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| <i>NATIONAL MARINE FISHERIES SERVICE PROCEDURE 04-115-01</i> Effective on: November 28, 2016 | |
| To be reviewed on: May 1, 2024 | |
| Science and Technology 04-115 Policy on Electronic Technologies and Fishery-Dependent Data Collection | |
| Marine Recreational Information Program (MRIP) Electronic Reporting Technologies | |
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| Signed _____ Ned Cyr Director, Office of Science and Technology | |
| Date _____ | |

I. Introduction

Significant growth in the use of smartphones and the internet has created new opportunities to use electronic reporting (ER) technologies in support of fisheries management and science. NOAA Fisheries' Marine Recreational Information Program (MRIP) is committed to developing ER and expanding its use to improve the quality and timeliness of recreational fisheries catch and effort data. MRIP will explore a variety of uses for ER, including the integration of technologies into new and existing data collection designs, as well as supplemental uses for ER data.

II. Objective

To identify key considerations, and to establish priorities, for MRIP investment in development of electronic reporting technology.

III. Guidance

Background

NOAA Fisheries, MRIP, monitors and reports marine recreational fishing catch and effort. MRIP conducts surveys that estimate catch and effort for marine finfish. Information from these surveys is combined with other sources of data, such as commercial catch and biological research, to support fisheries stock assessments and management decisions. MRIP is designed to meet two critical needs:

- Provide timely, scientifically sound information that fishery managers and scientists need to ensure the sustainability of ocean resources and to better manage recreational fisheries.
- Address regional and stakeholder needs and concerns about recreational fishing catch and effort estimates.

MRIP is a collaboration among NOAA Fisheries, Interstate Fisheries Commissions, Regional Fishery Management Councils, state natural resource agencies and recreational anglers. Consequently, program priorities reflect the needs of a diverse stakeholder group, and initiatives to address priorities require extensive partner engagement. To date, MRIP priorities have generally focused on addressing concerns identified by the National Research Council's 2006 review, such as evaluating data collection designs for catch and effort surveys. As improved designs are implemented, we anticipate that priorities will shift toward more subtle refinements of methods and expanded sampling to further address stakeholder needs.

MRIP conducts two types of data collections: sample surveys and censuses.

A sample survey estimates the characteristics of a population by collecting information from a representative subset of the population – a sample. The majority of MRIP data collections are sample surveys such as the Access Point Angler Intercept Survey, the Fishing Effort Survey, the For Hire Survey, and the Large Pelagic Survey. Details on these surveys can be found [here](#).

There are two broad categories of sampling: probability sampling and non-probability sampling. In probability sampling, each member of the target population has a known, non-zero probability of being included in the sample. Generally, samples are randomly selected from a comprehensive list of population members commonly referred to as the sample frame. Probability sampling, if implemented properly, will result in unbiased samples that are representative of the target population. All MRIP surveys utilize probability designs to estimate total catch and effort.

In non-probability sampling, the relationship between the sample and the target population is unknown. Consequently, it is not possible to know if a sample is unbiased. Examples of non-probability samples include convenience samples, social media research, quota samples, and clinical trials.

Researchers and professional organizations, including the American Association of Public Opinion Research (AAPOR), have examined the utility of non-probability samples as an alternative or supplement to traditional probability-based survey designs. Generally, these reviews suggest that convenience samples, including volunteer samples and opt-in panels, are not appropriate for estimating population characteristics ([AAPOR 2013](#)). For MRIP, these findings suggest that it is not appropriate to estimate total catch and effort from data reported by a self-selected group of anglers using a voluntary electronic reporting tool, such as a smartphone app. A [2012 MRIP workshop](#) examining the utility of opt-in angler data resulted in a similar conclusion – volunteers are not likely to accurately represent the overall population, resulting in biased data.

In contrast to a sample survey, a census attempts to collect complete information from all members of a population. General requirements of a census include:

- A clear definition of the population to be included in the data collection.
- Independent validation to monitor reporting compliance and correct for missing data and data that were reported inaccurately.
- Sufficient enforcement to maximize participation.

At present, MRIP does not directly administer census programs. However, we collaborate with several ongoing census programs, including the Northeast Logbook Program and the Southeast Head Boat Program, to estimate catch and effort for the for-hire sector, and are supporting partner efforts to develop and expand for-hire census data collection (see below).

MRIP ER Work to Date

MRIP is supporting the development of ER technologies that are expected to enhance the timeliness and accuracy of recreational fishing catch and effort data. This work includes pilot studies to design and test methods that utilize ER technologies, as well as the development of methods to validate electronically reported information. MRIP has supported projects exploring ER in both census data collections and sample surveys.

MRIP supports multiple projects that are testing electronic logbook reporting in the for-hire sector, for example, the Alaska Charter Boat Logbook Program, the Alabama Snapper Check Program, and charter boat logbook and validation sampling for North Carolina and South Carolina. While this work has focused on a limited number of census programs, we anticipate that the results will be broadly applicable to ongoing for-hire census programs. More details about these findings and the timeline associated with this work can be found in the MRIP For-Hire Electronic Reporting Road Map, Supplement 04-115-01-01.

MRIP is also exploring the feasibility of replacing traditional paper and pencil interviews with Computer Assisted Personal Interviewing (CAPI). For example, MRIP is currently supporting several projects that are testing tablet devices in MRIP and partner-administered dockside surveys. These methods are similar to electronic data recording methods being developed by NOAA Fisheries for the National Observer Program.

Finally, MRIP is evaluating the potential benefits and limitations of data that are collected or reported through non-probability designs. Key projects in this category include:

- A [2012 workshop on Opt-In Angler Panels](#) explored existing data collection programs, the statistical properties of the data, and a potential framework for evaluating and using non-probability panel data.
- [An assessment and comparison of the statistical properties and utility of multiple smartphone applications.](#)
- A [comparison of data collected by a smartphone application from two groups](#) – a panel selected via probability sampling and a panel selected via non-probability sampling (typical users) – to better identify the biases associated with data collected with the application.

This procedural directive contains a high-level overview of the ER work being supported by MRIP. More details on many of MRIP's ER projects can be found in the MRIP project descriptions and reports under the Electronic Data Collection section of the [MRIP Project Tree](#).

MRIP ER Position

MRIP recognizes and appreciates that private anglers want to share their data to help conserve and maintain ocean resources. All of our current surveys rely on angler submitted data. The voluntary participation of anglers in these surveys is necessary for the surveys' success. This statement affirms MRIP's commitment to develop and expand use of ER technologies that produce sound data in an efficient manner.

Additionally, this directive lays out MRIP's priorities for the ER work it will support. In priority order, MRIP will:

- Support the work needed to develop and implement ER technologies for logbook reporting in the for-hire industry (or other census-based approaches), including the development of new reporting technologies and methods to validate reported information. More details on the planned approach to this work can be found in the For-Hire Electronic Reporting Road Map, Supplement 04-115-01-01. Explore ER technologies that can be used by fisheries samplers in the field.
- These technologies have the potential to save time and money and to reduce errors in data collection.

- Collaborate with partners to examine the utility of supplemental angler reporting applications. This includes working with partners to develop and set standards for third parties to use in development of their own applications. All MRIP-supported work on supplemental angler reporting applications must:
 - Meet the needs of MRIP partners, as expressed in the MRIP regional implementation plans.
 - Identify and address any limitations of data that are collected through non-probability sampling designs.

All MRIP supported approaches must be consistent with and supportive of the NMFS Policy Directive 04-115 ([Policy on Electronic Technologies and Fishery-Dependent Data Collection](#)) – specifically, they must be “cost-effective and sustainable approach[es] that ensure alignment of management goals, data needs, funding sources and regulations.”