



Report of the Port-based Outreach Activities of the Common Oceans Tuna Project for 2016-2018

October 2016 to October 2018
Cape Town, South Africa

Prepared by BirdLife South Africa

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**Port-based Outreach pilot work for BirdLife component of the GEF funded FAO
Common Oceans ABNJ Tuna Project (Output 3.2.1)
January 2019**

Report on Project Results at completion of project

Port-based outreach pilot work: Seabird Bycatch Mitigation

Report summary

This report details results emanating from vessel visits conducted for the duration of the Port-based Outreach (PBO) pilot project in Cape Town, between October 2016 and October 2018. The PBO pilot project aimed to raise awareness of Best Practice seabird bycatch mitigation measures (SBMM) in tuna longline fleets operating on the high seas (Areas Beyond National Jurisdiction, ABNJ) south of 25°S where use of these is mandatory. A secondary aim of the project was to assess whether port-based outreach could lead to or inform about the uptake of Best Practice seabird bycatch mitigation measures (SBMM), given the National Awareness Workshops, Seabird Bycatch Assessment Workshops, and other outreach work conducted by BirdLife, both within the ambit of Output 3.2.1 and via other activities. This report summarises outcomes of the pilot project and discusses its usefulness in relation to increasing awareness and monitoring uptake of Best Practice SBMM. Suggestions are given for ongoing awareness raising and monitoring activities for future PBO projects.

Introduction

The Port-based Outreach (PBO) pilot project, situated in Cape Town, South Africa is a component of the Common Oceans Tuna Project that aims to improve sustainable management of tuna fisheries operating in Areas Beyond National Jurisdiction (ABNJ) worldwide. Due to its location and port infrastructure, Cape Town harbour is used by high seas tuna longline vessels from a diversity of flag states, which operate in the southern Atlantic and Indian oceans.

The PBO pilot project is primarily designed to raise awareness on options for Best Practice seabird bycatch mitigation measures (SBMM) and build capacity within high seas fleets to meet RFMO regulations. PBO activities take place in port, with the PBO Officer visiting foreign-flagged vessels and interviewing crew (typically the captain/fishing master). During the process the project gathered 'baseline' information on SBMM.

Methods

Details of the methods used in the PBO pilot project are provided in the project Protocol in Appendix 1 of this report. Information gathered to date is from tuna longline vessels fishing in the high seas. During the course of the project, training opportunities with port inspectors (Fisheries Compliance

Officers, FCOs) in South Africa led to an opportunity for the PBO Officer to accompany FCOs on inspections of foreign-flagged vessels. During this project, two PBO Officers were in post, at different times, but for brevity we refer to “the PBO Officer” in the singular.

Typically, the PBO Officer would initiate the formal part of the outreach session by showing a video using a tablet device, which was available in the languages of all interviewees. This was followed by a Q&A session. Engaging with interviewees through consecutive translators presents challenges, particularly in capturing information from lengthy responses to questions. Therefore results should be interpreted with caution, as details may not have been captured accurately in every instance.

Best Practice

The Agreement on the Conservation of Albatrosses and Petrels (ACAP) produces periodic updates to its advice on SBMM Best Practice. Current ACAP Best Practice is that tuna longline operations should employ night setting, bird scaring lines and branchline weighting simultaneously. Each measure has detailed specifications, including multiple options for line weighting regimes, which we do not consider here. For the geographic area of interest for Component 3.2.1 (Atlantic and Indian oceans), tuna Regional Fisheries Management Organisations (RFMOs: the International Commission for the Conservation of Atlantic Tunas (ICCAT) and Indian Ocean Tuna Commission (IOTC)) have binding conservation measures that require the use of two out of three SBMM when operating south of 25°S. These regulations are not perfectly aligned with ACAP recommendations, and differ in some details between RFMOs. However, to all meaningful purposes, it is possible to quantify the use of any of the three SBMMs by tuna longliners, and we disregard minor deviations from Best Practice.

Foreign-flagged vessels that use Cape Town harbour fish predominantly within ICCAT and IOTC areas of competence, but many vessels also target southern bluefin tuna, so some of those vessels’ operations fall under the Commission for the Conservation of Southern Bluefin Tuna (CCSBT). Our PBO data shows that most operate at times in areas where they are required to use SBMM in accordance with the relevant RFMO regulations.

Results

Vessel visits

Participating vessels

The PBO Officer interacted with 63 different vessels (and 89 visits when revisits are included) from six fleets, of which 45 operated south of 25°S. In addition, we report on outcomes from a further 25 “revisits”, constituting a PBO visit followed by

- i) a second PBO visit (n = 14, all vessels operating south of 25°S) and
- ii) a subsequent interaction while accompanying an FCO (n = 11, of which 9 vessels fished south of 25°S).

Table 1. Vessel visits during the PBO pilot project in Cape Town South Africa, including visits from the PBO Officer and from compliance officials (FCO).

Year	Month	PBO	FCO
2016	October	3	-
2016	November	3	-
2016	December	1	-
2017	January	5	-

2017	February	2	-
2017	March	2	-
2017	April	6	-
2017	May	6	-
2017	June	6	-
2017	July	2	-
2017	August	10	-
-	<i>New PBO Contract</i>		
2018	February	3	-
2018	March	5	-
2018	April	4	-
2018	May	-	3
2018	June	6	9
2018	July	-	4
2018	August	-	4
2018	September	-	5
TOTAL (PBO + FCO combined)		-	89

Vessel characteristics and participating respondents

The majority (95%) of vessels visited were Asian-flagged, while 3 were flagged to African states. Vessels ranged in size from 36-59 m (mean length 49.6 m).

Fishing activities

Fishing grounds

Vessels landing catch in Cape Town harbour mainly fished areas south of Africa under a CCSBT licence, however many vessels also fished areas off South America, West Africa, East Africa and the southern Indian Ocean (Figure 1). Seasonality in the southern bluefin tuna (SBT) fishery led to an increase in SBT vessels from April to July. Many vessels also fished for oilfish (also known as escolar, *Lepidocybium flavobrunneum*) south-east of the South African Exclusive Economic Zone (EEZ). We were able to obtain data on historical fishing locations from 42 vessels (67%) in this study using the online tracking tool Global Fishing Watch (GFW, <http://globalfishingwatch.org/>). We compared self-reported fishing grounds from PBO interviews to GFW data and found no substantial differences.

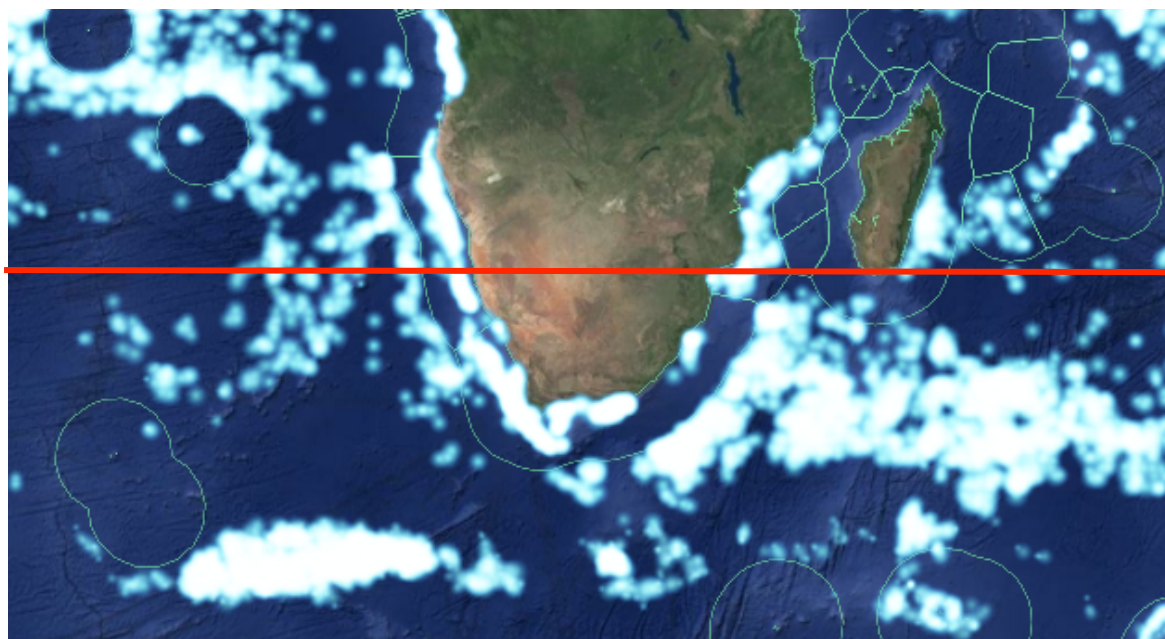


Figure 1. Highlighted areas depict Automatic Identification System (AIS) data for April and May 2018. Signals from areas outside the Namibian and South African EEZs are of mainly pelagic longline activity. Many vessels fishing in these areas are also thought to discharge catch elsewhere, including transshipping to carrier vessels. The red horizontal line indicates 25°S. Image sourced from <http://globalfishingwatch.org/>

Understanding and use of seabird bycatch mitigation measures (SBMM)

We investigated the level of understanding of SBMM requirements, what was actually being used (as opposed to what was self-reported as being used) and trends (i.e. any improvement in understanding or use) over the course of the project. Only vessels operating south of 25°S are included in the results below. The questions investigated are:

1. What is the level of understanding of fishing vessel officers regarding the requirements for SBMMs?
2. Has a change occurred over the duration of the Common Oceans project?
3. What is the likely actual use of seabird bycatch mitigation measures (and conformity to Best Practice)?
4. Subsequent to the opportunity to accompany FCOs during inspection visits, we were able to ask: Is there a difference in the data collected through PBO and compliance visits?

1. Level of understanding of SBMM requirements

Two vessels reported using no SBMM (~4%), none reported using only one measure, 18 (40%) reported using two measures and 25 (56%) reported using all three measures (Table 3). This result clearly shows that the majority of interviewees knew that SBMM measures are required (confirmed by overwhelmingly positive answers to an explicit question during interviews), which suggests that communication from national or flag state authorities regarding the need to use SBMM is generally sufficient. However, conformity to Best Practice guidelines was considerably more variable, with

only nine vessels appearing to use two SBMMs that met or exceeded Best Practice minimum standards.

Table 3. Number of vessels operating south of 25°S that self-reported utilising between zero and three SBMM, as well as those using them to Best Practice specification as defined in the relevant ICCAT or IOTC regulations.

	Number of SBMMs used			
	0	1	2	3
Vessels	2	0	18	25
Best Practice specification	20	16	9	0

2. Change over time

One of the objectives of the PBO project was to determine if outreach in port is an effective way to communicate to vessels regarding the need to use SBMM, and whether there is any detectable change over time, which might inform the effectiveness of the Common Oceans project as a whole. However, the overwhelming majority of interviewees confirmed that they understood the SBMM requirements. Therefore we are unable to show that the project increased the level of awareness amongst fleets, since the level of awareness was already very high. This is somewhat surprising, and suggests that of the fleets accessed through this project and which operate south of 25°S, if they do not use two out of three measures, they do so knowing that they are not following requirements.

3. Use of individual and combined measures and likely conformity to Best Practice specifications

We analysed use of SBMM as reported by interviewees. This includes information where a first interaction was when accompanying a compliance officer, but excludes data from any second visits to vessels. The PBO Officer was usually able to obtain insights into the likely conformity of vessels' SBMM to RFMO requirements, through asking nested questions (e.g. **IF** the answer to measure X was affirmative, **THEN** a secondary question about the nature of that measure sometimes revealed if this was according to Best Practice or not). These observations were compared to the self-reported use, to ascertain the degree to which Best Practice SBMM is followed. This evaluation is therefore very conservative – i.e. if interviewees reported using a measure, we assumed that the measure was indeed used. If subsequent information provided indicated that the measure(s) didn't conform to Best Practice standards, this was noted as such. **In other words, this exercise provides no information on actual use of SBMM, and therefore has no compliance-related implications whatsoever.** From 45 vessels, all but three reported using bird scaring lines, 38 reported using night setting, and 31 reported using line weighting. However, when we interrogated the responses to ascertain whether or not the reported measures used conformed to Best Practice, the picture changed considerably. Only 5 vessels (11%) had a Best Practice bird scaring line, nine vessels (20%) reported setting start times that suggested night setting was followed correctly, and 12 of 44 vessels (27%) reported using Best Practice line weighting. Five vessels (11%) reported setting at various times, largely due to operation constraints or based on target species, thus *some* of their sets could be considered to be employing night setting as a SBMM. However, the likely conformity to Best Practice is less optimistic. Information gained from self-reporting and/or from accompanying FCOs suggests that 20 vessels (45%) didn't have any Best Practice SBMMs, 16 may have used one Best Practice measure, and nine vessels (20%) may have used two Best Practice measures.

4. Do PBO and FCO visits tell different stories about likely use of SBMM?

Towards the end of the project, the PBO officer was able to accompany FCOs during their inspection duties. This afforded the PBO Officer the chance to collect more rigorous information regarding actual presence onboard of Best Practice SBMMs on nine vessels – e.g. through inspecting gear onboard. For each paired vessel visit of a PBO interview followed by a visit with an FCO, we compared each reported SBMM to whether or not it met Best Practice specifications (see tables 7-9).

None of the nine vessels had Best Practice bird scaring lines onboard. For night setting, the PBO visit suggested that six of the nine vessels were using night setting correctly, whereas from the FCO visit, it appeared that none of the vessels followed the night setting specification correctly. For line weighting, it was seldom possible to see the branchlines and therefore much of the line weighting information was reported by the captain. Information comparing the use of line weighting showed that reported use of line weighting was higher during compliance visits than PBO visits (89% compared to 67%). When investigating the number of vessels using line weighting to Best Practice specification, from PBO interviews it appeared that 22% of vessels reported using Best Practice (= RFMO specifications for weight and distance from hook) line weighting specifications. By contrast, no vessels reported meeting those specifications during FCO visits. This overall picture is rather bleak, as it suggests that captains understand the regulations quite well, they understand the specifications for the three SBMMs, but most do not use any of these – i.e. all SBMMs that might be used are not to the required specifications.

We consistently found that interviewees appeared knowledgeable about SBMM requirements (types, specifications, etc.). They willingly provided information to the PBO officer. However, when in the presence of FCOs, either responses changed (perhaps due to fear that misrepresenting things would have greater risks than stating the actual situation) or inspection of the gear onboard revealed that Best Practice standards were essentially absent.

Effectiveness and reasons for use

Ten respondents (22%) stated that they considered night setting effective for seabird bycatch mitigation, with a further four considering it only “somewhat” effective. Three respondents considered night setting as the most effective SBMM, with a further two stating it was their “preferred” SBMM. In general, however, it was felt that although seabird abundance was much less at night, they were still present in varying numbers throughout the diel cycle, and three respondents mentioned effectiveness of night setting was improved through concurrent use of bird scaring lines. Four respondents noted their use of night setting specifically as a SBMM, while eight others reported that they set at night for operational reasons (target species behaviour). Eight vessels reported they specifically minimise deck lighting during night setting.

Bird scaring lines

Number of lines

Bird scaring lines are the most commonly reported SBMM, with all but three (94%) of respondents indicating use during at least some setting operations (Figure 4). The majority reported using only a single line, while others reported using two or three lines. The veracity of the self-reported number of lines used is dubious, since no vessel infrastructure (specifically, poles to attach lines to) were observed that could support three bird scaring lines.

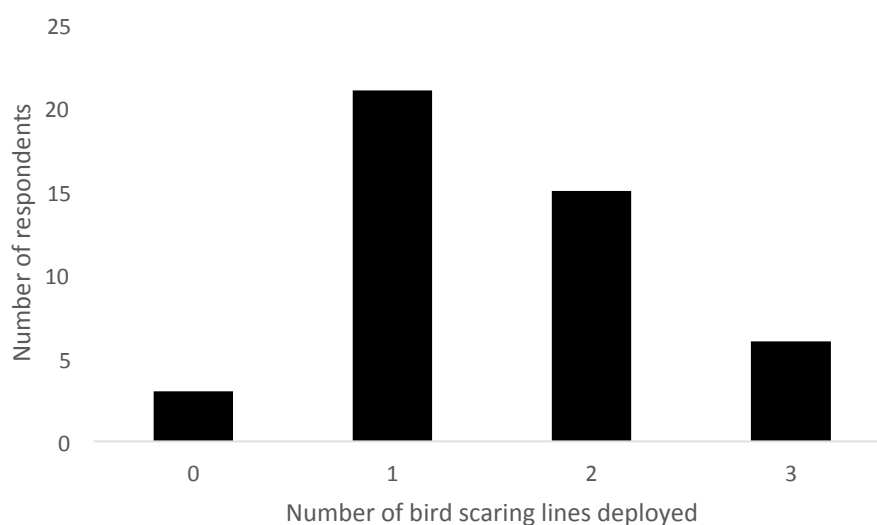


Figure 4. Number of bird scaring lines deployed by vessels operating south of 25°S, as reported by vessel crew during interviews.

Maximum length of lines

The performance of a bird scaring line is dependent on several design features, of which total length from attachment point is a critical feature. Best Practice guidelines are contained in RFMO regulations, which specify that bird scaring lines should be a minimum of 150 m long. The reported lengths ranged in length from 40-200 meters, with the majority of lines between 100-150 meters (Figure 5).

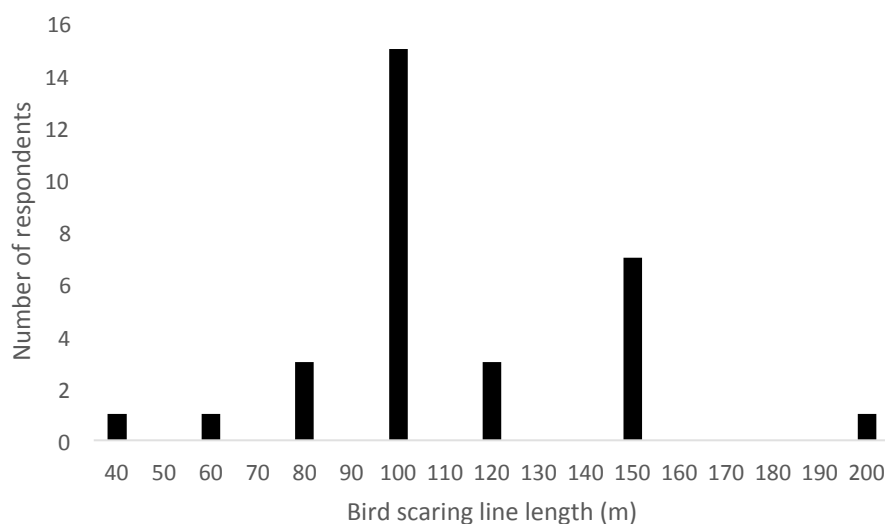


Figure 5. Lengths of primary bird scaring lines reported by individual vessels operating south of 25°S.

We found very variable designs in the nature of streamer lines attached to the main bird scaring line, with length, materials and spacing intervals all being highly variable. Thirty-nine per cent of vessels reported having no dedicated towed object to create drag and improve the aerial extent (which is the distance astern over which a bird scaring line is effective). Similar to the streamers, the nature of towed objects reported was highly variable, and the efficacy of the many designs remains unknown.

Bird scaring line attachment location

The height above the waterline at which bird scaring lines are attached is another key determinant of aerial extent, and thus effectiveness of the line. There is a minimum requirement in RFMO regulations for ‘tori poles’ to be installed for bird scaring lines at 7 m above the waterline. We could evaluate tori pole heights for 45 vessels, of which 7 (16%) did not have a tori pole. Tori poles were visible on 26 vessels (58%) and the attachment height above the water ranged from 4-10 m, with the majority being at or close to 7 m (Figure 6).

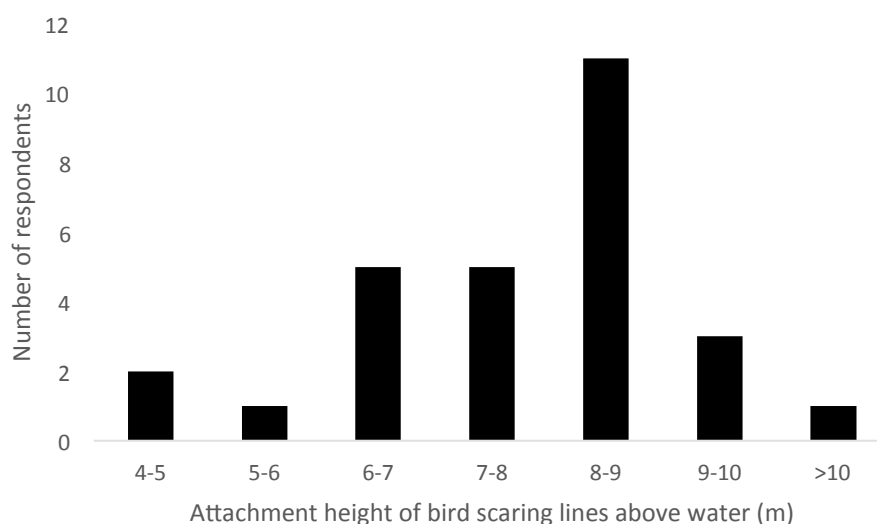


Figure 6. Estimated heights (in meters) of attachment of bird scaring lines above the sea surface for vessels operating south of 25°S.

Effectiveness and operational issues

Seventy-one of those captains who responded to effectiveness of bird scaring lines reported that they were “effective” or “very effective” at reducing seabird bycatch, with reported reductions of between 75 and 80% in some cases. However, a smaller number (10%) considered the use of bird scaring lines as only “somewhat effective”, effective only under certain conditions or for certain seabird species. Four respondents felt bird scaring lines were not effective, while fifteen reported experiencing entanglements with fishing gear using their current bird scaring line setups – this was usually linked to rough weather and sea conditions or surface currents, with some citing the longer streamer lengths as a concern.

Terminal branchline weighting

Branchline setups

Very few branchline setups were viewed, as vessel setting areas were not often accessed, with details of the majority of setups instead derived directly from descriptions provided by respondents (unless visits were conducted with compliance officers). Eighteen vessels (55%) described adding weight to the terminal section within 4 m of the hook of all branchlines, with a further eleven (33%) adding weight more than 4 m from the hook and four vessels with unknown distances of where the weight was placed in the setup (based on vessels for which information was available). Table 6 provides details on the individual setups for these 33 vessels. Many gear configurations include a

weight of some description being placed at or close to the attachment point of the branchline to the mainline. These added weights are not SBMM, but are used for operational purposes and have no impact on seabird bycatch. Information related to weights >6 m from the hook is disregarded.

Table 6. Details of individual vessels' self-reporting of branchline weighting. Data are only from vessels operating south of 25°S.

Vessel ID	Weight (g) added	Distance from hook (m)	Description of weight(s) on terminal section	Additional weights/comments
1	0			
2	30	0	Unknown	Second weight (leaded swivel) of 60 g added 4-5 m from hook
3	0	-	-	
4	25	0	Sliding spindle weight	Second weight of 75 g placed at ~5 m from the hook and a third weight of 100 g at unknown distance
5	80	Unknown	At mainline attachment	Concerned about fly-backs
6	0	-	-	-
7	0	-	-	-
8	50	0	-	Second weight of 100 g at the mainline attachment (~30 m from the hook). Not always used as weighting prevents bait from looking natural
9	100	4-5		Second weight of 100 g placed 10.5 m from the hook. Line said to sink very quickly, within 50 m of the vessel)
10	30	2	-	Effective measure as hooks sink quickly
11	0	-	-	
12	25-30	0	-	
13	80	3.5	-	There was a 50 cm double-weight line (unknown weight) just above the hook
14	0	-	-	Afraid of using weights at the hook due to safety concerns
15	0	-	-	Afraid of using weights at the hook due to safety concerns
16	0	-	-	Worried about impacts on

				the catch of placing weight closer to the hook - a long monofilament section behaves more naturally under water. Uses shark lines (90 cm wire trace) on each float section. Showed interest in sliding leads.
17	45+	0.4	45 g sliding lead above 40 cm wire trace	They used to use no wire trace, but lost too many leads and hooks. Required to use the sliding leads by their company. Use a protective helmet with a visor.
18 and 19	45	1	45 g sliding lead	Apparently they had tried double-weight lines and blue lights and all had affected operations negatively (e.g. fly-backs that required crew to wear visors). Recently changed to sliding leads and working so far.
20	0/30/45	0.5		We saw 3 different setups: 45 g sliding lead; 30 g "blue light"; no weight. The blue light was described as the best weighting method.
21	45	0.3	Sliding lead just above the hook	Currently only use sliding leads on a third of line (1000 out of 3000) but would like to increase this in the future.
22	~70	3	1.5 m double-weight line with 2 x 30 g weights, starting 1.5 m above the hook	Most effective measure
23	45+	0.4	45 g sliding lead above 40 cm wire trace	-
24	45+	0.4	45 g sliding lead above 40 cm wire trace	-
25	Unknown	0	Unweighted swivel	Weight impacts the movement of the set bait and therefore target catches. He does feel it is the most effective seabird measure.
26	60	1	Swivel	As above
27	60	Unknown	-	Uses an additional two 60

				g weights at unknown distances from the hook. Mentioned weight increases line sink rate and decreases entanglement in strong currents
28	60	Unknown	-	Uses an additional two 60 g weights at unknown distances from the hook
29	30-40	Unknown	-	Weight has a negative impact on fishing performance but effective as seabird measure
30	75	3.8	-	Second 75 g weight used. Both weights are within 3.8 m from the hook.
31	74	29.5	-	-
32	30	20	-	-
33	30	Just above the hook	~30 g "blue light" flashing LED light on some branchlines - attached via wire spindle	Report catching no birds on weighted lines

Effectiveness as a SBMM and reasons for use

Terminal branchline weighting was generally regarded to be effective as a SBMM, with nine (41%) of vessels utilising it and pronouncing their setups as effective in reducing seabird interactions and/or sinking baits quickly during the setting process, and none reporting it lacked effectiveness. Some vessels utilising terminal branchline weighting were using this measure primarily as part of their standard setups for targeting various fish species, as opposed to primarily as a SBMM. Reasons provided for not using terminal branchline weighting, or not moving weights closer to the hook to meet required specifications, were twofold: perceived effects on catch of target species and crew safety. Economic cost of outfitting the entire set with weights was also advanced as the reason for only weighting a portion of branchline terminal sections by two vessels.

Additional measures reported

Other methods reportedly used for reduction in seabird interactions with baited hooks included one vessel's use of an array of plastic buoys tied to the vessel stern to produce noise with movement of the vessel that scared birds away from the area where baits were cast, as well as blue-dyed bait (although this was not used on any of the vessels surveyed, some were aware of its use on other vessels). One vessel reported having used firecrackers in the past in order to try and scare away large numbers of birds.

Several vessels reported using circle hooks, primarily as a mitigation measure to reduce bycatch of marine turtles. However, one vessel reported that these hooks also resulted in less bycatch of seabirds. Several vessels reported the depredation of their catch by toothed whales (pilot whales and/or false killer whales) and reported an association between these and birds (bird numbers increased during periods when these mammals were active) and therefore seabird bycatch.

Knowledge of and attitudes towards SBMM

Impacts of bird interactions on fishing operations (including use of SBMM)

Eighteen (40%) vessels described bait loss to birds as problematic for their operations, primarily due to the lost potential revenue per baited hook. However, they also reported 'losses' due to having to use SBMMs, which had economic impacts on operations from the necessity of use of SBMM (changing from day to night setting, tangling of bird scaring lines affecting setting operations, crew safety risks from using terminal branchline weighting) or having to delay the start of setting or change fishing grounds during periods of high bird abundance.

Awareness of regulations relating to SBMM use

The presence or absence of prior knowledge on regulations pertaining to SBMM use could only be established for 60 % (27 vessels) of all respondents. The majority (10 vessels) reported knowledge of national (their own or other countries') regulations and RFMO regulations, nine vessels reported knowledge of only their national regulations, five vessels indicated prior awareness of the specific RFMO regulations pertaining to use of SBMM when fishing in areas south of 25°S, while 3 vessels reported no knowledge on either RFMO or national regulations (all were from vessels which engaged in fishing south of 25°S).

Discussion

Participating vessels

A majority of participating vessels fished for appreciable periods (half or more of their season) or exclusively in tropical waters of the Atlantic Ocean. This was in most cases due to shifting of fishing grounds to target different pelagic species at different times of the year, for example vessels fishing for bigeye (*T. obesus*) and yellowfin (*T. albacares*) tuna in tropical waters and southern bluefin tuna (*T. maccoyii*) in temperate waters at different periods.

Prevalence of meeting Best Practice requirements

Comparatively few vessels used their Best Practice SBMM to the required specifications to comply with RFMO regulations on SBMM use. For the reasons discussed elsewhere in this report, there is the possibility that some information recorded was in error, and therefore the results reported here should not be used to assess degree of compliance. However, the apparent widespread lack of meeting all mandatory specifications highlights the potential value of PBO work (and subsequent compliance vessel visits) in assisting greater understanding of requirements and options related to Best Practice SBMM and their use.

It was encouraging that one vessel has already reported making changes to their use of bird scaring lines following a PBO visit. The captain installed a new davit-style pole enabling flying of his primary line outboard the vessel, and reported he had more frequently made use of a second line with success during his latest fishing trip. Such examples are encouraging and show that the current approach has the potential to assist in enhancing Best Practice SBMM use in southern ABNJ waters.

Recommendations for port-based awareness activities

The experiences and information collected in the PBO pilot project should be useful for other projects aiming to increase uptake of Best Practice SBMM in awareness raising and/or compliance-related activities. What we consider the strengths and potential weaknesses of our approach to date are listed below, and based on these we then list some recommendations for other awareness activities on seabird bycatch mitigation conducted in-port or with fishermen off-vessel that are likely to be similar.

Strengths

- Participants appeared at ease with an ‘informal’ approach of a discussion
- Meeting on the bridge or other “non-work” areas of the vessel assisted with perceptions that this was not a compliance inspection
- Using audio-visual material (especially the introductory video) in the participants home language helped in communicating concepts and examples
- Use of demonstration kits also aided in targeting awareness and discussion
- When possible, appointments made through vessel agents enabled interaction with participants that minimised the risks of them being called to other duties
- The active seeking of opinions and experiences facilitated insights that would not be received in compliance-type interactions
- The approach lends itself to follow-up interactions on future calls to port of vessels having undergone PBO awareness activities, where further information that may have been missed during initial interactions may be obtained, together with any changes vessels may have made in their use of SBMM in the intervening period

Weaknesses

- The informal nature of discussions and use of translators in certain cases resulted in some details being missed or remaining unclear, as well as a lack of standardisation of information
- Use of interpreters to communicate in the participant’s home language was helpful, although sometimes at the expense of prolonging the period necessary for information exchange and with some potential for details to be miscommunicated
- In the absence of appointments made through agents, direct approaches to participants were difficult to schedule around vessel in-port activities and, in some cases, reluctance to participate
- When comparing data collected during PBO interviews and compliance visits, it is clear that more accurate data is collected and greater access is provided to gear on the vessel with the presence of a compliance officer.

Recommendations

- A record of information not received during initial PBO activities should be maintained for each participating vessel so that it can be requested in follow-up interactions

- The use of external sources of information (e.g. publically-available vessel position data) can be of assistance in prioritising participants for PBO activities
- Wherever possible, the prior arrangement of appointments with participants to undertake PBO activities greatly assists in scheduling and undertaking these
- In the absence of direct viewing of gear, audio-visual multimedia is particularly effective in conveying information. In this regard, the use of a tablet computer provides an easy and effective method of carrying a variety of multimedia that can be utilised during onboard interactions
- Consideration should be given to utilising an electronic tablet or online survey, which may be self-completed (although this has its own draw-backs) and that allows standardisation of data collected that will be of greater use for long-term monitoring purposes
- Agreements to work alongside inspectors is a key recommendation, although this creates conflict between outreach and data-gathering.

Recommendations for future work

The PBO pilot project overtly and deliberately avoided any actions or approaches that might have created a perception of compliance implications. However, our experiences have relevance for how compliance personnel's activities might be made more effective, when inspecting vessels' with respect to use of and conformity with SBMM regulations (Table 13).

Table 13. Recommendations for obtaining and assessing vessel use of SBMM in port-based compliance activities

SBMM or related area	Sources of variation	Most appropriate method(s) for obtaining details	Supplementary information sources required/available	Prospects for obtaining and verifying information	Notes
Night setting	Start and end of setting operations	Logbook for certain flag-states, otherwise verbal questioning	Need to verify time zone(s) of records. Useful to have table of times for nautical twilight by season/latitude to assess degree of conformance. May be possible to estimate independently using publicly available sources (e.g. Global Fishing Watch)	High	Start of setting is commonly the only time reported in vessel logbooks. Setting end time is seldom recorded but would be required for formal compliance purposes.
	Number of hooks per set (to estimate duration of setting in the absence of set end time records)	Logbooks or verbal questioning	Knowledge of casting interval utilised by the vessel	High	Casting interval may be vessel-specific and required to accurately estimate setting duration
	Fishing location	Logbooks or vessel position data	May be possible to estimate independently using publicly available sources (e.g. Global Fishing Watch)	High	Global Fishing Watch
Bird scaring lines	Number of lines used	Visual inspection of lines and/or tori poles		High	May need to verbally enquire to see lines, since these may be stowed when in port
	Length of line(s)	Visual inspection, verbal questioning	Dimensions of coiled rope/line of various types for visual estimation of length	Medium	Without unpacking the entire length of line it may be difficult to verify estimated or reported lengths. Measuring line lengths is also tricky and time consuming
	Attachment to vessel – details of tori pole dimensions, construction	Visual inspection	Positioning of tori poles relative to the stern and their suitability for setting	Medium to High – depending on whether poles	Useful to take photographic record and make a sketch indicating position, vertical

SBMM or related area	Sources of variation	Most appropriate method(s) for obtaining details	Supplementary information sources required/available	Prospects for obtaining and verifying information	Notes
	and position or location of other attachment sites		lines beyond the side of the vessel. Details of deployment methods (e.g. winching mechanisms)	are left raised when vessel enters port	and horizontal dimensions and other details
	Attachment height above water surface	Visual inspection	Useful to estimate based on the height of the upper deck and tori pole dimensions (as above)	Medium to High (as above)	Photographic record including person as a height reference is useful, even in the absence of raised pole. A plumb line from the top deck to the water level will give deck height information
Bird scaring lines	Streamers – materials, length, spacing, colour, attachment to line	Visual inspection		High	Need to be aware of potential for longer streamers to be detached and stowed away from the line or stowed in the inner/middle section of the coiled BSL
	Use of towed device/section	Visual inspection, verbal questioning		Medium	May be detached and stowed separately
Line weighting	Presence and characteristics of weights on terminal sections of branchlines	Visual inspection	Length of branchlines may be recorded in logbooks.	Medium	Branchlines may need to be uncoiled to estimate position of weights in relation to hooks. Use of a spring scale may assist in accurate estimation of added weights
	Variation in branchline configurations and weighting regimes	Visual inspection, verbal questioning	Request number of hooks per set with particular configuration	Low	Unfeasible to verify through examination of more than a few baskets, so may need to rely on information provided by crew
Line weighting - other	Use of external light sources and attachment position on branchlines	Visual inspection, verbal questioning	Details of individual brands/classes of light source	Medium	Usually added during setting, so may need to request details from crew

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Port-based Monitoring Protocol Port-based outreach pilot work: Seabird Bycatch Mitigation

Element 3: Port-based outreach pilot work: Seabird Bycatch Mitigation
for output 3.2.1 of the

Sustainable Management of Tuna Fisheries and Biodiversity Conservation in the ABNJ

Updated October 2018
Cape Town, South Africa

Prepared by BirdLife South Africa

Project: FAO-GEF Project *Sustainable Management of Tuna Fisheries and Biodiversity Conservation in the ABNJ (GCP/GLO/365/GFF)*

Reporting organisation: BirdLife South Africa

Port-based Outreach pilot work for BirdLife component of the GEF funded FAO Common Oceans ABNJ Tuna Project (Output 3.2.1)

Methods

Sampling approach

Initially direct interaction and discussions with vessel captains and crew served as the primary means of outreach activity and data collection in the PBO pilot project. Given the difficulties of willing participants, vessel access and data accuracy, the preferred method for visiting vessels were revised and adapted during 2018. FCOs were accompanied for seabird outreach visits and then the PBO officer would purposefully collect SBMM use data whilst accessing various parts of the vessel with the authority of a government official as a trainee. The following sections outline the basic processes involved in identifying candidate vessels, arranging for vessel access and discussions with crew members, and data recording. These serve as the current template for vessel visits, but this is subject to update at periodic intervals and as new/additional approaches are trialled in the pilot project based on experience and lessons learned.

Identification of vessels for outreach activities

Vessel port schedules for Cape Town harbour, including estimated arrival and departure dates and berthing location, are provided periodically to authorised persons and entities by the National Port's Authority. The PBO pilot project currently has access to this information through the South African Department of Environmental Affairs. Port schedules also list the local ship agents representing each vessel and their contact details.

It is usually relatively simple to establish which vessels on the port schedule are TLL vessels based on the supplied vessel names, which can be cross-referenced with various publically-available resources (e.g. FAO fishing vessels finder (<http://www.fao.org/fishery/collection/fvf/en>) and the Consolidated List of Authorised Vessels of Tuna-org (<http://tuna-org.org/GlobalTVR.htm>) that includes lists from all RFMOs). However, it occasionally occurs that vessels are listed with an ambiguous name (e.g. several Asian vessels with the same name across different categories of vessel).

In such cases it may be necessary to confirm with the vessel's agent, or visit the harbour to check by sight if a particular vessel is indeed a TLL vessel. While many vessels are added to the port schedule at least several days prior to arrival, arrival dates frequently change and advance warning may be short.

As both vessel arrival frequency and duration of their stay in port (ranging from stays of only a few days to over a month) are highly variable, vessels will be prioritised for arranging PBO visits based on the expected duration of their stay in port (i.e. if several vessels arrive within a similar period, those with the shortest duration in port targeted before those staying for longer durations), project personnel availability to conduct concurrent visits (including interpreter availability) and priority requirements for monitoring purposes (e.g. under-represented vessel flag states, vessels available for repeat visits).

Port-based Monitoring Protocol Port-based outreach pilot work: Seabird Bycatch Mitigation

Vessels fishing in areas below latitude 25°S are the focus for PBO visits, although vessels may change their target species and fishing locations over time (beyond usual changes with season as is common for many). Even vessels currently not fishing in southern waters may therefore benefit from PBO visits as the knowledge may be relevant at later periods, and crew may have knowledge to impart from past fishing in southern waters.

It is sometimes possible to envisage whether a vessel currently fishes in southern waters based on information from a variety of online sources (e.g. fishing authorisations for catching southern Bluefin tuna (*Thunnus maccoyii*) that occurs predominantly below latitude 25°S) such as Global Fishing Watch (<http://globalfishingwatch.org/>) which indicates fishing areas for a large proportion of active vessels based on vessel safety broadcast data.

Arranging port access

Following the initial PBO Inception Workshop, the project received a letter of authorization from the national fisheries compliance division (South African Department of Agriculture, Forestry and Fisheries) requesting access be granted to PBO personnel and vehicles for areas of Cape Town port which are utilised by TLL vessels. This was used to request the required permits from the local ports authority (Transnet National Ports Authority), which are periodically updated as required. PBO personnel are also required to attend an annual port safety induction training session and make use of the required safety gear required upon entering particular areas.

Scheduling PBO visits and contact with vessels

Once a vessel due (or already) in port is identified as an ABNJ TLL vessel and therefore suitable for PBO activities, these are planned further by the PBO personnel (usually the PBO officer). The procedure below lays out the general routes for establishing contact with vessels, captains and crew members and conducting PBO visits.

Establishing contact with and gaining access to vessels

It is desirable to establish contact with a TLL vessel prior to approaching the vessel. International vessels docking in Cape Town make use of agencies which coordinate some of their activities while in port. When possible, PBO personnel make use of the vessel agent to establish contact with the vessel to arrange for a PBO visit based on multiple methods, as outlined below:

Method 1: Pre-arranged PBO visit

- The PBO Officer contacts the vessel's nominated local agent to establish the feasibility for PBO activity based on suitable time(s) during which a visit might occur
- The vessel agent identifies suitable time(s) to visit the TLL vessel based on its activities whilst in dock and availability of the captain/fishing master/crew. Based on this, an appointment for the visit will be arranged with the vessel via the agent
- The agent identifies and arranges with the captain and/or designated crew members (preferably the fishing master or bosun) to be available during the time of the visit and inform this to the PBO Officer, as well as convey any special conditions requested by the vessel (e.g. 'no-go' areas on board, special safety measures, any information that may not be recorded)
- The PBO Officer confirms the visit, and ensures the relevant personnel have the correct authorization and access to the area where the vessel is docked. Usually, the visit will be undertaken by the PBO Officer appointed under the project, together with a translator if necessary

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The above represents an "ideal" approach to scheduling, but is largely reliant upon cooperation from a number of different ship agencies, not all of whom provide the desired level of assistance. For instance accessing vessels to conduct PBO work concurrently with scheduled compliance activities, as opposed to a separate PBO visit, was initially requested by one ship agency. An alternative approach that does not rely on the assistance of the agents in scheduling visits is outlined below:

Method 2: Opportunistic PBO visit

- PBO personnel (including translator) schedule a time during which to visit the port based on identified TLL vessels and their known location in port
- PBO personnel establish whether the vessel may be free to conduct a PBO visit based on the level of activity onboard the vessel (i.e. whether any other activity is taking place that would preclude participation of the captain/crew)
- If a vessel appears free, the PBO personnel approaches the vessel and attempts to gain the attention of the captain (usually a crew member can be alerted and asked if the captain can be spoken with)
- PBO personnel briefly explain the purpose and activities of the PBO pilot project to the captain (or in some cases the vessel owner, if aboard) and enquire if they are willing for such activity to be undertaken with them then, if they are free of other commitments, or at another time during their visit to port
- During interaction with the captain/crew as above, it is important to request prior permission before boarding a vessel. In some cases crew/captains may invite the PBO personnel to board the vessel, but many prefer to discuss the prospects of a PBO visit while PBO personnel are still on the quayside and grant access to the vessel only once they accept to receive a visit
- In some cases vessels may be berthed up against one another at the quayside. In such cases conversing with the outer vessel(s) requires crossing of the quayward vessel(s) and it is important to first enquire permission from their captain/crew before doing so

This method was successful in some cases as it circumvented the need for dealings with vessel agencies who often created a barrier between the PBO expert and the captains of vessels. Vessel officers were sometimes happy to speak with and share information with the outreach team without the interference of agents and / or vessel owners. Many captains however contacted their vessel owners or agents via phone before granting or blocking the PBO expert access to an interview.

The difficulty of accessing key persons and accurate SBMM use information on vessels could often be negated by accompanying FCOs on a vessel visit:

Method 3: DAFF FCO seabird outreach visits

- Contact FCO supervisor at DAFF and request contact details of FCOs on duty in port
- PBO personnel (preferably with translator) schedule a time during which to visit the port based on FCO availability and identified TLL vessels and their known location in port
- The FCOs are contacted once more upon arrival in port to join in on a vessel visit if they are still available.
- Once confirmed, the FCO will contact the vessel agent (sometimes the PBO Officer will do this with familiar agents) who will observe the outreach and possibly give instructions to the captain of the vessel if required
- The PBO officer, FCO and agent (plus translator if required) will then board the vessel and request the presence of the captain or highest ranking officer to meet on the bridge of the vessel

Undertaking PBO visits Method 1 and 2

- The PBO Officer arranges, based on the information provided by the vessel agent or the flag of a target vessel, for a suitable person to accompany the PBO Officer during the PBO visit for interpretation in the native language of the vessel captain and/or crew member(s). Interpreters pre-identified by the initiative have undergone prior introductory exposure to the project, its aims and objectives, and are provided training in the information being provided through outreach materials and in principles, gear and terminology related to seabird bycatch mitigation
- If required by the vessel owner/operator, the vessel's agent may accompany the PBO personnel to the vessel for introduction to the captain or crew
- During the vessel visit information and advice on seabird bycatch mitigation measures is provided to the vessel captain/fishing master/crew and information on the current use of mitigation measures by the vessel gathered in discussion and visual examination of the vessel and fishing gear (if possible). Further details of these activities are outlined in other sections of the protocol
- Duration of any PBO visit is guided by the availability of the participant(s) and level of engagement depending on their interest and inputs. Most visits last between half to one hour
- If it is impossible to schedule a PBO visit onboard any particular vessel (e.g. vessel and crew accessibility constrained due to their scheduled activities in port), the PBO Officer may attempt to gather as much relevant data on the use of SBMM as possible through assessing fishing gear set-ups and other visible measures in a quayside observation of the vessel. Although not an ideal situation, information thus gained may nonetheless provide at least minimum data on certain SBMM that may be suitable for monitoring purposes.

Undertaking PBO visits Method 3

- The PBO officer can alternatively follow this method and gain access to the vessel without consent of the captain or agent. By educating the FCO in SBMM use and implementation, the PBO officer automatically gains access to the vessel and can collect accurate data by direct observation
- The FCO should be prepared upon arrival with inspection form (found in a separate report on compliance activities for 2018), electronic pocket scale, measuring tape and string (+/- 10 m) initially provided by BirdLife. If they did not have this available, the PBO outreach officer would provide a set of equipment to them during the visit
- By having the FCO request the vessel logbook and checking fishing grounds and setting times, the PBO officer can assess whether the vessel fishes south of 25°S or sets during the night
- By looking at tori poles and bird scaring lines the FCO and PBO officer can measure if vessels have compliant bird scaring lines and attachment heights
- By inspecting droplines, the FCO and PBO officer can weigh line weights and measure the distance of weights to hooks

This method painted a very positive picture of seabird bycatch mitigation measures use at sea, but accessing captains and crew on vessels for interviews became increasingly difficult over time.

Post-PBO activities

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- Following each PBO vessel visit, details on the PBO interaction and information collected are captured electronically and within seven days following each visit a brief report (outlining the visit, outreach activities and data collected) is compiled and submitted to the Common Oceans Tuna Project. Such a report may also be provided to the vessel owner/operator if specifically requested
- Any requests for further information/assistance relating to seabird bycatch mitigation arising from interaction with the captain and crew during PBO visits are actioned by PBO personnel to the best of their ability
- Information collected and recorded from PBO visits will be further analysed to examine trends in the prevalence and uptake of seabird bycatch mitigation measure use in the ABNJ TLL fleet. Comparison of various associated indicators at different times post project initiation may be useful in evaluating the ongoing effectiveness of the pilot project and its approach

Outreach activities and materials

During interaction with vessel captains and crew, PBO personnel make use of various outreach materials and methods to engage on seabird bycatch problems in longline fisheries, as well as potential solutions available and recommended actions to take for its mitigation. These materials include:

- Video on seabird bycatch in longline fisheries produced by BirdLife International (viewed on tablet computer)
- Information sheets for assisting in explaining concepts and details relating to use of seabird bycatch mitigation measures on TLL vessels
- Factsheet summarizing SBMM requirements and options for TLL fishing below latitude 25°S
- Seabird, target and bait species identification sheets for crew referral
- Examples of bycatch mitigation gear and setups, such as:
 - Scale model of bird scaring line and materials for their construction
 - Sample branchline weighting options and setups
 - Examples of alternative SBM gear such as hook-shielding devices (“Hook-pods”, “Smart-hooks”)

The video, information and fact sheets and species identification sheets include non-English translations to facilitate improved communication with international captains and crew. Some material (e.g. factsheets, gear samples) may be provided to crew for their future reference.

Information collection

During discussions with captain/crew PBO personnel seek to obtain information on vessel fishing gear configuration and fishing operations as these relate to potential interaction with seabirds, including:

- Fishing master/crew member knowledge on Best Practice seabird bycatch mitigation and related requirements of RFMOs and/or national governments
- Areas fished, in relation to latitude 25°S (exact positional data are not required, but rather information on the proportion of fishing time spent fishing in such areas)
- Longline setting and hauling times, as well as target and bait species

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- Use and configuration of gear with seabird bycatch mitigation potential, such as bird scaring (Tori) lines and branchline weighting configuration(s) and other gear setups, materials used and deployment positions that may impact on the effectiveness of seabird bycatch mitigation measures
- Captain/crew observations on the use of seabird bycatch mitigation measures in ABNJ TLL fisheries
- Details of seabird interactions with fishing operations and their effect on fishing operations (e.g. areas of high incidence and number of birds impacted, the species and numbers of each typically caught)

A vessel questionnaire and checklist (Appendices 1 and 2) further outline the information targeted for obtaining during discussions on PBO visits. From experience interview-type direct questioning from a paper-based questionnaire hinders the obtaining of information as captains are generally less at ease than when target questions are framed in terms of a general discussion covering relevant areas.

The information so obtained is recorded according in the questionnaire and checklist format at the conclusion of a visit. Supplementary data on particular vessels (e.g. vessel size, RFMO affiliation) that may be relevant to data analysis but were not discussed with the vessel is gained through available information sources. Electronic copies of the filled questionnaire and checklist sheets are scanned for record-keeping purposes.

When *Method 3* is followed the visit becomes much shorter with a quick (15 minutes) outreach inspection around the vessel, only recording relevant data of actual SBMM use. Factsheets would still be handed over to the captain to ensure that he is aware the SBMM in his area of operation and the agent and captain will usually be debriefed regarding the level of mitigation measure use on the vessel. No vessels were fined by FCOs and it was made clear to both agent and captain that the visit would comprise of data collection for the purpose of training.

Data management and analysis

As some data will be highly descriptive in nature (e.g. individual gear setups, specific observations on seabird interaction with gear), consolidation of such information into appropriate categories for further analysis will be necessary upon entry into the database.

Initially, simple descriptive statistics will be sufficient to describe patterns in the use and specifications of relevant SBMM. It is anticipated, however, that as more detailed information is obtained (including through the use of supplemental data on vessel fishing operations and other variables) and repeat visits are undertaken, more powerful analysis may be possible.

Since a major thrust of the pilot project is to determine the effectiveness of such outreach activity in encouraging the use of seabird bycatch mitigation measures, monitoring the trends of results obtained from such analyses over the projects duration will be necessary. This may be accomplished through one or more of the following approaches:

- Comparing the data collected during different periods of the project, for example analysis at predetermined times following initiation of the project
- Separate analysis of vessels receiving two or more PBO visits
- Comparing PBO outreach visits with FCO outreach data

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Data from FCO outreach visits will be particularly valuable in assessment of the pilot project effectiveness as they will allow for accurate assessments of SBMM use instead of relying on information provided verbally by interviewees. Disparities related to SBMM use data collected were starkly contrasted between PBO visits *Methods 1 & 2* vs *Method 3* when escorted by FCOs.

Project duration, work plan, monitoring and reporting

The PBO pilot project was expected to run from February 2016 through to September 2018 (a separate Progress Against Work Plan report outlining the work plan is available on request - provides information on the intended work plan for the PBO pilot project for the entire project duration).

As outlined in the preceding *Post-PBO activities* section, within seven days of a PBO visit a brief report on that visit and the data collected is submitted to the project management team for the Seabird Bycatch component of the Common Oceans Tuna Project. Additionally, project activities and status, together with performance of the project against the work plan, is reported when requested to the BirdLife Project Executive Team.

Other considerations

As it was anticipated there may be some concern from various stakeholders regarding accessing vessels and collecting data, efforts were made to limit this. In the inception stages of the project it was discussed with and presented to representatives from relevant government departments involved in fisheries compliance activities at Cape Town harbour, the local fishing industry, ship agents of international fishing vessels and the National Ports Authority.

The initiative was formally introduced to these and other stakeholders at a Project Inception Workshop, where the approach to be used was discussed, including issues of data confidentiality, potential confusion with compliance activities and access to vessels. The use of locally-based ship agents where possible is intended to ameliorate these concerns, although as previously mentioned this is not always possible.

Interacting with DAFF staff and introducing seabird outreach training to PBO officers alleviated some of the vessel access and data collection difficulties. FCO availability and willingness to participate in the training had its own challenges, but the transfer of information to both FCOs, captains and agents whilst collecting proxy data was a worthwhile investment with instant returns.

All information gathered during the PBO pilot project is treated confidentially and the initiative takes the necessary steps to ensure confidentiality of the data collected and stored. There is a corresponding commitment that no vessel/person-specific information gathered during vessel visit(s)/interaction(s) will be shared outside of the seabird bycatch component of the Common Oceans Tuna Project without the consent of vessel owners/operators.

Data analysed in the PBO pilot project is only those aspects of vessel/fishing operations related to seabird bycatch and its mitigation, and is analysed and communicated at an aggregate level (e.g. by geographical area of the flag state). No reference to specific vessels/persons by name is made without the prior permission of the vessel owner/operator.

Appendices

Appendix 2. Port-based Outreach Vessel Engagement Checklist

Appendix 1. Port-based Outreach Vessel Engagement Checklist

Engagement details

Date		Interviewer	
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Vessel Information

Name		Size (t)		Setting speed (knots)	
Call Sign		Length (m)		Setting platform height above water level (m)	
Nationality (Flag)		Type		Number of propellers	
Nationality (Owner)		Crew compliment		Propeller position	Port
VMS (Y/N)		Details of any previous engagements			Centre
First engagement?					Starboard

Crew Information

Position	Name	Nationality	Crew changes since last engagement with this vessel?
Captain			
Fishing Master			
Crew	Number and nationalities		

Vessel Fishing Data

Logbook available?			<u>Notes</u>
Line setting records surveyed (days)			
Target species			
Latitude	Number of sets	Number of hauls	
N of 25°S			
S of 25°S			

Fishing Areas	FAO Fishing Area	% time	Previous port calls (Name of Port/Country)	Date
Main fishing area 1				
Main fishing area 2				

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Main fishing area 3			
Main fishing area 4			
Main fishing area 5			

Fishing Times	Normal	Range	Notes
Timezone of records			
Set times start			
Set times duration (hr)			
Haul times start			
Haul times duration (hr)			
Fishing durations (hr)			

Longline Fishing Gear Data

Main line length and branchline spacing (m)		BCM and/or Line shooter?		Notes	
Hooks per set		Type and location of BCM (Gyrocaster?)			
Gear storage		Mechanical Branchline Recovery Devices			
Evidence of bait thawing facilities?		Distance from stern of aft-most coiling device (m)			
Bait offal discarded during line hauling?		Site of offal discharge			

Bycatch Mitigation Gear Details

Tori Lines

BSL on board		Deployment		Sketch of BSL design specifications
BSL operational		Mechanical retrieval system		
Main line material		Attachment site(s)		
Streamer length 1		Attachment height above water (m)		
Streamer material 1		Attachment height above work deck (m)		
Streamer length 2		Attachment system (design and setup)		
Streamer material 2				
Streamer spacing (cm)				
Drag system				

Branch Line Weighting Systems

Line set-up 1

Target species		Hook type		<u>Sketch of set-up</u>
Branchline length (m)		Hook size		
Weight system type and weight (g)		Hook weight (g)		
Hook to weight material and gap (cm)		Other features		

Line set-up 2

Target species		Hook type		<u>Sketch of set-up</u>
Branchline length (m)		Hook size		
Weight system type and weight (g)		Hook weight (g)		
Hook to weight material and gap (cm)		Other features		

Line set-up 3

Target species		Hook type		<u>Sketch of set-up</u>
Branchline length (m)		Hook size		
Weight system type and weight (g)		Hook weight (g)		
Hook to weight material and gap (cm)		Other features		

Night Setting

Proportion of sets night set		Proportion of hooks set in darkness		<u>Notes</u>
Start of night setting (time)		Power of lights on during night setting (W/ LM/ cp)		
End of night setting (time)				

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Appendix 2. Port-based Outreach Vessel Engagement Questionnaire

It is hoped that this can be used an online questionnaire. It will be trialled in the near future and hopefully will reduce the time the PBOO is required to disrupt vessel activities while in port and will streamline the data collected.

Engagement details

Date		Interviewer	
Vessel name		Interviewee	

Do you see any sea bird while fishing?

Yes

No

Do these sea birds get caught in your fishing lines?

Yes

No

Does catching seabirds negatively impact your fishing operations in any way?

No impact	<input type="checkbox"/>	
Loss of bait	<input type="checkbox"/>	
Loss of fishing gear	<input type="checkbox"/>	
Less fish caught	<input type="checkbox"/>	
More/slows crew work	<input type="checkbox"/>	
Danger to crew	<input type="checkbox"/>	
Increased costs	<input type="checkbox"/>	
Compliance	<input type="checkbox"/>	
Other (please specify)	<input type="checkbox"/>	

Do you believe seabird bycatch in longline fishing operations has a negative impact on seabird populations? Please explain

No impacts <input type="checkbox"/>	Slight impact <input type="checkbox"/>	Moderate impact <input type="checkbox"/>	Strong impact <input type="checkbox"/>

How frequently do you experience seabird bycatch during fishing operations?

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	Line setting	Line hauling
Rare (0 - 5 %)	<input type="checkbox"/>	<input type="checkbox"/>
Irregular (5 - 20 %)	<input type="checkbox"/>	<input type="checkbox"/>
Frequent (20 - 40%)	<input type="checkbox"/>	<input type="checkbox"/>
Common (40 - 60 %)	<input type="checkbox"/>	<input type="checkbox"/>
Very Common (60 - 80 %)	<input type="checkbox"/>	<input type="checkbox"/>
Almost Always (80 - 100%)	<input type="checkbox"/>	<input type="checkbox"/>
Average number of birds caught		

For each category of seabird, please indicate %age contribution to your total seabird catch and any particular areas or times they are caught in large numbers

Category of seabird (pick from photo ID's)	%age contribution	Problem areas/ time of year
Great Albatrosses		
Mollymawks		
Petrels		
Shearwaters		
Giant Petrels		
Diving Petrels		
Other (incl. combined)		

Do you release birds hauled to the vessel alive? (PLEASE PROVIDE DETAILS)

YES <input type="checkbox"/>	NO <input type="checkbox"/>
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What is done with any dead birds brought to the vessel? (PLEASE PROVIDE DETAILS)

Discarded	<input type="checkbox"/>	
Whole body retained	<input type="checkbox"/>	
Part of body retained	<input type="checkbox"/>	
Other	<input type="checkbox"/>	

Do you have any bands retained from captured seabirds?

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YES <input type="checkbox"/>	NO <input type="checkbox"/>
------------------------------	-----------------------------

Are you aware of any seabird bycatch mitigation regulations? (PLEASE PROVIDE DETAILS)

RFMO	<input type="checkbox"/>	
PSM	<input type="checkbox"/>	
Home Country	<input type="checkbox"/>	
Other countries	<input type="checkbox"/>	
Other	<input type="checkbox"/>	

Use and effectiveness of seabird bycatch mitigation measures (PLEASE PROVIDE DETAILS FOR EACH MEASURE)

OPTIONS **Not at all:** No noticeable effect **A little:** Measure reduces bycatch of seabirds compared to normal levels, but by much less than half
Somewhat: Measure reduces bycatch of seabirds by about half, compared to normal levels
Very: Measure reduces bycatch of seabirds compared to normal level by much more than half, but not completely **Extremely:** Seabirds almost never caught

Measure	Effectiveness	Response
Tori line (1 or 2?)	Effectiveness	Not at all <input type="checkbox"/> A little <input type="checkbox"/> Somewhat <input type="checkbox"/> Very <input type="checkbox"/> Extremely <input type="checkbox"/>
	Used because of	Compliance <input type="checkbox"/> Reduce bait loss <input type="checkbox"/> Environmental concerns <input type="checkbox"/> Other <input type="checkbox"/>
	Not used because of	Difficult to use <input type="checkbox"/> Financial <input type="checkbox"/> Not effective <input type="checkbox"/> Gear/materials unavailable <input type="checkbox"/> Other <input type="checkbox"/>
Line weighting (type?)	Effectiveness	Not at all <input type="checkbox"/> A little <input type="checkbox"/> Somewhat <input type="checkbox"/> Very <input type="checkbox"/> Extremely <input type="checkbox"/>
	Used because of	Compliance <input type="checkbox"/> Reduce bait loss <input type="checkbox"/> Environmental concerns <input type="checkbox"/> Other <input type="checkbox"/>
	Not used because of	Difficult to use <input type="checkbox"/> Financial <input type="checkbox"/> Not effective <input type="checkbox"/> Gear/materials unavailable <input type="checkbox"/> Other <input type="checkbox"/>
Night setting	Effectiveness	Not at all <input type="checkbox"/> A little <input type="checkbox"/> Somewhat <input type="checkbox"/> Very <input type="checkbox"/> Extremely <input type="checkbox"/>
	Used because of	Compliance <input type="checkbox"/> Reduce bait loss <input type="checkbox"/> Environmental concerns <input type="checkbox"/> Other <input type="checkbox"/>

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	Not used because of	Difficult to use <input type="checkbox"/> Financial <input type="checkbox"/> Not effective <input type="checkbox"/> Gear/materials unavailable <input type="checkbox"/> Other <input type="checkbox"/>
Offal managed	Effectiveness	Not at all <input type="checkbox"/> A little <input type="checkbox"/> Somewhat <input type="checkbox"/> Very <input type="checkbox"/> Extremely <input type="checkbox"/>
	Used because of	Compliance <input type="checkbox"/> Reduce bait loss <input type="checkbox"/> Environmental concerns <input type="checkbox"/> Other <input type="checkbox"/>
	Not used because of	Difficult to use <input type="checkbox"/> Financial <input type="checkbox"/> Not effective <input type="checkbox"/> Gear/materials unavailable <input type="checkbox"/> Other <input type="checkbox"/>
.....	Effectiveness	Not at all <input type="checkbox"/> A little <input type="checkbox"/> Somewhat <input type="checkbox"/> Very <input type="checkbox"/> Extremely <input type="checkbox"/>
	Used because of	Compliance <input type="checkbox"/> Reduce bait loss <input type="checkbox"/> Environmental concerns <input type="checkbox"/> Other <input type="checkbox"/>
	Not used because of	Difficult to use <input type="checkbox"/> Financial <input type="checkbox"/> Not effective <input type="checkbox"/> Gear/materials unavailable <input type="checkbox"/> Other <input type="checkbox"/>

How does use of seabird bycatch mitigation measures impact your fishing operations?

No impact	<input type="checkbox"/>
Positive impacts	Less bait lost <input type="checkbox"/> More fish caught <input type="checkbox"/> Increased profits <input type="checkbox"/> Less birds caught <input type="checkbox"/> Certification <input type="checkbox"/> Environmental benefits <input type="checkbox"/> Public perceptions <input type="checkbox"/> Other <input type="checkbox"/>
Negative impacts	Increased costs <input type="checkbox"/> Less fish caught <input type="checkbox"/> Slows crew work <input type="checkbox"/> Fishing gear loss <input type="checkbox"/> Increased preparation <input type="checkbox"/> Changes to operations <input type="checkbox"/> Danger to crew <input type="checkbox"/> Other <input type="checkbox"/>

Do you catch any other species as bycatch and use any particular mitigation measures to reduce this?

Species group (please note specific spp. if applicable)	Mitigation Measures	Effective (Y/N)?