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UK (British Indian Ocean Territory) National Report to the Scientific Committee of the Indian Ocean Tuna Commission, 2015

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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 2015, final data for the 2014 calendar year must be provided to the Secretariat by 30 June 2015)	YES 03/06/2015
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 2015, preliminary data for the 2014 calendar year was provided to the IOTC Secretariat by 30 June 2015). **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 2015, final data for the 2014 calendar year must be provided to the Secretariat by 30 December 2015).	NO
If no, please indicate the reason(s) and intended actions: The UK (BIOT) Authority does not operate a flag registry, BIOT does not have a fleet of commercial fishing vessels, and there is no commercial port in BIOT. The waters of the Territory were declared a Marine Protected Area (MPA) on 1 April 2010 and from 1 November 2010 became a no-take MPA to commercial fishing. An MPA exclusion zone covering Diego Garcia and its territorial waters exists where pelagic and demersal recreational fisheries are permitted. The recreational fishery catches some tuna and tuna like species.	

EXECUTIVE SUMMARY

UK (BIOT) waters have been a Marine Protected Area (MPA) since April 2010. Diego Garcia and its territorial waters are excluded from the MPA and include a recreational fishery. UK (BIOT) does not operate a flag registry and has no commercial tuna fleet or fishing port. The United Kingdom (BIOT) National Report summarises fishing in its recreational fishery in 2014 and provides details of research activities undertaken to date within the MPA against its Interim Conservation Management Framework.

The recreational fishery landed 9.99t of tuna and tuna like species on Diego Garcia in 2014. Principle target tuna species of the industrial fisheries (yellowfin, bigeye and skipjack tunas) contributed 21% of the total catch of tuna and tuna like species of the recreational fishery. Length frequency data were recorded for a sample of 75 yellowfin tuna from this fishery. The mean length was 69cm. Sharks caught in the recreational fishery are released alive.

IUU fishing remains the greatest threat to the BIOT ecosystem and fisheries but a range of other threats exist including invasive and pest species, climate change, coastal change, disease, and pollution. During 2015 the BIOT Authority appointed an Environmental Officer to take forward its Interim Conservation Management Framework and progress to date is presented. In 2015 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.

Contents

1. BACKGROUND/GENERAL FISHERY INFORMATION

The waters of the British Indian Ocean Territory (BIOT) were declared a Marine Protected Area (MPA) on 1 April 2010 and from 1 November 2010 became a no-take MPA to commercial fishing. An MPA exclusion zone covering Diego Garcia and its territorial waters exists where pelagic and demersal recreational fisheries are permitted. 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.

The UK (BIOT) Authority does not operate a flag registry, BIOT does not have a fleet of commercial fishing vessels, and there is no commercial port in BIOT.

2. FLEET STRUCTURE

N/A: As stated above, UK (BIOT) does not have a flag registry and fleet of commercial fishing vessels. The recreational fishery is described in section 4.

3. CATCH AND EFFORT (BY SPECIES AND GEAR)

N/A: As stated above, UK (BIOT) does not have a flag registry or a fleet of commercial fishing vessels.

4. RECREATIONAL FISHERY

A small recreational (sports) fishery occurs under licence at Diego Garcia. A total of 9.99 tonnes of tuna and tuna like species were caught in 2014 representing 42% of the recreational catch (the remainder are reef associated species). Principle target tuna species of the industrial fisheries (yellowfin, bigeye and skipjack tunas) contributed 21% of the total catch of tuna and tuna like species of the recreational fishery (
Table **1**).

Table 1: Catches of tuna and tuna like species landed from the UK (BIOT) recreational fishery during the period 2010-2014.

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
2010	91	88	1056	196	300	17847	150	100	8573	36	8859	19578	28438
2011	363	113	1050	144	104	10757	406	24	8386	0	8815	12532	21347
2012	181	102	1182	138	249	5359	370	80	3132	0	3582	7211	10793
2013	0	64	464	135	363	6844	317	101	3635	0	4052	7871	11924
2014	0	97	444	126	0	7259	290	106	1670	0	2067	7926	9992

Length data have been collected for yellowfin tuna (*T. albacares*) from the recreational fishery since June 2009, but data were only collected during October-December in 2014. A total of 75 fish were measured in 2014. The mean length of the *T. albacares* sampled was 69cm. 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.

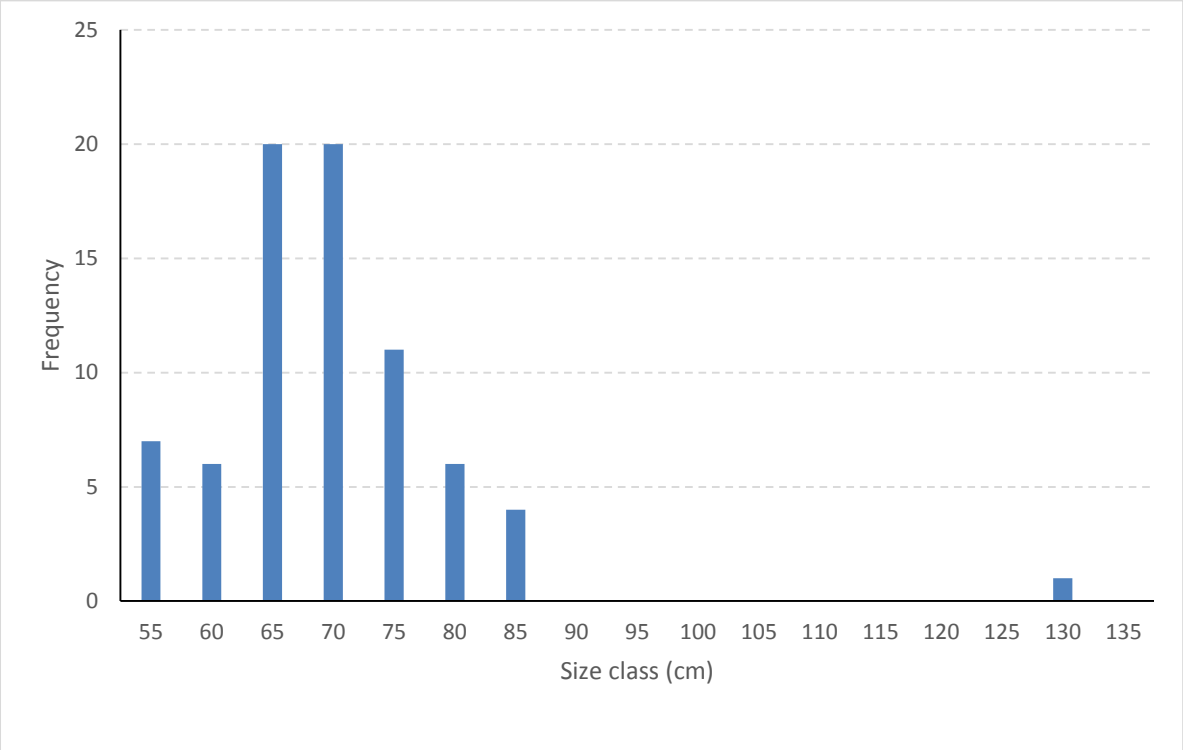

Figure 1: **Yellowfin tuna length frequency plot using data from the recreational fishery in 2014 (n=75)**

5. ECOSYSTEM AND BYCATCH ISSUES

The BIOT zone, excluding territorial waters around Diego Garcia, is a no-take MPA closed to commercial fishing. The recreational fishery on Diego Garcia is currently permitted and is monitored.

The current ecosystem threats relate to illegal unreported and unregulated fishing of which a number of events have been detected by the BIOT Patrol Vessel and have resulted in a number of successful prosecutions. This information is reported separately to the Compliance Committee.

In particular, IUU vessels target oceanic and reef associated sharks with longlines and gillnets (some of which are greater than 2.5km in length contrary to IOTC Resolution 12/12). The surveillance strategy of the BIOT Patrol Vessel is based on a combination of ecological risk assessment and intelligence on IUU activities. Beyond the blanket protection of all species through the declaration of the MPA, there are currently no separate national plans of action in place for individual species or species groups.

Other threats to the ecosystem that have been identified 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 (including discarded fishing gear and abandoned or lost fish aggregating devices (see IOTC-2015-WPEB11-48), causing inter alia hazards to nesting turtles and ghost fishing).

5.1 Sharks

Sharks must be released alive when caught in BIOT's recreational fishery.

UK (BIOT) presented data on sharks caught by vessels fishing illegally in BIOT waters to the Working Party on Ecosystems and Bycatch (IOTC-2015-WPEB11-48) *'Update on the catch and bycatch composition of illegal fishing in the British Indian Ocean Territory (UK(OT)) and a summary of abandoned and lost fishing gear'* Illegally caught sharks include a number of pelagic species of concern to IOTC, hammerhead spp and scalloped hammerhead, oceanic whitetip, blue shark, silky shark, and thresher shark spp. This includes IOTC prohibited species (oceanic whitetip and thresher sharks).

5.2 Seabirds

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

5.3 Marine Turtles

No turtle bycatch / interaction was reported in the BIOT recreational fishery in 2014. 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 and regularly encounter and record turtle nesting tracks. Research into the location and frequency of turtle nesting is currently in progress (See Table 8)

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

No incidental mortality / annual catches on other ecologically related species such as marine mammals and whale sharks has been observed in the recreational fishery. From the BIOT Patrol Vessel, opportunistic data is collected on sightings of marine mammals by the Senior Fisheries Protection Officer.

6. NATIONAL DATA COLLECTION AND PROCESSING SYSTEMS [MANDATORY]

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

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.

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

As there are no vessels flagged by the BIOT Authorities and no commercial vessels are licensed to fish inside the BIOT MPA, the BIOT VMS is currently not operational.

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

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

6.4. Port sampling programme [including date commenced and status of implementation]

NA. BIOT has no commercial port

6.4. Unloading/Transhipment [including date commenced and status of implementation]

As BIOT has no commercial ports there is no unloading or transhipment allowed. Transhipment by foreign fishing vessels is not permitted anywhere within BIOT waters.

7. NATIONAL RESEARCH PROGRAMS

In 2014 the BIOT Administration developed an Interim Conservation Management Framework (BIOT, no date): it is not yet appropriate to develop a longer term plan pending the outcome of policy reviews by the UK and BIOT Governments and consultations with Mauritius[1]. The Interim Conservation Management Framework (CMF) sets a strategic approach to the implementation of environmental monitoring and research within the MPA and defines the immediate monitoring needs. Progress made against the Interim CMF to date is shown in Table 8a. Research is generally funded from external sources but approved through the BIOT Administration and supported-in-kind through the provision of the BIOT Patrol Vessel as a research platform during research expeditions. Research expedition activities relate primarily to the first two activity areas of the CMF (Understanding and interpreting the ecosystem; and, Conserving wildlife and habitats). Additionally there are a number of individual research activities funded outside the Expeditions. In 2015, BIOT appointed an

[1] The outcome on 18 March 2015 of the legal challenge to the BIOT MPA brought by Mauritius through the International Tribunal on the Law of the Sea (ITLOS) has resulted in increased dialogue with Mauritius, which is currently on-going.

Environmental Officer tasked with working on the next steps of the Interim Conservation Management Framework and acting as an anchor for scientific expeditions, ensuring that they reflect BIOT's needs.

A five year plan from scientific institutions for monitoring megafauna in the Chagos MPA is being developed which could attract private/third sector funding. This goes beyond the timeframe of the Interim Conservation Management Framework established by the BIOTA. The plan is currently being updated and aligned with the CMF and in order to ensure a coordinated approach to monitoring megafauna, it takes account of activities planned through the Chagos Expeditions. Table 8b indicates the research activities undertaken between October 2014 and September 2015 through these expeditions and independently.

The BIOT Administration and UK Government ministers have been keen to involve Chagossians in environmental and scientific work. Jenny Bertrand took part in the 2015 pelagic expedition through the Chagossian Community Environment Project in conjunction with ZSL, and Claudia Naraina took part in the 'BIOT MPA Survey Expedition 2015'.

Table 8a. Summary of progress against the Interim Conservation Management Framework to date (October 2015).

Action	Target / Indicator	Progress
1. Understanding and interpreting the ecosystem		
Commence programme to evaluate impact of no-take MPA on tuna stocks, in collaboration with IOTC	Evaluation plan and protocols developed and implemented. IOTC buy-in secured.	Papers submitted to IOTC - IOTC–2011–SC14-40 (for YFT); IOTC–2014–WPTT16–14; IOTC–2014–WPTT16–15 (on fleet dynamics). Further examination by IOTC SC of the joint effects of the BIOT and IOTC closures stalled pending discussions between BIOT Administration and Mauritius.
Monitor status of reef sharks and fish assemblages to evaluate the impact of no-take and IUU controls, in a range of representative habitats	Select from existing study areas key monitoring locations. Protocols developed and implemented. Biological changes linked to environmental variables and management measures.	See Table 8b, 'Animal tagging and tracking in BIOT'
Monitor the status of pelagic sharks and fish (e.g. tunas) to evaluate the impact of no take and IUU controls	Establish key monitoring locations. Protocols developed and implemented. Biological changes linked to environmental variables and management measures.	See Table 8b, 'Animal tagging and tracking in BIOT' and 'Use of underwater video technology to explore pelagic communities.'
Monitor movements of elasmobranchs (sharks, manta rays) within Chagos to understand connectivity and behaviour with recovery of these populations	Connectivity between atolls quantified as movements increase as abundance and size of animals increase. Focal species: greys (as reef example), silvertips (as quasi reef/oceanic) and tigers.	See Table 8b, 'Animal tagging and tracking in BIOT'
Initiate survey programme for marine mammals	Establish monitoring plan and protocols. Initiate monitoring.	Data is currently collected by SFPO opportunistically. Some initial correspondence with Swansea, regarding survey protocols, although not currently coordinating with Swansea.
Develop remote, satellite-linked, monitoring/enforcement units	Data collected on species abundance, diversity and environmental variables. Deterrent to, and ancillary to monitoring of, IUU. Baselines and surveillance coverage improved.	SMART (Spatial monitoring and reporting tool) being evaluated.
Review protocols for data collection of confiscated illegal catches	Improved understanding of species and morphometrics of poached species. Lab analysis of parameters	Some coordination with UWA in developing the protocols. Programme on hold pending policy / process review and initiation of

Action	Target / Indicator	Progress
	such as stable isotopes, xenobiotic accumulation etc.	samples collection through Environmental Officer.
Establish detailed baselines for assessing coral disease prevalence	Key monitoring locations established and initial analyses undertaken.	See Table 8b, 'Strengthening the world's largest Marine Protected Area: Chagos Archipelago' sub project 5
Monitor coral cover	Building on previously established baselines, indicators of reef health provided.	See Table 8b, 'Strengthening the world's largest Marine Protected Area: Chagos Archipelago' sub project 2
Monitor continuous sea temperature and ocean acidity to better understand risks from climate change	Enable ongoing assessment of temperature change and associated anomalies.	Ongoing monitoring occurs.
Commence discovery and documentation of deep-sea ecosystems.	Mapping of representative sea-mounts and island/plateau slopes. Description of associated benthic ecosystems, including sessile marine species and demersal communities. Multi-frequency acoustic studies of DSL interaction with seamount and archipelagic slope systems to examine bentho-pelagic coupling	Yet to be initiated
Establish detailed baselines for assessing island geomorphological change, with an aim to informing management actions	Baseline maps for DG and northern atolls completed.	See Table 8b 'A Half-Century of Coastline Change in Diego Garcia'
Monitor diversity, abundance, movements and distribution of seabirds	Diversity and abundance of seabirds increases with habitat rehabilitation; distance for foraging decreases with increasing abundance of bait schools and tunas. Management actions informed.	See Table 8b, 'Strengthening the world's largest Marine Protected Area: Chagos Archipelago' sub project 7
Establish detailed baselines for terrestrial environments, including poorly studied taxa and vulnerable habitats (including mangrove)	Biodiversity interests and priorities identified. Terrestrial Management Plan informed.	Initiated. Proposal requesting external funding to undertake data collection to inform a Terrestrial Action Plan submitted. Part of 'Strengthening the world's largest Marine Protected Area: Chagos Archipelago' in an earlier year.
Monitor sea turtle populations, incubation conditions, foraging behaviours, genetic characteristics and migration.	Conservation and management actions informed. Contribution to global research needs.	See Table 8b, 'Monitoring programme to assess the sea turtle population in BIOT'
Review ecological character of Ramsar site in Diego Garcia	Management actions, if/where necessary, informed. Obligations under Ramsar met.	Initiated. A review of the legislative provisions protecting the Ramsar site has been completed and management measures amended accordingly. Ongoing monitoring of pressures is required. Current evidence has informed a response from Defra to the Ramsar Secretariat indicating obligations are being met.
Video-document key terrestrial and marine habitats	Complete visual baselines for key monitoring locations, to complement ongoing scientific programmes. Open source data	See Table 8b 'BIOT MPA Survey Expedition 2015'

Action	Target / Indicator	Progress
	made available for ongoing research and communications.	
2. Conserving wildlife and habitats		
Develop terrestrial management plans for each island, including identification and recommendations for ongoing or future restoration or ecological improvement	Terrestrial conservation work informed and prioritised according to ecological need.	Initiated. Proposal requesting external funding to undertake data collection to inform a Terrestrial Action Plan submitted.
Undertake field-based review of habitat restoration projects underway on DG	Production of management plans / guidelines for habitat restoration.	Initiated. An interim habitat restoration management plan for the Plantation on DG has been drafted. Data collection to inform future management is ongoing.
Intervene, where necessary to protect or preserve terrestrial biodiversity	Vulnerable species and/or habitats protected in the immediate term, prior to implementation of terrestrial management plan. Proposed interventions subject to peer review.	Ongoing.
Complete planned rat eradication project on Ile Vache Marine in August '14	Absence of rats, as determined by follow-up surveys after 6 and 12 months. Inform plans for broader rat eradication.	See Table 8b 'Île Vache Marine rat eradication project'
Produce official list of 'pest' species	Removal policies for invasive species informed and peer-reviewed.	Initiated. Proposal requesting external funding to collate data to inform list submitted.
Continue monitoring and habitat management of wetlands in Diego Garcia and consolidate into Ramsar action plan	Biodiversity and ecosystem goods and services of DG's wetlands secured.	Requires action.
3. Reducing threats		
Review and develop a new enforcement strategy for the MPA, including review of legislative options available with reference to UNCLOS and other relevant international agreements.	Reduction in resource loss through illegal exploitation, with reduction in secondary risks. Strategy to be informed by comprehensive baselining of the incidence and patterns of illegal exploitation. Use of all available data and capabilities, civilian and military, to support this, and inform continuous surface picture compilation.	MRAG review completed 2014. Maritime Analysis and Enforcement Adviser continuing evaluation.
Undertake socio-economic study of drivers for illegal exploitation	Enforcement strategy informed, and full range of options for reducing drivers of illegal exploitation considered.	MSc study MRAG / Kings College, completed; BIOT-A currently reviewing options, including through bilateral cooperation.
Work with regional partners, bilaterally and through IOTC, to promote understanding and effective prevention of illegal exploitation.	Regional ownership of a regional threat. Effective coordination of associated efforts leading to reduction in resource loss and secondary risks throughout BIOT and the broader Indian Ocean.	Bilateral relationship with Sri Lanka and continued engagement with Seychelles through BSFC. Diplomatic engagement with India, continued presence at CoC.
Undertake a strandline survey of beach debris.	Environmental impacts identified, to inform action plan.	Initiated. Bi-monthly data on broad debris types collected from a regular beach clean-up collated. More in-depth analysis of litter types, especially plastics, planned for Nov/Dec 2015, including in the outer islands.
Continue beach clean-ups in Diego Garcia	Minimal adverse environmental impact, targeted towards turtle	Initiated. In addition to the above, a number of other standalone beach clean-ups occur on DG during a year.

Action	Target / Indicator	Progress
	nesting areas, supported by volunteer participation.	
Refresh protocols for documenting and recording observations of FADs, discarded or abandoned fishing gear and other significant floating debris	Protocols and templates for recording information on incidences of fishing gear found in the water and during beach clean-ups revised and included in database. Data summarised annually.	Procedure in place to record all sightings and recovery of FADs and other abandoned fishing gear in database. BIOT signed up to ghost gear initiative. Beach clean-ups also in progress although no data yet received.
Enforce controls and regulations designed to protect the environment of the Territory	Ecological integrity maintained, and adverse anthropogenic impacts minimised. Protection of vulnerable sites and species, including those listed under Ramsar and IBA designations.	Ongoing. Spot checks of permits required prior to entry the DG Restricted Area (which broadly overlaps the Ramsar site) now being undertaken. Review of the legislation pertaining to recreational fishing completed and management actions in progress.
Monitor water quality in DG lagoon	Phosphates and nitrates decline over time.	Initiated. BIOTA have commissioned a project specification for water quality monitoring from CEFAS. Expected to commence early 2016.
Undertake a detailed assessment of all legal non-commercial fisheries	Undertake a creel survey to describe in detail the fisheries around DG and the northern atolls, including numbers of fishers, gear, catch and locations, in order to inform future regulation or management.	Survey forms developed and circulated to all personnel on DG. Infrastructure implemented to allow the anonymous return of completed forms. Interview-based survey on DG to be undertaken in Nov/Dec 2015.
Refresh reporting requirements for recreational fishery, and fishery from visiting yachts	Accurate and compulsory recreational fisheries monitoring (re-)established across all fishing categories (boat and shore based). Maximum amount of biologically useful information extracted from recreational fishing; impact assessments enabled. Appropriate mechanisms for ensuring or incentivising reporting are investigated.	Data received on a monthly basis from MWR (catch and LF data) and tuna submitted to IOTC. All catch data presented at BSFC. Data from yachts sporadic.
Assess / monitor ecological impact of treated wastewater effluent on reef conditions in DG.	Impact minimised through effective mitigation measures	Initiated. Incorporated within the scope of work BIOTA have commissioned from CEFAS.
Assess landfill sites for signs of leaching	Identify nature of hazard (if any).	Initiated. As above.
Review and, if necessary, revise protocol for disposal of confiscated illegal catch	Minimal impacts on environment and human health.	Completed. Illegal catch to be disposed of offshore.
Maintain the highest standards of environmental controls with regard to construction and engineering projects in Diego Garcia	Environmental impacts minimized.	Ongoing. BIOT HQ is routinely consulted for commentary and approval of infrastructure and development projects on DG. A watching brief is required to ensure full consultation occurs.
Assess current approach to reducing risks of shark-human contact on Diego Garcia	Maximise safe access to nature for personnel, with improved information to reduce risks.	Ongoing. Recreational swimming areas are regularly monitored for the presence of sharks and entry to the water prohibited where sharks are sighted. Additional advice requested on an ad hoc basis to address specific risks.
Re-assess protocols for waste disposal by visiting yachts.	Reduced environmental impact from excess waste on northern atolls.	Requires action.

Action	Target / Indicator	Progress
Refresh / enforce regulations around anchorage	Minimal benthic damage; reduced risk from sediment plumes.	Requires action.
Review and refresh BIOT environmental regulations.	Environmental regulations aligned with international obligations and best practice. Dedicated MPA legislation enacted, which consolidates and updated existing legislation.	BIOTA do not intend to implement changes to the legislative framework which underpins the MPA, until consultations with Mauritius are completed.
Commence programme to evaluate impact of no-take on fishing fleet dynamics in collaboration with IOTC	Evaluation plan and protocols developed and implemented. IOTC buy-in secured	PhD. MRAG/Imperial College, completed. Papers presented at WPTT: IOTC-2014-WPTT16-14 and IOTC-2014-WPTT16-17. See also above (impact of no-take MPA on tuna stocks)
4. Coordinating and communicating conservation management activities		
Develop and implement active communications plans for conservation and environment, including information signage and outreach on DG and the outer islands	Maximised engagement and education of personnel in Diego Garcia, and visitors to the outer islands.	Initiated. Project proposal requesting external funding to support production of brochures, leaflets and audio-visual materials submitted. Development of a 'snorkel trail' in progress.
Facilitate involvement of DG-based personnel in conservation and management efforts.	Maximised engagement and education of personnel, with increased benefits for morale and welfare. Maximised capacity for DG-based activities (habitat restoration, beach cleaning, turtle and bird monitoring).	Initiated. Over 60 volunteers have engaged in voluntary invasive species clearance in the terrestrial restoration sites. Turtle surveys and beach clean-ups are undertaken on a bi-monthly basis. Volunteers have also assisted in collecting benthic habitat data and in a new 'citizen science' approach collecting data on coconut crab populations in the Salomon atoll.
Assess options for centralised data store for environmental information on BIOT	Improved sharing of, and access to, cross-cutting value on environment in BIOT.	An open CCT run portal offering this solution (see Table 2, Chagos Research Portal) will be linked to from the BIOTA website when operational
Determine and enforce data-sharing protocols for those working in BIOT	Improved sharing of, and access to, cross-cutting value on environment in BIOT.	Review currently being implemented
Recruitment of temporary resident environmental officer on Diego Garcia.	Effective attainment of DG conservation goals, through liaison with interested parties. Governing standards and environmental regulations implemented. Science and conservation projects communicated to local and visiting personnel.	Environmental Officer now appointed.
Launch BIOTA website	BIOT's unique environmental value broadcasted; management lessons communicated; key resources provided.	Initiated. Basic webpages have been drafted and the website launch is scheduled for November/December 2014.
Produce and implement standardised protocols / documentation for science visits	Clarity for all parties on roles and responsibilities, with bureaucratic burden minimised. Ease of doing business maximised.	Initiated. BIOTA are currently auditing procedure and personnel to produce guidance for scientists.
Routine scrutineering of science equipment stored in Diego Garcia	Kit degradation minimised, and outlays for replacement / repair reduced.	Initiated. A scope of work to secure kit against damage and/or unauthorised removal has been submitted to the contractor on Diego Garcia. A quote is expected by November 2015.

Table 8b. Summary of current environmental research undertaken in the BIOT MPA between October 2014 and October 2015

Project title	Period	Countries involved	Funding source	Objectives	Short description
BIOT MPA Survey Expedition 2015	February 11th to March 3rd 2015	UK and Australia	Catlin Group Ltd Google Trekker	Google-Trekker; to map island vegetation perimeters and provide publicly available imagery of BIOT islands. Catlin Seaview; to collate imagery of BIOT coral reefs, for both scientific and educational purposes.	An expedition comprising a Catlin Seaview Survey Shallow Team, a Catlin Seaview Survey Deep Team and a Google Trekker Street View team to conduct surveys on the reefs and islands of the atolls of the BIOT MPA. Google Trekker; vegetative survey of the strandline of 16 island to identify a perimeter which may be used as a reference point in assessing shoreline dynamics. Imagery of the island perimeters has also been published. Catlin Seaview Survey Shallow Team; to catalogue present day coral baselines worldwide and improve the speed of coral science to match the pace of global reef decline. It is expected that the imagery for the 28 sites surveyed in Chagos will become available online to the public and the wider scientific community by September 2016. High-resolution 1 m2 geo-tagged benthic survey images can be extracted from the panoramic images and used for a variety of scientific surveys such as assessment of benthic community composition. The imagery will also act as a ground-truthing tool for the satellite-based habitat surveys being undertaken by the Khaled bin Sultan Living Oceans Foundation (LOF) which utilises WorldView2 (2m x 2m resolution) data. Catlin Seaview Survey Deep Team; conditions and resources proved prohibitive to deploying ROVs aimed at depths of 40-150m. Instead, over 500 coral samples were collected, aiming to improve understanding regarding coral species distribution.
Chagos Research Portal	2014-ongoing	UK (BIOT)	Chagos Conservation Trust	To compile data from research conducted in Chagos over the past 40 years into an online relational database.	The database will be spatially projected using GIS and serve as a platform for communication between researchers, the public, and decision-makers.
Animal tagging and tracking in BIOT	Feb/Mar 2013 - ongoing	UK, USA and Australia	Bertarelli Foundation	To tag and track large pelagic species in order to assess how much protection the no-take MPA is	Work on this project continued in 2015 with an expedition from the Yacht Vava II (March 18th-28th), with the deployment of 17 additional acoustic arrays to monitor tagged animals; and separately, additional work through the Chagos Pelagic Expedition, between Jan 9-27 2015.

				providing (note that reef associated species have also been tagged)	Five different types of electronic tags were deployed in this study: Wildlife Computer's pop-up mini-pat archival tags; Wildlife Computer's Smart Position or Temperature Transmitting tag; Lotek international archival tags, Vemco coded acoustic transmitters and conventional identification tags. In 2013 38 receivers were installed and a further 26 in 2014 with a total of 130 animals tagged during this period. Between 2013 and 2015 the following specific species have been tagged: Tunas, 16 (2 Dogtooth and 14 Yellowfin tuna); Sailfish, 3; elasmobranchs,180 (75 grey reef shark, 79 silvertip shark, 6 silky shark, 17 manta ray, 1 blacktip reef shark, 2 nurse shark). The goal of the tagging component of the 2015 VAVA expedition was to focus on reef sharks (n=50), pelagic fish (billfish, tuna) and manta tagging (n=30) with specific efforts to expand the geographic scope of acoustic tagging and increase the number of acoustically tagged animals, in order to better assess inter-atoll movements and patterns of residency. Potentially some fish and/or elasmobranchs may be double tagged with a long term satellite tag (8-9 months) and an acoustic tag. To supplement the data collected through acoustic tagging and to learn more about long term residency and migration patterns of sharks, manta rays, and fish 10 Wildlife computer minipat and 6 Lotek satellite tags were deployed. These tags collect and archive data on depth, temperature, and light levels and detach from the tagged animal after a programmed period of time. In 2015 5 individual *M. alfredi* were tagged with Wildlife Computers smart position or temperature transmitting (SPOT) tags and pings from all tags have been received, confirming successful deployment. Tissue biopsy samples from 4 individuals were collected. A total of at least 26 new individuals were photographed and added to the ID database. Data obtained from SPOT tags deployed on *M. alfredi* during this expedition will provide information pertaining to critical habitat usage and migratory distances.
Use of underwater video technology to explore	2015	UK / Australia	Bertarelli Foundation	To assess the benefits of the Marine Protected Area for pelagic species,	The University of Western Australia and the Zoological Society of London (ZSL) have collaborated on using underwater video technology to explore mid-water communities to better understand the benefits of the Marine Protected Area. In

pelagic communities.				principally sharks, manta rays and some piscivorous reef fish.	2015 the team deployed Baited Remote Underwater Video System (BRUVs) on two-hundred and sixty occasions. Data from these deployments indicated the presence of whale sharks and oceanic white tips as well as documenting fish biomass. Acoustic surveys were undertaken in seven locations to assess fish and planktonic movements. Deep-sea footage was also collected (300-3300m) identifying deep-sea shark species.
Oceanographic studies in BIOT	2015	UK/Australia	Bertarelli Foundation		Acoustic surveys at night were undertaken to enable 3D mapping of seamount and maps for Sandes, Swartz and the Marlin mounts have been generated. Oceanographic data was collated over a 2.5 week deployment of an oceanographic mooring with high resolution tidal current data and turbulence profiles documented. Deployments of oceanographic instruments and moorings will enable description of internal wave and tidal regimes, characterisation of water masses, and the description of interactions between tidal regimes, stratification, and abrupt topography; these oceanographic features are important in identifying productive habitats for higher trophic levels such as birds, mantas, pelagic sharks, and tunas, and for interpreting the mid-water BRUVS and acoustics observations.
Monitoring programme to assess the sea turtle population in BIOT	2012-2015	UK and Australia	Swansea University	Assessment of sea turtle populations in BIOT, including an assessment of nesting locations.	This project extends a successful Darwin Initiative Scoping Award to establish a monitoring programme to assess the sea turtle population in BIOT pending a full application to Darwin for 2015-17 by the University of Swansea. A number of turtles were tagged during October 2012 and their monitoring and that of on island nesting continues in 2015. In 2015 10 turtles were tagged with satellite transceivers, in order to monitor long-term migratory and movement patterns, with the aim of understanding habitat use. The Senior Fisheries Protection Officer has assisted in implementing this project.
Strengthening the world's largest Marine Protected Area: Chagos Archipelago	2012-2015	UK	Darwin Initiative	Setting of baseline monitoring against which change can be assessed in the BIOT MPA.	The University of Bangor, ZSL and University of Warwick had a Darwin initiative project to develop a comprehensive approach to long term marine and island ecosystem monitoring against which change can be assessed, and develop an understanding to assess the magnitude and significance of potential impacts from several scenarios, including climate change, island ecosystem restoration and possible human resettlement. In 2015 the Darwin Expedition undertook the following research:

					1: Coral Reef community monitoring by video archive 2: Coral Reef Monitoring 3: Coral Reef Carbonate Budget 4: Rat induced terrestrial-marine nutrient cascades 5: Coral Disease 6: Coral reef cryptofauna biodiversity /ARMS/Coral colony growth 7: Sea bird monitoring, Coconut crab assessments
PhD study (ZSL/UCL) Impact of large scale closures on pelagic predators	2012-2014	UK	External	To assessing whether large-scale spatial fishery closures affect the diversity and abundance of pelagic predators.	The project is investigating the efficacy of large MPAs for pelagic predators. Research focuses on analysing existing fisheries data and satellite tagging individuals to understand spatial, temporal and demographic distributions, movement between populations, habitat utilisation and site fidelity of focal species within, and adjacent to, the MPA.
Île Vache Marine rat eradication project	2014	UK	Various, including CCT and BIOTA	The primary aim of this project is the eradication of invasive black rats (*Rattus rattus*) from the island of Vache Marine. This is conceived as a pilot project, which will inform longer-term plans to remove rats from all islands in the northern atolls.	Black rats (*Rattus rattus*) have been present in the Chagos archipelago for several centuries and are present on 74% of the 58 islands in the group. They have had severe impacts on the native bird populations, with substantial declines in the numbers and distribution of most of the seabird species in particular. Elsewhere, rats also have impacts on insects, terrestrial crustaceans and native plants and are likely to have affected a similar suite of species on the Chagos islands. An eradication operation on Île Vache Marine was implemented in 2014 and will provide an example of what can be achieved on other small islands within the Chagos group and should also show that in situations where rats re-invade an island a ground-based eradication operation can remove them. The islands are monitored for signs of rats as a part of the normal BritOps rotations. None were found in 2015.
A Half-Century of Coastline Change in Diego Garcia				Using remotely sensed images to assess and quantify any changes in the Diego Garcia shoreline between 1963 and 2013.	The shoreline and vegetation lines on the island of Diego Garcia were mapped from a series of time separated remotely sensed images spanning the years 1963 – 2013. The data were assembled to assess the level of morphological change caused by natural processes. Results have been recently submitted for publication.

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 2005 and 2015.

Res. No.	Resolution	Scientific requirement	CPC progress
15/01	On the recording of catch and effort by fishing vessels in the IOTC area of competence	Paragraphs 1–10	Not applicable as BIOT has no flag registry or fleet of vessels.
15/02	Mandatory statistical reporting requirements for IOTC Contracting Parties and Cooperating Non-Contracting Parties (CPCs)	Paragraphs 1–7	BIOT submits all mandatory statistical reports, including null reports
15/05	On conservation measures for striped marlin, black marlin and blue marlin	Paragraph 4	Not applicable as BIOT has no flag registry or fleet of vessels.
13/04	On the conservation of cetaceans	Paragraphs 7– 9	Not applicable as BIOT has no flag registry. Cetaceans are not associated with the recreational fishery
13/05	On the conservation of whale sharks (*Rhincodon typus*)	Paragraphs 7– 9	Not applicable as BIOT has no flag registry. Whale sharks are not associated with the recreational fishery
13/06	On a scientific and management framework on the conservation of shark species caught in association with IOTC managed fisheries	Paragraph 5–6	Not applicable as BIOT has no flag registry and releases all sharks alive from the recreational fishery.
12/09	On the conservation of thresher sharks (family alopiidae) caught in association with fisheries in the IOTC area of competence	Paragraphs 4–8	BIOT all sharks alive from the recreational fishery
12/06	On reducing the incidental bycatch of seabirds in longline fisheries.	Paragraphs 3–7	Not applicable as BIOT does not have a flag registry.
12/04	On the conservation of marine turtles	Paragraphs 3, 4, 6–10	Parts relating to flag vessels are not applicable as BIOT does not have a flag registry. Nesting sites in BIOT are monitored on island visits.
11/04	On a regional observer scheme	Paragraph 9	Not applicable as BIOT does not have a flag registry.
05/05	Concerning the conservation of sharks caught in association with fisheries managed by IOTC	Paragraphs 1–12	No sharks are retained in BIOT. Sharks caught in the recreational fishery are released alive. Sharks caught by IUU fishing vessels are reported in communications to the Compliance Committee.

9. LITERATURE CITED

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IOTC-2014-WPTT16-14 -Tim K. Davies, Chris C. Mees and E.J. Milner-Gulland (2014a) Modelling the spatial behaviour of a tropical tuna purse seine fleet

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IOTC-2015-WPEB11-48 J Moir Clark, Duffy H, Pearce J and Mees CC (2015) Update on the catch and bycatch composition of illegal fishing in the British Indian Ocean Territory (UK(OT)) and a summary of abandoned and lost fishing gear