



**SCIENTIFIC COMMITTEE
THIRTEENTH REGULAR SESSION**

Rarotonga, Cook Islands
9–17 August 2017

Bycatch data exchange protocol

WCPFC-SC13-2017/EB IP-15

P. Williams, N. Smith, I. Tuiloma, and A. Panizza

ABSTRACT

The current paper implements a recommendation from the Twelfth Scientific Committee to continue a trial of the Bycatch Data Exchange Protocol. The Pacific Community has prepared and formatted the bycatch data it holds on behalf of the WCPFC into the Bycatch Data Exchange Protocol for 2013-2016. The tables are submitted as an Excel file associated with this paper, along with proposed text for the Western and Central Pacific Fisheries Commission website. Generic issues related to the development of the Bycatch Data Exchange Protocol are raised in the Thirteenth Scientific Committee paper on data gaps and related issues. Concurrent work on other research in 2017 has addressed some of the issues identified in 2016, in particular estimating mortality rates for purse seine, the filtering of data according to the Western and Central Pacific Fisheries Commission data rules with respect to vessel names, and providing information on observer coverage at 5°x5° resolution. The further development of the Bycatch Management Information System provides an opportunity to progress the Bycatch Data Exchange Protocol work including progressing a trial regional Bycatch Data Exchange Protocol compilation for purse seine at the scale of the Pacific Ocean, in co-operation with the Inter-American Tropical Tuna Commission and the Commission for the Conservation of Southern Bluefin Tuna Secretariats. In summary, the Bycatch Data Exchange Protocol work is being continued and is improving the quality of, and access to, bycatch data.

1. INTRODUCTION

1.1 Background

A meeting of invited experts, convened in January 2015 in Keelung, Taiwan, to progress elements of the Work Plan agreed by the Joint Tuna Regional Fisheries Management Organisations Technical Working Group-Bycatch, recommended that an existing data exchange format be used as the basis for summarizing data in each of the five tuna Regional Fisheries Management Organisations (tRFMOs). Compiling basic metadata across the tRFMOs aims at i) understanding and harmonizing tRFMOs bycatch data holdings; ii) reviewing and improving bycatch data collection and reporting programmes; and iii) planning for intra- and inter-RFMO analysis of bycatch rates and mitigation effectiveness (Anon., 2015).

The proposed t-RFMOs Bycatch Data Exchange Protocol consists of i) a summary of the total fishing effort and total observed effort by area, fishery and year; and ii) a summary for the same strata (area, fishery and year) of observed captures, mortalities and live releases of various taxa known to be vulnerable to interactions with tuna fisheries. It is understood that a lack of taxonomic identification, spatial resolution constraints, scarce data holdings and other technical and policy issues may limit the data that some t-RFMOs can provide. Nevertheless, initiating a flow of summarized information and taking stock of existing datasets is an important first step toward harmonization and improved management (Clarke et al., 2015).

The concept of a Bycatch Data Exchange Protocol (BDEP) amongst the t-RFMOs was raised at Western and Central Pacific Fisheries Commission (WCPFC) Scientific Committee (SC) 11, noting that the Commission for the Conservation of Southern Bluefin Tuna (CCSBT) already has an internal BDEP procedure in place (Clarke et al., 2015). SC11 agreed to proceed with the WCPFC component of a BDEP, subject to resourcing from the Common Oceans (ABNJ) Tuna project, and subject to WCPFC data confidentiality rules (by paras. 654-657 of the WCPFC SC11 Summary Report). Subsequently the Indian Ocean Tuna Commission (IOTC) has also agreed to trial the BDEP, with the Secretariat filling out the template and intending to present it at the IOTC Working Party on Ecosystems and Bycatch in September 2016.

1.2 SC12

In response to the WCPFC SC11 recommendation, a working paper was prepared for WCPFC SC12 under the Ecosystems and Bycatch Theme. The Pacific Community (SPC), with resourcing from the Common Oceans (ABNJ) Tuna project, prepared and formatted the bycatch data it holds into the Bycatch Data Exchange Protocol (BDEP) template as described by “Proposal for a Bycatch Data Exchange Protocol (BDEP) amongst the t-RFMOs” (Clarke et al. 2015). Williams et al. (2016a) reported on the methods for compiling the template, issues identified in compiling the data, and recommended future work.

WCPFC SC12 recommended that the trial of BDEP be continued in 2017 and 2018 (Anon., 2017a) and this was endorsed by the Western and Central Pacific Fisheries Commission (Anon., 2017b.). However, due to no new funding, the 2017 work was to be limited to the no cost option of publishing BDEP as public domain information on the WCPFC web site and any issues arising in compiling the data to be identified in the generic data gaps paper (Williams, 2017)).

1.3 Bycatch Data Exchange Protocol 2017

In response to the WCPFC SC12 recommendations the trial of BDEP has been continued in 2017. This paper presents the results of that work and provides the BDEP tables for 2017.

2. METHODOLOGY

SPC has filled out the BDEP template (Clarke et al. 2015), based on data extracted from the WCPFC ROP database (not the entire SPC observer holdings). Note that where explicit written permission was obtained from WCPFC CCMs to use their observer data (held by SPC), it has also been included in the summary (that is, non-ROP trips for observer activities in NZ, and AU waters). In each of the following sections the method applied is identified, and the BDEP summary arising is highlighted.

The first step in developing the extraction routines for the BDEP template was to identify the WCPFC-defined observer data, which includes the WCPFC Regional Observer Programme (ROP) defined trips and additional non-ROP observer data which have been authorised by relevant CCMs to be included in the WCPFC defined observer data (see Table 8 in Williams, 2014). The extraction routines required a function to output each of the species groupings defined in the BDEP template. The data extracted were filtered to adhere to the WCPFC data rules for public domain data (i.e. removing the cells representing the activities of less than three vessels). The summarized data presented in Tables 2–5 represent unraised data, although an indication of coverage of the data in Tables 2–5 is provided in Table 1a (the observer coverage column has been filled in with a simple calculation of the ratio of observed to total effort). The main gap in the WCPFC ROP longline data in Tables 2 and 4 are the comprehensive Hawaii longline observer data for activities within their EEZ, and the main gap in the WCPFC ROP purse seine data in Tables 3 and 5 are the data for the domestic fisheries of Papua New Guinea and Solomon Islands.

The total data holdings are identified in Tables 1a and 1b. Table 1a represents all ROP data held by SPC (see Table 8 in Williams, 2014) and also data from New Zealand and Australia observer programmes for which approval is held (AU and NZ observer data since 2008 have been included in the WCPFC observer database and so have been included in the data extracted here).

The summarized data in Table 1b represents all observer data held by the SPC and includes ROP as well as non-ROP data that the owner of the data has not authorized as being released to the WCPFC. These data that are held by SPC are generally only for internal scientific analyses, nonetheless benefiting the WCPFC. These non-ROP data essentially represent trips from certain CCMs which are solely within the EEZ of that CCM, and that CCM has yet to authorize provision of the data to the WCPFC. The required coverage of the WCPFC tropical purse seine fishery since 2010 is 100% and of the WCPFC longline fishery is 5%, although the available data (both WCPFC and to SPC) is clearly below these required levels; some reasons for the low levels of coverage are explained in Williams et al. (2016b).

2.1 Whole of WCPFC Area summary

The observed and estimated captures and mortalities for key bycatch species groups by year for the WCPFC longline fishery are provided in Table 2. The unit for both “captures” and “mortalities” is numbers (note that these are sometimes estimated from weights where the observer has recorded a visual estimate for weight only). The observed and estimated captures and mortalities for key bycatch species groups by year for the WCPFC purse seine fishery are provided in Table 3. Capture rate has been defined for longline using captures per 1000 hooks. Capture rate has been defined for purse seine using captures per set. NOTES are provided with these tables to explain the source of data and other aspects of the data presented.

2.2 Spatially explicit BDEP

The fisheries have been aliased and represent a combination of flags, but have been separated into the two major gear types (longline and purse seine). For the spatially explicit information summary, data are reported at a 5x5 degree resolution. Figure 1 shows the spatial coverage of the observer data for 2016 for longline and Figure 2 shows the spatial coverage of the observer data for 2014 for purse seine).

The observed and estimated captures/mortalities for key bycatch species groups by year and area for the WCPFC longline fishery are provided in Table 4. The observed and estimated captures/mortalities for key bycatch species groups by year and area for the WCPFC purse seine fishery are provided in Table 5. Capture rate has been defined for longline using number of captures per 1000 hooks. Capture rate has been defined for purse seine using number of captures per set. The NOTES for these tables are essentially the same as the notes for Table 2 and 3 respectively, although additional NOTES on latitude and longitude are provided.

2.2 BDEP 2017

Tables 1-5 are provided in the associated Excel file –(<https://www.wcpfc.int/node/29687>) WCPFC-SC13-2017/EB-IP-15a along with the associated explanatory notes.

3. COMMENTS

The compilation of the ROP and additional approved observer programme data into the BDEP templates has been completed for 2013-2016. The continuing trial has seen some of the issues highlighted by Williams et al. (2016a) addressed, as detailed below. In particular the trial continues to extend ongoing work to improve the utility and accessibility of observer data (Williams et al., 2017).

1. **Estimating mortality rates for purse seine** - The tenth SPC/FFA Data Collection Committee (DCC10) meeting in December 2017 rationalised the collection of SSIs interactions by enhancing the PS-3 and LL-4 forms to collect key information on interaction, and the fate (e.g. release) and condition on release. The GEN-2 form was also modified to become a form only used to collect information on SSIs for non-gear interactions (i.e. sightings). Further, there has been significant progress over the past few months (March-June 2017) in generating the relevant PS-3 and LL-4 catch records from GEN-2 data where the observer did not record them, although there is further work to be conducted (Williams et al., 2017). The revisions to regional observer database structures to cater for the DCC10 decisions to enhance the PS-3, LL-4 and GEN-2 forms (as per paragraph above) will ensure this issue is resolved for future data.
2. **Providing tables of observer effort by 5°x5°** - Some progress has been made on this in 2017 through initial explorations of data for estimating seabird bycatch (Peatman et al., 2017) The improvements for longline are reflected in Figure 1 of this report with effort and observer coverage provided in a single plot at 5°x5° resolution.
3. **No distinct vessel names provided, so hinders the filtering of data according to the WCPFC data rules** - This has been resolved with the respective entities and permission has been provided to include data provided to the WCPFC into the BDEP.
4. **Allowing estimates of catch to be determined in number of specimens and in weight** - Additional work on this matter is discussed in the generic data gaps paper (Williams, 2017; Section 2.6).
5. **The BDEP tables be published on the WCPFC web site** – The tables as attached to this paper are ready to be posted on the WCPFC web site. The proposed text for the BDEP page is attached as Annex I. Note that additional updates can henceforth be provided at any time (e.g. once more data are loaded) and will be provided at least annually in future.
6. **Undertaking a regional BDEP compilation trial for purse seine** - no specific work has been undertaken in 2016-17 with the IATTC and CCSBT Secretariats, however an approach to co-operatively completing this work is identified as a part of the Bycatch Management Information System (BMIS) workplan in Fitzsimmons et al., 2017).

In summary, BDEP continues as a positive step toward improving the quality of and access to bycatch data within and across RFMOs. It is intended that a further summary of progress on BDEP will be provided in 2018 to WCPFC SC14, with a recommendation to normalize some of the BDEP related activities into the ongoing work of the WCPFC.

4. ACKNOWLEDGEMENTS

The analysis in 2016 (Williams et al., 2016a) was an initiative of and funded by the Common Oceans Areas Beyond National Jurisdiction (ABNJ) Tuna Project. Work in 2017 has been included within the WCPFC ROP Data Management contract. Dr Shelley Clarke, Technical Coordinator-Sharks and Bycatch, Common Oceans (ABNJ) Tuna Project, WCPFC, is thanked for ongoing guidance and support of this work. A special thanks to the observers, observer trainers and national agency staff who ensure observer data are available through the ROP. Without their efforts such analyses would not be possible.

5. REFERENCES

- Anon. 2015. Harmonisation of Longline Bycatch Data Collected by Tuna RFMOs. Tuna RFMO Expert Working Group Meeting, 27-29 January 2015, Keelung, Taiwan.
- Anonymous. 2017a. Report of the Twelfth Regular Session of the Scientific Committee of the Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean. 3-11 August 2017, Bali, Indonesia. WCPFC, Pohnpei, Federated States of Micronesia.
- Anonymous. 2017b. Report of the Thirteenth Regular Session of the Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean. 5-9 December 2016, Denarau Island, Fiji. WCPFC, Pohnpei, Federated States of Micronesia.
- Clarke, S., S. Nicol & P. Williams 2015. Proposal for a Bycatch Data Exchange Protocol (BDEP) amongst the t-RFMOs. SC11 EB-WP-06. Eleventh Regular Session of the Scientific Committee of the WCPFC. Pohnpei, FSM. 5-13 August 2015.
- Fitzsimmons, L., Caillot, S., Clarke, S., and Smith, N. 2017. Redevelopment of the Bycatch Management Information System (BMIS): status and future work plan including integrating regional bycatch data summaries. Working Paper SC-13 EB-WP-09. Thirteenth Regular Session of the WCPFC Scientific Committee (SC13), Rarotonga, Cook Islands. 9-17 August 2017.
- Peatman, T., Smith, N., and Caillot, S. 2017. A short note on the development of WCPFC seabird bycatch estimates for Project 68. Information Paper SC13 EB IP-18. Thirteenth Regular Session of the WCPFC Scientific Committee (SC13), Rarotonga, Cook Islands. 9-17 August 2017.
- Williams, P.G. 2014. Scientific data available to the Western and Central Pacific Fisheries Commission. Working Paper SC9 ST WP-1. Tenth Regular Session of the WCPFC Scientific Committee (SC9), Majuro, Republic of the Marshall Islands. 6-15 August 2014.
- Williams, P.G. 2017. Scientific data available to the Western and Central Pacific Fisheries Commission. Working Paper SC13 ST WP-1. Thirteenth Regular Session of the WCPFC Scientific Committee (SC13), Rarotonga, Cook Islands. 9-17 August 2017.
- Williams, P.G., Smith, N., Tuiloma, I., Falasi, C., and S. Clarke. 2016a. Trial Application of the BDEP Template for Summarizing Bycatch Data. Working Paper SC12 EB WP-12. Twelfth Regular Session of the WCPFC Scientific Committee (SC12), Bali, Indonesia. 3-11 August 2016.
- Williams, P.G., I. Tuiloma & C. Falasi 2016b. Status of ROP data management. Information Paper ST IP-02. Twelfth Regular Session of the Scientific Committee of the WCPFC (SC12). Bali, Indonesia, FSM. 3-11 August 2016.
- Williams, P., Tuiloma, I., Panizza, A. 2017. Status of observer data management. Information Paper ST-IP-02. Thirteenth regular session of the Scientific Committee of the Western and Central Pacific Fisheries Commission. Rarotonga, Cook Islands, 9-17 August 2017.

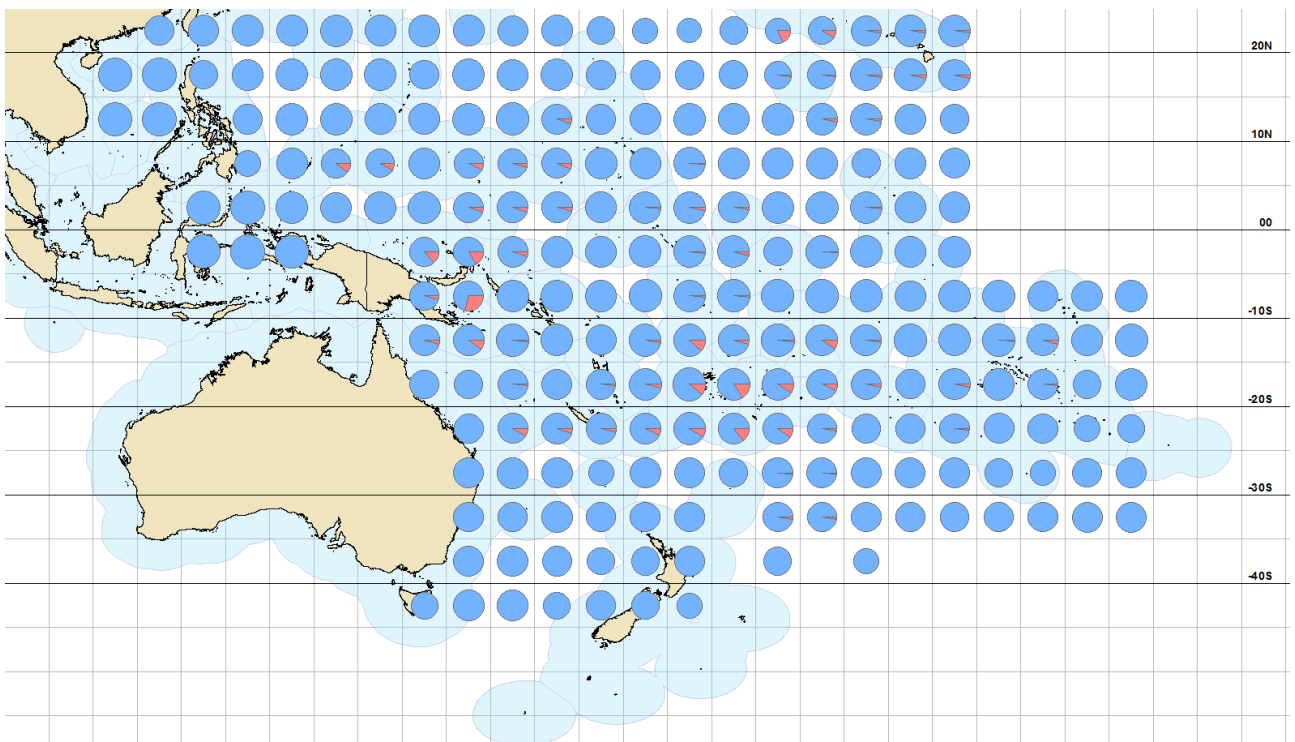
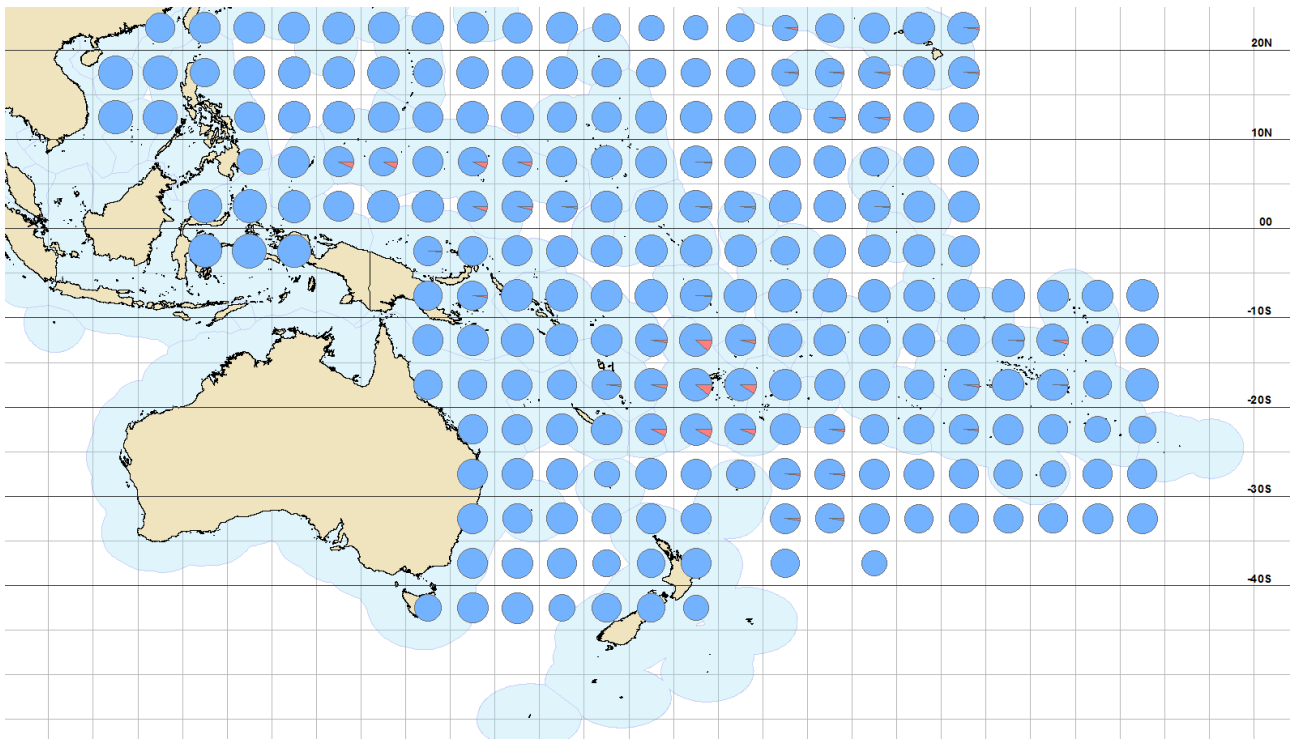


Figure 1a. Observer coverage of longline vessels in 2016, percentage of hooks with an observer onboard by 5°x5° square across the WCP area for ROP data (top) and all SPC observer data (bottom). Size of circles is proportional (log scale) to total longline fishing effort, non-observed effort in blue and observed effort in red. Note that data submission for 2016 is still incomplete.

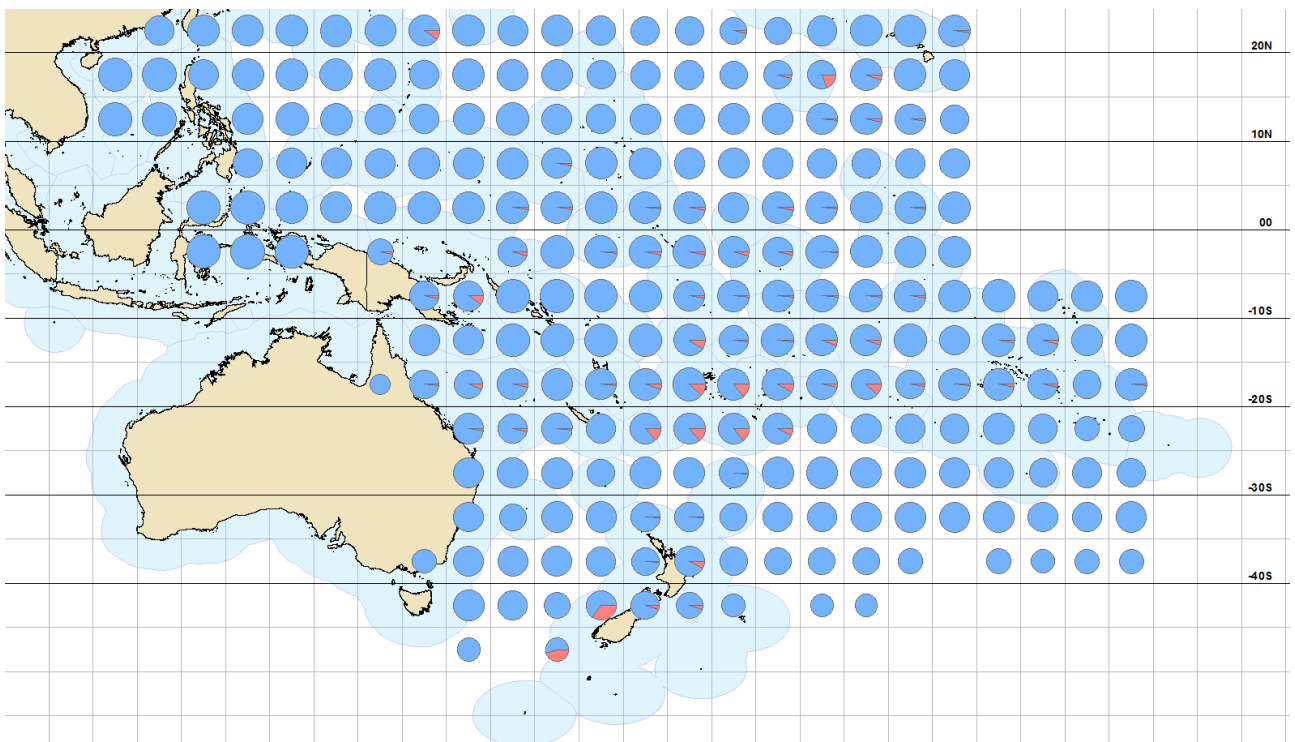
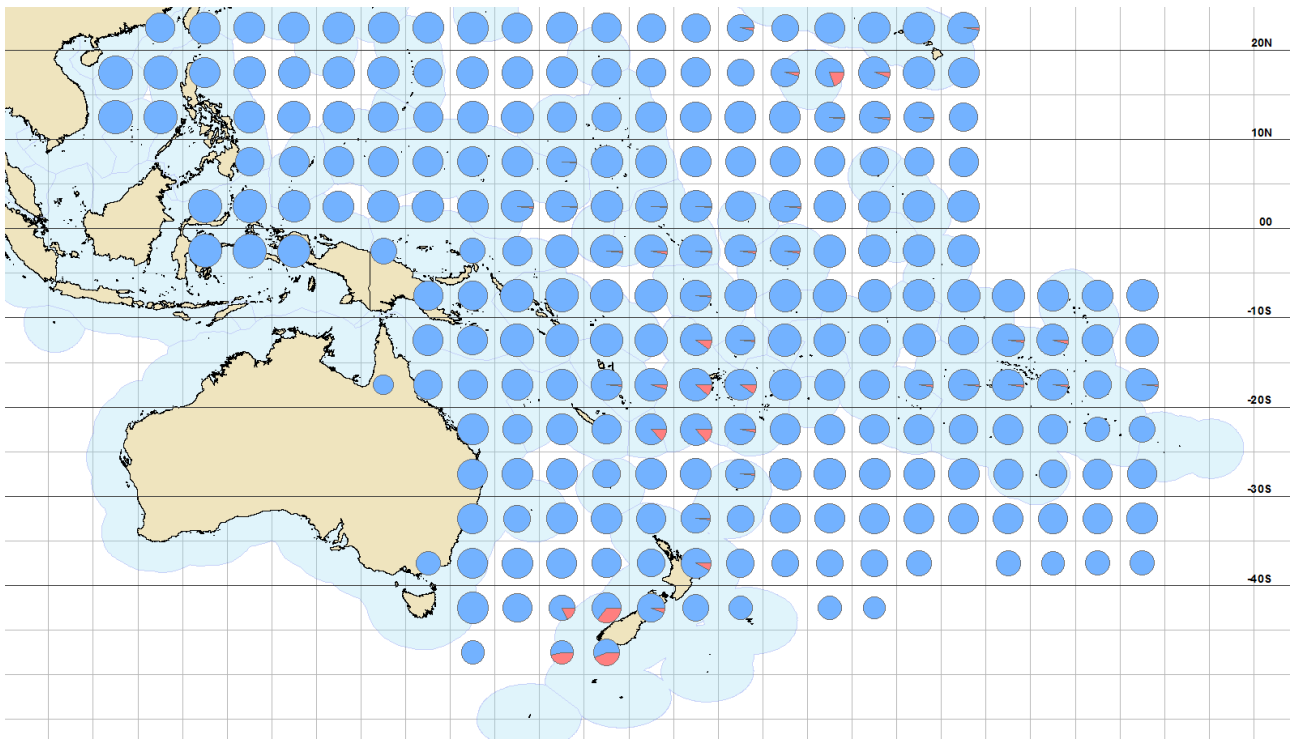


Figure 1b. Observer coverage of longline vessels in 2015, percentage of hooks with an observer onboard by 5°x5° square across the WCP area for ROP data (top) and all SPC observer data (bottom). Size of circles is proportional (log scale) to total longline fishing effort, non-observed effort in blue and observed effort in red.

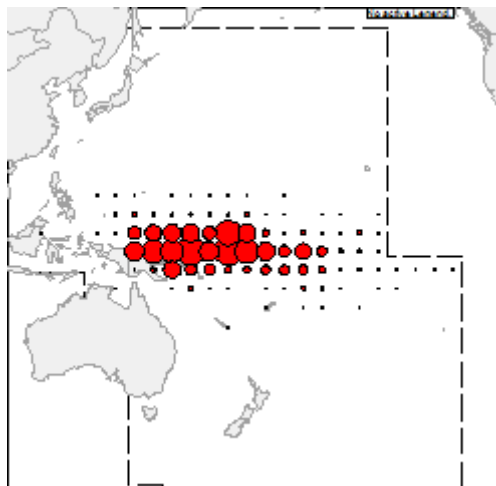
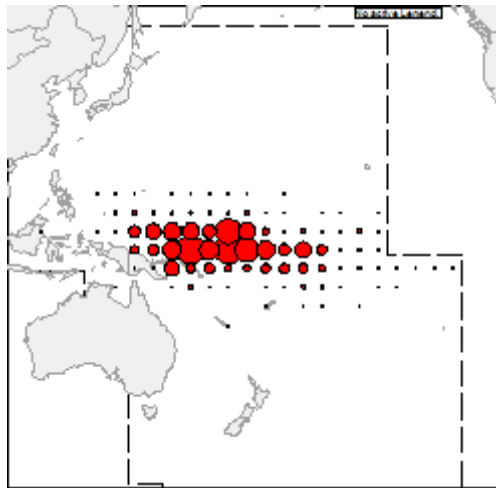
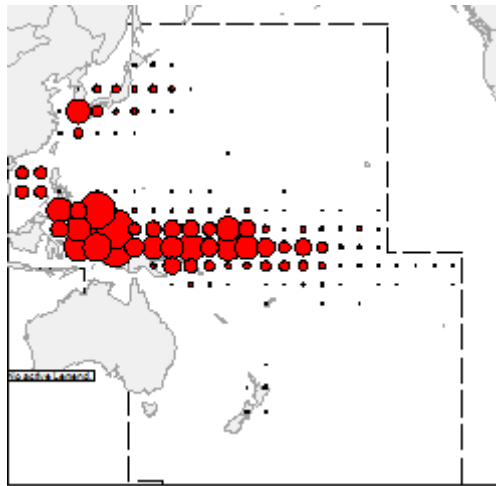


Figure 2. Distribution of total effort in the WCPFC purse seine fishery in 2014 (top), total observed effort in the WCPFC ROP database (middle) and, total observed effort in the SPC observer data holdings (bottom)

ANNEX I

Bycatch Data

This page makes publically available tables of aggregated bycatch data and associated effort and observer data for the WCPFC (using the Bycatch Data Exchange Protocol, BDEP, approach).

Background

A meeting of invited experts, convened in January 2015 in Keelung, Taiwan, to progress elements of the Work Plan agreed by the Joint Tuna RFMOs Technical Working Group-Bycatch, recommended that an existing data exchange format be used as the basis for summarizing data in each of the five tuna RFMOs (tRFMOs). Compiling basic metadata across the tuna RFMOs aims at i) understanding and harmonizing tuna RFMO bycatch data holdings; ii) reviewing and improving bycatch data collection and reporting programmes; and iii) planning for intra- and inter-RFMO analysis of bycatch rates and mitigation effectiveness (Anon. 2015a).

A proposed t-RFMO bycatch data exchange protocol was outlined in [Clarke et al. 2015](#) and consists of i) a summary of the total fishing effort and total observed effort by area, fishery and year; and ii) a summary for the same strata (area, fishery and year) of observed captures, mortalities and live releases of various taxa known to be vulnerable to interactions with tuna fisheries. It is understood that a lack of taxonomic identification, spatial resolution constraints, scarce data holdings and other technical and policy issues may limit the data that some t-RFMOs can provide. Nevertheless, initiating a flow of summarized information and taking stock of existing datasets is an important first step toward harmonization and improved management ([Clarke et al. 2015](#)).

The original concept of a Bycatch Data Exchange Protocol (BDEP) amongst the t-RFMOs was raised at SC11, noting that CCSBT already has an internal BDEP procedure in place ([Clarke et al. 2015](#)). SC11 agreed to proceed with the WCPFC component of a BDEP, subject to resourcing from the ABNJ-GEF Tuna Project, and subject to WCPFC data confidentiality rules (by paras. 654-657 of the SC11 Summary Report). Subsequently IOTC has also agreed to trial the BDEP, with the Secretariat filling out the template and presenting it at the IOTC Working Party on Ecosystems and Bycatch in September 2016.

In August 2016, an SC12 paper ([Williams et al., 2016](#)) provided, for the first time, tables of bycatch data according to the BDEP for years 2013-2015. SC12 recommended that these BDEP tables be published as public domain information on the WCPFC web site (at <http://www.wcpfc.int/tuna-fishery-data>) on an annual basis.

Bycatch data

EXCEL files containing the latest WCPFC BDEP data and reference information are available for the following:

- 1a. Total fishing and observed effort per year and fishery
- 1b. Total fishing and observed effort per year and fishery, including additional non-ROP observer data held by SPC
2. Observed and estimated captures/mortalities for key bycatch species groups by year for the WCPFC LONGLINE fishery
3. Observed and estimated captures/mortalities for key bycatch species groups by year for the WCPFC PURSE SEINE fishery
4. Observed and estimated captures/mortalities for key bycatch species groups by year and area for the WCPFC LONGLINE fishery
5. Observed and estimated captures/mortalities for key bycatch species groups by year and area for the WCPFC PURSE SEINE fishery

These data files were last updated on the 30 June 2017.

Please provide the following contact information before accessing to the download page:

First Name *

Last Name *

Email *

Organization *

Title *