Topeka Shiner (*Notropis topeka*) Monitoring in Eastern South Dakota Streams (2004-2006)

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EXECUTIVE SUMMARY

The Topeka shiner (*Notropis topeka*) was listed as endangered in 1999 due to an 80% reduction in its range, which encompasses portions of six Midwestern states including South Dakota. However, more recent studies have shown that the Topeka shiner is more widespread within South Dakota than other portions of its range. Because of the prevalence of the Topeka shiner in South Dakota, the Department of Game, Fish and Parks developed a state management plan (Shearer 2003) with the goal of maintaining the habitat integrity of Topeka shiner streams in South Dakota while contributing towards national recovery efforts. Monitoring and assessment is a critical step in the implementation and evaluation of this goal. The purpose of this study was to implement the long-term Topeka shiner monitoring program created to evaluate the management goals outlined in the State Plan. The monitoring plan was designed to assess the hydrologic and geomorphic parameters that may influence stream physical habitat, and ultimately fish community composition, and also to collect Topeka shiner and fish community data in tributaries potentially inhabited by Topeka shiners in the Big Sioux, Vermillion and James River Basins.
Specific objectives were to:

1) Classify each stream reach according to the Rosgen classification system (Rosgen 1996).
2) Produce a longitudinal profile of each stream reach illustrating pool/riffle sequences.
3) Produce a substrate composition profile for each stream reach.
4) Summarize aquatic habitat (riparian, bank and instream habitat) for each stream reach.
5) Calculate fish metrics for monitoring fish community structure.

A total of 33 sample sites were evaluated within eastern South Dakota over the course of three years. Eleven streams were assessed and three monitoring sites per stream were sampled. Streams sampled included: Sixmile Creek, Peg Munky Run, Stray Horse Creek, West Pipestone Creek, and Medary Creek from the Big Sioux River Basin; West Fork of the Vermillion River, Turkey Ridge Creek, and Long Creek from the Vermillion River Basin; and Middle Pearl Creek, Enemy Creek, and Twelve mile Creek from the James River Basin. Cross section, thalweg, substrate, habitat and fish community data was collected to calculate metrics that could be used to monitor stream condition.

Topeka shiners were found in all streams surveyed and at 76% (25 of 33) sites sampled. Numbers of Topeka shiners caught at sample sites ranged from 0 to 964. Our sampling recorded the largest number of Topeka shiners caught at one site on record in Stray horse Creek (964), Enemy Creek (342) and Turkey Ridge Creek (127), Long Creek (138), and the West Fork of the Vermillion (214). Topeka shiners were discovered at new locations on all streams except Six mile Creek, Middle Pearl Creek, Medary Creek, and Turkey Ridge Creek, which were resampled sites where Topeka shiners had previously been found. Topeka shiners were found at 13 of 15 (87%) resampled sites. The main result of this study was the establishment of baseline data that can be used to monitor changes in stream habitat and fish

community as indicators of stream health and consequently Topeka shiner health. The study provides a standard for data collection and metric calculations for repeatable monitoring at sample sites. The data collected and metrics calculated in this study provide a robust array of proven habitat and biological indicators of changes resulting from disturbance. We assume that changes in habitat and fish community will be surrogates for Topeka shiners health, and are more practical and repeatable than monitoring Topeka shiner populations. The metrics provided by this study are most applicable for detecting quantifiable differences in habitat and fish quality by comparing values at a site amongst years. Differences in metrics can be analyzed by individual site, stream, and/or basin. An excel file is provided with this report to facilitate future comparison of metrics in subsequent monitoring years.