Additional Large Pelagics Telephone Survey Data Collection to Address Potential Biases with the Large Pelagics Intercept Survey

FY 2014 Proposal

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1. Overview

1.1. Sponsor

Ron Salz

1.2. Focus Group

Survey Design and Evaluation

1.3. Background

NOAA Fisheries is responsible for monitoring and managing United States marine fisheries resources. Large pelagic species (e.g., tunas, billfish, swordfish, and sharks) are of particular management interest as they support socially and economically important recreational and commercial fisheries. The collection of catch and effort information on large pelagics also fulfills U.S. obligations to the International Commission for the Conservation of Atlantic Tunas. The Large Pelagics Survey (LPS) is designed to collect information on recreational fishing directed at large pelagics. Offshore trips targeting large pelagics typically make up a relatively small proportion of all recreational fishing trips. Use of this specialized survey design allows for higher levels of sampling for large pelagic trips, which ultimately improves estimates of catch and effort for large pelagics. The survey is comprised of two independent, complementary surveys: 1) Large Pelagics Telephone Survey (LPTS), which collects fishing effort information from a list frame of captains holding federal permits required to fish for some large pelagic species, and 2) Large Pelagics Intercept Survey (LPIS), an access point intercept survey of private and charter boat captains that provides detailed catch and trip characterization data along with supplemental effort information used to account for undercoverage in the telephone survey. Together, these two surveys provide the effort and mean catch rates needed to estimate recreational catch of large pelagics. In their review of saltwater recreational fisheries data collection methods, the National Research Council (NRC) identified several sources of bias with the intercept component of the NOAA Fisheries Marine Recreational Fisheries Statistics Survey (MRFSS). To the extent that the MRFSS intercept survey, critiqued by the NRC, and the LPIS are similar, at least some of the issues identified in the NRC report pertain to the LPIS. An MRIP project aimed at improving the Large Pelagics Survey design and estimation methods is currently underway (see MDMS project plan titled “Review of Current Sampling and Estimation Methods for the Large Pelagics Survey). One potential source of bias common in recreational fisheries dockside surveys is undercoverage. As noted in the NRC (2006) report: “The undercoverage of angler trips ending at private access sites….. could result in significant biases in the intercept survey estimates of angler trip catch rates and/or species composition of angler trip catches” (NRC 2006). Similarly, fishing trips that return to public access sites that are not on the dockside sampling frame (i.e. master site register) also represent a potential source of undercoverage bias. Data collected from LPTS phone interviews on access site type suggest that between 20%-25% of all LPS private boat trips from Maine through Virginia return to private access sites, while another 20% may return to public sites that are not on the LPIS site register (see Table 1 in Supporting Documents). Therefore, the potential for biased LPIS catch rate estimates due to undercoverage is relatively high and worthy of further investigation. In addition to catch rates, LPIS data are used to calculate effort adjustment factors for out-of-state trips and trips by non-permitted vessels (i.e. vessels not on the LPTS frame). These adjustment factors may also be biased due to undercoverage. Another major issue identified by the NRC relates to the mismatch between the sampling design and the estimation method. Similar to the MRFSS, estimates from the LPIS rely on un-weighted averages that do not reflect the complex sampling design and also contain data not obtained through a strict probability based sample. These factors result in design-biased LPS catch estimates that should be corrected for where possible. Not appropriately weighting intercept data can result in another potential bias related to LPIS sampling at fishing tournaments. A recent MRIP pilot study (MRIP HMS Work Group Report 2009) suggested that tournaments are being oversampled in the dockside LPIS compared to rates of tournament trips reported on the complementary phone survey (LPTS). For certain large pelagic species, catch rates and fish sizes from tournament trips can significantly differ from those associated with non-tournament trips. A sensitivity analysis was conducted on LPS estimates to determine: 1) which particular species are more sensitive to this potential bias, and 2) the relative magnitude of the catch estimation bias resulting from differing hypothetical rates of oversampling tournaments in the LPIS. Landings estimates for commonly targeted sharks (i.e., blue, common thresher, and shortfin mako) were particularly sensitive to tournament trip down-weighting. Results suggest a positive bias in LPS shark landings estimates and billfish release estimates due to LPIS disproportionate sampling of tournaments.

1.4. Project Description

Information obtained from the Large Pelagics Telephone Survey (LPTS) can be used to both identify and correct for biases associated with the LPIS. As illustrated above, LPTS responses to access site type questions can be used to estimate the magnitude of LPIS undercoverage due to off-frame fishing trips. LPTS data can also be used to compare trip attributes across the three access types: private, public on frame, and public off-frame. LPTS effort variables that can be compared include target species, fishing method, tournament participation, miles offshore, lines used, and hours fished. The LPTS also collects limited catch data on a few rare event LPS species. With a few exceptions, current LPTS private boat sampling rates generally do not allow for robust comparisons across access site types at either the state/sampling week or state/month level. The state level sample sizes shown in Table 1 (see Supporting Documents) are pooled across 2-years and 11 sampling periods for each year. Pooling data to increase sample sizes for analyses can be problematic since catch rates and other trip attributes may differ significantly across year, states, month or even 2-week sampling periods. An increase in LPTS sample sizes, combined with an expansion of catch questions to more common LPS species, would allow for more meaningful comparisons of catch rates (and

other trip attributes) across access site types. This would result in a better understanding of the magnitude and direction of bias associated with LPIS undercoverage. For trips not returning to a site on the LPIS site register, follow-up questions can also be added to the LPTS to determine if the vessel stopped at an LPIS site (e.g. marina fuel dock , tournament weigh station), or some other site, before reaching their final destination. This information can be used to 1) determine the proportion of trips returning to “off-frame” locations that can still be intercepted in transit, and 2) develop a strategy for intercepting a larger proportion of “off-frame” trips at locations where these vessels typically stop. Additional Probing questions can also be added to improve site type classification (i.e., reducing classification errors), particularly for trips classified as “public not on site register.” In some cases the site description provided by the respondent is simply too vague (e.g. state ramp, unnamed marina) to match the site to one on the site register. Increasing LPTS sample sizes will also result in more robust data for improving the statistical validity of the estimation methods being applied to the LPIS. As was done for the MRFSS with Coastal Household Telephone Survey (CHTS) data, an empirical time slice distribution of completed LPS vessel trips can be modeled from LPTS data and used to expand the number of completed vessel trips in the sampled LPIS time slice to the entire day. With adequate sample sizes, LPTS data may also be used to estimate the prevalence of tournament trips needed to appropriately weight LPIS tournament data. Relationship to MRIP PrioritiesThis project addresses the following four priority areas specified in the FY 2014 Guidelines for MRIP Proposals: • Projects that further develop or test recommendations from MRIP-funded reviews of existing data collection designs or previous MRIP pilot studies (i.e. follow-up studies)• Evaluation of ongoing catch and effort surveys administered by state natural resource agencies or the Federal Government;• Assessment of non-sampling errors, such as non-response error, coverage error, and measurement error, in recreational fishing surveys;• Projects that address recommendations from the National Research Council (NRC) Review of Recreational Fisheries Survey Methods

1.5. Public Description

1.6. Objectives

Task 1: Increase LPTS sample sizes in 2014 1. Improve our estimate undercoverage due to trips returning to sites not on LPIS frame. 2. Allow for more meaningful comparisons of LPS trip attributes, including catch rates, between on-frame and off-frame trips.3. Provide sufficient sample sizes for developing models aimed at improving the statistical validity of the estimation methods being applied to the LPIS: a) Model an empirical time slice distribution of completed LPS trips b) Develop appropriate weights for LPIS tournament data. c) Develop other model-based estimation approaches as necessary for approximating a design-unbiased estimation method. Task2: Add questions to the LPTS to: 1. Allow for comparisons of LPS trip catch rates across access site types 2. Determine proportion of trips returning to “off-frame” sites that can be intercepted in transit. 3. Improve accuracy of access site type classification, particularly for trips classified as “public not on site register"

1.7. References

NRC (National Research Council). 2006. Review of recreational fisheries survey methods. Committee on the Review of Recreational Survey Methods, Oceans Studies Board. The National Academies Press. Washington, DC. 187 pp. MRIP HMS Work Group Report. 2009. Evaluation of the Sampling Distribution of Tournament Versus Non-tournament Trips in the Large Pelagics Survey. Foster et al. 2008. Large Pelagics Survey: Methodology overview and issues. ICES CM 2008/K:22.

2. Methodology

2.1. Methodology

The Large Pelagics Telephone Survey collects effort information from a list frame of vessels with NMFS permits required to fish for either Atlantic tunas or, more generally, highly migratory species with rod and reel or handline. The sample target population is defined by year, sample reporting period, state, and fishing mode (Private or Charter) with individual vessels being the primary sampling units (Foster et. al 2008). In LPTS, fishing mode is defined by permit type. Vessels with the Charter/Headboat HMS permit comprise the “charter boat” mode while boats with either an Angling category HMS permit or a General category Atlantic Tunas permit comprise the “private boat” mode. This project only involves proposed changes to the private boat mode sampling, or LPTS Private. LPTS sampling is conducted bi-weekly from June through October and from Virginia through Maine. The total LPTS Private frame size (all states) typically ranges from 14,000 to 15,000 permit holders. LPTS Private uses simple random sampling with fixed sample sizes that differ by state and sample reporting period. Approximately 4-5% are selected for sampling every two weeks. The sample reporting period is two weeks long. In the week prior to a sample period, vessel representatives (captains or permit holders) receive notification letters that their vessel has been selected for the LPTS. The notification provides respondents with the sample period dates, and information about the survey including when respondents will be contacted. The LPTS survey instrument contains both general effort characterization and trip specific profile questions. If approved for funding, the specific distribution of additional LPTS sample across states and sampling periods will be further evaluated by the project team. While adding sample to all strata would likely result in the benefits discussed above, an even distribution of sample across strata may not be the most optimal or efficient approach. For example, states with a higher prevalence of LPTS trips returning to private access sites could be given a disproportionate increase in sample size relative to states where private access undercoverage is less of an issue. Additional questions, as proposed above, will be developed and tested by the LPS review project team in consultation with the LPTS contractor.

2.2. Region

Mid-Atlantic, North Atlantic

2.3. Geographic Coverage
LPS coverage area from Maine through Virginia

2.4. Temporal Coverage
LPS months from June through October

2.5. Frequency
bi-weekly dialing

2.6. Unit of Analysis
vessel fishing trip

2.7. Collection Mode
telephone survey

3. Communication

3.1. Internal Communication
Project team will hold bi-weekly conference calls,or more often as needed, during the development phase (March-May) to discuss optimum sampling allocation and questionnaire changes. Team will also communicate via Email and will share documents using Google Docs. All shared documents with Personally Identifiable Information (PII) will be kept secure using approved encryption protocols. Project team will be emailed updates during survey implementation phase (June-Nov) will conference calls arranged as needed.

3.2. External Communication
Monthly reports will be posted to MDMS.Final project report will be sent to the MRIP OT Chair.

4. Assumptions/Constraints

4.1. New Data Collection
N

4.2. Is funding needed for this project?
Y

4.3. Funding Vehicle
Optional task on existing NMFS ST1 contract for LPTS. Anticipated award January 2014.

4.4. Data Resources

4.5. Other Resources

4.6. Regulations

4.7. Other
Increased LPTS sample sizes and additional questions proposed will require OMB PRA approval. LPTS is currently covered under the OMB PRA title Large Pelagics Fishing Survey (No. 0648-0380) which expires in November 2014. The revisions requested for this proposal will be combined with the overall LPS package renewal which should be in place by May 1, 2014 to be ready for the 2014 LPS survey season.

5. Final Deliverables

5.1. Additional Reports
see MRIP project "Review of Current Sampling and Estimation Methods for the Large Pelagics Survey"

5.2. New Data Set(s)

LPTS datasets are delivered monthly by the Contractor

5.3. New System(s)

6. Project Leadership

6.1. Project Leader and Members

First Name	Last Name	Title	Role	Organization	Email	Phone 1	Phone 2
Jay	Breidt	Professor / Consultant	Team Member	Colorado State University			
Ron	Salz	Fishery Biologist	Team Leader	NOAA Fisheries	ron.salz@noaa.gov	301-427-8171	
Lynn	Stokes	Professor / Consultant	Team Member	SMU			
Ana	Valentin		Team Member	NOAA Fisheries	ana.valentin@noaa.gov	301-427-8187	

7. Project Estimates

7.1. Project Schedule

Task #	Schedule Description	Prerequisite	Schedule Start Date	Schedule Finish Date	Milestone
8	Complete draft project report	7	11/17/2014	01/12/2015	Y
4	Contract modification to add questions to LPTS CATI script	2	02/10/2014	04/15/2014	
1	Add option to LPTS SOW for sample size increase		12/01/2013	12/15/2013	
2	Procure contractor for 2014 LPTS (combined with For-Hire Survey contract)	1	01/06/2014	01/30/2014	
5	Develop and test new LPTS questions; Finalize questions and add to CATI script	2,4	04/16/2014	05/26/2014	
7	Conduct LPTS sampling	1,2,3,4,5,6	06/02/2014	11/10/2014	

Task #	Schedule Description	Prerequisite	Schedule Start Date	Schedule Finish Date	Milestone
6	Evaluate distribution of additional LPTS sample across state and sampling week strata	1, 2	02/03/2014	05/01/2014	
3	Renew/revise Large Pelagics Survey OMB PRA		11/01/2013	05/15/2014	Y

7.2. Cost Estimates

Cost Name	Cost Description	Cost Amount	Date Needed
LPTS Sample Size Increase	2X the base sample of 7,950 with estimated cost per attempted interview @ $13.00	$103350.00	05/15/2014
LPTS Additional Questions	Add to CATI questionnaire for both base and add-on sample; 15,900 attempted interviews @ $2.00 each	$31800.00	05/15/2014
TOTAL COST		$135150.00	

8. Risk

8.1. Project Risk

Risk Description	Risk Impact	Risk Probability	Risk Mitigation Approach
Delay in OMB PRA revision approval request	Additional sample and questions would not be added at the start of LPTS sampling. Assumptions would need to be made regarding months that could not be covered.	Low	The OMB renewal process was started well in advance and is on track to be done on time.

9. Supporting Documents