

North Pacific Fisheries Commission
1st Meeting of the Small Scientific Committee on Pacific Saury

20-22 April 2016

Tokyo, Japan

FINAL REPORT

Agenda Item 1. Opening of Meeting

1. The 1st Meeting of the Small Scientific Committee on Pacific Saury (PS) took place in Tokyo, Japan and was attended by Members from China, Japan, Republic of Korea, the Russian Federation, Chinese Taipei, and a party that has not yet ratified the Convention (United States of America) and observers.

Agenda Item 2. Selection of Chair and Rapporteur

2. Dr. Toshihide Iwasaki was selected as the Chair. Mr. Peter Flewwelling was selected as Rapporteur with support provided from Japan.

Agenda Item 3. Adoption of Agenda

3. The provisional agenda was adopted with the amendment to delete Agenda Item 6 and merge it with Agenda Item 8 and include 'Pacific saury' in the title of Agenda 4 (Annexes A, B).

Agenda Item 4. Review of Pacific saury fisheries through presentation of Annual Reports

4. Participants made reports with respect to their Pacific saury fisheries in their annual reports. China, Japan, Republic of Korea, Russian Federation and Chinese Taipei and observers provided short discussions on the highlights of their Pacific saury fisheries. Total catch amount of Pacific saury in 2015 was less than 60% of that in 2014.
5. The reference document for the discussions including the most recent data on catches, areas and vessels active in the Pacific saury fisheries for the NW Pacific Ocean was the summary tables prepared by the Secretariat (NPFC01-2016-AR-Annual Summary Table-P Saury).

6. Russia clarified the number of vessels engaged in the fishery for Pacific saury in national waters and the Convention Area (CA) in 2015. A total of 45 fishing vessels include: 39 vessels in national waters; of these, 9 vessels also fished in the Convention Area, which traditionally crossed the Convention Area border from time to time. In addition, 6 vessels fished exclusively in the Convention Area, which made a total number of 45 vessels fishing for Pacific saury in 2015.
7. China confirmed that all the Chinese vessels fishing for Pacific saury fished only in the Convention Area.
8. Chinese Taipei clarified that in 2015, catches were only taken in the CA with 90 vessels. Before 2015, some fishing vessels conducted fishing activities in Russian waters by fishery cooperation in some particular years. Chinese Taipei revised the catch data and number of vessels separately in the CA and national waters.
9. The Republic of Korea explained the number of vessels conducted for Pacific saury in the CA was 13, including 12 vessels in the EEZ of Russia in 2015.
10. Russia suggested to improve the table of reported catches and vessels fishing for Pacific saury and leave two major columns in the table: total catch by a Member (including catch in the CA, catch in national waters of the Member and catch in national waters of another Member) and catch in the CA.
11. Korea indicated that one of the two columns suggested by Russia should be limited to the catch in national waters adjacent to the CA.
12. Vanuatu noted that in 2015, 4 vessels fished in the NPFC Convention Area with catches being 6,600 mt.
13. SSC PS01 recommended to SC that the catch data presented in the annual report be separated into two columns for each Member – one being total catch taken by the Member (including catch in the CA, catch in national waters of the Member and catch in national waters of another Member) and the second column to include that portion taken in the Convention Area (CA). Total catch of Korea will not

include catch in Korean national waters. The fishing days and numbers of vessels by area were also to be split accordingly, if possible.

Agenda Item 5. Progress in Stock Assessment for Pacific saury

14. The Chair noted NPFC01-2016-SSC-PS01-Inf01- *Information For Assessment Of Pacific Saury* which highlighted the historical biomass, range and seasonality of the Pacific saury fisheries for China, Japan, Korea, Chinese Taipei and Russia for the benefit of the SSC PS01 Participants.
15. Japan presented NPFC01-2016-SSC-PS01-WP01 and WP03, its stock assessment by the Japan Fisheries Research and Education Agency (FRA) for 2015 which used the swept area method based on surface-trawling research cruise data during 2003 - 2015 and stick-held dip net commercial fishery data and standardized CPUE during 1980 - 2014 to estimate the current population dynamic parameters and the acceptable biological catch (ABC) for 2016 fishing year (i.e., July 2016 to June 2017). The assessment indicated that it would be appropriate to maintain current SSB (920,000 mt in the end of 2015 fishing year). Therefore, the ABC estimated for 2016 was 363,000 mt, that is, 92% of ABC for the previous year. Key point noted was the decreasing trend in the stock.
16. Discussions on the Japanese assessment brought out possible issues associated with the survey design, uncertainty associated with the population dynamics estimates using the swept area method, and possible improvement for taking into consideration for future estimation, e.g., exploring model-based estimation approach versus current design-based estimation approach; the differing conclusion on the stock status using different time scales/ranges; possible use of alternative stock assessment models, e.g., production model and age/size structured models); and other factors that might influence the quality of this assessment. FAO suggested the use of all methods might enhance the results.
17. Chinese Taipei provided a paper (NPFC0-2016-SSC-PS01-WP02a) and presentation (NPFC01-2016-SSC-PS01-WP02b Rev 1) on the potential to standardize CPUE in the NW Pacific Ocean. Chinese Taipei's catch represents approximately 38% of the total catches in the NW Pacific Ocean over the past 5 years. Chinese Taipei used a generalized additive model (GAM) to standardize CPUE using catch and effort data, collected from 2001-2014, from the Chinese

Taipei's Pacific saury fishery. The variables in the model include year, month, sea water temperature, area, and vessel size. The standardized CPUE showed a moderate increasing trend from 2001 to 2012, and a sharp increase from 2012 to 2014. As the GAM model appeared robust in setting a standard, Chinese Taipei recommended:

- a. incorporating CPUE data from all major Pacific saury fishing fisheries into models,
- b. developing a more inclusive model and/or method for CPUE standardization, and
- c. the continued collection of long term data.

Discussions revealed the possible factors influencing CPUE standardizing issue and the complexities of CPUE standardization and the agreement with Chinese Taipei on the need for further studies. Possible causes for apparent differences between the Japanese standardized CPUE and Chinese Taipei standardized CPUE were discussed.

18. Russia presented information on stock assessment for Pacific saury in Russian and adjacent waters in the Northwestern Pacific Ocean (NPFC01-2016-SSC-PS01-WP04). A notable decrease in annual catches, CPUE values and density distribution index were observed, which indicated recent negative trend in Pacific saury stock. Russia informed on approaches towards standardizations of CPUE data using Generalized Linear Models (GLM) and pointed out notable concordance of standardized CPUE values provided by Russia and Japan. With respect to selecting optimal harvest control rules (HCR), Russia used data limited model (DLM) tool package to assess the total allowable catch (TAC) under data-limited conditions for migrating stocks, and among a variety of models suggested depletion corrected average catch (DCAC₄₀), which produced minimal risks of overfishing and an estimated mean TAC value for Pacific saury of about 340,000 mt. Calculations of Pacific saury biomass depletion, based upon GLM applied to Japanese biomass assessments, suggested that the average annual decrease in Pacific saury biomass during 2003-2014 was about 250,000 mt. Russia also pointed out that, based upon the existing data on catches, CPUE and estimated biomass, possible change in the observed trends for these values might have happened in 2009-2010. Participants discussed possible issues associated with this approach and agreed on prospective of further exploring the usefulness of the suggested approaches for stock assessment of Pacific saury.

19. The SSC PS01 agreed that it should discuss a two-step stock assessment, that is, provisional assessment toward Scientific Committee in 2017 using available data followed by an in-depth assessment including desirable data to be collected in the future and model development and evaluation.
20. SSC PS01 made a table of available data and parameters (Annex D). SSC PS01 agreed that to expedite and make more effective the process of stock assessment for Pacific saury, Members propose to the SC the establishment of a working group. SSC PS01 collectively set tasking and identified data sets to be used for this recommendation to SC, as further detailed in Agenda Item 7.

Agenda Item 6. Ways to improve reporting and information collection from fisheries

21. In order to improve stock assessment procedures for pelagic fish stocks, the SWG of PrepCon recognized that there is a need to improve reporting and information collection regarding all fisheries (Report of SWG 13). SSC PS01 agreed that the collection of fish size composition was necessary to support stock assessment and other analyses, but the issue of the detail of size data and the format for reporting such data to the Commission needs to be clarified.

Agenda Item 7. Recommendations to the 1st Session of the Scientific Committee

22. SSC PS01 endorsed the following recommendations to the SC for consideration and action:
 - a. catch data presented in the annual report be separated into two columns for each Member – one being total catch taken by the Member (including catch in the CA, catch in national waters of the Member and catch in national waters of another Member) and the second column to include that portion taken in the Convention Area (CA). Total catch of Korea will not include catch in Korean national waters. The fishing days and numbers of vessels by area were also to be split accordingly, if possible;
 - b. To meet the requirement to complete a stock assessment of Pacific saury in 2017 the SSC PS01 recommended the following action:
 - i. establish a technical working group to work intersessionally and through a workshop to develop the Pacific saury stock assessment under the leadership of Mitsuo Sakai, with membership including:
 1. China (Siquan Tian/Yong Chen),

2. Russia (Vladimir Kulik/ Oleg Katugin),
 3. Korea (Jaebong Lee/Eunjung Kim),
 4. Japan (Satoshi Suyama/Toshihide Kitakado), and
 5. Chinese Taipei (Wen-Bin Huang/Chih-hao Hsieh).
- ii. The Terms of Reference for this working group are attached as Annex E
 - iii. The workshop is proposed to be held in December 2016 or January 2017
 - iv. Korea has offered to host the workshop
 - v. Workshop budget to be supported by NPFC
 - vi. Tasking of the workshop includes:
 1. Review report of Pacific saury-stock assessment working group activity
 2. Finalize CPUE standardization
 3. Finalize specification (base cases as well as scenarios for sensitivity analyses) of stock assessment, *inter alia* for (Bayesian) age-aggregated production models
 4. Conduct stock assessment to:
 - estimate population dynamics
 - determine biological reference points (e.g. with respect to maximum sustainable yield [MSY] or depletion level)
 - conduct risk analyses based on different harvest levels
 - specify environmental data to be included.
 5. Discuss how to present the stock assessment results for SC in 2017.
 6. Other issues (e.g. alternative models).
 - vii. Data sets to be used
 1. Time series of fishery-dependent biomass indices, standardized CPUE (up to 2015)
 2. Time series of fishery-independent biomass index (up to 2015)
 3. Time series of catch (up to 2015).

Agenda Item 8. Other Matters

23. There were no other matters for discussion.

Agenda Item 9. Next Meeting

24. The timing and venue of the next meeting of the SSC PS is deferred to the SC.

Agenda Item 10. Adoption of the Report

25. The Report of the SSC PS01 was adopted by consensus on 22 April 2016.

Agenda Item 11. Close of Meeting

26. The meeting closed at 15:42 hrs. on 22 April 2016.

27. The Participants thanked the Chair for his leadership and guidance during the meeting.

Annexes

Annex A - Agenda

Annex B - Annotated Agenda

Annex C – Participants List

Annex D - NPFC Pacific Saury Data Availability (All Members)

Annex E - Terms of Reference for the Pacific Saury Stock Assessment Working Group

North Pacific Fisheries Commission
1st Meeting of the Small Scientific Committee on Pacific Saury

20-22 April 2016

Tokyo, Japan

AGENDA

1. Opening of the meeting
2. Selection of Chair and Rapporteur
3. Adoption of Agenda
4. Review of Pacific saury fisheries through presentation of Annual Reports
5. Progress in Stock Assessment for Pacific saury
6. Ways to improve reporting and information collection from fisheries
7. Recommendations to the 1st Session of the Scientific Committee
8. Other Matters
9. Next Meeting
10. Adoption of the Report
11. Close of the Meeting

North Pacific Fisheries Commission
1st Meeting of the Small Scientific Committee on Pacific Saury

20-22 April 2016

Tokyo, Japan

ANNOTATED AGENDA

Agenda Item 1. Opening of Meeting

The meeting will open at 0900 hrs on 20 April 2016. Past Chair shall provide admin details for the meeting (start times, breaks, facilities available – washrooms secretariat, etc.)

Agenda Item 2. Selection of Chair and Rapporteur

Participants will consider to select Chair and Rapporteur for the Meeting and future meetings according to the Rules of Procedure.

Agenda Item 3. Adoption of Agenda

The provisional agenda will be reviewed, amended as appropriate, and adopted.

Agenda Item 4. Review of Pacific saury fisheries through presentation of Annual Reports

Members will be asked to update and highlight information regarding pelagic fisheries based on their Annual Report submitted to the Secretariat.

Agenda Item 5. Progress in Stock Assessment for Pacific saury

The SWG recommended the SC make efforts to complete the stock assessment by its 2017 meeting. Participants will be invited to present on the progress in developing stock assessment for Pacific saury since the WG meeting in 2015.

The Chair will summarize the available information from which participants will discuss candidates for assessment method and data needs

Agenda Item 6. Ways to improve reporting and information collection from fisheries

In order to improve stock assessment procedures for pelagic fish stocks, SWG

recognized that there is a need to improve reporting and information collection regarding all fisheries. Participants will discuss ways to improve reporting and collection from fisheries.

Agenda Item 7. Recommendations to the 1st Session of the Scientific Committee

Participants will agree on recommendations to be submitted to 1st session of the Scientific Committee for its consideration.

Agenda Item 8. Other Matters

Participants will consider any other issues that are raised under agenda item 3.

Agenda Item 9. Next Meeting

Participants will decide the date and place of the next meeting.

Agenda Item 10. Adoption of the Report

The record of the 1st SSC on Pacific saury will be adopted.

Agenda Item 11. Close of Meeting

The meeting will close at 1800 hrs on 22 April 2016.

**NORTH PACIFIC FISHERIES COMMISSION
SMALL SCIENTIFIC COMMITTEE –
PACIFIC SAURY MEETING
20-22 April 2016**

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NPFC Pacific Saury Data Availability (All Members)

Annex D

Data/ parameter	China		Chinese Taipei		Korea		Japan		Russia		
Fishery-dependent information											
Catch (monthly/annual)	YES	2012-2015	YES	1977-2015	YES	1985-2015	YES	1950-2015 (m)	YES	1960-2015	
Number of vessel	YES	2012-2015	YES	1977-2015	YES	1985-2015	YES	1980-2015	YES	1960-2015	
Number of vessel by size class	YES	2012-2015	YES	2001-2015	YES	1985-2015	YES	1980-2015	YES	1960-2015	
Daily catch			YES	2001-2015	YES	1985-2015	YES	1980-2015	YES	1970-2015	
Catch/haul (net)			YES	2003-2015	YES	1985-2015	YES	1980-2015	YES	1970-2000	catch/n 1960- catch/day
Fishing vessel position	YES	2012-2015	YES	2001-2015	YES	1985-2015	YES	1980-2015	YES	1960-2015	
Temperature at fishing sites			YES	2001-2015	YES	1985-2015	YES	1980-2015	YES	1970-2015	
Number of operated days	YES	2012-2015	YES	1994-2015	YES	1985-2015	YES	1980-2015	YES	1970-2015	
Number of operated nets (haul)			YES	2003-2015	YES	2013-2015	YES	1980-2015	YES	1970-2015	
Estimated size composition of catch			YES	2006-2015			YES	1980-2015	YES	1960-2015	
Age length key (fishing season)			YES	2015			YES	2001-2015	YES	2000, 2001,	
Fishery-independent information											
Survey stock biomass index			NO		NO		YES	2003-2015	YES	1980-1990	1990-
Survey stock abundance index			NO		NO		YES	2003-2015	YES	1980-1990	1990-
Survey size composition			NO		NO		YES	2003-2015	YES	1980-1990	1990-
Survey age composition			NO		NO		YES	2003-2015			
Spatially-explicit survey			NO		NO		YES	2003-2015	YES	1980-1990	1990-
Abundance of larvae			NO		NO		YES	2003-	YES	1970-1990	
Biological information											
Maturation rate at age			NO				YES	2013, 2014	YES	?	
Length-weight relationship			YES	2006-2015			YES	1980-2015	YES	1970-2015	
Size at age			NO				YES	2003-2015	YES		
Weight at age			NO				YES	2003-2015	YES		
Age length key			NO				YES	1998-2015	YES		
Assumed natural mortality			NO				YES	1.25			

**DRAFT TERMS OF REFERENCE FOR THE NPFC PACIFIC SAURY
STOCK ASSESSMENT WORKING GROUP**

1. To compile and evaluate the fishery-dependent, fishery-independent, and biological data used in the assessment;
2. To develop and evaluate the stock assessment models used to assess the stock;
3. To develop the base-case scenario and scenarios for sensitivity analysis;
4. To conduct stock assessment, including the estimation of F-based and Biomass-based target and limit references, and sensitivity analysis and evaluate the assessment findings/results;
5. To conduct and evaluate the stock projections;
6. To evaluate and discuss uncertainties in the assessment, and their potential consequences;
7. To make the research recommendations for the next assessment;
8. To recommend guidance on key improvements in data and modeling approaches which should be considered when scheduling the next assessment;
9. To complete the draft stock assessment report.