

Recreational Fishing Catch and Effort Data Collection



NOAA FISHERIES

Power of Partners

Data collection is made possible through partnerships we maintain with the coastal states and anglers. We work closely with states to design, implement and conduct marine fisheries statistics data collection programs and to integrate those data into a single data management system that will meet the needs of fishery managers, scientists and fishermen.

All our surveys rely on the voluntary participation of anglers. Part of the angling tradition is a deep-seated ethic of conversation and stewardship. The information anglers volunteer is the cornerstone of our ability to sustainably manage our fishery resources.

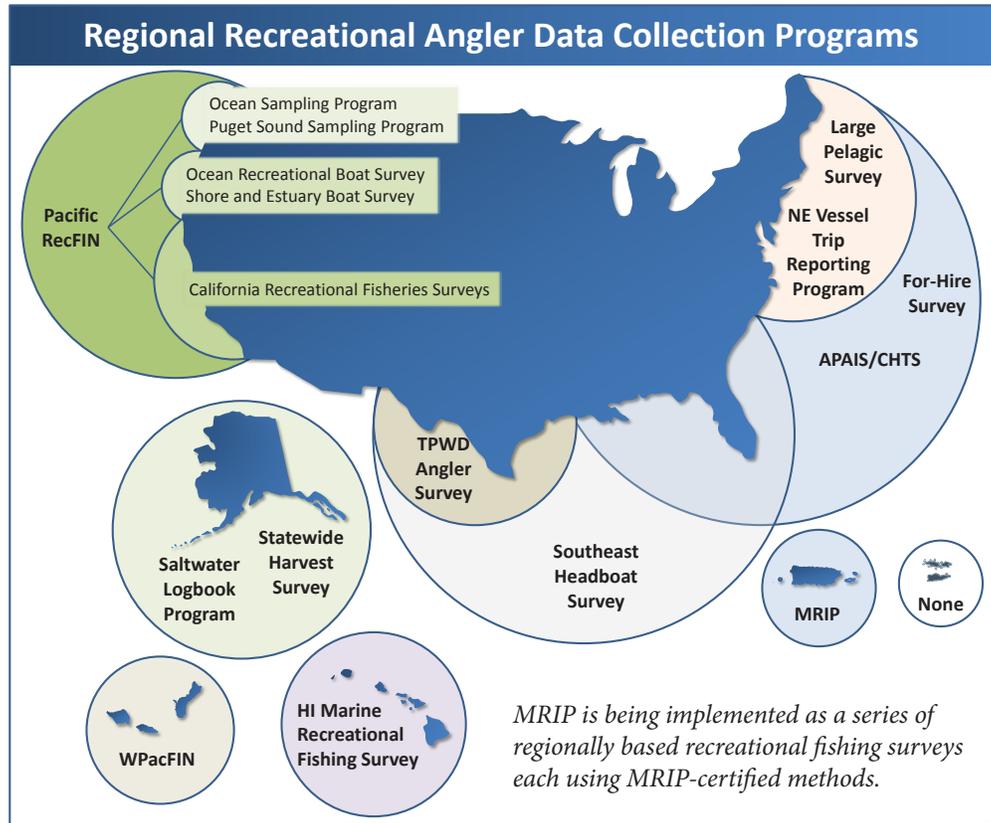
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Counting Catch and Effort

MRIP collects information from recreational anglers about how often they're going fishing and what they're catching using a system of surveys. Just like polls that predict such things as presidential elections within a few percentage points, NOAA Fisheries surveys can determine total catch by surveying a few thousand saltwater anglers.

Sampling is based on mathematical probability theory, which may sound complex, but the basic concept really isn't. George Gallup, founder of the famous Gallup Poll, once described sampling with a simple analogy; he said sampling a population was like taste-testing soup. One spoonful can reflect the taste of the whole bowl, if the soup is well-stirred. In other words, a sample can accurately reflect a much larger population so long as the sample is representative of the whole.

When it comes to surveying saltwater anglers, NOAA Fisheries randomly selects sites in proportion to their expected fishing activity and sends personnel there to interview anglers about their catch. This broad representation is what "stirs the soup." In addition to being representative, the sample size also has to be large enough to derive the most statistically accurate estimates.

To gather information about the number of trips anglers are taking and what they're catching on those trips, we use a number of specialized surveys tailored to the

Making Improvements

The Marine Recreational Information Program, or MRIP, is constantly working to update recreational data collection and reporting methods to keep pace with emerging science and the information needs of our users.

A major focus for MRIP since its launch has been making improvements to our angler catch surveys to remove potential sources of bias – errors that can result from uncontrolled variables or untested assumptions – from our estimates. Changes we rolled out in 2013 include:

- **Sampling trips that end at night** so we do not have to assume night catch rates are the same as daytime rates.
- **Sampling from specified locations and time blocks** so that we can apply the proper calculations to sampler data based on where samplers were assigned and when.
- **Launch of a new online site register** which can be updated more frequently and used to make better sampling assignments.

Moving forward, MRIP priorities include:

- Working in each Region to scale the improvements we've made to address needs for greater precision and timeliness, and smaller geographic areas.
- Continuing to determine how to most effectively use electronic reporting and make other improvements in our for-hire estimates.
- Moving away from random-digit dialing as a way of gathering effort data, and using license and registration information as one way to reach anglers.

unique qualities of the fishery. These different surveys allow us to gather a lot of data very efficiently, which ultimately results in more reliable catch and effort estimates.

Atlantic and Gulf Coasts Coastal Household Telephone Survey

The Coastal Household Telephone Survey (CHTS) collects fishing effort data from shore and private boat anglers. Because the majority of shore and private boat fishing trips are taken by individuals who live in coastal areas, the CHTS is limited to households located in coastal counties. Correction factors derived from the intercept survey are used to account for trips taken by non-coastal residents and out-of-state anglers, as well as anglers who live in households without land-line telephones. Data collection occurs during a two-week period at the end of each two-month sample period (or “wave”). This annual schedule has been maintained since the survey inception in 1979, although not all states have been surveyed in all years. The CHTS specifically excludes Texas and Alaska, which conduct their own recreational fishing surveys.

The CHTS utilizes a computer-assisted, random-digit dialing (RDD) approach to contact full-time residential households. Contacted households are screened to determine if any household members participated in marine recreational fishing during the previous two months, and each active angler is asked to recall the number of saltwater fishing trips that were taken during the wave, as well as provide details about each trip. Institutional housing, businesses, wireless phones and pay phones are excluded from the survey. Within each state, sample is allocated among coastal counties in proportion to household populations. For each coastal county, data from the CHTS are used to estimate the average number of trips per household, which is then expanded by the county household population to estimate total trips. County estimates are summed and then expanded by intercept survey adjustment factors to produce state-level effort estimates. All estimates are computed by fishing mode, then all mode-level estimates are aggregated to obtain the total statewide estimates.

Access Point Angler Intercept Survey

The Access Point Angler Intercept Survey (APAIS) is conducted at public marine fishing access points (boat ramps, piers, beaches, jettys, bridges, marinas, etc.) to collect individual catch data, including species identification, total number of each species, and length and weight measurements of individual fish, as well as some angler-specific information about the fishing trip and the angler's fishing behavior.

The interviews are conducted in person by trained field staff, and the sites and dates are selected by a proportional random selection process in which those sites that have the most activity within a sample month will be selected for interview collection most often. The sampling schedule is independently determined by fishing mode (shore fishers, charter boat fishers, or private or rental boat fishers) and target sample sizes are based on statistical power and available funds. From these angler interviews, a catch per trip estimate (CPUE) can be made for each type of fish encountered, either observed or reported. These CPUE estimates are combined with the effort estimates by sampling stratum to produce the catch and harvest estimates. Questions are also asked that provide the information to adjust for non-coastal residents' effort, fishing activity by anglers living in households without traditional land-line telephone service, and charter boat anglers fishing from boats that are not in the FHS sample frame for the wave.

For-Hire Survey

The For-Hire Survey (FHS) was developed to resolve undercoverage of charter and party boat angler effort by the CHTS. The CHTS does not capture the majority of for-hire angling effort in most states because most anglers who take trips on charter and head (or party) boats do not live in coastal counties. A series of pilot studies to obtain fishing effort information directly from charter boat operators was conducted in North Carolina and Maine, then throughout the Gulf of Mexico sampling region (Louisiana-West Florida). After several years of testing, the FHS was implemented as the official methodology for obtaining Gulf of Mexico Charter boat effort in January, 2000. This FHS design was then pilot tested against a logbook program and the CHTS in South Carolina in 2000 and included headboats as well as charter boats. The FHS was implemented for all Atlantic and Gulf Coast states from Maine through Louisiana in January 2005. It overlaps other charter and headboat monitoring programs, including the Northeast (Maine-Virginia) Vessel Trip Reporting Program (VTR), the Southeast Regional Headboat Survey (SERHS), various state logbook programs and the ongoing CHTS.

The sampling unit for the FHS is the individual for-hire vessel. The sample frame is constructed from a comprehensive directory of for-hire boats for all states from Maine through Louisiana. The vessel directory consists of a vessel identifier (vessel name or registration number); the name, address and telephone number of an identified vessel representative (captain or owner); as well as a variety of accessory information, such as eligibility, activity and cooperation status. Sampling is stratified by vessel type (headboat and charter boat), state and week, within each two-month sampling wave. Currently, vessels are sampled at a rate of 10 percent within each stratum, with a minimum sample size of three vessels. Data collection is conducted on a weekly basis during all weeks within each wave, and is completed during the week following the specified sample week of fishing. Respondents are asked to report vessel fishing activity for the prior week, and then to profile each for-hire fishing trip. Information obtained from each trip includes area fished, number of anglers who fished, hours of actual fishing activity, method of fishing and target species, if any. Advance notice of selection is mailed to each selected vessel representative and alternative reporting modes are provided for the Atlantic Coast respondents, including an interactive website, a fax number and a phone contact for respondent-initiated interviewing. Effort estimates are produced from the average number of angler trips per vessel-type per week and the number of vessels per vessel-type in the sampling frame. Adjustment factors for active for-hire fishing boats that are not in the sample frame (new to fleet, no contact information known, etc.) are produced from field intercept survey questions and applied to the raw effort estimate.

Quick Guide to Estimating Recreational Fishing Activity

1 Effort *Number of fishing trips*

In **shore or private boat mode**, randomly selected fishermen are surveyed by phone or mail about their fishing activity.

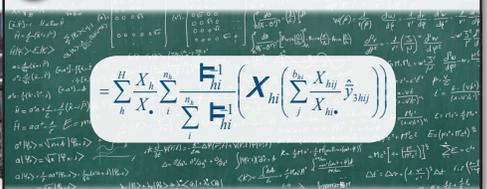
In the **for-hire** sector, vessel representatives provide effort information by boat.

2 Catch *What individual anglers caught and discarded*



Shoreside samplers observe and record catch information from fishing trips.

3 Estimate *Total number of fish caught*



After validating the data quality, scientists use statistical methods to make estimates.

The Large Pelagics Survey (LPS)

The Large Pelagics Survey (LPS) is specifically designed to collect information on recreational fishing directed at large pelagic species (e.g., tunas, billfishes, swordfish, sharks, wahoo, dolphin and amberjack). Offshore trips targeting large pelagics typically make up a relatively small proportion of all recreational fishing trips. Using this specialized survey design allows for higher levels of sampling large pelagic trips, which ultimately improves estimates of catch and effort for large pelagics. The LPS has been conducted since 1992 from Maine through Virginia. The LPS includes two independent, complementary surveys that provide the effort and average catch per trip estimates needed to estimate total catch by species.

The **Large Pelagics Intercept Survey (LPIS)** is a dockside survey of private and charterboat captains who have just completed fishing trips directed at large pelagic species. This survey is conducted at public fishing access sites that are likely to be used by offshore anglers, and is primarily designed to collect detailed catch data.

The **Large Pelagics Telephone Survey (LPTS)** collects fishing effort information directly from captains holding Highly Migratory Species (HMS) permits (required by NOAA Fisheries to land these species). The LPTS is stratified by permit category: HMS Angling and Atlantic Tunas General permits and HMS Charter/Headboat permits. Data from the phone survey are used to estimate the total number of boat trips on which anglers fished with rod and reel or handline for large pelagic species. The LPTS differs from the standard marine recreational fishing surveys mainly in estimating effort and catch by *boat*, rather than by angler. Information on the number of anglers per boat-trip is collected by the LPIS, but the primary unit for all estimates is the boat-trip, or boat-day of fishing. Additional information collected during LPIS and LPTS interviews include target species, tournament participation, fishing method used, fishing location, water depth and water temperature.

Highly Migratory Species (HMS) Catch Card Census Program

NOAA Fisheries has a rule in place that requires mandatory reporting of all recreationally landed billfish, swordfish and bluefin tuna. In all but two states these species are reported by HMS anglers and captains either online or by phone. The states of Maryland and North Carolina currently conduct recreational HMS catch card census programs with funding and technical support from NOAA Fisheries. All billfish, swordfish and bluefin tuna landed recreationally in these states must have a landings tag attached prior to removal from the vessel (or from the water in the case of trailered vessels). Captains or operators of permitted vessels are required to complete a catch card for each individual billfish, swordfish and bluefin tuna landed in exchange for a landings tag. Catch cards are available at designated reporting stations located in bait and tackle shops, marinas and other locations where billfish and bluefin tuna are landed. Data collected from HMS catch card census programs are used to track in-season landings and monitor and manage these highly valued recreational fisheries.

Puerto Rico and Hawaii

In Puerto Rico, the standard approach outlined above is used to develop estimates for all three fishing modes, including charter boats. In Hawaii, the standard approach outlined above is used for the shore and private boat modes; charter boats are required to report their catch and effort through a state-managed logbook/trip reporting system.

Pacific Coast

As part of the Recreational Fisheries Information Network, or RecFIN, the states of Washington, Oregon and California each operate a number of angler survey programs that include intercept, phone and mail components. More information about data collection on the Pacific Coast at <http://www.psmfc.org/program/prog-3?pid=17>

Alaska

The State of Alaska conducts an annual mail survey to gather information about private boat and shore fishing. They also administer a census logbook program for their for-hire fisheries. More information about data collection in Alaska at www.adfg.alaska.gov/sf/sportfishingsurvey/.

Texas

The Texas Parks and Wildlife Department has conducted their own survey of marine recreational fisheries since 1974. More information about data collection and access estimates for Texas at www.tpwd.state.tx.us/business/about/divisions/coastal_fisheries/.