Missouri Chapter Report

Rivers and Streams

River and Stream Technical Committee

MOAFS Rivers and Streams committee is planning to assist MDC staff with Hydrilla detection and eradication during summer 2017.

Eric Rahm, Committee Chair

Missouri Department of Conservation

Have started to standardize its approach to reporting 404 and 401 activities that may not be permitted. Feel free to contact Eric Rahm for information about this process (Eric.Rahm@mdc.mo.gov).

Report from Del Lobb, Activities in 2016:

Project funding started on a 5-year, University of Missouri research project to study of Lake Sturgeon movement and habitat selection in Missouri River tributaries. Acoustic telemetry tags will be implanted in up to 100 Lake Sturgeon adults in 2017. Attempts to collect fish from the Osage and Gasconade rivers will begin in March. Tracking will begin when sufficient numbers of fish have been implanted with acoustic tags.

Project funding started on a 2-year, University of Missouri research project in the East Fork Black River. This study will evaluate the potential for long-term addition of gravel downstream of Lower Taum Sauk Dam to enhance habitat for lithophilic spawning and riffle fish species. Temperature monitoring will begin in March. Searches for Hornyhead Chub (Nocomis biguttatus) spawning mounds will begin in April. Riffle fish sampling will begin later in the spring.

Efforts continued on preparing for a pilot project of placing sand and gravel in the East Fork Black River downstream of Lower Taum Sauk Dam. To evaluate longitudinal differences in the macroinvertebrate community and potential for macroinvertebrate colonization on added substrates, plastic mesh bags filled with substrate particles ranging from 4-45 mm (intermediate axis diameter) were placed in five riffles downstream of the dam. Bags were placed in the late winter and again in late summer. Bags were retrieved 5-6 weeks after placement. Natural substrate adjacent to retrieved bags was also collected. Invertebrates from the winter samples have been processed and identified. Results showed less diverse macroinvertebrate fauna and lower abundances of natural sand and gravel particles near the dam.

Results support continuing with the plan of placing sand and gravel (up to 32 mm intermediate axis diameter) on two riffles during the fall of 2017.

Report from Jacob Westoff, Activities in 2016:

Niangua Darter

Range-wide monitoring for Niangua Darters (*Etheostoma nianguae)* based on summer snorkeling surveys and an occupancy modeling approach has occurred annually from 2011 through 2016. In this design, we visited 75 habitat patches in five Osage River basin watersheds (each watershed once every two years) and sampled each patch at least twice during a visit. Occupancy probability was 0.78 in Little Niangua River in 2015, the watershed with the most robust population. Occupancy in the four other watersheds generally ranged from 0.25 – 0.44. Occupancy estimates have not been calculated for 2016 sampling, but Niangua Darters were detected in 48% of sites visited in the Maries River and in 47% of sites in the Pomme de Terre. Both detection rates far exceed those from the previous two sampling events in those systems.

Ongoing monitoring has shown that Niangua Darter populations and stream habitat have responded positively to the improved road crossings. Three bridge replacement sites were sampled in 2015 and 11 in 2016. Proportions of occupied habitats and abundances of Niangua Darters have increased upstream of most crossings as the historical effects of impoundment and accumulated sediment diminish. Niangua Darter populations declined downstream of

some crossings following replacement likely associated with the transfer of fine materials; however, evidence from monitoring suggests this is a short-term response.

Neosho Madtom

We continued monitoring populations of the Neosho Madtom (*Noturus placidus)* in the Spring River of southwestern Missouri in 2016. Our approach using kick seining methods allows for evaluating dynamic occupancy models that estimated changes in probabilities of occupancy, colonization, extinction, and detection based on spatial replication of samples in approximately 80 patches of suitable habitat. Neosho Madtoms have commonly been detected in 27 – 32% of sites (2010 – 2013), but were detected in 64% of sites in 2014. No sampling occurred in 2015 and Neosho Madtoms were detected in 30% of sites in 2016. Occupancy model results have not yet been finalized.

Ozark Cavefish

We conducted Ozark Cavefish (*Amblyopsis rosae*) surveys at nine sites from May 3 – 5, 2016. Three sites were cave systems and the other six were wells or spring boxes. Surveys included searches for Ozark Cavefish and other stygobites, along with water quality monitoring. Our surveys resulted in Ozark Cavefish sightings at five sites and cave crayfish at six sites. The highest number of Ozark Cavefish detected was eight at one of the cave sites. All water quality measurements were within acceptable ranges for Missouri criteria, with the exception of low dissolved oxygen at one of the well sites. We currently recognize 25 active/accessible sites for monitoring Ozark Cavefish, including 22 conservation populations that are defined on the basis of surface recharge zone boundaries (Table 4). Ozark Cavefish have been observed in 20 sites since 2006 representing 17 populations. Additionally, a study is underway through Oklahoma State University to determine the efficacy of eDNA sampling methodology for detecting Ozark Cavefish.

Topeka Shiner

Topeka Shiner (*Notropis topeka*) sampling was again conducted during 2015 and 2016 within the Moniteau Creek watershed, which represents one of the two extant populations in Missouri. Multiple drag seine samples at approximately 25 study sites were used to describe fish communities and habitat characteristics were measured for use in dynamic occupancy models. Separate annual occupancy models from 2011 – 2015 estimated occupancy rates from 0.27 – 0.83, with detection ranging from 0.32 – 0.63. Occupancy estimates have not been completed for 2016, but Topeka Shiners were detected at 6 of 22 (27%) sites. The low number of detections in 2016 is some cause for concern, but may also represent the low end of typical annual variation. Additional monitoring will occur in 2017. Early efforts to identify watersheds for introduction of Topeka Shiner non-essential populations (NEP) are underway. Encouraging results from north Missouri NEPs coupled with highly successful captive propagation efforts provide hope for establishment of additional populations and progress towards state recovery goals.