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Changes to Shark Reporting and Data Gaps Assessment Processes

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Abstract

This paper presents three proposals for streamlining and clarifying the shark-related content of SPC's annual paper on "Scientific Data Available to the WCPFC". The SPC paper provides a snapshot of the Commission's data holdings but the format could be improved to better grasp where the most important shark data gaps lie. Once these gaps are clearly understood, studies such as those under the Areas Beyond National Jurisdiction (ABNJ) Tuna Project, can be developed to address and help remedy them. The proposals presented here would involve six additional annotations to the standard tables prepared each year by SPC, and would allow the tables to more closely reflect the WCPFC's existing data rules. It is also proposed that guidelines be formulated for determining whether shark catch and catch/effort data are under-reported and that the key shark designations of mako and thresher sharks be confirmed on a species-specific basis.

1 Introduction

One of the three components of the Areas Beyond National Jurisdiction (ABNJ, or Common Oceans) Tuna Project being led by the Western and Central Pacific Fisheries Commission (WCPFC) pertains to shark data improvement and harmonization. Catch estimates and catch/effort data for key sharks are required to be provided under the WCPFC's Scientific Data to be Provided to the Commission (WCPFC's "data rules") (WCPFC 2014). These rules have been revised over time, and have expanded from originally covering four types of sharks (CMM 2008-06) to now covering eight types of sharks (CMM 2010-07). The WCPFC's Scientific Services Provider, the Secretariat of the Pacific Community (SPC), reports each year on WCPFC CCM's data provision and Commission's data holding in the form of a "data gaps" paper presented to the Scientific Committee (Williams 2014). The tables in the "data gaps" paper then form the basis for the Commission's annual review of data provision under the Compliance Monitoring Scheme (CMM 2014-07). Over time, and as a result of its continual revision to reflect new requirements, particularly those from the annual priorities designated within the still developing Compliance Monitoring Scheme, the format of tables and annotations in the data gaps paper has become unwieldly with up to 36 annotations per table reflecting both shark and non-shark notes. As will be described below, this complicated situation makes it difficult to grasp where the most important shark data gaps lie. This paper aims to assist in understanding shark data provision issues so that studies can be developed to address and help remedy these gaps.

This paper presents three proposals for streamlining and clarifying the shark-related portions of the tables and annotations in the annual data gaps paper. All of the following proposals strictly adhere to and reflect the current WCPFC data rules and can be easily accommodated in the existing reporting framework. The following sections discuss the tables for annual catch estimates, operational catch/effort data, and aggregated catch/effort data. These sections reference "Scientific Data Available to the Western and Central Pacific Fisheries Commission" (Williams 2014) as the 2015 version of this paper was not available at the time of writing. As was agreed at WCPFC11, the 2015 version of the paper is expected to incorporate a tiered scoring system, which is to be reviewed by SC11. At the time of writing it was assumed that the tiered scoring system would not affect the proposed approach for reporting of shark data gaps. Each section below presents the current data rule, a description and analysis of the current table format, and a proposal for improving the table format in subsequent reporting.

2 Provision of Annual Catch Estimates

Requirement: Under Section 1 of the "Scientific Data to be Provided to the Commission" CCMs are required to provide annual catch and discard estimates for blue, silky, oceanic whitetip, mako, thresher, porbeagle (south of 20°S only), hammerhead and whale sharks.

Current format: The current format for evaluating the provision of annual catch estimates (2014 "Data Gaps" paper, Table 2) contains three annotations relevant to shark catches:

G: "estimates of all key shark species have been provided in aggregate catch/effort data, operational catch/effort data or observer data provision"
11: "estimates of shark catch by species have not been provided"
12: "estimates of shark catch by species provided, but not for all key species taken by this fleet"

Analysis: The current format makes a useful distinction between provision of all ("G"), some ("12") and none ("11") of the required shark data. However, it does not record whether both catches and discards are provided. The latter is particularly important given no-retention measures now in place for oceanic whitetip, silky and whale sharks. There also appears to be some inconsistency in the application of the criteria among fleets that appear to have actively fished, for example some rows in the table have neither a "G", nor "11" nor "12" annotation. Where data for some, but not all, key sharks have been provided it would be useful to know which sharks are missing.

Proposal: Request that SPC modify the annotations for the table on annual catch estimates in the annual "data gaps" paper to be explicit with regard to the provision of all, some or none of the catch estimates for key sharks as well as the provision of all, some or none of the discard estimates for key sharks. Each row in the table should be assigned one of these three annotations for catch and one of these three annotations for discards. Where the annotations for "some" catch estimates and "some" discard estimates are used, the paper should describe in the text, or a table, which key sharks are not reported.

New Annotations: Three-- to denote provision of all, some or no shark discard data.

3 Provision of Operational Level Catch and Effort Estimates

Requirement: Under Section 3 and Annex 1 of the "Scientific Data to be Provided to the Commission" operational level catch and effort data shall be provided, subject to domestic legal constraints, in the form of the number of blue, silky, oceanic whitetip, mako, thresher, porbeagle (south of 20°S only), hammerhead and whale sharks caught per set.

Current format: The current format for evaluating the provision of operational catch/effort data (2014 "Data Gaps" paper, Table 5) contains three annotations relevant to shark catch and effort:

E: "catches of shark by species have been provided"
8: "catches of key shark species have not been provided"
9: "catches of key shark species have been provided, but (i) not all key species covered, and/or (ii) coverage of shark species catches is considered low"

Analysis: The annotation "E" denotes that operational data have been provided for all key sharks, but the current text may not be clear to readers on this point. The considerations that led to a designation of "E" and "9", as opposed to simply "9", among fleets may also appear confusing to readers. Provision of operational data that lack catches of any key shark species is denoted by "8", but this current text may not be clear and/or may appear ambiguous with the other notes from the readers' point of view. It is also important to distinguish between the provision of complete and incomplete operational level data as these data are critical for stock status evaluations such as indicators or stock assessment models. However, it is understood that the degree of completeness and coverage issues for operational data are being addressed under the proposed tiered scoring system, and as these are not a shark-specific issues they are not discussed further here. It is also important to distinguish whether the data are provided from logsheets or observer data in order to understand whether the operational data held are independent of the observer data.

Proposal: Request that SPC modify the annotations for the table on operational catch/effort data in the annual "data gaps" paper so that one of three annotations is assigned to each row of the table: (i) numbers per set for all key shark species have been provided; (ii) numbers per set for some key shark species have been provided but some key sharks missing; or (iii) numbers per set for key sharks not provided. SPC should add one further annotation to show provision (if any) from

observer rather than logsheet data. Where the annotation for "some key sharks provided" is used, the paper should describe in the text, or a table, which sharks are missing. It is recommended that guidelines for determining whether key shark species are under-reported should be discussed by the Scientific Committee so that future data gaps assessments will be consistent and reflect a common understanding.

New Annotations: One-- to denote whether data are sourced from logsheets or observers.

4 Provision of Aggregated Catch and Effort Estimates

Requirement: Section 4 of the "Scientific Data to be Provided to the Commission" describes situations in which aggregated catch and effort data shall be provided when the coverage rate of the operational catch/effort data that are provided is less than 100%. As for the operational catch/effort data, catch/effort data for blue, silky, oceanic whitetip, mako, thresher, porbeagle (south of 20°S only), hammerhead and whale sharks are required.

Current format: The current format for evaluating the provision of aggregated catch/effort data (2014 "Data Gaps" paper, Table 4) contains three annotations relevant to shark catch and effort:

I: "catches of key shark species provided in their aggregate data"
18: "catches of key shark species have been provided but (i) not all key species covered, and/or (ii) coverage of shark species catches is considered low"
21: "catches of key shark species have not been provided, but can potentially be estimated from observer data"

Analysis: The annotation "I" is used to signify that data have been provided for all key sharks, but the current text may not be clear to readers on this point. There are other annotations – "J" and "M" which indicate that "*Aggregate data have been generated from annual catch estimates and operational data made available to the SPC …*" which imply any issues in the operational data (e.g. gaps in the provision of key shark data) will be carried over to aggregate data, but this implication may not be clear to readers. In other words, it is possible that data for all key sharks are provided in aggregate form but the data are not stratified properly, have not been raised properly, are not in the correct units, or are otherwise insufficient, but the current data gap/general notes do not adequately contain enough detail to explain the potential issues in the data.

Similar to the all, some or none model applied to the other tables, annotation "18" covers the "some" category but annotation "21" does not appear applicable to all cases of non-provision. In particular, there may be cases of non-provision which cannot be remedied by estimating from observer data. Furthermore, annotation "21" is a data gap, but SPC is not yet in a position to undertake the analyses required on a regular basis to produce estimates of key shark species from observer data, where this is required.

Proposal: Request that SPC modify the annotations for the table on aggregated catch/effort data in the annual "data gaps" paper so that one of five annotations is assigned to each row of the table: (i) catch and effort for all key sharks provided and, in combination with the operational data (if any) provided, are considered complete; (ii) catch and effort for all key sharks provided; (iii) catch and effort for some key sharks provided but some key sharks missing; (iv) catch and effort for key sharks not provided but can potentially be estimated from observer data; and (v) catch and effort of key sharks have not been provided and cannot be estimated from observer data. Where the annotation "for some key sharks provided" is used, the paper should describe in the text, or a table, which sharks are missing. As proposed above for operational data, it is recommended that guidelines for determining whether key shark species are under-reported should be discussed by the Scientific Committee so that future data gaps assessments will be consistent and reflect a common understanding. The Scientific Committee should also consider whether SPC should undertake the analyses required to produce estimates of key shark species from observer data on a

regular basis (where required) and what additional resources may be required to undertake this work.

New Annotations: Two—to denote whether shark catch and effort data are considered complete, and whether catch and effort data gaps can be remedied with observer data.

5 WCPFC Key Shark Designation and Species-level Taxonomy

WCPFC8 in March 2012 adopted a process for designating key shark species for data provision and assessment (WCPFC 2012). This process recognized that some of the existing WCPFC "key shark species" (e.g. from CMM 2008-06) are not in fact species rather they are genera, i.e. mako sharks consist of shortfin and longfin makos (*Isurus oxyrinchus* and *I. paucus*) and thresher sharks consist of bigeye, pelagic and common threshers (*Alopias superciliosus*, *A. pelagicus* and *A. vulpinus*). It is highly desirable to distinguish between these species in catch statistics as their life history traits, and thus their resiliency to fishing pressure, can vary considerably (Clarke et al. 2015). In the original Shark Research Plan (Clarke & Harley 2010) it was recognized that there are insufficient data to support species-specific assessments of longfin mako or any of the thresher species. Data issues for these species continue to hamper analysis (SPC 2015). It is therefore imperative to work toward separating these species in catch and catch/effort statistics.

Proposal: It is recommended that SC11 consider correcting the key shark designations for "makos" and "threshers" to reflect the species contained in these groups (i.e. shortfin and longfin makos; and bigeye, pelagic and common threshers). This would then trigger a requirement for CCMs to report these key sharks to species in catch and catch/effort statistics. If there is not consensus support for this proposal, those CCMs whose fisheries report or can report these sharks to species are encouraged to submit such species-specific records to the Commission where they will be maintained at this level of taxonomic specificity.

6 Conclusion

SC11 is invited to consider the following proposals contained in this paper:

- Revise some of the current annotations and add six new annotations to the standard tables prepared each year by SPC in the "Scientific Data Available to the Western and Central Pacific Fisheries Commission". All proposed changes are fully consistent with WCPFC's existing data rules.
- Noting that SPC currently determines whether shark catch and catch/effort data are under-reported but has requested guidance on this issue, convene a small working group to consider formulating some guidelines for SPC to use in future data gaps assessments to ensure they are consistent and reflect a common understanding.
- Correct the key shark designations for "makos" and "threshers" to reflect the species contained in these groups (i.e. shortfin and longfin makos; and bigeye, pelagic and common threshers).

7 References

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