

Partnerships

Work in Fish Sampling Efforts

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Scientific fisheries data collection is not easy. With ever-increasing federal mandates, dwindling budgets and staff reductions, New Jersey Division of Fish and Wildlife is forced to find innovative ways to collect new, essential data for fisheries stock assessments—and we have. Our agency is cultivating a solution to one aspect of data collection through the generous cooperation with party boats and fishing tournaments.

Biological samples—such as fish otoliths (ear bones), scales and total fish lengths—are a key component to many fisheries stock assessment methods. The use of biological samples and measurements provide us with information essential to create an age/length key for reference when only a fish's length is known. For two common New Jersey species—striped bass and bluefish—considerable data on age structure are required for stock assessment.

The success of the two fish sampling strategies described below—initiated in association with federally mandated striped bass management programs—led Fish and Wildlife's marine fisheries staff to theorize that the same strategies could assist New Jersey with assessing the feasibility of collecting biological information from bluefish in advance of any bluefish-related federal mandates. Read on to learn how these programs developed and have proven to be invaluable.

Party Boat Sampling on the Queen Mary

The majority of Fish and Wildlife's biological samples are collected from striped bass. These fish are primarily caught during Atlantic States Marine Fisheries Commission (ASMFC)-mandated field surveys but additional data are needed. Over the years, Fish and Wildlife has periodically sampled fish on several party or charter boats. Since 1999, Captain John Brackett (JB) has hospitably welcomed Fish and Wildlife staff to sample the striped bass catch on the F/V Queen Mary, a vessel based in Point Pleasant, New Jersey. The Queen Mary's staff and regular customers have made sampling easy and efficient and as a result, the Queen Mary has become our "go-to" vessel when sampling opportunities arise. Sampling from party boats is an excellent way to supplement survey data with much-needed samples from both kept and released fish.



Captain John Brackett (L) and deck hand Eric Olsen.

Striped Bass During our time sampling on the Queen Mary, Fish and Wildlife measured 753 fish averaging 25 inches in total length and collected scale samples from 663 fish for age determination, ultimately yielding data from fish ranging between two and 13 years old.

Bluefish Previously, all age-related information for bluefish came from Virginia. Comprehensive age information is critical for bluefish stock assessment. The ASMFC Bluefish Management Board is considering whether to impose a requirement for some states (including New Jersey) to collect age-related information. Recognizing our current staff and funding limitations, we know that initiating a new sampling program is not practical, but Fish and Wildlife is determined to collect this valuable information for this significant fishery.

In 2010, this goal motivated Fish and Wildlife to once again approach Captain JB, requesting his help to initiate a sampling program focused on collecting recreationally caught bluefish for otolith extraction. Biologists would attempt to discern differences in fish lengths obtained from using fish racks (fish with both fillets removed) versus those measured from whole fish. These data will allow New Jersey to assess the feasibility of this program, and will likely influence future coast-wide sampling programs (i.e., if rack length significantly differs from whole fish length, collection programs and assessments must take this into account).

In 2010, Fish and Wildlife extracted otoliths from 85 bluefish collected on the Queen Mary, ranging in total length from 12.25 to 34.0 inches. In addition, results from our whole versus rack-length comparison preliminarily suggests that fish between 10 and 23 inches are likely to be between $\frac{1}{16}$ to $\frac{3}{8}$ inches smaller when filleted compared to those measured whole. For fish larger than 23 inches, filleted fish can be up to $\frac{7}{8}$ of an inch smaller than their whole counterparts.

Tournaments

Striped Bass Fish and Wildlife has established another source for collecting valuable striped bass data through New Jersey fishing tournaments. This endeavor began in 1997 when our agency was invited to attend the Sea Shell's 1st Annual Striped Bass Derby in Beach Haven. The information collected was especially useful in supplementing field survey data with samples from large fish, data that is currently lacking but is critical information for stock assessments. After the data-gathering success at the Derby¹, a conscious effort was made to attend more of these events. In 2009, Fish and

¹In 2009, the Derby raised \$20,000 for the John F. Hughes III Scholarship Fund for Southern Regional High School athletes.



Age Length Keys

Goal:

To create an age-length key (ALK) which will accurately reflect the age structure of a fish species.

Project to achieve goal:

Fish age and length data collection through biological sampling techniques.

Q. What is an age-length key?

A. An ALK is a table or plot that displays the age of a fish based on its size.

Q. What information is needed to develop an ALK?

A. Methods vary depending on the species. Fish scales are the most common body structure used to age striped bass, primarily due to ease of collection without harming the fish. Scales are not effective for aging bluefish. Using otoliths (fish ear bones) is preferred for bluefish but otoliths are also proven to be more accurate for striped bass, especially in older fish. The aging technique is similar when using either an otolith or a scale; the process involves counting growth rings to determine age, analogous to counting the growth rings from the cross-section of a tree.

Otoliths (fish ear bones). Bluefish (left) and striped bass.



Photos by Heather Corbett/NJ Div. Fish and Wildlife



Another fine striper caught while fishing the Queen Mary.

Wildlife also collected samples from the South Jersey Big Bass Open at South Jersey Marina in Cape May and Bay Point Marina's Striped Bass Tournament in Cedarville.

During fall 2009, Fish and Wildlife collected lengths and weights from 120 harvested striped bass, averaging nearly 38 inches and 21.5 pounds. Using scales and otoliths, biologists determined that fish sampled in 2009 ranged from five to 15 years old; the majority were age 13. Interestingly, the age 13 fish were from the 1996 year class, an above average index year for New Jersey's Striped Bass Recruitment Survey in the Delaware River and the highest index for Maryland's similar survey in Chesapeake Bay.

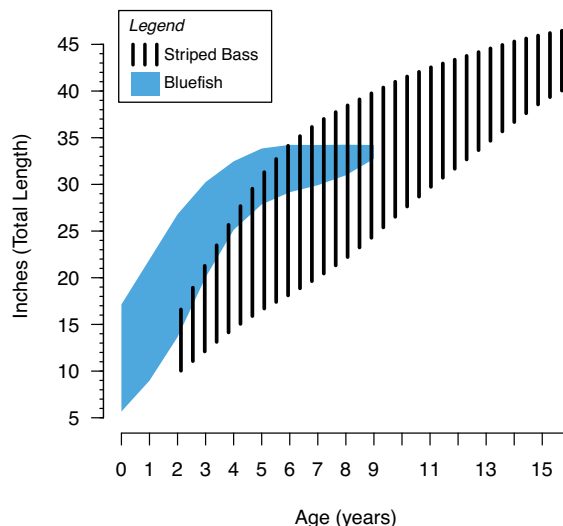
Bluefish Our success sampling striped bass from tournaments prompted us to consider the same avenue to supplement our bluefish data collection. In our inaugural year, Edward Goldman (New Jersey Marine Fisheries Councilman) and the Absecon Saltwater Sportsman's Club graciously permitted us to collect samples from the Nuncio Bruno Kids Under 16 Bluefish Tournament held

at Chestnut Neck Marina. We extracted otoliths collected from 23 fish ranging in total length from 17.5 to 29 inches.

Conclusion

Fish and Wildlife's successful collaboration with the Queen Mary and the Sea Shell Striped Bass Derby has resulted in significant data collection for striped bass and bluefish and provides the template for future programs. Fish and Wildlife values any occasion to collect additional data at different fishing tournaments or on additional fishing vessels. Future sampling effort goals may include additional species such as weakfish. If you are—or know of—an interested tournament coordinator or vessel operator who might allow Fish and Wildlife to attend your striped bass, bluefish or weakfish event, contact Heather Corbett or Michael Celestino at (609) 748-2020.

Age length keys for striped bass and bluefish



For additional information

- www.njfishandwildlife.com/artstrpbass10.htm
- www.njfishandwildlife.com/pdf/2010/artdel_fishtraveled.pdf
- www.njfishandwildlife.com/artdelstudy10.htm
- www.dnr.state.md.us/fisheries/juvindex/index.asp