



Neon Flying Squid

2024 NPFC SC



1st Meeting of the Small Scientific Committee on Neon Flying Squid

22–23 August 2024

Online

The meeting was attended by Members from Canada, China, Japan, the Republic of Korea, the Russian Federation, Chinese Taipei, the United States of America, and the Republic of Vanuatu. The Pew Charitable Trusts attended as an observer. An invited expert, Dr. Rujia Bi, participated in the meeting.

1. Key documents have been reviewed and are now forwarded for SC endorsement

The SSC NFS reviewed and revised the draft [Terms of Reference](#).

The SSC NFS reviewed [CPUE standardization protocol](#) for neon flying squid.

The SSC NFS reviewed [stock assessment protocol](#) for neon flying squid.

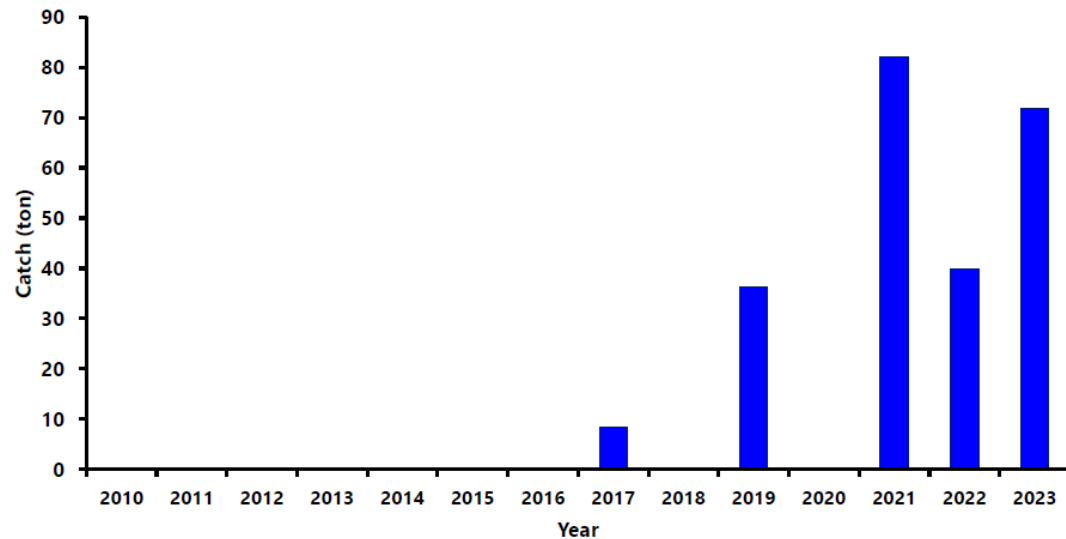
[NPFC Performance Review recommendations](#)

The Science Manager presented the proposed responses, drafted by the SSC NFS Chair with the SC Chair and the Secretariat, to the recommendations from the Performance Review report that concern NFS. The SSC NFS reviewed and further developed the proposed responses

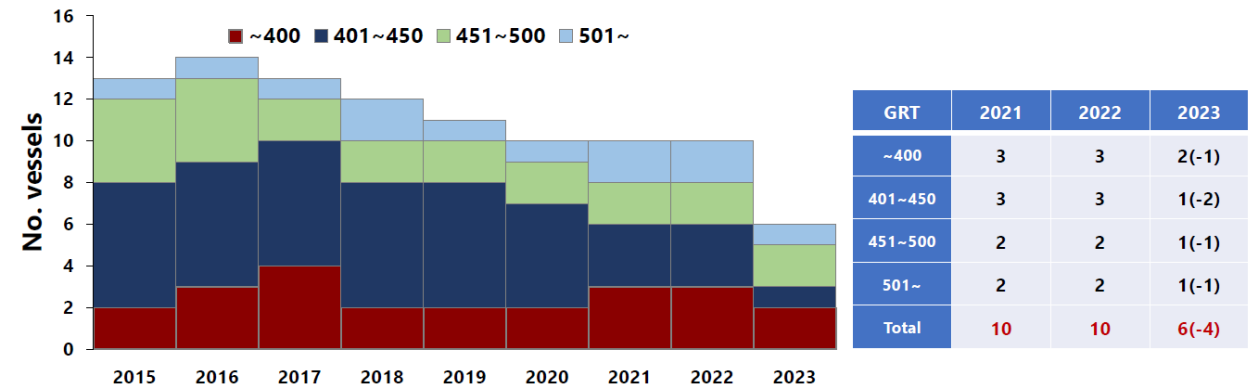
[Species summary](#)

2. Updates on Member's fishery status

All Korean NFS catch is by stick-held dipnet vessels and NFS is not their primary target species. The number of stick-held dipnet vessels fishing for squid has gradually decreased since 2016.



Number of Korean SHDN Vessels (jigging vessels)

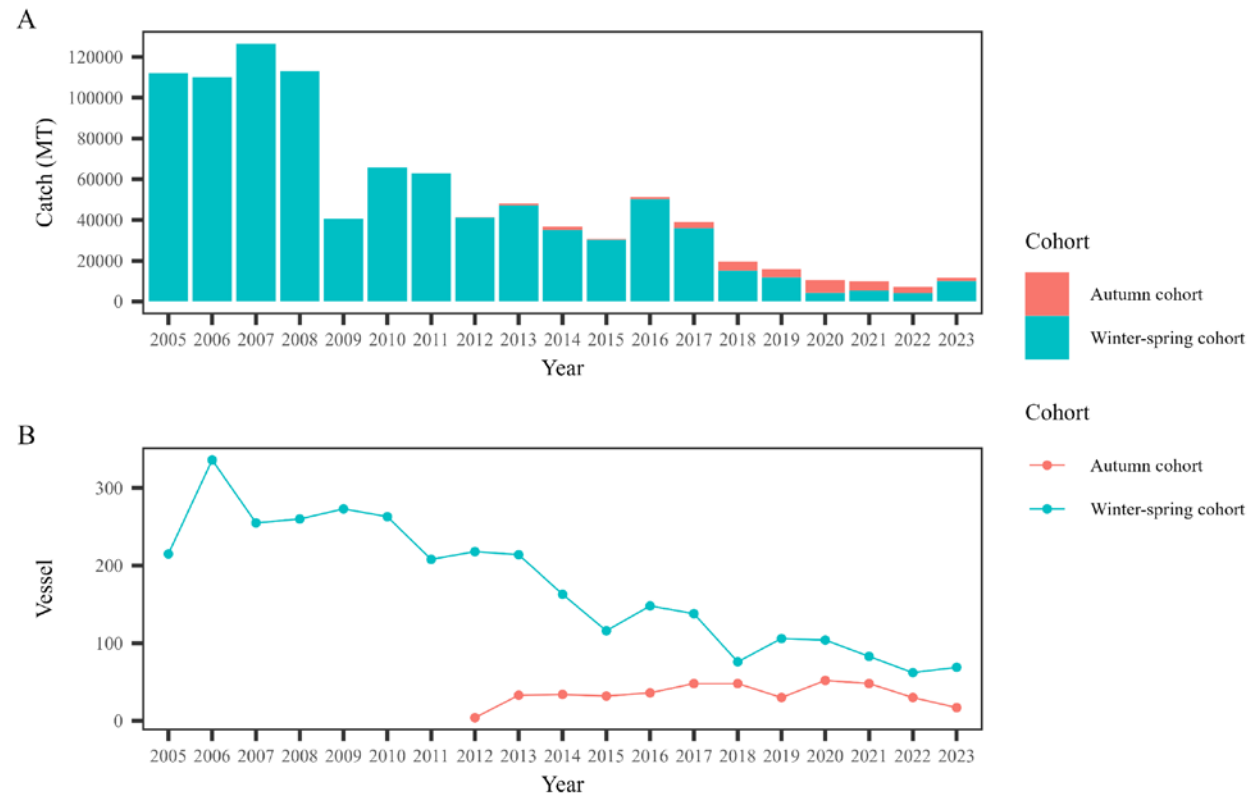


- The number of Korean SHDN Vessels has decreased gradually.

2. Updates on Member's fishery status

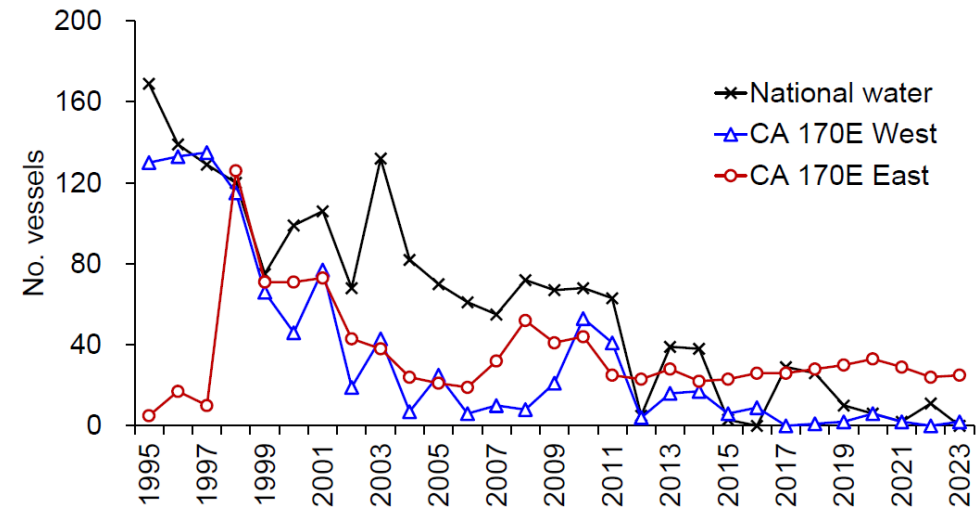
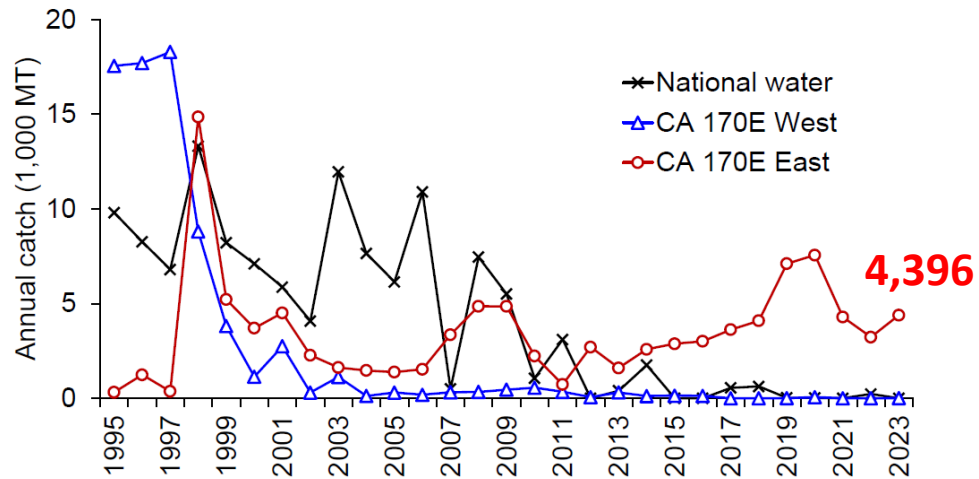
China has reported jigging fishing fleets and catch by two cohorts of NFS in the Northwest Pacific Ocean: the autumn cohort and the winter-spring cohort, which are separated by the 170°E longitude line.

| Year | Total | Catch_170 W | Catch_17 0E | Vessel_17 0W | Vessel_17 0E |
|------|-------|----------------|----------------|-----------------|-----------------|
| 2023 | 11644 | 10087 | 1556 | 69 | 17 |



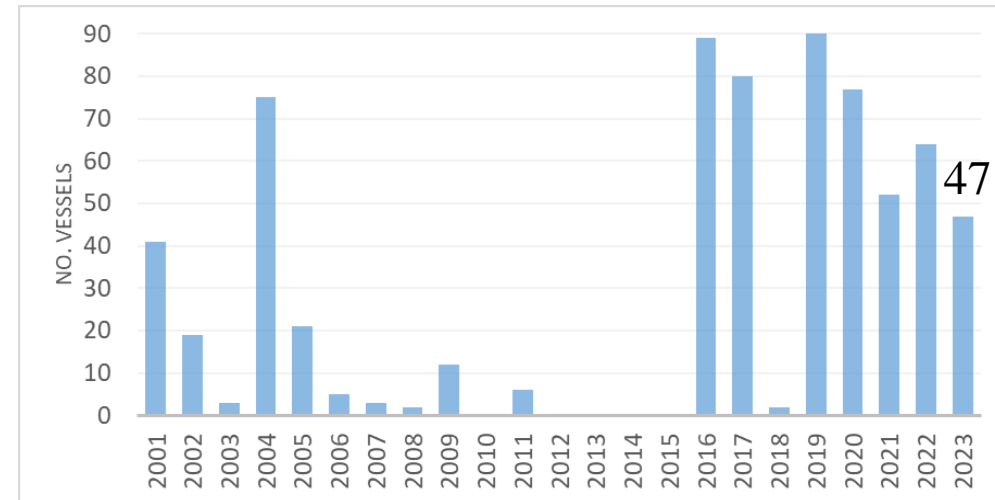
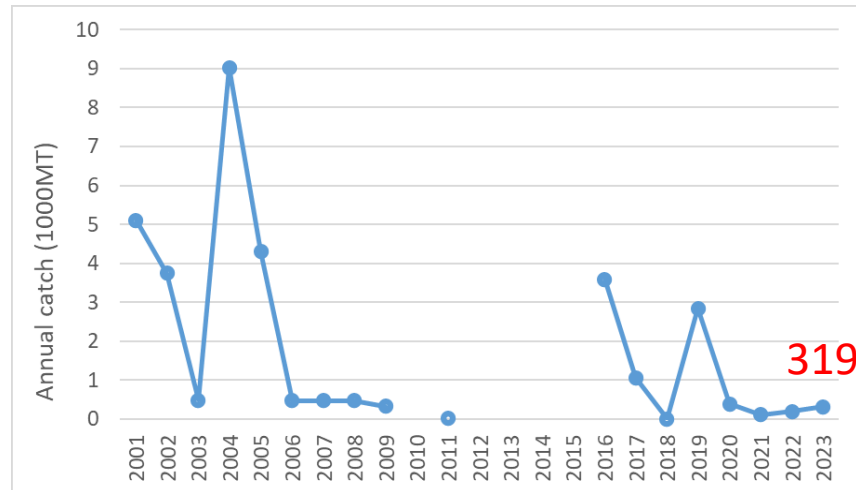
2. Updates on Member's fishery status

Japan has reported separately fleets and catch by National water, east and west of 170 E in Convention Area.



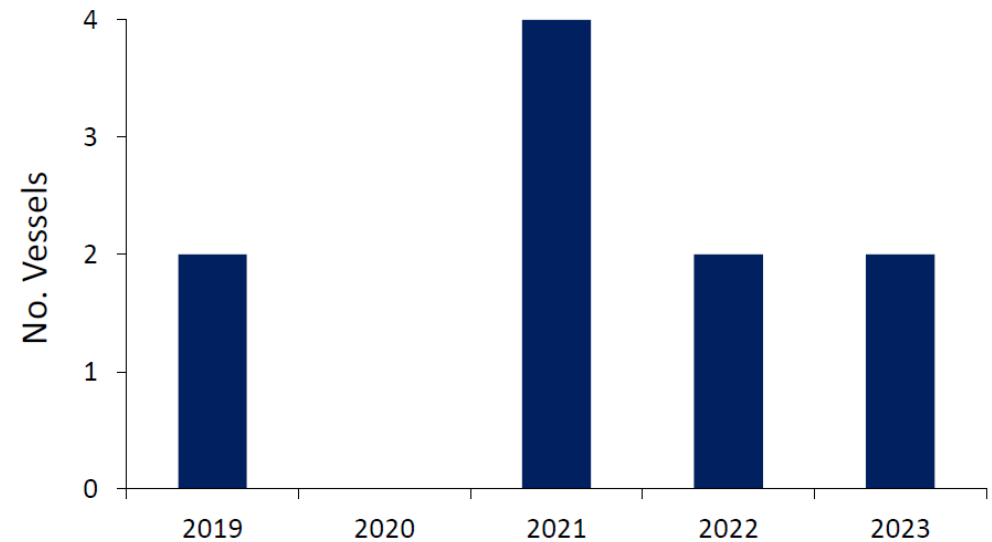
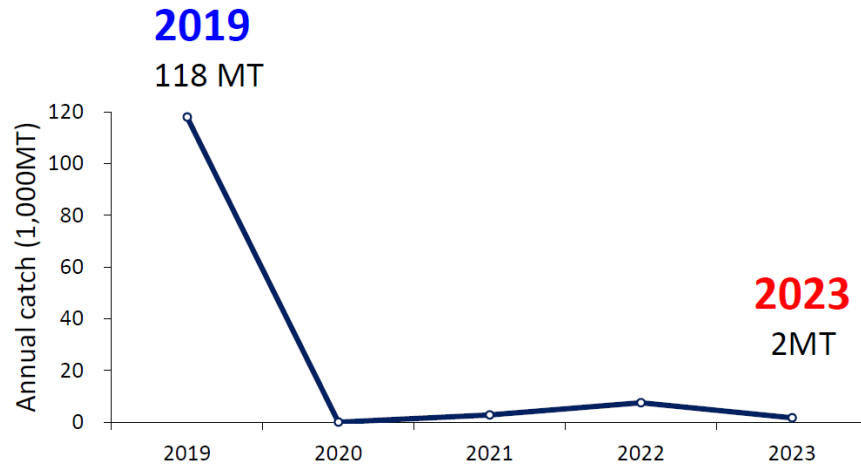
2. Updates on Member's fishery status

Chinese Taipei: Vessels target both NFS and Pacific saury. From 2001 to 2011 and they mainly targeted NFS, but after 2016 they mainly targeted Pacific saury. In early years, NFS catch has occurred earlier in the fishing season, but in recent years, it has occurred later in the season.



2. Updates on Member's fishery status

Vanuatu's NFS vessels have multiple gears onboard, are able to target both NFS and Pacific saury, and mainly target Pacific saury.



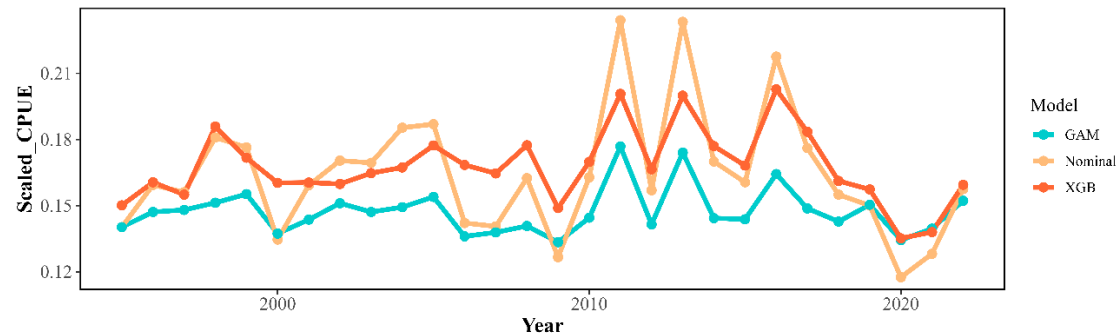
2. Updates on Member's fishery status

Russia informed the SSC NFS that its vessels caught around 2 MT of NFS in 2023 as part of experimental fishing in the Russian exclusive economic zone (EEZ) east of the Kuril Islands.

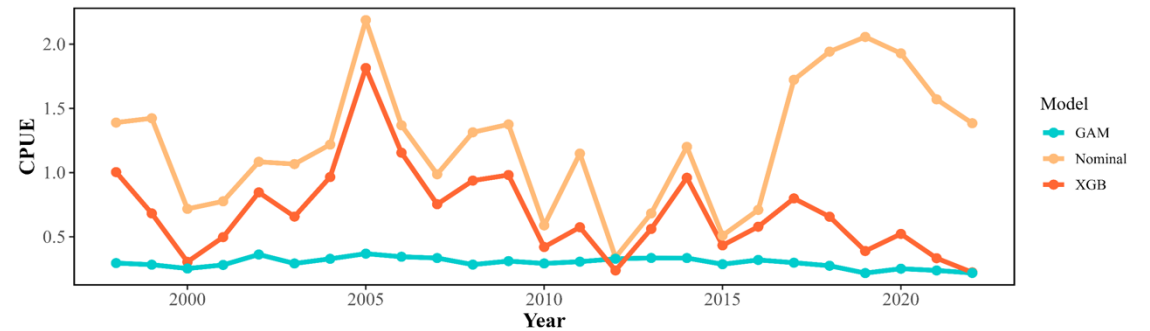
3. Updates on CPUE and fishery-independent survey

China conducted the CPUE standardization using a generalized additive model (GAM) and Xtreme gradient boosting model (XGB).

Winter-spring cohort:



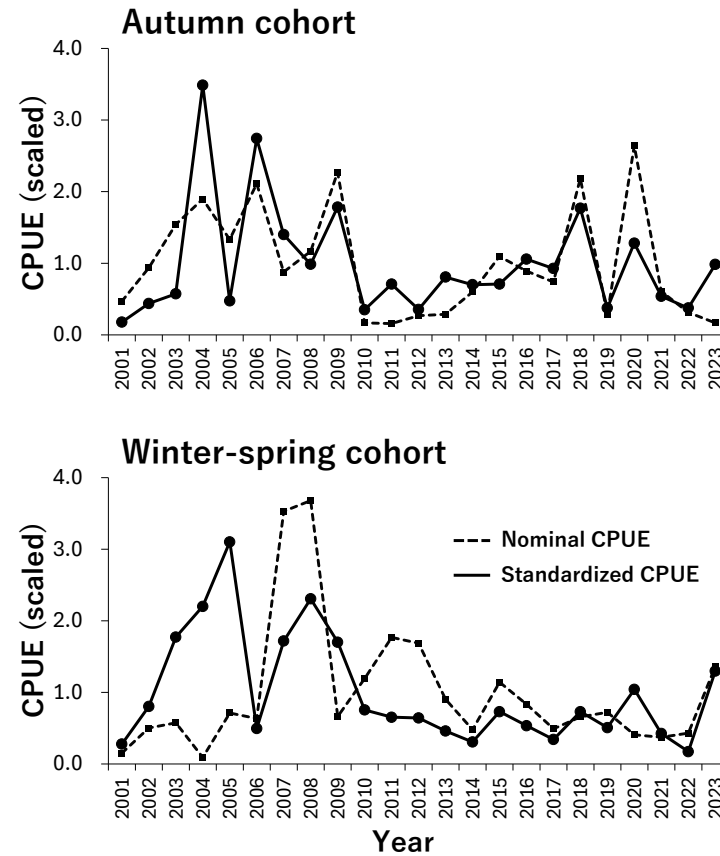
Autumn cohort:



China presented a summary of squid jigging surveys conducted between 2021 and 2023 by R/V Songhang, Shanghai Ocean University's pelagic fishery resources survey vessel. Basic biological characteristics of the squid species, including the mantle length (ML) composition, body weight (BW) composition, ML-BW relationship, and sexual maturity composition, were also recorded. NFS was the most abundant species in the surveys and had a high concentration of immature individuals.

3. Updates on CPUE and fishery-independent survey

Japan presented a CPUE standardization for the autumn and winter-spring cohorts of NFS based on Japanese driftnet surveys conducted in the summer

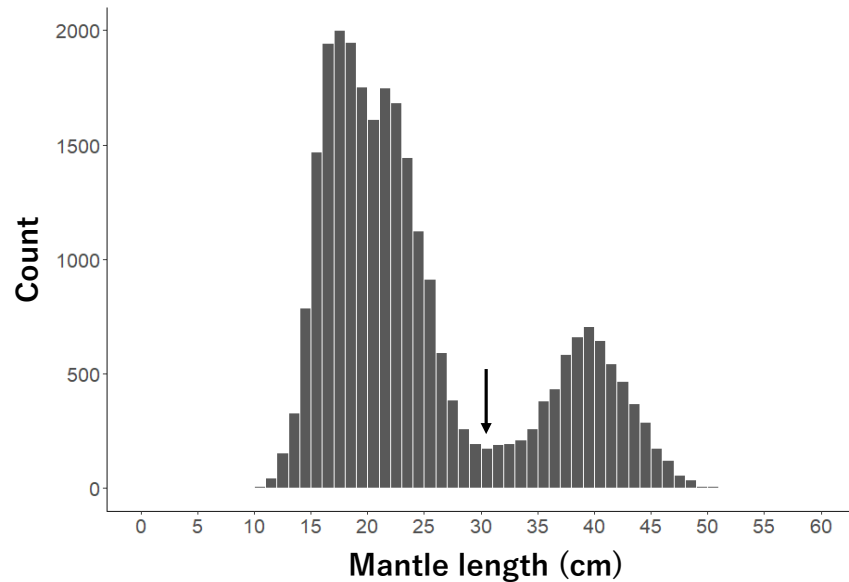


3. Updates on CPUE and fishery-independent survey

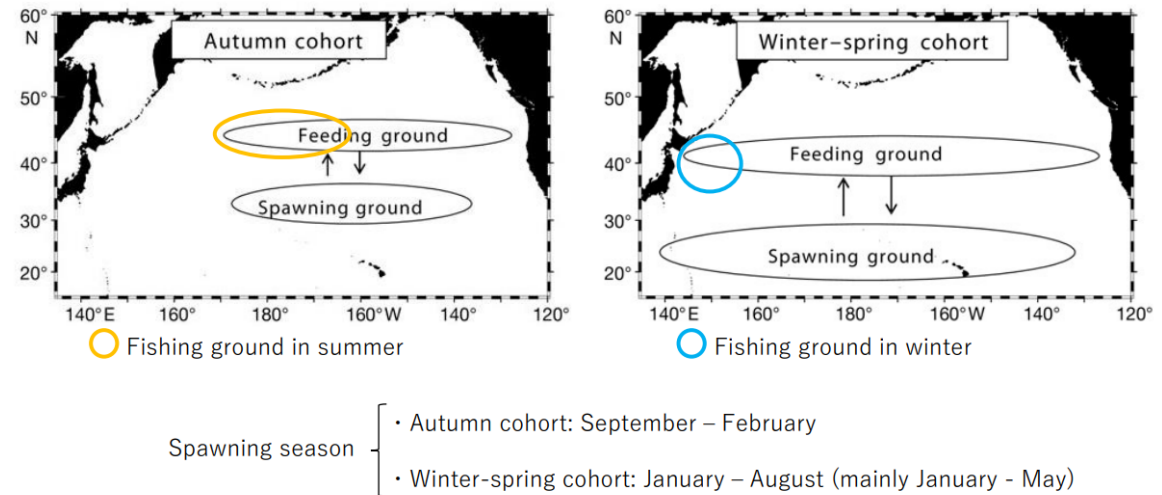
The SSC NFS suggested that in the future, Japan and China could consider sharing survey data to create one dataset with increased coverage or coordinate with each other when designing their respective surveys to maximize their combined survey coverage.

4. Approaches to separate the two NFS cohorts

The size of squid caught with Japan's driftnets survey showed a bimodal distribution. Individuals smaller than the boundary (~ 30) represented the winter-spring cohort, while larger individuals represented the autumn cohort. The autumn cohort was mainly caught at stations east of 170°E, while the winter-spring cohort had a wider distribution.



Population structure of NFS



(Yatsu et al. 1998, Ichii et al. 2009)

The SSC NFS agreed to hold further discussions at its next meeting on how to separate the two NFS cohorts for conducting stock assessments of each. The SSC NFS agreed that the 170°E longitudinal line is a useful general approach for separating the two cohorts but agreed that further information, such as size data, is needed to more accurately estimate the catch data by cohort.

5. Stock assessment modelling

Japan presented a preliminary application of the stochastic surplus production model in continuous time (SPiCT) to the autumn and winter-spring cohorts of NFS in the North Pacific for demonstration purposes.

The main advantage of SPiCT is that it incorporates seasonality, so it can be a potential tool for assessing the NFS stock status using seasonal datasets, as has already been applied to other cephalopod stocks.

China has also presented surplus production model using (JABBA) in the meetings prior to 1st NFS SSC and NFS agreed that surplus production model is the priority model approach at this moment to get stock assessment results.

5. Review of the Work Plan of the SSC NFS

Key thing: Stock assessment

| ITEM | 2024 | 2025 | 2026 | 2027 | 2028 | Progress |
|---|---|--------------------------------------|---------------------------|---------------------|---------------------|----------|
| Update and review of surplus production model and other stock assessment models | Continue review of outcomes of surplus production model | Conduct preliminary stock assessment | Finalize stock assessment | Same as on the left | Same as on the left | |

6. Meeting next year for SSC NFS

| Year | Date | Meeting | Format (hybrid or virtual) | # days | Host |
|------|--------------------|-----------------------|----------------------------|--------|-------|
| 2025 | March 18-27 | TCC08 / FAC07 / COM09 | hybrid | | Japan |
| | Jul(/Jun) | TWG CMSA | hybrid | 4 | |
| | Jul(/Jun) | SSC NFS | hybrid | 3 or 4 | |
| | Jul(/Jun) | WG NSAM | hybrid | 2 or 3 | |
| | End Aug | SSC PS | virtual | 4 | NA |
| | End Aug/early Sep? | SWG MSE PS | ? | ? | |
| | December | SSC BFME | hybrid | 2 or 3 | |
| | December | SSC NFS | hybrid | 3 or 4 | |
| | December | SSC PS | hybrid | 3 or 4 | |
| | December | SC | hybrid | 4 | |

7. The SSC NFS recommended that the SC

endorse the Terms of Reference for the Small Scientific Committee on Neon Flying Squid

endorse the CPUE Standardization Protocol for neon flying squid

endorse the Stock assessment protocol for neon flying squid

adopt the Work Plan of the SSC NFS

adopt the species summary

consider the SSC NFS's comments on the NPFC Performance Review recommendations that concern neon flying squid

continue to hire an invited expert in 2025 to support the SSC NFS



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