



December 21, 2017

MEMORANDUM FOR: The Record   
FROM: Cisco Werner, Ph.D., Director, Scientific Programs and Chief  
Science Advisor, National Marine Fisheries Service  
SUBJECT: Certification of Marine Recreational Information Program (MRIP)  
Fishing Survey Method for LA Creel

This memorandum certifies the LA Creel survey design described herein as an approved method for derivation of estimates of recreational fishing catch and effort. The MRIP certification process is described at <https://www.st.nmfs.noaa.gov/recreational-fisheries/MRIP/making-improvement>. For LA Creel, specific Terms of Reference were also adopted (see attached).

## BACKGROUND

Prior to 2008, the Marine Recreational Fisheries Statistics Survey (MRFSS), initiated in 1979, was the primary source for national recreational fishery statistics in the United States. In response to a growing demand for an improved recreational fishing data collection program, NMFS commissioned the National Research Council (NRC) of the National Academies of Science to conduct a high-level scientific review of the existing survey methods used by NMFS and its partners to monitor catch, effort, and participation in marine recreational fisheries throughout the U.S.

The NRC's Ocean Studies Board formed a 10-member committee of experts in sampling design and statistics to conduct the requested review independent of NMFS. A final report of their findings (*Review of Recreational Fisheries Survey Methods*) was published in April 2006. The committee identified a number of potential problems with the MRFSS sampling and estimation designs, and questioned the adequacy of existing surveys in providing the statistics needed to support stock assessments and the kinds of fishery management decisions required by current law and practice. The report included recommendations to redesign current surveys to improve their effectiveness, the appropriateness of their sampling procedures, their applicability to various kinds of management decisions, and their usefulness for social and economic analyses.

Section 401(g) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), which was added via the 2006 Magnuson-Stevens Reauthorization Act (MSRA), P.L. 109-479 (Jan. 12, 2007), includes new requirements for improving recreational fisheries data collection:

- "Within 24 months after the date of enactment of the [MSRA], the Secretary, in consultation with representatives of the recreational fishing industry and experts in statistics, technology, and other appropriate fields, shall establish a program to improve



the quality and accuracy of information generated by the Marine Recreational Fishery Statistics Survey, with a goal of achieving acceptable accuracy and utility for each individual fishery.” 16 U.S.C. § 1881(g)(3)(A).

- “The program shall take into consideration and, to the extent feasible, implement the recommendations of the National Research Council in its report *Review of Recreational Fishing Survey Methods* (2006), including...redesigning the survey to improve the effectiveness of sampling and estimation procedures, its applicability to various kinds of management decisions, and its usefulness for social and economic analyses...” *Id.* § 1881(g)(3)(B).
- “Unless the Secretary determines that alternative methods will achieve this goal more efficiently and effectively, the program shall, to the extent possible, include...use of surveys that target anglers registered or licensed at the State or Federal level to collect participation and effort data...collection and analysis of vessel trip report data from charter fishing vessels.” *Id.* § 1881(g)(3)(C)(ii)-(iii).

NMFS initiated the Marine Recreational Information Program (MRIP) in 2006 to address the findings and recommendations of the NRC report and to carry out the above requirements. MRIP was formally established upon adoption of an Implementation Plan in October, 2008. It is a collaborative effort among NOAA Fisheries, regional fisheries managers and stock assessment scientists, and the recreational fishing community to develop and implement an improved recreational fisheries statistics program. The new program consists of a system of regional surveys that provides the best scientific information available (BSIA) for use in the assessment and management of the Nation’s marine fisheries. *See id.* § 1851(a)(2) (requiring, under MSA National Standard 2, that conservation and management measures be based on BSIA). Decisions to implement new data collection methods are informed by a technically-sound scientific process that includes testing of new or enhanced survey methods, peer reviews of survey methods and project results, reviews by stakeholder groups, and development and execution of transition plans that assure an orderly and scientifically sound process for incorporating the catch and effort estimates derived from new methods into catch history databases as necessary for fisheries stock assessments and management.

In response to the NRC findings and recommendations, and as directed and authorized by § 401(g) of the MSA, MRIP has undertaken a series of actions to establish more suitable sample frames and to develop and test survey methods which will result in more accurate estimates of fishing effort. In addition to the BSIA standard under MSA’s National Standard 2, MRIP follows the requirements of the Information Quality Act (P.L. 106-554 § 515), which ensures the quality, objectivity, utility, and integrity of disseminated information.

Many regional partners have also initiated development of alternative and supplemental survey designs that are intended to provide catch estimates that directly address partner needs that are not fully met by the general MRIP surveys. In order for the data generated by these surveys to be utilized by NMFS, NMFS developed a certification process under which survey designs are pilot tested, the design and pilot results peer reviewed, and NMFS certifies whether the survey and estimation methods are scientifically sound.

In 2014, the Louisiana Department of Wildlife and Fisheries (LDWF) developed an alternative general survey design designated as LA Creel. LA Creel was designed to provide catch estimates for state drainage basins, particularly for offshore fisheries, that are more precise than the MRIP general survey estimates, and also to provide preliminary estimates weekly during the fishing season. To achieve improved precision at finer temporal and spatial scales, LDWF increased LA Creel sampling effort substantively from the levels previously provided by the MRIP general surveys, at a cost that is three to four times higher. At the time of certification, LDWF is providing funds to cover all costs above the original MRIP funding allocated for Louisiana.

LA Creel was pilot tested in 2014-2015, and the design was adjusted in response to pilot testing. At LDWF's request, NMFS conducted a peer review of LA Creel in June, 2015. LDWF has responded to the peer review comments and there have been subsequent rounds of review and response, as documented in the attachments.

## DESCRIPTION OF THE CERTIFIED METHOD

The LA Creel survey is based on a complemented survey design, where an on-site access point survey is combined with off-site telephone surveys in order to calculate total landings estimates for fish species across different recreational fishing activities. The access point survey is primarily used to estimate landing rates (landing per angler trip or landing per charter trip), and two different telephone surveys—one for private anglers and one for charter boats—are primarily used to estimate total effort (total number of angler or charter trips). Total landings estimates for a certain period of time are simply the product of the landing rate and total effort values. There are three primary survey components of LA Creel:

- The Access Point Survey for Landings Rate Estimation is conducted at fishing access points, stratified by river basin and day type. A probability sampling design based on site pressure is utilized. Estimates of catch rates are produced weekly. Sites with offshore fishing activity are sampled at higher rates during the federal red snapper season.
- The Private Angler Effort Survey is a telephone survey of Louisiana saltwater fishing license holders with telephone numbers on file. The telephone survey is stratified into three geographic regions of the state plus non-residents, plus holders of Recreational Offshore Landing Permits (ROLP). The survey produces weekly estimates of the number of trips at shore, public (boat) and private (boat) access sites. Sampling rates for ROLP holders are increased during the federal red snapper fishing season.
- The Charter Effort Survey is a weekly survey of holders of Louisiana Charter Boat Guide licenses. The survey is stratified by holders and non-holders of ROLP's. Weekly estimates of charter-based fishing trips are produced by basin.

The complete documentation of the LA Creel survey methods, survey instruments, and estimation is provided in the attachments hereto.

## CERTIFICATION

The LA Creel survey design described in the attached file titled *LA Creel Survey Documentation 12012017-1* is certified as a design that has been appropriately developed and peer-reviewed and that is considered scientifically valid. The practical effect of this certification is that NMFS may fund use of this design in surveys and fund and/or provide technical support for other similar efforts proposed or used by partner organizations. It should be noted that any modifications of the documented survey design are not automatically deemed certified, but will require review for consistency with this determination and potential further modification for the survey to remain certified.

This certification does not mean that estimates from LA Creel are, at this time, the best scientific information available for purposes of MSA National Standard 2, 16 U.S.C. § 1851(a)(2). Catch statistics produced using LA Creel cannot be reliably used for fishery stock assessments and management actions until scientifically valid methods have been developed, peer reviewed, and implemented that allow for integration of the LA Creel catch estimates into the history of MRIP-derived estimates in a common currency for comparison. In order to integrate the LA Creel estimates, NMFS and LDWF need to develop a calibration method to adjust the historic estimates to be comparable to LA Creel, have the new calibration method peer reviewed, and then apply it to catch history time series in updated stock assessments. Once these measures have been completed, through execution of a Transition Plan pursuant to NMFS Policy Directive 04-114, the LA Creel estimates can be fully utilized by NMFS in fishery stock assessments and management decision-making.

### Attachments:

LA Creel Survey Documentation 12012017-1  
LA Creel Review 09292017and Response-1  
LA\_Creel\_Review\_v4  
LA\_Creel\_Review\_TOR9  
LA Creel Review - Final Response 15Dec15  
LA Creel OT Review\_12152017  
ESC Review of LA Creel\_1221201

# **Saltwater Finfish Landing Statistics**

## **Purpose**

To provide recreational fishery information to aid in the management of Louisiana’s valuable fishery resources. The saltwater component of the recreational fishery encompasses state waters including marsh habitat, bays, beaches and nearshore areas as well as the offshore federally managed waters of the EEZ. These are open systems where the only boundary to the species is its habitat requirements.

## **Methodology**

The LA Creel survey is based on a complemented survey design, where an on-site access-point survey is combined with off-site telephone surveys in order to calculate total landings estimates for fish species across different recreational fishing activities. The access point survey is primarily used to estimate landing rates (landing per angler trip or landing per charter trip) and the telephone survey is primarily used to estimate total effort (total number of angler or charter trips). Total landings estimates for a certain period of time are simply the product of the landing rate and total effort values.

## **Access Point Survey for Landing Rate Estimation**

### *Site Sample Frame*

Access points included in the survey are public sites (i.e., boat launches, marinas, piers, road side, beaches) in coastal Louisiana that are utilized by saltwater anglers. Each site is evaluated monthly on the intensity of fishing pressure (estimated average number of trips per day) for each fishing activity (Private Inshore, Private Offshore, Charter Inshore, Charter Offshore) and for each day type (weekday/weekend). Weekdays are Monday – Thursday and weekend days are Friday – Sunday. Each site initially has 8 pressure values for a sample week (4 fishing activities x 2 day types). For each fishing activity within a basin and day type, proportional probabilities are derived from pressure values for each site, and then averaged across fishing activities. The end result is 2 weighting factors (average proportional probabilities) per site per month, one for each day type. These weighting factors are used during assignment selection (described below). The Barataria Basin has a disproportionate amount of offshore effort located in the area’s southern half. In order to prevent this offshore effort from dominating the probability calculations for site selection, the basin was divided into two distinct selection strata, an upper and lower portion of the basin.<sup>[FJ1]</sup>

### *Sample Design*

The Access Point Survey follows a stratified two-stage design. For site selection, the site sample frame is divided and stratified into the following categories:

<b>BASIN</b>	<b>DAY TYPE</b>
Lake Pontchartrain	Weekday (Monday-Thursday)
Upper Barataria-Mississippi River	Weekend (Friday-Sunday)*
Lower Barataria-Mississippi River	
Terrebonne-Timbalier	
Vermillion-Teche-Mermentau	
Sabine-Calcasieu	

\*MLK Day, Memorial Day, July 4<sup>th</sup>, and Labor Day holidays are treated as weekend days.

The primary sampling unit (cluster) is a specific site, day, and shift when an interviewer will be present to survey anglers. Shifts are 8am – 2pm and 2pm – sunset. The secondary sampling unit is the

angler trip. [FJ2] From here on, the specific site/day/shift clusters are referred to as “assignments.” See “Louisiana Recreational Statistics Program: Sampling Protocol” for detailed interview procedures. One person from each fishing party will be interviewed.

Information collected during dockside survey:

1. Fishing activity (Private Inshore, Private Offshore, Charter Inshore, Charter Offshore)
2. Number of anglers in party
3. Total number of fish landed for each species (trip totals for entire party)
4. Total number of fish thrown back or used as bait by species for the following species (At the request of National Marine Fisheries Service (NMFS)).
  - i. Black Drum
  - ii. Gray Snapper
  - iii. Gray Triggerfish
  - iv. Greater Amberjack
  - v. King Mackerel
  - vi. Red Drum
  - vii. Red Snapper
  - viii. Sheepshead
  - ix. Southern Flounder
  - x. Spanish Mackerel
  - xi. Spotted Seatrout [FJ3]
5. Number of anglers with a Louisiana saltwater fishing license
6. Number of anglers with a Recreational Offshore Landing Permit (ROLP)
7. Area where majority of fish were harvested or, if no harvest, area of majority of fishing effort.
  - a. Area reported at sub-basin level for state waters.
  - b. Area reported by grid number for EEZ waters.
8. Charter captain name if applicable
9. Whether or not trip was participating in a tournament
10. Trip status (complete/incomplete)
11. Interview status (complete, incomplete, refusal)
12. Target species (primary and secondary, at the request of NMFS) [FJ4]
13. Number of missed parties (counted for each assignment)

Discarded fish are recorded as: under the legal size limit, used for bait, or other (for any reason not covered by the first two options). [FJ5]

Incomplete trips are allowed to be surveyed to accommodate shore sites due to the length and layout of the site, which may span more than a mile. Interviewers are encouraged to conduct incomplete trip surveys only during the last on-site hour. Incomplete trip parties are issued a postage paid, uniquely numbered card on which they can record their landings and mail the card to LDWF. Incomplete trip data are recorded as reported but, are not used for statistical purposes until the card is received.

Missed parties are those parties who were believed to be eligible for the survey, but were not approached due to the interviewer surveying other parties at the time.

Biological data is recorded if time allows, but biological data collection is not a part of the dockside survey. (See “Biological Sampling Program” document for details).

### Assignment Selection

The number of assignments per basin per month was determined based on the diversity of fishing activities within each basin as well as the number of sites that experience fishing pressure. Since greater fishing activity occurs on the weekends, assignments for each basin are divided so that weekends are drawn more often than weekdays with the exception of the Vermilion basin which has limited recreational activity compared to other basins (Table 1).

BASIN	WEEKLY ASSIGNMENT DISTRIBUTION	
	Weekdays	Weekends
Lake Pontchartrain	2	4
Upper Barataria-Mississippi River	2	2
Lower Barataria-Mississippi River	2	4 <sub>[FJ6]</sub>
Terrebonne-Timbalier	2	3
Vermillion-Teche-Mermentau	2	2
Sabine-Calcasieu	2	4

**Table 1.** Dockside assignment distribution.

Next, specific sites, dates, and shift times are selected. For each sub-week, sites are randomly selected using a probability proportional to size (PPS) methodology with replacement; using average proportional probabilities for each site as the weighting factor. Dates and shift times are randomly selected with replacement for each sub-week using equal weights. This process is repeated for each basin. In the event that duplicate assignments occur within a basin, the selection process is repeated until no duplication occurs. Creel schedules with interview assignments are distributed to field offices monthly.

### Federal Red Snapper Season

Given the drastic increase in offshore angling activity during the shortened federal red snapper private angler season, sampling at sites with offshore angling pressures is increased by moving assignments from the Upper Barataria – Mississippi River Basin with little or no offshore activity to the Lower Barataria – Mississippi River basin with the highest offshore activity in the state. In 2016, one weekday and one weekend day were moved for the month of June. The number of assignments does not change, but survey effort at sites with offshore pressure is increased in order to improve the precision offshore landing rate estimates. The above is just one example of how La Creel offers LDWF the flexibility to review its sampling protocol and adjust assignment selection as necessary to make sure adequate coverage is provided for species of concern or in response to environmental issues.

### Considerations

Interviewing anglers in-person immediately after they finish their trip is preferred because trained field staff can observe and confirm catch. This removes numerous response issues common in off-site survey designs (recall bias) and assumptions associated with incomplete trip (roving) surveys. Typical access point surveys can have a high cost given the relatively low number of interviews obtained, but the data obtained are high quality (Pollack et al., 1994). Given that only one angler per fishing party is required to report for the trip, the question list is short, and that anglers from all fishing activities will be interviewed during an assignment, this survey increases the possible number of trips interviewed and reduces potential angler skill level bias compared to other access point surveys. The short interview

time should also appeal to anglers and increase participation (reduce refusal rate). In addition, mail-in cards that are given to anglers who have not yet completed their trip and can be submitted upon trip completion, which further increases angler participation. This is primarily to help better quantify shore-based trips where observing complete trips is less common.

Site selection is optimized through the inclusion of site pressures that are evaluated monthly by fishing activity and day-type; where assignment dates are distributed evenly throughout the month and/or season. This helps to minimize manpower requirements on a given day and data lost to weather cancellations or poor fishing conditions (resulting in no interviews). By weighting the random selection process, the likelihood that observed landing rates are representative of Louisiana anglers over time is greatly increased. As LA Creel data are analyzed, weighting AM/PM shifts may be added if data suggests doing so would further increase efficiency. In addition, modifying the monthly number of assignments for each basin and fishing activity from a fixed number to one that changes throughout the year may prove to be beneficial. The access point survey portion of LA Creel does not currently sample nighttime anglers or anglers with private fishing access and as such, landing rates will not include these angler groups. It is not known if landing rates of nighttime anglers and private access anglers substantially differ from daytime landing rates at public access sites. This will be determined through separate LDWF programs. If total landings estimates from private access sites are calculated, landing rates from public sites will be used in combination with private effort to determine total private landings. The telephone surveys will account for public vs. private and daytime vs. nighttime differences in effort.

Although catch and release data collected from surveys are not verifiable, they are subject to prestige bias (exaggeration), and could be intentionally falsified if it is perceived by anglers that their response can influence management decisions. LA Creel began collecting such data in May 2016 at the request of NMFS. In addition, discard mortality rates are variable. Using spotted seatrout as an example, discard mortality rates depend largely on bait/hook type, hooking location, angler skill level, fish size, and water quality (LDWF 1995, Murphy et al. 1995, Stunz and McKee 2006, James et al. 2007). [FJ7]

For the purpose of producing estimates, this survey does not utilize a question on which fish species are being targeted by anglers. Omitting a targeting question removes a source of prestige bias (anglers stating that only fish harvested were targeted), but since this is a multispecies survey, the issue is raised of when to apply zeroes if a species is not harvested. Zeroes will only appear in the survey data when a party landed no fish. This survey assumes that all anglers interviewed had the potential to catch all species observed during the time period of interest, essentially assigning zeroes to parties that did not land a species that was landed by another party.

At the request of NMFS specific species targeting questions were added for the purpose of providing this data to NMFS. La Creel does not currently utilize species targeted in its analysis protocol. [FJ8]

## **Effort Surveys**

There are two separate effort surveys being conducted, one for private recreational saltwater anglers (Private Angler Effort Survey) and one for the Charter Boat Captains (Charter Effort Survey).

**Private Angler Effort Survey**

*Angler Sample Frame*

All persons possessing a Louisiana saltwater fishing license with valid phone numbers on file are included in the private angler effort survey sample frame. The frame includes the angler's name, Louisiana recreational saltwater fishing license number, and phone number. Email addresses are included in the frame if the license holder opts to enter it at the time of license purchase.

Anglers are encouraged to keep their contact information up-to-date through the LDWF website. The frame is being continually screened to remove unusable numbers. The number of saltwater license holders continually changes throughout the year. The most notable sample frame change during the year is immediately after June 30<sup>th</sup> when annual recreational licenses expire, where a rapid decrease and subsequent increase in frame size occurs as anglers purchase new licenses.

*Sample Design*

The angler effort survey sample frame is stratified into 5 regions based on geographic area, license densities, and/or license type (Table 2)

REGION	SALTWATER LICENSED ANGLER POPULATION*
North Louisiana	71,919
Southeast Louisiana	226,126
Southwest Louisiana	117,846
Non-Resident	38,848
ROLP (includes saltwater license holders)	15,619

\*Numbers are approximations

**Table 2.** Private effort regions.

The Recreational Offshore Landing Permit (ROLP), which is a free permit required to possess certain offshore species. The purpose of this stratification is to increase the likelihood that angler effort estimates are possible at fine spatial resolutions. Each week, 1,600 license holders are contacted for interviews, distributed uniformly across the five regions (400 contacts for the ROLP region and 300 contacts per remaining region). For sampling to be considered complete for the week, a total of 800 license holders must complete a survey. Calling efforts continue until the quota of 800 is met.

Information collected during the private angler effort survey:

1. Dates angler went saltwater fishing
2. The basin from which the majority of harvest was taken.
  - If no fish were landed, the area that most of the fishing activity took place.
3. Whether or not activity was from shore
4. Whether trip ended at a publicly accessible site or a private site
5. Time trip ended and returned to dock
6. Whether they possess an ROLP (non-ROLP strata only for database correction)

*Call List Selection*

The weekly call list of 1,600 anglers is randomly selected from the sample frame without replacement. Anglers do not appear on the call list two weeks in a row. The list is purposely randomized using random number sorting before calling begins. Calls are made by going through the list until the 800 quota is met. This randomization ensures there is no sorting bias that would otherwise occur with this method. By uniformly allocating the weekly call list, the necessary weighting needed to account for disproportional license distribution can be achieved.

### *Federal Red Snapper Season*

Given the drastic increase in offshore angling activity during the shortened federal red snapper season, the number of anglers contacted weekly in the ROLP strata is increased from 400 to 800 in order to improve the precision of private angler ROLP effort estimates. By increasing the number of anglers contacted weekly, private angler ROLP effort estimates has been within a +/- 5 % margin of error (MOE).

### *Considerations*

A telephone survey using an angler license sample frame is recognized as an efficient method to produce precise effort estimates (Pollack et al. 1994). By conducting this survey weekly, recall bias is substantially reduced when compared to other telephone surveys. The question list is short, which minimizes costs and appeals to anglers, and is able to provide effort data by drainage basin and public/private access status. Stratifying the call list sample frame ensures that regional differences in avidity are accounted for. Past research has shown saltwater avidity differs in Louisiana primarily by region, however, additional avidity differences exist between license types and angler age (LDWF 2008).

A common problem with call list sample frames is inaccurate contact information resulting in a high number of calls with no successful interviews. While the frame is screened to remove obviously unusable phone numbers, it is not possible to identify all bad numbers *a priori*. This frame is continually adjusted; removing any unusable number encountered. In addition, a tool on the LDWF website has been developed to enable license holders to update their contact information. Unlicensed anglers are not contacted during the telephone survey, meaning observed total angler trips only includes licensed anglers and is an underestimate of effort. This is accounted for by expanding observed effort estimates by LA recreational saltwater license requirement and compliance levels determined from the access point survey.

The license turnover that occurs after the annual license expiration date of June 30<sup>th</sup> may result in a disproportionately high number of lifetime license holders being contacted; however, it is expected that the annual license purchase rate will be high given the popularity of summer fishing, reducing the amount of time this bias occurs. Past research shows that lifetime license holders are slightly less avid than annual license holders (LDWF 2008), which could result in slightly depressed effort estimates in the weeks following June 30<sup>th</sup>. This particular aspect of the effort survey is being investigated thoroughly by LDWF and may result in design modifications in the near future.

The absence of a fish species targeting question in this telephone survey will require the same total effort data from a period to be applied to each species caught in that period. An assumption with coupled multispecies creel survey designs is that the two populations surveyed are landing the same distribution of fish species. For example, within a single period, the access point survey resulted in two species being caught, and the phone survey resulted in a single effort multiplier. If the landing

rate for one species was low, then the total landings estimate will be low for that species; if the landing rate for another species was high, then the total landings estimate will be high for that species.

For effort that is reported by anglers drawn from the ROLP region, the total number of offshore trips will not come from the license frame, but from the ROLP frame. However, the effort estimate generated by ROLP region data is ultimately combined with offshore effort from all other regions to produce one weekly offshore effort for private anglers. Catch rates calculated from dockside data does not distinguish between ROLP and non-ROLP anglers and is applied to the entire weekly offshore effort. ROLP species specific catch rates are no longer applied to just the ROLP effort but to the combined offshore effort of all private offshore trips.<sup>[FJ9]</sup>

## **Charter Effort Survey**

### *Charter Sample Frame*

All persons possessing a Louisiana charter boat fishing guide license are included in the charter sample frame. The expiration date for guide licenses is December 31<sup>st</sup>, meaning the size of this sample frame will continually increase throughout the year.

### *Sample Design*

The charter sample frame is stratified into 2 groups: those possessing an ROLP, and those that do not. The purpose of this stratification is to increase the likelihood that offshore charter efforts will be obtained from the survey. Initially each week, 5% of the ROLP captains and 5% of the non-ROLP captains were contacted. Starting on January 1, 2016, 30% of the ROLP captains and 10% of the non-ROLP captains are contacted weekly to improve the precision of charter ROLP effort estimates. See "Louisiana Recreational Statistics Program (LA Creel): Sampling Protocol" for detailed interview procedures.

Information collected during the charter effort survey:

1. Date charter fishing trip took place
2. Number of anglers on each trip
3. The basin in which the majority of harvest was taken
  - If no harvest, then the basin in which the majority of fishing effort took place
4. Whether trip ended at a privately or publicly accessible site

### *Call List Selection*

The weekly charter call list is randomly selected from the sample frame without replacement. Captains do not appear on the call list two weeks in a row.

### *Federal Red Snapper Season*

Given the drastic increase in offshore angling activity during the shortened federal red snapper season, all ROLP captains (100% of the ROLP sample frame strata) are contacted in order to maximize the precision of charter ROLP effort estimates.

## Considerations

Most of the considerations for the angler effort survey apply to the charter effort survey. Contact information in the charter sample frame is more accurate than in the angler frame. The size of the weekly call list was chosen due to the small size of the charter call list sample frame. The charter frame is a list of charter captains and not a list of charter vessels, which is the case with other survey designs. This should increase the likelihood that data will be collected from captains with multiple vessels and captains who need to borrow a vessel (if their primary vessel is under repair).

Given the December 31<sup>st</sup> guide license expiration date, this frame will expand throughout the year, but will likely not consist of more than 1,000 individuals before years end. While sampling the entire frame weekly would be preferred due its small size, past experience has shown that contacting more than 20% of charter captains weekly decreases participation. The ROLP/non-ROLP holder strata were chosen since this is expected to be the primary source of avidity differences within the charter call list sample frame; however stratification may be modified once more data become available

## Calculations

The calculations described below determine weekly estimates for landing rate, effort, and total landings for any given species in any particular fishing activity. These estimates can be expanded for any period of interest (month, season, or year). All of the calculations are completed in SAS 9.3. Within the period of interest, total landings for a species can be estimated for each of the following fishing activities within the following basins (equivalent to CSAs), or combined to form statewide total landings estimates (Table 3).

BASIN	FISHING ACTIVITY
Lake Pontchartrain	Private Inshore
Barataria-Mississippi River	Private Offshore
Terrebonne-Timbalier	Charter Inshore
Vermillion-Teche-Mermentau	Charter Offshore
Sabine-Calcasieu	

**Table 3.** Basins and activities.

### Landing Rate Estimation

The equations and estimates for effort were obtained from the Proc Surveymeans section of SAS Institute Inc. 2009.

For a stratified cluster sample design with sampling weights, the sample can be represented as  $n \times (P + 1)$  matrix that looks like the following:

$$(\mathbf{w}, \mathbf{Y}) = (w_{hij}, \mathbf{y}_{hij}) = (w_{hij}, y_{hij}^{(1)}, y_{hij}^{(2)}, \dots, y_{hij}^{(P)})$$

### Definitions and Notation for Landing Rate

$h=1,2,\dots,H$  is the stratum index (day-type)

$i=1,2,\dots,n_h$  is the cluster index (site-day-shift) within stratum  $h$

$j=1,2,\dots,m_{hi}$  is the unit index (interview) within cluster  $i$  of stratum  $h$

$n = \sum_{h=1}^H \sum_{i=1}^{n_h} m_{hi}$  is the total number of observations (interviews) in the sample

$n_h$ : is the number of clusters (site-days-shifts) per strata

$y_{hij} = (y_{hij}^{(1)}, y_{hij}^{(2)}, \dots, y_{hij}^{(P)})$  are the observed values of analysis variables (number of fish and anglers) for unit  $j$  in cluster  $i$  of stratum  $h$

$w_{hij}$  = are the assignment weights within cluster  $i$  of stratum  $h$ .

$x_{hij}$  = are the values for the variable of interest (i.e. total number of anglers)

$f_h$  : is the sampling rate for stratum  $h$ , which is the fraction of clusters (site-days-shifts) selected for the sample

For private and charter anglers, species landing rates are derived from equation [1]:

$$\text{Mean Angler Harvest Rate} = \frac{\text{Total \# of Fish Harvested by Party}}{\text{Total \# of Anglers in Party}} \quad [1]$$

Let  $y_{hij}$  represent the value of the variable for total number of fish landed by the  $j^{\text{th}}$  party in cluster  $i$  in the  $h^{\text{th}}$  stratum. Let  $x_{hij}$  represent the value of the variable for total number of anglers in the  $j^{\text{th}}$  party in cluster  $i$  in the  $h^{\text{th}}$  stratum.  $w_{hij}$  is the sampling weight for cluster  $i$  of stratum  $h$ . Then equation [3] calculates the landing rate (HR) for a single species in a period (week):

$$\widehat{HR} = \frac{\sum_{h=1}^H \sum_{i=1}^{n_h} \sum_{j=1}^{m_{hi}} w_{hij} y_{hij}}{\sum_{h=1}^H \sum_{i=1}^{n_h} \sum_{j=1}^{m_{hi}} w_{hij} x_{hij}} \quad [2]$$

The variances of this ratio estimate were calculated using a Taylor series expansion method. This method obtains a linear approximation for the estimator and then uses the variance estimate for this approximation to estimate the variance of the estimate itself. The variance calculation of this landing rate ratio is as follows:

$$\widehat{V}(\widehat{HR}) = \sum_{h=1}^H \widehat{V}_h(\widehat{HR}) \quad [3]$$

For  $n_h > 1$ :

$$\widehat{V}_h(\widehat{HR}) = \frac{n_h(1-f_h)}{n_h-1} \sum_{i=1}^{n_h} (g_{hi} - \bar{g}_h)^2 \quad [4]$$

where:

$$g_{hi} = \frac{\sum_{j=1}^{m_{hi}} w_{hij} (y_{hij} - x_{hij} \widehat{HR})}{\sum_{h=1}^H \sum_{i=1}^{n_h} \sum_{j=1}^{m_{hi}} w_{hij} x_{hij}} \quad [5]$$

and:

$$\bar{g}_h = \frac{\sum_{i=1}^{n_h} g_{hi}}{n_h} \quad [6]$$

### Considerations

The standard PSU-only variance approximation does account for both among-PSU and within-PSU variation, but not in an obvious way and not in an unbiased way. The estimator only uses the empirical variation among PSUs, but the theoretical variation among PSUs and within PSUs is included in this empirical variation. Under mild conditions on the design, the bias of the PSU-only variance estimator is extremely small.

### Effort Estimation

The equations and estimates for effort were obtained from Cadima et al. 2005. Effort estimates are calculated both statewide and for each basin.

### Definitions and Notation for Effort:

$N$ : is the total population of licensed anglers statewide

$N_h$ : is the population total of licensed anglers found within each stratum (Region)

$n_h$ : is the total number of anglers interviewed within each stratum (Region)

$\hat{E}$ : is the estimated effort (number of angler trips) statewide

$\hat{E}_h$ : is the estimated effort (number of angler trips) within each stratum (Region)

$e_h$ : is the estimated mean effort (number of angler trips) per angler

$e_{hi}$ : is the estimated effort (number of angler trips) for a specific angler

The effort survey is a stratified random sampling design within each period (analysis). Thus the following calculations are used to calculate the observed number of angler trips for each stratum (i.e. Region), and the total observed number of angler trips for the total population:

$$\hat{E}_h = N_h * \frac{e_h}{n_h} \quad [7]$$

$$\hat{E} = N * \sum_{h=1}^H \frac{N_h}{N} * \frac{e_h}{n_h} \quad [8]$$

To calculate variance for the total number of angler trips, you first calculate the estimated variance of each stratum, and then sum the variances for each stratum to get the estimated total variance for the population:

$$\hat{V}_h(\hat{E}_h) = N_h^2 \left(1 - \frac{n_h}{N_h}\right) \frac{s_h^2}{n_h} \quad [9]$$

$$\hat{V}(\hat{E}) = \sum_{h=1}^H N_h^2 \left(1 - \frac{n_h}{N_h}\right) \frac{s_h^2}{n_h}, \text{ where } \dots s_h^2 = \frac{\sum_{i=1}^{n_h} (e_{hi} - \bar{e}_h)^2}{n_h - 1} \quad [10]$$

To account for unlicensed angler effort, the license compliance rate is calculated using data collected during the access point survey:

$$\text{Private Angler License Compliance Rate} = \frac{\text{Total \# of Anglers in Party with a License}}{\text{Total \# of Anglers in Party}} \quad [11]$$

$$\text{Charter Guide License Compliance Rate} = \frac{\text{Total \# of Captains with a License}}{\text{Total \# of Captains Interviewed}} \quad [12]$$

$$\text{ROLP License Compliance Rate} = \frac{\text{Total \# of Captains or Anglers with a ROLP}}{\text{Total \# of Captains or Anglers Interviewed}} \quad [13]$$

The variance calculation of this ratio are the same as written above in the landing rate estimation section, with the exception being that  $x_{hij}$  now represents the value for total number of anglers in the party with a license (or number of captains) for the  $j^{\text{th}}$  member in cluster  $i$  in the  $h^{\text{th}}$  stratum.

Using the license compliance rates, the observed total number of angler trips is expanded into a new total number of angler trips:

$$\text{Expanded Total \# of Angler Trips} = \frac{\text{Observed Total \# of Angler Trips}}{\text{License Compliance Rate}} \quad [14]$$

The calculation of this ratio and its variance is made using a first-order Taylor series approximation of random variables X (total number of angler or charter trips) and Y (license compliance rate). Suppose one wants to estimate:

$$g(\mu_x, \mu_y) = \frac{\mu_x}{\mu_y} \text{ where } E(\bar{X}) = \mu_x \text{ and } E(\bar{Y}) = \mu_y \quad [15]$$

Then the first-order Taylor approximation gives:

$$\hat{g} = \frac{\bar{X}}{\bar{Y}} \quad [16]$$

$$E(\hat{g}) \approx \frac{\mu_x}{\mu_y} \quad [17]$$

$$V(\hat{g}) = \left(\frac{\mu_x}{\mu_y}\right)^2 \left[ \frac{V(\bar{X})}{\mu_x^2} + \frac{V(\bar{Y})}{\mu_y^2} - 2 \frac{\text{Cov}(\bar{X}, \bar{Y})}{\mu_x \mu_y} \right] \quad [18]$$

Since X and Y are independent random variables, the covariance  $\text{Cov}(X, Y)$  is equal to zero, thus equation [18] simplifies to:

$$V(\hat{g}) = \left(\frac{\mu_x}{\mu_y}\right)^2 \left[ \frac{V(\bar{X})}{\mu_x^2} + \frac{V(\bar{Y})}{\mu_y^2} \right] \quad [19]$$

Since the license compliance rate is calculated from the on-site access survey, they can be analyzed separately by species of interest, fishing activity (private, charter, shore) and fishing area (inshore, offshore). With the expanded total number of angler trips being a function of the license compliance rate, this also means that the expanded total number of angler trips can be calculated separate for each species, fishing activity, and fishing area.

### Considerations

When calculating basin specific effort estimates, the issue is raised as how to determine the total population ( $N$ ) of anglers for each basin, and for the mean number of trips per angler ( $e_h$ ), which basin to apply the respondents who did not fish. For this survey, it is assumed that Louisiana anglers have the potential to fish in any basin; therefore: 1)  $N$  is equal for both statewide and basin specific effort calculations, and 2) for basin effort estimates  $e_h$  includes all respondents who did not fish in addition to those who did fish in that basin.

### Total Landings Estimation

The equations and calculations for estimating total landings were obtained from Pollack et al. 1994.

The estimate of total landings is the product of the estimated effort and the estimated landing rate. Equation [19] can be used to calculate observed or expanded total landings estimates, using observed or expanded effort estimates, respectively:

$$\text{Total Landing} = \text{Effort} * \text{Harvest Rate}$$

$$\text{or: } \hat{H} = \hat{E} * \hat{HR} \quad [20]$$

The estimated variance of the estimated total landing is calculated using a modified version Goodman's Exact Variance of Products (Goodman 1960, Walter and Ortiz 2012):

$$\hat{V}(\hat{H}) = \hat{E}^2 \hat{V}(\hat{HR}) + \hat{HR}^2 \hat{V}(\hat{E}) - \hat{V}(\hat{E}) \hat{V}(\hat{HR}) \quad [21]$$

### Quality Control/Quality Assurance

All interviewers will be biologists trained in fish identification, who have passed a training course in LA Creel field procedures. Unannounced visits are made by a trained observer to view the interviewer performing his/her assignment. Interviewers are expected to meet the following minimum criteria:

- ✓ Interviewers must follow protocols as outlined in the LA Creel Sampling Protocol
- ✓ Be at the assigned site at the assigned starting time
- ✓ Clothing must include a shirt with LDWF logo
- ✓ If caps are worn, they must have LDWF logo
- ✓ Shoes must be closed-toe (Crocs® are not acceptable)
- ✓ Have a time piece (watch, cell phone, etc.)
- ✓ Have appropriate fish identification book(s)
- ✓ Conduct must be professional and courteous
- ✓ Field fish identifications must be correct

Field forms are reviewed by an independent biologist, and both the original data on the field form, and the data entered into electronic databases will be validated. Two options for electronic data entry are available; a web entry data management system and an iPad application. Data entered through the iPad application are delivered to a server where a data management biologist downloads and imports the data into the LA Creel database.

Once field forms are received by data management, quality control checks are performed by comparing intercept responses on the field form with the intercept data that was entered electronically. Responses to each question are compared to ensure that each intercept interview data

was entered consistently. Data management attempts to correct any transposition errors and/or inconsistencies prior to running estimate calculations. If discrepancies in data arise, the interviewer is contacted for further explanation, the validity of the data discussed, and if necessary, the interviewer is corrected.

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## **Purpose**

This manual was written for field staff. It covers protocols for the dockside survey in depth. It provides general principles of the assignment draw process, effort survey, charter survey, and data entry. Details on those topics can be found in sister documents.

## **Introduction and Background**

The mission statement of the Louisiana Department of Wildlife and Fisheries (LDWF) is as follows:

*To manage, conserve, and promote wise utilization of Louisiana's renewable fish and wildlife resources and their supporting habitats through replenishment, protection, enhancement, research, development, and education for the social and economic benefit of current and future generations; to provide opportunities for knowledge of and use and enjoyment of these resources; and to promote a safe and healthy environment for the users of the resources.*

To properly manage a fish resource, it is important to know, among other things, the population of that resource, the rate of harvest of that resource, and participation in the harvest of that resource. The program discussed in this document endeavors to provide answers to the last two pieces of data directly as it pertains to recreational saltwater fishing and the first piece indirectly.

Fish harvest by the commercial industry is captured through the Trip Ticket program which requires submission of documentation showing, generally speaking, what was harvested and how much was harvested. The only way, currently, to characterize recreational harvest is through voluntary dockside and phone surveys of anglers.

A curriculum for characterizing recreational saltwater finfish harvest was developed by the National Oceanic and Atmospheric Administration (NOAA) in the late 1990's. Their program was called the Marine Recreational Fisheries Statistics Survey (MRFSS). In the spring of 2013, NOAA made fundamental changes to MRFSS and the resulting revision was named the Marine Recreational Information Program (MRIP).

Both programs, however, were one-size-fits-all models that failed to accurately define recreational fishing activity down to the state level. Harvest of a particular species was extrapolated from very few surveyed landings. What information was collected took months to get back to state agencies. The need for a program designed with Louisiana in mind with quicker data turnaround was evident. Such a program was designed throughout much of 2013 and on January 1, 2014, LDWF launched the program, which is called "La Creel."

## **Method**

The program develops weekly statewide recreational saltwater finfish landings estimates, which can be scaled down to at least basin level. There are three components of La Creel. The access-point angler survey is the component from which a rate of harvest (i.e. harvest per trip or angler) is obtained. The two other components, a charter captain survey and a saltwater fishing license

holder survey, provide estimates of harvest participation known as an effort estimate (i.e. number of saltwater fishing trips in a week).

## **Access Point Angler Survey**

### Access Sites

A site registry is maintained that includes a list of all publicly accessible saltwater finfish sites and select private access sites. It is from this registry that sites are drawn for survey assignments. The registry includes: 1) site name, 2) physical address (if known), 3) GPS coordinates in decimal degrees to four places (e.g. 29.3353, -90.8442), 4) site contact name and number (if applicable), 5) site hours (if applicable), 6) estimated angler pressures, and an assigned Site Identification (ID) Number. Site pressures are divided into four fishing activities: private inshore, private offshore, charter inshore, and charter offshore. Inshore includes all trips made within state waters (i.e. three miles from the coast). Offshore includes trips beyond three miles from shore. **Pressure is the total number of eligible trips (i.e. parties) in each activity expected at a given site for a given pressure group of weekday and weekend day.** The Weekday pressure group covers Monday – Thursday. The Weekend pressure group covers Friday – Sunday. For the purposes of site pressure a day is defined as 8am – sunset.

#### Example 1:

From Monday through Thursday of a typical week in June, 1 charter trip might be made from Site A. The Charter pressure for Mondays – Thursdays in June for Site A is therefore 1.

#### Example 2:

From Friday through Sunday of a typical week in March, 6 private inshore boat trips might be made from Site B. In addition, 10 shore parties are typical for this site. The Private Inshore pressure for Fridays – Sundays in March for Site B is therefore 16.

A pressure value of “0” is to be used only if an activity is not present for a given pressure parameter. A pressure value of zero should not be used for low activity. If there is a possibility of even a single trip being made from a given site during a given pressure group, the pressure should be 1 for that activity for that site for that pressure group.

Field staff should keep management up-to-date on issues concerning accessibility of existing public access saltwater fishing sites. Issues include, but are not limited to, permanent closure, temporary closure, hostility from site manager(s), and changes in pressure. Management should be notified of new sites as well as observed activity adjacent to, but not included in the coverage of, existing sites. Field staff should relay the required information for the site to management. New sites will be issued an identification number by management. In addition, sites that prove too busy for one staff member to effectively cover should be brought to the attention of management. A decision will be made to either require two or more staff work the site together or break the existing site into multiple sites.

Any updates to pressures will be required to be entered by a certain date prior to the assignment draw. The date will be announced monthly via email by La Creel management.

For a site to be considered closed there should be something that restricts access to the site. If the bait shop, restaurant, office, store, etc. closes, but there are no barricades to prevent access or signage to discourage use of the site to fishing activity, the site should remain available for assignments in the site register.

### Period

The terms “Period,” “Sample Period,” and “Sample Week” are interchangeable. Each period is made up of a Monday – Sunday week. Depending on the way days fall, there will be 52 or 53 sample periods per calendar year.

### Assignment Draw

Assignments are drawn by sample periods. Assignment draws will cover 4 or more sample periods. The draw is structured to favor weekend days over weekdays. It is common to have twice as many assignments on the weekend than during the week, because recreational fishing activity is typically higher on weekends than it is during the week.

Holidays such as Martin Luther King Day, Memorial Day, July 4<sup>th</sup>, and Labor Day are treated as weekend days, because fishing activity typically on those days are more similar to a weekend day than they are to weekdays. Holidays such as Thanksgiving Day, Christmas Day, and New Year’s Day are not known to affect recreational fishing activity like the previously mentioned holidays do. Therefore, “fall” holidays may be included in the draw at the discretion of management.

There are two assignment time blocks indicating the time frame in which the interviewer is to be on-site. The AM block is 8:00 am to 2:00 pm and the PM block is from 2:00 pm to sunset. The interviewer is to be on site for the duration of the assignment unless the site environment becomes unsafe. (See “Asg. Complete” section for details).

At a minimum, assignment draws will be provided to the Coastal Study Area (CSA) managers and supervisors two weeks in advance. Assignments are distributed in a Microsoft Excel spreadsheet in which all assignments for all CSA’s are in a single work page. Individual CSA Microsoft Word calendars will be forwarded after the assignment list as soon as possible. Assignment lists include a date, site name, site number, time block, control number (CN), and sample period. Calendars include only the CN, start time, site number and site name.

Each assignment will have a unique 4-digit Control Number (CN). The first digit indicates the CSA to which the assignment was given. The remaining three digits are a sequential numbering of all assignments in a CSA for the year. Control Numbers start over at the beginning of each sample year.

Example: CN1097 is the 97<sup>th</sup> assignment in CSA1.

### Interviewer

The priorities during a La Creel assignment are (in order): **Counted observations, number of parties (i.e. surveying as many as possible), and, lastly, biological.**

In the context of La Creel, “Biological” refers to anything beyond identifying and counting (e.g. lengths, weights, ear bones, sex), which is part of Biological Sampling. Biological Sampling is separate from La Creel and is covered in a separate document.

Some sites may have boat and shore activity. If that is the case, try to interview anglers from both activities. If the site is so busy that you must choose between activities, boat anglers are the higher priority.

Interviewers represent the Louisiana Department of Wildlife and Fisheries and as such are expected to dress and act in a professional manner that reflects well on the Department. Shirts should be Department issued and in good condition. Open toe footwear, such as sandals or Crocs™, is not acceptable. Caps, if worn, should be Department issue. Coats and jackets should be Department issue if available.

It is inevitable that someone will bring up a controversial topic whether fishing related or not to a staff member. As a representative of the Department, we cannot allow ourselves to be caught up in such conversations. Anything we say will directly reflect on the Department as a whole and is subject to being quoted or misquoted. It is best to listen only if possible. If the person is hostile or if they really want to speak to someone about their concerns, attempt to refer them to Jason Adriance (jadriance@wlf.la.gov, 504.284.2032) or Harry Blanchet (hblanchet@wlf.la.gov, 225-765-2889).

### **“Right Place, Right Time”**

Staff must be at the right site at the right time for the assignment to be useable. While interviewers are encouraged to be on-site a few minutes early, angler interviews should be interviewed during the assignment time block only. Any anglers encountered prior to or after the assignment time block should not be recorded on the Survey Form. If a party becomes available even a minute before the assignment end time, they can be interviewed. A party that comes in a few minutes after the assignment end time should not be surveyed even though technically they ceased fishing during the assignment block. Statistical calculations are based on a time block. Including anglers on the form that were encountered outside the time block could negatively affect catch rate calculations. There are understood limitations to dock side surveys.

Interviewers should have at a minimum, incomplete trip cards and a fish identification book when conducting surveys. While there is no requirement to have copies of the current survey or species count forms, the interviewer must know what information to collect and record that information for later transference to an official form for submission.

Each interviewer will be issued a four-digit identification number formerly referred to as an MRIP ID number upon scoring at least 70% on a fish identification test. The test consists of a total of 25 finfish. Bonus fish may be included. The twenty-five fish may be a mixture of

inshore and offshore salt and fresh water finfish species and will be presented in a Microsoft PowerPoint format. Although freshwater species are not the focus of La Creel, they are routinely encountered during the dockside survey. As a representative of the Department, interviewers should be able to identify freshwater species that are commonly seen at La Creel sites. Graded tests will be emailed to Gulf States Marine Fisheries Commission (GSFMC) for ID issuance. Obtaining ID numbers from GSMFC is necessary due to ongoing cooperation between LDWF and NOAA on other biological programs. In addition to the fish ID test, attendance of in-person training is required.

## **Regulations**

### Louisiana Fishing License

Anglers 16 years of age or older who take or possess fish in Louisiana waters must possess a fishing license. Anglers 15 years old and under and residents born before June 1, 1940 who have lived in Louisiana for one year prior to fishing are exempt from basic and saltwater licenses but **MUST** have appropriate gear licenses when using trawls, crab traps, slat traps, oyster tongs, crawfish traps, wire nets, hoop nets or any other legal fishing gear.

Recreational licenses purchased between June 1 and December 31 are valid from the date of purchase until June 30 of the following year. Recreational licenses purchased between January 1 and May 30 are valid from the time of purchase until June 30 of the current year. Example: a license purchased on May 28, 2015 will expire June 30, 2015. Example: a license purchased June 3, 2015 will be valid until June 30, 2016.

Recreational fishing and hunting licenses may be purchased by phone toll-free at 1-888-765-2602 or online at [www.la.wildlifelicense.com](http://www.la.wildlifelicense.com). Methods of payment are Visa, MasterCard, Discover, American Express or E-check. An authorization number for immediate use will be provided.

A Basic Resident Fishing License is \$9.50. A resident saltwater fishing license is an additional \$13.00. The total for an annual Louisiana Resident Saltwater Fishing License is \$22.50.

### Recreational Offshore Landing Permit (ROLP)

Randomly selecting contacts solely from the saltwater fishing license database for the purposes of the effort survey resulted in too few offshore anglers to adequately characterizing offshore activity. By far the majority of saltwater fishing license holders focus their effort inshore. As a result, the Recreational Offshore Landing Permit (ROLP) was created in 2013.

The permit is free and is required of all adult anglers in possession of any species of tuna, billfish, amberjack, grouper, snapper, hind, or dolphin, as well as wahoo, cobia, or swordfish. The permit is not required for except minors, which are those anglers under the age of 16 years. Charter anglers (i.e. clients) are covered under the captain's permit, which is required to have a permit if landing any of the covered species.

ROLP's follow the same validation period as recreational fishing licenses. Permits issued between June 1 and December 31 are valid from the date of purchase until June 30 of the

following year. Permits issued between January 1 and May 30 are valid from the time of purchase until June 30 of the current year. Example: a permit issued on May 28, 2015 will expire June 30, 2015. Example: a permit issued June 3, 2015 will be valid until June 30, 2016.

ROLP's are available online at <http://www.wlf.louisiana.gov/rolp> or via Apple and Android apps. They are not available at any fishing license vendor nor at LDWF offices. Permits can be printed and carried by the angler or displayed on a Smartphone. Either form is acceptable for Enforcement purposes.

#### Atlantic Highly Migratory Species (HMS) Permit

The Atlantic Highly Migratory Species (HMS) Permit is a federal permit required of all owners/operators of vessels fishing recreationally for Atlantic tunas, sharks, swordfish and billfish in the Gulf of Mexico as well as the Atlantic Ocean and Caribbean Sea. The federal HMS permit is required whether or not the vessel is being used for a private or charter fishing trip and is in addition to the Louisiana's ROLP. The Atlantic HMS permit costs \$20.00 and is valid from the date of issuance through December 31<sup>st</sup> of the year of issuance. The permit can be purchased online at <https://hmspermits.noaa.gov/PermitList.asp>.

Some anglers have confused the ROLP and HMS permits, thinking they are one and the same. There are two key differences between the two permits. One is the HMS is vessel-based (i.e. it covers everyone on a permitted vessel) and the ROLP is individual-based (i.e. it covers only the person to which it is issued). The other difference is the ROLP is free and the HMS is twenty dollars.

#### **The Angler**

Information gathered is confidential and will not be used for any purpose other than biological. Survey participants, including charter captains, who acknowledge fishing without a license and/or permit, possess illegal fish, etc. will not be reported to Enforcement.

The La Creel survey, including harvest information, is voluntary for all recreational anglers, private and charter. Anglers are under no obligation to participate in the survey. Any angler who refuses to be surveyed is considered an initial refusal.

#### Eligibility

##### **“Were you recreationally fishing for saltwater finfish today?”**

To be eligible for interview anglers must answer “Yes” to the screening question above. The angler need not have caught or landed any finfish. Although it is preferred that the fishing trip be finished, it is not a requirement. There are no age limitations (use common sense when choosing a fishing party representative to interview). Charter captains or deckhands may be interviewed to report for the trip.

Anglers must either be actively saltwater finfishing or have finished saltwater finfishing for the day to be eligible. Do not attempt to interview anglers who are preparing to saltwater finfish. Anglers who report they targeted freshwater finfish, fresh or saltwater shellfish are not eligible

even if they harvested saltwater finfish species during the trip. Anglers casting for shellfish to be used as bait to catch finfish later the same day are not eligible. The same angler may be approached later while they are actively finfishing at which time they would be eligible.

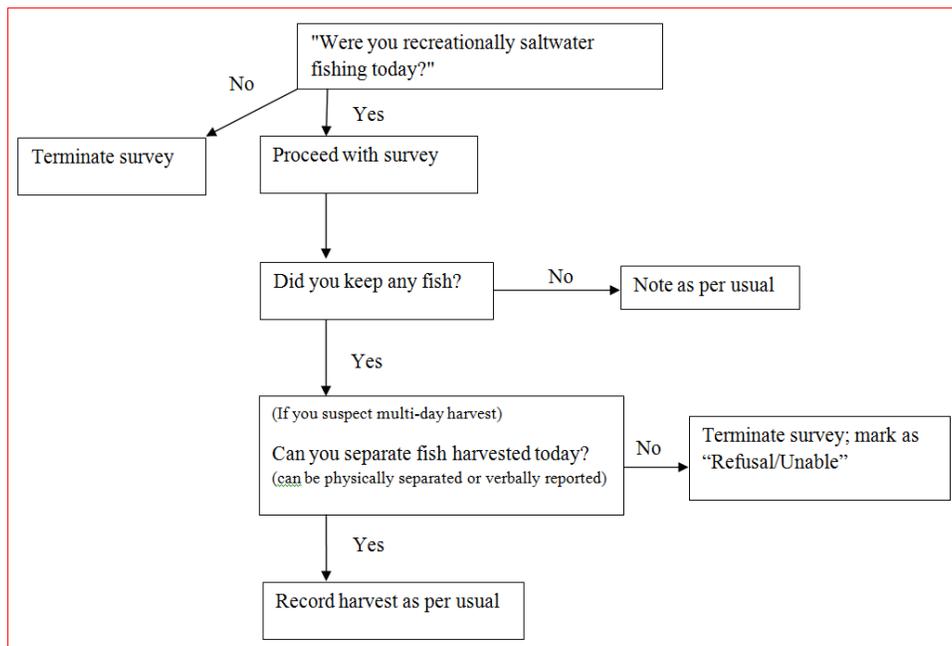
Anglers for which the primary reason of the trip was for commercial purposes (i.e. sale of harvest for profit) are not eligible.

Tournament anglers are eligible, but only if they use the assigned site to launch and retrieve boats or are believed to be long term users of a slip at the site. Only those anglers should be approached. Anglers who come to the site to weigh fish or observe tournament activity are not eligible.

*Overnighters and Campers*

“Were you recreationally fishing for saltwater finfish today?” As much as possible let the angler or captain determine what “today” means. It is more important that the angler or captain be consistent with their definition of today between the dockside survey and the effort survey than the definition of “today” is. If the answer is yes, ask if “today’s” harvest can be separated out from harvest from previous day or days, if applicable. If it can, whether it be physically separated or verbally reported, record the harvest as per usual. If “today’s” harvest cannot be separated from harvest of previous day or days, terminate the survey mark “Refusal/Unable” on the survey form note why the survey was terminated in the survey comments section (Figure 1).

There is no survey question about whether or not a trip is a multi-day or overnight. For now, the need to ask if an angler or anglers were fishing multiple days or overnight rests with you the interviewer.



**Figure 1.** Survey eligibility of campers and overnight trips.

### Fishing Trip

A fishing trip is defined as the time of initiation of fishing to the time of cessation of fishing within the same “waking day” regardless of the type of fishing done or if fishing is done at the same or different sites. Fishing is the act of having fishing gear in the water. The cessation of all fishing for the waking day is considered a completed fishing trip.

## **Data**

### Forms

The “La Creel Survey Form” is the form on which all data that pertains to all aspects of the fishing trip is recorded and submitted. In addition, there is a “La Creel Assignment Cover Sheet” that is used to summarize the assignment.

All fishing party data must be present on a legible copy of the Survey Form for submission to Data Management. Data entry must be completed by 4:30pm the day after the assignment. Data entry can be accomplished via DMS or the iPad app. Data entry instructions for each method are available in a separate document. All assignment forms must be scanned and emailed to [lacreel@wlf.la.gov](mailto:lacreel@wlf.la.gov) by 4:30PM Monday immediately following the end of the sample period (i.e. the previous Monday – Sunday). It is preferred to have the data submitted by the next day. Keep in mind management staff need time to review, edit, and correct all data within 10 days of the date of the assignment.

### Angler Report Cards

A “La Creel Angler Report” card, a.k.a. “Incomplete Trip Card” or simply “Incomplete Card,” is used to capture harvest information from anglers who are not finished fishing at the time of survey (Figure 2).

This method of obtaining harvest information is intended for shore assignments; however, it may be used for boater anglers as well. The Department recognizes that trying to catch shore anglers along a stretch of road or beach just as they are leaving leads to missed anglers. Cards can be issued to shore anglers during the second half of the assignment block only (i.e. between 11am and 2pm of an 8am – 2pm assignment).

Cards may be given to boat anglers at any time during the assignment block if the party returns to the dock for any reason and will continue fishing during the same day. This includes parties returning for fuel, bait, food, or any other supplies and intends to return to fishing after acquiring those supplies. This also includes boat parties that leave their boat at the dock to make a trip home, to a nearby store, etc. as long as the party intends to return to fishing later that same day. Cards may be distributed to any angler, shore or boat, that leaves the assigned site with the intention of fishing elsewhere the same day.

When issuing Incomplete Cards, issue one card per fishing party. If needed, the interviewers should explain the confidential nature of the information provided. Postage is paid by the Department. Write the date of intercept and Control Number of the assignment in the designated areas on the card and record the card number on the survey form before handing the card over.

Record Species Count for any fish in possession at time of interview (calculations will be made by Data Management to prevent double counting). Instruct the angler to record any and all harvest for the entire trip including any fish you may have recorded.

If an Incomplete trip angler refuses to accept an Incomplete card for any reason (e.g. admits he would not return the card, practices catch and release only), mark the fishing trip as Incomplete and note that angler did not want a card in the Interview Comments section.

LA CREEL ANGLER REPORT		Card N <sup>o</sup>																																																
PLEASE PRINT INFORMATION AND MAIL TODAY																																																		
Interview <b>DATE:</b> _____		<b>CONTROL NUMBER:</b> _____																																																
<b>BASIN</b> – Select a Basin or write in the location of most fish caught <input type="checkbox"/> Pontchartrain <input type="checkbox"/> Mermentau <input type="checkbox"/> Barataria <input type="checkbox"/> Calcasieu <input type="checkbox"/> Terrebonne/Timbalier <input type="checkbox"/> Sabine <input type="checkbox"/> Vermilion/Teche/Atchafalaya <input type="checkbox"/> EEZ		LDWF requests contact information for one Louisiana Recreational Saltwater Fishing License holder of your fishing party. Contact information further improves the quality of the La Creel Program. Name: _____ Address: _____ City: _____, State: _____ Zip: _____, Phone: _____ Email: _____																																																
Body of water/location: _____																																																		
<input type="checkbox"/> No fish kept		<b>SPECIES COUNT</b> (total number of fish kept on this date)																																																
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By submitting this card you are providing important data to aid in the management of Louisiana's valuable recreational fishery.																																																		

Figure 2. La Creel Angler Report card. (Current as of August 11, 2016).

If an angler to whom a card was given earlier is seen leaving the site, interviewers should attempt to convert an incomplete trip to a complete trip. Ask the angler if he is finished fishing for the day. If he is done fishing, update harvest data on the Survey Form and retrieve the card. If the angler is going to continue to fish the same day at another site, remind him to send in the card.

Similar cards have been printed for distribution by LDWF Enforcement during water patrols (Figure 3). This card will be a tool used to determine catch rates for private access anglers. If an angler were to receive one of these cards and is also surveyed dockside by an interviewer, the interviewer should continue the survey and instruct the angler to send in the card.

LA CREEL ANGLER REPORT		Card No. E000003	
PLEASE PRINT INFORMATION AND MAIL TODAY			
# OF ANGLERS: _____		INTERVIEW DATE: _____	
Are you bringing your fish back to a public or private location?			
<input type="checkbox"/> PRIVATE (restricted access - not open to the general public; ie: camp, member only launch)			
<input type="checkbox"/> PUBLIC (available for access by the general public)			
<input type="checkbox"/> No fish kept			
SPECIES COUNT		(total number of fish kept on this date)	
Species	# Kept	Species	# Kept
Croaker		Pompano	
Black Drum		Crab	
Redfish		Shrimp (lbs)	
Flounder		Oyster (lbs)	
Speckled Trout			
Gafftopsail Catfish			
Gray/Mangrove Snapper			
Red Snapper			
Sheepshead			
White Trout			

**Figure 3.** The La Creel “Enforcement” card.

**NOTE:** The Enforcement card initiative HAS NOT been implemented as of the date of this version.

## The Access Point Survey

### Consistency

It is more important that the angler be consistent in his responses to the access point survey and the phone survey than it is for him to adhere to exact definitions of “day,” “trip,” etc.

Throughout the following instructions on conducting the dockside survey the corresponding effort question, when applicable, will be stated to guide the interviewer as to what information is intended to be gathered.

### Efficiency

Interviewers should use their own phrasing of questions aimed at capturing needed data.

Interviewers can rearrange the order of questions to fit the circumstances, their preferred flow, etc.

Pay attention to the angler’s responses; they may provide an answer to a later question while answering another question. For example, when asking a party if the trip was offshore, they may say they were twenty miles out and were trying to catch Red Snapper. That answers the activity question and the target question.

### Introducing the survey

Prior to the screening question, interviewers should introduce themselves and briefly explain why they are approaching anglers. A suggested introduction would be, “My name is \_\_\_\_\_ and I am conducting a survey for the Louisiana Department of Wildlife and Fisheries to determine recreational harvest of saltwater finfish.”

Screening Question – “Were you recreationally fishing for saltwater finfish today?”

### **Trip#**

Number each trip sequentially.

### **Fishing Activity**

Harvest estimates can be generated for private and charter activities. To determine catch rate for each activity we must know which group an angler belongs to. A private trip is defined as a fishing party that did **not** hire a guide to either show the party where to fish using either the party’s vessel or a vessel provided by the guide. It does not matter if the party used a boat belonging to one of the party members, borrowed a boat from someone other than a party member, or if the party rented a boat. A charter trip is a fishing party that **did** hire a guide to show them where to fish using either the party’s vessel or a vessel provided by the guide. Keep in mind captains may fish without clients. They may take non-paying family or friends, search for new fishing spots, etc. If such a situation occurs, the trip should be marked as private.

Private anglers are further classified into shore and boat anglers. Shore anglers are those who fished outside of a boat and include anglers fishing from piers, beaches, banks, jetties, etc. If an angler uses a boat to get to some jetties, for example, gets out of the boat to fish standing on the jetties, he is considered a shore angler. In that example, the boat was used as a means of transportation much like a car.

For the purposes of La Creel, there are four fishing activities.

1. Private Inshore - a private fishing trip in which the majority of harvest was taken, or where the majority of time spent fishing if no harvest, while the angler is in a vessel in federally recognized Louisiana waters (i.e.  $\leq 3$  miles from shore).
2. Shore - a private fishing trip in which the majority of harvest was taken, or time spent fishing if no harvest, while fishing with “feet on the ground” and not from a vessel.
3. Private Offshore - a private fishing trip in which the majority of harvest was taken, or where the majority of time spent fishing if no harvest, while the angler is in a vessel in federally recognized federal waters (i.e.  $\geq 3$  miles from shore).
4. Charter - a fishing trip in which a guide or a guide/boat combination is compensated for their fishing finding services.

### **Refused/Unable**

If an angler refuses to participate in the survey at all it is considered an initial refusal. For initial refusals record a Trip# and check the “Refusal” box on the form. Do not fill-in any other information. If the refusal is a charter trip, record a Trip#, check the “Refusal” box, and record the captain’s name if known. Initial refusal trips should not be counted in the “Missed” box on the Assignment Cover Sheet.

If an angler agrees to participate in the survey initially, but either refuses to answer or is unable to answer a key question, the survey is considered a mid-interview refusal. Mid-interview refusals are not useable. Such a survey should be marked as “Refusal.” Leave the Trip# and any information gathered up to the point of refusal or inability to answer on the form. Mid-interview refusals should not be counted in the “Missed” box on the Assignment Cover Sheet.

### **Trip Status and Incomplete Card#**

If the angler is finished fishing for the day, Trip Status is Complete (1). If the angler plans to fish after being interviewed during the same day, in the same activity or not, at the same site or not, Trip Status is Incomplete (2). An Incomplete card should be issued to the party instructing them to report any and all harvest for the entire trip including any fish you may have recorded. Record the card identification number in the appropriate place. Record Species Count for any fish in possession at time of interview (calculations will be made by Data Management to prevent double counting).

### **# of Anglers in Party**

This number includes ALL anglers who fished whether or not they actually caught fish or how long they fished during the trip. It also includes charter captain and/or deckhands if they fished during the trip. Be sure to include the captain if his species limit was used whether or not he actually fished. Current regulations allow for bag limits of charter captain and crew to be used for all species except red snapper, greater amberjack, and any species of grouper.

For a single boat-based trip, the party includes all anglers fishing from the same vessel. Multiple boats or kayaks fishing as a group, whether private or charter, can be handled in one of two ways. They may be treated as a single group by combining harvest data and totaling the number of anglers. If grouped, note how many boats/kayaks the trip includes in the trip comments. Or, they may be treated as single parties if harvest can be separated by party. The preferred method is to treat as separate parties. If a charter group is reported as individual trips, note the Charter Captain Name is the same for each trip. If a group of boats or kayaks are treated as a single fishing party, note the number of vessels under trip comments.

For shore anglers, a party can be defined as the number of anglers keeping fish on a common stringer, ice chest, etc. But, like vessel based anglers, a large group of shore anglers fishing together (e.g. a family) can be combined into a single party by combining harvest and totaling the number of anglers in the group.

### **# Lic.**

License information is needed in order to establish a correction factor for those private anglers who will never participate in the effort survey due to not having a valid Louisiana recreational saltwater fishing license.

For Private trips “#Lic” is the number of party member anglers (i.e. those who fished during the trip) who report holding a current recreational Louisiana saltwater fishing license. Ask all private party members if they hold a valid license.

If the number of licenses is less than the party number, note in the trip comments why. A common reason is angler exemption from the license requirement such as minors (Table 2). The number of licenses should not exceed the number of anglers in the party.

Leave this field blank for charter trips. Do not ask charter clients license questions. Never ask charter captains about their licenses in earshot of his clients.

Condition/Situation	Code	Additional Comment Examples	Acceptable Recordation
Refused to answer a license question	<b>RL</b>	Refused to say if he had license, refused to show license	RL refused to show license
Minor, underage, child, children anglers	<b>MR</b>	None	1 MR, MR 1
Senior anglers	<b>SR</b>	None	1 SR, SR 1
Texas licensed anglers fishing LA waters without a LA license	<b>TX</b>	Texas license only, no LA license	TX Fishing in LA side of Sabine with TX license

**Table 2.** Accepted trip comment notation for these scenarios.

### #ROLP<sub>[TL1]</sub>

Like licenses, this is the total number of anglers in private parties that claim to have valid permits. Every private angler regardless of activity, area fished, harvest, etc. must be asked if they have a valid ROLP.

Skip this column for charter trips. Do not ask charter clients about ROLP's. The charter captain's ROLP covers any and all clients he may have on any trip.

### Tournament

Tournament anglers using the assigned site to launch and retrieve boats or are believed to be long term users of a slip at the site are eligible. This includes fishing rodeos and any other organized fishing event in which prizes or awards are given.

Check only if the party was or is participating in a tournament, etc.

### Captain's Name

For all charter trips, record the captain's name as it appears on his guide license. The name will be used to validate guide license holders later. Using nicknames or incomplete names will result in being unable to validate the guide license.

### License / ROLP

Validate all charter captains by referencing the charter captain frame (i.e. list). DO NOT ask a captain to show his license in front of his clients. An updated frame is emailed weekly to CSA staff. If the captain is found on the list, check the "License" box. If the charter captain is not found in the list, leave the "License" box unchecked and note in the comments box that the captain could not be found in the frame. Try verifying his name, etc. the next time his is seen. Only after all possible miscommunication errors have been eliminated should the captain be asked to show his guide license.

If the captain has an ROLP according to the frame, check the "ROLP" box. If he does not have an ROLP, leave the "ROLP" box unchecked. No comment is needed in either case.

## **Target**<sup>[TL2]</sup>

Every trip, both private and charter, should be asked what the primary and, if applicable, secondary species were that they intended to catch at the time the fishing trip started. Responses along the lines of, “Whatever was biting,” are acceptable and will be recorded as “No target” in the app.

## **Area of majority of harvest (basin)**

Basins are delineated bodies of water that are identified by a numerical Trip Ticket code. Basin maps are located in Appendix A of this document and on the iPad La Creel app (app instructions are located in Appendix B of this document). Harvest estimates are derived for each basin therefore it is imperative that the correct basin be identified dockside. Never assume the basin. Record the basin code for the area the majority of harvest took place or, if no harvest, the area the majority of time fishing took place. There will be situations in which offshore species will be recorded for a trip listed as inshore and vice versa.

## **Trip Comments**

In addition to required notes, record any comments you feel will help you and/or management.

## **Fish**

### **Fish in Possession**

Obviously, harvest estimates cannot be generated without knowing what species are being harvested and how many of those species are being harvested.

All fish, including shellfish, in possession of the angler party at the time of survey are divided into two observation types: Counted (1) – identified and counted by interviewer, Reported (2) – identified and counted by angler. The majority of observations should be Counted/Type 1, because the Department needs to have as much confidence in harvest estimates as possible. That confidence comes from interviewers identifying and counting fish, which minimizes estimation error that would be present in reported harvest. There are no expectations of 100% Counted observations. Reported harvest will always be present and used in determining harvest estimates. Anglers will always be in a hurry, etc. We simply need to take advantage of opportunities to get Counted observations.

If all fish in possession of the party are not counted, note a reason in the comments box, such as “angler in a hurry.”

If the party allows and there are no other parties available for interview, count as many fish as you can even if there are 50 or more fish. The point of dock side surveys is to characterize harvest at a given site and, by extrapolation, basin. That is why surveying as many parties as possible is still important. Therefore, if you are interviewing a party and there is another party available to survey, limit counting to approximately 15 randomly selected fish from the current party and then move to the next available party. If you count the 15<sup>th</sup> fish of the current party and see the other party(ies) has left, and the current party is okay with you continuing to count their fish then do so.

If only part of the harvest is counted, record the uncounted fish on a separate line. This is true whether the reason for not counting all fish was due to the angler wanting to leave, angler not making all fish available, you counted 15 or so fish and moved to the next party, etc.

For every Reported harvest note a reason in the comments box. Simple notes such as “angler in a hurry,” “angler did not make all harvest available,” “fish filleted,” “moved to next trip.” Analysis of Reported codes can be used as a tool for determining site pressures and identifying sites that may need two interviewers during certain times of the year.

Keep in mind anglers may keep purchased live or dead bait fish in the same location as harvested fish. Be certain that only harvested fish are recorded.

Climbing into angler vessels or vehicles is permissible if the angler allows.

### **Fish Discarded**<sup>[TL3]</sup>

Certain finfish species caught by the fishing party during the trip but are not in their possession at the time of survey are to be recorded on the survey form in the same box as fish still in possession. As of now, we are only interested in collecting “discard” data on the finfish species listed below:

1. Black Drum
2. Gray Snapper
3. Gray Triggerfish
4. Greater Amberjack
5. King Mackerel
6. Red Drum
7. Red Snapper
8. Sheepshead
9. Southern Flounder
10. Spanish Mackerel
11. Spotted Seatrout

The La Creel app nor DMS will accept discard data for species not on this list.

Three additional codes are used to group the discarded finfish by reason for discard.

#### Discard Codes

- 3 – fish thrown back because they were less than the **legal minimum length**\*
- 4 – fish used as bait **during the trip**\*\*
- 5 – fish thrown back or given away prior to interview for any reason not covered by codes 3 and 4, such as too big, not wanted, etc.

\*This is not the same as fish thrown back, because the fish were smaller than the angler likes.

\*\*Fish in possession at time of survey that will be used for bait on a later trip should be Type 1 or 2.

## **Species**

Record the species by either writing the name out and/or using the ITIS 6-digit species code.

## **#**

Record the number of fish observed. Finfish are recorded in number of individuals as are crabs. Shrimp are recorded in estimated pounds. Oysters are recorded in estimated “sacks.”

## *Scenarios*

You’re interviewing a party and another party is about to leave, stay with the 1<sup>st</sup> party in order to ID and count up to a total of 15 fish and risk missing the 2<sup>nd</sup> party. If you finish counting 15 fish from the 1<sup>st</sup> party’s harvest and the 2<sup>nd</sup> party is still available for interview, skip getting any bio on the 1<sup>st</sup> party’s fish and move to the 2<sup>nd</sup> party. If there are no other parties immediately “behind” the 2<sup>nd</sup> party and the 2<sup>nd</sup> party is fine with you continuing to count and begin taking lengths, etc., then do so.

## ***Assignment Cover Sheet***

A La Creel Assignment Cover Sheet should be submitted for every assignment even if there were no surveys obtained due to a lack of activity or the assignment was not worked (Figure 4). The cover sheet should be the first page in files of scanned assignment forms.

## **CN**

The Control Number (CN) can be found in the assignment list, site register, DMS, and the iPad app.

## **Asg. Complete**

An assignment is complete if the interviewer remained on-site for the full time block (i.e. 8am – 2pm, 2pm to sunset). Arriving late and leaving early can greatly affect the accuracy of harvest estimates. Interviewers are expected to be on site on time and leave no sooner than the assignment end time unless the site becomes unsafe.

Assignments in which no anglers were interviewed due to a lack of activity are considered complete. Include a comment explaining the reason for no surveys in the comments box. If weather was a factor, write “WR” in the comments on the form and during data entry (Table 1).

An assignment is not complete if the assignment was not worked at all, the interviewer arrived late or left the site prior to the end of the time block for any reason. The only exception is leaving a private access site after verifying no activity is present. In such cases the assignment will be marked as complete. Currently there is only one private access site in the La Creel site register and it is located in CSA7.

Interviewers may leave the site early if the site environment becomes unsafe. Unsafe can be inclement weather, non-anglers engaging in questionable acts, or for any other legitimate reason as determined by the interviewer. The interviewer should exercise common sense for any situation that may arise outside of the ones discussed here. A reason for leaving the site early

must be noted on the assignment comments line. A form should be submitted as per usual even if no surveys were obtained prior to leaving the site early.

#### *Missed or Compromised Assignments*

In the event an assignment is not worked a cover sheet with a reason why the assignment was missed must be given on the assignment comments line. The form should be submitted as per usual.

If an assignment was worked “incorrectly” (e.g. worked wrong site, worked wrong time block, worked an assignment on the wrong date) survey data cannot be used. We can, however, use any biological data collected, if any. Incorrectly worked assignments are treated the same as missed assignments as far as documentation is concerned. A cover sheet with an explanation given on the assignment comments line should be submitted as per usual.

#### *Closed or Inaccessible Sites*

If an assigned site is not accessible for the duration of an assignment, discontinue the assignment. The interviewer should note such as well as the circumstances causing inaccessibility on the La Creel Survey Form. The assignment will be considered Complete. The form should be submitted as per usual (Table 1). If the site is inaccessible due to temporary circumstances (e.g. high water, closed due to family emergency) and the site has a drawn assignment anytime between the day it is found to be inaccessible and the end of the latest assignment draw, a substitute site will be selected by management. If the site continues to be inaccessible at the time site pressures for a subsequent assignment draw are being developed, a decision concerning how to treat the site will be reached through discussion between field staff and management. Field staff should continue to monitor the site and notify management if the site becomes accessible.

#### *Office Closures*

In the event of an emergency state office closure that includes the parish of a given CSA office, all La Creel assignments for the affected CSA office are considered cancelled for the duration of the closure. If a closure becomes effective during an assignment, the assignment is considered terminated at the time of closure effectiveness. In either case, an assignment cover sheet should be completed and submitted as per usual. In either case, affected assignments are to be marked “Incomplete” with a comment indicating the closure and the reason for the closure, such as “Office Closure - Storm” or “Office Closure - Flooding.” In either case, the same comment should be entered in the app, the assignment status left as “Incomplete” and the assignment submitted.

#### *Comment Coding*

For the sake of generating reports, use the codes in Table 1 if applicable. Record them in the comments box and include them in the same during data entry. You do not have to write the word the code stands for, only the code itself. For example, 2 minors can be coded “2 MR.” Be sure when entering comment codes in DMS or the app, leave a space on either side of the code otherwise searching will be difficult. For example, 2 minors should be written as “2 MR” not “2 MR’s” or “2 MRs.” Comment codes must be **CAPITALIZED** when entered in DMS or the app.

<b>Condition/Situation</b>	<b>Code</b>	<b>Additional Comment Examples</b>	<b>Acceptable Recordation Example</b>
<b>Weather</b>	<b>WR</b>	Rained entire asg., high winds	WR rained all day
<b>Site Closed</b>	<b>SC</b>	Closed for repairs, closed for holidays, permanently closed	SC closed for repairs
<b>Site Inaccessible</b>	<b>SI</b>	Bridge out, bridge not working, flooded	SI swing bridge not working
<b>Asked to leave site</b>	<b>AL</b>	Manager asked me to leave	AL by manager, he says our presence scares off customers

**Table 1.** Assignment comment codes.

### **Site#**

The Site Number can be found in the assignment list, site register, DMS, and the iPad app.

### **Interviewer Name**

Write the first and last name of the person conducting the survey. If more than one interviewer is working a single assignment, all data entered for that assignment must be entered under a single interviewer. This is due to database limitations.

### **Interviewer ID#**

The four-digit number identification number formerly referred to as an MRIP ID number, of the interviewer under which data will be entered. If more than one interviewer is working a single assignment, record the ID number of the second interviewer under the “CN” line. The “first” interviewer should record their ID number on the “CN” line.

### **Number of Complete Trips**

The number of trips with a Trip Status of 1.

### **Number of Incomplete Trips**

The number of trips with a Trip Status of 2.

### **Number of Refusals**

Combine all mid-survey and initial refusals and record that number here.

### **Number of Missed Trips**

This number includes fishing parties not approached during the assignment time for any reason, but are believed to be eligible. This is typically those parties missed while surveying another party. Language barrier parties should also be included. This information will help in establishing accurate site pressures.

Parties that come to the site to weigh-in fish as part of a tournament, but did not launch from nor retrieve their boats from the site are not eligible for survey nor should they be counted as missed.

Doing so will artificially inflate the pressure for the assigned site. Only vessels that launched from and/or retrieved from the site and are not approached, assuming eligibility, should be counted as missed.

### **Asg. Comments**

Note anything that may be helpful to management in understanding conditions, activities, etc. that affected assignment productivity (Figure 5). Examples: cold, windy, hot, LSU game, Saints game.

## **Priorities**

The priorities during a La Creel assignment are (in order): **Counted observations, number of parties (i.e. surveying as many as possible), and, lastly, biological.**

In the context of La Creel, “Biological” refers to anything beyond identifying and counting (e.g. lengths, weights, ear bones, sex), which is part of Biological Sampling. Biological Sampling is separate from La Creel and is covered in a separate document.

### *The caveat: Red Snapper Lengths*

Get as many Red Snapper lengths as possible during each year’s federal season, assuming there is one. Normally federal Red Snapper seasons open in June and last from days to weeks. Interviewers should strive to get lengths on Red Snapper even if missing another party is necessary, but, again, only during federal seasons.

Priorities during federal Red Snapper season IF Red Snapper (RS) harvest is encountered (in order):

1. Counted RS
  - a. Count ALL regardless of number RS and number of parties missed.
  - b. This does not mean skip counting species other than RS altogether.
2. Counting species other than RS
  - a. If no other parties are around and the party allows, count every fish harvested.
3. Lengths of RS
  - a. Get lengths on all RS for each party surveyed if allowed regardless of number of RS. For any party, get all (or, if applicable, at least 20 random) lengths.
4. Number of parties (i.e. surveying as many as possible)
5. Lengths of all other species
  - a. Get lengths of other species as possible. For any one species measured, get all (or, if applicable, at least 20 random) lengths. If selection is needed, collect lengths on species less often encountered (e.g. yellowfin tuna over grey snapper).
6. Biological information other than lengths
  - a. As time permits.

## **Private Angler Effort Survey**

Part of the overall recreational harvest estimate equation is the amount of effort, defined by number of saltwater fishing trips, put forth each week by anglers. This is derived from the Private Angler Effort Survey. This survey is not conducted by LDWF staff, but is contracted to South Central Planning and Development. Each week, not including weeks that fall within the federal Red Snapper season, 1,600 Louisiana recreational saltwater fishing license holders are drawn at random for participation in the effort survey. A separate random selection of 400 is made from ROLP holders which gives the Department a better representation of offshore harvest. Initial contact is made by email informing the angler that he has been drawn for the survey and is given the option of reporting his fishing activity, or lack of, for the sample week (the week the email is sent) by replying to the email by a set time and date (typically by the Tuesday of the week following the sample week). If no response is received by the deadline, a series of phone calls (up to a maximum determined by LDWF), will be made to the angler in attempt to obtain the needed information. Ideally all anglers would have equal chances of being surveyed, but only licensed anglers, by nature, are in the Licensing Frame and are available to be drawn. An effort correction factor is used to account for those private anglers who fish without a license due to being exempt or simply not purchasing a license. The correction factor is established by validating licenses on select trips during the La Creel survey.

## **Private Angler Effort Survey**

The Charter effort survey is conducted weekly by email and/or phone. All persons possessing a current Louisiana charter boat fishing guide license are included in the charter telephone survey call list, a.k.a. “frame.” Ten percent of charter license only holders and thirty percent of charter license holders who also have an ROLP are drawn. During the federal red snapper charter season, one hundred percent of ROLP holding charter captains are drawn.

Each charter captain is assigned to a Coastal Study Area (CSA), a regional management area, based on address or known launch site(s) location. Charter call lists are emailed to CSA staff on Friday or Monday. CSA staff have Monday – Saturday of the following week and Monday – Wednesday of the next week to attempt to contact the captain to inquire about charter activity that took place during the previous week. The results must be entered into DMS and call sheets submitted to the La Creel email account by 4:30pm the following Wednesday. For example, sample week 1 draws were issued on Friday, January 8<sup>th</sup>. Calls can be made the following Monday – Saturday and the Monday – Wednesday of the next week (i.e. the Wednesday results are due (January 20<sup>th</sup>).

The purpose of the survey is to estimate recreational charter fishing effort. The number of saltwater charter trips (up to three per day) made in a given sample week (Monday – Sunday), the number of paying clients per trip, the dates of those trips, the basin in which the majority of harvest took place, and whether the trip launched from a public or private access point are collected. If no fish were kept, the basin is the area in which the majority of fishing effort took place. Results of the charter effort survey, along with recreational private angler effort survey, are multiplied by the recreational saltwater finfish catch rate (as determined by dockside surveys)

on a species specific level for the same sample week to calculate total landings estimates per species per sample week.

## Quality Control

### Interviewer QC

Management will conduct unannounced site visits to allow for one-on-one time with field staff. The purposes of the visits include, but are not limited to, explaining current procedures, exchange of information (e.g. ideas, questions), document field staff adherence to protocol and administration of a quiz to be completed by field staff on-site during the QC. There is no minimum or maximum number of visits for a given field staff or site.

In addition to the quiz, there is a checklist of items and protocol worth 45 out of 61 total points. The checklist consists of:

1. Working the assigned site (*20 points*)
2. Working the assigned time block (*20 points*)
3. Wearing LDWF clothing (*1 point*)
4. Having “Incomplete” trip cards (*1 point*)
5. Having a fish identification book, app, or pamphlet (*1 point*)
6. Properly screening anglers (*1 point*)
7. Conducting survey accordingly (*1 point*)

### Meetings

There will be one or two meetings each calendar year. The meetings are intended to be an open dialogue concerning changes, issues, etc. between administrative and field staff. The first meeting will be held in select field offices during the second or third quarter of the year. The last meeting will be held in December in Baton Rouge and will include a fish identification test, protocol refresher discussions and presentations. In addition, there will be an open discussion on all topics relating to Fisheries. Meetings are open to all and all are encouraged to attend.

Email announcements of meetings will be made a couple of weeks in advance.

## Charge Code

### Timesheet Coding

Any time spent on La Creel, which includes, but is not limited to driving to and from assignment sites, on-site time, and Biological Sampling (if done while working a La Creel assignment), can be charged to 51400W0406. Any time spent after an assignment on entering assignment data and/or editing forms can be charged to the same.

## Contacts

- Email completed forms to [lacreel@wlf.la.gov](mailto:lacreel@wlf.la.gov)
- Database related (DMS, iPad app), Site Register – Jason Froeba
- Survey QC – Kristie Carraway or Jenny Ragland
- Biological and Charter Call protocols, Database related – Nicole Smith
- Biological QC – Kevin Bland
- Dockside protocol, ROLP, iPad app, assignment schedule – Ty Lindsey
- Regulations, ROLP – Jason Adriance

## LA Creel Dockside Data Dictionary

Intercept_Id	Unique identifier for assignment header
SamplePeriod	Same as sample week in MRIP
SampleYear	Year
ControlNumber	CN of the assignment
Office_Id	Coastal Study Area Field office assignment is assigned
AssignDate	Date of the assignment
AssignTime	Either a morning (AM) or afternoon (PM) assignment
AssignState	Assignment has been entered into DMS (complete- field staff has entered Accepted- received and verified by data team)
AssignmentStatus	Assignment was completed or incompleted
TotalTrips	Total number of trips for that assignment (similar to the tally)
TotalParties	Total number of parties missed during an assignment
Site_Code	Site Code (same as MRIP)
Site_Name	Name of site
Interview_Id_Num	Interviewer ID (same as MRIP)
Comment	Comments about the assignment
Data Entry	Denotes if the assignment was entered via our iPad App or DMS
Type	Week or Weekend assignment
InterceptDetails_Id	Unique Identifier for assignment details
TripNumber	Number of the trip interviewed during the assignment
TripStatus	Complete or Incomplete
Activity	1:Private Inshore, 2:Shore, 3:Private Offshore, 4:Charter
Basin_Id	Number code associated with basin name
Basin_Name	Name of basin
BOW_Id	Number code associated with body of water name
AF_Desc	Area Fished description
Captain_LicEntityId_ref	Charter Captain License distinct number

Tournament	Y/N- was it a tournament
NumberAnglers	Number of anglers on interviewed trip
LicensedAnglers	Number of licensed anglers on interviewed trip
ValidLicenses	Licenses validated on interviewed trip
NumberWithROLP	Number of anglers on interviewed trip with an offshore landing permit
NumberROLPValid	Number of validated ROLP on interviewed trip
Prime1	Primary Target Species
Prime2	Secondary Target Species
PostCardNumber	Number on post card given out on incomplete trips
Refused	If interview trip was refused
Comments	comments about trip
SpeciesCount	Total number of species type by observation type
InterceptSpecies_id	Reference code for species
ITIS_Code	ITIS code for species
Common_Name	Common name of species
AmountCaught	Number of species caught
ObservationType	1:Counted, 2:Reported, 3:Undersized, 4: Bait, 5:Other
Comment2	comments about species

# La Creel Survey Form

CN#: \_\_\_\_\_

Activity: 1 – Private Inshore, 2 – Shore, 3 – Private Offshore, 4 – Charter

Status: 1 – Complete, 2 – Incomplete

TRIP \_\_\_\_\_ Activity: 1 2 3 4

REFUSAL/UNABLE

Trip Status: 1 2\* \*Incomplete Card#: \_\_\_\_\_

Comments:

#Anglers: \_\_\_\_\_ #Licenses: \_\_\_\_\_ #ROLP[TL1]: \_\_\_\_\_ Tournament: Y N

CH Capt. Name: \_\_\_\_\_ Lic. - Y N ROLP - Y N

Target[TL2]: 1° \_\_\_\_\_ 2° \_\_\_\_\_

Area of majority of harvest (basin):

(If no harvest, area of majority of fishing effort)

Type: 1 – Counted, 2 – Reported, 3 – Under size, 4 – Bait, 5 – Other[TL3]

Species	#	Type	Species	#	Type

TRIP \_\_\_\_\_ Activity: 1 2 3 4

REFUSAL/UNABLE

Trip Status: 1 2\* \*Incomplete Card#: \_\_\_\_\_

Comments:

#Anglers: \_\_\_\_\_ #Licenses: \_\_\_\_\_ #ROLP: \_\_\_\_\_ Tournament: Y N

CH Capt. Name: \_\_\_\_\_ Lic. - Y N ROLP - Y N

Target: Target: 1° \_\_\_\_\_ 2° \_\_\_\_\_

Area of majority of harvest (basin): \_\_\_\_\_

(If no harvest, area of majority of fishing effort)

Type: 1 – Counted, 2 – Reported, 3 – Under size, 4 – Bait, 5 – Other

Species	#	Type	Species	#	Type

TRIP \_\_\_\_\_ Activity: 1 2 3 4

REFUSAL/UNABLE

Trip Status: 1 2\* \*Incomplete Card#: \_\_\_\_\_

Comments:

#Anglers: \_\_\_\_\_ #Licenses: \_\_\_\_\_ #ROLP: \_\_\_\_\_ Tournament: Y N

CH Capt. Name: \_\_\_\_\_ Lic. - Y N ROLP - Y N

Target: Target: 1° \_\_\_\_\_ 2° \_\_\_\_\_

Area of majority of harvest (basin): \_\_\_\_\_

(If no harvest, area of majority of fishing effort)

Type: 1 – Counted, 2 – Reported, 3 – Under size, 4 – Bait, 5 – Other

Species	#	Type	Species	#	Type

# La Creel Assignment Cover Sheet

CN#: \_\_\_\_\_

Assignment Status: Complete Incomplete\*

\*Reason for Incomplete: \_\_\_\_\_

Assignment Date: \_\_\_\_\_ 2016 Shift: AM PM

Site#: \_\_\_\_\_

*Assignment Worked By*

Interviewer Name: \_\_\_\_\_ ID#: \_\_\_\_\_

Number of Complete Trips: \_\_\_\_\_

Number of Incomplete Trips: \_\_\_\_\_

Number of Refusals (initial + mid-interview): \_\_\_\_\_

Number of Missed Trips: \_\_\_\_\_

Number of pages (not including this page): \_\_\_\_\_

*Data Entry*

Same staff member as above

Name: \_\_\_\_\_ ID#: \_\_\_\_\_

Method: App DMS

Date Entry Completed: \_\_\_\_\_ 2016

Assignment Comments:

## Review of LA Creel Survey Program Proposed for MRIP Certification

Jay Breidt (Colorado State University), Mike Brick (Westat), Ginny Lesser (Oregon State University),  
Jean Opsomer (Colorado State University), Lynne Stokes (Southern Methodist University)

September 29, 2017

After reviewing the materials provided to us by NOAA staff, we address each of the terms of reference below.

1. *Does the survey design follow a formal probability sampling protocol with known inclusion probabilities at all stages and/or phases of sampling?*

The designs of both the catch and effort surveys are probability designs. The catch survey is a stratified two-stage design and the effort surveys have stratified random designs. These designs follow accepted survey methodology and are appropriate for these surveys.

2. *Do the estimation methods appropriately weight the sample data to account for the sampling design and produce design-unbiased point estimates and variance estimates?*

Both the effort and catch surveys follow unequal-probability sampling designs. The design for the catch survey is a stratified two-stage PPS, with the first stage a stratified selection of site-day-shift assignments with probabilities proportional to the fishing pressure, and the second stage assumed to be an equal-probability selection of anglers at the assigned site. The estimation methods for the average catch/trip and corresponding variance are weighted according to this sampling design, as required for valid design-based inference. However, they cannot be claimed to be exactly design-unbiased, because of standard approximations applied in the derivation of these estimators and the variance estimators. These approximations are commonly used in official surveys, so this is not a concern, but they do introduce a small amount of design bias. The estimation methods appropriately weight the sample data to account for the sample design, producing approximately design-unbiased point estimates and valid variance estimates.

The effort surveys, both for individual anglers and for charter captains, are stratified simple random sampling designs using list frames. Weights are used in estimation and inference here as well, again producing approximately design-unbiased point estimates and valid variance estimates. The final estimates include adjustments for undercoverage of the license frames, which are definitely warranted here.

Overall, we view these surveys and associated estimation approaches as statistically valid.

3. *Are appropriate methods in place to measure and/or correct for potential biases due to undercoverage, nonresponse, or response errors?*

We do not have enough information to fully answer this question about nonresponse. Little information is provided about nonresponse rates in either survey and what is done to account for nonresponse. Response rates are frequently very low in telephone surveys these days, so this has the potential to cause a bias problem. Further, one might expect that the response rates are differential by stratum, which could cause biases since effort is likely to differ by stratum (e.g., out-of-state vs in-state). This issue is worth further investigation. Unfortunately, this issue does not only affect LA Creel but recreational angler telephone surveys nation-wide as well as most telephone surveys.

One related concern about the effort surveys is the fact that they are set up as quota samples, in the sense that data collection is stopped once a target number of interviews is reached in each stratum. This can lead to “early respondent bias,” since it will tend to lead to samples that contain easier-to-reach respondents. This might be difficult or impossible to avoid when rapid turn-around is required for the survey. Nevertheless, it might be worth investigating whether a survey that spends more effort converting recalcitrant respondents leads to different results than the current approach.

The undercoverage issue is addressed more fully than the nonresponse issue. Specifically, the issue of undercoverage of the license frame is addressed, and a reasonable method for adjusting for this undercoverage is described. In the report on p. 11, there is a comment that these adjustments can be made separately by species, type of fishing activity, and fishing area. A possible concern is that the sample sizes for the compliance rate estimates for these small domains might be very small, resulting in a variance in equation [19] that is dominated by the adjustment variance. Hence, implementation of these adjustments at the species, activity or area level should be monitored to make sure they are not too large, causing instability in the estimates.

There is also an issue with undercoverage in the catch survey for private access and after-sunset anglers. The report mentions that the effort survey collects information to allow assessment of how large this undercoverage is, but no description of that data is provided. There is no adjustment possible for that undercoverage since no information on catch is available for the private and after-sunset anglers. However, the size of the undercoverage might help to judge the effect of the implicit assumption that catch is the same for all. The private access undercoverage problem is no different than what is present in MRIP, but the after-sunset issue is different, so this might lead to differences between both surveys. The size of this difference is likely small but should be investigated.

The quality control system in place for supervision of interviewers and for preventing data entry and editing errors seems very thorough.

The incomplete fishing day method seems reasonable, but it would be useful to know the response rate on the postcard method. The reliability of these self-reported data and how they compare with observed catch should be investigated.

Overall, the survey addresses the main types of potential biases to a level that is comparable to MRIP.

4. *How sensitive is the accuracy of the survey to assumptions made about segments of the target population that are not covered by the survey frame? What can be done to reduce or limit that sensitivity?*

The biggest frame issue is the unlicensed anglers, which as noted above is addressed by a separate adjustment. This adjustment is based on data collected in the access point survey. The information about whether or not each angler possesses a license is self-reported by the anglers, with no validation. Previous research by MRIP in an all mail survey of anglers showed that they both over-report (reporting that they have a license when they do not) and under-report (stating that they do not have a license when they do) their license ownership. These misreporting rates were non-negligible in both directions, but were higher for over-reporting than under-reporting. It is likely that this will also be true in a face-to-face interview. Therefore, we recommend that at a minimum, they periodically (e.g., every three years) perform a validation study on the license ownership question. This should take the form of a randomized experiment embedded into the access point data collection process, where some anglers are asked to produce their license (or otherwise prove they own one) and others self-report. If these discrepancies are non-negligible, a calibrated license ownership rate should be used in the license adjustment factor.

Another frame issue is bad contact information, which makes license holders ineligible. That issue is not addressed except to the extent of encouraging people to update their information. It would be useful to find out what fraction of license frame holders are eliminated because of bad addresses and investigate whether they have different angling behavior from the remaining license holders. Finally, the private access site issue can also be considered frame-related, but that problem is not specific to LA Creel.

5. *How sensitive is the accuracy of the survey to other potential sources of nonsampling error? What can be done to reduce or limit that sensitivity?*

One of the main sources of nonsampling error is nonresponse error. While using a frame of license holders will somewhat mitigate this source of error, the nonresponse rate is likely to be quite large and is expected to continue to grow in the future. At the same time, the use of quota-based sampling will make the problem worse, since it will tend to result in a larger

fraction of “early responders.” The use of telephone interviewing and quotas are likely unavoidable if the survey is to be used for in-season monitoring and hence requires rapid turn-around.

However, especially if the LA Creel estimates are to become part of the official MRIP estimates, the fact that the former uses telephone while the latter uses mail raises the issue that the estimates might not be directly comparable. Survey researchers have shown that an interviewer-based collection method (i.e., telephone) can show different results compared to a self-administered surveys (i.e., mail). One potential solution for this would be to develop calibration factors to convert “phone-reported trips” to “mail-reported trips,” which could be done with a side-by-side survey.

The report mentions that the private angler licenses all expire on a given date (same for charter) and that this causes a “bias” due to lifetime anglers being over-represented in subsequent sampling periods. This will not cause bias unless the new frames are not up-to-date or unless (non-lifetime) anglers are fishing without a license immediately after their license expires. If the former is true, then this could cause a problem for other than the one period. That is, if the license list used for the frame is considerably out of date, then newly licensed anglers might always be excluded. This will not be corrected by the compliance rate adjustment, since these anglers indeed have licenses. On the other hand, if the problem is the latter (that anglers are fishing unlicensed immediately after expiration) then this could be mitigated by maintaining them on the frame for a while after their license expiration. Maintaining expired-license anglers in the frame would decrease undercoverage (for those who fish) but also increase overcoverage (for those who do not fish). Whether this trade-off is worthwhile depends on the prevalence of expired-license fishing.

There are other sources of nonsampling error, such as incorrect reporting of discards, misreporting of trips, etc. However, these are similar to those in other MRIP surveys.

Overall, there are no major concerns with the ways LA Creel accounts for nonsampling errors.

6. *How sensitive is the survey design to potential errors in implementation? What can be done to evaluate, reduce or limit that sensitivity?*

As noted above, a robust quality control operation for the interviewing and data entry appears to be in place. The interviewer training appears to be thorough.

7. *How does the survey design compare to the legacy survey design it would replace? Is it more statistically sound and efficient, or is it at least comparable in its statistical validity and efficiency? What design features are most important in supporting this assessment?*

The overall structure of the design (with complementary surveys for catch and effort) is very similar to the MRIP design. The major positive difference now is in the sample sizes, which are larger for the new design and which therefore are expected to produce more precise estimates, especially for red snapper. As noted above, however, one possibly negative difference is that the effort survey is by telephone, which now have notoriously bad response rates, and which will represent a mode discrepancy with the FES. Investigating the size of resulting differences and possibly developing a calibration method is warranted.

The standard error estimates reported seem mostly to be smaller than comparable MRIP ones in the benchmarking data. However, in some cases, the estimates are quite different, with confidence intervals not at all close (e.g., PR +SH fishing effort comparison; MRIP value always higher). Is there an understanding of why that is the case?

We do have a comment about efficiency of the effort survey design. While we understand that equal stratum sample size is simple to explain and implement, it can lead to inefficient estimators with strata that vary fifteen-fold in size (from 15K to 226K per Table 2). Especially since these strata do not represent estimation domains of interest, it would seem to be more efficient to have sample sizes more nearly proportional to either the stratum size or the stratum angler activity. This should represent a relatively minor adjustment in implementation, since neither the sampling nor the estimation procedures would change materially, and it might result in non-trivial improvement in estimator efficiency.

Some differences with the previous survey are the fact that sample sizes are increased during red snapper season, and that quota-based sampling is used in the effort survey. Both are driven by the need for in-season monitoring. The former is perfectly acceptable, as long as the estimates are weighted appropriately to reflect the increased sampling. The latter is a drawback, as already noted, but likely unavoidable.

8. *How does the survey design compare with other survey designs previously certified by MRIP for estimating fishing effort and/or catch for the same fishing mode(s)? Is it more statistically sound and efficient, or is it at least comparable in its statistical validity and efficiency? What design features are most important in supporting this assessment?*

As noted, the overall survey program approach follows the standard MRIP model of complementary effort and catch surveys, and is implemented as randomized sampling and design-weighted estimators. The interview instruments are simplified compared to the MRIP ones, but essentially comparable in terms of key questions. The biggest difference is expected to be the mail vs. telephone mode for the effort survey, so that should be evaluated further. Overall, this survey program is similar to the other recreational angler survey programs currently certified by MRIP.

9. *Is the survey collecting data and producing information products that will meet the needs of the primary customers (stock assessment scientists and fishery managers)?* [To be addressed by NMFS staff.]

## Comments on the “Review of LA Creel Survey Program Proposed for MRIP Certification”

We sincerely appreciate the opportunity to provide comments on the review of Louisiana’s LA Creel survey for MRIP certification. Our intent is to provide information under the “COMMENT” sections that the reviewers noted was lacking or that we felt could help in their analysis. If other information is needed please don’t hesitate to ask. The highlighted text is our interpretation of the reviewer’s area of concern, and the comments are directed at those issues. Paragraphs have been removed to reduce the size of this document.

The comments provided in this document are not intended to be a complete response to the review. We would be happy to provide any information requested by the MRIP certification committee to aid in certifying Louisiana’s LA Creel survey.

1. *Does the survey design follow a formal probability sampling protocol with known inclusion probabilities at all stages and/or phases of sampling?*

### **NO COMMENT**

2. *Do the estimation methods appropriately weight the sample data to account for the sampling design and produce design-unbiased point estimates and variance estimates?*

The effort surveys, both for individual anglers and for charter captains, are stratified simple random sampling designs using list frames. Weights are used in estimation and inference here as well, again producing approximately design-unbiased point estimates and valid variance estimates. The final estimates include adjustments for undercoverage of the license frames, which are definitely warranted here.

### **COMMENT**

***Tables 1 and 2 provide the adjustment factors used to expand mode specific landing estimates for each week and basin for 2015 and 2016. On average out-of-frame rates are well below 20%. Private angler are out-of-frame if they report that they do not have a Louisiana saltwater fishing license, charter trips are out-of-frame if the captain does not have a charter guide license.***

Table 1 – Proportion of Private anglers within sampling frame by week and year by basin for 2015 and 2016

PRIVATE ANGLER - SALTWATER LICENSE OUT-OF-FRAME RATE BY BASIN												
Week	2015						2016					
	Pontchartrain	Barataria	Terrebonne	Vermilion	Calcasieu	Offshore	Pontchartrain	Barataria	Terrebonne	Vermilion	Calcasieu	Offshore
1	0.73	0.94	0.78	0.57	0.94	0.20	0.90	1.00	0.97	0.95	0.93	0.96
2	0.97	1.00	0.95	0.88	1.00	0.93	0.94	0.94	0.86	1.00	0.83	1.00
3	0.93	0.77	0.89	1.00	0.67	0.93	0.98	1.00	0.61	1.00	0.87	1.00
4	0.94	0.97	0.94	0.85	0.70	0.93	0.92	1.00	0.98	1.00	0.89	1.00
5	0.91	0.91	0.83	0.79	0.72	0.93	0.97	1.00	0.91	1.00	0.96	1.00
6	0.94	0.85	0.87	0.84	0.94	0.93	0.93	0.98	0.94	1.00	0.88	0.96
7	0.96	0.83	0.94	0.96	0.93	0.93	0.90	0.92	0.98	1.00	0.97	1.00
8	0.65	0.86	0.85	1.00	0.90	0.93	0.82	0.84	0.75	1.00	0.82	1.00
9	1.00	1.00	0.94	1.00	0.88	1.00	0.90	0.97	0.83	0.81	0.90	0.96
10	0.95	1.00	0.84	1.00	0.90	1.00	0.67	1.00	1.00	0.77	0.95	0.96
11	0.95	0.93	0.90	0.75	0.97	1.00	1.00	0.91	0.89	0.87	0.79	0.92
12	0.87	0.83	0.96	0.94	0.75	0.85	0.89	0.99	0.84	1.00	0.83	0.96
13	0.93	0.85	1.00	0.97	0.68	0.97	0.93	0.65	0.98	0.86	0.85	1.00
14	0.95	0.90	0.96	0.97	0.85	1.00	0.88	0.91	0.95	0.95	0.93	1.00
15	0.95	0.83	0.81	1.00	0.91	0.60	0.88	0.97	0.94	0.73	0.85	0.96
16	0.93	0.93	0.73	0.56	0.86	0.93	0.87	0.93	0.89	0.71	0.92	0.67
17	0.96	0.97	0.89	0.87	0.86	0.90	1.00	0.99	1.00	0.92	0.78	1.00
18	0.94	0.94	0.73	0.93	0.93	0.93	0.92	0.97	0.92	0.90	0.98	1.00
19	0.96	0.87	1.00	0.88	0.77	0.98	0.93	0.96	0.96	0.87	0.89	1.00
20	0.82	0.97	0.92	0.97	0.98	1.00	0.84	0.92	0.97	1.00	0.69	1.00
21	0.81	0.92	0.96	0.90	0.91	0.98	0.89	0.85	0.94	0.86	0.56	0.93
22	0.87	0.98	0.87	0.91	0.68	0.97	0.95	0.83	0.75	0.76	0.95	0.94
23	0.78	0.88	0.91	0.89	0.93	0.91	0.55	0.92	0.90	0.60	0.57	0.96
24	0.99	0.89	0.81	1.00	0.76	0.70	0.81	1.00	0.89	0.91	0.96	1.00
25	0.86	0.90	0.91	0.96	0.86	0.95	0.84	0.94	0.92	0.85	0.83	0.95
26	0.89	0.95	0.95	0.85	0.82	0.98	0.88	0.91	0.96	1.00	0.75	0.95
27	0.94	0.87	0.74	0.79	0.81	0.96	0.94	0.83	0.87	0.81	0.82	0.96
28	0.91	0.94	0.85	0.74	0.82	0.83	0.97	0.76	0.92	0.89	0.84	0.98
29	0.93	0.82	0.92	0.64	0.79	0.98	0.91	0.95	0.96	0.92	0.77	0.80
30	0.94	0.92	0.89	0.90	0.80	0.96	0.94	0.94	0.76	0.64	0.87	0.94
31	0.89	0.86	0.79	0.93	0.92	0.97	1.00	0.85	0.92	0.93	0.96	1.00
32	0.93	0.91	0.96	0.91	0.86	1.00	0.86	1.00	0.90	1.00	0.55	0.96
33	0.98	0.90	0.97	0.88	1.00	0.98	0.79	0.98	1.00	0.94	0.87	0.92
34	0.92	0.98	0.96	0.57	0.85	0.93	0.97	1.00	1.00	1.00	0.70	1.00
35	0.94	0.88	0.81	0.93	0.81	0.98	0.85	0.87	0.81	0.99	0.88	1.00
36	0.84	0.86	1.00	1.00	0.96	1.00	0.86	0.96	0.78	0.98	0.89	1.00
37	0.95	0.93	0.84	0.98	0.85	1.00	0.88	0.85	1.00	1.00	0.96	1.00
38	0.83	0.90	0.93	0.90	0.94	1.00	0.87	0.95	1.00	0.92	0.93	1.00
39	0.97	0.87	0.94	0.92	0.88	1.00	0.86	1.00	1.00	0.86	0.98	1.00
40	0.86	0.98	0.82	1.00	0.77	1.00	0.88	1.00	0.74	0.86	0.86	0.71
41	0.92	0.82	0.88	0.96	0.87	0.94	0.96	0.99	0.85	0.87	0.99	1.00
42	0.96	0.89	0.97	0.99	0.95	1.00	0.97	1.00	0.99	1.00	0.84	0.96
43	0.96	0.98	1.00	0.96	0.84	1.00	0.96	0.98	0.97	0.94	0.79	1.00
44	0.99	1.00	0.92	0.88	0.90	1.00	0.99	0.81	0.98	0.87	0.90	1.00
45	0.93	0.96	0.94	0.92	0.52	1.00	0.91	0.96	0.95	0.82	0.95	0.96
46	0.92	0.93	0.95	1.00	0.81	0.93	0.97	0.93	0.97	0.88	0.98	0.96
47	0.94	0.98	0.91	1.00	0.97	1.00	0.88	0.92	0.83	0.85	0.78	1.00
48	0.91	0.87	0.83	0.92	0.73	1.00	0.98	1.00	0.98	0.72	1.00	0.96
49	0.89	0.97	0.97	0.91	0.85	0.93	0.97	1.00	0.93	1.00	1.00	0.96
50	0.94	0.95	0.96	0.64	0.88	0.93	0.88	0.94	0.95	0.33	0.85	0.96
51	0.95	1.00	0.81	0.91	0.94	0.93	0.96	1.00	0.89	1.00	0.85	1.00
52	0.92	0.82	0.83	0.90	0.88	0.93	0.84	0.85	0.91	0.98	0.79	0.96
53	0.90	1.00	0.69	1.00	0.89	0.93						
<b>AVG</b>	<b>0.91</b>	<b>0.92</b>	<b>0.89</b>	<b>0.89</b>	<b>0.85</b>	<b>0.93</b>	<b>0.90</b>	<b>0.93</b>	<b>0.91</b>	<b>0.89</b>	<b>0.86</b>	<b>0.96</b>

Table 2 – Proportion of Charter trips within the sampling frame for 2015 and 2016

CHARTER - CAPTAIN'S LICENSE OUT-OF-FRAME RATE BY BASIN												
Week	2015						2016					
	Pontchartrain	Barataria	Terrebonne	Vermilion	Calcasieu	Offshore	Pontchartrain	Barataria	Terrebonne	Vermilion	Calcasieu	Offshore
1	0.98	1.00	1.00	1.00	1.00	0.97	1.00	1.00	0.99	0.91	0.50	0.89
2	0.98	1.00	0.97	1.00	1.00	0.97	0.95	0.56	0.99	0.91	0.90	0.89
3	1.00	1.00	0.97	1.00	0.67	0.97	1.00	0.95	0.99	0.91	0.90	1.00
4	0.98	1.00	0.97	1.00	0.96	0.97	1.00	0.70	0.99	0.91	0.90	0.50
5	1.00	1.00	0.97	1.00	0.96	0.97	1.00	0.95	0.99	0.91	0.90	0.89
6	1.00	1.00	0.67	1.00	0.96	0.97	0.95	1.00	0.99	0.91	0.90	0.89
7	0.98	0.57	0.97	1.00	0.96	0.84	0.95	0.85	1.00	0.91	0.90	0.83
8	1.00	1.00	1.00	1.00	0.96	1.00	1.00	1.00	0.99	0.91	0.90	0.89
9	0.98	0.92	0.97	1.00	0.96	1.00	0.95	1.00	0.98	0.91	1.00	0.69
10	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	0.99	0.91	0.90	0.89
11	0.98	0.89	0.97	1.00	1.00	0.97	0.95	0.86	0.99	0.91	0.82	0.92
12	0.73	1.00	1.00	1.00	0.96	0.97	1.00	1.00	0.99	0.91	1.00	0.89
13	0.98	0.93	1.00	1.00	1.00	0.94	1.00	1.00	1.00	0.91	0.74	1.00
14	0.98	0.95	0.97	1.00	1.00	0.77	1.00	0.93	0.99	0.91	0.94	0.63
15	1.00	0.88	1.00	1.00	0.96	0.91	0.95	0.94	0.99	0.91	0.92	1.00
16	1.00	0.92	0.97	1.00	1.00	1.00	1.00	0.80	0.99	0.91	0.90	0.80
17	1.00	0.91	1.00	1.00	1.00	1.00	1.00	0.83	1.00	0.91	0.90	1.00
18	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	1.00	0.91	1.00	1.00
19	0.88	0.94	1.00	1.00	1.00	0.91	0.86	1.00	1.00	0.91	0.91	1.00
20	1.00	1.00	1.00	1.00	0.92	1.00	0.89	1.00	1.00	0.91	0.61	1.00
21	1.00	0.89	1.00	1.00	0.90	0.97	0.60	1.00	1.00	0.91	0.97	1.00
22	1.00	0.88	1.00	1.00	1.00	0.94	0.95	0.98	1.00	0.91	0.84	0.93
23	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	1.00
24	0.98	1.00	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.90
25	1.00	0.96	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.88
26	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.67	0.69
27	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00
28	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.91	1.00	0.79
29	1.00	0.83	1.00	1.00	0.90	0.95	1.00	1.00	0.99	0.91	0.93	0.81
30	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.87
31	0.98	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.91	0.94	0.93
32	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.91	0.90	0.89
33	1.00	1.00	1.00	1.00	0.94	1.00	0.50	1.00	0.99	0.91	0.86	1.00
34	0.98	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.91	0.88	0.72
35	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.99	0.91	1.00	0.89
36	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	0.99	1.00	1.00	1.00
37	1.00	1.00	0.97	1.00	1.00	0.90	0.95	0.98	1.00	0.91	0.88	1.00
38	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.92
39	1.00	0.98	1.00	1.00	1.00	1.00	0.95	0.83	1.00	1.00	1.00	0.84
40	1.00	1.00	1.00	1.00	0.92	0.97	1.00	0.92	0.99	0.91	1.00	0.89
41	1.00	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.72	1.00
42	0.75	1.00	1.00	1.00	1.00	1.00	0.87	0.97	0.89	0.91	0.96	0.89
43	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.82	1.00	0.91	1.00	0.82
44	1.00	1.00	0.97	1.00	0.96	0.94	1.00	0.88	0.99	0.91	1.00	0.89
45	0.98	1.00	1.00	1.00	0.96	1.00	1.00	1.00	1.00	0.91	0.90	1.00
46	0.98	0.96	1.00	1.00	1.00	1.00	1.00	0.81	1.00	0.91	0.90	1.00
47	0.86	1.00	0.81	1.00	1.00	1.00	0.95	0.96	0.99	0.91	1.00	1.00
48	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.90	0.89
49	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00	0.99	0.91	1.00	0.89
50	0.98	0.72	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.91	0.90	1.00
51	0.93	1.00	0.97	1.00	0.96	0.97	0.95	1.00	0.99	0.91	0.90	0.89
52	0.98	1.00	0.97	1.00	0.96	0.97	1.00	1.00	0.99	0.91	0.90	0.89
53	1.00	1.00	0.97	1.00	0.96	0.97						
<b>AVG</b>	<b>0.98</b>	<b>0.96</b>	<b>0.98</b>	<b>1.00</b>	<b>0.98</b>	<b>0.97</b>	<b>0.96</b>	<b>0.95</b>	<b>0.99</b>	<b>0.92</b>	<b>0.91</b>	<b>0.90</b>

3. *Are appropriate methods in place to measure and/or correct for potential biases due to undercoverage, nonresponse, or response errors?*

We do not have enough information to fully answer this question about nonresponse. Little information is provided about nonresponse rates in either survey and what is done to account for nonresponse. Response rates are frequently very low in telephone surveys these days, so this has the potential to cause a bias problem. Further, one might expect that the response rates are differential by stratum, which could cause biases since effort is likely to differ by stratum (e.g., out-of-state vs in-state). This issue is worth further investigation. Unfortunately, this issue does not only affect LA Creel but recreational angler telephone surveys nation-wide as well as most telephone surveys.

#### **COMMENT**

*Tables 3, 4 and 5 show angler contact results from the LA Creel effort survey for 2015 and 2016. Since 2014 was a startup year and modifications to the effort survey were made throughout that year, we felt the results may not be representative of the current survey so it was not used in this analysis. For each year, completed interviews came from about 52% of the selected sample overall (Table 3).*

*Indications are that Out-Of-State and ROLP anglers tend to have a higher rate of completed interviews (Table 3). Interestingly, the percent complete by phone is very consistent across the strata. The primary difference seems to be that e-mail contacts (which are not universal in the license database, but are better in the out-of-state stratum, and are universal in the ROLP stratum) seem to make a real difference. Clearly this is not the only factor involved, though.*

*Average angler trips/week (Table 4) are similar by region.*

*Avidity (Table 5), defined as the fraction of anglers reporting as having taken a trip during the survey week, does vary by region, as expected, with anglers further from the coast less likely to make a trip overall.*

Table 3 – The table provides private angler completion rates by region. A designation of “Survey Complete” is given when an angler is contacted regardless if fishing occurred. “Survey Incomplete” refers to the number of anglers where no contact was made. Anglers that refused to participate in the effort survey were designated as “Survey Refused”.

EFFORT SURVEY - PRIVATE ANGLER COMPLETION RATE BY REGION							
Year	Status	REGION					Grand Total
		North	South West	South East	Out of State	ROLP	
2015	Survey Complete	7,506	6,817	7,315	8,599	10,665	40,902
	Email	413	380	491	1,118	2,780	5,182
	Phone	7,093	6,437	6,824	7,481	7,885	35,720
	Survey Incomplete	8,220	8,957	8,449	7,110	5,891	38,627
	Survey Refused	160	121	143	162	214	800
<b>2015 Total</b>		<b>15,886</b>	<b>15,895</b>	<b>15,907</b>	<b>15,871</b>	<b>16,770</b>	<b>80,329</b>
2016	Survey Complete	7,089	6,318	6,972	7,935	14,044	42,358
	Email	645	639	744	1,344	4,764	8,136
	Phone	6,444	5,679	6,228	6,591	9,280	34,222
	Survey Incomplete	8,263	9,108	8,474	7,371	6,755	39,971
	Survey Refused	231	167	153	279	338	1,168
<b>2016 Total</b>		<b>15,583</b>	<b>15,593</b>	<b>15,599</b>	<b>15,585</b>	<b>21,137</b>	<b>83,497</b>

EFFORT SURVEY - PRIVATE ANGLER COMPLETION RATE BY REGION							
Year	Status	REGION					Total
		North	South West	South East	Out of State	ROLP	
2015	Survey Complete	47%	43%	46%	54%	64%	51%
	Email	3%	2%	3%	7%	17%	6%
	Phone	45%	40%	43%	47%	47%	44%
	Survey Incomplete	52%	56%	53%	45%	35%	48%
	Survey Refused	1%	1%	1%	1%	1%	1%
2016	Survey Complete	45%	41%	45%	51%	66%	51%
	Email	4%	4%	5%	9%	23%	10%
	Phone	41%	36%	40%	42%	44%	41%
	Survey Incomplete	53%	58%	54%	47%	32%	48%
	Survey Refused	1%	1%	1%	2%	2%	1%

Table 4 – Anglers responding that a saltwater fishing trip was taken for the time period in question is enumerated in this table. The total number of positive trip contacts is designated as “N”. “Trips” represent the number of trip taken. Average trips represent the mean number of angler trips taken by week.

EFFORT SURVEY - PRIVATE ANGLER AVERAGE TRIPS/WEEK BY REGION						
REGION	2015			2016		
	N	Trips	Avg Trips	N	Trips	Avg Trips
North	105	144	1.4	56	74	1.3
South West	371	507	1.4	283	401	1.4
South East	600	860	1.4	581	816	1.4
Out of State	1,023	1,330	1.3	714	989	1.4
ROLP	1,493	2,239	1.5	1,880	2,883	1.5
<b>Total</b>	<b>3,592</b>	<b>5,080</b>	<b>1.4</b>	<b>3,514</b>	<b>5,163</b>	<b>1.5</b>

Table 5 – Avidity of private anglers by region

EFFORT SURVEY - AVIDITY BY REGION							
Year	Trips Taken	REGION					Total
		North	South West	South East	Out of State	ROLP	
2015	No	7,399	6,446	6,714	7,576	9,172	37,307
	Yes	105	371	600	1,023	1,492	3,591
	<b>Total</b>	<b>7,504</b>	<b>6,817</b>	<b>7,314</b>	<b>8,599</b>	<b>10,664</b>	<b>40,898</b>
2016	No	7,036	6,037	6,391	7,222	12,163	38,849
	Yes	56	283	581	714	1,880	3,514
	<b>Total</b>	<b>7,092</b>	<b>6,320</b>	<b>6,972</b>	<b>7,936</b>	<b>14,043</b>	<b>42,363</b>

EFFORT SURVEY - AVIDITY BY REGION							
Year	Trips Taken	REGION					Total
		North	South West	South East	Out of State	ROLP	
2015	No	99%	95%	92%	88%	86%	91%
	Yes	1%	5%	8%	12%	14%	9%
2016	No	99%	96%	92%	91%	87%	92%
	Yes	1%	4%	8%	9%	13%	8%

One related concern about the effort surveys is the fact that they are set up as quota samples, in the sense that data collection is stopped once a target number of interviews is reached in each stratum. This can lead to “early respondent bias,” since it will tend to lead to samples that contain easier-to-reach respondents. This might be difficult or impossible to avoid when rapid turn-around is required

for the survey. Nevertheless, it might be worth investigating whether a survey that spends more effort converting recalcitrant respondents leads to different results than the current approach.

**COMMENT**

*LA Creel's survey protocol calls for an initial emailing of the effort survey and phone calls to anglers without an email address to begin on Monday of each week. Anglers not responding to emails are added to the phone call list on Tuesday. Tables 6 and 7 below show the number of phone contact attempts in 2016, the proportion of completed contacts made each day of the week and more importantly the proportion of positive trips reported by anglers each day of the week. Overall, it appears that anglers contacted on Tuesday – Friday have similar response rates to the question of whether the angler fished the previous week.*

DRAFT

Table 6 – Number of anglers responding to the survey by email and the number of phone call attempts made in 2016 to contact anglers

EFFORT SURVEY - 2016 PHONE CALL ATTEMPTS							
PERIOD	# DRAWN	Email Response	1ST ATTEMPTS	2ND ATTEMPTS	3RD ATTEMPS	4TH ATTEMPS	TOTAL ATTEMPTS
1	1600	171	1429	662	20	0	2111
2	1600	151	1449	741	81	0	2271
3	1600	149	1451	727	38	0	2216
4	1600	182	1418	715	248	0	2381
5	1600	157	1443	659	275	0	2377
6	1600	173	1427	527	132	0	2086
7	1600	175	1425	661	298	0	2384
8	1600	159	1441	685	185	0	2311
9	1600	155	1445	679	240	36	2400
10	1600	142	1458	783	385	74	2700
11	1600	125	1475	807	234	0	2516
12	1600	159	1441	769	289	71	2570
13	1600	146	1454	813	481	8	2756
14	1600	151	1449	757	95	0	2301
15	1600	145	1455	772	247	2	2476
16	1600	186	1414	689	37	0	2140
17	1600	160	1440	713	152	3	2308
18	1600	168	1432	834	565	0	2831
19	1600	153	1447	801	448	78	2774
20	1600	150	1450	837	481	57	2825
21	1600	165	1435	739	20	0	2194
22	1800	193	1607	903	217	0	2727
23	1800	177	1623	928	148	0	2699
24	1600	150	1450	803	265	6	2524
25	1600	138	1462	794	329	0	2585
26	1600	157	1443	797	195	0	2435
27	1600	168	1432	766	379	0	2577
28	1600	165	1435	767	287	0	2489
29	1600	156	1444	837	566	13	2860
30	1600	160	1440	754	450	43	2687
31	1600	149	1451	787	349	0	2587
32	1600	205	1395	756	486	69	2706
33	1600	312	1288	720	502	122	2632
34	1600	160	1440	764	334	26	2564
35	1600	170	1430	836	451	43	2760
36	1600	166	1434	818	458	9	2719
37	1600	162	1438	778	408	26	2650
38	1600	156	1444	809	578	214	3045
39	1600	157	1443	802	501	49	2795
40	1600	155	1445	836	524	144	2949
41	1600	147	1453	830	315	0	2598
42	1600	152	1448	795	249	38	2530
43	1600	153	1447	824	315	0	2586
44	1600	150	1450	810	499	9	2768
45	1600	145	1455	792	398	93	2738
46	1600	154	1446	808	288	30	2572
47	1600	150	1450	830	225	0	2505
48	1600	154	1446	801	421	63	2731
49	1600	157	1443	808	128	0	2379
50	1600	132	1468	834	276	0	2578
51	1600	144	1456	801	341	0	2598
52	1600	168	1432	721	75	0	2228

Table 7 – Proportion of phone call contacts and positive trip reports by day of week

Phone Calls (% By Day Contacted)						Phone Calls (% Reported Positive Trips)					
Day Of Week	Year				Grand Total	Day Of Week	Year				Grand Total
	2014	2015	2016	2017			2014	2015	2016	2017	
MONDAY	15%	20%	18%	21%	18%	MONDAY	7%	6%	5%	5%	5%
TUESDAY	21%	20%	28%	27%	24%	TUESDAY	5%	6%	7%	10%	7%
WEDNESDAY	28%	33%	29%	29%	30%	WEDNESDAY	9%	9%	8%	11%	9%
THURSDAY	22%	20%	18%	19%	20%	THURSDAY	8%	8%	7%	9%	8%
FRIDAY	13%	6%	7%	4%	8%	FRIDAY	7%	8%	7%	9%	7%
SATURDAY	2%	0%	0%	0%	1%	SATURDAY	8%	13%	0%	0%	8%

The undercoverage issue is addressed more fully than the nonresponse issue. Specifically, the issue of undercoverage of the license frame is addressed, and a reasonable method for adjusting for this undercoverage is described. In the report on p. 11, there is a comment that these adjustments can be made separately by species, type of fishing activity, and fishing area. A possible concern is that the sample sizes for the compliance rate estimates for these small domains might be very small, resulting in a variance in equation [19] that is dominated by the adjustment variance. Hence, implementation of these adjustments at the species, activity or area level should be monitored to make sure they are not too large, causing instability in the estimates.

**COMMENT**

*We agree with the reviewer’s concern*

There is also an issue with undercoverage in the catch survey for private access and after-sunset anglers. The report mentions that the effort survey collects information to allow assessment of how large this undercoverage is, but no description of that data is provided. There is no adjustment possible for that undercoverage since no information on catch is available for the private and after-sunset anglers. However, the size of the undercoverage might help to judge the effect of the implicit assumption that catch is the same for all. The private access undercoverage problem is no different than what is present in MRIP, but the after-sunset issue is different, so this might lead to differences between both surveys. The size of this difference is likely small but should be investigated.

**COMMENT**

*Existing LA Creel protocol includes 2 time periods for dockside intercept sampling. An “AM” period (800-1400) hours and a “PM” period (1400-Sunset). “Time returning to dock” is collected as part of LA Creel’s effort survey for each angler reported fishing trip. Between 2014 and 2016 7-8 percent of trips were reported to be out-of-frame due to time of day (Figure 1). Independently, 23-29 percent of the effort survey respondents reported returning to a private dock from the years 2014-2016 (Table 8).*

Figure 1 – The graph represents the proportion of angler reported trips returning to the dock from fishing in the “AM” (800-1400), “PM” (1400-Sunset) and out-of-frame time slots.

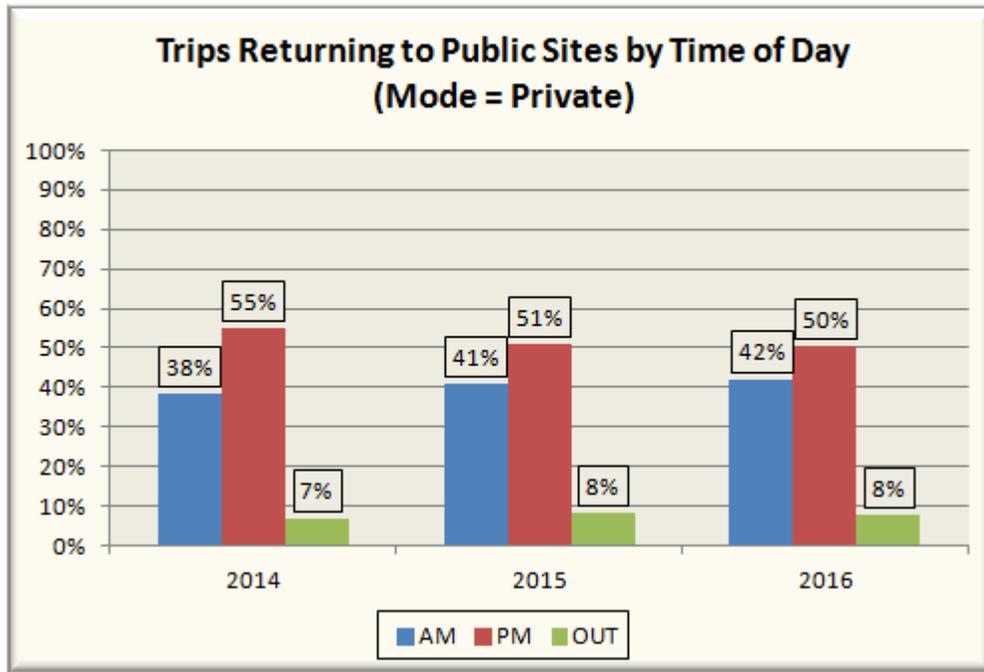


Table 8 - Angler response to Public/Private question on effort survey

LA CREEL EFFORT SURVEY PUBLIC/PRIVATE RESPONSES					
YEAR	PUBLIC SITE			%	%
	YES	NO	ALL		
2014	3,486	1,061	4,547	77%	23%
2015	3,665	1,136	4,801	76%	24%
2016	3,372	1,398	4,770	71%	29%

The incomplete fishing day method seems reasonable, but it would be useful to know the response rate on the postcard method. The reliability of these self-reported data and how they compare with observed catch should be investigated.

#### COMMENT

*Tables 9, 10 and 11 below provide information on the number of incomplete trip post cards issued and received. The vast majority of the cards are issued in shore mode as expected. Thirty two percent of the shore mode trips were issued incomplete trip post cards in 2016 where only 1% of the private angler inshore trips were issued cards. Sixteen percent of the cards issued in shore mode were received in 2016. Only 0.6% of the total number of trips was from incomplete trip post cards received. For our estimation purposes, we use both private boat and shore as a single mode, so the contribution to the overall harvest estimate is small. However, we will compare the reported harvest rates from the trip post cards to observed shore mode rates. Boat-based angling trip cards may be too sparse to be reliably compared.*

**Table 9 – A comparison of the number of incomplete trip post cards issued (YES) to those trips where cards were not issued (NO) by year and activity type.**

ACTIVITY	INCOMPLETE TRIP POST CARDS ISSUED									ACTIVITY	INCOMPLETE TRIP POST CARDS ISSUED					
	2014			2015			2016				2014		2015		2016	
	YES	NO	TOT	YES	NO	TOT	YES	NO	TOT		YES	NO	YES	NO		
1: Private Inshore	129	8,347	8,476	72	8,091	8,163	44	7,482	7,526	1: Private Inshore	2%	98%	1%	99%	1%	99%
2: Shore	651	830	1,481	398	781	1,179	370	787	1,157	2: Shore	44%	56%	34%	66%	32%	68%
3: Private Offshore	3	401	404	1	420	421	2	416	418	3: Private Offshore	1%	99%	0%	100%	0%	100%
4: Charter	1	1,224	1,225	1	1,801	1,802	4	1,485	1,489	4: Charter			0%	100%	0%	100%
<b>Grand Total</b>	<b>784</b>	<b>10,802</b>	<b>11,586</b>	<b>472</b>	<b>11,093</b>	<b>11,565</b>	<b>420</b>	<b>10,170</b>	<b>10,590</b>	<b>Grand Total</b>	<b>7%</b>	<b>93%</b>	<b>4%</b>	<b>96%</b>	<b>4%</b>	<b>96%</b>

**Table 10 – A comparison of the number of post cards received (YES) to the number Issued by year and activity.**

ACTIVITY	POST CARDS RECEIVED FROM THOSE ISSUED									ACTIVITY	POST CARDS RECEIVED FROM THOSE ISSUED					
	2014			2015			2016				2014		2015		2016	
	YES	NO	TOT	YES	NO	TOT	YES	NO	TOT		YES	NO	YES	NO		
1: Private Inshore	19	110	129	12	60	72	9	35	44	1: Private Inshore	15%	85%	17%	83%	20%	80%
2: Shore	111	540	651	58	340	398	58	312	370	2: Shore	17%	83%	15%	85%	16%	84%
3: Private Offshore		3	3		1	1	1	1	2	3: Private Offshore	0%	100%	0%	100%	50%	50%
4: Charter		1	1		1	1		4	4	4: Charter			0%	100%	0%	100%
<b>Grand Total</b>	<b>130</b>	<b>654</b>	<b>784</b>	<b>70</b>	<b>402</b>	<b>472</b>	<b>68</b>	<b>352</b>	<b>420</b>	<b>Grand Total</b>	<b>17%</b>	<b>83%</b>	<b>15%</b>	<b>85%</b>	<b>16%</b>	<b>84%</b>

**Table 11 - A comparison of the number of post cards received to the total number of trips interviewed by year and activity type.**

ACTIVITY	POST CARDS RECEIVED TO ALL TRIPS						ACTIVITY	% CARDS RECEIVED TO ALL TRIPS		
	2014		2015		2016			2014	2015	2016
	RECEIVED	ALL	RECEIVED	ALL	RECEIVED	ALL				
1: Private Inshore	19	8,476	12	8,163	9	7,526	1: Private Inshore	0.2%	0.1%	0.1%
2: Shore	111	1,481	58	1,179	58	1,157	2: Shore	7.5%	4.9%	5.0%
3: Private Offshore		404		421	1	418	3: Private Offshore	0.0%	0.0%	0.2%
4: Charter		1,225		1,802		1,489	4: Charter	0.0%	0.0%	0.0%
<b>Grand Total</b>	<b>130</b>	<b>11,586</b>	<b>70</b>	<b>11,565</b>	<b>68</b>	<b>10,590</b>	<b>Grand Total</b>	<b>1.1%</b>	<b>0.6%</b>	<b>0.6%</b>

4. *How sensitive is the accuracy of the survey to assumptions made about segments of the target population that are not covered by the survey frame? What can be done to reduce or limit that sensitivity?*

The biggest frame issue is the unlicensed anglers, which as noted above is addressed by a separate adjustment. This adjustment is based on data collected in the access point survey. The information about whether or not each angler possesses a license is self-reported by the anglers, with no validation. Previous research by MRIP in an all mail survey of anglers showed that they both over-report (reporting that they have a license when they do not) and under-report (stating that they do not have a license when they do) their license ownership. These misreporting rates were non-negligible in both directions, but were higher for over-reporting than under-reporting. It is likely that this will also be true in a face-to-face interview. Therefore, we recommend that at a minimum, they periodically (e.g., every three years) perform a validation study on the license ownership question. This should take the form of a randomized experiment embedded into the access point data collection process, where some anglers are asked to produce their license (or otherwise prove they own one) and others self-report. If these discrepancies are non-negligible, a calibrated license ownership rate should be used in the license adjustment factor.

**COMMENT**

*Validation of self-reported information given by anglers when asked if they have a saltwater license was conducted by fisheries biologists during standard LA Creel sampling in 2015. Anglers on a trip were asked if they have a saltwater fishing license. Anglers responding in the affirmative were then asked to produce their license for visual inspection. Records where anglers refused to produce a license or where only part of the fishing party was available for license validation or where anglers reported a license was not available for immediate inspection were removed from analysis (Table 12). An alternative analysis was conducted that assumed that anglers reporting that their license wasn't immediately available for inspection were not licensed (Table 13).*

Table 12 – An assessment of dockside validation of saltwater licenses. Records where an angler or license wasn't immediately available for visual inspection were removed from the analysis.

Year = 2015	Licensed Anglers			Valid Licenses			% Valid			Total Licensed Anglers	Total Valid Licenses	Total % Valid
	1: Private Inshore	2: Shore	3: Private Offshore	1: Private Inshore	2: Shore	3: Private Offshore	1: Private Inshore	2: Shore	3: Private Offshore			
1	459	80		455	78		99%	98%		539	533	99%
2	325	60	6	324	59	6	100%	98%	100%	391	389	99%
3	456	80	24	455	80	24	100%	100%	100%	560	559	100%
4	447	81	20	446	81	20	100%	100%	100%	548	547	100%
5	1,165	122	84	1,165	122	84	100%	100%	100%	1,371	1,371	100%
6	958	73	280	953	73	278	99%	100%	99%	1,311	1,304	99%
7	980	42	161	977	42	160	100%	100%	99%	1,183	1,179	100%
8	808	79	96	808	77	96	100%	97%	100%	983	981	100%
9	851	72	29	848	72	29	100%	100%	100%	952	949	100%
10	1,044	57	41	1,040	57	41	100%	100%	100%	1,142	1,138	100%
11	683	80	13	683	80	13	100%	100%	100%	776	776	100%
12	744	81		741	81		100%	100%		825	822	100%
<b>Grand Total</b>	<b>8,920</b>	<b>907</b>	<b>754</b>	<b>8,895</b>	<b>902</b>	<b>751</b>	<b>100%</b>	<b>99%</b>	<b>100%</b>	<b>10,581</b>	<b>10,548</b>	<b>100%</b>

NOTE: Records do not include anglers not available for validation and anglers claiming license unavailable for validation

Table 13 - An assessment of dockside validation of saltwater licenses. Records where an angler wasn't immediately available for visual license inspection were removed from the analysis. Records where an angler's license wasn't immediately available for inspection were assumed to not have a license and were included in the analysis.

Year = 2015	Licensed Anglers			Valid Licenses			% Valid			Total Licensed Anglers	Total Valid Licenses	Total % Valid
	1: Private Inshore	2: Shore	3: Private Offshore	1: Private Inshore	2: Shore	3: Private Offshore	1: Private Inshore	2: Shore	3: Private Offshore			
1	470	88		461	81		98%	92%		558	542	97%
2	339	67	6	332	61	6	98%	91%	100%	412	399	97%
3	479	84	24	465	81	24	97%	96%	100%	587	570	97%
4	488	82	26	465	81	24	95%	99%	92%	596	570	96%
5	1,239	129	87	1,195	125	86	96%	97%	99%	1,455	1,406	97%
6	1,049	76	293	1,000	75	284	95%	99%	97%	1,418	1,359	96%
7	1,051	49	176	1,012	42	167	96%	86%	95%	1,276	1,221	96%
8	848	91	100	829	82	97	98%	90%	97%	1,039	1,008	97%
9	882	82	32	862	77	31	98%	94%	97%	996	970	97%
10	1,078	66	41	1,056	57	41	98%	86%	100%	1,185	1,154	97%
11	722	92	13	704	85	13	98%	92%	100%	827	802	97%
12	780	83		758	82		97%	99%		863	840	97%
<b>Grand Total</b>	<b>9,425</b>	<b>989</b>	<b>798</b>	<b>9,139</b>	<b>929</b>	<b>773</b>	<b>97%</b>	<b>94%</b>	<b>97%</b>	<b>11,212</b>	<b>10,841</b>	<b>97%</b>

NOTE: Records do not include anglers not available for validation but do include records where anglers claimed their license was unavailable

Another frame issue is bad contact information, which makes license holders ineligible. That issue is not addressed except to the extent of encouraging people to update their information. It would be useful to find out what fraction of license frame holders are eliminated because of bad addresses and investigate whether they have different angling behavior from the remaining license holders. Finally, the private access site issue can also be considered frame-related, but that problem is not specific to LA Creel.

**COMMENT**

*The number of bad phone numbers by week for 2016 are provided in Table 14. Table 8 above provides results from the LA Creel effort survey of anglers asked if they landed from their trip at a public or private site.*

*As part of the process used to draw anglers for the weekly effort survey, records with invalid phone numbers or phone numbers that appear to be license vendor phone numbers by the number of times they appear in the frame, are removed prior to conducting that week's draw. For example, in week 42 for 2017 these Invalid angler phone numbers (10,837 anglers) made up 3% of the total effort frame (382,068 anglers) for that week.*

Table 14 –The number of bad phone numbers reported by the phone survey contractors weekly for 2016.

2016 EFFORT SURVEY				2016 EFFORT SURVEY				2016 EFFORT SURVEY			
WEEK	DRAW	BAD PHONE #	% BAD	WEEK	DRAW	BAD PHONE #	% BAD	WEEK	DRAW	BAD PHONE #	% BAD
1	1,600	207	13%	19	1,600	246	15%	37	1,600	236	15%
2	1,600	218	14%	20	1,600	226	14%	38	1,600	246	15%
3	1,600	224	14%	21	1,600	211	13%	39	1,600	242	15%
4	1,600	220	14%	22	1,800	221	12%	40	1,600	225	14%
5	1,600	225	14%	23	1,800	223	12%	41	1,600	212	13%
6	1,600	237	15%	24	1,600	207	13%	42	1,600	224	14%
7	1,600	259	16%	25	1,600	217	14%	43	1,600	193	12%
8	1,600	208	13%	26	1,600	222	14%	44	1,600	215	13%
9	1,600	236	15%	27	1,600	245	15%	45	1,600	211	13%
10	1,600	228	14%	28	1,600	241	15%	46	1,600	192	12%
11	1,600	191	12%	29	1,600	243	15%	47	1,600	183	11%
12	1,600	213	13%	30	1,600	208	13%	48	1,600	243	15%
13	1,600	241	15%	31	1,600	245	15%	49	1,600	186	12%
14	1,600	194	12%	32	1,600	244	15%	50	1,600	198	12%
15	1,600	202	13%	33	1,600	202	13%	51	1,600	238	15%
16	1,600	194	12%	34	1,600	240	15%	52	1,600	215	13%
17	1,600	203	13%	35	1,600	221	14%	<b>TOTAL</b>	<b>83,600</b>	<b>11,481</b>	<b>14%</b>
18	1,600	230	14%	36	1,600	230	14%				

5. *How sensitive is the accuracy of the survey to other potential sources of nonsampling error? What can be done to reduce or limit that sensitivity?*

One of the main sources of nonsampling error is nonresponse error. While using a frame of license holders will somewhat mitigate this source of error, the nonresponse rate is likely to be quite large and is expected to continue to grow in the future. At the same time, the use of quota-based sampling will make the problem worse, since it will tend to result in a larger fraction of “early responders.” The use of telephone interviewing and quotas are likely unavoidable if the survey is to be used for in-season monitoring and hence requires rapid turn-around.

**COMMENT**

*Refer to Tables 3, 6 & 7 above.*

The report mentions that the private angler licenses all expire on a given date (same for charter) and that this causes a “bias” due to lifetime anglers being over-represented in subsequent sampling periods. This will not cause bias unless the new frames are not up-to-date or unless (non-lifetime) anglers are fishing without a license immediately after their license expires. If the former is true, then this could cause a problem for other than the one period. That is, if the license list used for the frame is considerably out of date, then newly licensed anglers might always be excluded. This will not be corrected by the compliance rate adjustment, since these anglers indeed have licenses. On the other hand, if the problem is the latter (that anglers are fishing unlicensed immediately after expiration) then this could be mitigated by maintaining them on the frame for a while after their license expiration. Maintaining expired-license anglers in the frame would decrease undercoverage (for those who fish) but also increase overcoverage (for those who do not fish). Whether this trade-off is worthwhile depends on the prevalence of expired-license fishing.

**COMMENT**

*Our concern for “bias” may be a nonissue. We would like to discuss this item further with the reviewers.*

*The license frame is up-to-date; we have complete records for the prior week when we draw the sample frame on Monday. However, not sure how we might address the change in unlicensed anglers or if it is worthwhile, based on the out-of-frame values seen in the data (Table 1). The concern is not unlicensed anglers but rather the possible difference in angler avidity between annual and lifetime licensed anglers. The proportion of lifetime licensees in the effort frame goes up significantly as a result of annual licensees being dropped from the frame July 1.*

6. *How sensitive is the survey design to potential errors in implementation? What can be done to evaluate, reduce or limit that sensitivity?*

**NO COMMENT**

7. *How does the survey design compare to the legacy survey design it would replace? Is it more statistically sound and efficient, or is it at least comparable in its statistical validity and*

*efficiency? What design features are most important in supporting this assessment?*

The overall structure of the design (with complementary surveys for catch and effort) is very similar to the MRIP design. The major positive difference now is in the sample sizes, which are larger for the new design and which therefore are expected to produce more precise estimates, especially for red snapper. As noted above, however, one possibly negative difference is that the effort survey is by telephone, which now have notoriously bad response rates, and which will represent a mode discrepancy with the FES. Investigating the size of resulting differences and possibly developing a calibration method is warranted.

#### **COMMENT**

*We agree with the reviewer's comment that LA Creel's larger sample size should reduce error in catch rates. However, we feel that a larger sample size alone doesn't necessarily ensure efficiency and representative catch rates. We believe that, at least for Louisiana, stratifying inshore and offshore sites provides a mechanism to more efficiently conduct the survey. For clarity here, what we call an "offshore" site is one where there are significant numbers of trips going into the "Ocean >3 miles" region. These sites also have significant inshore / nearshore fishing effort, which is also sampled. So these are not exclusively "offshore" sites. Being able to adjust the number of dockside assignments for inshore and offshore strata independently for the purpose of reducing catch rate error provides for a more efficient sampling program. Similarly, having the ability to adjust intensity of sampling within a specific basin across the state allows flexibility of design to address basin-specific questions without greatly affecting overall sampling intensity.*

*We are aware of the issues with telephone based surveys, and while we are still comfortable with our current response rates, we are continuing to consider alternative methods of contact that can be considered within the turn-around time we're currently using. Electronic reporting means, such as by app, text and e-mail have been considered, and e-mail does seem to have some benefits. However, we are not intending to move in that direction at this point due to concerns over recognized but unknown differences in the responding population compared to the fishing universe.*

We do have a comment about efficiency of the effort survey design. While we understand that equal stratum sample size is simple to explain and implement, it can lead to inefficient estimators with strata that vary fifteen-fold in size (from 15K to 226K per Table 2). Especially since these strata do not represent estimation domains of interest, it would seem to be more efficient to have sample sizes more nearly proportional to either the stratum size or the stratum angler activity. This should represent a relatively minor adjustment in implementation, since neither the sampling nor the estimation procedures would change materially, and it might result in non-trivial improvement in estimator efficiency.

#### **COMMENT**

*The effort survey is divided into 5 regions (strata) to ensure that we obtain representative effort estimates for each basin. Effort estimates are calculated for each region by basin. Regional estimates are summed into angler trips by basin. The alternative suggested would require a much larger sample size since the vast majority of anglers reside in southeast Louisiana and don't*

***frequent southwest Louisiana to fish. A pure random sample would have greatly reduced probability of encountering fishing activity in some basins.***

***We also believe that incorporating our Recreational Offshore Landing Permit (ROLP) as a survey frame significantly improves the efficiency of the effort survey for both offshore and inshore fishing activity. The holders of this permit tend to be much more active anglers than average, improving our chances of contacting anglers who took trips during periods and basins with low activity.***

***We also believe that weekly sampling rather than two month wave has the potential to increase accuracy by reducing recall bias.***

Some differences with the previous survey are the fact that sample sizes are increased during red snapper season, and that quota-based sampling is used in the effort survey. Both are driven by the need for in-season monitoring. The former is perfectly acceptable, as long as the estimates are weighted appropriately to reflect the increased sampling. The latter is a drawback, as already noted, but likely unavoidable.

#### **COMMENT**

***Because we now stratify sites into inshore and offshore, we are able to intercept a sufficient number of red snapper trips and no longer need to increase sample size during red snapper season. We continue to increase the number of ROLP holders drawn for the effort survey during the open season. We do also increase effort in the sense that biological sampling manpower is increased along with the parallel creel sampling in order to get biological samples that can be traced back to the sampling site and day of the creel survey.***

8. *How does the survey design compare with other survey designs previously certified by MRIP for estimating fishing effort and/or catch for the same fishing mode(s)? Is it more statistically sound and efficient, or is it at least comparable in its statistical validity and efficiency? What design features are most important in supporting this assessment?*

As noted, the overall survey program approach follows the standard MRIP model of complementary effort and catch surveys, and is implemented as randomized sampling and design-weighted estimators. The interview instruments are simplified compared to the MRIP ones, but essentially comparable in terms of key questions. The biggest difference is expected to be the mail vs. telephone mode for the effort survey, so that should be evaluated further. Overall, this survey program is similar to the other recreational angler survey programs currently certified by MRIP.

#### **COMMENT**

***We agree with the reviewer's comment***

9. *Is the survey collecting data and producing information products that will meet the needs of the primary customers (stock assessment scientists and fishery managers)? [To be addressed by NMFS staff.]*

**NO COMMENT**

DRAFT

# Review of LA Creel

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August 16, 2015

## 1 Introduction

During the one-and-a-half-day meeting in Baton Rouge, LA, on June 2–3, 2015, we met with Louisiana Department of Wildlife and Fisheries (LDWF) staff to discuss LDWF’s recreational fisheries statistics program, LA Creel. Prior to the meeting, we had been provided with a report entitled “RECREATIONAL STATISTICS PROGRAM: LA CREEL LANDING STATISTICS,” which provided a thorough overview of the survey design and estimation procedures that comprise LA Creel.

We begin by briefly summarizing our overall reaction to LA Creel: it is a well-designed and executed program. The program has a large and thorough sampling effort, with fine spatial and temporal stratification for on-site work. There is a high-quality license frame for effort measures. LA Creel appears to have careful design in all of its aspects, and rigorous randomization. There is an exceptionally high level of quality assurance/quality control built into the program. For the most part, there is also a clear and clean match between the sampling design and the estimation methods. The methodology is thoroughly documented, with assumptions explicitly listed. The consultants had very favorable reactions to all of these characteristics of LA Creel.

In the remainder of this report, we outline our recommendations for possible extensions or improvements to LA Creel, as well as a few suggestions for further study.

## 2 On-site survey

### 2.1 Definition of primary sampling units

In the LA Creel methodology report, the sampling design is considered a three-stage design, with site-day as the primary sampling unit (PSU), shift within the site-day as the secondary sampling unit (SSU) and angler trip within the site-day-shift as the tertiary sampling unit (TSU).

The selection procedure for days and shifts is with replacement among all day-shift combinations in a stratum, with a rejection step if duplicate assignments are obtained. Ignoring the small chance of duplicate assignments within a basin, the design is closely approximated by without-replacement selection of site-day-shifts, followed by selection of anglers within site-day-shifts. Our recommendation, therefore, is to treat the design as a two-stage design, with site-day-shift as the PSU and the angler trip as the SSU.

### 2.2 Stratification for offshore sampling

Sites are assigned monthly pressures in three “activities” (private in-shore, private off-shore and charter), which is conceptually similar to the “modes” in MRIP, in the sense that it separates the overall recreational fishing activity at a site into categories with different characteristics for the purpose of sampling. Selection of sites (and hence site-days and shifts) is performed through stratified PPS sampling, proportional to the average site pressure across all activities present at the site. This procedure results in oversampling of sites with private off-shore activity, because these sites tend to have fewer activities (1–2) but high off-shore pressure. This oversampling is considered desirable because these sites are smaller in number but are important due to the presence of critical species such as red snapper. During the federal red snapper season, the pressure of the private off-shore activity is increased, to further increase the probability of sampling these sites.

This sampling procedure is statistically valid and we see no major issues with continuing to use it. However, the somewhat indirect manner in which the oversampling is achieved is likely to result in sample sizes that will vary month-to-month, leading to possibly increased variance of the resulting catch estimates. An allocation that oversamples certain types of sites can also be achieved more directly by stratifying the sites (which can also be done using the activity pressures, averaged or otherwise) and selecting the desired number of sample days in each stratum. The stratification could also help with weighting because the inverse of selection probabilities are simple to obtain and can be used as weights. A further advantage of stratification is that it is easy to incorporate additional sampling requirements such as geographic representation (as is already being

done), minimum sample sizes in low-pressure categories that might often be missed by pure PPS sampling, etc.

It should also be noted that the manner in which sites are labeled and selected for the purpose of sample selection, e.g. sites in an “off-shore stratum” and those in an “in-shore stratum,” has no implication on the data that can be collected at those sites, so that replacing a PPS-based sample selection by a stratification-based one is strictly a design issue. Similarly, defining relatively fine sampling strata does not imply that estimates should be created and reported for all the strata.

### **2.3 Undercoverage and compliance rate adjustments**

A key issue in surveys that estimate the average catch and the total effort separately is that the definition of a “trip” needs to be matched across both surveys. It is clear that the LDWF staff are aware of this and have made sure that this is reflected in both surveys, by eliminating the “species targeted” as a factor in determining the catch and the effort. A related issue is frame undercoverage, which can occur on both the catch and the effort side: private sites are an example of frame undercoverage in the former survey, and people fishing without a license are an example in the latter. Because of the complementarity of both surveys, it is possible to compute correction factors for some of these types of frame undercoverage. In LA Creel, the on-site survey is used to estimate the fraction of people fishing without a license, which is then used to correct the estimate of total effort obtained from the license sampling frame.

A similar correction factor is applied to account for anglers without a recreational offshore landing permit (ROLP). The factor is estimated as the (weighted) fraction of trips that land off-shore species for which the angler has an ROLP in the on-site survey. However, it is not appropriate to treat the absence of ROLP as an undercoverage issue, and hence to adjust effort estimates in this manner. The reason for this is that the category of anglers defined as “ROLP holders” is fully captured by the ROLP frame, so there are no missing anglers in the frame and no undercoverage adjustment is needed. In contrast, the category “angler” is not exhaustively covered by the license frame, so an undercoverage adjustment *is* needed. Another way to see the same thing is by considering the correction factor itself: by calculating the fraction of off-shore trips where the angler has an ROLP, we can indeed estimate the fraction of anglers who adhere to a recreational fishery regulation, but this contains no information directly applicable to the estimation of effort of the anglers who hold an ROLP.

The anglers can be divided into three non-overlapping groups: those holding an ROLP (and, we assume, an angling license), those holding an angling license and no ROLP, and those holding neither. These groups should drive the design of the on-site and effort

surveys and the manner in which estimates are produced. The effort of the first two groups are separately estimated directly by the telephone survey, while that for the third group cannot be estimated directly. During the on-site survey, the catch of the first group can be estimated directly as long as these anglers are identified, and this needs to be done regardless of whether they are fishing off-shore or in-shore, since effort estimates are calculated across both types of trip (note: this might not be correct, the telephone survey does ask whether a trip is in-shore or off-shore). The average catch of the second and third groups are estimated together for both off-shore and in-shore trips, and the combined effort of both groups is obtained by estimating the total effort of the second group in the telephone survey and applying a correction factor from the on-site survey to account for the third group.

The discussion above assumes that the license and ROLP status of anglers can be exactly determined during the on-site survey. This is of course not exactly true, because anglers might not know whether they are licensed and/or have the permit, or they might say they have it but it is not correct (e.g. license expired, belongs to spouse, outright lies, etc). Hence, it is still useful to supplement questions about license and permit compliance with a validation question for a subset of the intercepted anglers. The estimated validation rate can be used to perform sensitivity analysis for the license undercoverage correction and for the catch estimates for the ROLP group, and also constitutes a useful survey quality metric to track over time. One way to increase the efficiency of the validation sampling and to reduce its respondent burden is to perform the ROLP validation preferentially over the license validation: if an angler selected for validation claims to have a ROLP and a license, only check the ROLP. This also makes sense since the license frame undercoverage correction is only applied to the non-ROLP angler group.

## **3 Off-site survey**

### **3.1 Burden of response: charter captains**

Currently, up to five attempts are used to obtain data on trips (up to three trips each day of the week) from the charter boat captains. Multiple contacts are essential to maximize response rate, but survey research has shown that different types of communication approaches are generally more powerful to maximize response. In order to improve participation of charter boat captains for the surveys, a number of techniques used by survey researchers should be tested. Since most contacts are made by either phone or email, using the postal service to send a letter prior to calling may improve participation. Having a well-respected individual who is supportive of the project sign the letter would be ideal. The letter would describe the objective of the survey and emphasize the importance

of participation. An example of a letter with a number of ideas discussed at the June meeting is shown in Appendix A. The letter should be brief—probably not including all of the text provided in the Appendix A example. Confidentiality comments or details on the length/time should be delayed until the questionnaire is given to the boat captain.

With a population of 720 captains and the current level of response rates (30–40%) after mailing everyone each week, we obtain responses from approximately 250 captains. While this might look like a reasonable sample size, the problem is that this includes a significant burden on the target population, and leads to a sample that is possibly not representative, in the sense that the randomization is fully determined by the willingness to respond, and not by type of sampling. A proposal to solve both of these problems is to use the rotating panel design that is discussed in the next section.

### **3.2 Alternative design with rotating panels**

Given the response rates obtained in survey of boat captains, it would be beneficial to design the approach to select charter boat captains recognizing nonresponse as a component of the survey design. A panel survey observes repeated measurements taken on the same sampling units at different time points. Obviously, participants tire of providing high quality data and eventually drop out of surveys. In order to decrease the burden on boat captains to report each month, another approach LDWF may consider is adopting a rotating panel design. In a rotating panel design, new individuals (e.g., charter boat captains) are periodically sampled and asked to provide data for a fixed number of times, and then are removed from the study. The Census Bureau’s Current Population Survey uses a rotating panel design for their monthly surveys. Once a household is selected, the household reports for four consecutive months, then rotates out for eight months, and then returns back to report for an additional four months. At that point the household leaves the sample permanently (<http://www.census.gov/cps/methodology/>). New households rotate in each month to provide continuity but limit the burden on the respondent by rotating them off the panel after a fixed amount of time.

To make this specific for the LA Creel charter captain population, suppose there are 700 captains in all. Rather than asking most to respond to each wave, divide the captains into groups (say five random groups of 140 each). If the wave sample size requirement is about 300 sampled (not 300 responding), then groups 1 and 2 would be included in the first wave, for the next wave group 1 would drop out and groups 2 and 3 would be sampled. The pattern would continue with group 1 joining group 5 in a circular fashion, as shown in the following table.

	Wave						
Group	1	2	3	4	5	6	...
1	X				X	X	
2	X	X				X	...
3		X	X				...
4			X	X			
5				X	X		

With such a rotation scheme, the captains could be told up front that they would only be asked to respond for two consecutive waves and then would be not burdened until four waves later. This is just a rough example and the numbers and rotation could be revised to give the needed sizes and periods of time out of the sample.

### 3.3 Use of auxiliary information

A comment made during the meeting was that the data collection is so extensive in LA Creel that very short-term temporal effects can be identified from the effort data: federal season for red snapper, weather and tide events, etc.

The ability to identify such relationships from the data suggests that there may be opportunities to include auxiliary information into the estimation procedures, to gain precision at almost no additional cost. Weather, tide and regulation information has some explanatory power for effort, and may be available even when other information is difficult and costly to obtain (e.g., due to nonresponse). For example, if total effort is correlated with the count of “good fishing days”, determined from readily-available wind, precipitation and tide data, then these correlated counts can be used to improve the precision of the effort estimates without actually collecting more data. Even if the predictive relationships between auxiliary variables and effort are imperfect, the auxiliary data may be very useful in producing more efficient estimators using “model-assisted estimation.” Like direct survey estimates, model-assisted estimators are design-unbiased or nearly so, and allow for consistent variance estimation and proper confidence interval construction (even if the regression model is imperfect). If the regression model has reasonable explanatory power, the model-assisted estimator has smaller variance and narrower confidence intervals than the direct estimator that ignores auxiliary data.

It may be worth establishing predictive relationships now, given the currently extensive LA Creel data collection effort. In the future, if resources are less available for field data collection, the predictive relationships may be very helpful in maintaining precision of the estimates.

## 4 LA Creel compared to MRIP

We believe it was a useful exercise to go through the on-site MRIP questionnaire items in comparison to the on-site LA Creel questionnaire items, and similarly for the off-site MRIP and LA Creel instruments. This made clear the decision-making that has led to the structure of each program, including the trade-offs. We comment briefly on the comparisons here.

### 4.1 Incomplete trips

One notable difference between MRIP and LA Creel is with regard to the treatment of incomplete trips. MRIP asks unfinished anglers how long they intend to continue fishing, then uses that information to weight up the observed catch for the observed time fishing to the total angler catch for the total (estimated) time spent fishing. LA Creel, on the other hand, asks unfinished anglers to mail back a card specifying their catch during the unobserved time spent fishing, and replaces incomplete records with complete records if a card is returned. No other incomplete records are included in estimation. Clearly the two methods have their own strengths and weaknesses. One interesting possibility, that would give researchers some insight into the relative merits of the two methods, would be to add the MRIP “how long do you intend to continue fishing” item to the LA Creel survey instrument.

Because the LA Creel approach provides mailed-in responses for a subset of the non-responses, there is the potential to develop a suitable imputation method to fully account for the nonresponse due to incomplete trip reporting. This might be preferable to the current practice of discarding the incomplete records for which no card is returned. A simple version of such an imputation method might be a hierarchical hot-deck approach, in which an incomplete record is randomly matched to one that was returned with similar characteristics (site or region, main activity, weekday/weekend, species caught, etc), which becomes a “donor” record. The values from the donor are used to impute the missing incomplete trip characteristics. Strictly speaking, the hot-deck does not require that the donor be itself an originally incomplete trip, but if there are a sufficient number of potential donors among the returned cards, that might represent a better set of matches in the sense all the trips (donors and “recipients”) were originally incomplete.

### 4.2 Discards, releases, biological samples

In designing its new survey program, LDWF made the decision to exclude discards and releases and not to collect biological samples as part of the on-site interview protocol. These decisions were made partly to streamline the interview process, and in the case of

discards/releases, because there were concerns that the self-reported information was not sufficiently reliable. While these concerns are justified in our view, we recommend that LDWF staff develop formal sampling plans to obtain these types of information as well, to ensure that the data and resulting estimates are of the same level of statistical validity as the primary catch and effort surveys.

### 4.3 Treatment of charter captain catch

This is likely to be a relatively minor point in terms of the effect on the catch estimates, but it seems strange to us that the catch of the charter captain is included as part of the recreational catch for this trip, but the captain is not counted as an angler (presumably because he is not “recreating”). If this catch is a significant part of the total trip catch (we don’t know whether it is or not), this might lead to catch/angler estimates that are inflated. To the extent that this is only used to estimate total catch, this is not a problem, but other uses of the data related to e.g. economic analysis of recreational CPUE, might be adversely affected. A possible solution, if that is not yet done, would be to flag such trips in the data file, so that different users can perform the analysis that is appropriate for their purpose.

## 5 Other comments

In closing, we note that the methodology report contains a few technical errors that should be addressed. Some of these are typographical errors while others reflect misinterpretations of the relevant theory. For example, the statement (bottom of page 11) that “Variance calculation using Proc Surveymeans in SAS only accounts for among cluster variation” is misleading: the standard PSU-only variance approximation does account for both among-PSU and within-PSU variation, but not in an obvious way and not in an unbiased way. The estimator only uses the *empirical* variation among PSUs, but the *theoretical* variation among PSUs and within PSUs is included in this empirical variation. Under mild conditions on the design, the bias of the PSU-only variance estimator is extremely small.

Typographical errors include:

- Extra divisor of  $n_h - 1$  in equation [10], page 12.
- Missing overbars in  $\text{Cov}(\bar{X}, \bar{Y})$  in equation [18], page 13.
- Incorrect Goodman’s formula in equation [22], page 14.

All of the equations need to be checked carefully in the documentation and in any code that relies on the equations, in case the typos have been copied to or from the analysis programs.

## Appendix A: Example of letter sent to boat captains prior to a request for data.

Dear Captain Smith,

DATE

The Louisiana Department of Wildlife and Fisheries (LDWF) will shortly be contacting you [Comment: by phone? by mail? The mode of contact should be included here.] to collect data on recent charter trips you took. Data you provide are critical to the conservation and management plan for fisheries in our coastal waters.

I am writing now because we have found many people like to know ahead of time that they will be contacted. We would greatly appreciate you taking the few minutes needed to complete the survey.

Since there are few captains, we also are hoping that you are willing to participate in this survey monthly over the next four months. After that time, we will rotate you out of our sample and you will not be bothered for [Comment: This would be included in the case of a rotating panel design.]

If possible, we are hoping that you can answer the survey using the Internet [Comment: We did not recall if you are only collecting data by phone or over the web. This is an example of information to provide if collecting data over the Internet.] If people respond by using the Internet, the state saves money in these difficult economic times and obtains results quickly. To respond over the Internet go to the address bar in your web browser window and type the address you see below. Once there, you will be asked to enter your personal code to access the survey.

<http://mycatch.LDWF/captains>

Your Code is: ?????

A page with a picture of a fish will appear and you will then be prompted to your first question. Note that searching for the site through a search engine like Google or Yahoo will not take you to the survey. We realize that some do not have Internet access. If this is the case for you, we will send a paper version of the questionnaire for you to fill out and mail back to us if we do not receive an Internet response.

Your name was randomly selected from the list of all captains on file with LDWF. In order for the results of this study to truly represent catch information of our coastal water, it is important to hear from nearly everyone selected in the sample. If you have any questions about the purpose of this survey or how the data will be used, please call Joey Shepard at LDWF at (???)??-???? or by email at ?????.

Thank you for your help in managing Louisiana's fish resources.

Sincerely,

1. Term of Reference #9: Is the survey collecting data and producing information products that will meet the needs of the primary customers (stock assessment scientists and fishery managers)?

In a conference call (12/01/2017) with consultants, LA DWF, NOAA Fisheries Office of Science and Technology and Gulf States Commission representatives, SEFSC and Regional Office reviewers reiterated concerns about the use of telephone surveys for the collection of information on fishing effort for the following reasons: (a) evidence of a general decline in response rates for telephone based surveys, and; (b) the need for survey calibrations so that meaningful comparisons between telephone and mail based fishing effort estimates could be made. In addition to concerns about effort survey, there were also interest in continued expansion of the scope of the catch survey design to include (a) continued collection of reported information on released catch numbers by species and (b) that the State consider expanding the suite of target species (used by SERO to estimate directed effort). In the call, LADWF was acknowledged for its willingness to modify the survey sampling design to address SEFSC and SERO data needs. Comments provided by the SERO in response to Term of Reference #9 (11/13/2017) follow:

SERO review of LA Creel and addressing Terms of Reference #9: Is the survey collecting data and producing information products that will meet the needs of the primary customers?

The overall LA Creel survey program approach follows the standard MRIP model of effort and catch surveys. We have only a few comments on the LA Creel survey and they are presented below.

1. The effort data results are dependent on a phone survey. Nowadays response rate from telephone surveys are very low. Thus LA Creel could benefit from transitioning the phone survey to a mail survey. This change has potential to increase response rate, decrease nonresponse bias, and improve results. Additionally, if LA Creel used a ~~phone~~ [mail] survey the results would be more comparable to future MRIP estimates since MRIP is in the process of transitioning the effort component from a phone survey to a mail survey. If LA Creel did not want to switch the effort component from a phone survey to a mail survey then it would be helpful to have LA Creel develop conversion factors between phone and mail survey results.
2. We applaud the Louisiana Department of Wildlife and Fisheries staff for modifying LA Creel to collect target effort and discard information. This additional information is very useful to NMFS, and we recommend that LA Creel continue to collect information on target effort and discards in the future. We hope that the target effort and discard components are permanent additions to LA Creel and are not just run for MRIP certification.
3. In 2017 LA Creel started collection of discard information for 11 species. However, we would like to see an expansion of the species list to include all of the species managed by NMFS. For example, gag grouper (*Mycteroperca microlepis*), cobia (*Rachycentron canadum*), and vermilion snapper (*Rhomboplites aurorubens*) are not on the LA Creel discard list of species which results in no collection of their discards. Discard information for these three species, and the other species that NMFS manages, would be useful for both assessment and management.

# **Louisiana Department of Wildlife and Fisheries response to the August 16, 2015 LA Creel peer review report**

We sincerely appreciate the National Marine Fisheries Service's Marine Recreational Information Program's (MRIP) support in coordinating and funding a peer review of the Louisiana Recreational Creel Survey (LA Creel). Having an interactive, face-to-face meeting with an in-depth presentation of survey design and protocols proved to be very beneficial, ensuring the review committee fully understood the LA Creel program and that we fully understood the review committee's recommendations. Special thanks should be given to the MRIP contractors for their professionalism and patience—they provided a thorough review and clear and concise explanations of their recommendations. We hope that this type of process and interaction will continue into the future as we strive to provide fishery managers with the best data possible.

We would like to provide the following comments in response to the review (Attachment).

**Section 2.1** – We agree and will implement the reviewers' recommendation to treat the survey as a two-stage design with site-day-shift as the PSU and the angler trip as the SSU.

**Section 2.2** – We agree that moving from an average proportional probability site selection process to a distinct strata selection process will provide greater control over adequately sampling the various strata. We will implement this design change in January 2016.

**Section 2.3** – We understand that adjusting offshore fishing effort based on anglers not having a ROLP is inappropriate. We have already changed the LA Creel protocol to ask all anglers encountered through the intercept portion of the survey if they have a ROLP. By incorporating this change, we can assign anglers to the appropriate sampling frame.

**Sections 3.1 & 3.2** – We will keep the rotating panel alternative suggestion handy in the event we find reduced response rates from charter captains due to response burden. At this time, we plan to continue existing protocols.

**Section 3.3** – We are intrigued by the possibilities of using auxiliary information to improve survey estimates and hope to test some of these approaches in the future.

**Section 4** – We will not make any changes to LA Creel based on this section as it was only intended to compare the surveys in a general manner and a comprehensive evaluation of LA Creel will be conducted during the process of seeking MRIP compatibility.

**Section 5** – We have corrected all technical errors in the design document and thank the contractors for their thorough review.

Rob Andrews - NOAA Federal m  
to Dave, Gordon, John, Pres

Dec 15 (6 days ago)



Does anyone object to this language in the OT review of LA eel?

The Operations Team completed its review of the LA eel survey certification request. Generally, the LA eel dockside survey design is very similar to the design of the MRIP Access Point Angle Intercept Survey, which has previously been certified. In contrast, the LA eel effort survey is quite different from either the Coastal Household Telephone Survey or the MRIP Fishing Effort Survey. Notably, the LA eel effort survey provides greater temporal resolution than current MRIP surveys (weekly vs. bi-monthly) and is likely to be more efficient, as the sample frame is limited to licensed anglers. In contrast, LA eel may be susceptible to bias resulting from non-cove age of unlicensed anglers. LA eel attempts to adjust for unlicensed fishing activity by asking anglers who are intercepted in dockside surveys if they are licensed for saltwater fishing. Prior MRIP studies have demonstrated that anglers do not provide accurate responses to questions about license status. Consequently, LA eel cove age adjustments are susceptible to reporting errors.

Given the benefits and limitations of the LA eel survey design, the OTC recommends certification of the submitted design, including weekly stratification. In addition, the OTC recommends continued evaluation of the cove age of the license frame, as well as alternative options for accounting for fishing by unlicensed anglers.



Gordon Colvin - NOAA Affiliate  
to Ned, D ve, John, me, D vid

7 19 PM (18 hours ago)

Ned, the ESC's window for review of the OT's recommendation for LA Creel certification has closed. We received two responses, both indicating no objection to certification.

Therefore we can determine that the MRIP Executive Steering Committee has selected the LA Creel survey design for NMFS Certification, and we will now therefore complete preparation and clearance of the Certification Memo for the Record.

We have drafted the memo, which is in review in GCF. You will receive a copy of the current version under review to GCF shortly from Richard Cody. That second version responds to comments from Caroline Park and Michael McLemore on the first version. As soon as cleared by GCF, Richard will be coordinating moving the clearance folder through the process, beginning with your (or your acting's) sign-off.

Please let Richard and me know if you have any questions or concerns.

-Gordon

----- Forwarded message -----

From: Ned Cyr - NOAA Federal <ned.cyr@noaa.gov>

Date: Mon, Dec 18, 2017 at 9:43 AM

Subject: Requesting ESC Review of LA Creel Survey Certification Request

To: Bob Beil <rbeil@asmfc.org>, Bonnie Ponwith <Bonnie.Ponwith@noaa.gov>, "David M. Donlon" <dmdonlon@asmfc.org>, Dick Brumme <dbrumme55@gmail.com>, Doug Mecum <Doug.Mecum@noaa.gov>, Emily Meneses <emily.meneses@noaa.gov>, Kitty Simonds <Kitty.Simonds@noaa.gov>, Miguel Rolon <miguel\_rolon\_cfm@yahoocom>, Ned Cyr <Ned.Cyr@noaa.gov>, Randy Fisher <randy.fisher@psmfc.org>, Russell Dunn <russell.dunn@noaa.gov>  
Cc: David Van Voorhees <D.V.Voorhees@noaa.gov>, Gordon Colvin <Gordon.Colvin@noaa.gov>, David Detlor <D.vid.Detlor@noaa.gov>, David Brumme <david.brumme@noaa.gov>, Richard Cody - NOAA Affiliate <richard.cody@noaa.gov>, Preston Pate <ppate@ecrr.com>

MRIP ESC and Participants,

The Operations Team has completed its review of the LA Creel survey design and recommends Certification, with some additional recommendations for continued follow up. Preston Pate's summary of the OT review follows

"The Operations Team has completed its review of the LA Creel survey certification request. Generally, the LA Creel dockside survey design is very similar to the design of the MRIP Access Point Angler Intercept Survey, which has previously been certified. In contrast, the LA Creel effort survey is quite different from either the Coastal Household Telephone Survey or the MRIP Fishing Effort Survey. Notably, the LA Creel effort survey provides greater temporal resolution than current MRIP surveys (weekly vs. bi-monthly) and is likely to be more efficient, as the sample frame is limited to licensed anglers. In contrast, LA Creel may be susceptible to biases resulting from non-coverage of unlicensed anglers. LA Creel attempts to adjust for unlicensed fishing activity by asking anglers who are intercepted in dockside surveys if they are licensed for saltwater fishing. Prior MRIP studies have demonstrated that anglers do not provide accurate responses to questions about license status. Consequently, LA Creel coverage adjustments are susceptible to reporting errors.

Given the benefits and limitations of the LA Creel survey design, the OT recommends certification of the submitted design, including weekly stratification. In addition, the OT recommends continued evaluation of the coverage of the license frame, as well as alternative options for accounting for fishing by unlicensed anglers."

Please advise by COB Wednesday, Dec. 20 whether you have objections or comments regarding Certification. The LA Creel design and response to review comments are attached to assist in your review.

Thanks,

Ned

2 Attachments

