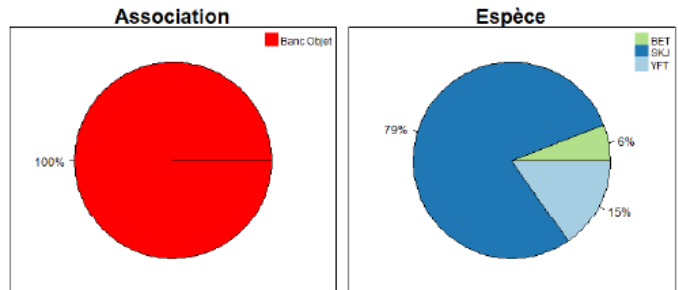
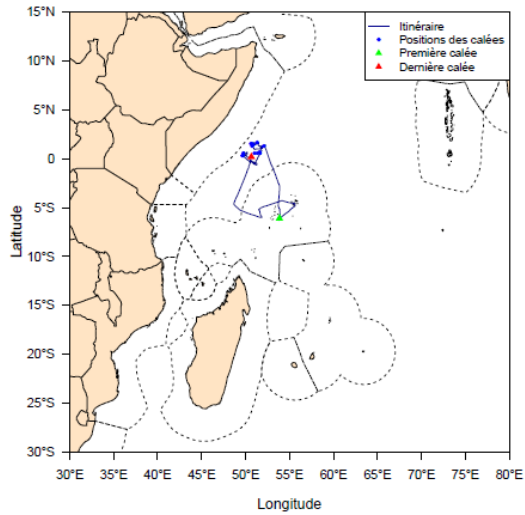


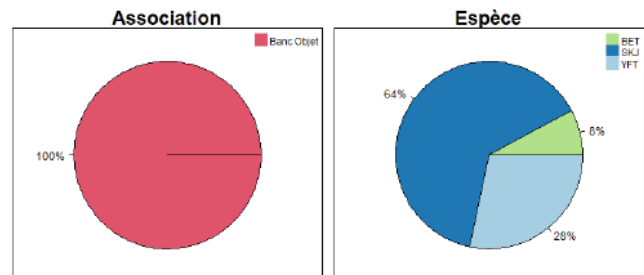
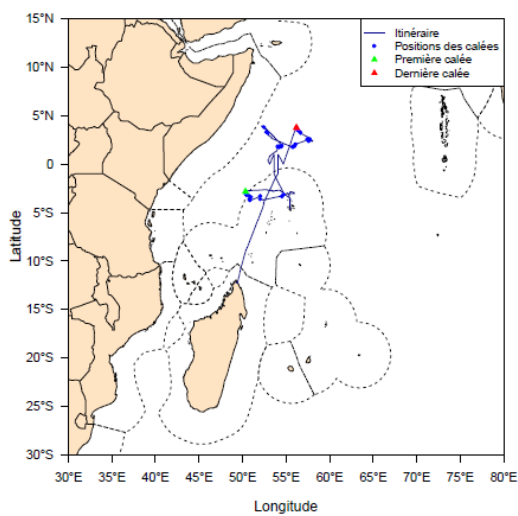
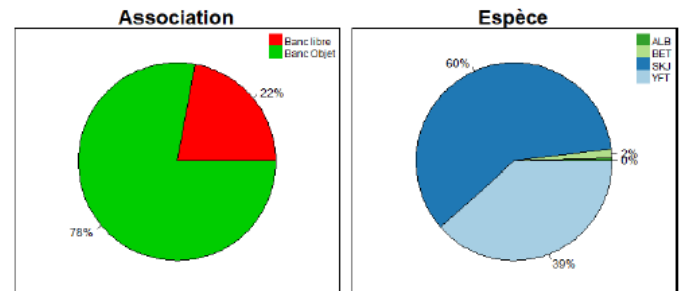
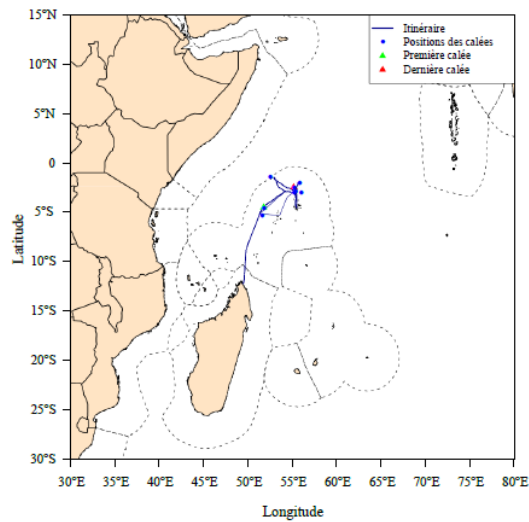
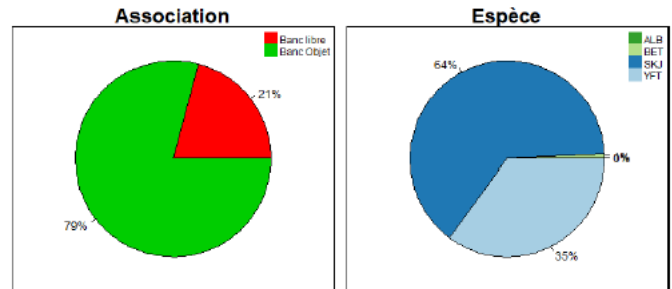
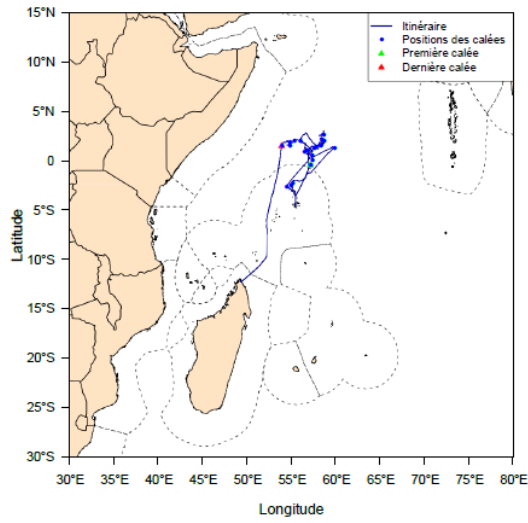
2020 – (A total of VIII Fishing Trips was carried out in 2020)

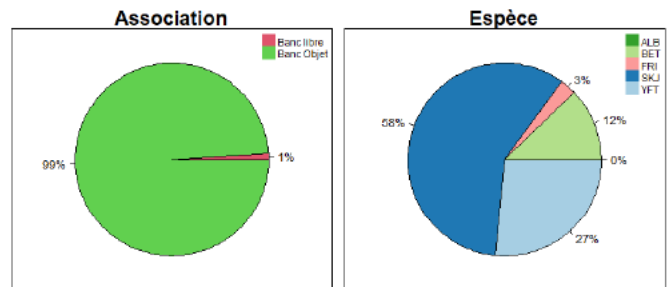
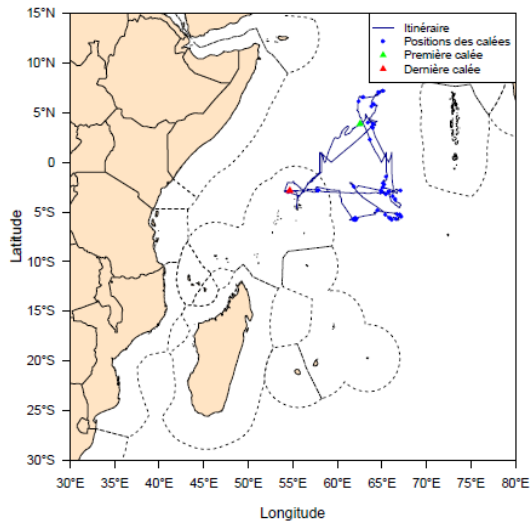
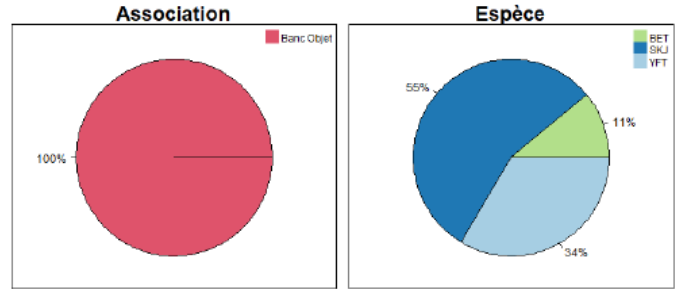
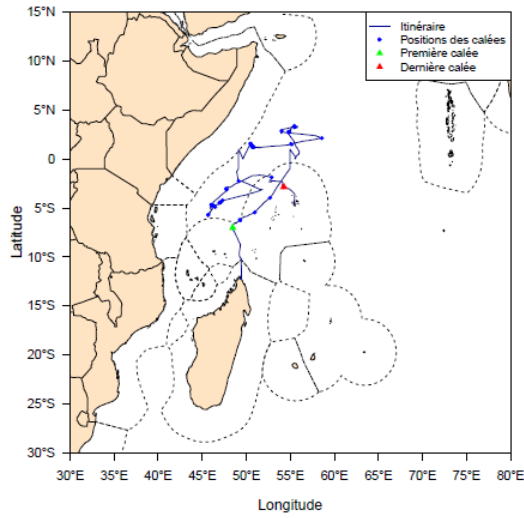


2021 - (A total of XI Fishing Trips was carried out in 2021)

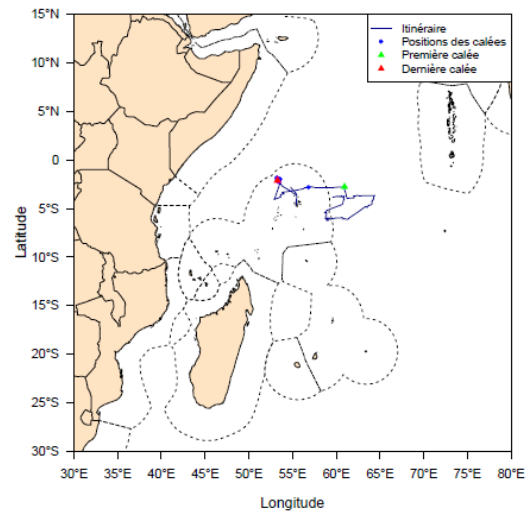
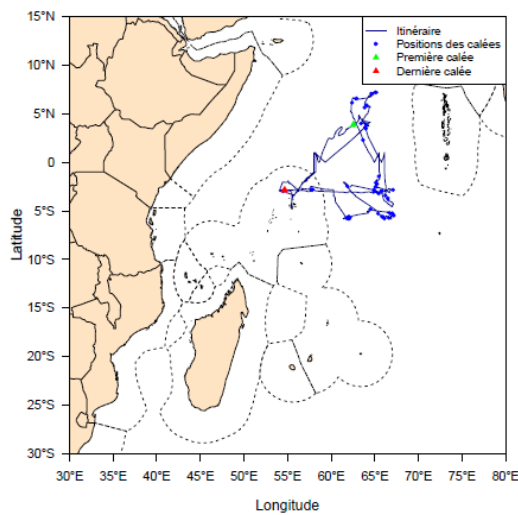


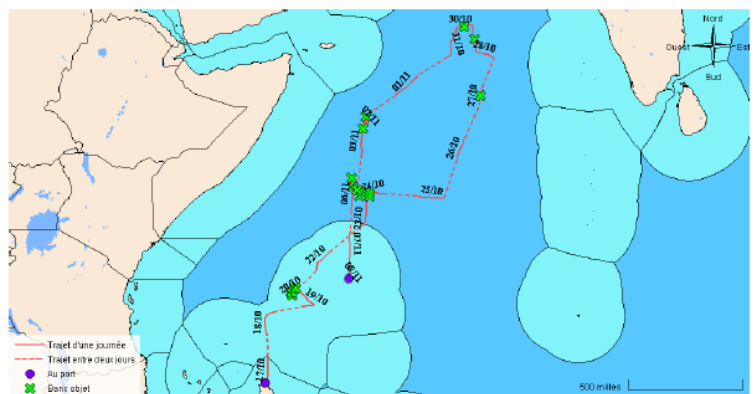
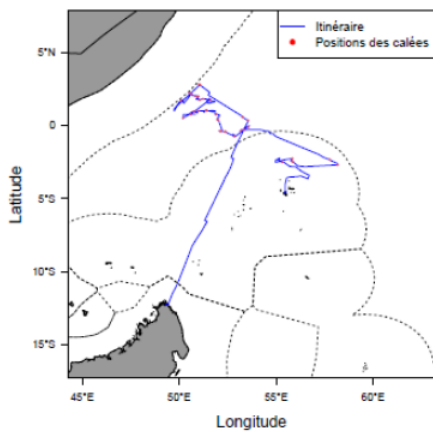
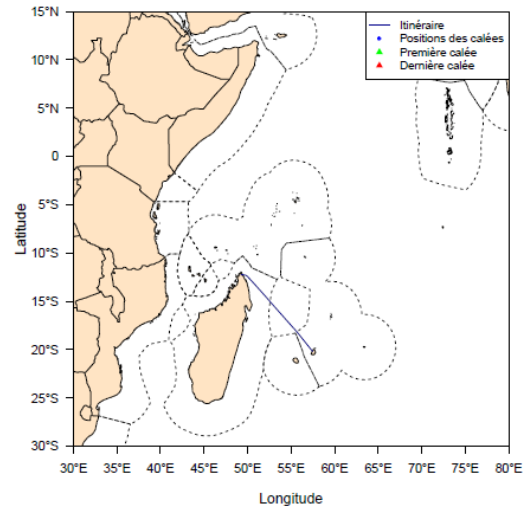
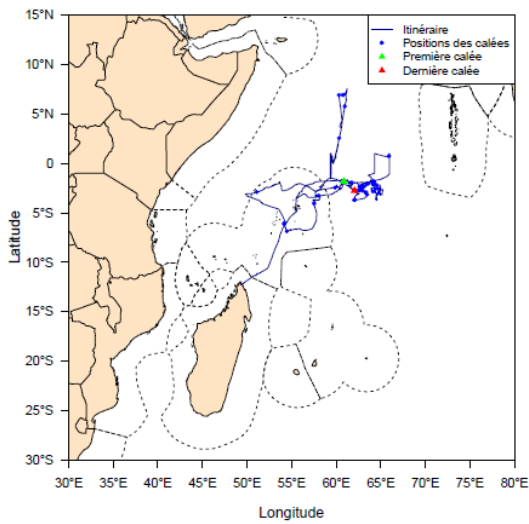
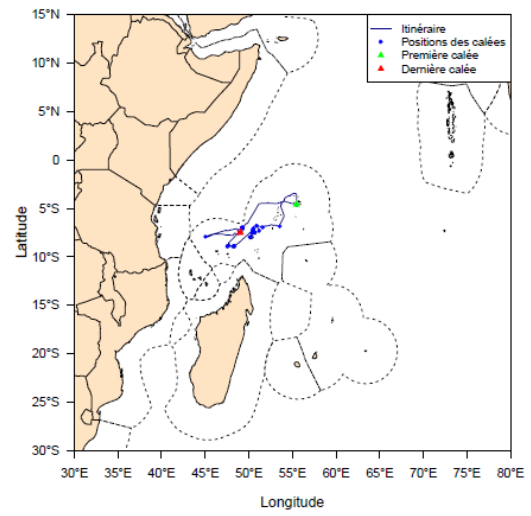
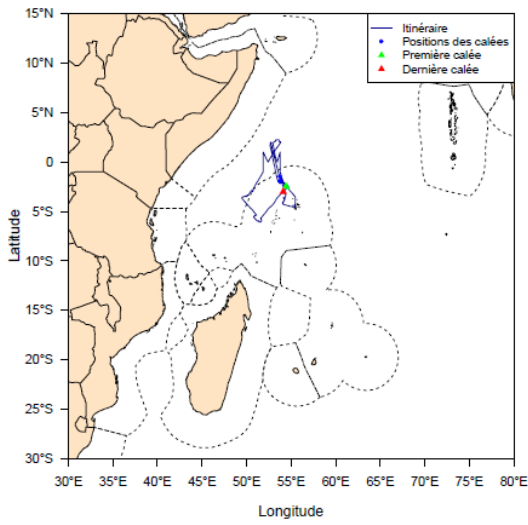


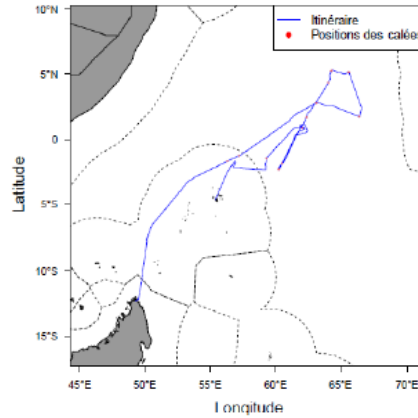
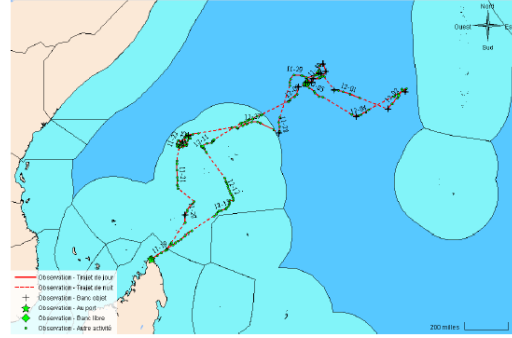
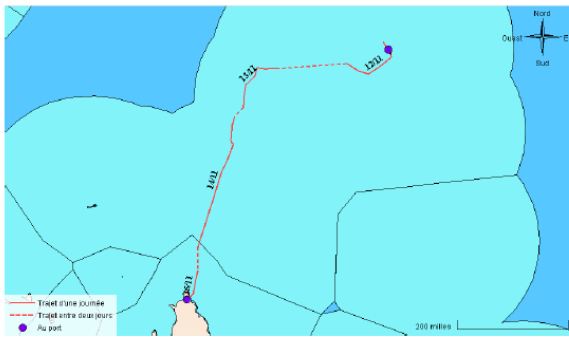




2022 – (A total of XI Fishing Trips was carried out in 2022)







4. RECREATIONAL FISHERY [Mandatory]

Not Applicable. Italian recreational fishing fleet is not operational in the IOTC area.

5. ECOSYSTEM AND BYCATCH ISSUES [Mandatory]

Within the IOTC area, the Agreement Tuna Future "Sharks" aims at implementing the responsible and sustainable fishing practices by reducing or even eliminating the mortality of by-catch species (sharks, rays and turtles) caught accidentally by purse seiners. The crew has been trained in good practices, consisting for example in: i) how to handle sharks; ii) how to release rays using accurate tools. This Agreement is part of the implementation of responsible and sustainable fishing practices.

5.1 Sharks [Mandatory]

According to the International Union for the Conservation of Nature (IUCN) Red List, around 20% of cartilaginous fish are threatened species. Since 2006, a monitoring programme of by-catches of cetaceans, sea turtles, and elasmobranchs by Italian pelagic trawlers has been conducted in the northern central Adriatic Sea. The Adriatic Sea is the most heavily impacted area by fishing activities. Several elasmobranch species are particularly vulnerable to the effects of bycatch due to their biological characteristics (long lifespan, late age at maturity, large size at birth, and low reproductive rates). In European waters, elasmobranchs are generally considered commercial species, except for *Cetorhinus maximus* and *Carcharodon carcharias*.

The monitoring programme consists in survey campaigns which are carried out by observers on board of pelagic trawlers (mostly). For each haul, they record operational parameters including the following parameters: haul duration, time of net setting, hauling, trawling speed (nm), geographical coordinates (latitude and longitude) and water depth.

Incidental bycatch of sensitive species (Protected, Endangered and Threatened – PET) are usually recorded through the SciObsAtSea sampling scheme, and additional information are collected through i) dedicated onshore interviews as part of the SciObsOnShore sampling scheme and ii) Logbooks. For both SciObsOnShore data collection (interviews and logbooks), fishers are asked to provide information about quantitative and qualitative structure of the bycatch.

In addition, a dedicated scientific observation at sea sampling scheme has been planned. This out-of-frame sampling scheme guarantees more accurate data on commercial population structure and biological information because it is conducted specifically in the collection of incidental bycatch of sensitive species such as cetaceans, birds, reptiles and protected fish during pelagic trawl fisheries in Adriatic, in order to fulfil the EU obligations set out in the Habitats Directive (92/43/EEC), Regulation (EU) 2019/1241 of 20 June 2019 (repealing Regulation (EC) 812/2004) on the conservation of fishery resources and the protection of marine ecosystems.

A complete assessment of the relative risk of bycatch for the different gear types/metiers was not realised yet. According to Recommendation 4 of RCG Med&BS 2021, a joint workshop of RCG Med&BS and STREAMLINE on data needed to assess the impact of fisheries on the marine ecosystem took place in April 2022. The outcomes are considered. A PSA-based risk analysis was conducted for the Mediterranean (Li Veli et al., 2024) at sub-regional level, but not at the metier and GSA level. However, the outputs of this study were also considered.

Tab. 2.c – Total number of sharks by species (2023)

Fish species			Destination			
Year	Code	Scientific name	Discarded alive	Discarded dead	Indeterminate	Retained onboard
2023	FAL	<i>Carcharhinus falciformis</i>	200	90	440	//
2023	OCS	<i>Carcharhinus longimanus</i>	12	3	8	//
2023	RMT	<i>Mobula tarapacana</i>	1	//	//	//
2023	RMV	<i>Mobula spp</i>	//	//	1	//
2023	RSK	<i>Carcharhinidae</i>	8	//	696	//
2023	RRY	<i>Rhina ancylostoma</i>	1	//	//	//
2023	SRX	<i>Rajiformes</i>	//	//	2	//

5.1.1. NPOA sharks [Desirable]

Not Applicable

5.1.2. Blue shark [Mandatory]

The observers were well trained in how to collect accurate data e report adequately in the correct forms. Moreover the crew also were trained in good practices, consisting for example in: i) how to handle sharks; ii) how to collect data. This Agreement is part of the implementation of responsible and sustainable fishing practices.

5.2 Seabirds [Mandatory]

This section is not applicable since the Italian vessel operates in Indian Ocean with purse seine gear only.

5.3 Marine Turtles [Mandatory]

This section is not applicable since the Italian vessel operates in Indian Ocean with purse seine gear only. Just n° 3 specimens of sea turtle (*Chelonia mydas* – TUG) were caught by the PS and immediately release safety at sea.

5.4 Other ecologically related species (e.g., cetaceans, Mobulid rays, whale sharks) [Desirable]

Not applicable.

6. NATIONAL DATA COLLECTION AND PROCESSING SYSTEMS [Mandatory]

6.1. Logsheet data collection and verification (including date commenced and status of implementation)

Currently in Italy, all fishing vessels with LOA > 15 meters are equipped with an electronic recording system of the catch data (e-log book). In the segment of LOA fishing units between 12 and 15 meters, the derogation system provided for by art. 9 paragraph 5 of EU Regulation 1224/2009 "*operate exclusively in the territorial waters of the flag Member State; o never spend more than 24 hours at sea from departure to return to port*". Specifically, Torre Italia uses the e-log book software provided by Italy to electronically record catches and landings from 10/10/2016.

The data arrives directly to the Italian databases, which processes and uses them for control and subsequent communications to the European Commission.

6.2. Observer scheme (including date commenced and status; number of observer, include percentage of coverage by fishery. Also, a description of the protocols supporting the observer programs and sampling schemes mentioned in paragraphs 3, 5, 7 and 8 of Res [22-04])

The purse seine is the only gear in use. Each fishing trip is covered by the deployment of an observer or with the CCTV. Therefore the percentage coverage is 100%.

Table 3. Annual observer coverage by operation, e.g., longline hooks, purse seine sets (for the most recent five years at a minimum, e.g., 2019–2023 or to the extent available). **[Mandatory]**

100% of fishing operations (2019-2023) is subject to observer coverage or is monitored using CCTVs.

Figure 4. Map showing the spatial distribution of observer coverage. **[Mandatory]**

The spatial distribution match with the fishing effort as report in Fig 2A.

6.3. Port sampling programme [Mandatory]

Not Applicable.

Table 4. Number of vessel trips or vessels active monitored, by species and fishery **[Mandatory]**

2023 n. 10 vessel trips gear: PS species: BET, SKJ, YFT

Table 5. Number of fish measured, by species and fishery] **[Mandatory]**

Not Applicable

6.4. Actions taken to monitor catches & manage fisheries for Striped Marlin, Black Marlin, Blue Marlin and Indo-pacific Sailfish [Mandatory]

Not Applicable.

6.5. Gillnet observer coverage and monitoring [Desirable]

Not Applicable.

6.6 Sampling plans for mobulid rays [Mandatory]

Not Applicable.

7. NATIONAL RESEARCH PROGRAMS [Desirable]

Not Applicable.

7.1. National research programs on blue shark

Not Applicable.

7.2. National research programs on Striped Marlin, Black Marlin, Blue Marlin and Indo-pacific Sailfish

Not Applicable.

7.3. National research programs on sharks

Not Applicable.

7.4. National research programs on oceanic whitetip sharks

Not Applicable.

7.5. National research programs on marine turtles

Not Applicable.

7.6. National research programs on thresher sharks

Not Applicable.

Table 6. Summary table of national research programs, including dates.

Not Applicable.

8. IMPLEMENTATION OF SCIENTIFIC COMMITTEE RECOMMENDATIONS AND RESOLUTIONS OF THE IOTC RELEVANT TO THE SC. [Mandatory]

Respond with progress made to recommendations of the SC and specific Resolutions relevant to the work of the Scientific Committee [to be updated annually to include most recent Conservation and Management Measures adopted by the Commission].

Table 9. Scientific requirements contained in Resolutions of the Commission, adopted between 2012 and 2023.

Res. No.	Resolution	Scientific requirement	CPC progress
12/04	On the conservation of marine turtles	Paragraphs 3, 4, 6–10	
12/09	On the conservation of thresher sharks (family alopiidae) caught in association with fisheries in the IOTC area of competence	Paragraphs 4–8	
13/04	On the conservation of cetaceans	Paragraphs 7–9	
13/05	On the conservation of whale sharks (<i>Rhincodon typus</i>)	Paragraphs 7–9	
13/06	On a scientific and management framework on the conservation of shark species caught in association with IOTC managed fisheries	Paragraph 5–6	
15/01	On the recording of catch and effort by fishing vessels in the IOTC area of competence	Paragraphs 1–10	
15/02	Mandatory statistical reporting requirements for IOTC Contracting Parties and Cooperating Non-Contracting Parties (CPCs)	Paragraphs 1–7	
17/05	On the conservation of sharks caught in association with fisheries managed by IOTC	Paragraphs 6, 9, 11	
18/02	On management measures for the conservation of blue shark caught in association with IOTC fisheries	Paragraphs 2-5	
18/05	On management measures for the conservation of the Billfishes: Striped marlin, black marlin, blue marlin and Indo-Pacific sailfish	Paragraphs 7 – 11	Not applicable for Italy. The only one vessel operating in IOTC area is a Purse Seiner (PS) not targeting those species.
18/07	On measures applicable in case of non-fulfilment of reporting obligations in the IOTC	Paragraphs 1, 4	
19/01	On an Interim Plan for Rebuilding the Indian Ocean Yellowfin Tuna Stock in the IOTC Area of Competence (<i>If not provided under Res 21/01 below</i>)	Paragraph 22	
19/03	On the Conservation of Mobulid Rays Caught in Association with Fisheries in the IOTC Area of Competence	Paragraph 11	
21/01	On an Interim Plan for Rebuilding the Indian Ocean Yellowfin Tuna Stock in the IOTC Area	Paragraph 23	



Res. No.	Resolution	Scientific requirement	CPC progress
	of Competence (<i>If not provided under Res 19/01 above</i>)		
22/04	On a regional observer scheme	Paragraph 12	Italy is involved in developing the Regional Working Plan 2025-2027. On large pelagic species, Italy is actively cooperating with the other two countries (Spain and France) who are mainly active in the IOTC area in order to improve and harmonize the effort for the observer’s programs.
23/07	On reducing the incidental bycatch of seabirds in longline fisheries.	Paragraphs 3–7	Not Applicable for Italy. The only one vessel operating in IOTC area is a Purse Seiner (PS).

9. LITERATURE CITED [Mandatory]