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Go to page two →

As they enjoyed a day of fishing on San Diego Bay, these anglers became part of the California Recreational Fisheries Survey. Surveyors are interviewing anglers at piers, beaches, launch ramps and aboard commercial passenger fishing vessels. The information, along with catch information and telephone surveys, help the Department of Fish and Game estimate total catch by recreational anglers.

Photo by Alex Vejar

Fishing For Data

Two Studies Offer DFG's Marine Region New Insight in Long-term Sustainability of Ocean Fisheries

"When I was growing up, my Dad had a 40-foot sport fishing boat," John Christie recalls. "I remember fishing south of the Ventura Pier and I can't remember seeing another boat. Five years ago, up by the rigs by Santa Barbara, there were probably 80 boats up there." Christie has been fishing for 45 years and has seen the changes in fish populations along California's coast. It's one of the reasons why he volunteered to participate in one of the surveys conducted by the Department of Fish and Game to help sustain the state's ocean fisheries. He says the logbook study that he helped with was easy. He kept track of the date and time of his fishing trips, where he left from, where he went and what he caught. "It probably took me 10 minutes to fill out the form," he says. "I like helping."

By Donna Matrazzo

At one of the marinas in San Diego Bay, surveyor Joshua De Los Santos monitors the number of recreational boats for the marina field study. The study uses both DFG and Pacific States Marine Fisheries Commission samplers to estimate fishing effort at locations where samplers have no direct access to anglers.

Study 1 Saltwater Anglers Logbook Study

The Department of Fish and Game recruited more than 200 anglers to participate in the Saltwater Anglers Logbook Study in 2005. Each of the anglers recorded the types and numbers of fish they caught. On average, the study indicated that trips from private marinas involved bigger boats, more anglers, longer trips and greater distances from shore.

Initially, the resulting data proved too sparse for scientists to make valid statistical inferences. However, the study indicated there may be significant differences between anglers who depart from private marinas versus those from public launch sites. For example, it was assumed that catch rates from trips starting at public launches would equal those from private marinas. Instead, differences showed up in the catch rates between certain species.

To better understand the differences between public and private launchings, DFG initiated a new logbook study in 2008. This time more than a thousand Southern California saltwater anglers volunteered to participate.

Connie Ryan, a senior biologist with DFG's Marine Region, points out that today, with more than four million fishing trips each year along California's marine and estuarine waters, accurate and detailed information is needed. She says, "When you have nearly a million people a year saltwater fishing, the catch adds up."

California and other Pacific Coast states are leading the way in collecting detailed saltwater fisheries data. Six years ago a collaborative effort between resources agencies, the Pacific States Marine Fisheries Commission and the fishing industry created the California Recreational Fisheries Survey (CRFS) to provide estimates of marine recreational angling trips and fish catch. The information is necessary to manage marine resources in a sustainable manner.

The goal of the surveys is two-fold: protect the long-term health of fish populations while maximizing fishing opportunities. Accurate estimates are particularly necessary for evaluating management measures like size and bag limits, closed areas and seasons, and monitoring species with annual harvest limits or quotas.

"The more we know about how many fish are or are not there—in part, evidenced by what people are catching—the better decisions we can make because we have the data to back them up," says Joe Weinstein, a DFG statistical methods analyst with the Marine Region.

The scope of work involved in collecting sample data from the number of fishing trips remains daunting. The survey covers all marine and estuarine waters along the California coast, from border to border and offshore islands. Anglers fish from beaches, banks and piers. They navigate

in private, rented and party vessels, and they launch their boats from hundreds of public and private marinas, ramps and shorelines. They catch more than 150 different species that surveyors need to identify, as well as measure and weigh.

Day and Night, What's the Catch?

Beginning in 2004, the CRFS commenced with three surveys. A field survey gathers catch and angling trip information during daylight hours from more than 400 public sites and commercial passenger fishing vessels, known as party or charter boats. A telephone survey samples party boat skippers to estimate effort. A second telephone survey reaches a sample of licensed anglers in boats returning to private marinas, or fishing at night. Together, the information offers estimates of total catch and angling trips.

The CRFS data and estimates are part of a number of data sources—for example, historical commercial landings, research surveys and larval abundance information—used to assess fish stocks and set harvest limits.

In some cases, regulations may be modified or a fishery closed based on the data. In 2004, DFG appealed to anglers to avoid widow rockfish. Fisheries experts based the request on data collected through the surveys. The call for voluntary angler cooperation prevented a mid-season restriction.

Another example came in 2008, when CRFS data and resulting projections indicated the yelloweye rockfish catch would exceed the harvest limit. First, modified depth restrictions were imposed to avert a fishery closure. Later in the season, a portion of the groundfish fishery was closed.

In general, though, the data can be a boon to fishing opportunities, says Ryan, the CRFS coordinator.

"We are constantly keeping track of the species by keeping track of the numbers," she says. "The more precise we can make it, the closer we can call it. We can keep a fishery open longer with confidence that we won't go over the limit."

And the information doesn't always lead to tighter restrictions. For example, in 2006, the season for California scorpionfish, commonly known as sculpin, was extended in southern California when a stock assessment indicated that the population could support a longer season. That same year, some recreational groundfish seasons were extended and most depth restrictions relaxed because survey data showed that those changes would not pose a threat to over-fished species.

Can More be Learned?

"The question is, can we do better?" asks Ashok Sadrozinski, a DFG marine fisheries

Private Marina Field Study 2 Study

The Private Marina Field Study took on a formidable task, explains Ashok Sadrozinski, a Department of Fish and Game marine fisheries biologist. In Southern California, there are an estimated 33,000 boats moored at private sites. Those sites include marinas and private docks associated with houses, apartment buildings, clubs and more. Marinas are sometimes clustered in convoluted waterways, difficult to differentiate and reach and where there may not be one common point of egress.

In the 11-month marina field study, which wrapped in August 2009, observers were stationed at selected private marinas to collect the necessary information.

Michelle Arthur was one of the observers who spent the day with eyes glued to a set of binoculars. She kept notes of everything and tallied everything on her clipboard. "I observed incoming boat traffic and recorded the number of boats that appeared to be returning from a recreational fishing trip," she said.

The work felt valuable, Arthur says. "It gives us data that can be used in many ways."

CRFS FIELD SAMPLE DATA COUNTS

The chart at right shows the number of anglers interviewed and fish examined by field samplers for the California Recreational Fisheries Survey between 2004 and 2008. The information helps experts estimate fishing effort and numbers of finfish caught in California's ocean and estuarine waters.

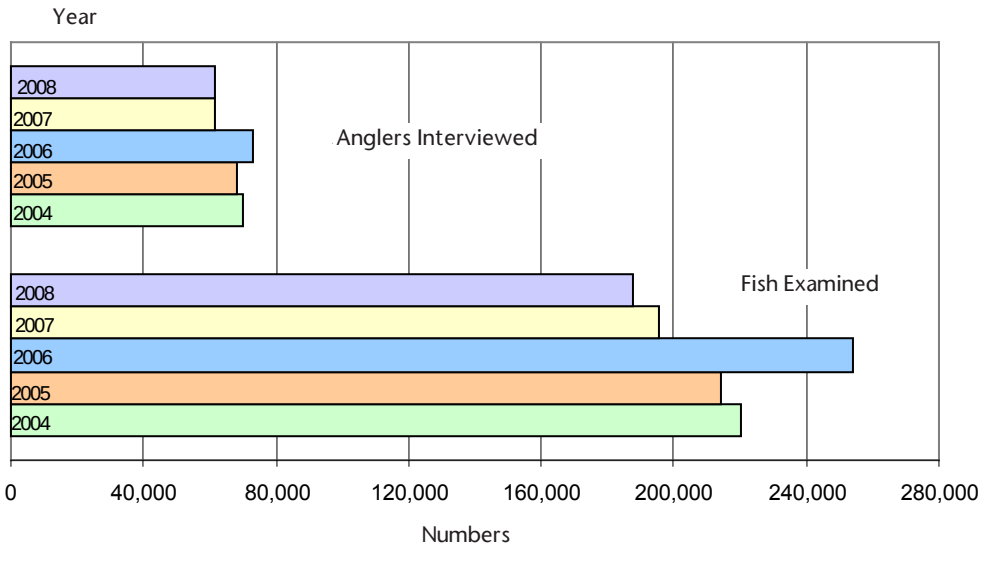

Photo by Molly Roberts

As anglers return to Shelter Island marinas in San Diego Bay, DFG associate biologist Alex Vejar is able to maneuver his vessel and verify the number of anglers aboard from observations made by land-based samplers. California works as part of a collaborative effort between resources agencies, the Pacific States Marine Fisheries Commission and the fishing industry to provide estimates of marine recreational angling trips and fish catch. The information is necessary to manage marine resources in a sustainable manner.

biologist. "Can we learn more?"

Sadrozinski says two concurrent studies in Southern California are addressing those questions. Both studies aim to generate better methods for observing and estimating catch rates for private-access angling trips. Anglers who return to private-access sites account for a significant part, about half, of all private and rental boat trips in southern California.

"There's a mission to collect the best data and continually improve the estimates of recreational fishing," Sadrozinski says. "We are continually pursuing that end."

The Private Marina Field Study tested methods for collecting and estimating fishing effort for anglers in boats that return to private-access sites. The other study, the Saltwater Angler Logbook Study, should determine whether catch-rates are equal between public and private-access sites, as the CRFS has assumed.

> "Of course, I'm a fishing nut and I love it. My son's a fisherman and I want fishing to carry on to people in the next generation."
> Don Moore, boat owner

Sponsored by DFG and the Ocean Protection Council, both studies are limited to Southern California because of the region's greater proportion of private access sites, its larger coastal population and its year-round fishing opportunities.

Once, the oceans seemed endlessly bountiful and the disappearance of populous species nearly unimaginable. But today, that outlook may be different. It seems those who have fished for decades have stories of how things have changed.

When DFG approached boat owner Don Moore to join the logbook study, he jumped at the opportunity immediately. Volunteers for the logbook study were given a journal with monthly reporting forms, envelopes, instructions and fish identification guides.

The 81-year-old Moore, a former owner of a hunting and fishing lodge in the Sierras, still fishes three or four times a week. He says he switched to saltwater fishing when he could no longer see the smaller flies of freshwater angling.

"Of course, I'm a fishing nut and I love it," Moore says. "My son's a fisherman and I want fishing to carry on to people in the next generation."

Weinstein, the statistical analyst, says the anglers and boat owners who kept records proved invaluable to the study. "I think the volunteers realized they were part of a useful applied science endeavor that will have actual benefits," he says.

Donna Matrazzo is a science and environmental writer who hikes, kayaks, bicycles and gardens. Her stories have previously appeared in Outdoor California.