



# Pennsylvania Fish & Boat Commission's PIT Tagging Project

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Photos: Rob Brown

*Fisheries Biologist Brian Niewinski and the late Mark Sickles, former Fish Culturist at Linesville State Fish Hatchery, scan a musky for a PIT tag.*

Muskies have earned the title “the fish of 10,000 casts.” The Pennsylvania Fish & Boat Commission (PFBC) is working to reduce the number of casts it takes to hook into one of these great fish by improving their Musky Culture Program. The muskellunge (*Esox masquinongy*) is a coolwater fish that is long-lived (up to 30 years old) and can reach 60 to 70 inches in length. In recent years, PFBC has made great strides in improving the overall success of the Musky Culture Program. Read more about the program at [www.fishandboat.com/anglerboater/2009/06novdec2009/05musky\\_culture.pdf](http://www.fishandboat.com/anglerboater/2009/06novdec2009/05musky_culture.pdf).

One of the recent advances in the Musky Culture Program is the use of Passive Integrated Transponder (PIT) tags. Beginning in 2007, all of the broodstock muskies spawned at PFBC's Linesville State Fish Hatchery have been implanted with a 12 millimeter ( $\frac{1}{2}$  inch) PIT tag. A PIT tag is a glass-encapsulated microchip that sends a unique, numeric code to a reading device. The major advantages to using PIT tags are that the data can be retrieved without harm to the fish, and each fish has a unique identifying code. When using other tags, like coded wire tags, the fish normally has to be killed in order to recover the tag. PIT tag technology allows the researcher to individually tag and track fish throughout their life.

When adult muskies are spawned at the Linesville State Fish Hatchery, they are first collected with trap nets from the Pymatuning Reservoir and Sanctuary. The fish are measured and weighed. Then, the eggs and milt are

collected, and the fish are scanned with a PIT tag reader to determine if they already have a PIT tag. If a PIT tag is not detected, the fish is implanted with a PIT tag in the abdominal area. Some of the data collected includes the date and location the fish was caught, the date the fish was spawned, fish length, weight and sex. If a PIT tag is detected, the current data can be compared with previously collected data. With this technology, we can track growth rates, estimate age, determine egg production and quality based on female length and weight and observe movement patterns. For example, a 50-inch, 39½-pound female musky was trap netted in the Pymatuning Reservoir and brought to the Linesville State Fish Hatchery to be spawned. Because that fish was PIT tagged, we were able to determine that the female musky had grown an average of 5¾ inches and 12.8 pounds per year, in the two years since it was tagged. After the fish are spawned, the muskies are returned alive to the waters of Pymatuning Reservoir and Sanctuary.

The Musky PIT Tagging Project allows us to follow individual fish being handled and spawned repeatedly over many years to determine if their egg/milt production and quality have changed over time and if the act of spawning these fish was detrimental to their growth and survival. Another objective of the project is to determine if muskies released into the Pymatuning Sanctuary remain in the Sanctuary or whether they move back into the Pymatuning

Reservoir. This information on musky movement patterns can provide insights into the best locations for setting trap nets and has been a great opportunity to work with a non-lethal, fish marking technique to better understand the capabilities and limitations of this state of the art technology.

Recently, Biomark Inc., introduced a smaller, 8.5 millimeter (0.33 inch) PIT tag. In 2010, we experimented with tagging yearling muskies at Linesville State Fish Hatchery that were approximately 300 millimeters (12 inches) in length. The fish survived well with the smaller tag and were released into Pymatuning Sanctuary. With this yearling group of muskies at large, there are now known age, PIT tagged muskies in the population. Each recaptured, PIT tagged musky will provide researchers and managers with valuable data.

During 1997 through 2000, Ohio Department of Natural Resources (ODNR) released yearling muskies into the Pymatuning Reservoir that were given unique fin clips corresponding to the year that they were released. We've been catching these fin-clipped muskies (now 11 to 14 years old) in our trap nets in the Pymatuning Reservoir and implanting them with a PIT tag, allowing us to track their age and growth over time as they are recaptured.

In 2011, Three Rivers Chapter of Muskies Inc., presented PFBC's Executive Director John A. Arway with a check for \$500 to support the Musky PIT Tagging Project. These funds are greatly appreciated and will be used to buy additional equipment like PIT tags, injectors and readers.

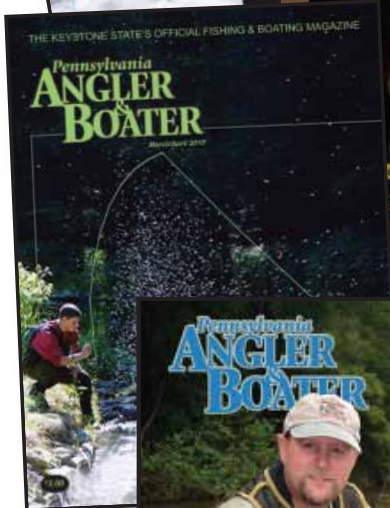
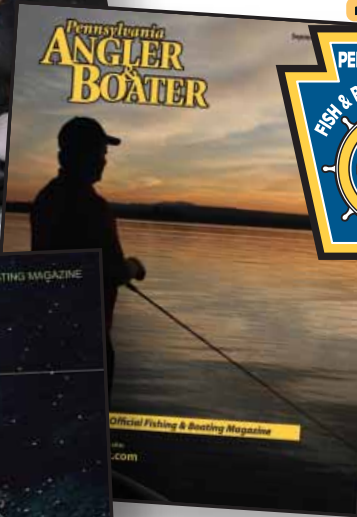
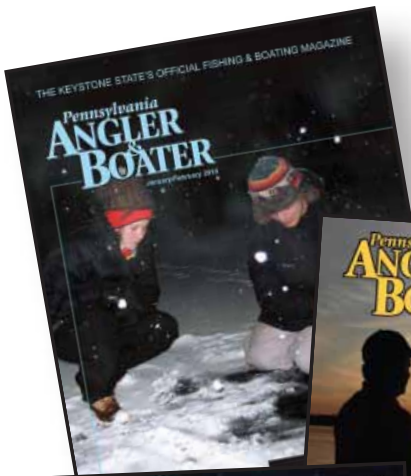
The plan is to continue PIT tagging all of the broodstock muskies that are spawned at Linesville State Fish Hatchery and to collect valuable data on age, growth and performance. PFBC's Fisheries Management Division is currently evaluating the efficacy of using PIT tags in wild musky populations in Pennsylvania. PFBC will continue to look for ways to adapt emerging technologies into our fish culture fisheries management programs. ☐

*If a PIT tag is not detected, the musky is implanted with a PIT tag in the abdominal area.*



*The fish are scanned with a PIT tag reader such as the Biomark Pocket Reader EX to determine if they already have a PIT tag. If a PIT tag is detected, the current data can be compared with previously collected data.*

*A PIT tag is a glass-encapsulated microchip that sends a unique, numeric code to a reading device.*



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