

# California Recreational Fisheries Survey (CRFS)

## A Review of the New Sampling Methods for 2004

BY

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## CALIFORNIA RECREATIONAL FISHERIES SURVEY (CRFS) SAMPLING METHODS

This new recreational sampling program covers all modes of marine fishing in California. The CRFS is funded by state funds and RecFIN funds. CRFS utilizes California Department of Fish & Game (CDFG) employees and Pacific States Marine Fisheries Commission (PSMFC) employees as field samplers and supervisors. Catch and effort estimates are made for six geographic areas of the coast and by integration of seven sampling and estimation methods:

### A. **Primary Private Boat Sites [PR1]** (90% of catch of important species occurs here) – Each site sampled 8 days per month

*Effort Survey:* Counts all boats returning from fishing and trailer counts of trailers remaining on site at the end of the day. Angler effort is from the count of anglers per fishing boat. Fishing vs. non-fishing vessels, anglers per vessel and catch per vessel are applied to remaining trailers at the end of the sampling day.

*Creel Survey:* Samples most fishing boats for the day. Sample unit is the boat. Data elements collected include target species, species caught, length & weight, angler data, area of catch, and fish discarded by the angler.

*Catch Estimates:* Vessel counts and total anglers from sampled days are expanded to all days of the month based on weekday and weekend samples. CPUE by species from the creel survey for all days sampled is multiplied by total angler trips to estimate total catch for the month by six geographic areas for all the PR1 sites in each geographic area.

### B. **Secondary Private Boat Sites [PR2]** (10% of catch of important species occurs here) - Sites sampled in a roving clusters 3 days per month.

*Effort Survey:* Roving instantaneous counts of trailers at these sites and monitoring of changes of effort while on-site.

*Creel Survey:* Samples fishing boats completing their trips at the site. Sample unit is the boat. Data elements collected include target species, species caught, length and weight of fish, anglers/boat,

angler data, area of catch, duration of trip, and fish discarded by the angler.

*Catch Estimates:* Vessel and trailer counts and total anglers from sampled days are expanded to all days of the month based on weekday and weekend samples. CPUE by species from the creel survey for all days sampled is multiplied by total angler trips to estimate total catch for the month by six geographic areas for all the PR2 cluster sites in each geographic area.

### **C. Private Boats at Night and at Private Access Sites**

*Effort Survey:* The Angler License Telephone Survey (G) is used to estimate angler trips by trip type from private or locked marinas or private waterfront homes and night fishing.

*Creel Survey:* Trips by trip type from the Primary Boat Sites (A) and the Secondary Boat Sites (B) are combined to estimate the CPUE by time period, geographic area and water body fished.

*Catch Estimation:* CPUE by trip type, time period, geographic area and water body are multiplied by matching trip estimates to get catch estimates by species.

### **D. Commercial Passenger Fishing Vessels (Party/Charter Boats)**

*Effort Survey:* Weekly telephone survey of vessel skippers. A 10% sample of all active boats selected at random each week. Skippers provide data on trips taken for the week including the number of anglers carried each trip. Vessel trip samples, field validation rates and an adjustment for boats not included in the telephone survey are used to estimate total angler trips for the month.

*Creel Survey:* On-board samplers ride most passenger fishing boats to sample anglers and catch for species, lengths & weights, area of catch, discards and angler specific data.

*Catch Estimation:* The CPUE from the creel survey is multiplied by total trips to get total catch estimates by species and catch category, including discarded catch weight estimates.

## **E. Beach and Bank Fishing**

*Effort Survey:* The Angler License Telephone Survey (G) estimates total angler trips for all access, day and night fishing by geographic area, time period and water body fished.

*Creel Survey:* Roving access point survey at publicly accessible beaches during daylight hours. Individual angler interviews collect species caught, lengths and weights, biological and angler data, and discards.

*Catch Estimation:* CPUE by trip type, time period, geographic area and water body are multiplied by matching trip estimates to get catch estimates by species.

## **F. Man Made Structure Fishing**

*Effort Survey:* Roving instantaneous counts of anglers at access points with monitoring for changes in effort while on-site is used for estimation of effort. The Angler License Telephone Survey (G) is used to estimate the private access and night fishing effort.

*Creel Survey:* Interviews of anglers at completion or during their trip to collect species, lengths & weights, target species, angler and biological data, and discards.

*Catch Estimation:* CPUE by trip type, time period, geographic area and water body are multiplied by matching trip estimates to get catch estimates by species.

## **G. Angler License Telephone Survey**

*Effort Survey Only:* This survey of licensed anglers estimates fishing effort by trip type, time period, geographic area and water body fished for all modes of fishing for trips taken in daylight or night or by private or public means of access. The estimates are used for total Beach/Bank effort estimates and for the effort from private access sites and night fishing in all modes except for CPFV (D), which already includes night fishing and chartered passenger trips. This is a monthly survey of licensed anglers that captures saltwater angler trips taken the previous month.

**CALIFORNIA RECREATIONAL FISHING SURVEY (CRFS) UPDATE**  
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**CRFS Strengths:** CRFS was designed to specifically address data needs that the Marine Recreational Fisheries Statistical Survey (MRFSS) was unable to provide for recreational fisheries management in California. Several significant changes in sampling methodology were initiated to improve the accuracy and precision of the collected data as described above. These have provided for the following improvements:

1. Catch estimates are now stratified into six geographic regions of California as compared to two regions under MRFSS.
2. Effort estimates for all modes except CPFV and beach/bank anglers are now made by direct daily field counts of anglers at the fishing sites as compared to the household telephone survey at two-month intervals under MRFSS. This direct count method was used by the California ocean salmon project and has produced estimates with a higher degree of precision. Therefore, it was implemented in CRFS sampling for the entire recreational private boat fishery and man made structure anglers.
3. The CPFV estimates continue to use the direct sampling of 10% of all skippers each week began in 2001 to profile angler trips taken for estimation of total effort. Field samplers ride the CPFV's to examine angler catch.
4. Catch and effort estimates are made monthly as compared to the two-month periods under MRFSS.
5. Field sampling rates of anglers at fishing sites under CRFS are in excess of 3 times the MRFSS field sample sizes.
6. Effort and Catch estimates are computed by trip type and mode under CRFS as compared to only by mode under MRFSS.
7. Difficult effort estimates for some modes (beach/bank anglers and boat anglers returning to private access areas and taking trips to Mexico) are estimated by means of a new monthly angler license database phone survey. The license database effort survey, while not used for CPFV, Private Boat and Pier and Jetty angler effort estimates, can be used as a tool to verify the effort estimates made for these modes by direct field counts.
8. The MRFSS household phone survey was discontinued in January, 2004 as the method for estimating fishing effort.

**Field Data Collection:** Preliminary results from the first six months of CRFS sampling for 2004 showed that field sampling increased dramatically over MRFSS sampling in 2003. A total of 44,971 CRFS anglers was interviewed at fishing sites in the field this year between January-June versus 13,594 MRFSS anglers between January-June last year. This is a 231% increase in the number of angler interviews. It is projected that for the year as a whole in excess of 100,000 angler will be sampled. During 2004, CRFS

samplers examined 45,579 fish during January-June field sampling, while during the same period in 2003, MRFSS samplers examined 17,112 fish. This is a 166% increase in the number of fish examined. This will contribute to greater accuracy in estimating catch, especially for overfished species or fish that are rarely taken.

**CRFS Challenges:** The program still encounters challenges in full implementation, although these are becoming fewer. Several thousand lines of programming code has been written and checked to accommodate the CRFS sample frame and catch estimation programs. California Department of Fish and Game (staff) is working closely with Pacific States Marine Fisheries Commission (PSMFC) staff to assure that coding is correct and that correct estimates are made. The Department is working diligently to review preliminary estimates from the new program before releasing catch and effort numbers for management consideration.

**Angler License Database Phone Survey.** The Department implemented an angler license database phone survey in January to estimate fishing effort for beach/bank anglers and private boats returning to private, inaccessible access sites. This phone survey is done on a monthly basis. The angler license phone survey methodology is consistent with the angler license phone surveys used by Oregon for inland boat and shore effort and in Washington for Puget Sound boat effort which began in mid-2003 under RecFIN. In California, the angler license database represents one angler name and phone number for each 20 licenses sold from books of 20 licenses. Initial response by license vendors returning angler name and telephone number cards from each license book to the Department was poor. However, during early April, after each vendor was contacted by telephone and sent a follow up mailing, compliance increased dramatically. Initially, the Department was receiving 500 names and numbers per month. Currently, we are receiving over 2,500 cards per month. Because of the initial low vendor response, CRFS did face a challenge in having an adequate license database upon which to make telephone calls during the first part of this year. Despite this low vendor response, the distribution of returned cards reflects the distribution of license sales in past years. At the current rate of 2,500 new entries per month, adequate numbers are available to insure angler contacts are at planned levels. License books will be modified in 2005 to further accommodate the collection of angler names and telephone numbers. With similar sample sizes, angler contacts from the angler license database are greatly increased over the MRFSS household survey where most households contacted contained no anglers.

CIC Research Inc. has been contracted to conduct the angler license phone survey portion of the CRFS. This survey only provides effort estimates for saltwater anglers fishing from private boats returning to private access sites and effort estimates for beach/bank anglers. Unlike the MRFSS household survey of past years, the CRFS angler license effort survey is based on a sample frame of annual resident, annual non-resident, 1-day, 2-day and 10-day recreational California fishing license holders. The sample frame is provided through the License and Revenue Branch of the Department and is processed at CIC Research. The telephone survey is conducted on a monthly

basis and uses one-month recall of saltwater fishing trips. All modes of saltwater fishing are considered in the CRFS survey questions. Information collected includes fishing trip duration, area fished, public vs. private access to fishing site, distance from shore, targeted fish species, fishing methods, as well as fishing effort in waters of Mexico. In 2004 at least 10,000 interviews will be conducted using computer assisted telephone interviewing techniques. The collected data are edited and checked for quality assurance. Electronic data are provided to the PSMFC to be used with field (creel) survey information to generate monthly estimates of fishing effort and catch for beach bank modes and private boat effort returning to private access sites.

**Preliminary Results of CRFS Telephone Survey:** For the period from January through June 2004, CIC Research called 6,987 telephone numbers out of the 9,427 obtained from the Department's angler license base. A total of 4,101 anglers provided interviews which could be used to estimate angler effort. Of the anglers contacted, 862 (21%) said they had fished in saltwater during the prior month. Since January through June represents only 50% of the sample frame, and the sample frame is growing substantially, it is fair to assume that by the end of 2004, over 2,300 saltwater anglers will be contacted from about 10,000 calls. The license-based telephone survey will not be used to estimate CPFV (party/charter), launch ramp or pier angler effort, but will be used as a tool to verify the effort estimates produced in these modes through direct field counts.