



**154th Meeting of the Scientific and Statistical Committee
December 12-13, 2024
Council Office, Honolulu HI**

FINAL REPORT

4. Pacific Islands Fisheries Science Center Director Report

T. Todd Jones presented the Pacific Islands Fisheries Science Center (PIFSC) Director's report on behalf of Director Charles Littnan. He highlighted PIFSC's strategic planning process, the 2025 Marianas small boat socioeconomic survey, 2025 Pacific Islands region charter/for-hire survey, Guam BFISH, and activities related to the Sellit Logit training and data support in Guam and CNMI. The strategic plan is a ten-year vision that is organized around three objectives: regionally informed science and research; community and partner collaboration; and organizational excellence. Plan development process included working groups with partners and stakeholders. The full plan was made available to the SSC on the first day of the meeting, following Jones' presentation.

In response to SSC member inquiries on the status of sea turtle and monk seal activities at French Frigate Shoals, Jones reported that a total of 1,260 turtles were identified, with 512 nesting females on Tern Island, and 223 on East Island. These numbers are indicative of a nesting shift from East Island to Tern Island. A total of 169 monk seal pups were recorded at 6 major pupping sites, with 26 interventions that benefited monk seal survival, including 14 that were moved from areas with high predation by sharks.

In response to an SSC member inquiry on how disposition of catch is measured in the small boat socioeconomic survey, Justin Hospital reported that the survey includes questions on how much was caught in the 12 months and a breakdown on proportion of those were consumed at home, given away to family/neighbors/community event, traded for goods/services, sold or released. The new survey intends to broaden the questions to estimate the level of distribution or number of people impacted and converting to meals supported within the community.

An SSC member suggested exploring new technology such as daily satellite photographs of coastal areas as a potential mechanism of estimating fishing effort to estimate catch from creel survey data.

5. Program Planning

A. SSC Strategic Planning

Lynch provided an overview of the SSC's strategic planning exercise initiated during the 153rd SSC meeting. In advance of the 154th meeting, SSC members met virtually for a discussion session to make progress on the planning exercise.

An objective of this strategic planning process is to focus SSC work and meetings in a manner that is better suited to addressing the unique challenges facing fishery management in the Western Pacific given evolving economic, cultural, and environmental considerations. Another objective of this exercise is to create a collegial environment whereby SSC members may develop, discuss and provide scientific recommendations.

The strategic plan is intended to be a concise and high level document to provide direction for the SSC. The plan emphasizes participation by individual SSC members, effective communication with PIFSC and the public, and contemplates individual members working on specific areas in a proactive manner. A draft code of conduct was added to the strategic plan to promote effective communication among members, and to ensure SSC is being respectful but also rigorous in its scientific approach.

SSC adopts the strategic plan and code of conduct (Appendix A) and recommends the Council endorse the plan.

B. Science Needs to Inform Management Priorities

T. Todd Jones, PIFSC, provided a presentation on the scientific needs to inform management priorities, to inform the SSC's discussion on strategic planning and identifying special project topics. PIFSC intends to provide these needs across several SSC meetings to highlight needs from all three divisions. Jones highlighted several priority areas that could benefit from joint PIFSC/SSC working groups. These needs related to stock assessment for the management unit species complex and improving processes for converting the science to management.

A recent PIFSC false killer whale working group invited several SSC members to participate in discussions and provide feedback to PIFSC, and could serve as a model for future collaborations. However, it also highlighted the need to refine the process for SSC members being engaged with PIFSC staff through working groups. One refinement could be to develop terms of reference that clearly delineate the workload and meeting frequency of these groups.

The SSC thanked Jones for his informative presentation.

C. SSC Special Projects Discussion

In addition to its traditional role of reviewing technical documents and providing comments on them, the SSC plans to undertake special projects to inform the Council regarding the effects of fishery management actions on cultural resources, fishery economics, and fish and protected species populations. Lynch provided an overview of this initiative.

An initial list of priorities for 2025 was developed through a strategic planning discussion

session held in advance of the 154th meeting (Appendix B). These priorities included developing alternative approaches to assessing BMUS species in the territories, social science/human dimension topics, and processes that can improve communication between SSC and PIFSC. Another priority is to engage Council members in the SSC deliberations. The Executive Director noted that she has been working with Council members so that individual members would be assigned to specific issues, so they can listen into SSC deliberations for those topics.

SSC members broke out into two working groups to review the list of projects and structure the priorities in a way that is staggered throughout the upcoming year. SSC members were also encouraged to indicate which items they would like to work on. Specific projects discussed included the following:

- SSC process and communication
 - Develop work short paper on communication side of technical information (synthesizing economic/social/cultural information); making sure we have appropriate information to communicate effectively to Council members
 - Providing a framework for how to incorporate competing objectives and considering weighting those objectives
 - Presentation at March 2025 meeting
- Bottomfish species complex management
 - Discuss the general framework and process for decision matrix on single-species, indicator species, and use of a complex - including monitoring through catch composition or other indices.
 - Hold as a topic at an SSC meeting with invited experts from other SSCs/Science Center (e.g., SEFSC / Caribbean Council/SSC) as they have similar issues on data-limited approaches, to talk about general framework or process to deal with current situation with complex of species.
 - Timing TBD (June or September 2025)
- Climate-related topics
 - Synthesis of available information; potential intersessional meeting; linkage to the Council's IRA project
 - Discuss the plan for how we approach this project and present plan forward at the March 2025 meeting
- Human Dimensions and Social Science
 - Develop presentation for March 2025 meeting on social science information
 - Linkage to the SSC process/communication
- Additional projects discussed on approaches for evaluating efficacy of MPAs; protected species management evaluation

Lynch and Jones will coordinate intersessionally to refine the project list and develop a table of proposed projects with the concept for each project, timeframe and proposed assignments. The SSC will review the refined list at the March 2025 meeting.

D. Inflation Reduction Act Project Updates

Council staff provided an update on the Council projects under the Inflation Reduction Act (IRA) program. Council has solicited proposals for contractual support for the four priority areas, which include: 1) Scenario Planning; 2) Regulatory Review; 3) Projected Species and 4) Communities. Steering committees for each priority area are being formed to review, evaluate

and select contractors with work projected to begin in January 2025.

This funding represents a significant opportunity for projects focused on impacts of climate change on fisheries, with approximately \$2 million available. An SSC member asked if this funding was available for SSC projects (related to the strategic plan). Council staff explained they are currently soliciting help to support the work, but no decisions have been made yet and suggested that they would explore whether SSC priorities overlap with the projects.

E. AS BMUS Revisions-ABC Control Rule Tier 6 (action item)

Council staff provided a presentation on a component of the American Samoa Bottomfish Management Unit Species revision action being considered by the Council that included adding an additional tier to the current Acceptable Biological Catch (ABC) control rules. This additional Tier 6 would allow for using a rate-based approach to setting Annual Catch Limits to allow for data-limited stocks to be effectively monitored and managed.

SSC members discussed the Tier 6 approach to determine whether this approach is particular to American Samoa or if it should be expanded to all fisheries under the Council's jurisdiction. Discussions were focused on the ability to use a rate-based alternative to traditional weight or numbers-based ACL systems. While the inclusion of a Tier 6 ABC control rule offers a viable management alternative for data-limited stocks, it requires significant improvements in data collection and monitoring infrastructure. There were concerns that a broad extension of the control rule could potentially delay other management actions and how effectively mean size metrics reflect stock health under varying recruitment and fishing conditions. However, the SSC agreed that the addition of a Tier 6 ABC control rule provides an additional tool for the SSC to address data-limited stocks. Existing stock assessments often lack sufficient data for robust management and this approach could be used while efforts continue to improve data quality.

The SSC recommends the Council provide the Tier 6 ABC control rule for all of the Fishery Ecosystem Plans.

F. Public Comment

There was no public comment.

6. Protected Species/Pelagic & International Fisheries

A. False Killer Whale Foreign Fleet Impacts Analysis

SSC members Shelton Harley, Ray Hilborn, Graham Pilling, and David Itano participated in an ad-hoc PIFSC working group convened in March 2024 to consider approaches for estimating foreign fleet fishing effort and false killer whale (FKW) bycatch in the pelagic FKW stock management area (also referred to as the assessment area). At the 153rd meeting, the SSC received a presentation of the analysis and results from Rob Ahrens, PIFSC. The SSC was informed that the members who participated on the ad-hoc PIFSC working group will have the opportunity to review the draft manuscript in advance of the 154th meeting. Harley, Hilborn, Pilling, and Itano (hereafter referred to as the SSC subgroup) met virtually on November 14, 2024, to discuss their review of the draft manuscript.

Hilborn presented a summary of the SSC Subgroup's draft manuscript comments. The SSC Subgroup noted that the Global Fishing Watch (GFW) data as well as the uncertainties associated with the Regional Fishery Management Organization (RFMO) three-vessel rule should be explained in the methods section and accounted for in the actual analysis if the bias exists. The Subgroup also provided comments on an approach for testing the assumption about missing shallow-set longline data in the GFW dataset, as well as comments regarding the appropriate interaction rate to apply to foreign fleets (see full comments in attached SSC Subgroup Report, Appendix C). The SSC subgroup further noted that the analysis provides a framework for estimating the foreign fleet bycatch within the pelagic FKW assessment area, and that the quantified impact should be accounted for in the calculation of the mortality and serious injury (MSI) rather than in the potential biological removal (PBR) calculation.

Ahrens provided responses to the SSC subgroup comments about the three-vessel rule and GFW data. The three-vessel rule provides an underestimate with the data coming from the metadata from the WCPFC. He stated that accounting for this issue becomes problematic due to a lack of spatial data but it may be viewed as a sensitivity analysis. They will examine this issue and present it more clearly in the manuscript. For the GFW data, he will clarify relative to the shallow set longline fleet data from the RFMO but it is likely to have small changes to the overall result. Regarding interaction rates for foreign fleets, Ahrens clarified that there is no ROP coverage for the WP region.

An SSC Member identified potential sources of bias coming from interaction rates and suggested not stating the direction of a bias without having more robust spatial FKW data. Furthermore, additional FKW tagging data could change the management area in the future, which is another source of uncertainty that could be acknowledged in the report.

Erin Oleson, PIFSC, responded to the SSC subgroup comments on the implication of the analysis results on the PBR. The intent is to generate a point estimate of the foreign fishery MSI. This estimate would also influence the computation of the PBR in terms of the level of uncertainty in the total catch estimate. Thus, the results of the analysis would be accounted for in both the MSI and PBR determination.

An SSC member stated they would be interested in how the calculations for MSI and PBR will be performed.

The SSC endorses the Subgroup’s finding that the analysis provides a framework for estimating the foreign fleet bycatch within the pelagic FKW assessment area.

The SSC requests PIFSC provide an update at the March 2025 SSC meeting on how the analysis will be incorporated in the estimation of MSI and PBR.

B. Development of an Electronic Monitoring Program for Western Pacific Fisheries (action item)

Staff provided an overview of decision points to authorize Electronic Monitoring (EM) in the Western Pacific region fisheries. EM has been a voluntary program in longline fisheries dedicated to research and development, and has not been authorized for monitoring under statutory requirements. In order to implement EM as a tool for monitoring, the Council would need to authorize the use of EM. Given the decline in human observers in 2024, 2025, and beyond due to NMFS budgetary limitations, there is a need to transition the existing EM program from an experimental and research tool to a program that can address monitoring requirements in Pacific Island fisheries. The implementation of an electronic monitoring program that can support monitoring requirements is a very high priority for management of Pacific Island fisheries. These requirements include the need to develop statistically reliable estimates of all catch and bycatch as well as the number and fate of interactions with protected species. Three decision points will be provided for the Council to take in order to authorize EM to be transitioned from a research and development tool to satisfy statutory requirements to monitor fisheries. First, the Council may consider if EM may be authorized as either an optional monitoring program for fishing vessels or a mandatory program. Second, the Council may consider scope of EM implementation: whether EM should be authorized for longline fisheries under the Pelagic Fishery Ecosystem Plan (FEP) or for any fishery under all applicable FEP as EM becomes available. Third, the Council may determine the relationship with existing monitoring: whether EM should complement human observers or complement human observer coverage while validating self-reporting logbooks.

Human observer coverage is expected to drop to 7% by January 2025 for the Hawaii-based deep-set longline (DSLL) tuna fishery. EM will be an increasingly important alternative for monitoring statutory obligations and especially to provide reliable estimates of protected species interactions. SSC considered (1) whether voluntary phase-in or the more costly mandatory adoption was appropriate, (2) if authorized, should EM then apply to all FEP fisheries not just pelagic longline fisheries and (3) whether EM would be an adequate supplement to human at-sea observer coverage (which has declined substantially in recent years) and catch/effort self-reporting logbooks introduced in 1991. The NMFS is currently obliged to maintain at least a 5% coverage by human observer coverage.

A SSC member proposed that it would be useful to maintain in the interim a concurrent observer and EM program to assess reliability and comparability of the incoming EM system. A SSC member noted the need to evaluate the economic and cultural impacts of implementing EM on fishery participants.

T. Todd Jones (PIFSC, SSC member) described NMFS plans for funding systems for an EM program for longline fisheries that could be phased in over three years (2025-2027) that may eventually replace human observer programs. Funding for human observers remains uncertain,

given the increased costs. Implementation could duplicate observer data collection using a randomly selected subset of EM derived data per trip to estimate protected species interactions.

The SSC acknowledges the potential value of EM-based monitoring. SSC members noted the need for economic and cultural impacts analyses to evaluate the impacts of the action on affected parties.

The SSC recommends that:

- 1. EM be phased in by NMFS with the intent for a full mandatory program implemented by the end of 2027 to ensure the minimal obligatory annual observer coverage of 5%, with the primary objective for protected species monitoring and bycatch estimation, and secondary objective for discard accounting.**
- 2. EM initially be limited to the following pelagic FEP fisheries: the Hawaii-based shallow-set longline (SSL) swordfish fishery (at 100% coverage), the Hawaii-based deep-set longline (DSL) tuna fishery and the American Samoa DSL tuna fishery.**
- 3. EM coverage replace the current observer program coverage and verify logbook data and be subject to the same expansion procedures applied currently to the observer coverage for the SSL and DSL fisheries.**

The SSC thanks Council staff for the informative presentation.

C. Public Comment

Eric Kingma, Hawaii Longline Association (HLA), noted that the Hawaii longline fishery and HLA has been a longtime supporter of several voluntary EM trials and programs over several years. He stated that program costs should not be borne by HLA and that no vessels would volunteer for EM installation if they had to pay for program costs. However, he felt that many vessel owners would volunteer to have EM installed if an EM trip would be counted in lieu of taking an onboard observer. Other concerns by industry have to do with data confidentiality and security that should be on par with human observer data procedures. In general, HLA is generally supportive of a phased implementation of EM in the fishery.

7. Island Fisheries

A. Non-commercial Fisheries Data

1. MRIP Pacific Islands Regional Implementation Plan

Council staff presented on the status of the Marine Recreational Information Program (MRIP) Pacific Islands Regional Implementation Plan (PIRIP) which is designed to identify priority needs and actions associated with understanding, and management of, the non-commercial fishery in the state/territorial and federal waters in the Western Pacific. The plan identified five regional needs and staff provided an updated status for each of those priorities along with potential needs to be added. The original PIRIP was developed for the years 2018-2022 and Council staff is currently working with partners to develop a new PIRIP. Some priorities from the previous PIRIP have been completed, and some are still in progress while a few have yet to be initiated.

An SSC member noted a strong interest in an integrated data collection system within the region suggesting that additional projects to do this in the PIRIP may be needed. He also noted that the SPC's Ikasavea app already incorporates the rate-based approach with recording length-frequency and calculating spawning potential ratio (SPR).

The SSC heard the detailed presentation with interest and looks forward to an updated PIRIP and potential progress on estimating non-commercial catch and effort.

2. Non-commercial Bottomfish Vessel Registry Data Exploration

Jason Helyer, SSC member and State of Hawaii Division of Aquatic Resources, provided a report that explored and evaluated alternative non-commercial (NC) Deep 7 catch scenarios. Using available information on the number of NC Deep 7 fishers, commercial fish catch reports, and previous surveys of Hawaii bottomfishers, he provided hypothetical scenarios of NC Deep 7 catch. The scenario comparisons with reported commercial catch and the two options for NC catch considered in the 2024 Deep 7 stock assessment suggest previously reported estimates of NC Deep 7 catch (both catch and ratio approaches) are likely to be high. The presentation was not suggesting that the data from this exercise be used in a stock assessment, rather it was a thought exercise to evaluate numbers and see what is realistic as there is ample data available to get at the issue.

The SSC noted that this was an independent, voluntary effort to evaluate the various possible catch scenarios from existing data and provides further insight into the long-term question of how to measure and assess estimates of unreported and non-commercial catch. There is a need to be realistic about the data and use either a ratio-estimator or a consideration for different sectors of the fishery.

The SSC discussed the use of the PIFSC research assessment track as an opportunity to further evaluate this approach with stock assessors and the fishing community. The SSC noted that if an alternative method of determining the non-commercial catch component of a stock, then it should be explored and taken to the fishers to make improvements before being used in assessments.

The SSC thanked Helyer for an informative presentation.

B. Main Hawaiian Islands (MHI) Uku

1. MHI Uku Update Stock Assessment

Marc Nadon, PIFSC Stock Assessment Program, provided an overview on a 2024 update from a 2020 benchmark stock assessment on the Main Hawaiian Islands (MHI) uku. The current assessment is an update to the 2020 benchmark, adding 5 years (2019-2023) of catch, catch per unit effort (CPUE), and size data, and an extra year of fishery-independent diver surveys (2019). The only change to the modeling approach was to implement correction factors for the recreational catches related to the decline of phone landlines between 2003 and 2016, as done in the recent Deep-7 assessment. Fishing mortality (F) on the stock (average F on ages 5-30) is currently 0.05 with a relative fishing mortality at maximum sustainable yield (MSY), F/F_{MSY} value of 0.36. Fishing mortality has only been above F_{MSY} (0.14) twice, in 1988 and 1989 when F reached 0.17 and 0.15, respectively. The 2023 spawning stock biomass (SSB) of 995 mt is 280% above the Minimum Stock Size Threshold (355 mt). Therefore, relative to the reference points defined by the Fisheries Ecosystem Plan, overfishing is not occurring and the MHI uku stock is not overfished. Stock projections for uku were conducted using the age-structured projection model software AGEPRO using results from the base-case model to evaluate the probable impacts of constant catch quotas on future spawning stock biomass and yield for uku in the MHI. Results show the projected female spawning stock biomasses and fishing mortality rates under each of the constant-catch scenarios. For example, a constant catch limit of 190 mt (418,878 pounds) each year from 2025 to 2029 would result in a 50% chance of overfishing occurring in 2029.

The SSC questioned the catchability coefficient for a time series index of abundance that stretches nearly 70 years given technological changes (GPS, electric reels, etc.). While the current update assessment did not explore this directly, there have been past Western Pacific Stock Assessment Review (WPSAR) recommendations related to this. In the 2020 update assessment numerous alternative models were run, including the use of a shorter time series, and this modeling approach did not provide substantial changes to the results.

The SSC observed recent changes in gear proportions in the time series and highlighted the importance of continued engagement with fishers to better understand targeting and gear usage. Additional discussion related to the recreational catch adjustments and strategies to handle multiple sources of uncertainties in the time series. PIFSC explained how incorrect recreational catch likely does not affect current stock status but could mask commercial trends and pointed to recent stock assessments (American Samoa Bottomfish) that have tackled uncertainty.

The SSC commended PIFSC for providing extensive documentation underlying all analyses.

The SSC thanked Nadon for the informative presentation.

2. Chair's Report on Uku Update Stock Assessment WPSAR

WPSAR Chair, Erik Franklin, provided a summary of the report and recommendations provided by himself and SSC members Jason Helyer and Milani Chaloupka serving as panelists of a review of the MHI uku update stock assessment. Each of the Terms of Reference (TORs) were reviewed with recommendations where appropriate. The panelists were satisfied with all the TORs and found all the methodologies and applications to be satisfactory. The panel also made a

series of recommendations - high, medium, and low priority for consideration with the next benchmark stock assessment.

The WPSAR Chair provided an overview of the WPSAR process for new SSC members and noted that the process is becoming more of a public process, which is improving engagement with the fishing community. The SSC noted three public comments included in the panel report that all focused on the issue of shark depredation affecting the uku fishery. The SSC again commended PIFSC for impeccable documentation and noted that past assessments are readily available for new SSC members to review.

The SSC thanked Franklin for the informative presentation.

The SSC endorses the findings of the WPSAR review panel, and recommends that the MHI uku update stock assessment be considered Best Scientific Information Available.

C. Public Comment

There were no public comments.



**Western Pacific Regional Fishery Management Council
Strategic Plan for Scientific and Statistical Committee
Adopted at the 154th SSC Meeting
December 2024**

The Scientific and Statistical Committee (SSC) is engaged in a Strategic Planning exercise to guide its work and membership for the next several years. The SSC advises the Council on scientific and technical matters relating to fisheries management in the Western Pacific Ocean. An **objective** of this Strategic Planning process is to focus SSC work and meetings in a manner that is better suited to addressing the unique challenges facing fishery management in the Western Pacific given evolving economic, cultural, and environmental considerations. Another **objective** of this exercise is to create a collegial environment whereby SSC members may develop, discuss and provide scientific recommendations.

In recent years, it has become clear that the rapidly evolving landscape of fishery management in the Western Pacific requires SSC members to take on a more proactive role to give greater effect to the goals and requirements of the Magnuson-Stevens Act. In view of these considerations, the following principles will guide the SSC and its actions:

1. In addition to its traditional role of reviewing technical documents and providing comments on them, the SSC will undertake special projects to inform the Council regarding the effects of fishery management actions on people, fishing communities, consumers, fishery economics, and fish and protected species populations. SSC members with expertise in these areas will be selected to work collaboratively with NMFS to further the Council's understandings in these areas. SSC members involved in special projects will lead discussions at SSC meetings over these matters and will be viewed as subject matter experts in SSC deliberations over such matters. Presentations and papers will clearly and concisely state the problem under consideration and conclude with a concise summary of conclusions.
2. Agendas for SSC meetings will be developed and focused on technical areas under consideration by the SSC, and relevant to Council meetings. The SSC will strive to avoid revisiting topics or decisions that have been previously discussed.
3. SSC members will review meeting materials in advance of SSC meetings and come prepared to meaningfully engage in discussions at SSC meetings.
4. The SSC will operate in a collaborative, consensus-based manner consistent with the **Code of Conduct** provided below. SSC members shall remain professional in their dealings at all times with SSC members, presenters, and the public.
5. The SSC will review these principles on an annual basis and reassess the need for changes or additions to these principles.

Code of Conduct¹

Scientific and Statistical Committee

1. Rigor, honesty and integrity.

- Focus SSC deliberations on science-based issues with science-based solutions
- Act with skill, care, transparency, and rigor in all scientific work.
- Maintain up to date skills and assist their development in others.
- Take steps to prevent professional misconduct. Declare conflicts of interest.
- Be alert to the ways in which research derives from and affects the work of other people
- Respect the rights and reputations of others.

2. Respect for the law, nature, and the public good.

- Ensure that your work and research that SSC reviews is lawful, justified, and based on the best scientific information available (BSIA).
- Strive to increase the public's understanding of marine resources and their associated fisheries
- Minimize any adverse effects your work may have on fishing communities and the environment.
- Protect the rights and privacy of survey respondents and interviewees

3. Responsible communication: listening and informing.

- Seek to discuss the issues that science raises for society.
- Listen to the aspirations and concerns of others.
- Do not knowingly mislead, or allow others to be misled, about matters that come before the SSC.
- Present and review scientific evidence, theory or interpretation honestly and accurately.
- Strive to make scientific data and interpretation understandable to the public

¹ Adapted from the Royal Astronomical Society, available at <https://ras.ac.uk/membership/membership-fellows/universal-ethical-code-scientists> (last viewed 12/1/24).



**SSC Strategic Planning Discussion Session
December 4, 2024
Summary**

Overview: The SSC at the 153rd meeting in September 2024 initiated a strategic planning exercise. The purpose of the strategic planning exercise is to guide the SSC's work and membership for the next several years. A goal of this Strategic Planning exercise is to focus SSC work and meetings in a manner that is better suited to addressing the unique challenges facing fishery management given evolving economic, cultural, and environmental considerations. In advance of the upcoming 154th meeting, SSC members met virtually for a discussion session to make progress on the planning exercise. The SSC discussed the revised draft strategic planning document and a draft SSC code of conduct, and had a round robin discussion to identify areas the SSC could proactively contribute to the development of scientific information. A summary of these discussions are presented below.

Discussion Summary:

Key Themes for 2025

Members identified areas where the SSC may help proactively develop scientific information. These special projects are not intended to be a large time commitment, but rather a focused effort that may result in short papers or presentations. At the upcoming 154th meeting, the SSC will refine these into a list of priorities and roadmap for 2025. The list identified at the December meeting will help form agenda items for future SSC meetings.

- Bottomfish species complex management:
 - Shifting from multi-species complex assessments to single species assessments for bottomfish and how to select indicator species and monitor them over time
 - Science-policy coordination to maximize economic value while complying with MSA
 - Exploring alternative management alternatives to ACLs for insular management unit species
 - Collaboration between SSC, academia, and PIFSC to explore different assessment approaches and data inputs
 - Development of a standardized list of items/issues to be addressed in stock assessments
- Climate-related topics:
 - Accounting for non-stationarity in stock assessments as well as processes before/after (e.g., standardization, ACL process)
 - Dynamic management – more dynamic management based on climate indices; also in terms of ESA/MMPA
 - Impacts of climate on stock assessments, redistribution of target/non-target catch, vessel range, and potential for fisheries subsidies
- Human dimensions and social science:
 - Develop indicators to evaluate fishery performance in support of NS8 goals, especially community participation and engagement
 - Marketing studies, focused on market gluts, imports, fish quality (i.e., treated tuna and health risks), market chains and impacts on the local fleets in all parts of the region
 - Effectiveness of outreach and education about rules and regulations, as well as justification of those rules
 - Focus on troll and handline small boat fisheries and motivation to fish, and fish flow, especially for unsold portion of the catch

- Monitoring community engagement and resilience
 - Incorporate human dimensions into protected species discussions.
- Impacts of closed areas in the region – integrating economic, environmental and cultural perspectives
- Industry-based solution to management problems
- Protected species management evaluation - Evaluate potential impacts of management interventions especially in terms of protected species – through cumulative effects and other analyses (ensuring utilization and food production is at the table)
- Contribute expertise to the regional HMS stock assessments and associated processes
- Electronic monitoring – science on bycatch estimation
- Data improvements:
 - SAFE Report improvements – make the report more comprehensive and useful by including species-specific information with hyperlinks to databases, monthly catch and effort data, and relevant time series of economic data
 - Data quality evaluation – evaluate time series of data in terms of quality, particularly given the loss of institutional knowledge due to retirements
 - Automating data streams
- SSC Process and Communication
 - Explore ways to better convey the full complexity of SSC discussions and recommendations to the Council
 - Consider process for SSC to work with PIFSC in being proactive (recent FKW foreign fleet working group provides a case study from which to improve)
 - SSC input on Council-funded research projects to ensure they are policy-focused and mission critical research that take a systems approach accounting for social, economic and biological data
 - Increase collaboration with other Councils and SSCs on shared issues like mixed-stock bottomfish complexes, climate impacts, and closed area effects
 - Improve data visualization techniques to better communicate information to the public and stakeholders

Revised Draft Strategic Plan and Draft Code of Conduct

The strategic plan is intended to be a concise and high level document to provide direction for the SSC. The plan emphasizes participation by individual SSC members, effective communication with PIFSC and the public, and contemplates individual members working on specific areas in a proactive manner. Members expressed general support for the revised plan, with additional feedback received on ensuring that the SSC does not lose sight of human dimensions.

A draft code of conduct was added to the strategic plan to promote effective communication among members, and to ensure SSC is being respectful but also rigorous in its scientific approach. Members acknowledged that much of what is in the draft is already practiced by the SSC, and generally supported having a written code of conduct. Members provided several suggestions for improvement:

- Adding transparency, as it is key to scientific integrity and rigor
- Rephrasing the term “cultural resources” to encompass a broader understanding of cultural and social systems
- Adding language to emphasize the protection of respondent privacy in social and economic impact assessments



SSC Subgroup Review of FKW Foreign Fleet Analysis

Prepared for the 154th SSC Meeting

SSC members Shelton Harley, Ray Hiborn, Graham Pilling, David Itano participated in an ad-hoc PIFSC working group convened in March 2024 to consider approaches for estimating foreign fleet fishing effort and FKW bycatch in the pelagic FKW stock management area (also referred to as the assessment area). At the 153rd meeting, the SSC received a presentation of the analysis and results from Rob Ahrens, PIFSC. The SSC was informed that the members who participated on the ad-hoc PIFSC working group will have the opportunity to review the draft manuscript in October. The SSC scheduled a full discussion on the uncertainties associated with the RFMO data and implication of this analysis on the PBR recovery factor for its December 2024 meeting, informed by the inter-sessional review of the draft manuscript by a subset of SSC members.

Harley, Hilborn, Pilling and Itano (hereafter referred to as the SSC subgroup) met virtually on November 14, 2024, to discuss their review of the draft manuscript. Below are the key comments identified through the SSC subgroup review.

Summary of SSC Subgroup Manuscript Comments

- **RFMO three-vessel rule uncertainty:** The draft manuscript discusses uncertainties with the RFMO 5° x 5° data as they pertain to the three vessel rule, and estimates that the 5° x 5° data represents 86.5% of the total effort with a CV of 0.008. It is unclear how this estimate was derived, and should be explained in the methods section. Further, this uncertainty should be accounted for in the actual analysis if the bias actually exists.
- **Global Fishing Watch (GFW) data:** The methods section should include a stand-alone section on GFW data, including a description of the difference between fishing effort and a clear description of what is true effort vs inferred effort. The methods should also explain which date/version of GFW dataset was used.
- **Assumptions about missed SSSL data in GFW:** The draft manuscript noted that the GFW data may be missing shorter fishing sets made by SSSL operations, and that set-level data from non-US fleets would be needed to assess this. This assumption has an effect on the proportion of non-US swordfish effort, and may be tested by comparing US data with GFW data for specific area and time periods characterized by SSSL and DSSL fishing activity.
- **Appropriate interaction rate to apply to foreign fleets:** The PIFSC working group noted at its March 13, 2024 meeting that, based on the preliminary analysis, the key uncertainty seems to be what interaction rate per hook or set to use for the foreign fleets, and that the U.S. deep-set rate was probably more appropriate than the ROP estimate. The SSC subgroup notes that the ROP interaction rate is very similar to the SSSL rate, and contends that the RFMO data is an underestimate and the DSSL interaction rate is

more appropriate to use for the foreign fleet rate. The SSC subgroup further notes that the draft manuscript describes several reasons for the DSLL interaction rate being biased low; however, SSSL does represent some fishing effort so using the DSLL interaction rate may represent an overestimate. The US SSSL to DSLL ratio by 5x5 grids could be applied to foreign fleets to validate the assumptions regarding the proportion of non-US swordfish effort.

- The SSC subgroup found it was generally challenging to follow the various assumptions made throughout and their interactions, each of which will increase uncertainty in the outputs. It would be useful to consolidate all of those in the paper and clearly examine their implications. It was also noted that the information currently provided in the manuscript is insufficient to replicate the analysis.
- Figure A1 – related to the comment made above on ‘Assumptions about missed SSSL data in GFW’, an evaluation of where the US fleet GFW data indicate little or no effort despite the RFMO data indicating effort occurred should provide further information on the efficacy of GFW data for the process of partitioning 5x5 data.

Implications of the Analysis Results on the PBR and Recovery Factor¹

The SSC subgroup notes that the analysis provides a framework for estimating the foreign fleet bycatch within the pelagic FKW assessment area. The quantified impact should be accounted for in the calculation of the mortality and serious injury (MSI) rather than in the PBR calculation.

¹ GAMMS guidelines for setting recovery factor: If the CV is greater than 0.3, the recovery factor should be decreased to: 0.48 for CVs of 0.3 to 0.6; 0.45 for CVs of 0.6 to 0.8; and 0.40 for CVs greater than 0.8. See full GAMMS guidelines at: <https://www.fisheries.noaa.gov/s3/2023-05/02-204-01-Final-GAMMS-IV-Revisions-clean-1-kdr.pdf>