UPDATE ON THE SEABIRD COMPONENT OF THE COMMON OCEANS TUNA PROJECT – SEABIRD BY-CATCH ASSESSMENT WORKSHOPS

B. Maree[1]

SUMMARY

This paper provides the outcomes of two Regional Seabird Bycatch Pre-assessment Workshops held in early 2017, together with some explanatory background. An agreed next step is that a data preparation workshop, along the lines of stock assessment workshops and CPUE standardisation processes, should be held in February 2018. Further, intersessional work before and after the data preparation workshop is highly desirable. The scale of this evaluation effort will be limited to the Southern Hemisphere.

RÉSUMÉ

Ce document fournit les résultats de deux ateliers régionaux de pré-évaluation des prises accidentelles d'oiseaux de mer qui se sont tenus début 2017, ainsi que quelques informations explicatives. La prochaine étape convenue est qu'un atelier de préparation des données, s'inspirant des ateliers d'évaluation des stocks et des processus de standardisation de la CPUE, se tiendrait en février 2018. En outre, il est fort souhaitable qu'un travail intersession ait lieu avant et après l'atelier de préparation des données. L'ampleur de cet effort d'évaluation sera limitée à l'hémisphère Sud.

RESUMEN

Este documento proporciona los resultados de dos jornadas regionales de evaluación previa de captura fortuita de aves marinas, que se celebraron a comienzos de 2017, junto con alguna explicación de contexto. Se acordó que el siguiente paso sería unas jornadas de preparación de datos, en línea con unas jornadas de evaluación de stock y procesos de estandarización de la CPUE, que deberían celebrarse en febrero de 2018. Además, sería más que conveniente que se realizaran trabajos durante el periodo intersesiones antes y después de las jornadas de preparación de datos. La escala de este esfuerzo de evaluación se limitará al hemisferio sur.

KEYWORDS

ABNJ, high seas, distant water fleets, coastal states, tuna longline

[1] Compiled by Bronwyn Maree – Seabird Bycatch Project Coordinator, Common Oceans Tuna Project (Areas Beyond National Jurisdiction, ABNJ) based on participants participation at the 1st and 2nd Regional Seabird Bycatch Pre-assessment Workshops 2017. BirdLife South Africa, on behalf of workshop participants. Presented by Kazuhiro Oshima.

1. Background

In 2014, the Commission for the Conservation of Southern Blue-fin Tuna (CCSBT) convened a Seabird Mitigation Measure Technical Group to scope methods for reviewing the effectiveness of tuna RFMO seabird measures, in the form of a workshop held in November 2014. One of the recommendations arising from workshop was that the impact of tuna RFMO seabird Conservation Management Measures (CMM) should be monitored through a 'two-tiered approach'. The first tier would involve each tuna RFMO undertaking annual monitoring of bycatch rates and total numbers of birds killed through national reports. The second tier involves periodic, joint tuna RFMO efforts to assess cumulative impacts on seabird populations. An additional element of Tier 2 is to bring national scientists together and, where appropriate and requested, to help build the capacity of national scientiststo undertake bycatch analyses. In 2015-2016, this proposal was forwarded to the bycatch and ecosystem working groups of other tuna RFMOs, and received their support. BirdLife International, through its implementing partner BirdLife South Africa, included Tier 2 work into the scope of the Common Oceans Tuna Project. In 2017, with the support of the FAO's Common Oceans/ABNJ tuna project, national scientists have commenced collaborative work towards the first global evaluation.

The Common Oceans Tuna Project has been presented previously to the Indian Ocean Tuna Commission's Working Party on Ecosystems and Bycatch (IOTC-2015-WPEB11-340), ICCAT's Sub-Committee on Ecosystems (SCRS/2015/118) and the Western and Central Pacific Fisheries Commission (WCPFC12-2015-26) . This paper provides updates to these bodies.

2. Outcomes of the Regional Workshops

The first Regional Seabird Bycatch Pre-assessment Workshop was held in the Kruger National Park, South Africa in February 2017, while the second workshop was held in Hoi An, Vitenam in April 2017. The report from the two workshops, together with the proposed structure and timeframe of next steps, is given in **Appendix 1**.

The proposed workplan is reproduced below:

Table 1. Proposed workplan, including the details of the meeting, time frame and proposed outcomes

Meeting	Meeting Detail	Time Frame	Proposed Outcome	Notes
Intersessional Meetings with CPCs				
1	Data Meetings: DWFNs, 2-3 meetings	November 2017-January 2018	Standardization of Data set	Work with the DWFNs to identify the differences between fleet BPUEs
2	Data Meetings- Other CPCs (coastal states)	November 2017-January 2018	Standardization of Data set	Work with the coastal states to identify the differences between fleet BPUEs
Note: these meetings where possible will be aligned with other meetings such as RFMO meetings and will be conducted by Joel Rice (invited expert/independent consultant)				
Pre-assessment Data Meeting				
3	Pre-assessment Data Meeting: data preparation (attendance by select CPCs)	February 20-21 2018	Standardized Data Set	May not be required if the intersessional data meetings are successful
4	Pre Assessment Data Meeting: data analysis	February 22-24 2018	Calculate the vulnerability (by primary species, species/fishery specific)	Mexico

		Compile distribution, analyze overlap	
		Develop a decision tree based on 'compiled data set'	
		Steps toward, identify (best) practices to estimate the total catch	
		Using fishing effort data from RFMOs and seabird distribution data via BLI, and observer data from CPCs to calibrate	
		Identify impacts of seabird CMMs	
		Leverage results from previous analyses.	
		Prepare for population impact models/scenarios	
Global seabird bycatch assessment meeting			
Analysis meeting	October 2018	Estimate total number of seabirds killed globally in pelagic tuna longline fisheries. Evaluate BPUE trends. Identify impacts of seabird CMMs. Assess population viability using demographic and/or impact models	Time and Location TBD

Appendix 1

Report of the 1st and 2nd Regional Seabird Bycatch Pre-assessment Workshops

for component 3.2.1 of the

Sustainable Management
of Tuna Fisheries
and Biodiversity Conservation
in the ABNJ

1st: 23 February to 1 March 2017:
Kruger National Park, South Africa
2nd: 2 to 7 April 2017:
Hoi An, Vietnam

Prepared by BirdLife South Africa

Workshop Report

Project: FAO-GEF Project *Sustainable Management of Tuna Fisheries and Biodiversity Conservation in the ABNJ* (GCP/GLO/365/GFF)
Reporting organisation: BirdLife South Africa
Report prepared by: Bronwyn Maree

1st and 2nd Regional Seabird Bycatch Assessment Workshops for BirdLife component of the GEF funded FAO Common Oceans ABNJ Tuna Project (Output 3.2.1)
23 February to 1 March 2017 (Kruger National Park) and 2 to 7 April 2017 (Hoi An)

BirdLife South Africa report

Aims and outcomes of the workshop

To strengthen national scientist capacity to analyse bycatch data, two workshops to bring together experts, national scientists and institutions working with seabird bycatch data from vessels operating south of 25° South were implemented Through the process of strengthening national scientist capacity to analyse seabird bycatch data, these workshops and intersessional work are aimed ultimately at a collaborative, joint tuna-RFMO assessment of seabird bycatch and the effectiveness of the relevant Conservation and Management Measures (CMMs) in tuna longline fisheries.

The main outcomes for this element of the Common Oceans Tuna Project are:

1. Strengthened the capacity of national scientists and institutions to manage and conduct analyses of seabird bycatch data and the effectiveness of bycatch mitigation measures.
2. Harmonised assessment methods to facilitate annual seabird bycatch assessments by RFMOs and/or CPCs, and for global assessment of current bycatch mitigation measures.
3. Statistical tools (e.g. R scripts and Excel sheet macro or similar) for managing and analysing fishing, CMM use and seabird bycatch data, to be developed and provided freely

Workshop Objectives

1. Create a network of mutual support for national scientists working with seabird bycatch data
2. Understand currently available seabird bycatch data for national fleets
3. Share experiences of the challenges in seabird bycatch data collection, data storage, cleaning and analysis and discuss potential solutions to improve data quality
4. Understand existing national and RFMO reporting procedures and share experiences of the reporting challenges
5. Identify areas for future collaboration
6. Discuss mechanisms for global seabird bycatch assessments

Participants

BirdLife International, through its implementing partner for this work, BirdLife South Africa, convened the meetings and contracted a team of consultant stock assessment scientists (Invited Experts) to assist with the technical content of the workshops. The US National Oceanographic and Atmospheric Administration (NOAA) lead this aspect through allocating the services of Dr Rishi Sharma as one of the experts. Dr Joel Rice assisted Dr Sharma as the second consultant. Other invited experts were Anton Wolfaardt from the Agreement for the Conservation of Albatrosses and Petrels, Prof. Julia Hsiang-Wen Huang from the National Taiwan Ocean University, Assistant Prof. Yu-min Yeh from the Nanhua University and Dominic Rollinson from the University of Cape Town.

The 1st and 2nd Regional Seabird Bycatch Pre-assessment workshops were attended by 23 and 17 people respectively, including government officials, national scientists, BirdLife experts and invited experts who facilitated the workshop. The 1st workshop had participants from Mozambique, South Africa, Japan, Seychelles, Namibia, Brazil, Uruguay, as well as invited experts; BirdLife International; Food and Agriculture Organization of the United Nations; Indian Ocean Tuna Commission (IOTC) and the International Commission for the Conservation of Atlantic Tunas (ICCAT). The 2nd workshop had participants from Australia, Japan, New Zealand, People's Republic of China, Indonesia, as well as invited experts, the Pacific Community (SPC); BirdLife International; the Food and Agriculture Organization of the United Nations; and the Indian Ocean Tuna Commission (IOTC).

Summary of presentations and facilitated discussions

The workshop agendas are provided in Annex 2.

The workshops were specifically designed to be a mix of presentations and facilitated discussions. It was sufficiently fluid to allow extra time on discussion points that participants felt needed more attention and discussion, in order to make sure all participants inputs were taken into account and in order to progress towards a joint t-RFMO seabird bycatch assessment in a collaborative manner.

A summary of each presentation (except for the invited experts guiding presentations) is listed below. Those presentations that were repeated in the 2nd Regional workshop are not repeated in the summary of that workshop:

<u>1st Regional Seabird Bycatch Pre-assessment workshop: Kruger National Park, South Africa</u>

1. Introduction to the Common Oceans Tuna Project (K Hett): Kathrin Hett presented the Common Oceans ABNJ Tuna Project which is a multi-stakeholder partnership funded by the Global Environment Facility and implemented by the Food and Agriculture Organization of the United Nations. The 5-year Project aims at sustainably managing tuna fisheries and conserving biodiversity focusing on three main components: 1) improving management; 2) strengthening monitoring, control and surveillance and 3) reducing impacts on biodiversity. This workshop is part of the Common Oceans ABNJ Tuna Project's work executed by BirdLife South Africa supporting the demonstration, refinement and promotion of at-sea bycatch mitigation techniques in fisheries for which there are high risk interactions.
2. Seabird biology/ecology, distribution and status updates in the Southern Ocean (B. Maree): a brief description about the life-history traits that make seabirds (especially albatrosses) vulnerable to any level of mortality. Seabird bycatch issues by fishery were discussed and linked to the BirdLife International tracking database.
3. The importance of data collection in relation to seabird bycatch mitigation (K Yokawa): Decsription of the various data required to be collected for the 3 best practice mitigation measures widely accepted for seabird bycatch mitigation.
4. Scoping paper: approaches for measuring and monitoring the effectiveness of Seabird Conservation Measures in Southern Bluefin Tuna longline fisheries (C Small): Outcomes of the CCSBT Technical Working Group meeting (2014) were presented which outlined the reasoning for the implementation of the regional workshops.
5. ICCAT and IOTC Bycatch Working Groups activities and work plan: ICCAT essentially began to address seabird matters in 2002 with the adoption of a non-binding resolution (Res. 02-04) that encouraged CPCs to implement International Plans of Action and collect seabird data from their fisheries. More concrete management measures were adopted in 2007 (Rec. 07-07) and 2011 (Rec. 11-09) which stipulated the use of mitigation measures including line weighting, bird-scaring lines (and its specifications) and night setting. In parallel the subcommittee on ecosystems (SCECO) has been increasingly evaluating seabird data and have in the past conducted a risk assessment as well as an unsuccessful attempt to assess the efficacy of the management measures prescribed in Rec [11-09]. The SCECO has agreed to continue the latter assessment and individual CPC scientists have agreed to collaborate to assess their individual fisheries and provide estimates of by-catch rates and total seabird captures. This has been deemed the most constructive way to proceed, based on the poor data submission to ICCAT as well as the ongoing modification of the by-catch data submission forms which require approval by the SCECO in 2017.
    - IOTC gave a background into what data is collected and highlighted the challenges with seabird bycatch data collection within the IOTC. Sarah Martin gave feedback by IOTC member/country on what data has been submitted and what mitigation measures are reported to be in use.

6. ACAP bycatch indicator paper – principles of good practice (A Wolfaardt): Anton Wolfaardt outlined work currently being undertaken by the Seabird Bycatch Working Group of ACAP to develop guidelines for estimating bycatch and reporting against ACAP's bycatch indicators. These indicators comprise: i) the seabird bycatch rate across each of the fisheries of member Parties, and ii) the total number of birds killed (bycaught) per year of ACAP species (per species where possible). This work, which is still in progress, also aims to develop a reporting framework for ACAP Parties to submit routinely seabird bycatch estimates and associated metadata to help measure the performance of the Agreement in meeting its aim of improving the conservation status of albatrosses and petrels.
7. At-sea observer experience – challenges of data collection (S Jimenez and C Marques): Sebastien and Ciao each have vast at-sea data collection experience and presented what data is collected on board vessels and some of the issues that are faced by an observer out at sea.
8. Description of national fleets, how seabird data are collected and what data are available: Brief presentation by country relating to their tuna longline fleets and what is known for each fleet. Some information in these presentations is confidential and is not outlined in detail by country in this report.
9. Seabird Bycatch data analysis - country examples: Fleets which have data and have undertaken analysis of seabird bycatch data presented the different methods they have used up until now. These provided an example for other fleets and starting points for approaches to use to analyze seabird bycatch data.
10. Capacity building needs and gaps for the provision of science-based advice: participants shared what they require in order to collect and analyze seabird bycatch data. Various options of support were discussed and placed on the table for participants to follow up on.

2nd Regional Seabird Bycatch Pre-assessment workshop: Hoi An, Vietnam

1. Seabird bycatch mitigation measures and tRFMOs CMMs (K Baird): Research has been presented at ACAP on methods of seabird bycatch mitigation and best practise methods are agreed by members. Currently 3 out of 3 methods are best; night setting, bird-scaring lines (BSL) and branch line weighting used simultaneously. Individually mitigation options are unlikely to be effective due to a range of practical issues and are designed to be used in combination. Two new measures: hook-shielding devices and time/area closures have been added recently along with new line weighting recommendations: >=40g within 0.5m of the hook; >=60g within 1m of the hook; >=80g within 2m of the hook. Tuna RFMOs CMMs for the southern hemisphere generally require 2/3 best practice methods to be used since July 2014. IATTC however currently still retains non-best practise options for its second option such as blue dyed bait and line shooter. Although CCSBT has only 1 required minimum mitigation measure (tori lines), it requires vessels fishing within its area of competency to abide by the mitigation measures of the overlapping area based tRFMO. Latest research presented to ACAP confirms that more mass placed closer to the hook allows baits to sink more rapidly and consistently (Barrington et al 2016), reduces attacks on baits and most likely mortalities (Jimenez et al 2013; Dos Santos et al. 2016).
2. At-sea observer experience – challenges of data collecting and experimental research (Dominic Rollinson): This presentation focussed on the problems and challenges faced by observers while collecting data at sea. The expected duties of the observers were discussed as well as the practicalities of performing these duties. Research conducted onboard Republic of Korea longline vessels was discussed in detail, particularly how these data were collected. The importance of observers/researchers not only collecting seabird bycatch data but also fish catch and fishing operations data (whilst trialling seabird bycatch mitigation measures) was highlighted. Yu-min Yeh provided an informative presentation on bird-scaring line design based on experimental work onboard a vessel operating in the South-East Atlantic Ocean.
3. Challenges in data collation, storage and cleaning – RFMO initiatives and perspectives (IOTC and SPC): IOTC (Dan Fu) - CPCs are required to provide seabird bycatch information via the observer program. However, observer data reported to IOTC suffers from various problems including the use of non-standard format, incomplete or missing information, or lack of linkage between catch and effort, preventing meaningful analyses using these data. In 2016, IOTC initiated a data call requesting CPCs fishing 25 degrees south to provide fine-scale seabird bycatch information. Data received from eight CPCs were summarised to provide a general distribution of seabird bycatch 25 degrees South. The usefulness of these data in estimating total fishing induced mortality and assessing the effectiveness of mitigation measures were also investigated.

SPC-WCFPC (Tom Peatman) – Tom presented an overview of seabird bycatch-related data collected through the WCPFC Regional Observer programme (ROP). First, relevant WCPFC CMMs were summarised to provide context to data collection and reporting requirements. Relevant data fields from the WCPFC minimum data standard were then outlined. A broad summary was provided of longline observer coverage, and seabird bycatch and interaction data, in WCPFC ROP data held by SPC. The coverage of longline effort by the WCPFC ROP has varied both spatially and temporally, including limited coverage in some high latitude areas. This has implications on the monitoring of both seabird bycatch and compliance with mitigation measures.

Consultations with countries

During both workshops, the invited experts discussed data availability, concerns and preferred approaches for collaborations with each of the country representatives. Due to the confidential nature of some of the responses, only summary outcomes are included in this report. It was evident from the consultations that all countries were supportive of the need to conduct a global assessment and expressed willingness to contribute to the process in a collaborative approach.

Going forward with the project - next steps

During the 1st workshop the recommended way forward was discussed and a draft recommendations (both intersessionally and for the next meeting) document was produced. One of the main outcomes of this meeting was that the next workshop should be a specialist data workshop before we are able to implement a global seabird bycatch assessment. During the 2nd workshop, the draft recommendations were presented and amended to include additional points and actions. The document is presented below, including a draft work plan:

The **first phase** of the project would be to have CPCs to work together intersessionally along with BLI consultants (Invited experts) to identify factors explaining differences between fleet Bird Per Unit Effort (BPUE). This phase would likely be comprised of a meeting involving the distant water fishing nations (DWFN) and one or more meetings for coastal CPCs. This is was considered especially important for the DWFN fleets, for which sizeable discrepancies in BPUE exist for fleets targetting the same tunas in similar areas. This could include a facilitated meeting between BLI Consultants and two or three DWFN. The timing and location of these meetings depend on schedules of the participants and available funding, but should happen prior to the global data meeting (early 2018).

The **second phase** of the project would progress concurrently with the first phase and would be focused on individual CPCs **national scientists compiling bycatch and fishery data, producing standardized reports** using simple BPUE models, producing common data stratification and basic exploratory data analysis. This would be initiated via a common data setup and analysis provided by the BLI consultants and be a by-product of the first phase of the project. During this phase the BLI consultants along with BLI would compile tracking data and colony population parameters to develop the best available information on seabird distribution. Approaches that could be undertaken include: i) examine spatial and temporal distribution of fleets and differences in gear characteristics and fishing operations, ii) generate a combined BPUE from multiple fleets and examine fleet effects by area, (iii) assess the effect of different data filtering approaches.

The **third phase** of the project would be a **collaborative data preparatory workshop** under the Common Oceans Project (to be held in February 2018, with a stock assessment type approach to data ownership/confidentiality). The data preparatory meeting would consider the operational level data available by fleet, to inform the appropriate methodologies for estimating seabird BPUE and overall mortality and trend in seabird bycatch across the Southern Ocean. Before the data preparatory meeting it would be useful to develop a decision-tree for seabird BPUE model selection, adapting the CPUE decision-tree shown in Figure 1. The group agreed it would be useful for all fleets to undertake a selected (simple) approach to data analysis prior to the data preparatory meeting. The meeting might consider, among other things, modeling approaches to BPUE estimation to account for spatial processes and gear factors and models that account for overdispersion/underdispersion and non-normality of the BPUE data.

The **fourth phase** of the project would continue the work developed in the data analysis workshop and focus on **intersessional work to develop model options and methodology.** This will give CPCs time to digest the information in the previous meeting and plan for the upcoming analysis.

The **fifth and final phase** of the project would be an **assessment meeting,** which is envisaged as a collaborative workshop to a produce global t-RFMO estimate of total catch of seabirds leading to jointly co-authored paper(s). Specific outputs of this analysis would be a flow chart of the best practice steps for the analysis of seabird bycatch data. e.g. data cleaning, create maps of observed versus total effort, identify data distribution (Poisson, etc), and create simple stratified ratio estimates before doing more complex modelling.

Additional work could be directed towards **developing population impact models** and scenarios for high-information species. This could possibly be done as another step, after the seabird bycatch evaluation/assessment process has been completed.

Through discussions at this workshop it was clear that national scientists had a range of capacity-building needs for seabird bycatch assessment, ranging from data collection and seabird identification issues, to support for choice of analytical approach. Although these are beyond the scope of this project it is worthwhile to identifying crosscutting needs and note that some of these could be addressed by topical workshops under the Common Oceans project, and some by 1-1 support either through the Common Oceans project or collaborative working between CPCs. Some aspects, especially observer training, would benefit from support from the tuna RFMO Secretariats and improve future global assessments of seabird bycatch, similar to existing efforts in IOTC and WCPFC Regional Observer Programs.

Table 2 contains a draft list of next steps agreed upon at the second regional workshop under the Common Oceans project (Vietnam, April 2017), before being communicated to the t-RFMO ecosystem/bycatch working groups in 2017.

Proposed structure and general timeframes:

A. Prior to the data preparation meeting (Phase 1 and 2, July 2017 – Jan 2018):

- Develop confidentiality agreements between CPCs and NOAA (tbc)
- CPCs to work together to identify factors explaining the differences in areas where seabird BPUEs diverge between fleets (facilitated by BLI consultants)
- Pre-process the data and realize explanatory analysis, including
    - Identify data gaps and hurdles
    - Provide a common framework for the analysis of CPC data
        - Logbook and Observer data
    - Develop a 'data catalogue' for the spatial & temporal data of, logbook, observer and seabird data.

Data scripts/technical advice provided by the BLI consultants, CPCs to undertake the work.

B. At the Data preparation meeting (Phase 3, February 2018)

Structure of the data workshop (facilitated by NOAA personnel and consultant):

- Basic analysis, and data formatting done prior to the meeting
- During the meeting:
    - Presentations of EXPLORATORY DATA ANALYSIS
    - Construction of a DATA CATALOGUE
    - Collation of STANDARDIZED DATA SET
    - Development of a DATA ANALYSIS DECISION TREE
    - Develop standard methodology for the annual evaluation of BPUE and N (to assist national reporting of estimates to RFMOs, potentially make consistent with tuna and shark reporting).
- Discussion for next steps for the assessment workshop
    - Compile overall dataset from logbook and observer data.
    - Discuss and begin to develop methods for initial calculation of assessments of ***N (the number of birds killed annually in longline fisheries South of 25 degrees south)***

- Compile distribution data
    - Show the ‘range’ of data availability for effort & distribution of seabirds
    - Investigate ‘seabird abundance’ in time and space from ‘at-sea’ data or species richness (relative abundance).

C. Intersessional work (Phase 4, March 2018 – September 2018)

D. Global Assessment meeting (Phase 5, late 2018/early 2019, facilitated by the BLI consultants)

- Discussion of the data meeting held (February 2018)
- Estimation methods for N
    - SRS ratio method
    - Model-based approach to standardized CPUE surface New Zealand-like analysis
    - INLA/VAST type model
- Integration of demographic/population level parameters
    - Australia-like methods of demographic modelling
    - PBR approach
- Plan for the continuation of the **periodic global evaluation,** in the future (see the CCSBT scoping paper)
- Calculate the vulnerability (by primary species, species/fishery specific)
    - Based on the overlap analysis
        - Leverage results from New Zealand (Dragonfly) analysis to identify data gaps and potential solutions.
- Develop a decision tree based on ‘compiled data set’ to estimate the total catch
    - Using data from RFMOs and distribution data from BLI, and observer data from CPC’s to calibrate
- Identify methods to evaluate impacts of seabird CMMs
- Discuss or prepare for population impact models/scenarios where available.

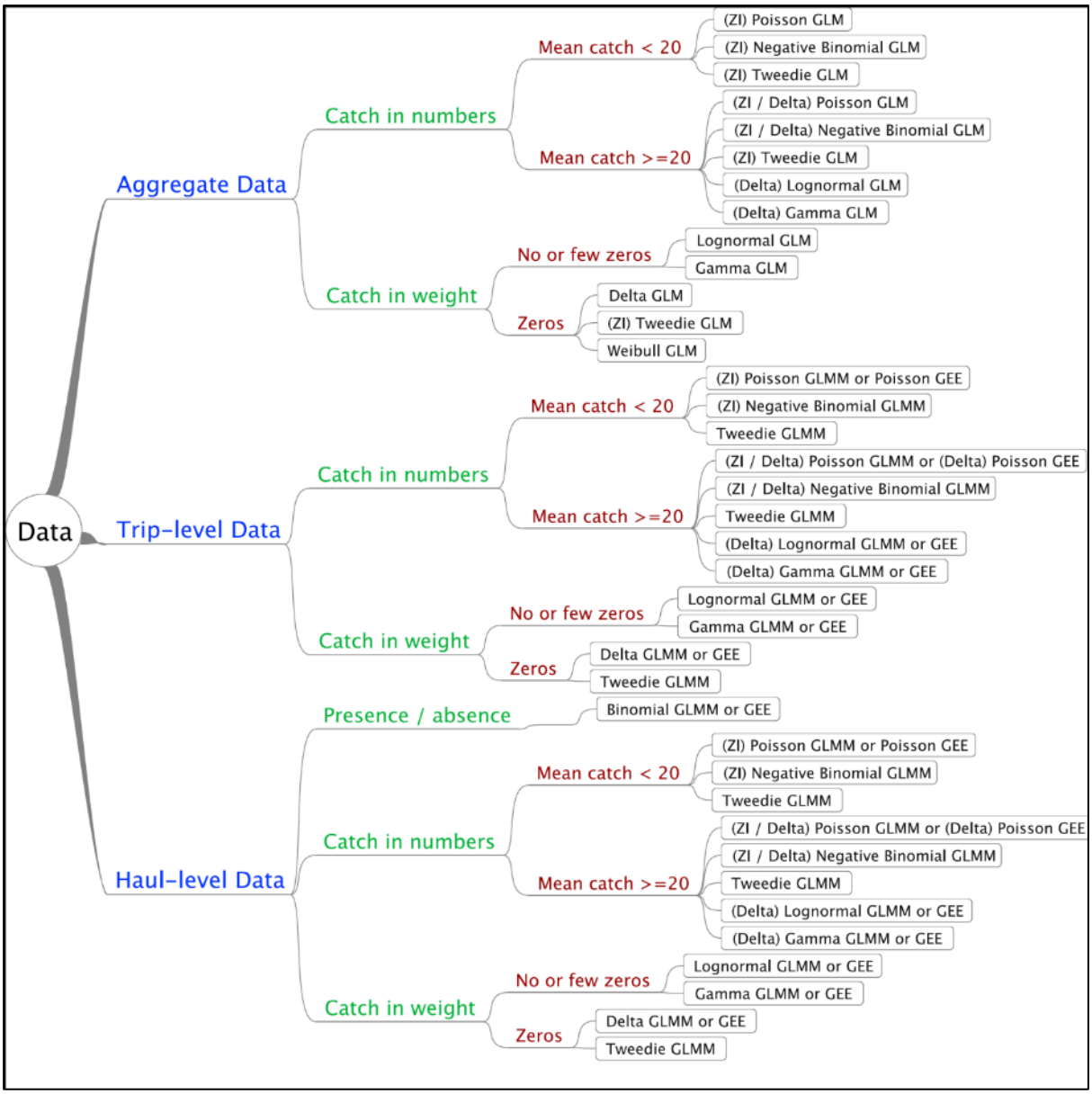

Figure 1. Decision tree for selecting CPUE standardization models, to be adapted for seabird BPUE model selection.

One of the main discussions at the 1st workshop was to work through the data fields that are required for a seabird bycatch assessment to occur. The starting point for this discussion was the ACAP bycatch indicators paper (SBWG7 Doc 05). Data were discussed and only 'required' data fields (not desirable) were included to ensure the process is simplified for data collection by CPCs (especially coastal states). The selected fields are presented in Table 1 below.

Table 1. Draft of priority data fields to be collected by set for seabird BPUE standardization and estimation (per set unless otherwise stated)

Variable classification	Variable description
Dependent Variable	Number of seabirds caught (by spp) Condition (Dead/Alive/Injured)
Independent Variable	

Temporal	Date Deployed Start Time Gear Deployment End Time Gear Deployment
Spatial	Latitude at beginning of set Longitude at beginning of set
Physical	Moon Phase. (this can also be calculated by date)
Fishing Operation	Vessel Identification Observer Identification [Vessel Characteristics e.g. length, tonnage & target species, for extrapolation to unobserved fleets] HBF Number of hooks deployed Number of hooks observed at haul Catch composition or target species
Fishing Gear	
Conservation Management Measures (CMMs) related	Bird-scaring line used (Yes/No) Number of bird-scaring lines Text field for description of bird-scaring line Mass of added weight (grams) and distance from hook (metres)

Table 2. Proposed workplan, including the details of the meeting, time frame and proposed outcomes.

Meeting	Meeting Detail	Time Frame	Proposed Outcome	Notes
Intersessional Meetings with CPCs				
1	Data Meetings: DWFNs, 2-3 meetings	November 2017-January 2018	Standardization of Data set	Work with the DWFNs to identify the differences between fleet BPUEs
2	Data Meetings- Other CPCs (coastal states)	Nov 2017- Jan 2018	Standardization of Data set	Work with the coastal states to identify the differences between fleet BPUEs
Note: these meetings where ppossible will be aligned with other meetings such as RFMO meetings and will be conducted by Joel Rice (invited expert/independent consultant0				
Pre-assessment Data Meeting				
3	Pre Assessment Data Meeting: data preparation (attendance by select CPCs)	February 20-21 2018	Standardized Data Set	May not be required if the intersessional data meetings are successful
4	Pre Assessment Data Meeting: data analysis	February 22-24 2018	Calculate the vulnerability (by primary species, species/fishery specific)	Location to be decided
			Compile distribution, analyze overlap	
			Develop a decision tree based on ‘compiled data set’	

		Steps toward, identify (best) practices to estimate the total catch	
		Using fishing effort data from RFMOs and seabird distribution data via BLI, and observer data from CPCs to calibrate	
		Identify impacts of seabird CMMs	
		Leverage results from previous analyses.	
		Prepare for population impact models/scenarios	
Global seabird bycatch assessment meeting			
Analysis meeting	October 2018	Estimate total number of seabirds killed globally in pelagic tuna longline fisheries. Evaluate BPUE trends. Identify impacts of seabird CMMs. Assess population viability using demographic and/or impact models	Time and Location TBD

Conclusions

The workshop provided a useful opportunity to bring together CPCs and RFMO representatives to enhance collective understanding of the options and challenges in analyzing seabird bycatch data. It provided an opportunity to understand the currently available seabird bycatch data for national fleets, sharing of experiences in seabird bycatch data collection and analysis and created a network of support for the nationl scientists working with seabird bycatch data. Most importantly, all participants understood the need and showed their support in the process going forward.

Acknowledgements

Funding for the workshop (including the venue, catering, travel and DSAs, mid-conference excursions, invited experts and BirdLife experts and their time) was provided through the FAO Common Oceans Tuna Project (LoA4). All participants are acknowledged for their preparation and presentations at the workshop.

Survey of workshop participants

Post-workshop questionnaires were developed (see Annex 3)to assess the usefulness of the workshops and to receive constructive feedback from participants that can be used in the development and implementation of future workshops. A different workshop survey was developed for the 2nd workshop, taking into account feedback from Kathrin Hett (M&E specialist from the FAO). In total, 13 participants completed the questionnaire at the 1st workshop and 17 at the 2nd workshop. Participants involved in the organisation and implementation of the workshop did not complete the survey. A summary of the questions and responses is included below. The original questions and scoring guidelines are provided in Annex 3.

1st Regional Seabird Bycatch Pre-assessment workshop: Kruger National Park, South Africa

Q1a. *[How useful was the Seabird biology/ecology, distribution +status updates in the Southern Ocean (B. Maree)]* **60%** of participants found the presentation **very useful**. **33%** found it **somewhat useful**, while only **6%** found it **not useful**.

Q1b. *[How useful was the Importance of data collection in relation to seabird bycatch mitigation (K. Yokawa)]* This was a popular presentation, with **86%** of participants finding it **very useful**, and **14%** finding it **somewhat useful**.

Q1c. *[How useful was the Introduction to the Common Oceans Tuna Project (K. Hett])* This presentation was found to be **somewhat useful** by **53%** of participants, and **very useful** by **47%.**

Q1d. *[How useful was the Scoping paper: Approaches for measuring and monitoring the effectiveness of seabird conservation measures in SBT longline fisheries (C. Small)]* Another popular talk, **80%** of participants found it to be **very useful**, and **20%** thought it was **somewhat useful**.

Q1e. *[How useful was the ACAP bycatch indicators paper (A. Wolfaardt)]* This presentation was found to be **very useful** by **73%** of participants, and **somewhat useful** by **27%**.

Q1f. *[How useful was the At-sea observer experiences – challenges in data collection]* By far the most popular discussion. **93%** found these presentations to be **very useful**. And **7%** found them to be **somewhat useful**.

Q1g. *[How useful was the Facilitated Discussions – data collection]* These sessions were found to be **very useful** by **69%** and **somewhat useful** by **31%** of participants.

Q1h. *[How useful was the Facilitated Discussions – data analysis/data demonstrations]* These sessions were found to be **not useful** by **6%** of participants, with **25%** finding them **somewhat useful** and **69%** finding them to be **very useful**.

Q2. *[Did the organisers allow enough time for the facilitated discussions?]* Results show that **88%** of participants found the time allocated for facilitated discussion to be **good. 6%** found it **too short**, and **6%**, found it to be too long.

Q3. *[Was the workshop long enough?]* **100%** of participants found the length of the workshop to be **about right.**

Q4. *[Overall, how would you rate the workshop?]* The workshop was rated as **good** by **59%** of participants. It was rated as **very good** by **35%** and **average** by **6%.**

Q5. *[How would you rate your understanding of seabird bycatch data collection BEFORE the workshop?]* **71%** of participants rated there understanding of seabird bycatch data prior to the workshop as **good**. **29%** rated their understanding as **poor.**

Q6. *[How would you rate you're your understanding of seabird bycatch data collection AFTER the workshop?]* After the workshop, **88%** rated their understanding as **good,** and **13%** rated it as **expert.**

Q7. *[How would you rate your understanding of seabird bycatch data analysis BEFORE the workshop?]* **59%** of participants rated their understanding prior to the workshop as **poor.** The remaining **41%** rated their *understanding as good.*

Q8. [How would you rate you're your understanding of seabird bycatch data analysis AFTER the workshop?] 6% of participants rated their understanding prior to the workshop as **poor. 82%** rated their understanding as **good.** And **2%** rated their understanding as **expert.**

Q9. *[Do you feel that your contribution/suggestions at the workshop were acknowledged and incorporated/taken on board?]* Overall, **71**% of participants felt that their contributions were acknowledged. The remaining **29%** were **neutral.**

Q10. *[Do you support a collaborative Global Seabird Bycatch Assessment in the future and what it is setting out to achieve?]* **94%** of participants were **supportive** and **6%** were **neutral.**

Q11a. *[Do you have concerns about Data collection]?* **33%** of participants were **very concerned**, **47%** were **somewhat concerned** and **20%** had **no concern.**

Q11b. *[Do you have concerns about Data confidentiality]?* **31%** of participants were **very concerned, 44%** were **somewhat concerned** and **25%** were **not concerned.**

Q11c. *[Do you have concerns about Support provided by BLSA/FAO]?* **38%** of participants were **somewhat concerned** and **63%** were **not concerned.**

Q11d. *[Do you have concerns about Data reporting]?* **31%** of participants were very concerned, **44%** were **somewhat concerned** and **25%** had **no concern.**

Q11e. *[Do you have concerns about Data analysis]?* **27%** were **very concerned, 40%** were **somewhat concerned** and **33%** were **not concerned**.

Q12. *[Would you be interested in participating in such workshops in the future?]* **100%** of participants said **yes**, they would be interested in future participation.

Q13. *[How do you rate the mid-conference activities (was it useful in building trust amongst stakeholders)?]* **100%** of participants found the activities to be **useful.**

Q14. [*Do you have any other comments or suggestions for future workshops?]*

- This workshop was fantastic: great venue; great selection of experts; very hard to top in future
- Great workshop! Maybe get a simple seabird example to play around with in R with real data
- Great workshop. The discussion was always really targeted and directional
- We are really interested in opportunities to capacity build our team in seabird bycatch data analysis
- Some of the topics presented were way to technical and left half of the participants behind. More discussion needed on next steps towards a joint analysis/road map/template. Modelling is way too complex to understand in a couple of hours. More homogenous audience based on workshop objectives
- First bycatch workshop I have attended and allowed me to relate tracking data to bycatch and analysis needs to be done
- Increased participation of coastal CPCs e.g. Madagascar, Mauritius
- Maybe add a very basic/logic exercise step by step for those who are not modellers/experts (like me a manager) and in excel (for those who do not have R), then assign someone to sit and work this through with those only. This way the Logic is explained and the manager will have a better idea and understanding of the scientists work and eventually have a better future understanding of model input (although no in detail), which ultimately may lead to more informed/better decisions.
- Less detailed data analysis and more basic principles; focus on data availability and quality; stress need for collaboration
- Thank you for your very nice hospitality; coordination of such a big party is difficult but I believe it will be a successful project
- Capacity development of observer programmes needs to be well addressed in countries that have no capacity or don't have the data collection programmes. The cleaning data approach needs to be standardized among the region, then would be useful for the methodologies are shared
- Consider introducing seabird identification activities

<u>2nd Regional Seabird Bycatch Pre-assessment workhop: Hoi An, Vietnam</u>

Q1a. [*How useful was Seabird Biology and conservation presentation?*] 85% of participants found it **very useful**, 8% of participants thought the information presented was **somewhat useful** and 8% thought it was **not useful.**

Q1b. [*How useful was the Seabird bycatch mitigation measures and tRFMO CMMS (K. Baird) presentation?*] 62% of participants found it **very useful**, 23% of participants thought the information presented was **somewhat useful**, 15% thought it was **not useful.**

Q1c. [*How useful was the Scoping paper: Approaches for measuring and monitoring the effectiveness of seabird conservation measures in SBT longline fisheries (B. Maree) discussion?*] 38% of participants thought the information was **very useful**, 54% of participants thought the information presented was **somewhat useful** and 8% thought it was **not useful**.

Q1d. [*How useful was the ACAP bycatch indicators papers presentations (A. Wolfaardt)?*] 69% of participants found it **very useful**, 15% of participants thought the information presented was **somewhat useful** and 15% found it to be **not useful.**

Q1e. [*How useful was the At-sea observer experiences – challenges in data collection (D. Rollinson) discussion?*] 69% of participants found it **very useful**, 15% of participants thought the information presented was **somewhat useful** and 15% found it to be **not useful.**

Q1f. [*How useful was the facilitated discussions? data collection (Day 2)*] 69% of participants found it **very useful**, 23% of participants thought the information presented was **somewhat useful** and 8% found it to be not useful.

Q1g. [*How useful was the facilitated discussions? data analysis/data demonstrations (Day 4 and 5*)] 67% of participants found it **very useful**, 33% of participants thought the information presented was **somewhat useful**.

Q2. *[Did the organisers allow enough time for the facilitated discussions?]* 18% of participants said the time allocated was **good**, 9% said the time was **too short**, and 73% said the time was **too long.**

Q3. [*Was the workshop long enough?*] 83% said the workshop length was **about right,** and 18% said it was **too long.**

Q4. [*Overall, how would you rate the workshop?*] 92% of participants rated the workshop as **good,** 3% rated the workshop as **average.**

Q5. [*How would you rate your understanding of seabird bycatch data analysis BEFORE the workshop?*] 54% of participants stated that their knowledge prior to the workshop was **good.** 46% stated there knowledge was **poor.**

Q6. [*How would you rate you're your understanding of seabird bycatch data analysis AFTER the workshop?*] On average, 8% rated themselves as **expert** after the workshop. 46% rated themselves as **good**, and 46% still rated themselves as **poor.**

Q7. [*Do you feel that your contributions/suggestions at the workshop were acknowledged and incorporated/taken on board?*] 92% were **neutral**, and 8% said they felt their opinions **weren't acknowledged**.

Q8. [*Do you support a collaborative evaluation of seabird bycatch and effectiveness of mitigation measures/RFMO CMM's for the Southern Ocean in the future and what it is setting out to achieve?*] 69% said that they were **supportive,** while 31% were **neutral**.

Q9a. [*Do you have concerns about data collection?*] On average, 9% had **no concern**, 55% were **somewhat concerned** and 36% of participants were **very concerned**.

Q9b. [*Do you have concerns about data confidentiality?*] On average, 36% had **no concern**, 27% were **somewhat concerned** and 36% of participants were **very concerned**.

Q9c. [*Do you have concerns about support provided by BirdLife/FAO?*] On average, 45% had **no concern**, 36% were **somewhat concerned**, and 18% were **very concerned.**

Q9d. [*Do you have concerns about data reporting?]* On average, 36% of participants had **no concern**, 27% were **somewhat concerned**, while 36% had **no concern.**

Q9e. [*Do you have concerns about data analysis?]* On average, 10% of participant had **no concern**, 70% were **somewhat concerned**, while 20% were **very concerned.**

Q10 [*Would you be interested to participate in such workshops in the future?*] 69% of participants were **very interested** and 31% were **neutral** about future workshops.

Q11. [*Do you feel that the other participants and relationships built during this workshop will be of support going forward?*] 100% of participants said that **yes,** the relationships built will offer support going forward.

Q12. [*Do you have a better understanding of what data is currently available for national fleets?*] 92% of participants said that **yes,** they now had a better understanding, 8% were **neutral.**

Q13. [*Do you better understand the challenges in seabird bycatch data collection, data storage, cleaning and analysis from attending this workshop?*] 69% said that **yes,** they had a better understanding, 23% were **neutral** and 8% said **no**, they did not have a better understanding.

Q14. [*Do you feel solutions to improve data quality were adequately discussed and addressed?*] 46% said that **yes,** the solutions were adequately discussed, 46% were **neutral** and 8% said **no.**

Q15. [*Do you have a clearer understanding of national and RFMO reporting procedures and how to overcome challenges related to reporting?*] 33% said that **yes,** they now have a clearer understanding. 58% were **neutral** and 8% said **no.**

Q16. [*Do you feel areas for future collaboration were adequately identified?*] 62% said **yes,** while 38% were **neutral** on the topic of future collaborations.

Q17. [*How do you rate the mid-conference activities (was it useful in building trust amongst stakeholders)?]* 85% found the activities **very useful** and 15% were **neutral.**

Q18. [*Do you have any other comments or suggestions for future workshops?]*

- The workshop was invaluable for meeting the other people involved.
- Timeframe compared with project lifeline is a concern.
- Dealing with missing data is a concern.
- Concern about the collaborative evaluation: All of this is a great idea, of course implementation could be difficult.
- Have some discussion on the choice of analysis approach depending on the quality and quantity of the data.
- Have national presentations much earlier in workshop.
- More time for discussion on data analysis methods, less on presentations.
- Make sure there is a mid-conference activity.

Annex 1

List of workshop participants for the 1st and 2nd Regional Seabird Bycatch Pre-assessment workshops

1st workshop: Kruger National Park, South Africa

Name	Affiliation
Bronwyn Maree	FAO/BirdLife South Africa
Rishi Sharma	Invited expert: National Oceanic and Atmospheric Administration
Joel Rice	Invited expert: Joel Rice Consulting
Ross Wanless	BirdLife South Africa
Kathrin Hett	FAO
Anton Wolfaardt	Invited expert - Agreement for the Conservation of Albatrosses and Petrels (ACAP)
Isabel Chauca	Fisheries Research Institute, Mozambique
Rui Mutombene	Fisheries Research Institute, Mozambique
Johan De Goede	Department of Agriculture, Forestry and Fisheries, South Africa
Azwianewi Makhado	Department of Environmental Affairs, South Africa
Elisa Socrate	Seychelles Fishing Authority (SFA), Seychelles
Cleo Small	BirdLife International Marine Programme
Kotaro Yokawa	National Research Institute of Far Seas Fisheries, Japan
Paul de Bruyn	International Convention for the Conservation of Atlantic Tuna (ICCAT)
Prof. Julia Hsiang-Wen Huang*	Invited expert - National Taiwan Ocean University
Hannes Holtzhausen	Ministry of Fisheries and Marine Resources, Namibia
Rodrigo Sant'Ana	The University of Vale do Itajaí (Univali), Brazil
Caio Marques	Projecto Albatroz, Brazil
Sarah Martin	Indian Ocean Tuna Commission (IOTC)
Henning Winker	Department of Agriculture, Forestry and Fisheries, South Africa
Sven Kerwath	Department of Agriculture, Forestry and Fisheries, South Africa
Sebastian Jiminez	Ministerio De Ganaderia, Agricultura Y Pesca (Dinara), Uruguay
Catrina van der Merwe	BirdLife South Africa

*Funding provided by BirdLife International

2nd workshop: Hoi An, Vietnam

Name	Organisation
Bronwyn Maree	FAO/BirdLife South Africa
Robin Thomson	Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia
Kazuhiro Oshima‡	National Research Institute of Far Seas Fisheries (NRIFSF), Japan
Sachiko Tsuji	National Research Institute of Far Seas Fisheries (NRIFSF), Japan
Edward Abraham	Dragonfly Data Science, New Zealand
Dan Fu	Indian Ocean Tuna Commission (IOTC)
Janne Folgelgren	FAO
Anton Wolfaardt	Invited expert - Agreement for the Conservation of Albatrosses and Petrels (ACAP)
Zhang Yu	East China Sea Fisheries Research Institute, People's Republic of China
Prawira Tampubolon	Research Institute for Tuna Fisheries, Indonesia
Dominic Rollinson	Invited expert - University of Cape Town
Tom Peatman	Secretariat of the Pacific Community (SPC)
Asst Prof. Yu-min Yeh*	Invited expert - Nanhua University
Rishi Sharma	Invited expert: National Oceanic and Atmospheric Administration
Joel Rice	Invited expert: Joel Rice Consulting
Ross Wanless	BirdLife South Africa
Karen Baird*	Forest and Bird (BirdLife International Marine Programme)

*Funding provided by BirdLife International.

‡Funding provided by NRIFSF.

Figures 2a and b. Team photograph including all the participants from each workshop (a – Kruger National Park; b – Hoi An). Additional images are available on request.

Annex 2: Workshop Agendas

1st Regional Seabird Bycatch Pre-assessment workshop: Kruger National Park

Day 1: 23 February (Thursday)

08:00 – 12:00: Arrival of participants
12:00 – 13:00: Registration and Lunch
13:00 – 13:45: Welcome, Introductions and Expectations (B Maree)
13:45 – 14:00: Plan for the coming days (R Wanless)
14:00 – 14:30: Discussion on Workshop aims, confidentiality and approach (J Rice/R Sharma)
14:30 – 14:40: Introduction to the Common Oceans Tuna Project (Kathrin Hett)
14:40 – 15:10: Seabird Biology/ecology, distribution and status updates in the Southern Ocean (C Small)
15:10 – 15:40: Tea Break
15:40 – 16:10: The importance of data collection in relation to seabird bycatch mitigation (K Yokawa)
16:10 – 16:40: Scoping Paper: Approaches for Measuring and Monitoring the Effectiveness of Seabird Conservation Measures in SBT Longline Fisheries (C Small)
16:40 – 17:00: ICCAT and IOTC Bycatch Working Groups activities and work plan (K Yokawa/P de Bruyn and R Wanless)
17:00 – 17:15 Reflections on day 1
18:30 – 22:00 Welcome dinner: Potjie

Day 2: 24 February (Friday)

07:30 – 09:00: Breakfast
09:00 – 09:15: Intro to day 1
09:15 – 09:40: ACAP bycatch indicators paper – principles of good practice (A Wolfaardt)
09:40 – 10:00 At-sea observer experience – challenges of data collecting (S Jimenez and C Marques)
10:00 – 11:00 Description of national fleets, how seabird data are collected and what data are available (brief presentation by *each* country)
11:00 – 11:30: Tea Break
11:30 – 12:45: Description of national fleets, how seabird data are collected and what data are available (brief presentation by *each* country)
12:45 – 13:45: Lunch Break
13:45 – 14:45: Understanding data quality, definitions, observed coverage (J Rice/R Sharma)
14:45 – 15:45: The data system – what we need to collect (vital versus desirable data) and how we can use logbooks/observer programmes (group discussion, led by J Rice/R Sharma)
15:45 – 16:15: Tea Break
16:15 – 17:30: Analysis of data gaps and obstacles to data collection (fleets and areas) – facilitated discussion (J Rice/R Sharma)
18h30 – 21:00: Dinner

25 February (Saturday)

Details to be confirmed: Mid-conference activities, including informal discussion time

26 February (Sunday)

Small group discussions/one on one time with country representatives who have data

Day 3: 27 February (Monday)

07:30 – 09:00: Breakfast
09:00 – 09:30: Recap session (on data collection discussions) and plan for the next 2 days
09:30 – 11:00: Seabird bycatch data analysis: Country examples – time for countries to share their experiences with analyzing seabird bycatch data
11:00 – 11:30: Tea Break
11:30 – 12:30: Challenges in data collation, data storage and data cleaning (J Rice/R Sharma, P de Bruyn and S Martin)
12:30 – 13:00: Approaches used in Longline fisheries - Li et. al. 2016 (J Rice/R Sharma)
13:00 – 14:00: Lunch Break
14:00 – 15:30: Working with different data sets/various modelling approaches – simulations – (a) best practice approaches to standardize BPUE in both data rich and data poor scenarios (group discussion, led by J Rice/R Sharma)

15:30 – 16:00: Tea Break
16:00 – 17:30: Working with different data sets/various modelling approaches – simulations – (b) best practice approaches to extrapolating to total number of birds per year in data rich and data poor scenarios (group discussion, led by J Rice/R Sharma)
19h30 – 21:00: Dinner

Day 4: 28 February (Tuesday)
09:00 – 11:00 Demonstration of logit response model and demonstrate a) Bycatch pre and post Conservation Management Measures and b) year effect declining as a function of catchability declining (not abundance declining) (J Rice/ R Sharma)
11:00 – 11:30: Tea Break
11:30 – 13:00: Discussion on reporting and reporting challenges (R Wanless)
13:00 – 14:00: Lunch Break
14:00 – 15:30: Capacity building needs and gaps for the provision of science based advice
15:30 – 16:00: Tea Break
16:00 – 17:15: Next steps: Discussion on going forward toward global seabird bycatch assessments
19h30 – 21:00: Dinner

2nd Regional Seabird Bycatch Pre-assessment workshop: Hoi An
Day 1: 3 April (Monday)
08:00 – 08:45: Welcome, Introductions and Expectations (B Maree)
08:45 – 09:00: Plan for the coming days (R Wanless)
09:00 – 09:20: Discussion on Workshop aims, confidentiality and approach (J Rice/R Sharma)
09:20 – 09:40: Introduction to the Common Oceans Tuna Project (J Fogelgren)
09:40 – 10:10: Seabird Biology/ecology, distribution and status updates in the Southern Ocean (R Wanless)
10:10 – 10:30: Tea Break
10:30 – 11:00: Seabird bycatch mitigation measures & tRFMO CMMs (K Baird)
11:00 – 11:30: Scoping Paper: Approaches for Measuring and Monitoring the Effectiveness of Seabird Conservation Measures in SBT Longline Fisheries (B Maree)
11:30 – 11:45: ACAP Introductory presentation (A Wolfaardt)
11:45 – 12:30: At-sea observer experience – challenges of data collecting and experimental research (D Rollinson)
12:30 – 14:00: Lunch Break **Country consultation with Rice/Sharma**
14:00 – 17:00 Description of national fleets: all national representatives
17:00 – 17:15 Reflections on Day 1 (B Maree)
18:30 – 22:00 Vietnamese buffet dinner (hotel) **Country consultation with Rice/Sharma**

Day 2: 4 April (Tuesday)
08:00 – 08:15: Introduction to Day 2 (B Maree)
08:15 – 08:45: 1st Regional Seabird Bycatch Pre-assessment Workshop outcomes (B Maree/R Wanless)
08:45 – 09:45: Understanding data quality, definitions, observed coverage (J Rice/R Sharma)
09:45 – 10:45: The data system – how we can use logbooks/observer programmes (group discussion, led by J Rice/R Sharma)
10:45 – 11:15: Tea Break
11:15 – 12:30: Analysis of data gaps and obstacles to data collection (fleets and areas) – facilitated discussion (J Rice/R Sharma)
12:30 – 14:00: Lunch Break **Country consultation with Rice/Sharma**
14:00 – 15:00: ACAP data fields for observer programmes: seabird bycatch - vital vs desirable & comparison with Kruger outcomes (A Wolfaardt)
15:00 – 15:30: Challenges in data collation, storage and cleaning - RFMO initiatives and perspectives (J Rice/R Sharma)
15:30 – 16:00: Tea Break
16:00 – 17:00: Challenges in data collation, storage and cleaning - RFMO initiatives and perspectives (J Rice/R Sharma)
17:00 – 17:15: Reflections on Day 2 (R Wanless)

18:30 – 22:00: Dinner out of the hotel – participants' choice **Country consultation with Rice/Sharma**

Day 3: 5 April (Wednesday)
05:00: Pick up for mid-conference activity to Bach Ma National Park with informal discussion time
18:30 – 22:00: International buffet dinner at the hotel

Day 4: 6 April (Thursday)
07:30 – 08:00: **Country consultation with Rice/Sharma**
08:00 – 08:15: Recap session of first two days & plan for next two days (R Wanless)
08:15 – 10:15: Seabird bycatch data analysis: Country examples – time for countries to share their experiences with analyzing seabird bycatch data (20 mins each).
10:15 – 10:45: Tea Break
10:45 – 11:15: Approaches used in Longline fisheries - Li et. al. 2016 (J Rice/R Sharma)
11:15 – 12:45: Methods for estimating N: How to estimate BPUE: Overview of approaches from the standardization literature (J Rice/R Sharma)
12:45 – 14:00: Lunch Break **Country consultation with Rice/Sharma**
14:00 – 15:30: Methods for estimating N: How to extrapolate to total number of birds per year in data rich and data poor scenarios (group discussion, led by J Rice/R Sharma)
15:30 – 16:00: Tea Break
16:00 – 16:30: Report-back of one-on-one sessions (J Rice/R Sharma)
16:30 – 17:00: Defining the structure of a data workshop, data templates etc. (J Rice/R Sharma)
17:00 – 17:15: Reflections on Day 4
19:00 – 22:00: Dinner at Morning Glory Restaurant

Day 5: 7 April (Friday)
08:00 – 10:00: Data analysis lab – break out groups (J Rice/R Sharma)
10:00 – 10:30: Tea Break
10:30 – 11:30: Capacity building needs and gaps for the provision of science based advice (J Rice/R Sharma)
11:30 – 12:30: Next steps and wrap-up of workshop (R Wanless/B Maree)
12:30 – 12:45: Closing remarks (All)
12:45 – 13:00: Post workshop questionnaire
13:00 onwards: Lunch Break and participants depart

Annex 3: Post-workshop questionnaires

1st Seabird Bycatch Pre-assessment Workshop
23 Feb to 1 March 2017 | Kruger National Park
Post-workshop Feedback

Ensuring we provide quality workshops and engagement for our projects is very important to BirdLife and the FAO. We appreciate your feedback on this week's workshop.

Name (Optional): **Occupation:**

1. **How useful was the information presented at the workshop?**
   Please rank: 1 = not useful, 2 = somewhat useful, 3 = very useful

Topic	**1**	**2**	**3**
Seabird biology/ecology, distribution +status updates in the Southern Ocean (C. Small)			
Importance of data collection in relation to seabird bycatch mitigation (K. Yokawa)			
Introduction to the Common Oceans Tuna Project (K. Hett)			
Scoping paper: Approaches for measuring and monitoring the effectiveness of seabird conservation measures in SBT longline fisheries (C. Small)			
ACAP bycatch indicators paper (A. Wolfaardt)			
At-sea observer experiences – challenges in data collection			
Facilitated Discussions – data collection			
Facilitated Discussions – data analysis/data demonstrations			

2. Did the organisers allow enough time for the facilitated discussions?

1) Too short 2) Good 3) Too long

3. Was the workshop long enough?

1) Too long 2) About right 3) Too short

4. Overall, how would you rate the workshop?

1) Very good 2) Good 3) Average
4) Poor 5) Very poor

5. How would you rate your understanding of seabird bycatch data collection BEFORE the workshop?

1) Poor 2) Good 3) Expert

6. How would you rate you're your understanding of seabird bycatch data collection AFTER the workshop?

1) Poor 2) Good 3) Expert

7. How would you rate your understanding of seabird bycatch data analysis BEFORE the workshop?

1) Poor 2) Good 3) 3) Expert

8. How would you rate you're your understanding of seabird bycatch data analysis AFTER the workshop?

1) Poor 2) Good 3) Expert

9. Do you feel that your contribution/suggestions at the workshop were acknowledged and incorporated/taken on board?

1) Yes 2) Neutral 3) No

10. Do you support a collaborative Global Seabird Bycatch Assessment in the future and what it is setting out to achieve?

1) Supportive 2) Neutral 3) Not supportive

11. Do you have concerns about a collaborative Global Seabird Bycatch Assessment? Please rank your concerns:

1 = no concern, 2 = somewhat concerned, 3 = very concerned

Concerns	**1**	**2**	**3**
Data collection			
Data confidentiality			
Support provided by BirdLife/FAO			
Data reporting			
Data analysis			

12. Would you be interested in participating in such workshops in the future?

1) Very interested
2) Neutral
3) Not interested

13. How do you rate the mid-conference activities (was it useful in building trust amongst stakeholders)?

1) Useful 2) Neutral 3) Waste of time

14. Do you have any other comments or suggestions for future workshops?

Thank you for your time ☺

2nd Seabird Bycatch Pre-assessment Workshop
2 to 7 April 2017 | Hoi An
Post-workshop Feedback

Ensuring we provide quality workshops and engagement for our projects is very important to BirdLife and the FAO. We appreciate your feedback on this week's workshop.

Name (Optional): **Occupation:**

2. How useful was the information presented at the workshop?
Please rank: 1 = not useful, 2 = somewhat useful, 3 = very useful

Topic	1	2	3
Seabird biology/ecology, distribution +status updates in the Southern Ocean (R. Wanless)			
Seabird bycatch mitigation measures and tRFMO CMMS 9K. Baird)			
Introduction to the Common Oceans Tuna Project (J. Folelgren)			
Scoping paper: Approaches for measuring and monitoring the effectiveness of seabird conservation measures in SBT longline fisheries (B. Maree)			
ACAP bycatch indicators papers presentations (A. Wolfaardt)			
At-sea observer experiences – challenges in data collection (D. Rollinson)			
Facilitated Discussions – data collection (Day 2)			
Facilitated Discussions – data analysis/data demonstrations (Day 4 and 5)			

2. Did the organisers allow enough time for the facilitated discussions?

4) Too short 5) Good 6) Too long

3. Was the workshop long enough?
1) Too long 2) About right 3) Too short

4. Overall, how would you rate the workshop?

1) Very good 2) Good 3) Average
4) Poor 5) Very poor

15. How would you rate your understanding of seabird bycatch data analysis BEFORE the workshop?

1) Poor 2) Good 3) Expert

16. How would you rate you're your understanding of seabird bycatch data analysis AFTER the workshop?

1) Poor 2) Good 3) Expert

17. Do you feel that your contribution/suggestions at the workshop were acknowledged and incorporated/taken on board?

1) Yes 2) Neutral 3) No

18. Do you support a collaborative evaluation of seabird bycatch and effectiveness of mitigation measures/RFMO CMMs for the Southern Ocean in the future and what it is setting out to achieve?

1) Supportive 2) Neutral 3) Not supportive

19. Do you have concerns about a collaborative evaluation of seabird bycatch and effectiveness of mitigation measures/RFMO CMMs for the Southern Ocean? Please rank your concerns:

1 = no concern, 2 = somewhat concerned, 3 = very concerned

Concerns	**1**	**2**	**3**
Data collection			
Data confidentiality			
Support provided by BirdLife/FAO			
Data reporting			
Data analysis			
Other (specify):			

20. Would you be interested in participating in such workshops in the future?

1) Very interested 2) Neutral 3) Not interested

21. Do you feel that the other participants and relationships built during this workshop will be of support going forward?

1) Yes 2) Neutral 3) No

22. Do you have a better understanding of what data is currently available for national fleets?

1) Yes 2) Neutral 3) No

23. Do you better understand the challenges in seabird bycatch data collection, data storage, cleaning and analysis from attending this workshop?

1) Yes 2) Neutral 3) No

24. Do you feel solutions to improve data quality were adequately discussed and addressed?

1) Yes 2) Neutral 3) No

25. Do you have a clearer understanding of national and RFMO reporting procedures and how to overcome challenges related to reporting?

1) Yes 2) Neutral 3) No

26. Do you feel areas for future collaboration were adequately identified?

1) Yes 2) Neutral 3) No

27. How do you rate the mid-conference activities (was it useful in building trust amongst stakeholders)?

1) Useful 2) Neutral 3) Waste of time

28. Do you have any other comments or suggestions for future workshops?

Thank you for your time ☺

[1] Compiled by Bronwyn Maree – Seabird Bycatch Project Coordinator, Common Oceans Tuna Project (Areas Beyond National Jurisdiction, ABNJ) on behalf of participants at the 1st and 2nd Regional Seabird Bycatch Pre-assessment Workshops 2017. BirdLife South Africa, 9 Foregate Square, Heerengracht Street, Foreshore, 8001, Bronwyn.maree@birdlife.org.za.