

For-Hire Electronic Logbook Pilot Study in the Gulf of Mexico

Final Report

Project Team:

Dave Donaldson and Gregg Bray, Gulf States Marine Fisheries Commission
Beverly Sauls, Stephanie Freed and Bridget Cermak, Florida Fish and Wildlife Conservation
Commission

Page Campbell, Alice Best and Katie Doyle, Texas Parks and Wildlife
Andrew Strelcheck and Kenneth Brennan, National Marine Fisheries Service

Completed March 27, 2013

Report submitted to the Marine Recreational Information Program Operations Team
July, 2012

Revised in response to peer review received February, 2013

Consultants:

Dr. Mark Kaiser, Iowa State University
Dr. Robert Trumble, MRAG Americas
Dr. James Chromy, RTI International
Dr. Joseph Powers, Louisiana State University



EXECUTIVE SUMMARY

This report summarizes the methods, results and conclusions of a one-year pilot study conducted in the Gulf of Mexico to test the feasibility of a mandatory electronic logbook reporting system, along with methods to independently verify self-reported catch and effort data in the for-hire fishery. The expectation with a mandatory reporting system is that a complete census of effort and catch among all participants in the fishery will be obtained. This would allow managers and scientists to monitor catch and effort in a timely manner to ensure catch limits are not exceeded. However, methods to independently validate self-reported fisheries data are needed to certify whether a true and accurate census of catch and effort is actually achieved, and to account for instances when it is not. Tracking methods are also important with any mandatory reporting requirement so that late or missing reports can be identified and participants in the fishery can be contacted in a timely manner. Tracking is also important to facilitate enforcement, when necessary.

Several potential benefits from a logbook reporting system were recognized from this study, and we do not rule out logbook reporting as a feasible method for the collection of catch and effort statistics from the for-hire sector. However, based on the results and design of this pilot study, a census of for-hire catch and effort using logbooks was not achieved due to non-reporting (both at the trip-level and vessel-level) by vessels required to report. If logbooks were to be used as a census, mechanisms to enforce timeliness and accuracy of reporting would need to be improved. This Executive Summary highlights the key findings from this study. Recommendations included herein are intended to guide decision makers who are considering adopting logbook reporting as a regional data collection method for for-hire fisheries. A separate analysis was completed using data collected during this pilot study to explore the feasibility of combining self-reported logbook data with independent validation data to generate statistically valid estimates for catch and effort. That report, which is currently undergoing peer-review, will provide further guidance on the utility of logbook reporting methods for the collection of catch and effort data from for-hire fisheries.

Key Findings and Recommendations

Reporting Tools

Electronic reporting with built-in quality control features that prevent data entry errors and omissions was an effective method for receiving high quality self-reported data from a large population of participants. Paper logbooks and electronic reporting options without built-in quality control features required more follow-up with participants to verify and attempt to correct self-reported data. Electronic reporting options that allow users the ability to record and store logbook data at-sea facilitate better record keeping and accurate recall by offering more flexibility for when and how users keep track of trip details and record logbook data.

Recommendations:

Recommend that participants in the fishery be involved in the design of electronic logbooks to improve data reporting accuracy and efficiency, and to ensure data entry fields are clearly described.

Electronic reporting is preferred over paper logbook reporting and it is recommended that electronic reporting be required for participation in a fishery, whenever it is practical to do so.

Recommend that electronic reporting tools have quality control features built in to prevent data entry errors and omissions by users, and electronic reporting options be certified to include all required quality controls before they become available for use.

Recommend that electronic reporting tools include a feature that requires an entry of either inactivity or activity for each day in the reporting period. Alternative options, such as hail out/hail in requirements or vessel monitoring systems, should also be considered for reporting activity.

Regardless of whether or not real-time reporting is required of participants in a fishery, electronic reporting options that offer users the ability to record and store logbook data at-sea during reported fishing trips (example, smart-phone applications, tablets, etc.) are highly recommended to facilitate record keeping and accurate recall of logbook information.

Recommend that electronic logbook records be accessible, with password protection, to vessel owners for their record keeping purposes. This will help create cooperation and incentive for participation.

Enforcement

Current authority to enforce reporting requirements for federally permitted vessels was effective for achieving reporting compliance, but was not effective for achieving timely reporting. Under the current authority, a delinquent vessel may continue to fish until the permit is due for renewal on an annual basis. Prior to the permit expiration date, the permit holder may submit delinquent records for the previous 12 months to become compliant and clear the permit for renewal. These data are not reliable in most cases. After the permit is issued, the same vessel can be non-compliant in the same manner the following year with the same consequences and results. Authority to require and enforce charter vessel trip reporting for non-federally permitted vessels varies by state and some states require legislative changes to gain such authority.

Recommendations:

As with any mandatory reporting program, timely reporting by participants should be required for logbooks and this requirement should be enforceable. It is recommended that authority for enforcing reporting requirements be modified to enhance the timeliness of reporting. Recommended authority should include permit suspension, permit termination and civil penalties to facilitate enforcement of timely reporting.

It is highly recommended during the initial implementation of a logbook reporting requirement that planned methods are in place for initiating a quick response if compliance is low at the onset of the reporting requirement.

Recommend that follow-up procedures to track reporting compliance are designed to facilitate timely enforcement (see recommendations below under “Reporting Compliance and Timeliness”).

Reporting Compliance and Timeliness

Based on the results and design of this pilot study, a census of for-hire catch and effort using logbooks was not achieved due to non-responses (both at the individual trip-level and vessel-level) by vessels required to report. For an ongoing logbook reporting program to remain effective, a consistent and high level of effort by port samplers and law enforcement is required to validate and maintain reporting compliance and timely reporting. If logbooks were to be used as a census of catch and effort, the timeliness and accuracy of reporting would need to be improved. Throughout the pilot study, reporting compliance gradually improved and most likely would have continued to improve had this pilot study run for a longer period and fishermen became more familiar with reporting requirements. However, the issue of vessels reporting inactivity during weeks when they actively fished would continue to be an obstacle to achieving a complete census and must be accounted for. A requirement to report vessel activity or inactivity each day within a reporting period is needed to effectively track and monitor compliance for a complete census of all trips, and to conduct timely follow-up for late and missing reports (i.e. within a given reporting week, participants should be required to report inactivity or activity for each day). A large number of vessels with federal permits did not actively charter fish during the pilot study (100 of 358 in Florida and 43 of 58 in Texas), and different reporting requirements may be necessary for inactive permit holders.

Recommendations:

While we do not rule out logbook reporting as a feasible method for the collection of catch and effort statistics from the for-hire sector, logbooks are not recommended if a complete census is necessary due to the significant additional resources in manpower and funding required for a logbook reporting method to achieve a complete census.

To achieve maximum compliance and timeliness, we strongly recommend that before any logbook program is implemented, provisions for the following components are included in the initial design and implementation phases for the program, and that long-term, recurring funds are appropriated to ensure that these tasks are maintained over the duration of the program:

- A large up-front effort to inform participants of upcoming reporting requirements prior to implementation
- Methods to track and quickly identify missing and late reports both at the onset of the program and over the long-term duration of the program
- Follow-up procedures that are timely and maintain compliance and timely reporting over the duration of the reporting program
- Multiple stages of follow-up procedures that are maintained over the long-term duration of the program, including an early prompt to remind participants when reporting deadlines are approaching, notifications to participants immediately after the deadlines are missed, and later follow up if reports are still delinquent.

Reporting Frequency

The frequency with which participants were required to report during this pilot study was weekly, and this frequency was sufficient to produce precise and timely catch and effort statistics. The effort required to effectively monitor compliance with timely follow-up for missing and late reports in this study would have been much greater if the selected reporting frequency was daily, and the cost would be even greater if certifying the accuracy of daily reporting at the individual vessel level was required (such as in commercial fisheries managed with individual fishing quotas or IFQs). Decreasing the reporting frequency (bi-weekly or monthly) to further reduce costs would come at the expense of increased recall bias and is not recommended.

Recommendations:

Recommend the selected reporting frequency and required reporting accuracy be considered both in terms of the cost and necessity for management and assessment before implementing a region-wide logbook reporting methodology.

Recommend a weekly reporting frequency combined with a daily reporting requirement for a logbook reporting design as the most feasible method, both in terms of cost and the benefits for minimizing recall bias and tracking compliance. Daily reporting frequency is only recommended if adequate resources can be dedicated to compliance tracking and timely follow up, and only if daily or individual vessel monitoring is necessary for fisheries management.

Validation and Estimation

The logbook reporting methods pilot tested in this study did not achieve a complete census. Logbook reports in this study were submitted for a large portion of the total effort (approximately 70% overall), which was verified through field validations of vessel status. Comparisons in this study between logbook reports and independent field validations confirm that self reported data are subject to recall bias and inaccuracies in reporting; therefore individual logbook trip reports cannot be considered a one-to-one match with independent validations. However, given an adequate sample size, aggregated logbook data are potentially very useful for developing estimators for total effort, catch-per-unit effort (CPUE), and total harvest at the regional scale. It is unlikely that logbook records can be used to provide precise daily estimates, and precision could also be low for weekly estimates, particularly during months of low fishing activity. We believe it is feasible to develop estimators for cumulative monthly catch and effort during periods of high fishing activity, and bi-monthly during periods of low fishing activity. Seasonal (lower frequency than bi-monthly) estimates would not be useful to regional fisheries managers and are not recommended.

Recommendations:

The project team worked with an MRIP Consultant to develop appropriate methods for estimating effort and catch using data from this study. A report for this task, which includes recommendations for consideration, was provided to the MRIP Operations Team in December, 2012, and is currently undergoing peer-review.

Given 30% of total trips validated did not submit logbooks, it is recommended that additional research be conducted to determine if adjustment methods are needed to account for sampling bias associated with vessels that did not report logbooks.

Recommend that methods currently in place to estimate catch and effort for for-hire fisheries in the Gulf of Mexico and Texas be evaluated to determine whether sample sizes are sufficient for precise and accurate estimates. In addition, recommend that potential bias associated with non-response (both refusals and non-successful contacts) be evaluated for each methodology. If sample sizes in current surveys are not sufficient, then the cost to achieve necessary sample sizes should be compared to a logbook reporting system to determine whether a logbook reporting system is a more affordable alternative for achieving larger sample sizes.

Field Validation

If individual logbook records could be considered one-to-one equivalents of what would result from dockside sampling, then a small validation monitoring program would be sufficient. However, based on the results of this study, logbook records should not be viewed as giving values similar to dockside sampling of the same trip (e.g., a small number of dockside samples should not be expected to agree with a small number of corresponding logbooks reports). The three field validation methods employed in this study were variable both in terms of cost and the granularity of information provided for direct comparisons with logbook trip reports. Effort validation through vessel activity status verification is the least costly method and was effective for measuring reporting compliance, though additional methods may need to be considered during periods of low fishing activity or in states with low numbers of vessels. Dockside sampling is the least costly method for validation of catch, but is not effective for validation or estimation of released catch. At-sea validation is the most costly method for validating catch, but provides high resolution data on numbers and size of landed and released fish, depth of capture and area fished. The feasibility of placing fisheries observers on charter vessels to collect high quality validation data at-sea was demonstrated during this study; however, due to low sample sizes we were not able to determine necessary sample sizes for validating discards at-sea.

Recommendations:

Recommend for any census-style logbook reporting program that vessel activity validation methods to measure and account for incomplete reporting be employed. This is important both for achieving an accurate estimate for the total number of trips and accounting for unreported catch.

Released catch represents a major portion of total catch and contributes significantly to total fishing mortality for many managed fisheries in the Gulf of Mexico. In this study, neither logbook trip reports nor dockside validations provided accurate estimates for released catch; therefore, it is highly recommended that some form of at-sea validation methodology be incorporated into logbook validations. For harvested catch, data from dockside validations and logbook trip reports were similar in aggregate; therefore a combination of dockside and at-sea validation methods may be employed.

Feasibility for Regional Implementation

Several potential benefits from a logbook reporting system were recognized from this study, and we do not rule out logbook reporting as a feasible method for the collection of catch and effort statistics from the for-hire sector. Given adequate resources and long-term funding commitments, this method would be feasible for a large geographic area with a large number of vessels, but may not be feasible for small states or regions with small numbers of vessels. This study included only charter vessels with federal permits, and regional implementation would also need to consider whether to include vessels that do not possess federal permits and mechanisms to require and adequately enforce logbook reporting, or else exclude those vessels from logbook reporting and survey them separately. Challenges to surveying small, inshore guide vessels in current survey methods would also apply to field validation sampling if they were required to report in a logbook program.

Recommendations:

Recommend that if logbooks are implemented on a large regional scale, implementation should be phased in at smaller regional scales so that adequate resources can be dedicated to necessary up-front efforts for outreach and follow-up with non-respondents to achieve high compliance.

Recommend that a regional logbook reporting program exclude non-federally permitted vessels unless each state has authority to require reporting and a mechanism to enforce timely reporting.

State license frames are often not adequate for identifying all vessels in a fishery, and a complete universe of known vessels is recommended before mandatory logbook reporting is implemented for all for-hire vessels in a region.