



Tracking Smallmouth Bass in Lake Erie

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First article of a two-part series.

History

For many years, Lake Erie's Smallmouth Bass were considered a species that didn't move much: individual fish spend their entire lives in a few square miles and don't typically make long migrations like Walleye or Steelhead do. Smallmouth have supported a popular fishery for many years and stringers of harvested bass were a common sight in the past. Leading up to the 1990s, bass harvest increased to record levels, leading Division of Wildlife biologists to grow concerned about the population. Additionally, Round Goby were introduced in 1995 (Figure 1). This invasive species is a known nest predator of bass eggs; biologists were concerned that the combination of nest predation and high harvest would cause a decline in the bass population. The state took action and implemented restrictive size and bag limits for bass in the Ohio waters of Lake Erie in 2000. The seasonal closure (no harvest May through June) was instituted in 2004. However, managers also wanted to confirm whether bass were, in fact, low movement – such a population could be subject to overfishing in high-profile areas like the Bass islands (since they would not be replaced by fish moving in). Even if fish weren't harvested, they might never return to their capture location if the bass were transported long distances and released in a tournament.

In 1998, Division of Wildlife staff began tagging Smallmouth Bass in Lake Erie to learn about their movements. Fish were captured using electrofishing, trap netting, and angling – the latter involving LECBA members such as Jim



Figure 1. Photo of an invasive Round Goby, nest predator of bass.

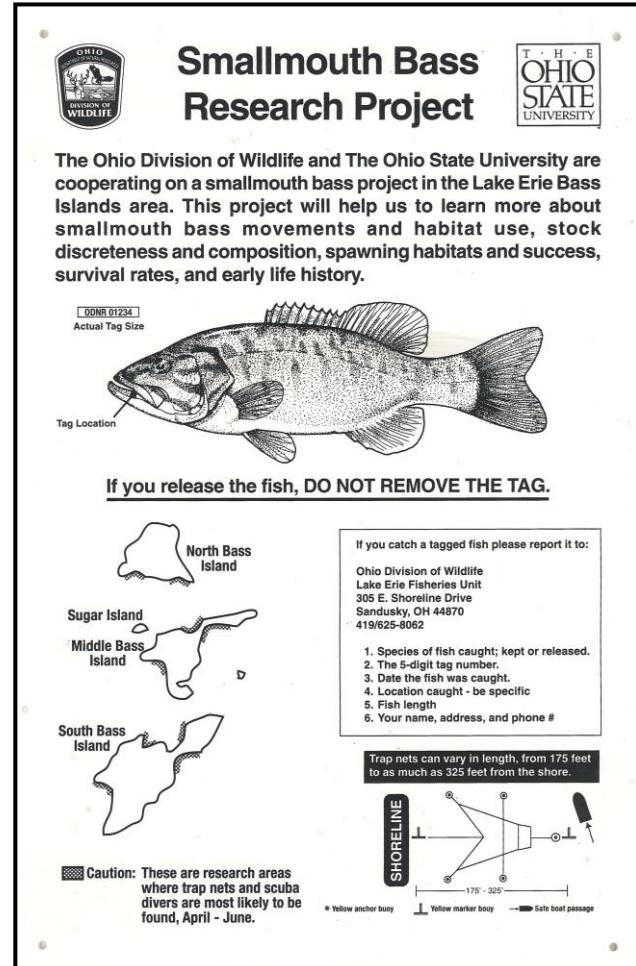


Figure 2. Sign advertising the Lake Erie Smallmouth Bass jaw tag project, 1998.

Fofrich Sr., who tagged 1,636 bass off his boat! A metal tag was fastened to each fish's jaw with a unique identification number and anglers were asked to report if they caught one (Figure 2). Between 1998 and 2002, over 6,000 bass were tagged; anglers reported nearly 600 captures back to biologists. Most of these fish were recaptured within a few miles of their release sites, indicating that "...the overall smallmouth bass population may be comprised of numerous, small stocks or sub-populations". While this conclusion meant that localized overfishing might be possible, unknowns such as tag loss, underreporting of tagged bass, and data loss left many unresolved questions. In addition, the reliance on angler recapture meant that recapture effort was focused on the same areas fish were tagged and fishing effort was mostly during spring and summer. These issues could bias the results from the study, leading biologists to believe that bass don't move when, in fact, they might move where and when anglers aren't fishing.

Modern Tagging

In the 20 years since this study, technology has changed. Instead of jaw tags and angler reports, we now utilize acoustic telemetry, implanting transmitters into fish and monitoring them using hundreds of acoustic receivers deployed across Lake Erie. This means we no longer must rely on angler catches to estimate movement.

To implant the transmitters, we first invert the fish onto a specially modified cooler with a cradle; we insert a hose into the fish's mouth to pump oxygenated water through the gills and we deliver a mild electric shock so that the fish lies still (Figure 3). Next, we make a small incision in the fish's belly using a scalpel and insert a transmitter (about the size and shape of an AA battery) into the fish's belly cavity (Figure 4). Finally, the surgeon uses 2-3 stitches to close the incision so it can heal. Before it is released, we measure the length of the fish and attach an



Figure 3. ODNR staff preparing to implant a transmitter into a Smallmouth Bass.

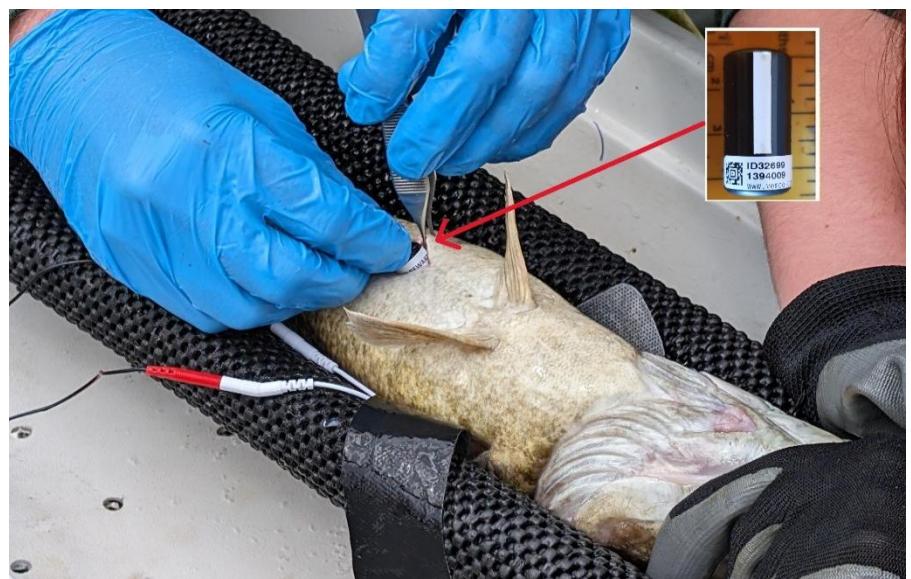


Figure 4. Acoustic transmitter being inserted into the fish (inset: transmitter).

external loop tag behind the dorsal fin (Figure 5). This second tag has identification and contact numbers to aid in reporting. Should you or one of your clients catch a tagged fish, please call the Sandusky office at 419-625-8062 or [report it online](#), providing us the tag ID (a five digit number on the loop tag), the date and location caught, and contact information for the angler.

In the conclusion to this two-part series, our ongoing tagging studies and initial results will be discussed. Acoustic telemetry is proving to be a valuable technology in helping us understand behavior of many species in Lake Erie – not just Walleye!



Figure 5. External loop tag behind the dorsal fin of a Walleye.