Received: 6 November 2014

Indian Ocean Tuna Commission
Commission des Thons de l'Ocean Indien
iotc ctoi

IOTC–2014–SC17–NR30

UK(British Indian Ocean Territory) National Report to the Scientific Committee of the Indian Ocean Tuna Commission, 2014

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INFORMATION ON FISHERIES, RESEARCH AND STATISTICS

In accordance with IOTC Resolution 10/02, final scientific data for the previous year was provided to the Secretariat by 30 June of the current year, **for all fleets other than longline** [e.g. for a National report submitted to the Secretariat in 2014, final data for the 2013 calendar year must be provided to the Secretariat by 30 June 2014)	YES 30/06/2014
In accordance with IOTC Resolution 10/02, provisional **longline data** for the previous year was provided to the Secretariat by 30 June of the current year [e.g. for a National report submitted to the Secretariat in 2014, preliminary data for the 2013 calendar year was provided to the Secretariat by 30 June 2014). **REMINDER:** Final longline data for the previous year is due to the Secretariat by 30 Dec of the current year [e.g. for a National report submitted to the Secretariat in 2014, final data for the 2013 calendar year must be provided to the Secretariat by 30 December 2014).	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 2013 and provides details of research activities undertaken within the MPA to date.

The recreational fishery landed 11.92t of tuna and tuna like species on Diego Garcia in 2013. Principle target tuna species of the industrial fisheries (yellowfin, bigeye and skipjack tunas) contributed 31% of the total catch of tuna and tuna like species of the recreational fishery. Length frequency data were recorded for a sample of 248 yellowfin tuna from this fishery. The mean length was 80.6cm. 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 2014 the BIOT Authority published its Interim conservation Management Framework setting out plans for environmental research, including those relevant to the pelagic ecosystem and IOTC fisheries. In 2014 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 UK (BIOT) does not operate a flag registry, UK (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 after which time all licensed foreign fishing ceased. Diego Garcia and its territorial waters are excluded from the MPA (the MPA exclusion zone).

Pelagic and demersal recreational fisheries are permitted by personnel stationed on Diego Garcia within the MPA exclusion zone. 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

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 and fleet of commercial fishing vessels.

4. RECREATIONAL FISHERY

A small recreational (sports) fishery occurs under licence at Diego Garcia. A total of 11.92 tonnes of tuna and tuna like species were caught in 2013 representing 41% of the recreational catch (the remainder are reef associated species). Principle target tuna species of the industrial fisheries (yellowfin, bigeye and skipjack tunas) contributed 31% 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 2009-2013.

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
2009	386	166	469	130	68	13661	64	90	17542	1284	18980	14879	33859
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

Length data have been collected for yellowfin tuna (*T. albacares)* from the recreational fishery since June 2009. A minimum landing size of 45 cm has been imposed. A total of 248 fish were measured in 2013. The mean length of the *T. albacares* sampled was 80.6cm. For comparison, observer programmes on purse seiners (2005/6) and longliners (2003/4) operating in BIOT recorded mean lengths of 98 cm (n=378) and 123 cm (n=2385) respectively.

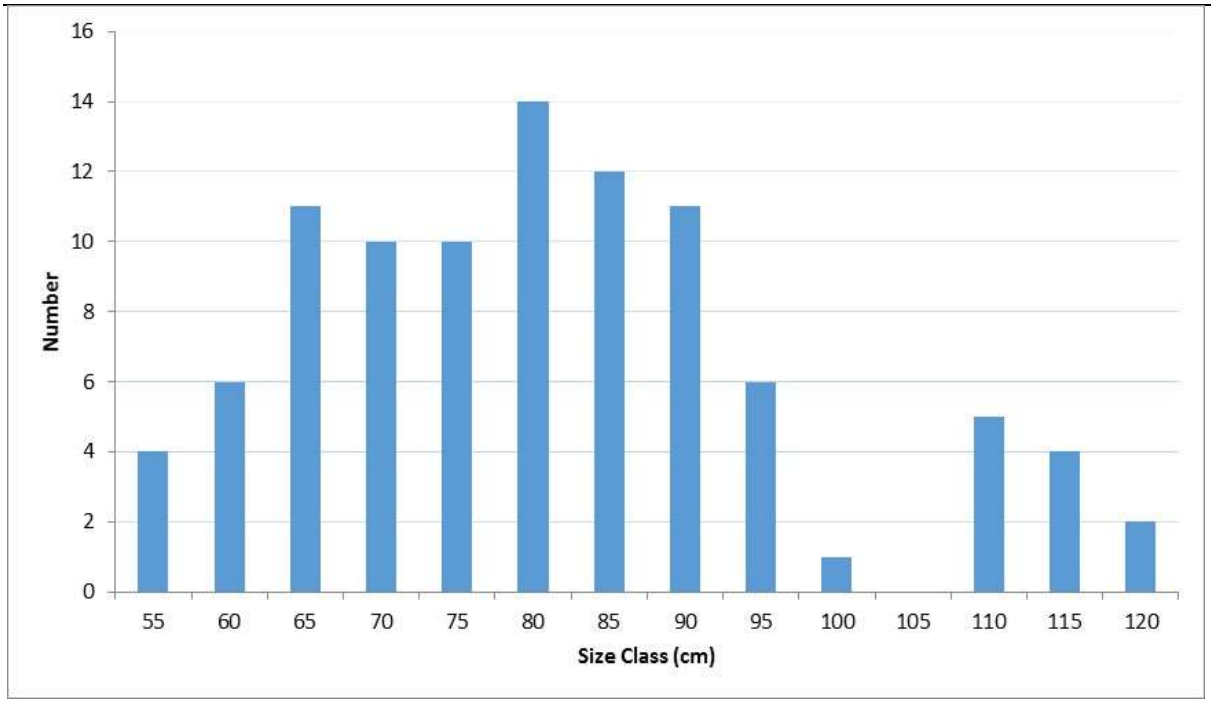

Figure 1 Yellowfin tuna length frequency plot using data from the recreational fishery in 2013 (n=248)

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. 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, 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 in BIOT waters prior to the declaration of the MPA to the Working Party on Ecosystems and Bycatch (IOTC-2014-WPEB10-15) '*Characterisation of shark bycatch from tuna longliners operating in the British Indian Ocean Territory (BIOT) between 2000 and 2010 from observer and vessel logbook data'*

5.2 Seabirds

No seabird bycatch was reported in the BIOT recreational fishery in 2013. There are about 10 Important Bird Areas (IBAs) reported on the islands of the Chagos Archipelago with some of the Indian Ocean's densest populations of several seabird species.

5.3 Marine Turtles

No turtle bycatch was reported in the BIOT recreational fishery in 2013. 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.

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

No incidental mortality / annual catches on other ecologically related species such as marine mammals and whale sharks has 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)

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 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]

As BIOT has no commercial ports there is no opportunity for a port sampling programme.

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

As BIOT has no commercial ports there is no unloading or transhipment allowed.

7. NATIONAL RESEARCH PROGRAMS

In collaboration with its partners, the BIOT Administration has in 2014 developed an Interim Conservation Management Framework (BIOT, no date): pending the outcome of policy reviews by the UK and BIOT Governments, it is not yet appropriate to develop a longer term plan. The plan is intended to cover the period up to approximately December 2015. It describes the Territory's main biodiversity resources, identifies key stressors and sets out priorities for practical action, which relate to:

- Understanding and interpreting the ecosystem;
- Conserving wildlife and habitats;
- Reducing threats;
- Managing human uses; and,
- Coordinating and communicating conservation and management activities

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. Research is generally funded from external sources but approved through the BIOT Administration and supported-in-kind through the provision of the Pacific Marlin as a research platform. In the past, environmental monitoring within BIOT had been undertaken largely with externally sourced funds via a series of 'Chagos Expeditions'. Since the declaration of the MPA, however, support from the Darwin Initiative (UK Government grants scheme) has enabled these expeditions to take a more strategic approach to research. Expedition activities relate primarily to the first two activity areas of the CMF (Understanding and interpreting the ecosystem; Conserving wildlife and habitats) and are focussed primarily on

the 'inshore' reef and terrestrial habitats. In 2014 no deep water research was conducted. Additionally there are a number of individual research activities funded outside the Expeditions.

The Bertarelli Foundation, which contributes to the funding of the MPA, has developed its own five year plan for monitoring megafauna in the Chagos MPA. This goes beyond the timeframe of the Interim Conservation Management Framework established by the BIOT-A. The Bertarelli plan makes no reference to the CMF, but its 9 Objectives broadly correspond to the areas of activity outlined in the CMF. Focussing on megafauna, it aims to look at the distribution, abundance and connectivity of sentinel species (Output 1); establish an ocean observatory for longer term monitoring (Output 2); establish the effectiveness of the Chagos MPA (3), its resilience (4) and context within the wider Indian Ocean (5) (Outputs 1-5 correspond with: Understanding and interpreting the ecosystem; Conserving wildlife and habitats of the CMF); using megafauna research to inform management (6) (CMF: reducing threats; and, managing human uses); establishing Chagos as an international hub for research (7), communication (8) (CMF: Coordinating and communicating conservation and management activities) and a ninth objective called Ocean discovery covering miscellaneous other activities.

The Bertarelli five year plan has been developed in conjunction with the Chagos Conservation Trust, in order to ensure a coordinated approach to monitoring megafauna, and thus takes account of activities planned through the Chagos Expeditions. In early 2014 the Chagos Expedition and a Bertarelli Expedition both took place simultaneously. Table 8 indicates the research activities undertaken during the reporting period through these expeditions and independently. Whilst the Bertarelli Plan includes an ambitious number of project activities, to date only 'Animal tagging and tracking in BIOT' has been initiated.

Two papers presented by UK(BIOT) to the Working Party on tropical tunas in 2014 present findings from the PhD study (IOTC-2014-WPTT16-14) ' Modelling the spatial behaviour of a tropical tuna purse seine fleet'; and, (IOTC-2014-WPTT16-17) 'Examining the impact of spatial closures on the behaviour of a tropical tuna purse seine fleet'

The BIOT Administration and UK government ministers have been keen to involve Chagossians in environmental and scientific work. Louis Elyse took part in the 2014 expedition. This was implemented through the Chagossian Community Environment Project in conjunction with ZSL, as part of the Chagos Ambassador Advanced Training programme.

Table 8. Summary of environmental research undertaken in the BIOT MPA since December 2012, including dates

Project title	**Period**	**Countries involved**	**Funding source**	**Objectives**	**Short description**
April 2014 Chagos Expedition	April 2014	UK (BIOT)	External, various including Darwin Initiative support	Continue ongoing environmental monitoring	Research undertaken included: **Corals:** -Understanding coral reef structure; -Assessment of coral cover; -Coral species diversity and abundance; -Assessing coral disease prevalence, severity and susceptibility; -Scleractinian coral functional diversity surveys -Video archive for long-term monitoring of coral reef benthic communities; -Assessing the contribution of parrot fish in reef erosion **Fish.** -Diversity and population abundance of reef fishes -Long-term monitoring of sea cucumber populations **Other marine** - Documenting sea temperature **Terrestrial habitats** -Monitoring the spread of invasive terrestrial invasive species -Population Assessment of the Coconut Crab -Long-term monitoring of Important Breeding Areas for Seabirds
Chagos Research Portal	2014-ongoing	UK (BIOT)	Chagos Conservation Trust	To compile data from research conducted in Chagos over the	The database will be spatially projected using GIS and serve as a platform for communication between researchers, the public, and decision-makers.

Project title	Period	Countries involved	Funding source	Objectives	Short description
				past 40 years into an online relational database.	
Animal tagging and tracking in BIOT	Feb/Mar 20013 - ongoing	USA and Australia	Bertarelli Foundation	To tag and track large pelagic species in order to assess how much protection the no-take MPA is 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. In addition to the animals tagged in 2013 (Grey reef shark, 38 tags; silvertip shark, 36; silky shark, 5; dogtooth tuna, 2; yellowfin tuna, 14; sailfish, 2; manta ray, 2; total 99) during 2014 33 more sharks were tagged, 2 manta rays and 1 sailfish.
Monitoring programme to assess the sea turtle population in BIOT	2012-	UK	Darwin Initiative Scoping Award	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 2014. 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 has 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.
PhD study (ZSL/UCL) Impact of large scale closures on pelagic predators	2012-2015	UK	External	To assessing whether large-scale spatial fishery closures affect the diversity and abundance of pelagic predators.	Ongoing in 2013/14. 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.
PhD study (Imperial college/MRAG Ltd) Exploring the uncertainties surrounding the implementation of large-scale marine protected areas in the open ocean	2011-2014	UK	External	The aim of this PhD to understand how spatial management affects the effort allocation dynamics of a large commercial offshore fishery and to quantify the ecological impacts resulting from these changes. More generally this work will contribute to reducing uncertainty in how resource users respond to spatial management, an area of research that remains underdeveloped	The PhD, now successfully concluded, was centred around a case study of the western Indian Ocean tuna purse seine fishery and the spatial restrictions associated with that fishery (e.g. Indian Ocean Tuna Commission time-area closures, coastal state marine reserves etc.). The research has three objectives, as follows: 1.To identify the factors that govern fishing effort dynamics in the Indian Ocean tuna purse seine fishery 2.To develop a model that predicts the reallocation of fishing effort in response to spatial management 3.To investigate the ecological consequences resulting from effort reallocation (e.g. changes in bycatch rates) under a number of alternative spatial management scenarios
Île Vache Marine rat	2014-15	UK	Various, including	The primary aim of this project is the	Black rats (Rattus rattus) have been present in the Chagos archipelago for several centuries and are present

Project title	Period	Countries involved	Funding source	Objectives	Short description
eradication project			CCT and BIOTA	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.	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 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.
Historical tracking of the Diego Garcia coastline using remote sensing	2014	UK / US	BIOTA	To aid the development of a coastal management solution for Diego Garcia by providing an atoll-wide quantification of shoreline changes over the last half-century.	Coastal change, including by means of accretion and erosion, is well documented across the Territory. Given the broad-ranging complexity of island dynamics, however, its scope, causes and consequences are not yet clear. Diego Garcia is, like the many islands that comprise the Chagos Archipelago, low-lying, and therefore at risk of inundation and erosion. While flooding and drowning are part of the lifecycle of an atoll on geological time-scales, the present, modest sea level rise on Diego Garcia is already having major environmental ramifications. This study is possible because of the recent discovery of archive aerial photography for Diego Garcia acquired in 1963 by the Naval Reconnaissance and Technical Support Centre, Naval Oceanographic Office. This vintage mosaic will be quantitatively compared to ultra-high-resolution satellite imagery acquired in 2013 to yield an estimate of shoreline migration.

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 2014.

Res. No.	Resolution	Scientific requirement	CPC progress
13/03	On the recording of catch and effort by fishing vessels in the IOTC area of competence	Paragraphs 1–11	Not applicable as BIOT has no flag registry.
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.
10/02	Mandatory statistical requirements for IOTC members and cooperating non contracting	Paragraphs 1–7	Data have been submitted as per the requirements of 10/02.

Res. No.	Resolution	Scientific requirement	CPC progress
	parties		
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

BIOT (no date) British Indian Ocean Territory Interim Conservation Management Framework

IOTC-2014-WPEB10-15 James Moir Clark (2014) Characterisation of shark bycatch from tuna longliners operating in the British Indian Ocean Territory (BIOT) between 2000 and 2010 from observer and vessel logbook data

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

IOTC-2014-WPTT16-17 - Tim K. Davies, Chris C. Mees and E.J. Milner-Gulland (2014b) Examining the impact of spatial closures on the behaviour of a tropical tuna purse seine fleet