SPRFMO

5th Meeting of the Scientific Committee

Shanghai, China, 23 - 28 September 2017

SC5-SQ08

Proposals on research programme and data sharing for Jumbo flying squid in Southeast Pacific

China

Background

Jumbo flying squid in the Southeast Pacific supports the largest squid fishery in the world. Six members (Chile, China, Ecuador, Korea, Peru and Chinese Taipei) of the Commission of the South Pacific Regional Fisheries Management Organisation (SPRFMO) target this species, and the annual catch is over one million ton in recent years. In order to manage jumbo flying squid to ensure long-term sustainable use, the Commission requests the Scientific Committee to undertake the "assessment and data requirements" tasks for the jumbo flying squid and further develop assessment approaches in 2017 (Annex 3, COMM 5- Report).

Conservation and management of fish stocks shall be based on the best scientific information available, to an extent, the stock assessment. Stock assessment requires some primary data and information such as stock structure, catch, temporal/spatial changes in abundance, and key life history parameters. However, there still exist big gaps between the data available and the data and information necessary for a comprehensive jumbo flying squid stock assessment in the Southeast Pacific. Although various research programs have been developed and conducted, some key information such as key life history processes, migration, stock structure, reproduction etc. is still limited. For example, spawning is believed to take place both over the continental slope and in adjacent oceanic areas, but details of the migration, including the timing, duration and movement routes, are not well understood. Similarly, there was no consistent view on population structure according to previously studies, although stock structure delineation can have significant impacts on how the stocks are assessed and managed.

Current catch and relative abundance index data may not be sufficient for a stock assessment, even if for the simplest surplus production model. Relative abundance data in China's production-model-based stock assessment only used the available CPUE data derived from the high seas fishery with no information inside the EEZ, although there is spatial heterogeneity in the dynamics of jumbo flying squid. Reliable stock assessment requires high quality and complete data and information input. Lacking of basic biological information and using partial data may lead to biased interpretation of stock dynamics, leaving conservation and management decisions open to uncertainty and risk.

As a straddling stock, jumbo flying squid is targeted by fishing vessels from different Members or CNCPs. Thus, collecting and sharing biological data and information among Members and CNCPs is essential to facilitate international collaborations for scientific research to derive the best available information for the assessment and management of jumbo flying squid.

Data collection and exchange has been described by the Conservation and Management Measure on Standards for the Collection, Reporting, Verification and Exchange of Data (CMM 02-2017). However, the CMM applies only to the high seas. Thus the Scientific Committee should consider establishing a new mechanism for data collection, exchange and sharing among Members and CNCPs participating in the jumbo flying squid fishery.

The purposes of this document are to explore ways to achieve better understanding of the population dynamics of jumbo flying squid and improving data collection and data sharing between Members and CNCPs.

Proposals

1. Develop data sharing and collection mechanism

Scientific Committee shall identify data gaps for stock assessment. The data needed currently for the surplus production model include monthly catch data and fishery dependent or independent abundance index data in the stock areas including both the national jurisdiction waters and Convention Area. Size-structured models, requiring more input data and information including catch, abundance, length composition, weigh-at-size matrix, maturity-at-size matrix, growth transition matrix, may need to be developed to better capture the stock dynamics in future. Scientific Committee shall develop data templates to ensure the data submitted in a consistent format and facilitate data exchange and sharing between Members and CNCPs participating in the jumbo flying squid fishery.

2. Develop biological research programme for jumbo flying squid

Scientific Committee shall develop biological research programme for jumbo flying squid to improve international collaborative research and better understanding of the basic biology. The biology research programme should be targeted to have a better understanding of life history, spawning and growth biology, migration patterns, stock structure etc., to answer some key questions about what the population structure is, where and when they are born and how they migrate from their spawning grounds to the feeding grounds. Joint surveys, data exchange and sharing are effective ways to facilitate such international joint research.

Each Member and CNCP participating in the jumbo flying squid should nominate a coordinator to take charge of data submission, exchange and sharing.

3. Stock assessment model development

Various stock assessment models need to be explored for the jumbo flying squid. Some simulation studies need to be designed and conducted to evaluate the effectiveness of models of different complexities in capturing the stock dynamics. There is also a need to consider the development of a management strategy evaluation (MSE) to evaluate impacts of data quality and quantity on stock assessment and management and identify optimal harvest control rules for managing this important stock. Because of importance of oceanographic conditions in regulating the dynamics of the jumbo flying squid, there is a need to consider environmental factors in the assessment and management of this stock.

After these proposals being approved by the Scientific Committee, the Squid Working Group should submit the detailed research plan and work schedule to be reviewed and discussed by the Scientific Committee.