Presentation Overview

- 3 Presentations
  - For-hire next steps (this presentation)
  - SEFHIER data review
  - Where do we go from here

- This presentation
  - Background – Why do we collect for-hire data?
  - Sampling methodologies
  - Review of current programs
  - Review of data gaps/needs

Why collect fisheries data?

- Provides data to inform stock assessments, management advice, and monitor catches

- Catch data
  - Collected from anglers what is caught during fishing trips. Supplemental information from field samplers from intercept surveys.

- Effort data
  - Collected through in person interviews, phone calls, mail, or electronic reporting. Each survey has its own method of data collection. Example questions include: how long they fished, targeted species, and number of trips.

https://www.fisheries.noaa.gov/infographic/infographic-illustrates-role-hire-data-science-and-management

Recreational Fisheries Data Usage in Management

- High quality catch and effort statistics are needed to determine effects of fishing and develop sound management strategies

- Continuous monitoring of catch and effort is needed to assess trends, evaluate management impacts, and project different management scenario outcomes.

- The quality of fishing catch and effort statistics depends on the sampling design – sample framework, data collection methods, and data estimation process

Types of Sampling Methods

- Census
  - Collects information from *all* members of a target population

- Sampling Design
  - Non-probability sampling
    - Does not use random sampling and may not be representative of all portions of the population
    - Chance that any member of the population will be sampled is unknown
    - Examples: Convenience sampling, opt-in or volunteer, snowballing sampling
  - Probability sampling
    - Uses random selection of representative portions of the population
    - Each member of the target population has a known chance of being sampled
    - Examples: MRIP APAIS survey

Data Collection vs Sampling Methods

- Electronic reporting (logbook) is a data collection *not a sampling method*
  - An appropriate survey design is needed to ensure accurate estimation of total fishing effort and catch
  - May facilitate more timely or better quality data

- Probability Sampling
  - Requires well-designed sampling frame
  - Allows for final estimation
  - Handles incomplete coverage and non-responses

Elements to a good survey design

- 2019 For-Hire Data Collection and Validation Methods Workshop
- The quality of a survey design depends on data collection, estimation, and validation methods
- Two or more data collections allow for validation of self-reported data
  - E.g., vessel trip reports (logbooks) with report from a dealer, observer, or port sample interception
  - Commercial fishery sampling designs use this design
- Dockside survey based on probability sampling is a critical component to mandatory for-hire reporting
  - Includes methods to account for trips and catch not reported

Design standard from workshop

- Logbooks should contain built-in quality controls
- Timely reporting should be required and enforceable
- Maintain high compliance
- Validation survey uses capture/recapture statistical method
  - Capture is the vessel trip report (logbook)
  - Recapture is the dockside intercept
  - Recapture must be independent of capture and be probability based

- Original SEFHIER program built on these components
- Quality data is the combination of a good survey design, compliance with design, and accurate reporting

For-hire fleet

- The for-hire fleet is composed of vessels that fish as a charter and/or a headboat. They may differ by size, fee structure, angler experience, and fishing activity.

- Headboat characterization
  - Headboats are vessels that take multiple individual and/or small groups of anglers on a fishing trip with a licensed captain and crew. Headboats are generally larger than charter boats, and almost always take more than six anglers on a given trip.

- Charter boat characterization
  - Charter boats are vessels that take a group of anglers - usually six or fewer - on a fishing trip with a licensed captain and crew. The anglers hire, or "charter," the vessel, and pay a fee for the captain's services. Charter boats engage in a full range of fishing techniques, including drift fishing, trolling, and bottom fishing.

Existing surveys

Brief descriptions of design including catch and effort collection and data gaps

Southeast Region Headboat Survey (SRHS)

- Conducted in all Gulf states since 1986
- Moved to electronic reporting in 2013
- Small sample frame ~70 vessels in the Gulf
    - This design is not scalable to all federal for-hire vessels
- 3 part survey design
    - Trip Logbook – designed to be a census although compliance fluctuates over time (recent years compliance is > 95%)
    - Dockside intercept – Collects biological samples
        - Systematic opportunistic sampling where a regional port agent samples in a manner to ensure all SRHS vessels in that region are sampled approximately the same number of times per month
    - Activity report – Verifies activity

SRHS Survey Design

Effort collections

- Logbook
  - Provides number of people and anglers on board; fishing location; trip duration; 4 economic questions (added 2014)
- Headboat Activity report
  - Port agents record all known vessel activity information (e.g. date, trip type, anglers, etc.)
  - Used to track compliance and correct for mis-reporting and non-reporting
    - Effort corrections are calculated by month and vessel
  - Utilizes direct observation, contacting ticket office, website checks, etc.

SRHS Survey Design

Catch collections

- Trip Logbook
  - Provides catch (landed and discard) by species
- Dockside intercept
  - Verifies logbook
  - Collects weights, lengths, and biological samples (e.g., otoliths, gonads, DNA)

Year	Trips	Trips Sampled	% Sampled
2015	9,728	882	9.07%
2016	10,082	810	8.03%
2017	9,931	613	6.17%
2018	9,877	874	8.85%
2019	9,488	998	10.52%
		Five year average	**8.53%**

SRHS Data gaps

- Census-like
  - Logbooks not always submitted – high compliance in recent years
  - Correction factor calculated per vessel based on Headboat activity reports

- Program participants
  - Participants vary by state

- Program not likely scalable due to high ratio of dockside samplers to vessels

- Compliance challenges early in the program – but after requiring logbooks to renew permits compliance dramatically increased

MRIP For-Hire Survey Design

- Currently only conducted in MS, AL, and FL
- Based on on-site Access Point Angler Intercept Survey (APAIS; catch) and off-site For-Hire Telephone survey (effort)

Effort collection

- o For-Hire Telephone survey (FHS) derives effort estimates
- o Each week 10% of all Gulf charter vessels are selected for phone survey
- o Includes state and federal permitted vessels
  - Mandatory response for Gulf federal *Reef Fish* permitted for-hire vessels
- o Collects information from *captains*
- o Collects information on the number of for-hire trips for the week

MRIP For-Hire Survey Design

Catch Collection

o APAIS survey is used to derives catch per trip estimates

o Collects information on mode, general area fished, catch (landed, alive discard, and dead discard), and biological samples (opportunistic)

o Collects information from *anglers*

Year	Vessels for FHS	Reported Trips[1]	Phone response rate	Phone refusal[2]	Non-contact Rate	APAIS Trip Samples
2015	10,173	8,623	61%	13%	25%	1,732
2016	8,864	7,186	61%	12%	27%	1,628
2017	8,029	6,437	58%	12%	29%	1,484
2018	8,541	6,110	59%	12%	28%	1,530
2019	7,965	6,329	57%	13%	29%	1,262

[1] Reported trips are where the vessel was selected for the phone survey, captain answered the phone, and answered the survey.
[2] Phone refusals can come from federal pelagic trips or any state trip. Not all callers have access to determine if the captain is from a federal reef fish permitted vessel or not. Not answering a phone is not considered a refusal.

MRIP Data gaps

- Voluntary for state and federal coastal migratory species permitted vessels
  - Trips tabulated may represent substantial under-estimate of total effort across state and federal waters

- Not a Gulf-wide survey

- APAIS surveys anglers may not be as knowledgeable about species identification, but less of a concern with port samplers

LA Creel Survey

- LA participated in MRFSS and MRIP until January 1, 2014
- LA Creel survey intended to provide more reliable landings of individual species in a timely manner using a two-part survey design

Effort survey

- o Weekly phone/e-mail survey where they contact licensed LA charter captains to interview them about their fishing activities from the previous week
- o Captains contacted at random – goal 30% captains fishing offshore (ROLP holders) and 10% fishing inshore (non-ROLP holders)
- o Red snapper season – contact 100% captains with offshore permits

Catch collection

- o Weekly access point survey
- o No access point survey at private locations
- o Collects discard information on 11 species

Texas Creel Survey

- Began survey in 1974, with landings estimates starting in May 1983
- Conducts boat surveys
  - Boat surveys include sampling of for-hire vessels, including both guided inshore and offshore vessels
- Intercepts and interviews boaters while at ramps and marinas
  - Collects landings, effort, and angler information
    - Collects lengths used to estimate weights; no discards
  - Sampling seasons: high-use (May 15 – Nov 20) and low-use (Nov 21 – May 14)
  - Random sampling based on relative site pressure
- Estimates sent to NMFS twice per year (high and low seasons)
  - Expansion of catch estimates uses fishable days instead of total effort
  - Estimates are based on empty boat trailer counts
- Sampling limited to sites and time covered by intercept survey frame (e.g. no private locations) with no separate survey to account for off-frame trips

GARFO For-Hire Reporting and MRIP

- GARFO requires vessel trip reports (logbooks) – Mandatory reporting
- Used to supplement MRIP in the Northeast
  - MRIP identifies vessels that have a vessel trip report requirement before sampling
  - Remain in the FHS survey but are not called as the vessel trip report is used instead
- Why only supplement?
  - The mandatory reporting does not cover non-permitted for-hire vessels – that is it misses some vessels captured by MRIP's FHS survey
  - Vessel trip reports are self-reported and not subject to validation

SEFHIER Design

- Built to the include a number of data and accountability reporting standards

- Mimicked commercial fisheries sampling designs to the extent practicable
  - Hail-outs for trip auditing
  - VMS positioning for validation
  - Mandatory vessel trip reports (logbooks)

- Independent validation survey to account for unreported trips and accuracy of self-reported data
  - Utilizes capture/recapture statistical method (see next slide)

- Adequate enforcement to ensure compliance

Capture/Recapture Challenges

- Requires registration of each trip

- Requires vessel trip report to be submitted prior to intercept (e.g., prior to offload of fish). This ensure independence of intercept survey

- Sufficient enforcement and compliance monitoring to reduce number of unreported trips

- Observers used to increase accuracy of released catch data

Known SEFHIER gaps

- No sampling or enforcement at private landing locations

- Does not collect discard disposition for mortality estimates

- Limited weight and length data collection

- Only samples federally permitted vessels

Questions?

Next up: SEFHIER Data Review