Evaluating Reintroductions of the Barrens Topminnow
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Phil Bettoli (left), fisheries biologist, and graduate student Cory Goldworthy are processing a sample of Barrens topminnows at a stocking site.

The Barrens topminnow *(Fundulus julisia)* is an at-risk species that occupies a small portion of its former range in the barrens region of middle Tennessee. In the spring of 2001, only two populations were known. The Barrens Topminnow Working Group (comprised of representatives from federal, state, and private organizations) has been coordinating efforts to stock hatchery-reared BTMs into formerly occupied sites and newly constructed habitats. A conservation strategy was developed and juvenile BTMs were reared at four hatchery facilities for release into ten sites with no historic topminnow presence in the headwaters of Hickory Creek and the Barren Fork River in Warren, Coffee, and Grundy Counties in the Barrens Plateau region of middle Tennessee. One site in the Duck River watershed that once harbored topminnows was also stocked. The Barrens Topminnow Working Group reared, tagged, and stocked 3,696 topminnows between August 2001 and December 2003.

Most (71%) stocking events through June 2003 resulted in at least one Barrens topminnow surviving at a stocked site for at least six months. Thirty-five percent of the stocking events resulted in persistence of at least one stocked fish for at least 12 months; however, only 15% of the stocking events resulted in three or more stocked fish persisting for at least 12 months. Natural reproduction by stocked topminnows was detected at three sites. Two of the sites were similar in that mosquitofish *(Gambusia affinis)* were absent or had only recently invaded.

Densities of Barrens topminnows at stocked sites ranged from 0 to 1.4 fish/m^2, and densities of mosquitofish ranged from 0 to 41.0 fish/m^2. At sites with mosquitofish, the ratio of mosquitofish-to-topminnows ranged from 3.3:1 to 127:1. Barrens topminnow growth (in length) was variable in the presence of mosquitofish and ranged from 0.07 to 0.37% per day; the greatest growth occurred at a site void of mosquitofish. However, Barrens topminnows were robust and grew rapidly in the presence of dense mosquitofish populations at some sites. Although topminnows persisted at some flood-prone sites, reproduction by stocked topminnows only occurred at upland sites with few if any mosquitofish. A sampling program has been designed to detect where the bottleneck in the recruitment process occurs and whether long-term persistence by topminnows in the presence of mosquitofish is possible.

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