The Pennsylvania Fish and Boat Commission (PFBC) conducted a fish habitat evaluation by assessing the relative abundance and size structure of selected fish species at felled shoreline trees versus un-improved shoreline sites at Blue Marsh Lake on June 2 and 23, 2014.

Blue Marsh Lake is a 1,150 acre impoundment constructed by the U.S. Army Corps of Engineers (ACOE) on Tulpehocken Creek in western Berks County in 1979. The reservoir is located approximately six miles northwest of the City of Reading. As an
ACOE impoundment, the primary function of the reservoir is flood control followed by water supply, water quality control, and recreation. The reservoir experiences a five foot draw down each fall and winter to provide flood protection to downstream areas.

The steep slope and mature trees along the shorelines of Blue Marsh Lake have created an ideal situation to cut and cable trees in an attempt to improve fish habitat and fishing. Selected trees are felled and cabled to their stumps with 0.25 inch galvanized wire rope and cable clamps. Typical placement density in Pennsylvania lakes is five trees per acre.

Daytime boat electrofishing was conducted at twenty locations for the evaluation, including ten locations in both Spring Creek and Tulpehocken Creek coves, which together comprise approximately fifty percent of the lake’s surface area. Each location included a felled shoreline tree (study site) and un-improved shoreline area (control site) located within 100 feet. The evaluation included hardwood trees that were naturally felled by wind or intentionally felled as part of fish habitat improvement projects. The tree tops were located in 4 to 24 feet of water and were sometimes fully submerged due to bank steepness and water depth. Many of the felled trees had accumulated floating, woody debris within the network of branches or along a portion of the trunk that extended above the surface of the water. This increased the complexity of overhead cover. One electrofishing pass was made along each side of the felled tree for its entire length.

Control sites were largely rocky embankments draped in overhanging shrubs in the near-shore area and contained no felled trees. Habitat away from the near-shore area was generally barren based on sonar display. Control sites were electrofished in the same manner as felled tree sites and included two comparable electrofishing passes. Electrofishing began at the same depth as the near-by felled tree, concluded at the shoreline, and covered an approximately equal surface area.
All fish species were captured, measured for total length, and released except for carp, which were only counted. Catch rates were determined based on the total number of fish caught per hour of electrofishing effort for each species as well as the number of fish within selected size groups of black bass and crappie since they are managed under minimum length limit regulations of 15 inches and 9 inches, respectively, at Blue Marsh Lake.

The results of this habitat evaluation indicated that felled shoreline trees attract a variety of sport fish species for anglers to target. Felled shoreline trees held significantly higher numbers of crappie and carp than control sites, while bass, sunfish, and walleye were observed in statistically similar numbers between felled shoreline trees and control sites.

Crappies were strongly associated with felled shoreline trees and exhibited the greatest difference in abundance between felled trees and control sites. A total of 93 crappies were captured at felled tree sites versus only 7 at control sites. Black Crappies and White Crappies comprised 77% and 23% of the catch, respectively. The average catch rate was 136.4 fish/hr on felled trees and 3.7 fish/hr on control sites (Figure 1). Crappies over nine inches accounted for 50% of the catch and had average catch rates of 46.0 fish/hr at felled tree sites and 1.6 fish/hr at control sites. The largest crappie captured during the evaluation was 15 inches; however, recent angler catches have occasionally yielded fish up to 18 inches long.

Bass were captured at nearly twice the rate at felled shoreline trees versus control sites. A total of 22 bass were captured at felled trees versus only 12 at control sites. Largemouth Bass and Smallmouth Bass comprised 91% and 9% of the catch, respectively. The average catch rate was 24.0 fish/hr at felled tree sites and 12.1 fish/hr at control sites (Figure 1). Bass over 15 inches accounted for 29% of the catch and had average catch rates of 4.7 fish/hr at felled tree sites and 1.5 fish/hr at control sites. For comparison, the PFBC’s statewide objective for bass over 15 inches is 2.0 fish/hr and
the average catch rate for southeastern Pennsylvania lakes is 3.6 fish/hr. The maximum size bass captured during the evaluation was 18 inches.

Figure 1. Average catch rates of fish collected at felled shoreline trees versus un-improved shorelines (control) at Blue Marsh Lake on June 2 and 23, 2014. The 95% confidence intervals were included for comparison. CPUE = Catch per unit effort.
Although few Walleyes were captured, they were more common at felled shoreline tree sites than control sites. A total of 8 Walleyes were captured on felled tree sites versus only 1 at control sites. The average catch rate was 6.3 fish/hr at felled tree sites and 0.6 fish/hr at control sites (Figure 1). The largest Walleye captured was 26 inches.

Carp were significantly more numerous at felled shoreline tree sites than control sites. A total of 72 carp were observed at felled tree sites versus only 18 at control sites. The average catch rate was 94.1 fish/hr at felled tree sites and 21.3 fish/hr at control sites (Figure 1). No sizes were recorded, but carp over 20 inches were common.

Sunfish, which included Bluegill, Pumpkinseed, Green Sunfish, and hybrid sunfish, were captured in comparable numbers between felled tree sites and control sites. A total of 315 sunfish were captured at felled tree sites versus 307 at control sites. The average catch rate was 496.4 fish/hr at felled tree sites and 601.7 fish/hr at control sites (Figure 1). Most (96%) of the sunfish captured were less than six inches.

Other fish species captured or observed during the habitat evaluation included Channel Catfish, Flathead Catfish up to 42 inches long, White Suckers, Spotfin Shiners, and Alewives.

In conclusion, felled shoreline trees are a cost effective method of attracting certain fish species, such as crappies, for anglers to target and may improve angler catch rates for those species. Felled trees provide complex habitat in a variety of depths and over a much larger area than most man-made structures and are more natural in appearance.

If you plan on fishing Blue Marsh Lake, please be advised that Smallmouth Bass and Largemouth Bass are managed under the Big Bass Program Special Regulations and crappies are managed under the Panfish Enhancement Special Regulations. In addition, the upper portion of the lake is a no wake zone, while the lower portion of the lake has no outboard motor horsepower restrictions. The lake has three boat launches, including
the Dry Brooks and State Hill Boat Launches operated by the U.S. Army Corps of Engineers, and Sheidy Boat Launch (open 24 hours) operated by the PFBC. Please note that there are several fee areas at Blue Marsh Lake, including the Dry Brooks Day Use Area, Dry Brooks Boat Launch, and State Hill Boat Launch (daily fee $3.00 per vehicle charged May 1 to September 30; annual pass available for $30). The Stilling Basin, which is where the water is released from the dam, is also a popular fishing location with a universally accessible fishing platform. Blue Marsh Lake is managed by the U.S. Army Corps of Engineers, so please see their website for the full range of recreational activities offered at the lake.

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