Fishery Dependent Data Collection Protocol: Full Census Approach

1. Introduction

This document outlines the protocol for implementing a full census approach for fishery-dependent data collection. This methodology is necessary to ensure the most accurate and timely estimation of total fishery catch, given recent changes in the fishery's operational landscape.

2. Rationale for Full Census Implementation

The standard practice of using a random-stratified survey with catch expansion for estimating total catch relies on a stable and sufficiently large population of active fishing vessels. However, the fishery has experienced a significant and sustained decline in the number of active fishing vessels.

Vessel Population Status	Previous State (Random-Stratified Basis)	Current State (Full Census Basis)
Active Vessel Count	High/Stable	Significantly Declined
Sampling Rate Required	Low (Due to expansion)	100% (Census)
Risk of Sampling Bias	High (if protocol not followed)	Low (If 100% compliance)
Confidence in Catch Estimate	Low (even with proper stratification)	High (Eliminates expansion error)

With a reduced vessel count, maintaining a representative and statistically robust random-stratified survey becomes increasingly challenging. The variability inherent in a small sample size, combined with the required expansion factor, introduces unacceptable levels of uncertainty and potential bias into the total catch estimate. Consequently, a full census—attempting to measure the catch of every single active vessel—is the only approach that can guarantee the required level of data quality and confidence in the final catch estimates in the shortest time possible.

3. Advantages of the Full Census Approach

The full census approach provides several key benefits:

- **Elimination of Sampling Error:** By collecting data from every active fishing vessel, the need for statistical expansion is removed, thereby eliminating the error associated with projecting sampled data to the entire population.
- **Highest Precision Catch Estimate:** The resulting estimate of total catch is the most precise measure possible, providing the most accurate basis for stock assessment and management decisions.
- **Detailed Fleet-Wide Monitoring:** Allows for the capture of detailed data on every fishing trip, offering a comprehensive view of the entire operational fishing fleet.
- **Reduced Time to Data Finalization:** With a limited number of vessels, the entire dataset can be compiled and verified more quickly than managing the complexity and expansion calculations of a stratified survey.

4. Conditions for Optimal Census Implementation

To maximize the benefits and accuracy of the full census approach, the following conditions must be met:

1. **Mandatory Compliance:** All registered and active fishing vessels must be legally mandated to report 100% of their catch.
2. **Universal Data Collection Points:** Data collection must occur at every active landing site/port or directly from the vessel. We will utilize the FishMat system to ensure data is collected efficiently.
3. **High-Frequency Monitoring:** Data collection must be continuous or implemented immediately following the completion of every fishing trip, ensuring the shortest possible time between catch and data entry.
4. **Expedited Reporting and Quality Control:** A streamlined system for immediate data entry and automated quality checks is essential to maintain the integrity of the 100% dataset.

5. Data Collection Process

5.1. Data Collection Tool: FishMat

All dockside and/or at-sea data collection will be conducted using the FishMat. FishMat is a custom-designed application optimized for rapid, comprehensive data entry and is essential for achieving the goal of a full census in the shortest time possible.

Photo: Captured photo of a typical bottomfish catch in American Samoa using FishMat

5.2. Data Collection Steps

Step	Activity	Tool/Method	Timeframe
1	Vessel Arrival Notification	Call to DMWR Boat-Based Program staff	Immediately upon entering Pago-Pago Harbor
2	Data Collector Deployment	On-site Data Collector	Intercept boat upon docking
3	Trip Information Recording	Interview form	Before offloading begins
4	Catch Measurement	FishMat Video/Photo	During offloading
5	Expedited Species Composition	FishMat Video/Photo	During offloading, to verify species and count
6	Data Submission and QC Check	Data entry portal and FishMat photo upload	Immediately after interview completion

5.3. Key Data Fields

The following mandatory fields must be captured for every fishing trip using the FishMat system:

- **Vessel Identification:** Vessel Name, Permit Number
- **Trip Details:** Departure Date, Arrival Date, Fishing Duration (Hours/Days)
- **Gear Used:** Gear Type, Effort (e.g., number of hooks, soak time)
- **Catch Data (Per Species):** Species Code, Total Weight (in kg), Number of Individuals, Disposition (Sold/Kept/Discarded), Shark Depredation
- **Location Data:** General Fishing Area (e.g., coordinates or grid block)

6. Implementation and Training

To ensure the success of this protocol, a comprehensive training program for all data collectors and port personnel will be scheduled. The training will focus specifically on the efficient use of the FishMat system and the strict adherence to the full census procedures. Success will also depend on the fishers buy-in and willingness to cooperate with DMWR on the data collection by calling in prior to departure and upon arrival. This approach will depend on 100 percent compliance to notification of DMWR staff and 100 percent response of DMWR staff to the notification by fishers.

PIFSC-FRMD is planning to hold a fishing community workshop in the spring to introduce the concept to the American Samoa small boat fishing participants (commercial and non-commercial) and solicit their support. Training of DMWR will occur in the summer.