IMPLEMENTATION PLAN - DATA SUFFICIENCY & REPORTING QUALITY

Brazil South Atlantic Swordfish - Longline (Hilo) FIP

Action 1 – A.I. (1.3)

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Hilo Fish Company

Slater Daniels

INTRODUCTION

Accurate reporting of fish and bycatch weights is crucial for organizations like the International Commission for the Conservation of Atlantic Tunas (ICCAT) to effectively manage fishery resources. Precise weight data enable these agencies to assess fish populations accurately, ensuring sustainable fishing practices and the long-term health of marine ecosystems.

ICCAT relies heavily on detailed catch data to monitor and manage tuna and tuna-like species in the Atlantic Ocean. The organization maintains extensive databases, including information on nominal catches, catch and effort statistics, and size samples. These data are essential for understanding the impact of fishing activities on various species and for developing effective conservation measures. By ensuring that fish and bycatch weights are accurately reported, ICCAT can better estimate biomass levels and set appropriate catch limits to prevent overfishing.

Accurate weight data also play a vital role in the development and application of stock assessment tools like JABBA (Just Another Bayesian Biomass Assessment). JABBA is an open-source tool that allows fishery scientists to build their own simple stock assessments by choosing from various options. It automates the analysis, simplifies the code, and visualizes the outputs in a way that fishery managers and the public can more readily understand. JABBA has been used to conduct stock assessments for various species, including Atlantic swordfish and blue sharks, providing essential data to support sustainable fishery management.

In summary, precise reporting of fish and bycatch weights is fundamental for fisheries management organizations to accurately assess fish populations, develop effective conservation measures, and ensure the sustainability of marine resources. Without reliable data, biomass estimates can be skewed, leading to misinformed management decisions that could threaten the health of fish stocks and marine ecosystems.

Source: ICCAT 2024

In Brazil, the management of swordfish (*Xiphias gladius*) fisheries has traditionally relied on length-weight relationships to estimate the biomass of catches. Fisheries scientists collect data on various length measurements, such as the lower jaw fork length (LJFL) and the operculum-caudal keel length (OCKL), along with the dressed weight (DWT) of the fish. These measurements are used to develop equations that relate length to weight, enabling the estimation of biomass from length data. For instance, a study analyzing swordfish landings in Northeast

Brazil between October 2003 and June 2004 provided such length-weight relationships and conversions, which are essential for assessing fish populations and informing management decisions.

While length-weight approximations are valuable, they can introduce uncertainties due to natural variability in fish morphology and condition factors. To enhance the accuracy of biomass assessments, implementing onboard digital scales presents a promising solution. By equipping fishing vessels with digital scales, fishers can obtain precise weight measurements of individual swordfish immediately upon capture. This practice would reduce reliance on estimations and provide more accurate data for stock assessments.

Accurate weight data are crucial for effective fisheries management, as they allow for better estimation of fish populations and the setting of appropriate catch limits. By reporting exact biomass measurements to the Brazilian Ministry of Fisheries and Aquaculture (MPA) and the International Commission for the Conservation of Atlantic Tunas (ICCAT), fisheries managers can make more informed decisions to ensure the sustainability of swordfish stocks. This approach aligns with international best practices and supports the long-term viability of the swordfish fishery in Brazil.

Source: ICCAT [Rec. 17-03 (10,11)]

Incorporating onboard digital scales into fishing operations represents a significant advancement in data collection methods. It enhances the precision of catch reporting, thereby improving the quality of data available for fisheries management. This initiative not only benefits the conservation of swordfish populations but also supports the livelihoods of fishers by contributing to the sustainable management of the resource. This document serves as Action Item (1.3) which is our planned methodology to implement the digital scales in Action Item (1.4).

IMPLEMENTATION PLAN

Overview

As part of the Brazil South Atlantic swordfish - longline (Hilo) FIP, we conducted a thorough evaluation of several scale options to enhance the accuracy of catch and bycatch weight reporting. Our goal was to implement a digital weighing system that ensures precise biomass data collection while maintaining ease of use and efficiency onboard vessels. After extensive discussions with vessel operators and a careful assessment of available scales, we have selected the **110ES Tension Link Salt Waterproof Crane Scale (ANYLOAD™)** as the optimal solution.

Evaluation Process

To determine the best scale for onboard use, we considered multiple factors, including:

- **Digital weight logging capabilities** for accurate data recording.
- **Ease of use in a marine environment** with limited space.
- **Ability to weigh bycatch without bringing it onboard**, reducing handling time and ensuring compliance with sustainable fishing practices.
- **Durability and waterproof features** to withstand harsh conditions at sea.

Scale Options Considered

We reviewed several scale models from reputable manufacturers, each offering unique benefits:

1. **Marel Floor Scales** – Highly durable and user-friendly but designed for stationary use, making them impractical for vessel deployment.
2. **MSI-4300 Port-A-Weigh Plus (Rice Lake)** – A robust crane scale with excellent accuracy but limited flexibility in weighing bycatch at sea.
3. **RoughDeck HE Floor Scale (Rice Lake)** – Heavy-duty industrial floor scale, unsuitable for onboard use due to size and mobility constraints.
4. **BenchMark HE-X Scale (Rice Lake)** – Washdown bench scale with strong sanitation features but not ideal for at-sea operations.
5. **RoMech 660lb Digital Hanging Scale** – Affordable and portable but lacking the necessary digital data integration and marine durability.
6. **110ES Tension Link Salt Waterproof Crane Scale (ANYLOAD™)** – Designed specifically for marine environments with high portability, wireless features, and digital weight logging capabilities.

Final Selection: 110ES Tension Link Salt Waterproof Crane Scale (ANYLOAD™)

After discussions with vessel operators and an in-depth review of operational requirements, we selected the **110ES Tension Link Salt Waterproof Crane Scale (ANYLOAD™)** for the following reasons:

- **Digital Weight Logging System**: This scale provides precise, electronically recorded weight data, minimizing human error and ensuring accurate biomass calculations.
- **Ease of Use**: Its compact design and wireless functionality make it ideal for use in the confined spaces of fishing vessels.
- **Bycatch Weighing Efficiency**: Unlike other models, this scale allows for the weighing of bycatch without bringing it onboard, reducing stress on non-target species and improving compliance with sustainable fishing regulations.
- **Marine Durability**: The scale is specifically designed for harsh ocean environments, ensuring long-term reliability.

110ES Tension Link Salt Waterproof Crane Scale (ANYLOAD™)

Description: The 110ES is a portable and robust tension link crane scale designed for marine environments. Its compact design and wireless features make it ideal for limited spaces on vessels.

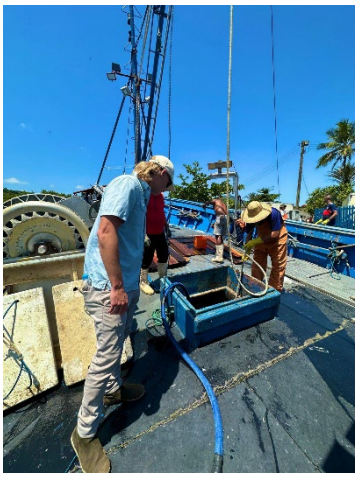
Capacity: Varies by model

Features: High portability, waterproof, compact design

Price: Contact ANYLOAD™ for pricing

Implementation Plan

We will work closely with vessel operators to ensure smooth integration of the **110ES Tension Link Salt Waterproof Crane Scale** into daily operations. Training sessions will be provided to onboard personnel, covering proper scale use, data recording procedures, and maintenance requirements. Additionally, we will collaborate with the **Brazilian Ministry of Fisheries and Aquaculture (MPA)** and **ICCAT** to ensure accurate reporting of weight data for improved fisheries management.



Digital scale implementation discussions with captain and crew

Conclusion

The selection of the **110ES Tension Link Salt Waterproof Crane Scale (ANYLOAD™)** represents a significant step toward enhancing data accuracy and sustainable fishing practices in the Brazil South Atlantic swordfish - longline (Hilo) FIP. By leveraging advanced weighing technology and thorough training, we aim to improve biomass assessments, support regulatory compliance, and contribute to the long-term health of fishery resources.