

Rivers and Streams

For more information on this project, please contact:

Bryan Bakevich, Clay Pierce, and Michael Quist
Department of Natural Resources Ecology & Management
Iowa State University
Ames, Iowa 50011
bakevich@iastate.edu, cpierce@iastate.edu, mcquist@uidaho.edu,



Distribution and Abundance of Topeka Shiners in West-Central Iowa

Since the arrival of European settlers nearly three hundred years ago, the landscape of Iowa has changed dramatically. The conversion of tall-grass prairie and forests to agricultural and urban land has contributed to the decline or extinction of many of its native species. The Topeka shiner *Notropis topeka*, a fish native to Iowa prairie streams, is one such species that has declined in both abundance and distribution throughout its historic range. Although this fish is known to inhabit streams, it has recently been found in off-channel habitats such as oxbows. In 1998, concern for the survival of this species led to its listing as endangered under the Endangered Species Act. The goals of this legislation are to reduce further extinction risk and to develop and implement a recovery plan for the species. However, certain information about the species, such as distribution, abundance, and habitat requirements are needed to make well-informed management decisions. Since small streams and off-channel habitats are rarely sampled in Iowa, our knowledge of Topeka shiner ecology in Iowa remains limited. This research will provide the fundamental information that is needed for a successful recovery effort. The specific objectives of this research are to (1) determine the distribution of Topeka shiners and (2) define abiotic and biotic factors associated with the occurrence of Topeka shiners in west-central Iowa.



During the 2010 field season, 42 sites were sampled in the Raccoon River and Boone River basins. These consisted of 14 instream sites and 28 off-channel sites (i.e. oxbows). A total of 457 Topeka shiners were sampled during the course of the season. Fewer stream sites were sampled because of the flooding events that occurred throughout the field season. However, off-channel sites could be sampled soon after the high water began to recede. Of the 14 instream sites sampled, Topeka shiners were found in only 2 of them. However, this low detection could be due to sampling in post-flood conditions (high turbidity). It is very possible that many fish present, including Topeka shiners, were present but not detected. In off-channel sites, 14 of the 28 sites contained Topeka shiners. Sampling these oxbows with a seine was very effective and did not depend on low turbidity conditions. All off-channel sites with

Topeka shiners also held either green or orangespotted sunfish. This verifies the conventional wisdom that Topeka shiners often use sunfish nests for spawning. Piscivores such as largemouth and smallmouth bass were also detected in all of the off-channel Topeka shiner sites. This is contrary to some of the literature that associates Topeka shiner absence with the presence of these piscivores. Many other fish species were sampled during the season, including two species of greatest conservation need (banded darter, southern redbelly dace). Sampling will continue in 2011 and sites will be selected in HUC-8 basins that Topeka shiners have been historically found, such as the Upper Des Moines River and East Fork of the Des Moines River basins.

