Tagging Black Sea Bass for Sex Change Data

Mikaela Provost

Rutgers University, Institute of Marine and Coastal Sciences, 71 Dudley Road, New Brunswick, NJ, 08901 E-mail:

Published online: 13 May 2013.

To cite this article: Mikaela Provost (2013): Tagging Black Sea Bass for Sex Change Data, Fisheries, 38:5, 227-227

To link to this article: http://dx.doi.org/10.1080/03632415.2013.779179
Bobbing slowly up and down, I keep my eyes tight on the bright horizon. The hot, sticky fabric of my Grundens brushes against my knees as I bend and brace for each wave. Thirty-five dedicated volunteers stand around me with their rods pointed out and, lines straight down in the water, anxiously anticipate nibbles. Standing at the center of the stern, my nose tickles with the smell of fresh clam bait, when I hear the first “FISH ON!” from Tom, one of our most avid fishing volunteers. All three of us in the fish tagging team leap into action, boat dipping and rising as we stumble across each other’s paths, gathering scalpels, forceps, plastic tags, and data sheets. And again, “FISH ON! It’s a big one!” pierces the breezeless air from starboard side. Then two more “I got one!” shouts come from port side.

Flapping, dark-colored Black Sea Bass (BSB) are gingerly unhooked and tossed into our live well as volunteers look on with approval and pride for their contribution. The tag-team routine is methodical and efficient; we measure length, collect scales, record location, tag, and check sex all in under a few minutes. As I insert the bright orange anchor tag into the last BSB for the day, one of the volunteers leans in and asks me, “Can Black Sea Bass really change sex?”

It’s hard to imagine, but in a matter of weeks mature female BSB can undergo sex change and become fully functioning, mature male fish. Because BSB change sex from female to male, most females are smaller in size and the largest fish are almost always male.

You might be wondering, why study sex change in BSB? Every year, from early summer to late fall, fishermen along the Eastern Coast of the United States dip their hooks and pots into the water for the shimmery black fish. In New Jersey, the BSB commercial fishery generated $995,600 in 2010, the highest among all other East Coast states. Thousands of vacationers flock to the Jersey coast yearly to fish for this popular sport fish.

Since the 1970s, BSB were overfished, but in 2003 the stock had been rebuilt and overfishing eliminated. And yet fishery scientists at the Northeast Fisheries Science Center are wary about the BSB population, labeling it a “data-poor stock.” Black Sea Bass are data poor because we don’t know how fishing pressure affects sex-changing populations. Again, you might be wondering what sex change and fishing pressure have to do with each other.

In New Jersey, the minimum size limit is 12 inches, which means that fishing mortality is heavier on males than it is on females (because, as I mentioned earlier, most larger fish are males). We know from laboratory experiments that if a male BSB is removed from a group of females, the largest female will change her sex. If sex change is triggered by the absence of male BSB in the population, will fishing pressure have a similar effect? In New Jersey, where fishing pressure is and has been historically high, are female BSB undergoing sex reversal at smaller and smaller sizes to replace males caught by fishermen? Or has the sex ratio of female : male BSB become so skewed (lots of females and very few males) that there is not enough sperm to fertilize all of the eggs? We are interested in these questions and more.

Our project aims to determine when sex change occurs and how prevalent sex change is in BSB off the coast of New Jersey. Local charter boat captains, commercial fishermen, and volunteer fishermen have all helped to tag over 1,500 BSB. Recaptured BSB are checked for sex change. As local fishermen return more and more recaptures we’ll know more about the timing of sex change and how frequently sex change occurs in hermaphroditic populations.

Many of the old-timer fishermen who’ve seen New Jersey’s coast transform and support an influx of people and years of development tell me with certainty that some fish have come and gone, but BSB are still here and people love to fish them. Learning more about sex change and fishing pressure will help make sure BSB are here to stay for many generations to come.