

FACTORS INFLUENCING THE DISTRIBUTION OF TOPEKA SHINERS IN KANSAS STREAMS^{AFS}

Christopher S. Guy, Sally J. Schrank, Matthew R. Whiles, and Brent L. Brock
Montana Cooperative Fishery Research Unit
Department of Ecology, Montana State University
Bozeman, MT 59717
cguy@montana.edu

The Topeka shiner (*Notropis Topeka*) has declined in abundance throughout its historical range in the central U. S. As a result, this minnow was listed as a federally endangered species in 1999. The objective of our study was to quantitatively assess the instream physical, chemical, and biological parameters and landscape-level factors influencing the distribution (i.e., extant or extirpation) of Topeka shiners. We sampled 26 streams in the Flint Hills region of Kansas: 12 sites where Topeka shiners are extant, and 14 sites where they are extirpated. Multivariate analysis of variance was used to test whether variables were different between extant and extirpated sites. Mean catch per effort of largemouth bass in stream pools was higher at extirpated sites, and species diversity by trophic guild and richness in stream pools were higher at extirpated sites. Stepwise logistic regression was used to develop a model to predict whether Topeka shiners were extant or extirpated. Number of small impoundments per watershed area, catch per effort of largemouth bass (*Micropterus salmoides*) in pools, and length of pool were the only significant variables in the logistic model. Our model correctly classified 83 percent of extant sites and 85 percent of extirpated sites. In a landscape-level analysis of 111 streams, only number of small impoundments per watershed area was significant in the logistic model. These results provide predictive tools to assess instream and landscape-level characteristics for habitat management and possible reintroduction of Topeka shiners in Kansas Flint Hills streams.