**SC14 – ISG7 – Review of the Shark Research Plan**

ISG7 reviewed progress under the Shark Research Plan and recommended changes and updates that are reflected in Table 1 below.

ISG7 considered the range of potential projects under the Shark Research Plan contained in SC14-EB-WP-04. ISG7 also considered the final report of Project 78 on data available for sharks which included potential assessment approaches supported by these data SC14-EB-WP-02. In the light of this, ISG7 developed an additional project proposal entitled *Testing the performance of alternative stock assessments approaches for oceanic whitetip shark* (SRP Sheet 9, attached below) and gave this new project the highest priority for completion in 2018/19.

**Table 1. ISG7 Schedule of analyses under the WCPFC Shark Research Plan. New proposed project outlines for 2019 are identified with # and the project details are provided in SC14-EB-WP-04 except for project #9 which is attached below. For 2018, work submitted to SC14 with reports or project updates are indicated in red with the corresponding SC14 paper number for ease of reference.**

| **Species** | **Region** | **Last assessment** | **2018** | **2019** | **2020** | **2021** | **2022** | **Priority** | **Potential assessment approach** | **Notes** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Silky shark | WCPO | 2013 (SC9-SA-WP-03) (SPC) | Assessment (SC14-SA-WP-08 addendum) (ABNJ) |  |  |  | Assessment? | High | Integrated age-structured (F+B) | no need for assessment in 2019; SA-WP-08 recommends re-visiting the assessment no later than 2021 |
| Pacific-wide |  | Assessment (SC14-SA-WP-08) (ABNJ) |  |  |  | Assessment? | High | Integrated age-structured (F+B) | SA-WP-08 recommends re-assessment no later than 2021 |
| Oceanic whitetip shark | WCPO | 2012 (SC8-SA-WP-06) (SPC) |  | Testing the performance of alternative OWT stock assessments approaches. #9 |  |  |  | High | Integrated age-structured (F+B) | Re-assessment with an integrated model should be possible as it was done in 2012 |
| Blue shark | SW, SE or full South Pacific | 2016 |  | SE Data preparation #1 (ABNJ) | SW Data preparation (SPC) Assessment (move to avoid tuna work overlap?) |  |  | High | Integrated or surplus production stock assessment (F+B) | As BSH is the most common species, if other sharks can be assessed BSH can probably be assessed too; SW Pacific data prep by SPC is required regardless of assessment region. Whole of Pacific assessment will require SE Pacific data are prepared (ABNJ funding). |
| North Pacific | 2017 | Stock Assessment and Future Projections |  | Assessment (ISC) |  |  | High | Integrated age-structured (F+B) | There was no decision on whether WCPFC should fund SPC participation |
| Shortfin Mako | SW, SE or full South Pacific | - |  | SE Data preparation #1 (ABNJ) | SW Data preparation (SPC) | Assessment (if data supports) #2 |  | High | Integrated or surplus production stock assessment (F+B) | SW Pacific data prep by SPC is required regardless of assessment region. South Pacific wide is an option only if SE Pacific data are prepared. ABNJ cannot fund the assessment. |
| North Pacific | 2015 (Indicator analysis) | Assessment (ISC) (SC14-SA-WP-11) |  |  | Assessment (ISC) |  | High | Integrated age-structured (F+B) | There was no decision on whether WCPFC should fund SPC participation |
| Longfin Mako |  |  |  |  |  |  |  | Low | EASI-Fish, SAFE or similar |  |
| Porbeagle | Pacific-wide (southern hemisphere) | 2017 (ABNJ) |  |  |  |  |  | Low | Spatially-explicit risk assessment (F only) | 2017 assessment showed low risk |
| Bigeye thresher | Pacific-wide | 2017 (ABNJ) |  |  |  |  |  | Medium | Spatially-explicit risk assessment (F only) | 2017 assessment showed F exceeds notional limit reference points in some areas |
| Common thresher |  |  |  |  |  |  |  | low | EASI-Fish, SAFE or similar |  |
| Pelagic thresher |  |  |  |  |  |  |  | low | EASI-Fish, SAFE or similar |  |
| Hammerhead (4 species) | WCPO | - |  |  |  |  |  | Low | EASI-Fish, SAFE or similar | only ~1200 hammerhead records since the start of observer programme (recently ~100 per year) and ~half are not species-specific |
| Whale Shark | Pacific-wide | - | Risk assessment (SC14-SA-WP-12) |  |  |  |  | Low | Spatially-explicit risk assessment (time series of F only) | 2018 assessment showed low risk |
| Manta and mobulids (8 species) | WCPO | - | Develop manta and mobulid - observer training and identification guides (SC14-EB-IP-xx) (ABNJ+SPC) |  |  |  |  | Medium | EASI-Fish, SAFE or similar | Focus on data improvement (high priority) but it will take time before any kind of quantitative assessment (indicators) can be done |
| General shark work | WCPO | N/A | Review of shark data and modelling framework to support stock assessments (proj 78) (SC14‑EB‑WP‑02) WCPFC/SPC | Operational and management histories (#4) | Develop a 20121-2025 shark research plan to be presented to SC16 in 2020? |  |  | Low |  |  |
| SRP mid-term review? SC13#7 but now rolled into proj 78. | Updated indicator analysis? | Low |  |  |
| Post-release mortality of silky and oceanic whitetip sharks in longline and purse seine fisheries (SC13‑EB‑IP‑06 and SC14-EB-IP-06) (ABNJ/SPC) | Shark modelling project (#6) | Low |  |  |
| Identifying LRPs for elasmobranchs (SC14-MI-WP-07) (WCPFC/ABNJ) | Operational planning for shark biological data improvement (#7) | High |  |  |
| Longline Bycatch Estimate (SC14-ST-WP-03) (SPC) | Assess spawner recruit relationships? (#8) | Low |  |  |
| Purse seine bycatch estimation (SC14-ST-IP-04) (SPC) | Testing the performance of alternative shark stock assessments approaches. (#9) | High |  |  |
| Silky shark tagging movement and FAD entanglement (ISSF-ongoing) |  |  |  |  |
| Review of shark CMM(s) | WCPFC key sharks | Not previously undertaken: | Potential scientific or technical work for SC pending finalised consolidated shark CMM. | | | | | Pending |  |  |

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| **Sheet Number** | SRP sheet 9 (draft) |
| **Project title** | Testing the performance of alternative stock assessments approaches for oceanic whitetip shark. |
| **Objectives** | Undertake quantitative stock assessments of WCPO oceanic whitetip shark to evaluate the performance of a variety of less data-demanding assessments approaches in comparison to a full, integrated, age-structured assessment model (such as MFCL or SS3). The project will provide:   * A stock assessment of WCPO oceanic whitetip shark for the purposes of generating management advice. * An evaluation of alternative assessment approaches that have potential application to other key shark species with less data. |
| **Rationale** | The Western and Central Pacific Fisheries Commission Scientific Committee has had a number of low information assessments of sharks but is has been difficult for members to interpret these results without a comparison to a known baseline. Undertaking both high and low-information assessments simultaneously on the same species may provide members with a better understanding of how full integrated age-structured assessment results can be compared to the results of less data-demanding assessments. |
| **Assumptions** | * Much of the existing fisheries and biological data are readily available. * Assessment personnel are available to undertake this work |
| **Scope** | Reviewing the previous shark assessments in the WCPO and North Pacific to assess and improve on methods to increase the understanding of data strengths and weaknesses, and update stock status. Update WCPO longline and purse seine catch estimates and abundance indices using recent observer data.  Undertake a quantitative stock assessment on WCPO oceanic whitetip shark to assess the level of F (fishing mortality) and B (biomass) trends for this species. The analysis should present the stock status in terms of common WCPFC quantities of management interest such as F/FMSY, SB/SBMSY and SB/SBF=0 ratios, fishing mortality, (SPR) spawner per recruit, yield and biomass.  Undertake less data-demanding assessments of WCPO oceanic whitetip shark to assess the level of similar common WCPFC quantities of management interest including the above (where applicable). Candidate assessment approaches can include:   * Surplus production model * Catch only methods * Area-based assessment approaches with a range of decreasing data inputs (such as stock density, gear efficiency, and post-discard survival).   + Spatially-explicit risk assessment   + EASI-Fish model   + Sustainability assessment for fishing effects (SAFE);   Input data must be consistent between assessment methods where the same data are an input. Separate analysis teams may be involved.  The focus of these analyses is the estimate of management quantities rather than the development of reference points (shark limit reference points are the subject of a separate (Project 57)).  Consideration should be given to the suitability of assessment approaches for regular application across a large number of key shark species (simultaneously) or, alternatively, for separate one-off assessments of a species.  Prepare a report containing the above results for SC15. |
| **Budget** | 1.5 FTE  $75,000 |