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Update on the seabird component of the Common Oceans Tuna Project Seabird Bycatch Assessment Workshop

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UPDATE ON THE SEABIRD COMPONENT OF THE COMMON OCEANS TUNA PROJECT – SEABIRD BYCATCH ASSESSMENT WORKSHOP

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SUMMARY

This paper provides the outcomes of the Common Oceans Seabird Bycatch Data Preparation Workshop held in early 2018. The Project Team and workshop attendees revised the objectives and approaches to achieve the project goal. The assessment will now focus exclusively on estimating total seabird bycatch, or N, (which is a fisheries performance metric) and the species- or population-level consequences thereof. Three distinct, but linked, approaches were agreed: i) A ratio-based estimate of N generated by the Project Team, using publicly available data or best estimates provided by each participating country; ii) geospatial estimates of N generated by participating countries with their own data, possibly using procedures being developed collaboratively with the Project Team; iii) a Spatially Explicit Fisheries Risk Assessment (SEFRA) conducted in collaboration between participating countries and Dragonfly Data Science consultants based in New Zealand. Further intersessional work is planned before the final workshop to assist countries with analyses, if requested. The scale of this evaluation effort will be limited to the Southern Hemisphere.

KEYWORDS [ABNJ, high seas, distant water fleets, coastal states, tuna longline, risk assessment]

1. Background

The Common Oceans Areas Beyond National Jurisdiction (ABNJ) project is currently in its fourth year and focusing on achieving the outcomes set out as overall project goals. A significant objective is to bring national scientists together and, where appropriate and requested, help build the capacity of national scientists to undertake seabird bycatch analyses of their own datasets. BirdLife International (BLI), through its implementing partner BirdLife South Africa, has been implementing activities to achieve this, through the Common Oceans Tuna Project. In 2017 national scientists met on two separate occasions to discuss the possibilities and potential pitfalls that a global analysis of seabird bycatch assessment could entail (SCRS 2017/158). These

meetings were followed by a Data Preparation Workshop, in February 2018. The approach to achieving a Global Seabird Bycatch Assessment has changed over the course of the project, but has now been finalised to make up three distinct but linked approaches to estimating N (total seabird bycatch). The objective to assess the effectiveness of seabird bycatch mitigation measures, or RFMO CMMs, has been abandoned, as the Data Preparation Workshop identified that datasets from many fleets are insufficiently representative or credible to be used in a robust assessment of this nature.

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 Data Preparation Workshop

The Data Preparation Workshop was held in Cusco, Peru in February 2018. The report from the workshop and the proposed structure and timeframe of next steps, is given in **Appendix 1**.

Whilst a detailed workplan can be viewed in the attached report, the broad actions discussed and agreed upon by countries present include the following:

- Seabird density surfaces be developed (including demographic data collation) via collaboration between BLI and Dragonfly Data Science by June 2018.
- Participating countries will use either scripts being developed by the Project Data Specialists or their own processes, to estimate their own calculations of N. These calculations will be shared with the project team by September 2018.
- Dragonfly Data Science will work collaboratively with participating countries to implement SEFRA calculations by August 2018.
- Intersessional work between the project team and countries is ongoing, and is set to continue until February 2019.
- A Southern Hemisphere-wide RA; a ratio-based estimate of N from publicly available information and data sources; and national bycatch estimates (ideally a geospatial estimate of N for the South Atlantic and potentially the southwest Indian Ocean) will be completed by the Project Team by December 2018.
- All results will be shared at the final Global Seabird Bycatch Assessment Workshop in February 2019.

Appendix 1: Workshop Report

Report of the Common Oceans Seabird Bycatch Data Preparation Workshop

for component 3.2.1 of the

Sustainable Management
of Tuna Fisheries
and Biodiversity Conservation
in the ABNJ

Cusco Peru, 20-24 Feb 2018

Distribution:
Participants in Session
Members of the Commission
Other interested Nations and International Organisations

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ACRONYMS USED IN THIS REPORT

ABNJ	Areas Beyond National Jurisdiction
ACAP	Agreement on the Conservation of Albatrosses and Petrels
BMIS	Bycatch Mitigation Information System, an online platform created through the Common Oceans project
BPUE	Birds [caught] Per Unit of Effort
BLI	BirdLife International
CMM	Conservation and Management Measures of tuna commissions
CPCs	Contracting Parties and Cooperating Non-Contracting Parties to tuna commissions
CPUE	Catch per unit of effort
EEZ	Exclusive Economic Zone
ERA	Ecological Risk Assessment
FAO	Food and Agriculture Organization of the United Nations
GLM	Generalised liner model
IO	Indian Ocean
IOTC	Indian Ocean Tuna Commission
IPOA	International Plan of Action
IUU	Illegal, Unreported and Unregulated fishing
LL	Longline
MoU	Memorandum of Understanding
N	Total seabird bycatch mortality (specifically defined in this document)
NGO	Non-Governmental Organisation
NOAA	National Oceanographic and Atmospheric Administration
NPOA	National Plan of Action
PST	Population Sustainability Threshold
RFMO	Regional Fisheries Management Organisation
t-RFMO	Tuna RFMO
UN	United Nations

KEY DEFINITIONS

Bycatch	All species, other than targeted catch that is caught or interacted with by fisheries for tuna and tuna-like species
Longline Vessels	Fishing vessels that employ drifting longline fishing gear
Risk Analysis (RA)	A method of calculating risk

1. OPENING OF THE MEETING

The Common Oceans Areas Beyond National Jurisdiction (CO, ABNJ) Seabird Bycatch Data Preparation Meeting (CO SBDPM) was held in Cusco Peru, from 20-24 February 2018. Eighteen participants, including the Project Team personnel, national representatives and invited experts attended the meeting. The list of participants is provided in Appendix I. Ross Wanless, the meeting convener from BirdLife South Africa, welcomed participants and formally opened the workshop.

2. ADOPTION OF THE AGENDA AND ARRANGEMENTS FOR THE SESSION

The CO SBDPM **ADOPTED** the Agenda (Appendix II).

3. THE CO SBDPM OBJECTIVES, APPROACHES AND CHALLENGES

3.1 Objectives of the workshop

The objective of the workshop was to ***enhance collective understanding*** *of the options and challenges in* ***analysing seabird bycatch data.*** This meeting is part of the seabird bycatch component of the CO project and was convened as part of the process of achieving the overall goals of the project, namely i) *Estimating the total number of birds killed annually by tuna longline fisheries (*N*) in the southern hemisphere,* and ii) *Evaluating the effectiveness of mitigation measures.*

This meeting report will not cover presentations and discussions in exhaustive detail; readers are referred to the Agenda (Appendix II) for sessions and presentations. Only details of discussions and presentations that are relevant to understanding the defined outcomes of the workshop are included in this report.

3.2 Meeting format and approach

The participants were provided with a general overview on the historical efforts of estimating N, the methods and experience of monitoring seabird population demographics and distributions, the ACAP process of defining effectiveness of mitigation measures and existing data reporting requirements for t-RFMOs. The workshop then considered national data availability, limitations, and approaches to achieve the expected outcomes by February 2019.

3.3 Challenges and limitations

The workshop noted that the information currently collected on the use of various mitigation measures is not adequate for determining the extent to which those measures are properly deployed, and variation in their effectiveness. In addition, a large variation in observed BPUEs and a correspondingly broad range of uncertainty expected in N estimates would make it difficult to interpret trends in N. However this would not prevent those countries that currently collect adequate information to

evaluate the effectiveness of mitigation measures used in their fleet(s). Individual countries are encouraged to undertake such evaluations if possible.

3.4 Reporting obligations and data needs

Although the reporting requirements of t-RFMOs include data needed to estimate N, the workshop noted that those requirements are seldom fulfilled. The workshop considered that harmonization of reporting requirements across t-RFMOs would facilitate better report submissions by CPCs, and more effective use of submitted information.

4. DATA NEEDS FOR ESTIMATING TOTAL SEABIRD MORTALITIES

N is typically estimated by scaling up observed seabird bycatch rates (BPUEs) to total fishing effort. It is therefore critical to understand significant factors influencing BPUEs. However data limitations with respect to those factors could prevent robust statistical modelling to obtain a more reliable estimate of N.

The workshop identified the following as of potential importance in influencing BPUEs:

- Factors relating to fishing operations: target species of operation, gear configuration, number of fishing vessels in proximity
- Factors relating to bird distribution and behavior: population size, location and season, species-specific foraging strategies, local abundance and composition of seabird species assemblages in relation to fishing effort
- Use of mitigation measures: night setting, line weighting regimes and bird scaring lines, and the combinations in which they are used
- Other factors: environmental conditions and vessel-specific components such as skipper, fishing master and/or vessel effects

The workshop also identified the following as needed to ensure representativeness of relevant data:

- In developing a sampling design, stratifying national fleets into multiple components (such as according to targeting, operational patterns or vessel sizes) would help to achieve better coverage of the fleet segments. In modelling bycatch rates, it may be possible to correct the impact of operational differences through post-stratification.
- For a given coverage rate, collecting data from as many vessels within a fleet as possible, while also ensuring adequate coverage of effort in space, time and fleet segment, is ideal.
- Random placements of observers or selection of sampled component (e.g. when using Electronic Monitoring data).

5. National reports on Seabird Bycatch and Data Catalogues

The countries represented in the workshop (Australia, Brazil, Indonesia, Japan, Korea, Namibia, and New Zealand) reported a range of data collected relating to seabird bycatch and fleet fishing activities in the area south of 25°S. BirdLife South Africa delivered a presentation on behalf of South Africa. The Project Team also reported summary results obtained through the data cataloguing survey conducted prior to the workshop.

Both national presentations and the data cataloguing survey results highlighted variations between nations in seabird bycatch data collection approaches. Those differences will guide the methodological approach that each nation should take when estimating seabird bycatch in its fishery. In general, all the reporting countries indicated relatively good data coverage and data collection systems in their fleets' fishing activities.

A round-table exercise considered the availability and quality of data collected for those factors identified in Section 4. The results of the exercise are summarized in Appendix III. Note that environmental conditions were not included in this exercise because participants agreed that if observer coverage was sufficiently broad, the effects of environmental conditions could be ignored.

Some countries collect seabird abundance count data around a vessel during fishing operations but they also indicated low confidence in the reliability of those data. It is therefore currently considered not appropriate to utilise the majority of such data when estimating N.

The workshop noted that observers often have difficulties in identifying caught seabirds to species level. The quality of seabird identification is improved by expert review, using photography, carcass necropsy and tissue collection for DNA analysis. Despite difficulties with observer identification, the round-table exercise (summarised in Appendix III) indicated that countries present at the workshop are generally confident with the overall reliability and quality of their seabird bycatch identifications.

Although the project is focused on estimating seabird bycatch south of 25°S, the workshop noted that in certain areas, such as the coastal areas of the SW and SE Atlantic, albatross and petrel distributions extend further north. Also, Brazil reported (to the workshop) non-trivial seabird bycatch occurring in its waters north of 25°S. The analytical approaches planned for 2018 should take these areas into account if possible.

The workshop noted that cryptic/undetected mortality occurs (when carcasses come off hooks before being landed) and that this project will take account of this in an appropriate way when estimating total N. This could include presenting a cryptic mortality estimate in a sensitivity analysis.

The workshop recognised that the estimate of total seabird bycatch mortality represents a performance measure of fisheries bycatch management, which has a stated objective to minimise total seabird mortality. It is necessary to have an additional indicator to reflect impacts of fisheries bycatch on seabird species and populations of conservation concern. It was recognised that the significance of fisheries bycatch to seabirds is, at a minimum, evaluated at the level of species (all species if possible, or a group such as the *Diomedea* albatrosses).

6. DATA GAPS AND POSSIBLE SOLUTIONS

6.1 Data gaps

The workshop noted that a range of data gaps exists for conducting a comprehensive evaluation of seabird bycatch. Countries with fisheries operating south of 25°S fall broadly into four categories, with respect to this project:

1) Countries participating in the process and with seabird bycatch data collected
2) Countries participating in the process but with little/no seabird bycatch data
3) Countries not participating in the process, but which have seabird bycatch data collected
4) Countries not participating in the process with little/no seabird bycatch data

The workshop noted several other, ongoing processes related to analysing seabird bycatch. It will be important to consider and, if appropriate, include the results of these processes in the February 2019 Seabird Bycatch Assessment Workshop:

1) WCPFC seabird bycatch estimation, funded by the Common Oceans, if available
2) ICCAT CPC-based collaborative process to estimate bycatch numbers, BPUE and effectiveness of mitigation measures
3) New Zealand's Risk Assessment and the ongoing Japan-New Zealand RA collaboration

The workshop noted that observer coverage of many fishing fleets is low and that there are spatio-temporal strata where no seabird bycatch data are available. The workshop noted that fleets without adequate observer coverage could use substitution methods, including from similar fleets. This extrapolation of BPUE to unobserved strata (within a fleet, or a time/area strata) can be done by design-based and model-based approaches. Due consideration of uncertainty in any approach is important. Nevertheless, extrapolation of BPUE to unobserved fleets will present substantial challenges. Simulation testing will be a valuable tool to assess and improve the reliability of different approaches.

6.2 Stratification of within-Flag State fleets

Fleet stratification as follows may be useful in any analysis:

1) Vessel size (as a proxy for behaviour of vessels)
2) Area – EEZ vs ABNJ
3) Season, if corresponding to differences in operating fleets

4) Effort (hooks/set) and gear configuration

Operational stratification, e.g. target species and the use of mitigation measures, should be taken into account, and will depend on the assessment approach taken. Temporal stratification of year quarters was considered to be the most appropriate when doing time-area assessments, given the availability and nature of seabird and fishing effort distributions.

7. ANALYTICAL METHODS OF EVALUATING TOTAL SEABIRD MORTALITY AND EFFECTIVENESS OF MITIGATION MEASURES

7.1 Risk-based approaches

Edward Abraham presented the estimation of the impact of fisheries on seabird populations using a risk analysis method. Materials for RA methods are available at www.github.com/seabird-risk-assessment. The meeting noted that the RA method utilises seabird distributions, and their overlap with observed fishing, to estimate species- and fishery-specific seabird bycatch. New Zealand and Japan have begun utilising this approach for estimating N, and will explore whether it can be used for evaluating the effectiveness of mitigation measures.

The meeting noted that this method:

- can be applied to aggregated data, without requiring set-level data from fleets
- uses information on seabird distributions and population sizes
- can disaggregate seabird bycatch by life-history stages, such as juveniles/immatures, adult breeders and adult non-breeders, where the distributions of each stage are available
- seabird vulnerability to fishing can be disaggregated into seabird- and fishery-related components
- can be extrapolated to poorly observed fleets with similar fishing operations, while accounting for seabird distributions

The risk assessment process can be carried out by individual CPCs or via a centralised or collaborative approach by including data from collaborating CPCs. Participants noted that a collaborative approach would likely have more explanatory power and that raw observer or effort data would not need to be provided, only aggregated data or indices of overlap.

7.2 Model-based approaches

Rodrigo Sant'Ana presented a method of estimating spatio-temporal BPUEs and N in a Brazilian fishery. The meeting noted that this method could be used collaboratively to calculate N.

7.3 Design-based approaches

Joel Rice presented an estimate of N derived from publicly available effort data and a range of fixed average BPUEs. The estimate could be further refined, including removal of double-counted effort, via collaborative work.

7.4 Indicators for seabird conservation performance

The workshop noted that estimates of annual adult (and/or juvenile) survival are likely to be sensitive indicators for assessing fishery impacts on seabird populations. Total seabird population counts/estimates (e.g. total annual counts of breeding pairs) are likely to be less sensitive to changes in N over time, due to the complex nature of seabird breeding ecology. However, relating total bycatch by species back to population demographics is useful to inform fisheries management. As such, New Zealand's Population Sustainability Threshold (PST) methodology might be a suitable approach. Given that this method was developed in the mid-2000s, the workshop agreed that it would be useful to review and update this method if appropriate. The workshop noted that comparisons of estimated mortality rates generated from demographic models could be compared to reported fishery mortality rates and would also aid in assessing impacts of other fishery on total mortality.

7.5 Period of evaluation

The workshop agreed to conduct the analysis under this project using fishing effort data from 2012-2016. Observer and seabird distribution datasets may cover additional periods.

8. General recommendations and action plan for improving seabird bycatch and monitoring

The workshop recognised the strong need to establish a stable and institutionalised mechanism to monitor total fishery-related seabird mortality in the southern hemisphere, and its impact on vulnerable seabird populations, as soon as possible. The estimation of bycatch (N) is an important objective, but population-level impacts should also be considered, so as to develop directed management advice. To achieve this, the workshop recommended that ACAP, relevant RFMOs, and member CPCs initiate communication to explore the appropriate form of such a global mechanism as well as the best way to achieve this.

The communication should include:

- Agreement on target indicators, including identification of priority vulnerable species/populations to monitor impacts on populations and the methodology to calculate indices
- Agreement on minimum data requirements to enable regular evaluation of total seabird bycatch (N) and its impact on vulnerable seabird populations
- Enhanced and harmonised collection, management, analysis, and dissemination of the information related to seabird bycatch and its impacts on

vulnerable seabird populations, as well as the supporting information and materials required for assessment

Until such time as mechanisms are established, the workshop encouraged the relevant groups to take the following actions, as appropriate and practical:

1) Data collection, management, and dissemination
   a) t-RFMOs to harmonise the data submission protocols of seabird bycatch-related information in a way to facilitate data submission by their CPCs
   b) ACAP to investigate coordinating the establishment of a publicly accessible repository of assessment results and supporting information and materials, with a consideration to be given to host this on BMIS

2) Global analysis and assessment
   a) ACAP, relevant RFMOs, countries and interested NGOs to consider and agree on a range of standardised methods to monitor the impacts of fishery bycatch
   b) ACAP and interested scientists to develop candidate indicators of seabird population sustainability (e.g. annual adult and juvenile survival, PST-like approaches, etc.)
   c) Relevant countries to enhance mutual collaboration and coordination toward harmonised assessment of southern hemisphere seabird bycatch mortality

3) Enhancement of national monitoring capacity
   a) Relevant countries to make efforts to monitor seabird bycatch across their fleets as broadly as possible
   b) Relevant IGOs and NGOs to assist countries that have little/no seabird bycatch monitoring mechanisms, to collect and analyse seabird bycatch data/fishing impacts on seabirds

The workshop also encouraged those countries with significant bycatch of albatrosses and petrels to participate in ACAP Seabird Bycatch Working Group meetings and discussions.

The workshop noted that a RA approach that includes other (non-tuna and tuna using gears other than LL) fisheries would be beneficial, to give context to the tuna longline contribution to total fisheries-related mortality in the Southern Ocean, but this falls outside the scope of the current project.

9. REVIEW OF AGREED RECOMMENDATIONS AND ACTION PLANS

9.1 Approaches to estimating N

The workshop agreed that using a range of approaches to estimate N would be very useful, so as to compare and contrast methods, each of which will have strengths and weaknesses. These should ideally include the following approaches:

1. In principle, each nation is requested to produce an estimate of N associated with its own fleet(s). The Project Team will be available to provide assistance as requested. The Project Team will also provide a protocol when standardisation with spatio-temporal stratification is used.
2. In addition, work will be conducted to develop an estimate of N based on a risk assessment approach. New Zealand and Japan are collaborating on a pilot of this approach and have encouraged the collaboration and involvement of other countries.
3. The Project Team will also advance and refine a ratio-based approach to estimating N, for presentation at the February 2019 workshop.

The workshop agreed to explore the development of a range of standardised methods to monitor the impacts of fishery bycatch, including New Zealand's PST approach. They further agreed that an additional part of the assessment will be to assess the impact of fisheries on seabird populations, if possible. The work required to achieve this may cause this aspect to fall outside the capacity of the current project. Indicators of impacts on bird populations should be presented/aligned with years in which RFMOs consider seabird bycatch, if possible.

The workshop agreed that currently there are inadequate data to analyse the effectiveness of different mitigation measures, with the possible exception of night setting. In light of this, the workshop participants encouraged RFMOs and countries to explore how to improve data collection practices, including to define what data would be useful to evaluate the use and/or effectiveness of line weighting and bird scaring lines, and combinations of different mitigation measures.

9.2 Action Plan

The workshop agreed to the following activities in advance of the final workshop of Element 4 (the Seabird Bycatch Assessment Meeting, to be held in February 2019), where total seabird bycatch (N) is to be estimated:

1) Countries develop, and share with the Project Team, workplans for analysis of their seabird bycatch data (including methods) and estimating of N by **April 2018**
2) The Project Team support additional work with countries, individually or via collaborations, and that MoUs should be developed for collaborative analysis on an ongoing/as-needed basis

3) Seabird density surfaces be developed (including demographic data collation) via collaboration between BLI and Dragonfly Data Science by **June 2018**
4) BLI to update seabird tracking data owners and secure full approvals for sharing density surfaces by **June 2018**
5) Seabird density surfaces be sent to countries by BLI by **August 2018**
6) Preliminary estimates of N be developed by countries and shared with the Project Team by **September 2018**
7) The Project Team should contact countries not currently involved in this process and again encourage their participation
8) BLI use the ATF meeting in Argentina in March 2018, and request that the RA be expanded to demersal fisheries using ATF data if possible
9) New Zealand expects to complete the RA for *Diomedea* by **June 2018** via collaboration with NZ & Japan
10) Dragonfly Data Science to develop a framework for agreements for RA collaborations with participating countries by **April 2018**
11) Dragonfly Data Science to send code and details for running a RA to countries (and other interested parties) by **August 2018**
12) Countries prepare observed captures and overlap layer for national RAs by **October 2018**
13) BLI request in **March 2018** that FAO/Common Oceans Project provide support for a small working group on RA procedures (tentatively planned for September or October 2018)
14) A Southern Hemisphere-wide RA be completed by **December 2018** and presented at the Seabird Bycatch Assessment Meeting planned for February 2019
15) Refinement by the Project Team of the ratio-based estimate of N from publicly available information and data sources be completed by **December 2018**, and that countries actively contribute to that refinement wherever possible
16) A geospatial estimate of N for the South Atlantic (and potentially the southwest Indian Ocean) be completed by collaborating nations with support from the Project Team by **December 2018**
17) Sensitivity and simulation testing of methods be conducted by the Project Team
18) The Project Team define key species for further modelling/impact assessment of sustainability indicators
19) The Project Team work with other experts to examine methods for estimating PST and productivity values by **February 2019**
20) The Project Team develop indicators for RFMOs to present at the Seabird Bycatch Assessment Meeting in **February 2019**
21) BLI and ACAP engage with seabird data holders to contribute data for indicators by **April 2018**
22) ACAP arrange a repository of awareness materials, guides, reports, that be publicly available (possibly via BMIS) by **June 2018**

The workshop agreed that this report and outcomes be presented at RFMO meetings (e.g. working parties) by volunteer CPCs.

10. OTHER ISSUES DISCUSSED THAT WERE BEYOND THE SCOPE OF THIS PROJECT:

Discussion topics are listed that relate to the assessment and management of seabird bycatch, but which were deemed out of the scope of this meeting.

- Pole and line bycatch
- How to utilize abundance counts by observers. Taking into account best practice guidelines for observer programmes – in the process of being updated by ACAP
- Gathering of tissue/feather samples and DNA samples as a future project noting the ACAP guidelines
- Band reporting biases
    - General recommendations are to develop awareness information on what banding is for, how to recover (via photo documentation or other means), contacts of institutions (noting information provided on ACAP website of major seabird banding schemes), recommendation for CPCs to promote ring recovery and reporting
    - Development of a mobile application to submit ring information
    - Possibility to use these data in our analysis - quality control/ground-truthing of species distribution. Need a person to take this forward
- VMS x abundance – research idea – risk with tracking data
    - Future project
    - Possible Global Fish Watch collaboration
- Annual species noise (e.g. only caught every 3 years)
- Undetected mortality
    - Previous studies (Brothers et al., 2010) estimate can be used
    - Additional research needed across fleets/regions – recommendation in report
    - Useful to include in our analysis, scaled approach, (10,20,30,40,50%)

11. APPENDIX I: LIST OF PARTICIPANTS

Name	Institute
Project Team personnel	
Bronwyn Maree	Food and Agriculture Organization of the United Nation
Joel Rice	JSR Consulting - Technical expert
Rishi Sharma	National Oceanic and Atmospheric Administration - Technical expert
Cleo Small	BirdLife International
Sachiko Tsuji	National Research Institute of Far Seas Fisheries, (NRIFSF), Japan
Ross Wanless	BirdLife South Africa
Country representatives	
Edward Abraham	Dragonfly Data Science, New Zealand
Zulkarnaen Fahmi	Research Institute for Tuna Fisheries (RITF), Indonesia
Yukiko Inoue	NRIFSF
John Kathena	Ministry of Fisheries and Marine Resources (MFMR), Namibia
Doo Nam Kim	National Institute of Fisheries Science (NIFS), Korea
Sung Il Lee	NIFS
Kazuhiro Oshima	NRIFSF
Mahdi Parsa	Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES), Australia
Rodrigo Sant'Ana	Universidade do Vale do Itajaí, Brazil and Projeto Albatroz
Invited experts	
Ana Carneiro	BirdLife International
Anton Wolfaardt	Agreement on the Conservation of Albatrosses and Petrels (ACAP)
Observer	
Taryn Morris	BirdLife South Africa

12. APPENDIX II: AGENDA

Seabird Bycatch Data Preparation Workshop

Seabird Bycatch in the Tuna Longline Fishery in the Southern Ocean

Cuzco, Peru 20-24 February 2018

20 February (Tuesday) Day 1		
Time	**Topic**	**Presenter**
8:30- 9:00	Arrival of participants Registration	
1.1 Welcome, Introductions and Expectations		
9:00-9:30	Announcements and House Keeping	B Maree
	Schedule and Agenda Introduction and expectations of Participants	
1.2 Objectives of the workshop		
9:30-10:45	Common Oceans Seabird Component Overall Objective and overview of the achievements	R Wanless
	Plan for the coming days Description of the Workshop aims, confidentiality and approach	J Rice
	Questions and answers (30 minutes)	
10:45-11:15	**Tea Break**	
2. Status of seabird bycatch data		
2.1 Background - historical and current situation		
11:15-13:00	South Georgia work	C Small
	Previous estimates of seabird bycatch by tuna fisheries	C Small
	ACAP Process and Guideline of defining effectiveness of mitigation measures	A Wolfaardt
13:00-14:00	**Lunch**	
14:00-14:30	Reporting obligations to RFMOs relating to seabird bycatch and actual status of data submission	R Sharma
2.2 Data needs for achieving the objectives		
14:30-15:15	Data needs for estimating the total seabird mortalities (Brainstorming)	S Tsuji
15:15-15:45	**Tea Break**	
15:45-16:30	Data needs for evaluating the effectiveness of mitigation measures (Brainstorming)	S Tsuji

21 February (Wednesday) Day 2

Time	Topic	Presenter
2.3 Review of existing data		
9:00-9:10	Recap of Day 1 and clarification on terminology	R Wanless
9:10-10:45	National Reports	J Kathena Z Fahmi E Abraham R Wanless (on behalf of H Winker)
	National Reports	R Sant'Ana M Parsa Y Inoue S Lee
10:45-11:15	**Tea Break**	
11:15-12:30	Data Cataloguing Outcomes from questionnaire	J Rice
12:30-13:30	**Lunch**	
2.4 Issues, gaps and possible solutions		
13:30-15:00	Issues and information gaps on seabird catch occurrence data - accuracy, precision, consistency, representativeness (including group activity)	S Tsuji
	Seabird density estimation from tracking data	A Carneiro
15:00-15:30	**Tea Break**	
15:30-16:00	Challenges dealing with uncertainty in observers' species identification – aggregation and disaggregation procedures	E Abraham
2.5 Possible solutions: short-term and longer term		
16:00-17:00	Open discussion	J Rice R Sharma

22 February (Thursday) Day 3 **Time**	**Topic**	**Presenter**
9:00-9:10	Recap of Day 2 & plans for Day 3	R Wanless
9:10-9:30	Report back of results of Issues and information gaps Group Activity	S Tsuji
3. Analytical methods of evaluating total seabird mortality and effectiveness of mitigation measures		
3.1 Historical and on-going evaluations		
9:30-11:00	Methods for scaling observer data to total effort – an example from Brazil	R Sant'Ana
	Total seabird mortality: Initial estimate based on total effort and average reported BPUE	J Rice
	Other ongoing activities relating to assessing seabird bycatch	Y Inoue
11:00-11:30	**Tea Break**	
11:30-12:15	Break-out Group activity: 1. How do you characterize and stratify your fleet? 2. What methods are appropriate for filling data gaps? 3. Spatial stratification 4. Temporal stratification	
12:50-13:50	**Lunch**	
13:15-14:50	Seabird Risk assessment methods and process	E Abraham
	NZ-Japan collaborative Seabird Risk assessment process and details	K Oshima
14:00-15:15	Comparison and integration of results obtained from different analyses. How to combine "N" and BPUEs from different countries (disparate estimates of N and BPUE)	R Sharma
15:15-15:45	**Tea Break**	
3.2 Challenges in analyses and evaluations		
15:45 – 17:00	Summary Observations and Discussion: Indication of target indicators Total seabird mortality (N) Evaluation of mitigation measures Sustainable indicators for bird populations Future work	S Tsuji

23 February (Friday) Day 4 - Next Steps (analysis over the next 12 months) – Short Day, late lunch		
Time	**Topic**	**Presenter**
9:00-9:15	Review of previous day's discussions	B Maree
4. Discussion on estimating total seabird bycatch mortality and effectiveness of mitigation measures		
9:15-9:35	Discussion on: Use (and pitfalls) of BPUE trends; How to leverage bright spots in data (and how not); Effectiveness of CMMs in reducing bycatch and how we can test analytically for that/show the effect.	R Sharma
5. General recommendation and action plans for improving the monitoring seabird bycatch		
9:35-10:15	General recommendations for 1. Improving seabird-related data collection and analysis 2. Ensuring continuous global assessment of seabird bycatch and effectiveness of mitigation measures 3. Enhancing collaboration between seabird specialists and fisheries management communities	S Tsuji
10:15-11:00	**Tea Break**	
11:00-11:50	Agreed targets for the 2019 South Africa meeting and corresponding next steps/action plan	R Wanless
11:50-12:00	Global Fish Watch: Filling in gaps using satellite technology	B Maree (on behalf of S Winnard)
12:00- 12:45	Group discussion on 'Parking Lot' topics	R Wanless
13:00	**Group photo and Lunch**	
15:00	**Report draft writing**	Project team
19:30	**Closing Dinner at Inka Restaurant**	

24 February (Saturday) Day 5		
Time	**Topic**	**Responsibility**
09:00 – 11:00	Members convene to read report	All
11:00 – 12:30	Clearing of the Report	R Wanless
12:30 - 13:30	**Lunch**	
13:30 – 15:30	Clearing of the Report	R Wanless

15:30 – 16:00	Other Business/M&E monitoring/Adjourn

13. APPENDIX III

Information collected through sampling surveys (e.g. observers) relating the bird bycatch of tuna longline fisheries in the area of south of 25S

	Whether data collected	Adequacy of covering target event	Extent of credibility	Adequacy in detail	No change in collecting methodology, reporting rate, and quality of data	
					in the past 5 yrs	in the past 10 yrs
	% in examined	% in those collecting data				
Components relating with bird distribution and behaviors						
Location	75%	100%	100%	100%	83%	83%
Season	75%	100%	100%	100%	83%	83%
Bird identification	75%	67%	83%	67%	67%	67%
Local bird abundance (seabirds as a whole)	63%	60%	0%	0%	100%	20%
Local bird abundance (further details)	50%	75%	0%	0%	100%	0%
Information relating to fishing operations with potential impacts on bird catch rate						
Target species	75%	67%	83%	17%	100%	67%
Gear configuration	63%	100%	100%	40%	60%	60%
Vessels in proximity *(when utilized VMS info, the perception may change)*	38%	67%	33%	0%	67%	67%
Information on utilization of mitigation measures						
Time of set start	75%	100%	100%	100%	100%	67%
Time of set end	75%	100%	100%	100%	100%	67%
Use of weighted line	50%	100%	50%	50%	25%	0%
Use of Tori-pole	50%	100%	100%	50%	100%	25%
Use of other mitigation measures	38%	67%	67%	33%	0%	0%
Other critical information in order to analyse bird catch rate						
Fishing master	63%	100%	100%	n.a.	100%	100%
Skipper	75%	100%	100%	n.a.	100%	100%
Vessel	75%	100%	100%	n.a.	100%	100%

Information on the whole tuna longline fleets operating in the area of south of 25S

	Whether data collected	Covering whole fleet	Extent of credibility	Adequacy in detail	No change in collecting methodology, reporting rate, and quality of data	
					in the past 5 yrs	in the past 10 yrs
	% in examined	% in those collecting data				
Location	100%	88%	100%	88%	88%	50%
Season	100%	88%	100%	88%	88%	50%
Fishing master	50%	75%	100%	n.a.	100%	50%
Skipper	100%	88%	100%	n.a.	100%	63%
Vessel	100%	88%	100%	n.a.	100%	75%
Target species	88%	86%	57%	0%	86%	57%
Gear configuration	75%	67%	33%	0%	0%	0%
Number of birds caught	50%	50%	25%	25%	75%	25%
Time of set start	88%	86%	71%	71%	100%	71%
Time of set end	75%	83%	67%	83%	83%	67%
Use of weighted line	25%	100%	100%	50%	50%	0%
Use of Tori-pole	25%	100%	100%	0%	50%	0%
Use of other mitigation measures	13%	100%	100%	100%		