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United Kingdom (UK) and UK British Indian Ocean Territory (BIOT) National Report to the Scientific Committee of the Indian Ocean Tuna Commission, 2021

Authors

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INFORMATION ON FISHERIES, RESEARCH AND STATISTICS

In accordance with IOTC Resolution 15/02, final scientific data for the previous year was 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 2021, final data for the 2020 calendar year must be provided to the Secretariat by 30 June 2021)	Yes 29/06/2021
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 2021, preliminary data for the 2020 calendar year was provided to the IOTC Secretariat by 30 June 2021). **REMINDER:** Final longline data for the previous year is due to the IOTC Secretariat by 30 Dec of the current year [e.g. for a National Report submitted to the IOTC Secretariat in 2021, final data for the 2020 calendar year must be provided to the Secretariat by 30 December 2021).	YES for UK commercial vessels NO for BIOT 30/06/2021 amended on 15/07/2021. NB. Data submitted on 15/07/2021 can be considered final for 2020.
If no, please indicate the reason(s) and intended actions:	

Executive Summary

This report is for the UK commercial fleet and recreational fisheries in the British Indian Ocean Territories (BIOT). Prior to its exit from the European Union the UK in January 2021 the UK's commercial fleet operated under EU regulations. However for ease of reference both UK EU and UK (BIOT) are presented in this report.

The UK had just one commercial long liner operating in the IOTC Convention area in 2020 of 45 metres overall length. This operated mostly in the south western area of the Indian Ocean on high seas, targeting large pelagic species (blue shark, swordfish and tunas). The UK's scientific observer programme started in mid-2017 and the first full year of sampling data, covering around 11 percent of fishing days, was reported in 2019. No sampling was carried out in 2020 due to issues around Covid 19. The vessel had also left the area before the end of the year when sampling would have been scheduled to take place. BIOT waters are a no take Marine Protected Area (MPA) to commercial fishing. Diego Garcia and its territorial waters are excluded from the MPA and include a recreational fishery.

The recreational fishery landed 6.5 tonnes of tuna and tuna like species on Diego Garcia in 2020. Principle target tuna species of the industrial fisheries (yellowfin and skipjack tunas, no bigeye were caught) contributed 50.20% of the total catch of tuna and tuna like species of the recreational fishery. Recognising that yellowfin tuna are currently overfished and subject to overfishing in the Indian Ocean and that Resolution 19/01 seeks to address this, the UK have been taking action to reduce the number of yellowfin tuna caught in the recreational fishery and encouraging their live-release. Length frequency data were recorded for a sample of 211 yellowfin tuna from this fishery. The mean length was 79cm. Sharks caught in the recreational fishery are released alive.

Illegal unreported and unregulated (IUU) fishing remains one of the greatest threats to the BIOT ecosystem but a range of other threats exist including invasive and pest species, climate change, coastal change, disease, and pollution, included discarded fishing gear such as Fish Aggregating Devices. During 2020 the BIOT Environment Officer continued to take forward the current conservation priorities. In 2020/21 Recommendations of the Scientific Committee and those translated into Resolutions of the Commission have been implemented as appropriate by the BIOT Authorities and are reported.

1. BACKGROUND/GENERAL FISHERY INFORMATION

The UK fishing vessels operating in the IOTC area of competence consist only of pelagic longliners. The number of vessel licences has remained fairly consistent since 2014 (2/3 vessels). The active vessels follow a similar trend (1/2 vessels since 2014). The vessels have ranged in size from 39 metres to 47 metres in length and operated mostly in the south western area of the Indian Ocean. Fishing voyages are of one to four months duration and vessels are actively fishing for most of that time.

The recreational fishery catches some tuna and tuna like species. Permitted recreational fisheries also include visiting yachts that fish outside the exclusion zone within the waters of the MPA, but not within Strict Nature Reserves. Such fishing must be for consumption within three days. Yachts must apply for a permit to moor in designated areas.

2. FLEET STRUCTURE

The UK has licensed two pelagic longline vessels for fishing in the IOTC area in 2020 of between 39 and 45 metres overall length of which just one was active during 2020. One of the vessels was administered in Scotland and the other in England.

Table 1: Number of vessels operating in the IOTC area of competence, by gear type and size: 2015–2020

Year	*Number of Vessels Licensed*	*Number of Vessels Active*	*Length*
2020	*1*	*1 (drifting longliners)*	*45 Metres*
2019	*2*	*2 (drifting longliners)*	*39 metres – 45 metres*
2018	*2*	*2 (drifting longliners)*	*39 metres – 45 metres*
2017	*2*	*2 (drifting longliners)*	*40 metres – 47 metres*
2016	*2*	*1 (drifting longliners)*	*47 metres*
2015	*3*	*2 (drifting longliners)*	*40 metres – 47 metres*

3. CATCH AND EFFORT (BY SPECIES AND GEAR)

The overall IOTC catch peaked in in 2009 (1334.4 tonnes). In recent years a decreasing trend has been observed. In 2020, a total of 411.9 tonnes were caught in the IOTC area by the single vessel operating. This figure included 202.4 tonnes of swordfish, 157.1 tonnes of blue shark, 32.9 tonnes of shortfin mako,6.6 tonnes of snake mackerel, and 6.2 tonnes of yellowfin tuna.

Table 2. Annual catch and effort in the IOTC area of competence (tonnes).

Year	Total Effort	Total Catch
2020	270000	411.9
2019	621600	881.8
2018	498100	989.3
2017	500300	579.8
2016	271700	469.4
2015	388300	745.5
2014	579700	1004
2013	502700	931.1
2012	577900	1224.9
2011	690800	1165
2010	566000	1064.6
2009	800900	1295.9

Total 2020 UK catches in the IOTC area by composition

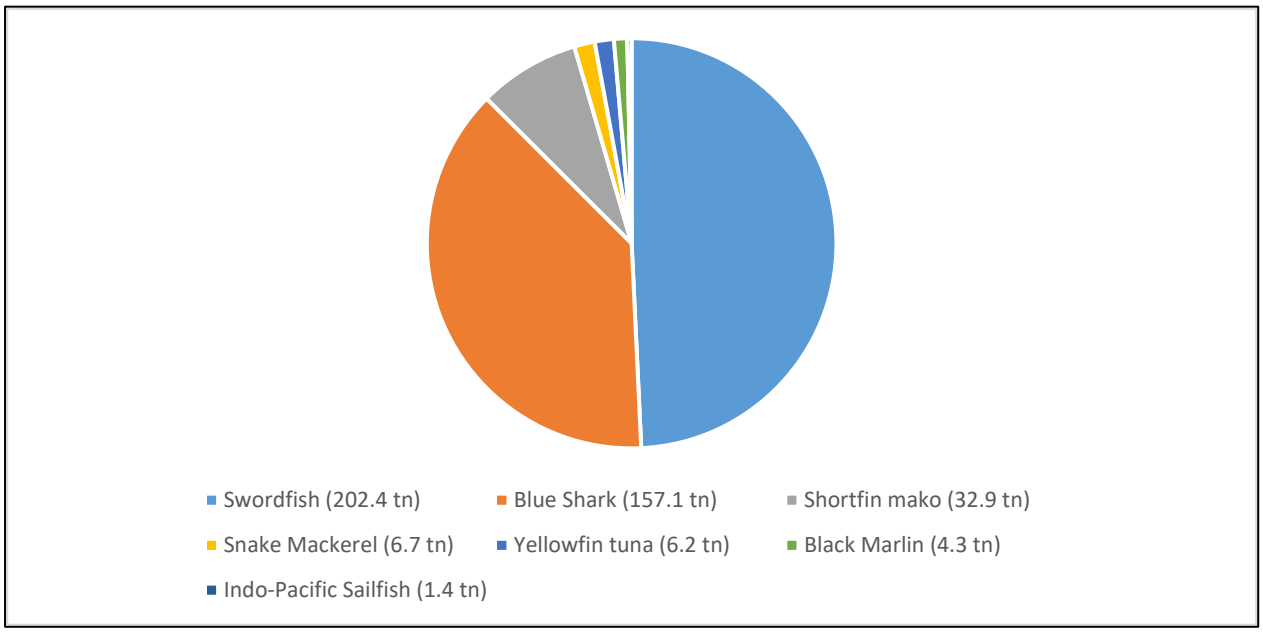


Figure 1 (a). Historical annual catch for the national fleet, by gear* and primary species, for the IOTC area of competence for the entire history of the fishery/fleet (UK Commercial Fleet) (tonnes).

Species name	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Albacore	8.7	5.1	4.0	6.6	7.0	7.9	8.5	2.1	3.1	1.0	1.3	0.0
AmberJack	0.0	5.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Barracuda	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bigeye Tuna	0.0	3.5	3.2	3.3	0.0	0.0	0.0	0.0	2.5	2.3	1.9	0.0
Sailfish	21.7	24.4	4.6	1.7	0.0	0.0	0.0	0.0	3.3	3.9	0.8	0.0
Black Marlin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	13.1	12.3	4.3
Bonito	5.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Blue Shark	427.1	379.3	333.0	326.4	193.4	251.8	215.3	172.4	195.7	369.5	371.8	157.1
Blue Marlin	0.0	1.3	9.3	20.4	16.5	11.7	7.9	3.5	4.1	0.0	0.0	0.0
Common dolphinfish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	2.9	3.3	0.9
Silky Shark	0.4	2.5	1.3	1.5	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
Other or mixed Demersal	1.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haddock	0.0	0.0	0.0	55.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Snake Mackerel	4.5	46.1	35.0	50.0	47.0	41.3	30.5	19.6	17.6	31.6	16.6	6.7
Longfin mako	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0
Mako Shark	44.3	52.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oilfish	32.7	4.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Indo-Pacific Sailfish	0.9	5.5	3.0	7.5	5.7	2.8	1.2	1.7	1.2	7.3	3.5	1.4
Sharks	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shortfin mako	16.7	17.0	62.1	70.2	46.5	54.0	26.1	22.8	68.2	87.4	72.0	32.9
Scalloped Hammerhead Shark	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Swordfish	646.3	684.0	679.6	687.3	558.9	527.2	365.0	203.7	284.2	523.0	383.2	202.4
Tuna - Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wahoo	0.0	1.8	1.5	3.5	2.1	2.8	1.7	0.4	0.7	1.6	0.8	0.0
Yellowfin tuna	120.4	51.6	42.7	56.8	53.9	85.9	85.4	41.8	20.6	9.1	14.2	6.2
Yellowtail Amberjack	3.8	10.0	20.8	10.5	8.3	18.7	4.0	1.4	7.2	0.5	0.0	0.0
Grand Total	1334.4	1295.5	1200.0	1300.8	939.2	1004.0	745.6	469.4	613.8	1053.4	881.8	411.9

*longliners

Figure 1 (b). Catches of tuna and tuna like species landed from the recreational fishery during the period 2016-2020.

Year	Estimated catch of tuna and tuna like species (kg)										TOTAL (kg)		
Species	Blue marlin	Dolphinfish	Kawakawa	Rainbow runner	Sailfish	Wahoo	Dogtooth tuna	Skipjack tuna	Yellowfin tuna	Other tuna nei	Tunas	Tuna like spp	All
2016	0	73	1033	169	0	4076	203	251	2075	0	2529	5350	7879
2017	0	70	1525	288	0	7899	569	107	2425	0	3401	9783	13184
2018	0	94	1189	153	0	5163	189	176	4313	0	4678	6599	11277
2019	0	32	1201	186	0	3859	109	257	2770	299	3434	5279	8713
2020	0.0	31.8	345.2	76.2	141.1	2663.9	10.4	117.9	3110.7	45.4	3284.5	3258.2	13928.2

Length data have been collected for yellowfin tuna (*T. albacares*) from the recreational fishery since June 2009. A total of 209 fish were measured in 2020. The mean length of the *T. albacares* sampled was 78.6cm. For comparison, observer programmes on purse seiners (2005/6) and longliners (2003/4) operating in BIOT recorded mean lengths of 98cm (n=378) and 123cm (n=2385) respectively, and the mean length in the recreational fishery in 2020 was 78.6 cm with a range of 55-110 cm.

Figure 2a. Map of the distribution of fishing effort, by gear type for the national fleet in the IOTC area of competence (No. of hooks x no. of sets x days fished,) UK vessels in the IOTC area of competence (2020)

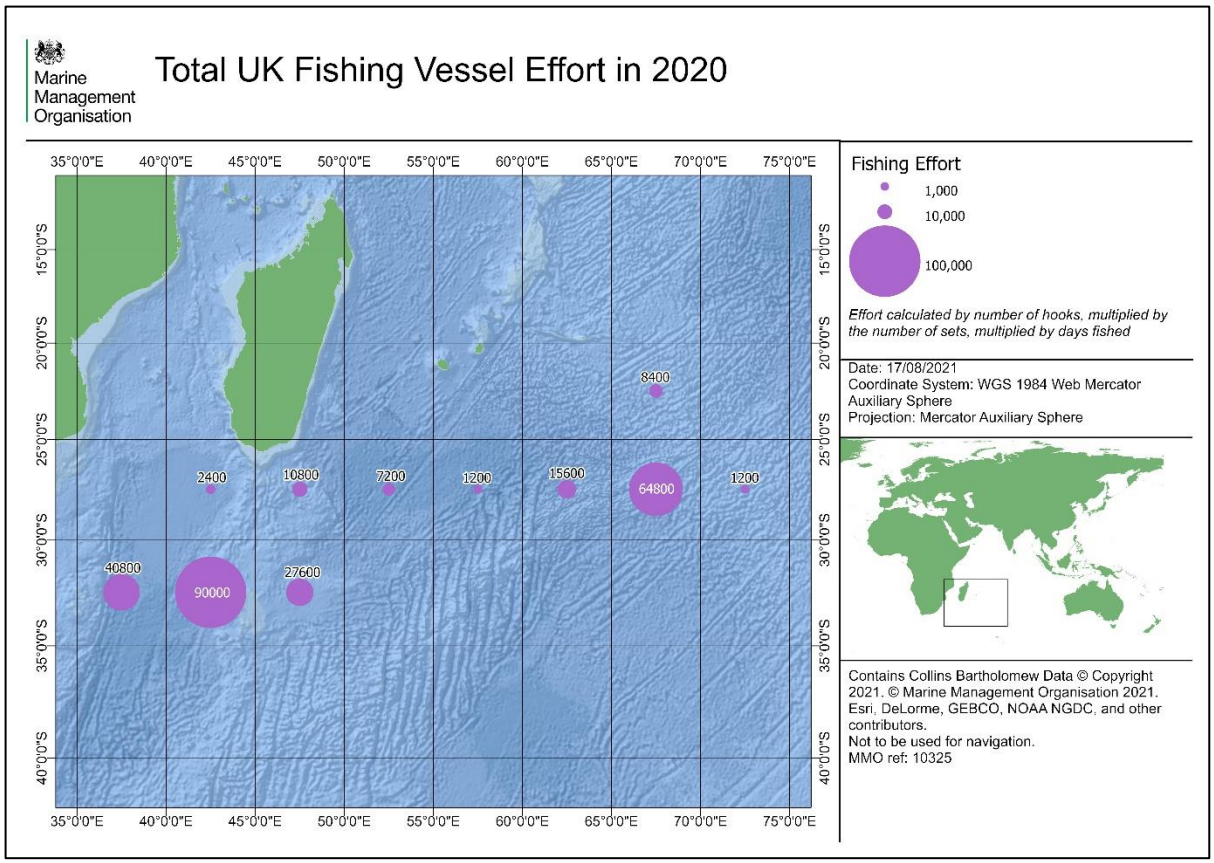


Figure 2b. Map of the distribution of fishing effort, by gear type for the national fleet in the IOTC area of competence (No. of hooks x no. of sets x days fished,) UK vessels in the IOTC area of competence (average of 2016–2020)

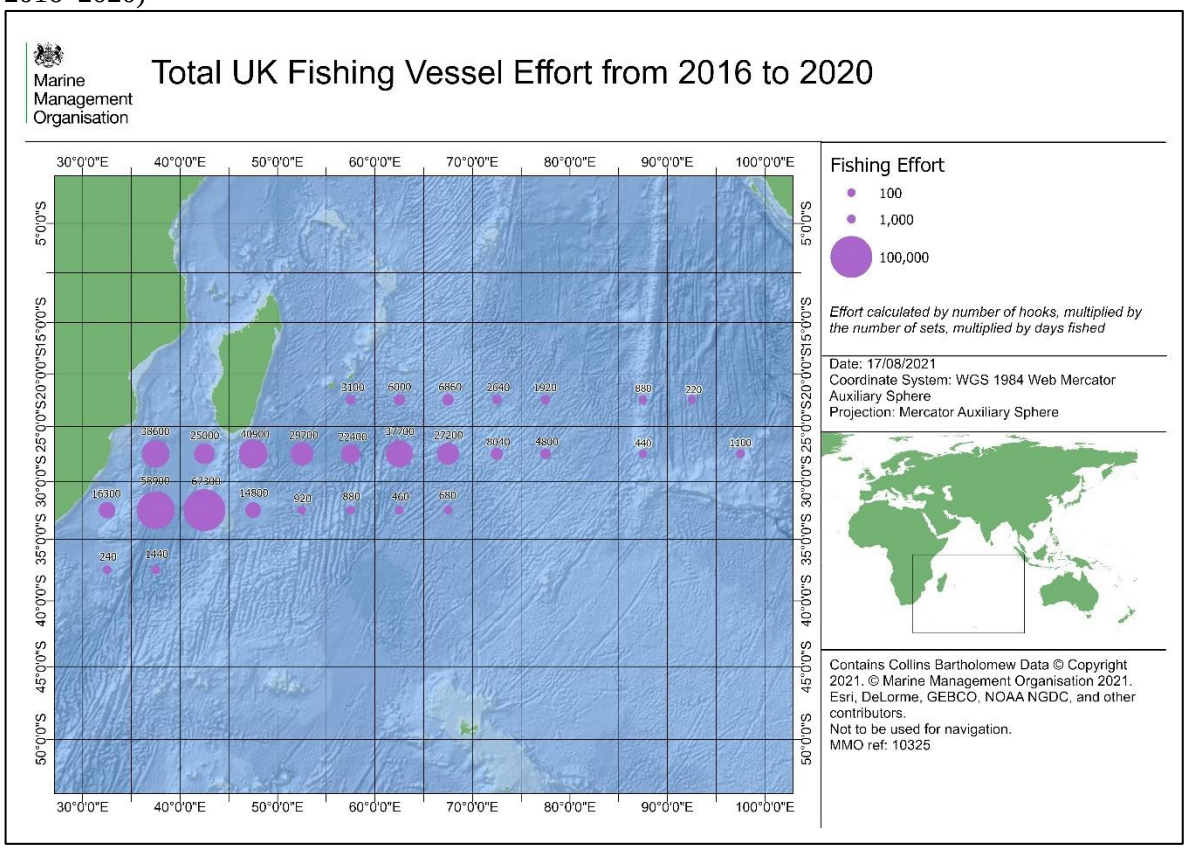


Figure 3a (1). Distribution of UK catch of blue shark (tonnes) in 2020 by 5˚ area

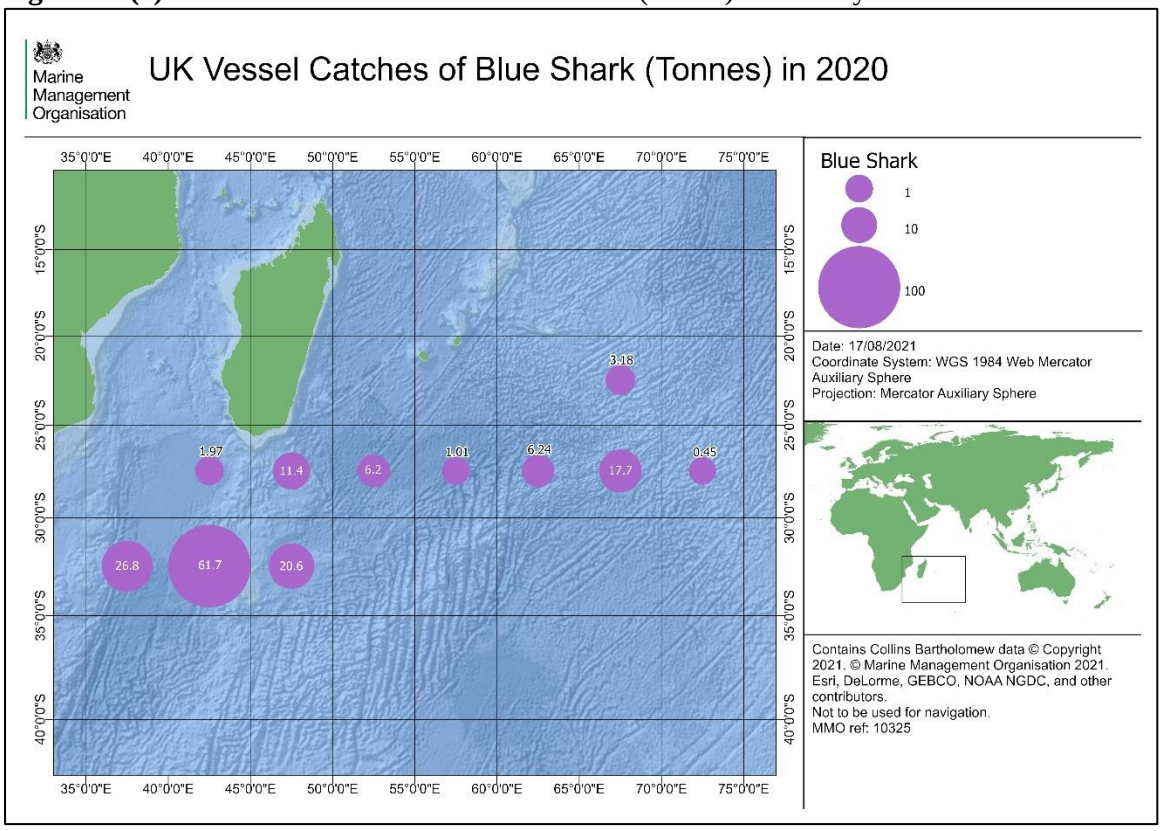


Figure 3a (2). Distribution of UK catch of shortfin mako (tonnes) in 2020 by 5˚ area

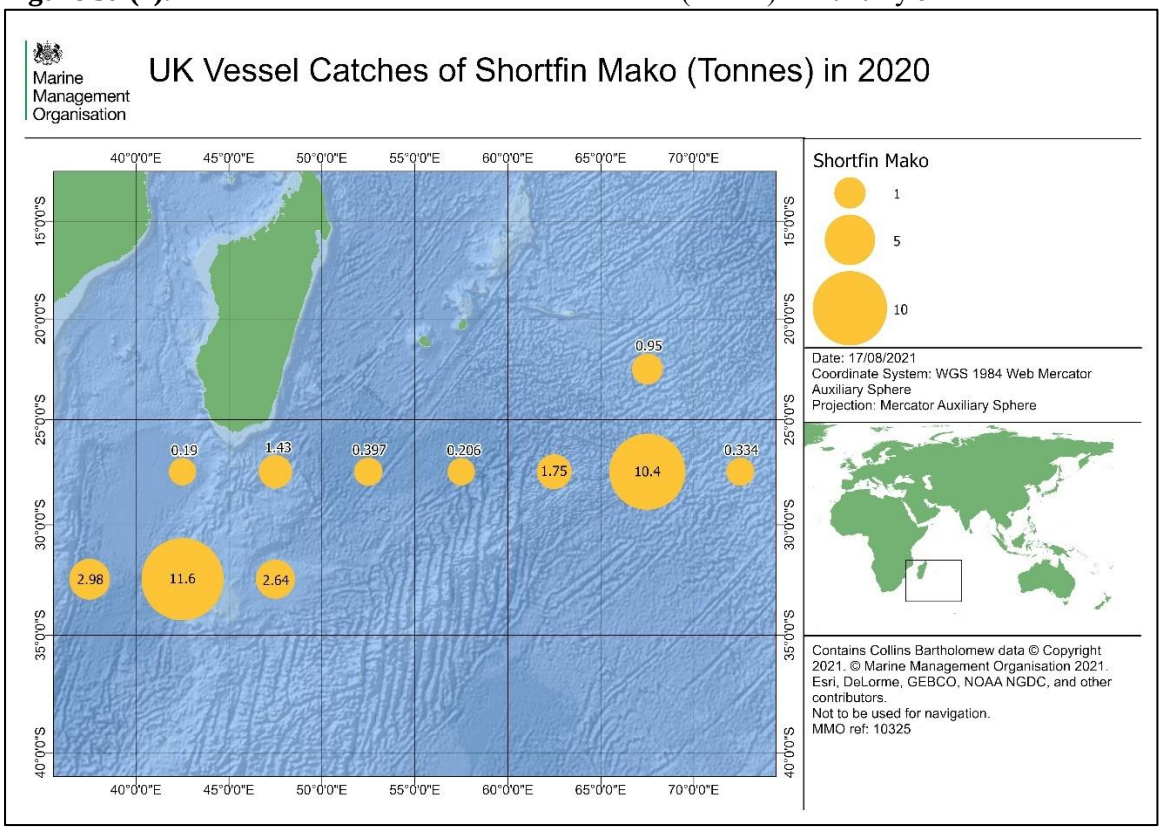


Figure 3a (3). Distribution of UK catch of swordfish (tonnes) in 2020 by 5˚ area

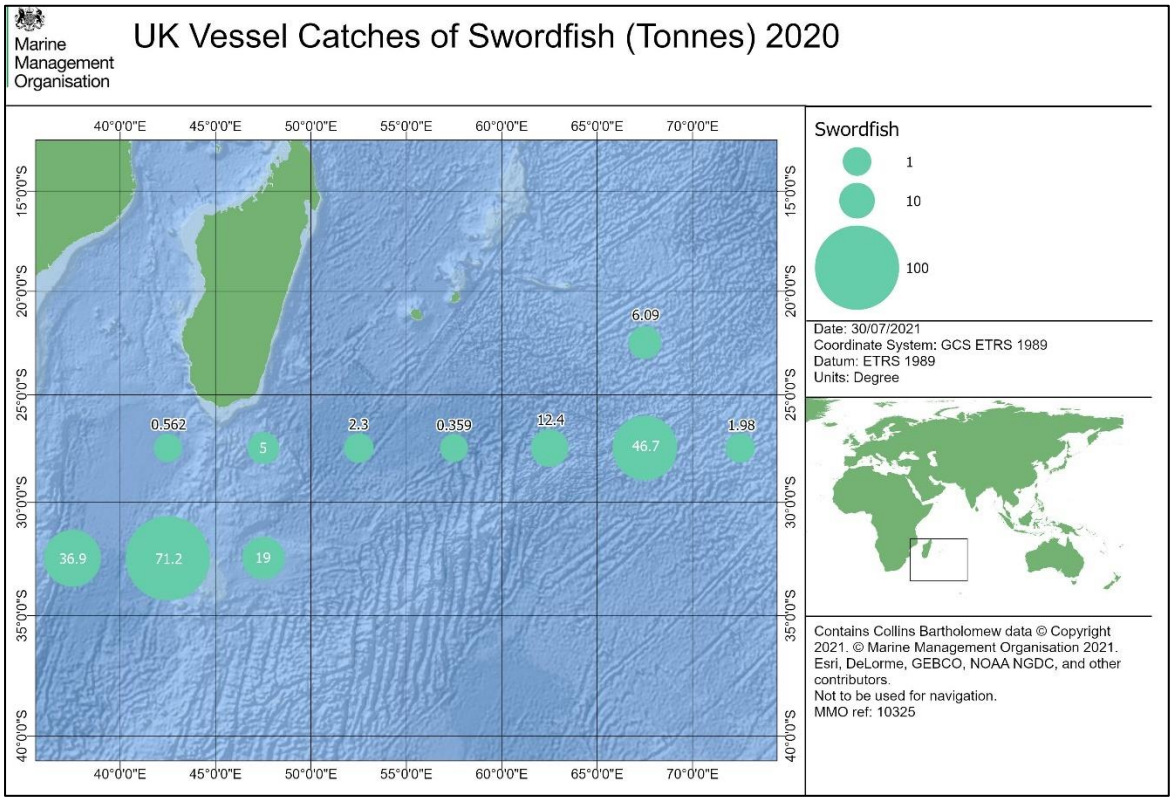


Figure 3a (4). Distribution of UK catch of yellowfin tuna (tonnes) in 2020 by 5˚ area

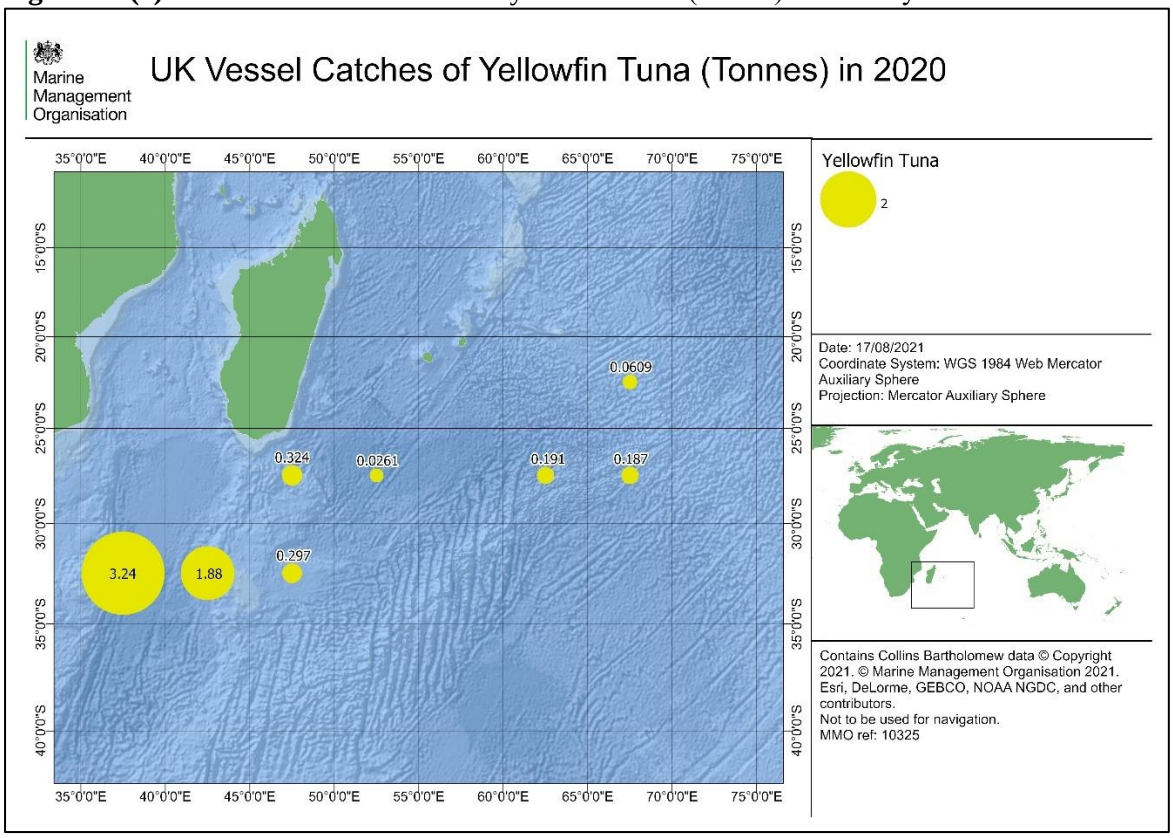


Figure 3a (5). Distribution of UK catch of other species (tonnes) in 2020 by 5˚ area

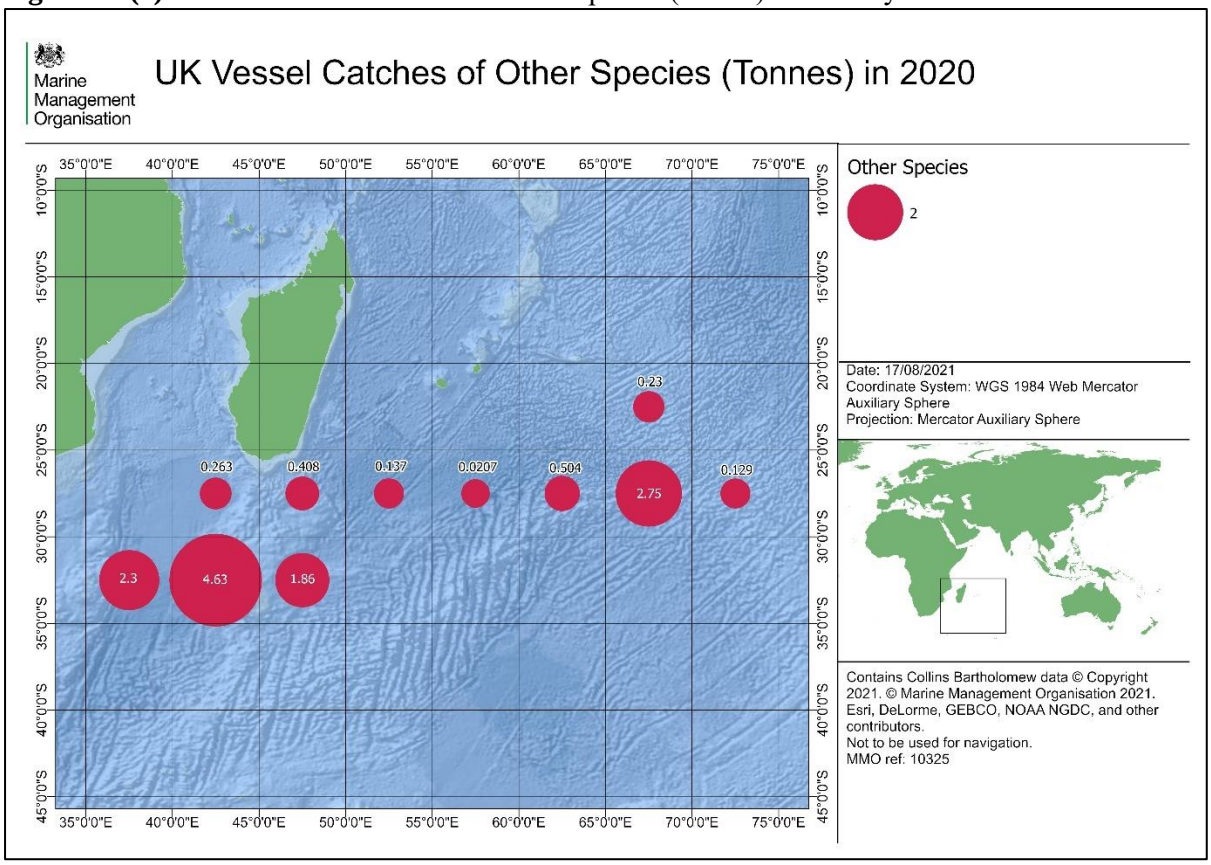


Figure 3b (1). Distribution of UK catch of albacore tuna (tonnes) 5˚ area (average 2016-2020)

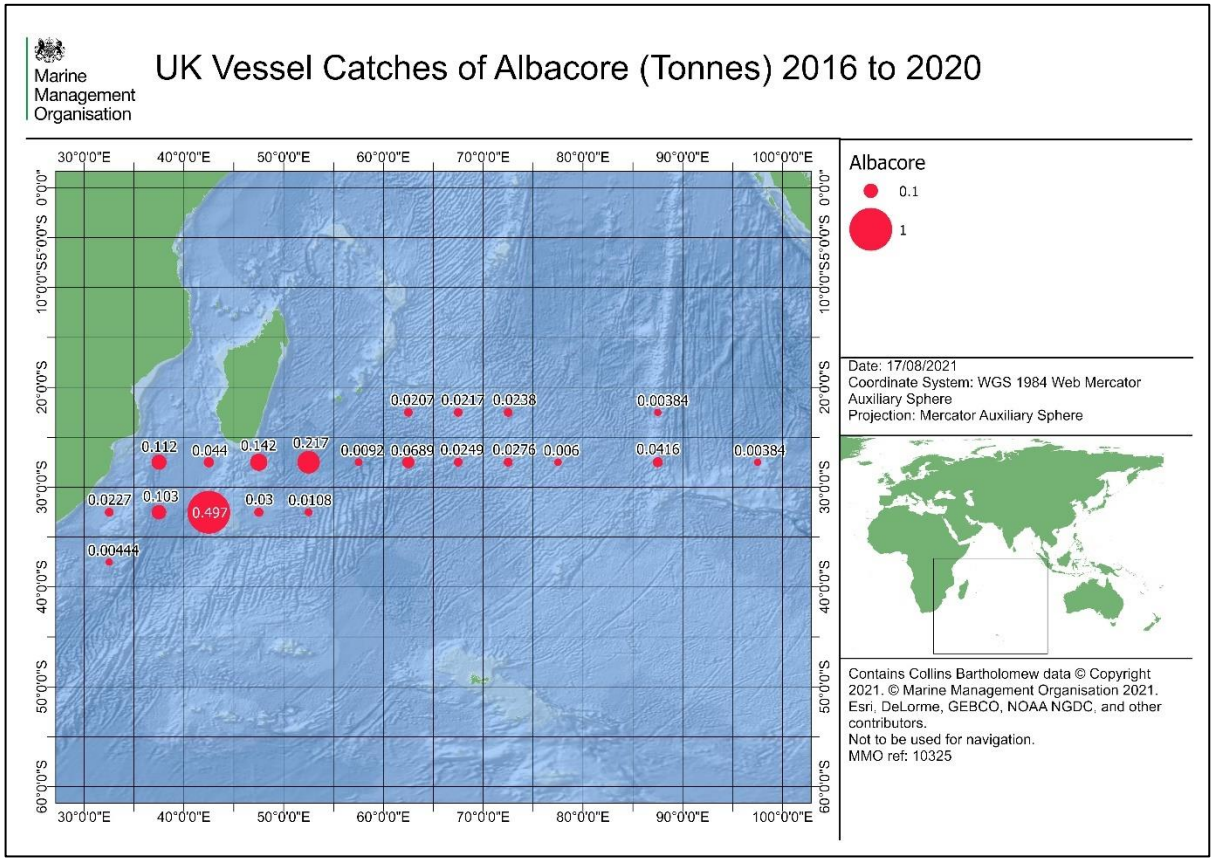


Figure 3b (2). Distribution of UK catch of blue shark (tonnes) by 5˚ area (average 2016-2020)

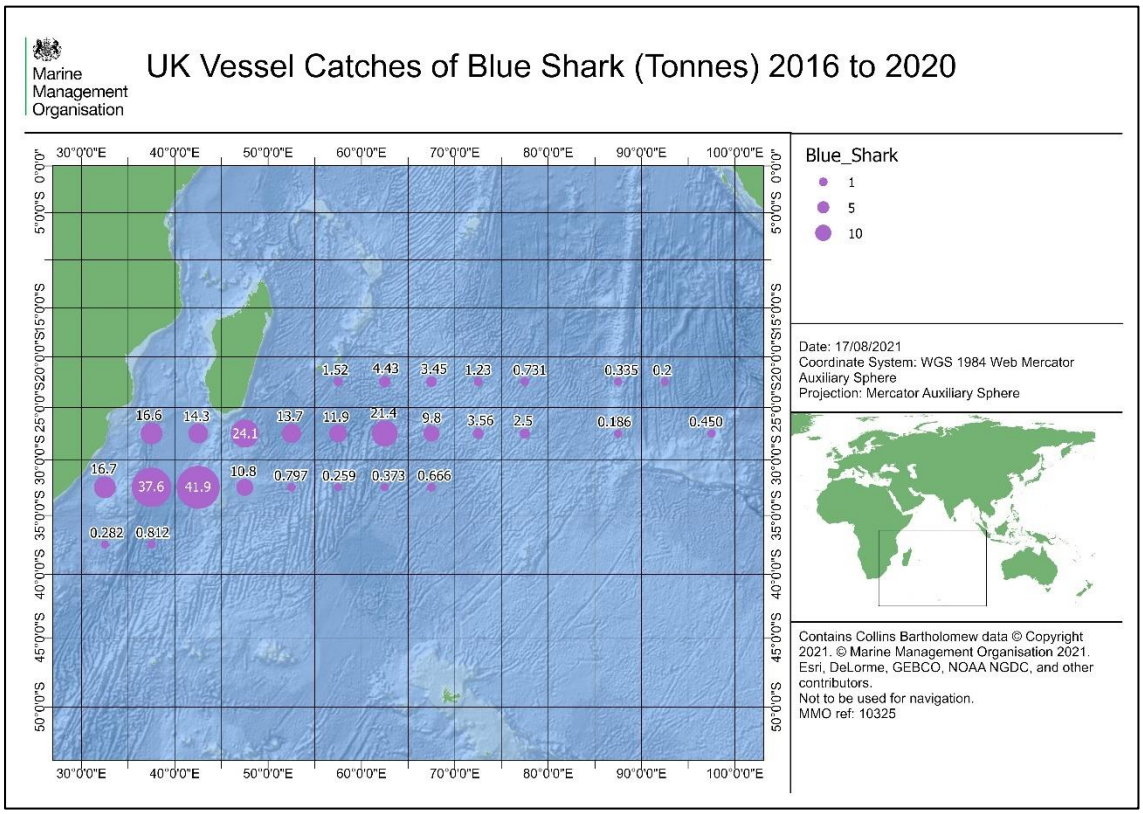


Figure 3b (3). Distribution of UK catch of shortfin mako (tonnes) by 5˚ area (average 2016-2020)

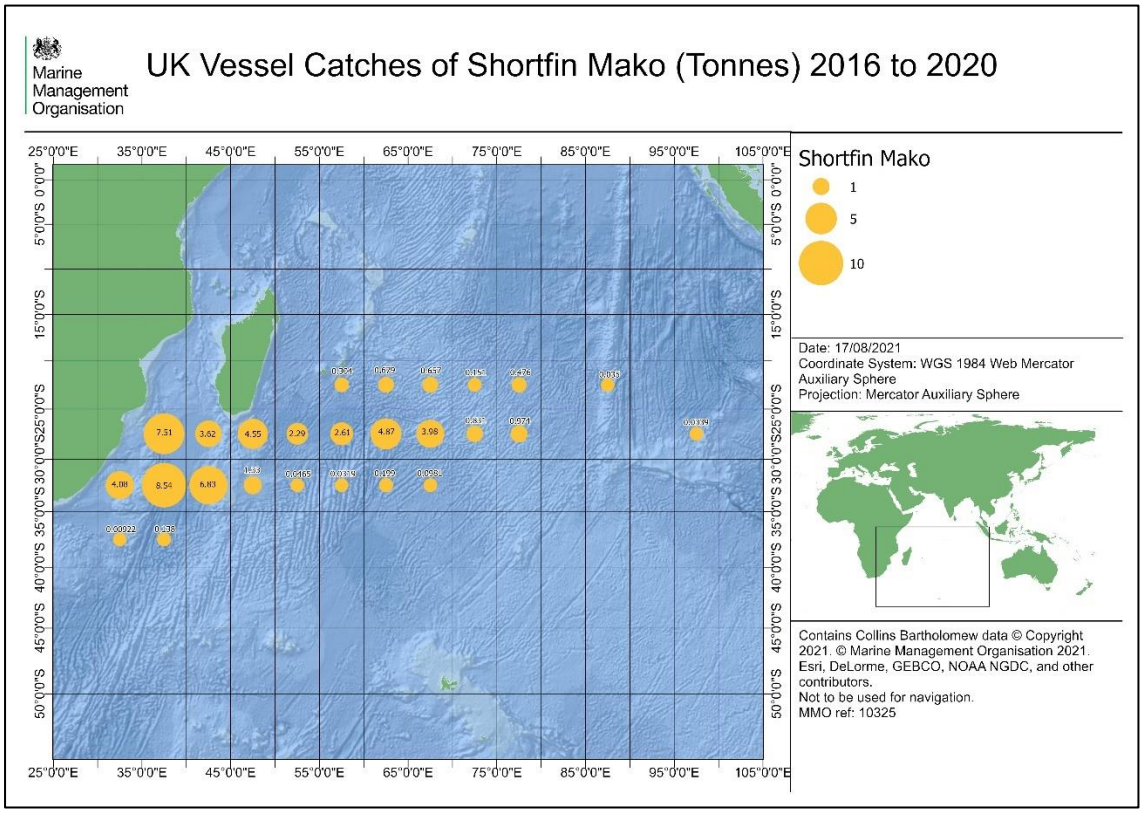


Figure 3b (4). Distribution of UK catch of swordfish (tonnes) by 5˚ area (average 2016-2020)

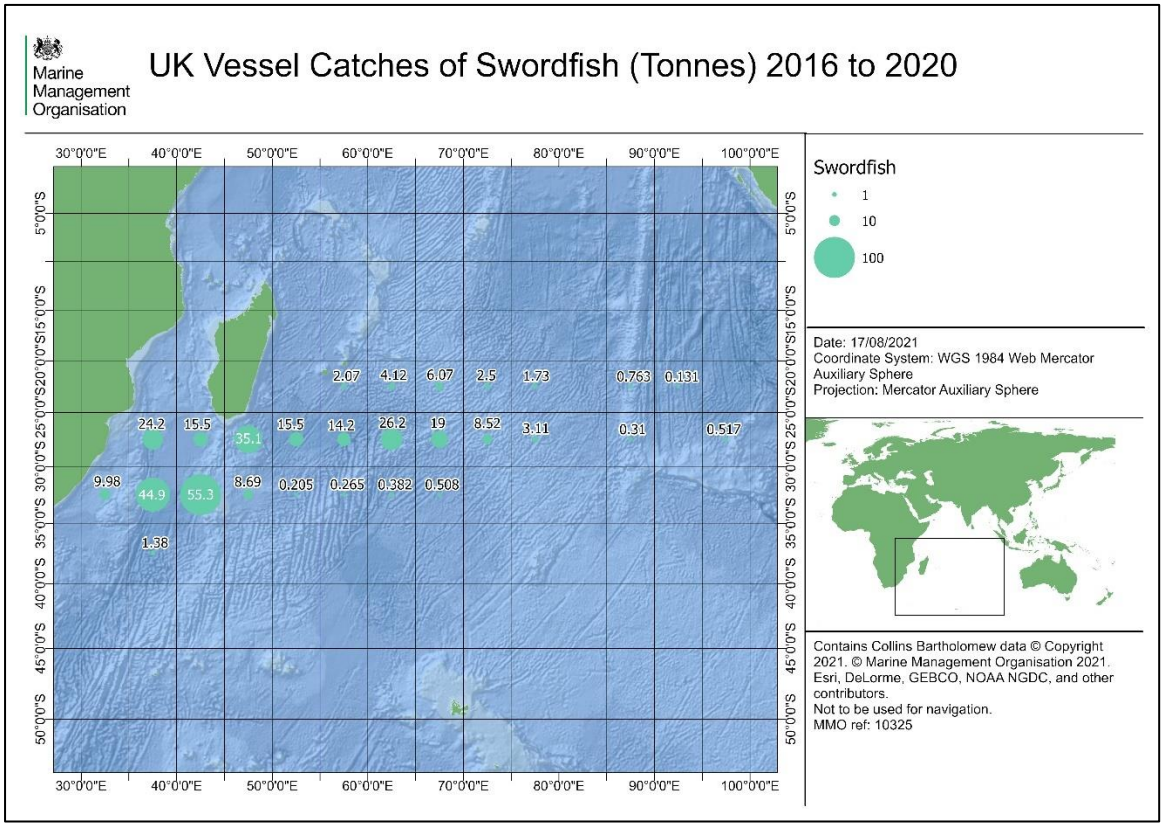


Figure 3b (5). Distribution of UK catch of yellowfin tuna (tonnes) 5˚ area (average 2016-2020)

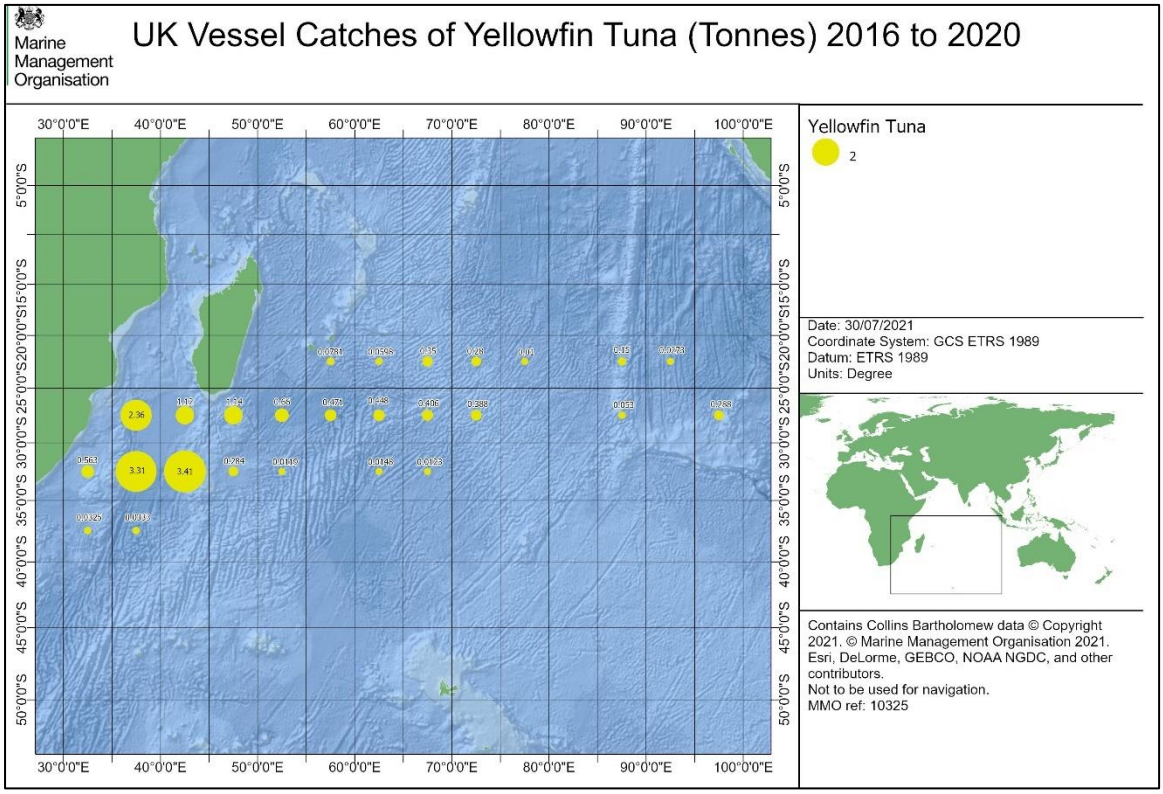
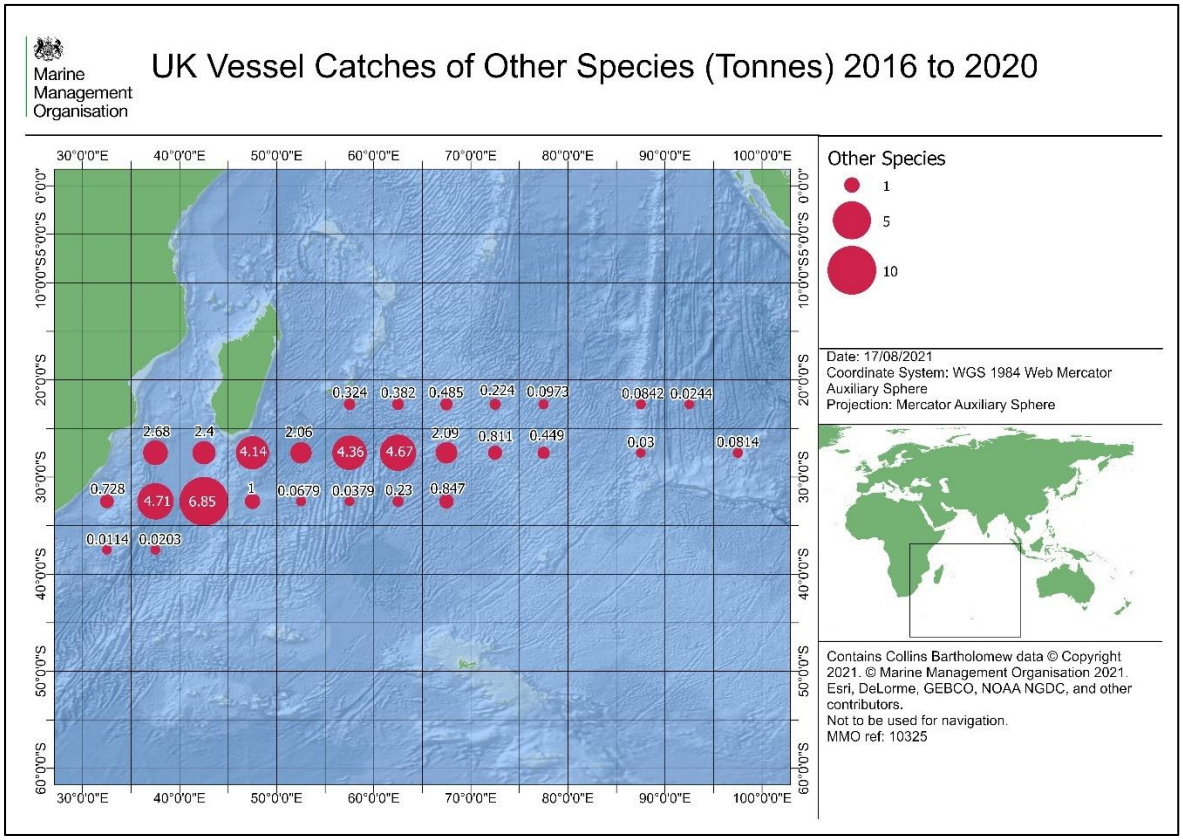


Figure 3b (5). Distribution of UK catch of other species (tonnes) 5˚ area (average 2016-2020)



4. RECREATIONAL FISHERY

A small recreational fishery occurs in Diego Garcia. A total of 8.7 tonnes of tuna and tuna like species were caught in 2020, reef associated species are also caught in this fishery. The principle commercial tuna species (yellowfin, and skipjack tunas, no bigeye were landed) contributed 49.35% of the total catch of tuna and tuna like species of the recreational fishery.

Recognising that yellowfin tuna are currently overfished and subject to overfishing in the Indian Ocean, and that Resolution 19/01 seeks to address this, the UK have been taking action to reduce the number of yellowfin tuna caught in the recreational fishery and encouraging their live-release.

5. ECOSYSTEM AND BYCATCH ISSUES

In its recreational fishery, all sharks and billfish caught must be released alive and fishers are encouraged to release yellowfin tuna.

The current ecosystem threats relate mainly to BIOT and IUU fishing of which a number of events were detected by the BIOT Patrol Vessel in 20120 and are reported separately to the Compliance Committee.

Other threats to the ecosystem occur within BIOT and include invasive and pest species (e.g. introduced by visiting vessels), climate change (including weather changes; coral bleaching and mortality, sea level rise, likely

increasing rates of erosion or inundation events; and oceanic chemical composition change), coastal change, disease (particularly of corals), and pollution. The latter includes lost and abandoned fishing gear including fish aggregating devices (FADs) which can have harmful impacts on species and habitats within BIOT. Research has been undertaken on their potential impacts (MRAG 2019a) and how currents and oceanic conditions may influence their movement throughout BIOT (MRAG 2019c).

5.1 Sharks

Shark catches are reported by species and the vessels are encouraged to release bycatch species that are caught alive. Table 3 details the total weight of sharks retained by the UK fleet in the IOTC area of competence. In 2010 the UK revoked the permits allowing for fins to be removed from sharks, therefore, all sharks retained must have their fins still naturally attached.

Sharks must be released alive when caught in the recreational fishery. Sharks continue to be caught illegally by IUU vessels in BIOT waters.

Research, including tagging of sharks in BIOT waters is ongoing through the Bertarelli Programme on Marine Science which includes scientific research expeditions in BIOT (see Table 11).

5.1.1. NPOA sharks

Not applicable

5.1.2. Shark finning regulation

In 2020 the UK operated under Council Regulation (EU) No 605/2013 whereby all EU vessels wherever they fish are required to land sharks with their "fins naturally attached".

The UK has a limited capacity to conduct inspections at sea and during landing for those vessels that fish in the IOTC area and land into ports where we do not have an inspection presence.

With regards to compliance, no incidents of non-compliance have been reported. However, this should be considered in light of the aforementioned difficulties in obtaining information. In order to help address this issue the UK is continuing to pursue enforcement opportunities and exchange of information with the relevant fisheries authorities.

5.1.3. Blue shark

Statistical data on catch and effort relating to blue shark have been reported in line with the provision of Resolution 15/01. Biological data - size and discard data have been provided in accordance with the Resolution 15/02 since 2017 when on board observers for the UK vessels operating in the IOTC area were first deployed. No data were available for 2020 for the UK commercial fleet due to lack of observer coverage because of Covid 19 restrictions.

Table 3: Total number and weight of sharks, by species, retained by the national fleet in the IOTC area of competence (2014–2020).

Species name	2014	2015	2016	2017	2018	2019	2020
Blue Shark	251.8	215.3	172.4	195.7	369.5	371.8	157.1
Longfin mako	0.0	0.0	0.0	0.3	0.3	0.0	0.0
Shortfin mako	54.0	26.1	22.8	68.2	87.4	72.0	32.9

Table 4: Total number of sharks, by species, released/discarded by the national fleet in the IOTC area of competence (for the most recent five years at a minimum, e.g. 2016–2020). Where available, include life status upon released/discards.

The UKFMC recorded no bycatch of sharks. No observer was present due to Covid 19 restrictions.

5.2 Seabirds

No incidents reported to the UK Fisheries Monitoring Centre in 2020. No observers were present due to Covid 19 restrictions.

All longline fishing vessels are aware of the need to use mitigation measures when fishing south of 25 degrees south or whenever interaction with seabirds is expected. Additional information has been sent to vessels to ensure that they are complying with their obligations.

Seabird bycatch does not occur in the recreational fishery and has not been observed in IUU fisheries.

5.3 Marine Turtles

All commercial vessels are aware of and use proper handling techniques and keep on board equipment needed for the release of live turtles. Additional information is being sent to vessels to ensure that they are complying with their obligations.

No incidents reported to the UK Fisheries Monitoring Centre in 2020. No observers were present due to Covid 19 restrictions. Figures provided below for commercial vessels are to 2019.

No turtle bycatch / interaction was reported in the BIOT recreational fishery in 2020. The BIOT area includes undisturbed and recovering populations of hawksbill and green turtles. Island sweeps are conducted as part of the normal monitoring programme, where part or entire islands are inspected, turtle nesting tracks are regularly encountered and recorded.

	Fishery – Longlines (logbook data)			Observed ** (Observer reports)				
Year	Lat*	Lon	Total effort	Total effort observed	Species	Captures (number)	Mortalities (number)	Live releases (number)
2018	22.5	57.5	14400					
2018	22.5	62.5	13200					
2018	27.5	37.5	26400					
2018	27.5	42.5	34600					
2018	27.5	47.5	100400	2400				
2018	27.5	52.5	27200	6000	Loggerhead turtle (Caretta caretta)	1	0	1
2018	27.5	57.5	17600	3600				
2018	27.5	62.5	56900	21600				

	Fishery – Longlines (logbook data)			Observed ** (Observer reports)				
2018	27.5	67.5	7700					
2018	27.5	72.5	20900					
2018	32.5	32.5	45600					
2018	32.5	37.5	39600	8400	Not identified	2	0	2
2018	32.5	42.5	95300					
2018	32.5	47.5	3400					
2018	32.5	52.5	2200					
2018	32.5	62.5	2200					
2018	32.5	67.5	4400					
2019	22.5	62.5	1200					
2019	22.5	67.5	4800					
2019	27.5	37.5	2400					
2019	27.5	42.5	58800	2400				
2019	27.5	47.5	74400	6000				
2019	27.5	52.5	81600	15600				
2019	27.5	57.5	46800					
2019	27.5	62.5	26400					
2019	27.5	67.5	7200					
2019	27.5	72.5	3600					
2019	32.5	32.5	36000					
2019	32.5	37.5	148800					
2019	32.5	42.5	69600	19200				
2019	32.5	47.5	40800	2400				
2019	32.5	52.5	2400					
2019	37.5	32.5	1200					

	Fishery – Longlines (logbook data)			Observed ** (Observer reports)				
2019	37.5	37.5	7200					

5.4 Other ecologically related species (e.g. marine mammals, whale sharks)

There were no reported incidents in 2020. All fishers are encouraged to immediately and safely release any animals caught.

Table 5. Observed annual catches of species of special interest by species (seabirds, marine turtles and marine mammals) by gear for the national fleet, in the IOTC area of competence (for the most recent five years at a minimum, e.g. 2016–2020 or to the extent available).

See Table under section 5.3. Only marine turtles were caught by commercial vessels in the period covered by the table. No catches were recorded in 2020. No incidental mortality /annual catches on other ecologically related species such as marine mammals and whale sharks have been observed in the recreational fishery.

6. NATIONAL DATA COLLECTION AND PROCESSING SYSTEMS

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

For the commercial fleet the following applied in 2020: Council Regulations 1966/2006, 1006/2008 and 1224/2009 and Commission Regulations 1077/2008 and 201/2010, implemented by the Sea Fishing (EU Recording and Reporting Requirements) (Scotland) Order 2010 (SSI 2010/334), require Masters of fishing vessels of 12 metres' length overall or more to record and report catch data electronically in EU and third country waters.

Logbook data collection for the recreational fishery is completed by the vessel charterer for each trip conducted. The system was introduced in 2006 and provides 100% coverage of all boat based recreational fishing activity. Prior to that a system of logbooks to be completed by fishers was utilised but proved less effective and did not achieve 100% coverage. A similar fisher-based system was introduced in 2016 for shore based recreational fishers, although they tend not to catch tuna and tuna like species.

6.2. Vessel Monitoring System (including date commenced and status of implementation)

As of 2012, all EU vessels which exceed 12 metres overall length must be fitted with VMS units. This means that all UK vessels operating in the Indian Ocean during 2020 were monitored by a satellite tracking system. This requirement has continued following the UK's exit from the EU in 2021.

Commission Implementing Regulation (EU) No 404/2011 sets out the requirements for vessel monitoring systems and requires each member state to adopt appropriate measures to ensure that the satellite tracking devices do not permit the input or output of false positions and are not capable of being manually overridden.

Commission Regulation (EC) No 2244/2003 requires each member state to adopt appropriate measures to ensure that the satellite-tracking devices do not permit the input or output of false positions and are not capable of being manually overridden. The regulations are implemented in Scotland through Scottish Statutory Instrument (SI) 392/2004.

6.3. Observer scheme (including date commenced and status; number of observer, include percentage coverage by gear type)

An observer programme has now been put in place for UK commercial vessels and routine sampling started from July 2017 with a single observer. The first report was received in October 2017. No observers were present in 2020 due to Covid 19 restrictions.

Length frequency data collection was initiated for the recreational fishery on Diego Garcia in June 2009.

Table 6. Annual observer coverage by operation, e.g. longline hooks, purse seine sets (for the most recent five years at a minimum, e.g. 2016–2020 or to the extent available).

See comments and Table under section 5.3.

Figure 4. Map showing the spatial distribution of observer coverage.

No observers were present in 2020 due to Covid 19 restrictions.

6.4. Port sampling programme

All UK commercial vessels operating in the IOTC Convention area land their catches in third countries. The catches are usually loaded into containers and shipped to non-UK ports. The UK's port sampling programme does not cover these vessels but regular contact is made with the competent authorities of countries where we know that the vessels land. Port sampling is therefore carried out occasionally.

Table 7. Number of vessel trips or vessels active monitored, by species and gear

Year	Target species	Number of active vessels	Number of trips monitored
2017	Blue shark (BSH), Swordfish (SWO), Shortfin mako (SMA)	2	2
2018		2	2
2019		2	2
2020		1	0

Table 8. Number of individuals measured, by species and gear

No observer monitoring took place in 2020 due to Covid 19 restrictions.

6.5. Unloading/Transhipment of flag vessels [including date commenced and status of implementation]

Transhipments are not permitted by UK vessels

Table 9. Quantities by species and gear landed in ports located in the IOTC area of competence - Longlines 2020

Port of landing	Species code	Species name	Liveweight (tonnes)
Durban	BLM	Black Marlin	2.6
	BSH	Blue Shark	78.2
	DOL	Common dolphinfish	0.7
	LEC	Snake Mackerel	3.0
	SFA	Indo-Pacific Sailfish	0.6
	SMA	Shortfin mako	11.3
	SWO	Swordfish	97.5
	YFT	Yellowfin tuna	4.6
Durban Total			**198.5**
Vigo	BLM	Black Marlin	1.7
	BSH	Blue Shark	79.0
	DOL	Common dolphinfish	0.1
	LEC	Snake Mackerel	3.7
	SFA	Indo-Pacific Sailfish	0.8
	SMA	Shortfin mako	21.6
	SWO	Swordfish	105.0
	YFT	Yellowfin tuna	1.6
Vigo Total			**213.4**
Grand Total			**411.9**

Table 10. Quantities by species and gear transhipped in ports located in the IOTC area of competence

Not applicable to the UK

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

Catches of these species by UK vessels are less than 15 tonnes annually. Data are supplied as required under Resolution 15/02 and the UK has implemented an observer programme.

6.7. Gillnet observer coverage and monitoring

Not applicable

6.8 Sampling plans for mobulid rays

There were no catches or discards of mobulid rays recorded in 2020.

7. NATIONAL RESEARCH PROGRAMS

Currently all research is conducted within BIOT through a series of expeditions funded under the Bertarelli Programme in Marine Science (BPMS, see Table 11). Research under the BPMS links to conservation priorities through 'Key Species' research.

Outputs of research conducted in BIOT can be accessed through the Chagos Information Portal (ChIP, https://chagosinformationportal.org/), the BPMS website (www.marine.science) and the BIOT website (https://biot.gov.io/) where details of expeditions up to those conducted in 2020 are currently available

(https://biot.gov.io/science/2019-science-expeditions/). Table 11 gives an update on the outcomes of expeditions carried out in 2020, not previously reported on, and summarises the expeditions conducted during 2020. Some of these were only partially completed due to COVID-19, the majority of planned trips were postponed.

Table 11. Summary table of national research programs- BPMS Expeditions to the British Indian Ocean Territory during 2020). Majority of planned trips postponed to 2021 due to COVID

Project title	Logistics	Team	Objectives	Application status
Seabird /drone research	14 Jan - 26 Feb DG and Nelson Grampian Frontier Route: via Bahrain to DG by air (commercial flight and AMC)	**BPMS expedition 18** **1. Malcolm Nicoll (ZSL)** 2. Alice Trevail (Exeter) 3. Robin Freeman (ZSL) 4. Steve Votier (Exeter) 5. **Daniel Ward (Marine Management Organisation**) 6. Steven Lloyd (Loughborough) 7. Melissa Schiele (Loughborough) 8. TWM team	**Overall objective**: To undertake research to assess the importance of the BIOT MPA for seabirds and to further test UAVs in situ **Specific objectives** 1: To document the year-round biology and foraging ecology of breeding Red Footed Boobys at Barton Point Nature Reserve and RFBs and BBs at Nelson Island. 2: To document the distribution of non-breeding RFBs from Barton Point Nature Reserve on DG. 3: To establish the status and distribution of breeding seabirds on Nelson Island. 4. To conduct test flights of fixed wing UAV's from the BPV fixed-wing for megafauna and ghost net surveying and IUU surveillance	Partially cancelled (drones) seabird work partially completed
Reef 0	3 – 9 Mar DG only Route: via Bahrain to DG by air (commercial flight and AMC)	**BPMS expedition 19** **1. Bryan Wilson (Oxford)** 2. Margaux Steyaert (ZSL) 3. Dominic Andradi-Brown (WWF) 4. Vivian Cumbo (Macqurie)	**Overall objective**: Assess population size and reproductive status of corals on DG's reefs **Specific objectives** 1. Survey reefs around Diego Garcia to obtain a more accurate estimate of population size for the critically endangered brain coral Ctenella chagius. 2. Asses coral reproductive status. The dates for the planned Reef 0 expedition coincide with what is suspected to be the annual period of synchronous spawning for corals on	Completed

			the reefs of BIOT. Survey the small cryptic invertebrates 3. (cryptofauna) that live on/in the reef by deploying a set of 9 ARMS for a period of one year (all will be collected in 2021).	
ZDF filming trip	12 - 29 Mar Antsiva Route: via Gan, Maldives by sea to BIOT	**BPMS expedition 20** **1. Heather Koldewey (ZSL)** 2. David Curnick (ZSL) 3. Taylor Chapple (Oregon) 4. Pete Carr (ZSL) 5. Sammy Andrzejaczek (Stanford) 6. Claudia Ruby (ZDF) 7. Lars Erik Torbjörn Karvang (ZDF) 8. Peter Michael Trinks (ZDF) 9. Ulrich Kunz (ZDF) 10. Christian Howen (ZDF)	**Overall objective:** Film footage for a documentary on BIOT and the science work of the programme **Specific objectives** 1. Give introduction to BIOT and the marine science programme 2. Use on board team to record activities around tagging sharks and birds and island ecosystems 3. Meet the Reef 1 team and film them conducting a range of reef research activities 4. Meet the Plymouth team and film them Manta tagging using ROVs to film deep reefs	Partially completed – team pulled out early due to COVID
Deep reefs and seamounts	7-25 Mar Tethys Supporter Route: via Gan, Maldives by sea to BIOT	**BPMS expedition 21** **1. Phil Hosegood (Plymouth)** 2. Edward Robinson (Plymouth) 3. Nicola Foster (Plymouth) 4. Clara Diaz (Plymouth) 5. Benjamin Williamson (Plymouth)	**Overall objective**: To study seamounts and mesophotic reefs as hotspots of biodiversity and sources of recovery for damaged shallow reefs **Specific objectives** To study the oceanography, mesophotic coral reef ecology and animal behaviour by using: 1. moored oceanographic instrumentation	Partially completed – team pulled out slightly early due to COVID

		6. Peter Arber (Plymouth) 7. Joanna Harris (Manta Trust) 8. Patricia Murray (Manta Trust) 9. Danielle Eager (Plymouth) 10. Alain Diaz (Doctor)	2.ship-based oceanographic instrumentation 3.surveys using a remotely-operated vehicle (ROV) 4.multibeam acoustic surveys	
Reef 1	10 - 31 Mar Grampian Frontier In; DG Out: DG Route: via Bahrain to DG by air (commercial flight and AMC)	**BPMS expedition 22** **1. Chris Perry (Exeter)** 2. Ines Lange (Exeter) 3. Cassandra Benkwitt (Lancaster) 4. Rachel Gunn 5. Brett Taylor (AIMS) 6. Mark Chinkin (AIMS) 7. Jamie McDevitt-Irwin (Stanford) 8. Melissa Palmisciano (Stanford) 9. Kristina Tietjen (Stanford) 10. Bryan Wilson (Oxford) 11. Margaux Steyaert (ZSL) 12. Rob Dunbar (Stanford) 13. David Mucciarone (Stanford) 14. Thomas Hewitt (Doctor)	**Overall objective**: Assessing the composition and structure of reef communities in BIOT pre and post bleaching event and to explore their relationship with reef resilience and the value of the MPA. **Specific objectives:** 1.Reef fish surveys 2.Sampling and studying of fish otoliths and gut contents to assess nutrient flows 3.Retrieving plates to study recruitment rates 4.Retrieval and processing of ARMS devices 5.Deployment of BEAMS instruments to measure reef productivity	Partially completed – team pulled out slightly early due to COVID

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

Table 12. Scientific requirements contained in Resolutions of the Commission, adopted between 2012 and 2020.

Res. No.	Resolution	Scientific requirement	CPC progress
11/04	On a regional observer scheme	Paragraph 9	An observer programme has now been put in place for UK commercial vessels and full observer coverage as required by the respective IOTC Resolutions has been adopted. Routine sampling started from July 2017. This was suspended in 2020 due to Covid 19.
12/04	On the conservation of marine turtles	Paragraphs 3, 4, 6–10	All vessels are aware of and use proper handling techniques and keep on board equipment needed for the release of live turtles. UK (including BIOT) submits all mandatory statistical reports, including null reports
12/06	On reducing the incidental bycatch of seabirds in longline fisheries.	Paragraphs 3–7	All longline fishing vessels are aware of the need to use mitigation measures when fishing south of 25 degrees south or whenever interaction with seabirds is expected. Additional information has been sent to vessels to ensure that they are complying with their obligations.
12/09	On the conservation of thresher sharks (family alopiidae) caught in association with fisheries in the IOTC area of competence	Paragraphs 4–8	Shark catches are reported by species and the vessels are encouraged to release bycatch species that are caught alive.
13/04	On the conservation of cetaceans	Paragraphs 7– 9	Not applicable to the UK
13/05	On the conservation of whale sharks (*Rhincodon typus*)	Paragraphs 7– 9	Not applicable to the UK.
13/06	On a scientific and management framework on the conservation of shark species caught in association with IOTC managed fisheries	Paragraph 5–6	Shark catches are reported by species and commercial vessels are encouraged to release bycatch species that are caught alive. All sharks are released alive from the recreational fishery.
15/01	On the recording of catch and effort by fishing vessels in the IOTC area of competence	Paragraphs 1–10	UK commercial vessels operating in the IOTC area are equipped with electronic logbooks for recording catch and effort data. Aggregate reports were supplied to the IOTC secretariat as required. .
15/02	Mandatory statistical reporting requirements for IOTC Contracting Parties and Cooperating Non-Contracting Parties (CPCs)	Paragraphs 1–7	Catch, effort and size data for longline fisheries has been provided. Nesting sites in BIOT are monitored on island visits.
17/05	On the conservation of sharks caught in association with fisheries managed by IOTC	Paragraphs 6, 9, 11	Shark catches are reported by species for commercial vessels and the vessels are encouraged to release bycatch species that are caught alive.
18/02	On management measures for the conservation of blue shark caught in association with IOTC fisheries	Paragraphs 2-5	Statistical data on catch and effort relating to blue shark have been reported in line with the provision of Resolution 15/01. Biological data - size and discard data have been provided in accordance with the Resolution 15/02 since 2017 when on board observers for the two UK vessels operating in the IOTC area were first deployed. Prior to that it was considered that the UK was exempt from biological sampling due to thresholds under the Data Collection Framework Regulation (2017/1004). Sharks caught in the recreational fishery are released alive.
18/05	On management measures for the conservation of the Billfishes: Striped marlin, black marlin, blue marlin and Indo-Pacific sailfish	Paragraphs 7 – 11	Catches of these species by UK vessels are small and reported in accordance with Resolution 15/02. Sharks caught by IUU fishing vessels in BIOT are reported in communications to the Compliance Committee.

Res. No.	Resolution	Scientific requirement	CPC progress
18/07	On measures applicable in case of non-fulfilment of reporting obligations in the IOTC	Paragraphs 1, 4	UK was compliant with reporting obligations under Resolutions 15/02 and 15/03
19/01	On an Interim Plan for Rebuilding the Indian Ocean Yellowfin Tuna Stock in the IOTC Area of Competence	Paragraph 22	Not applicable to UK commercial vessels – UK annual catches in the longline fishery are below threshold. A small recreational fishery exists on Diego Garcia that catches tuna and tuna like species all reporting obligations for this fishery are met in a timely manner. Sharks caught in the recreational fishery are released alive. In 2016 steps were taken to improve data collection for catches taken by shore-based fishers, though it is not anticipated this will include significant catches of tuna or tuna like species. Reference to this information will be included in the Annual Report of Implementation.
19/03	On the Conservation of Mobulid Rays Caught in Association with Fisheries in the IOTC Area of Competence	Paragraph 11	No mobulid rays were caught or discarded in 2020 by commercial vessels.

9. LITERATURE CITED

MRAG (2019a) Review of FAD papers from the 2nd Joint Tuna RFMO FAD WG Final Report June 2019.

MRAG (2019b) Ocean Currents in structuring FAD and ALDFG beaching in BIOT.

MRAG (2019c) Pilot results of modelling of passive particles through BIOT. October 2019

Regulations applicable to the UK Commercial Fleet

1.1. Commission Regulation (EC) No 2244/2003 of 18 December 2003 laying down detailed provisions regarding satellite-based Vessel Monitoring Systems
1.2. Council Regulation (EC) No 1966/2006 of 21 December 2006 on electronic recording and reporting of fishing activities and on means of remote sensing
1.3. Council Regulation (EC) No 1006/2008 of 29 September 2008 concerning authorisations for fishing activities of Community fishing vessels outside Community waters and the access of third country vessels to Community waters, amending Regulations (EEC) No 2847/93 and (EC) No 1627/94 and repealing Regulation (EC) No 3317/94
1.4. Commission Regulation (EC) No 1077/2008 of 3 November 2008 laying down detailed rules for the implementation of Council Regulation (EC) No 1966/2006 on electronic recording and reporting of fishing activities and on means of remote sensing and repealing Regulation (EC) No 1566/2007
1.5. 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, amending Regulations (EC) No 847/96, (EC) No 2371/2002, (EC) No 811/2004, (EC) No 768/2005, (EC) No 2115/2005, (EC) No 2166/2005, (EC) No 388/2006, (EC) No 509/2007, (EC) No 676/2007, (EC) No 1098/2007, (EC) No 1300/2008, (EC) No 1342/2008 and repealing Regulations (EEC) No 2847/93, (EC) No 1627/94 and (EC) No 1966/2006
1.6. Commission Regulation (EU) No 201/2010 of 10 March 2010 laying down detailed rules for the implementation of Council Regulation (EC) No 1006/2008 concerning authorisations for fishing activities of Community fishing vessels outside Community waters and the access of third country vessels to Community waters
1.7. Commission Implementing Regulation (EU) No 404/2011 of 8 April 2011 laying down detailed rules for the implementation of Council Regulation (EC) No 1224/2009 establishing a Community control system for ensuring compliance with the rules of the Common Fisheries Policy
1.8. Regulation (EU) No 605/2013 of the European Parliament and of the Council of 12 June 2013 amending Council Regulation (EC) No 1185/2003 on the removal of fins of sharks on board vessels
1.9. Sea Fishing (EU Recording and Reporting Requirements) (Scotland) Order 2010 (SSI 2010/334)

1.10. Sea Fishing (Enforcement of Community Satellite Monitoring Measures) (Scotland) Order 2004, SSI 392/2004.

Publications produced from BIOT 2020-2021

Publication Count	Publication and Authors
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18	Hays, G.C., Rattray, A. and Esteban, N. (2020) Addressing tagging location bias to assess space use by marine animals. *Journal of Applied Ecology*.57,10 DOI: 10.1111/1365- 2664.13720 [Oct] [*turtles*]
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25	Lange, I.D., Perry, C.T., Morgan, K.M., Roche, R., Benkwitt, C.E. and Graham, N.A.J. (2020) Site-level variation in parrotfish grazing and bioerosion as a function of species-specific feed metrics. *Diversity*. DOI: 10.3390/d12100379 [Oct] [*coral reefs*]
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