

## **10<sup>th</sup> MEETING OF THE SCIENTIFIC COMMITTEE**

*Korea, 26 to 30 September 2022*

### **SC10-SQ11**

#### **Importance of onboard scientific observers monitoring and managing the Jumbo Flying Squid fishery in SPRFMO.**

*Ecuador*

#### **Knowledge base from the onboard scientific observers programs**

Onboard scientific observers provide a whole gamut of scientific and technical information needed to make opportune fisheries management decisions, such as:

Putting data and information into a transparent framework

- Currently, the most reliable and accurate way to collect data on bycatch and discards is through onboard observer programs.
- Comparisons between observers and logbook data.

Improving biological and fishery monitoring

- Together with onshore sampling, onboard observer's data conform to a promissory strategy to detect fishing strategy, catch proportion and fish discarding.

Providing specific information for key process

- Standardisation of operations to help with abundance index construction.
- Stock assessment based on demographic structure (e.g., size or stage composition).

#### **1. Main goals: Of the onboard scientific observers in the Jumbo Flying Squid fishery in SPRFMO.**

#### **Seeking an improvement in the fishery data**

Ecuador is pursuing adopting an Integrated Scientific Monitoring Program (ISMP) in the Jumbo Flying Squid fishery in SPRFMO, where onboard scientific observers' support would be needed to achieve needed targets and goals, such as:

- to collect information on the quantity, species composition, and size and age structure of retained and discarded catch vessels, and
- to collect information on the incidence of interaction with protected species (e.g. seals, sea birds, and sharks).

The ISMP shall be collecting an extensive time series dataset on the size and species composition of catches from the fishery, including interactions that are both direct (capture during fishing operations) and indirect (observations of behaviour and abundance of protected species in the vicinity of fishing operations).

To understand more about the biology and life history of the Jumbo Flying Squid, onboard scientists also collect other information, such as structures for ageing and gonads for the determination of sex and reproductive stage. These various types of biological information can be combined with catch and effort data (main goals) and other information (fishing strategy) for incorporation into mathematical models and stock assessments to determine the impact of fishing on the stocks along the SPRMFO Convention area.

This information should then be given to fishery managers who decide on appropriate levels of fishing and endeavor to ensure the long-term viability of Jumbo Flying Squid. Thus, the sole objective of the ISMP is to collect biological and fishery information for use in research and management, SPRFMO should integrate the importance of this, and state compliance procedure related to onboard scientific observers' goals.

## **Rationale for the scientific onboard program**

Promote data and information collected in two ways:

On board monitoring where onboard scientists work on vessels during normal fishing activities to collect data on the total weight and size composition of retained and discarded catches. The onboard scientific observers also collect data on the abundance and interactions with protected species. Port based measuring where no-onboard observer monitor the size composition of fish landed at specified ports, markets or processors. Data from onboard observers can be used to ensure that fisheries comply with local, national and international laws resolved by governments, RFM and other organizations that provide the comprehensive sustainability of the fishing for consumers.

## **2. Onboard observer's standards In the Jumbo Flying Squid fishery in SPRFMO.**

### **Onboard observer's coverage rate**

The coverage rate onboard scientific observers, as well as the type of data that are collected and methods implemented to get them, pivot on several factors, some examples are:

- The objectives of the analysis, including levels of accuracy and precision of bycatch composition and discard rates,
- aspects of each individual fishery, such as vessel type, the spatial and temporal distribution of effort, frequency of occurrence of catch, the amount of fishing effort, and the spatial and temporal distribution of catch.

However, it is reasonable to reach a minimum level of coverage rate that allows identifying scientific fishing plans. Several studies show that variability in precision and biases in bycatch estimates decrease rapidly as the observer coverage rate increases to 20%, assuming that the sample is balanced and that there are no observed effects [1-4].

In the case of the Jumbo Flying Squid fishery in SPRFMO, and because the fishing type (automatic jigging reels) is subject to specific monitoring conditions to investigate the bias in estimates of discarding rate, Ecuador encourage an SPRFMO's mandatory procedure to implementing a minimum acceptable onboard scientific observer coverage rate, suggesting that 20% is acceptable and financeable, and establishing a kind of select type of rules or processes, which, when focused on the Jumbo Flying Squid fishery in SPRFMO, can be associated with several advantages for operators, such as product quality, increasing productivity, and a favorable external image.

### **Implementation barriers**

In the case of the Jumbo Flying Squid fishery in SPRFMO, and because the fishing type (automatic jigging reels) is subject to specific monitoring conditions to investigate the bias in estimates of discarding rate, Ecuador encourage that some vessels may not be safe or accessible for scientific observer placements, other systems, such as electronic monitoring, are proposed to be more cost-effective than onboard scientific observer programs, and the necessary coverage rate by electronic monitoring is higher than conventional at-sea onboard scientific observer programs.

However, the reasons mentioned above are not the case for the Jumbo Flying Squid fishery in SPRFMO. High levels of fishing effort, low observer coverage rates, a small proportion of monitoring data sampled, a large number of vessels, and extensive fishing grounds, evidence the need to implement human observer monitoring.

## **3. Ecuador commitments at the SPRFMO.**

### **Examples in other RFMOs**

Based on the Agreement on the International Dolphin Conservation Program (AIDCP), IATTC has required for many years that observers be placed on board 100% of trips in the Agreement Area by purse-seine vessels with larger carrying capacity to 363 metric tons (Class 6). Nowadays, this program not only helps control the use of Dolphin Mortality Limits, but also supports a large amount of scientific information for tropical tuna stock assessments and to measure impacts on populations of vulnerable species such as sharks, turtles and rays.

The IATTC Conservation Resolution (C-11-08) on scientific observers for longline vessels requires observer coverage of 5% of fishing effort. However, recent scientific advice encourages that, 5% coverage is too low to calculate accurate catch estimates for species that are infrequently caught in these fisheries, such as some sharks, turtles, and rays of conservation concern; 20% coverage is considered the minimum level required for such estimates (SAC-10 INF-H).

CCAMLR has the primary commitment of managing fishing south of the Antarctic Polar Front. In addition to the standard catch and effort data supplied by vessels, the collection of data by qualified onboard scientific observers have assumed importance in the collection of critical data for fisheries management purposes. Currently, the requirements to meet improvements in the management of Antarctic fisheries, including establishing feedback management procedures, require 100% scientific observer coverage on board Krill, Toothfish, and Icefish vessels.

In the case of SPRFMO, the onboard observers' scheme is partitioned in coverage rate for established fisheries and exploratory fisheries, Observer coverage levels are regulated by CMM 01-2022 (*Trachurus murphyi*), CMM 03-2022 (Bottom fishing), CMM 13-2021 (Exploratory fisheries) and CMM 18-2020 (Jumbo flying squid), while exploratory fisheries must ensure that each vessel carries one or more independent observers sufficient to collect data following a Data Collection Plan.

The WCPFC agreed on minimum standards and guidelines to overcome the challenges of monitoring catch and bycatch in tuna fisheries. Currently, the coverage rate is 100% for purse seine and 5% for other fleets, including longline vessels.

## **Ecuador on territorial waters**

Current onboard scientific observers' coverage rates are 15 % for Mahi-Mahi and Tuna longline vessels. However, an agreement has been reached to increase the coverage rate to 20% by 2023, 27,1% Small pelagic purse seine fishing vessels, 23,7% Titi shrimp ("Pomada") trawl vessels, and 23,3% Polivalente vessels. 85% Tuna purse-seine boats smaller (<363 t class 5) have voluntary contributions to the program, and Observers are beginning to be placed on longline vessels for swordfish fishing, hoping to reach 20% or more by 2023.

### **4. Onboard observers standards in the Jumbo Flying Squid fishery in SPRFMO**

#### **Electronic monitoring program**

Electronic monitoring also provides essential information on fishing operations, including some aspects of measuring the status of fish stocks and the impacts of fishing on the marine environment. Regarding the implementation of electronic monitoring in the Flying Squid fishery in SPRFMO, it is evident that these particularities can help improve transparency before consumers and demonstrate that fishing operations control compliance with regulations. In the field of scientific research, they can certainly support the work of human observers.

### **Final Conclusion**

On-board human and electronic observer programs should be developed and included among the mandatory measures for all countries involved in jumbo squid harvesting, supporting scientific and monitoring work to assess the status of the state population, which is compulsory by international agreements to regulate fisheries and management policies in the SPRFMO.

## References

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