

ECHEBASTAR SUSTAINABILITY WORKING GROUP

ANALYSIS OF THE POST RELEASE MORTALITY OF SILKY SHARKS (*CARCHARHINUS FALCIFORMIS*) TAKEN AS A BY-CATCH IN THE PURSE SEINE TUNA FISHERY IN THE INDIAN OCEAN

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1. Introduction

The MSC assessment of the Echebastar fishery categorised silky shark as an ETP species.

Condition 1 to the certification requires that by the fourth annual surveillance audit, the client demonstrates that information is adequate to measure trends and support a strategy to manage impacts on ETP species. The milestones for the 1st thru 3rd annual surveillance audits are that the amount of processed data available has been significantly improved and that protocols for data processing have been established to assure the provision of the data required in future years.

This requirement is mainly related to silky shark with a need for robust observed catch data. Considerable progress has been made in meeting the condition and it is anticipated that within 3 years the time series of available data will be to identify any trends and confirm that the fishery does not pose a threat to the recovery of the specie population.

However, while the number of silky sharks taken is relatively low, a clearer measure of the impact would be reliable data on the post release mortality (PRM) of captured silky sharks.

While the fishing companies have measures to limit the risks to silky sharks from its fishery (non-entangling FADs, good handling practises and a reduced number of active FADs), in meeting its commitment to go beyond MSC requirements the company will adopt others if they are shown to be meaningful and effective.

Accordingly, Echebastar has contracted AZTI to undertake research to better understand the interaction of its vessels with silky shark.

This project will provide valuable information on the effectiveness of existing mitigation measures as indicated by PRM and the potential to define other measures based on a better understanding of variation in silky shark interaction by set size and location.

We will inform stakeholders if the second phase of project is confirmed.

2. Background

Research indicates that elasmobranchs are particularly vulnerable to fishing effect because of their k life history characteristics and any overexploitation could lead to a decline in their population.

The silky shark (*Carcharhinus falciformis*) is an oceanic and coastal-pelagic shark with a circum-global distribution in tropical waters and listed as Vulnerable species under the IUCN Red List of Endangered Species.

In the Indian Ocean, Ecological Risk Assessments (ERAs) have identified silky sharks as species with high risk of overexploitation because of their K life history characteristics (e.g., slow growth, long gestation, late maturity). As result, mortality reduction and conservation of by-catch species, especially sharks, has become a priority for RFMOs and for the fishing industry that are working for sustainability standards (e.g. Marine Stewardship Council).

The fleet segments accounting for high catches of silky shark are longline, gillnet and driftnet. In contrast, the tuna purse seine fishery contributes less than 4% to the total silky shark catch. However, the specie is the main bycatch of purse seiners when they use fish aggregating devices (FADs) (as opposed to free school).

In 2012, the Spanish association of purse seiners, ANABAC (of which ECHEBASTAR is member) and others, established a voluntary "Code of Good Practices "(CBP) that promotes the use of mitigation measures in support of a sustainable fishery.

One measure comprises strengthened handling and releasing techniques for each sensitive species based on the results of the EU MADE project. This has led to a significant reduction in interactions.

However, additional research is needed to confirm the effectiveness of the measures.

Previous research has assessed mortality of elasmobranchs in longline fisheries and in purse seiners in the Pacific Ocean. However, studies in the Indian Ocean tuna purse seine fishery are scarce.

In general, survival rate analysis studies are based on the use of pop-up tags (sPAT) which allow an estimate of PRM while providing information on the vertical and horizontal movements. The latter may be valuable for exploring the habitat and identifying complementary mitigation measures.

Results from the Pacific show higher total mortality rates for sharks in purse seiners (between 70-80%) than in longlines (around 15%). However, these studies did not reflect a CGP or the use of non-entangling FADs (entanglement was the main source of mortality).

As such, IOTC in common with IATTC and ICCAT encourage tagging programs to assess survival rates in parallel with the application of Best Practices to assess the effectiveness of the measures.

3. Objectives

The main objective of this project is to determinate the PRM of silky shark in the purse seine tuna fishery to evaluate: (i) the impact of the CBP in reducing of the species mortality, and (ii) to identify the potential for practises that could further reduce the impact.

The specific objectives of this study are to measure:

1. PRM by tagging released silky sharks.
2. The correlation between the number of silky sharks taken by set and the geographical location of the set.; and
3. The correlation between the number of silky sharks taken by set size (total tonnage harvested in a set and the estimated biomass below the FAD prior to the set).

4. Approach

The selection of silky shark, their tagging and release will be carried out by AZTI personnel that are expert in the required techniques and shark ecology. Protocols for the field work will be define beforehand, insofar as possible using the experience of other organizations completing similar research.

Sampling will take place during a single fishing trip by an Echebatar vessel.

SPAT computer tags attached to individual silky sharks that will be released as required by the CGP. Information on depth, temperature, mortality and position will be obtained.

5. Timetable

The project will start in July 2020 (subject to international travel restrictions) and be complete by March 2021.

6. Reporting

A final report will be published after peer review.