

Marine Recreational Fisheries Data Collection:

Perspectives & Prospects



Recreational anglers fishing along the Manasquan Inlet bulkhead.

Photo by Ray Ringen

Frustration abounds over the collection and interpretation of marine recreational fisheries data and the management actions that result. As fisheries biologists with over a century of combined experience, we have witnessed at least one angler express concern over recreational harvest estimates or management measures at nearly every state, federal and inter-jurisdictional fisheries management meeting that we've attended. Truth be told, fishery scientists and managers have some of the same concerns as anglers about recreational fisheries data. This is why New Jersey Division of Fish and Wildlife's Marine Fisheries Administration has taken action to improve the information collected and used for recreational fishery management.

Collecting Fisheries Data

The main source of information is the Marine Recreational Information Program (MRIP), a survey of recreational anglers created by the National Marine Fisheries Service (NMFS) in 1981 then revamped in 2012. The survey occurs in two parts: an in-person angler intercept survey at fishing locations to determine the species and numbers of fish that are caught, kept and discarded plus a telephone or mail survey to estimate the proportion of the angling population that took a fishing trip. Results from the two parts are then combined in such a way that scientists can estimate the number of each species that recreational anglers harvested or released.

How is the Data Applied?

While this survey methodology is actually straightforward and not the main issue with the data, concern does arise in how we *use* the data. The MRIP wasn't specifically designed to answer small-scale (state-specific or season-specific) management issues, but that is often how the data is used. For some species, sampling coverage may be adequate for local management; for other species, the most reliable estimates come from aggregating data over large regions and all seasons.

The Importance of Sample Size

The primary cause for concern with recreational fisheries data is the number of anglers that MRIP interviewing staff, the samplers, can interact with—whether in person, on the phone or via mail. For perspective, New Jersey has an estimated 1 million marine recreational anglers who fish from approximately 250 known public access fishing areas (piers, beaches, boat ramps, marinas, etc.), plus the countless private access sites that cannot be sampled. It is not possible to increase sampling coverage in a cost-effective manner, so the number of intercepts (angler interviews) conducted each year remains a *very small proportion* of the total number of fishing trips.

For example, in 2016, approximately 4,100 angler intercepts were conducted out of an estimated 4,402,000 total fishing trips, a 0.09 percent sample size. The telephone survey has similar issues with limited sample size and will be replaced by 2018 with a mail survey. Accuracy and precision of both the in-person intercept and telephone portions of the survey are affected by sampling only a fraction of the total number of fishing trips.

Flip a Coin

Relying on data from such a small sample of angler intercepts results in *highly variable*—and sometimes unexpectedly high or low—harvest estimates from year to year. Let's use a coin-flip example to show how this works. Imagine flipping a coin 10 times and getting seven heads, then flipping it 10 more times and getting four heads. The proportion of heads changed from 70 percent to 40 percent, a 30-percentage point difference between the two samples. Now imagine doing the same exercise but each sample was 1,000 coin-flips. You might get 489 heads in the first sample and 525 heads in the second. This equates to only a 3.6-percentage point difference between the samples (48.9 percent vs 52.5 percent). Clearly, the larger sample size (number of coin flips) helps smooth out the difference between the samples (sets of coin flips). Also, the more coin flips you do, the closer you get to the "truth" of 50 percent heads and 50 percent tails.

These same principles hold true for sampling the recreational fishery. By sampling only 5,000 anglers every year, the *variability* in catch estimates is much greater than if, for example, 50,000 anglers were sampled annually. As with the coin flips, a *larger angler intercept sample size would produce a better estimate of the actual recreational angler harvest.*

Improved Data Collection

Fisheries management decisions based on a low intercept sample size have many consequences: disbelief about harvest estimates, frustration over ever-changing regulations and not being able to keep enough fish, discontent with managers and law enforcement, plus distrust in the fisheries management process. Research scientists and fisheries managers share with anglers many of these same frustrations.

Unfortunately, simply increasing the sample size in the recreational angler survey is not possible. Budgets are limited and sampling is expensive. However, the New Jersey Marine Fisheries Administration has been making other efforts to improve recreational data collection.

Many saltwater anglers are familiar with the Access Point Angler Intercept Survey (APAIS), the dockside interview component of the national Marine Recreational Information Program (MRIP). In the past, the APAIS was conducted by National Marine Fisheries Service contractors. Beginning in 2016, New Jersey began conducting the APAIS on behalf of the NMFS. Interviewers seen at the dock are state employees which gives us better control over their performance and data quality. In addition, our agency now has more influence on many aspects of the survey.

This Survey Could be a Game-changer for New Jersey

As a key data collection tool, New Jersey has developed our own survey to give anglers additional opportunity to provide data and get involved in the management process. A common remark heard from recreational anglers is, "They [APAIS] never interviewed me!" Since budget constraints prevent the expansion of APAIS sampling, our Marine Fisheries Administration created the New Jersey Volunteer Angler Survey (VAS), an online-only survey of marine recreational anglers. The VAS is open-access, allowing anyone to provide information on as many fishing trips as they choose at any time that is convenient.

A point to remember: the New Jersey VAS is entirely separate from the national MRIP; data from these two different surveys cannot be combined. However, the VAS has been used effectively to ground the truth or to refute the MRIP data. The New Jersey VAS has also been used to develop alternative fisheries management measures that may be more favorable (or at least less unfavorable) than those based on MRIP data.

Voluntary but Crucial

Our Volunteer Angler Survey is free, online and open-access. While it is voluntary, we strongly encourage you to participate. It takes only a few minutes and is an easy, effective way to be involved

in the saltwater fisheries management process. Trust in fisheries management practices may build as more anglers contribute information to the management process. Spread the word for anglers to check us out at www.NJFishandWildlife.com/marinesurvey.htm and tell us about your trips! **No need to report every fishing trip; just a handful from each angler every year is all it takes.**


Didn't Catch Fish? Report That Too!

An important note about the VAS: its success is linked to having *representative* coverage of recreational anglers and trips. Information from anglers of *all* skill levels is essential, including both your successful *and* unsuccessful fishing ventures—those trips where you catch no fish. To ensure representative reporting, you could consistently report on your first trip of the month, or you could flip a coin at the dock—heads you report, tails you don't. This type of *random selection* on which fishing trips to report ensures that the data is a representative sample.

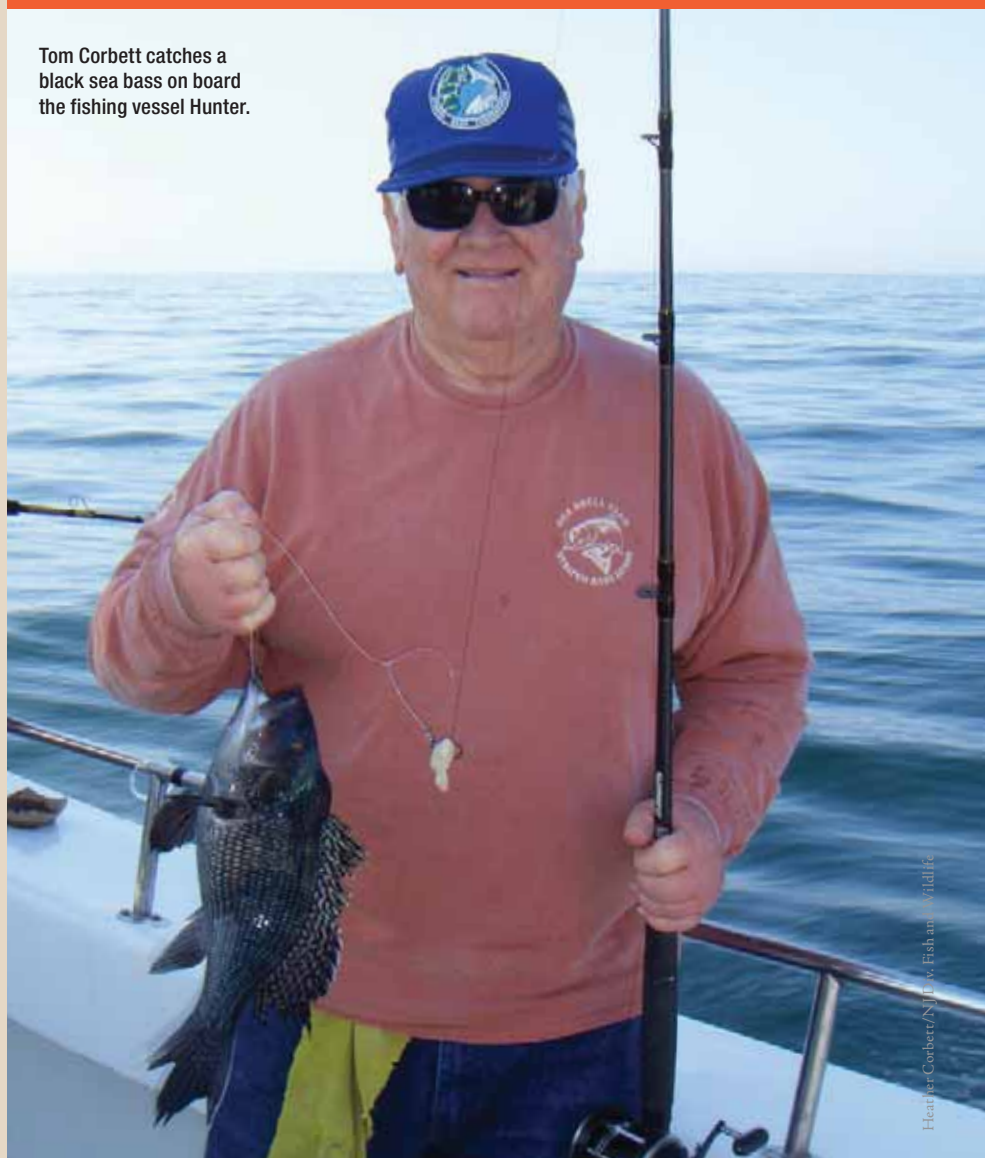
You Can Make a Difference

Whether you are approached for an APAIS interview, receive an MRIP survey in the mail or support the effort by submitting your fishing trip data through the Volunteer Angler Survey, your cooperation is *crucial* to ensure that New Jersey has the *largest* sample size possible to achieve the *best* estimate of fishing catch rates. Management decisions are only as good as the data on which they are founded, and the data comes from you—our marine recreational anglers.

Working together to improve New Jersey's recreational data collection strategies, anglers and fisheries managers can have confidence in the data being used to make sound recreational management decisions. Be part of the solution: flip a coin before every fishing trip. Did your coin come up heads? Visit the New Jersey Volunteer Angler Survey www.NJFishandWildlife.com/marinesurvey.htm to report your fishing trip results.

For more information on any of these programs, contact New Jersey Division of Fish and Wildlife's Bureau of Marine Fisheries at (609) 748-2020. 

Tom Corbett catches a black sea bass on board the fishing vessel Hunter.



Heather Corbett/NJ Division of Fish and Wildlife