

## 2017-2021 Work Plan of Scientific Committee

(updated at SC04, Apr 2019)

### 1. STOCK ASSESSMENTS FOR TARGET FISHERIES AND BYCATCH SPECIES

#### PACIFIC SAURY

| Year | Tasks                                                                                                                         | Progress/Comment                                                              | Meeting/Activity                                      |
|------|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-------------------------------------------------------|
| 2017 | Conduct stock assessment (provisional).                                                                                       | Done.                                                                         | TWG PSSA01, Feb 2017;<br>SSC PS02 Apr 2017.           |
|      | Present outputs for adoption                                                                                                  | Done.<br><i>SC was tasked to improve PSSA by July 2018.</i>                   | SC02 meeting, Apr 2017;<br>COM03 meeting, Jul 2017.   |
|      | Update the provisional stock assessment.                                                                                      | In progress.                                                                  | TWG PSSA02, Dec 2017.                                 |
| 2018 | Evaluate the quality of the data for stock assessment.                                                                        | In progress.                                                                  | Intersessional work;<br>SSC PS03, Apr 2018.           |
|      | Update stock assessment and recommendations to Commission to improve conservation and management of Pacific saury.            | In progress.                                                                  | SSC PS03, Apr 2018.                                   |
|      | Present outputs for adoption                                                                                                  | Done.                                                                         | SC03 meeting, COM04 meeting                           |
|      | Initiate the task of setting limit and target reference points and develop harvest control rules in conjunction with managers | Review of target and limit reference points by Dr. Kell.                      | Intersessionally: literature review, by Sep-Oct 2018. |
|      | Data preparation to finalize data set for BSSPM/try to draw a joint CPUE index                                                | SA data and specifications were agreed. Work on joint CPUE index was started. | TWG PSSA03, Nov 2018.                                 |

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| <p>2019</p> | <p>Joint spatial/temporal map of Members' catch and effort on Pacific saury</p> <p>Continue setting limit and target reference points, harvest control rules and management strategy evaluation in conjunction with managers</p> <p>Conduct benchmark stock assessment and recommendations to Commission to improve conservation and management of Pacific saury.</p> <p>Regular update of inputs (data and indices) and existing stock assessments/<br/>Work towards age-structured models/<br/>Work towards development of reference points/<br/>Initial discussions towards development of MSE (See detailed work plan).</p> | <p>Data were shared and a draft map was deployed on the test website.</p> <p>BRP/HCR/MSE workshop reviewed the approaches and practices of other regional fisheries bodies and how it can be applied to NPFC.</p> <p>Stock assessment was improved and considered as a benchmark by the TWG PSSA04.</p> | <p>Intersessionally.</p> <p>Workshop, Mar 2019.</p> <p>TWG PSSA04, Mar 2019.</p> <p>SSC PS04, Apr 2019.</p> <p>SSC PS05, fall 2019.</p> |
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|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------|
| 2020 | <p>Update stock assessment and recommendations to Commission to improve conservation and management of Pacific saury</p> <p>Regular update of inputs (data and indices) and existing stock assessments/<br/>Work towards age-structured models/<br/>Work towards development of reference points/<br/>Work towards development of MSE (See detailed work plan).</p>  |  | <p>SSC PS06, spring 2020.</p> <p>SSC PS07, fall 2020.</p> |
| 2021 | <p>Update stock assessment and recommendations to Commission to improve conservation and management of Pacific saury.</p> <p>Regular update of inputs (data and indices) and existing stock assessments/<br/>Work towards age-structured models/<br/>Work towards development of reference points/<br/>Work towards development of MSE (See detailed work plan).</p> |  | <p>SSC PS08, spring 2021.</p>                             |

### Detailed work plan for 2019-2021

#### Priority list

1. Conduct a stock assessment update with base case model 2 ( $q_{\text{biomass}}=1$ )
2. Further investigate improvements to the BSSPM
3. Develop an age-structured model
4. Continue joint CPUE work to incorporate broader spatial and temporal coverage
5. Update the biomass estimate using the existing method
6. Explore the possibility of developing a spatio-temporal model for the biomass estimate
7. Further investigate the coefficient of variation for the catchability coefficient in the Japanese survey. This variance should be included in the variance of the biomass data. If possible, refine

- the catchability estimate for the survey
8. Develop a longer-term roadmap for work related to Pacific saury stock assessment
  9. Identify target and limit reference points for stock biomass and fishing mortality

#### Detailed work plan

| ITEM                                             | SSC PS05<br>(2019 Fall)                                                                                                                                                                                                              | SSC PS06<br>(2020 Spring)                                                                                                           | SSC PS07<br>(2020 Fall)                                                                   | SSC PS08<br>(2021 Spring)              |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|----------------------------------------|
| <b>Regular update of inputs</b>                  |                                                                                                                                                                                                                                      |                                                                                                                                     |                                                                                           |                                        |
| Update & improvement of biomass survey index     | <ul style="list-style-type: none"> <li>● Review 2019 survey outcomes</li> <li>● Investigate/refine <math>q_{\text{biomass}}</math></li> <li>● Review a spatio-temporal modelling</li> <li>● Review simulation results</li> </ul> [H] | <ul style="list-style-type: none"> <li>● Review 2020 survey plan [H]</li> <li>● Continue review of analytical works [H]</li> </ul>  | Review 2020 survey outcomes                                                               | Review 2021 survey plan                |
| Update & improvement of CPUE indices             | Review CPUEs up to 2018 fisheries [H]                                                                                                                                                                                                |                                                                                                                                     | Review CPUEs up to 2019 fisheries                                                         |                                        |
| Development of joint CPUE index                  | Review results and choose some initial sets of series for trial use in BSSPM [M]                                                                                                                                                     | Review further results [M]                                                                                                          | Continue review of any further results                                                    | Continue review of any further results |
| <b>Regular update of the existing SA</b>         |                                                                                                                                                                                                                                      |                                                                                                                                     |                                                                                           |                                        |
| Routine update BSSPM as a benchmark              | Set up data and modify specification (if necessary) [H]                                                                                                                                                                              | <ul style="list-style-type: none"> <li>● Update with base case 2 and draft BSSPM SA report</li> <li>● Write a report [H]</li> </ul> | Update with base case 2 and draft BSSPM SA report unless there are any particular reasons | Review BSSPM report                    |
| Improvement and further investigation of BSSPM   | Review any outcomes of improvements (see Para 29 in TWG04 report) [L]                                                                                                                                                                | Continue [L]                                                                                                                        | Continue                                                                                  | Continue                               |
| <b>Toward age-structured models</b>              |                                                                                                                                                                                                                                      |                                                                                                                                     |                                                                                           |                                        |
| Data inventory (CPUE and size in space and time) | <ul style="list-style-type: none"> <li>● Review data availability for each member</li> <li>● Discuss data sharing process</li> </ul> [H]                                                                                             | Finalize an initial data set for initial trials of conditioning [H] (intersessionally)                                              | Finalize data for 2020 SA                                                                 |                                        |
| Summarizing available information on PS biology  | Review comprehensive reports ( <i>inter alia</i> maturity) [H]                                                                                                                                                                       | Finalize an initial list of assumptions for initial trials of conditioning [H] (intersessionally)                                   | Finalize assumptions for 2020 SA                                                          | Continue                               |

| ITEM                                                                               | SSC PS05<br>(2019 Fall)                                                     | SSC PS06<br>(2020 Spring)                                                                                                                                                 | SSC PS07<br>(2020 Fall)                                                                                                    | SSC PS08<br>(2021 Spring)                                                                                                                                                       |
|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Development of models                                                              | Review proposal and discuss evaluation methods (including simulation) [H]   | <ul style="list-style-type: none"> <li>● Start conditioning and review results [M]</li> <li>● Compare with BSSPM results [M]</li> </ul>                                   | Develop base and robustness scenarios                                                                                      | <ul style="list-style-type: none"> <li>● Review results of analyses by an agreed initial set of SA models</li> <li>● Write an SA report?</li> </ul>                             |
| Uncertainty in models (possible link with OM grid under MSE)                       | Grid of uncertainty and information gaps [L]                                | Continue [L]                                                                                                                                                              | (see above)                                                                                                                | Continue                                                                                                                                                                        |
| Examination of estimation performance and finalize an initial set of SA models     | Develop simulation specification [M]                                        | <ul style="list-style-type: none"> <li>● Continue discussion about simulation specifications [M]</li> <li>● Start conducting simulation [M] (intersessionally)</li> </ul> | <ul style="list-style-type: none"> <li>● Review initial simulation works</li> <li>● Refine simulation framework</li> </ul> | <ul style="list-style-type: none"> <li>● Review further simulation works</li> <li>● Finalize an initial set of SA models (if necessary, continue further evaluation)</li> </ul> |
| <b>Toward development of reference points</b>                                      |                                                                             |                                                                                                                                                                           |                                                                                                                            |                                                                                                                                                                                 |
| Identify target and limit reference points for stock biomass and fishing mortality | Review intensively RPs report<br>Start investigating reasonable options [H] | <ul style="list-style-type: none"> <li>● Identify candidate RPs for simulation [H]</li> <li>● Evaluate candidate RPs [H] (intersessionally)</li> </ul>                    | Continue discussion and recommend BRPs, if possible [H]                                                                    |                                                                                                                                                                                 |
| <b>Toward development of MSE (work formally start in 2020)</b>                     |                                                                             |                                                                                                                                                                           |                                                                                                                            |                                                                                                                                                                                 |
| Development of management objectives                                               | Review intensively RPs report [L]                                           |                                                                                                                                                                           |                                                                                                                            |                                                                                                                                                                                 |
| Definition of performance measures                                                 | Review intensively RPs report [L]                                           |                                                                                                                                                                           |                                                                                                                            |                                                                                                                                                                                 |
| Construction of OMs                                                                | See items in age-structured models [L]                                      |                                                                                                                                                                           |                                                                                                                            |                                                                                                                                                                                 |
| Development of candidate MPs                                                       |                                                                             |                                                                                                                                                                           |                                                                                                                            |                                                                                                                                                                                 |
| Simulation performance tests                                                       |                                                                             |                                                                                                                                                                           |                                                                                                                            |                                                                                                                                                                                 |
| Comparison of MPs and finalize advice                                              |                                                                             |                                                                                                                                                                           |                                                                                                                            |                                                                                                                                                                                 |
|                                                                                    |                                                                             |                                                                                                                                                                           |                                                                                                                            |                                                                                                                                                                                 |

Note: H, M and L indicate high, medium and low priority, respectively.