

Forays into Northwestern Iowa Yield New Records of Plains Topminnow (*Fundulus sciadicus*) and More Data on Pugnose Shiner (*Notropis anogenus*)

Konrad Schmidt
St. Paul, MN
ssminnow@usfamily.net

Robert Hrabik
Old Appleton, MO
Robert.Hrabik@mdc.mo.gov

Photos by
John Olson
Iowa DNR



Kon and Bob seining Pugnose Shiners in Lake Okoboji (Dickson County, IA)

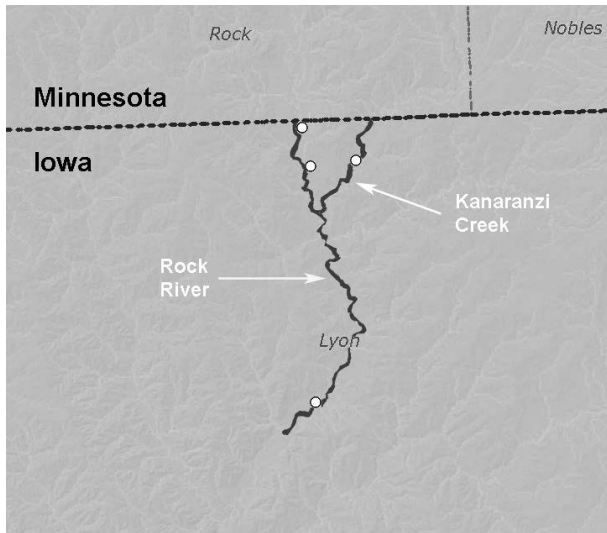
In late June 2011, NANFA members Bob Hrabik and Konrad Schmidt assisted the Iowa Department of Natural Resources (IDNR) in collecting Plains Topminnow [see cover page 14] in northwestern Iowa. The species had not been reported since 1941 and was presumed extirpated. John Olson (IDNR) coordinated the trip and covered expenses for what he called his “hired guns.” Bob was familiar with Plains Topminnow habitat in both Nebraska and Missouri while employed as a fisheries biologist with the Nebraska Game and Parks Commission and the Missouri Department of Conservation. Kon gained similar insight as the former Nongame Fish Specialist with the Minnesota

Department of Natural Resources. Before the surveys began, John recruited local Bureau of Fisheries and Law Enforcement staff to assist with the effort. Kon pre-selected several potential sampling sites using aerial photos of the Rock and Little Rock Rivers.

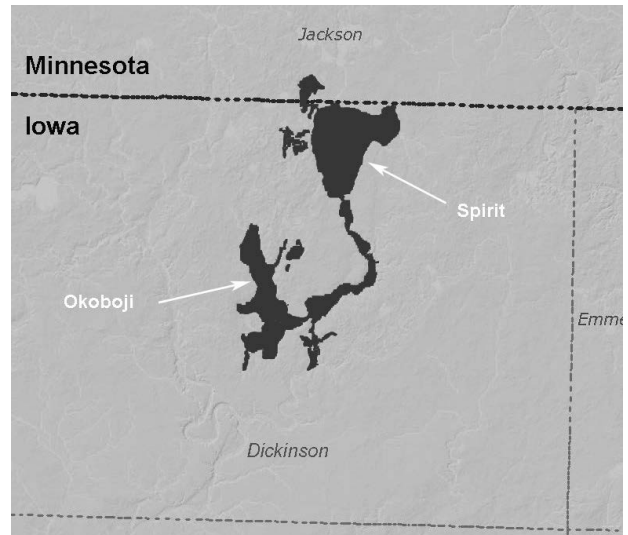
From June 27-29, with the enthusiastic assistance of several young fisheries interns, Plains Topminnows were found at four of 14 sites. Three sites were on the Rock River and one on Kanaranzi Creek; all were in Lyon County. None were found in the Little Rock River where the last specimen had been reported. These collections represent the first records in Iowa in 70 years.



Plains Topminnow site (Kanmaranzi Creek - Lyon County, IA) - John Olson



2011 Plains Topminnow localities



Iowa's "Great Lakes"

Midway during the Iowa foray, we embarked on one more adventure. Dr. Megan McCusker (University of Toronto) has been conducting a range-wide genetics study of Pugnose Shiner - [see page 14]. IDNR collected six specimens for Dr. McCusker from Lake Okoboji in 2010, but she requested more tissues to further study this only known population in the Missouri River Drainage. John, Bob, and Kon caravanned to Iowa's "Great Lakes" where we met up with our never-take-a break interns again

and with Mike Hawkins, IDNR Fisheries Biologist. NANFA member Chris Vrba from Pocahontas, IA, also joined us. After a half-day effort, five Pugnose Shiners were collected, but it took 12 people dragging a 50-foot seine through dense vegetation. The key to capturing this species was to lift the seine off the bottom of the lake and drag it through the water such that it operated like the mid-water or surface trawl. We were fortunate to have a lot of intern help to accomplish the task. Our catch of this species

increased considerably utilizing this method. Bob, who is always the ichthyologist at heart, also preserved specimens and tissues of Banded Killifish (*Fundulus diaphanus*) for his fish collection. Bob and Kon did suffer a minor mishap from treading in the depths of Lake Okoboji. The first report of swimmer's itch for the season was confirmed the week before and shortly after arriving home, we both found ourselves covered head to toe with swimmer's itch. However, both were mild cases and our red bumps and itch subsided in a couple of days. A small price to pay for the awesome experience we had. However, we do wonder how the interns fared?

Genetic Analyses Summary of Pugnose Shiner Samples

Dr. Megan McCusker - University of Toronto

Our study included samples from Ontario, New York, Minnesota, Wisconsin, Michigan, and Iowa. The primary genetic division in our dataset was between eastern and western samples, specifically those from Minnesota and Iowa versus all others. Although one possibility to account for this division is that the Pugnose Shiner occupied two distinct glacial refugia during the

last glaciation, the extent of the genetic divergence between eastern and western samples was more consistent with survival in a single glacial refuge (the Mississippian Refugium). We speculate that the genetic divergence observed today is related to discrete post-glacial colonization routes taken from the Mississippian Refuge, with one flowing northward into present day Iowa and Minnesota and one flowing eastward into present day Wisconsin, Michigan, Ontario, and New York.

The Okoboji population is significantly different from all other populations throughout the Pugnose Shiner's range indicating this population is distinct. Given the relative geographical isolation of Okoboji Lake with respect to the species' range and the limited movement; however, this was not at all surprising. Okoboji Lake samples were most closely related to Fish Lake (Le Sueur Co, MN), which was the most southern of all Minnesota samples included in this study. Although we only analyzed nine individuals from Okoboji Lake, genetic diversity was comparable to that found elsewhere, suggesting that despite very limited historical sampling of the Pugnose Shiner in this lake, the population size may not be unusually small compared to that found throughout the range of the species. 🐟



Plains Topminnow - Konrad Schmidt



Pugnose Shiner - Konrad Schmidt