

Trawling Down the River

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Birth of the Missouri Trawl

The conception of a trawl effective at collecting small, bottom fishes in large, too-deep-to-wade, rivers was the brainchild of “Data” Dave Herzog with the Dept. of Conservation in Jackson, MO. He had been frustrated for many years conducting fish surveys in the Mississippi and Missouri Rivers knowing deep habitats were inadequately sampled despite the use of a wide array of gears and methods. He discussed the need for a new design of bottom trawl with his supervisor, “Captain Jean-Luc Picard” Bob Hrabik whose enthusiastic order was, “Make it so!”

Dave’s final creation was a hybrid of existing trawls, but this design had a coarse mesh inner sock and a fine mesh outer sock. The two sock design segregated larger fish from smaller species and prevented the “atom smashing” that occurred in conventional trawls. The results have been incredible in rewriting scores of distributions that includes many rare species. However, this is by no means a silver bullet. Individual trawl hauls frequently have very low catches or are “clogged” with many common species. Since its inception, it is the collective species list maintained by Bob, Dave and “Engineer Geordi

La Forge” Dave Ostendorf who have ventured to the “frontiers” of 15 States, Canada, and recently, China that has proven the trawl’s worth is second to none (See Herzog et al 2005 and 2009).

Missouri Trawling in Minnesota

Bob and the “two Daves” brought their trawl to Minnesota for 10 days in 2004. During that short time, the trawl made an impressive debut. In Saganaga Lake along the Ontario border, the trawl collected Ninespine Sticklebacks (*Pungitius pungitius*) and Deepwater Sculpin (*Myoxocephalus thompsonii*). Both species were known from the lake, but very rarely reported. The deepest sculpin collection was at a depth over 200 feet. We were aiming for the maximum depth of 274 ft, but our sonar cut out at 216 ft. At several localities in the St. Croix River, the trawl collected the Shoal Chub (*Macrhybopsis hyostoma*) which had not been reported from this stream in 25 years. The distribution of the Western Sand Darter (*Ammocrypta clara*) was extended several miles downstream to the foot of Lake St. Croix and a depth record was set for the River Darter (*Percina shumardi*) of 70 feet in the gorge of the St. Croix. In the Minnesota River, the trawl made the largest single site sample of Shoal Chubs consisting of 529 specimens. The



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Fig. 1.

Trawling in Saganaga Lake along the Minnesota-Ontario border

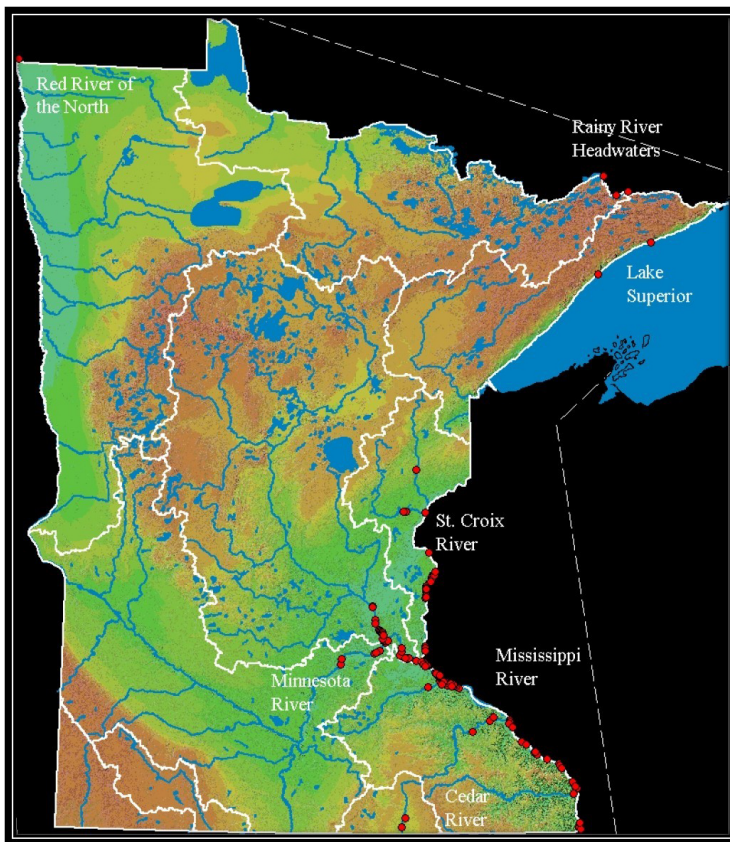


Fig. 2.
Missouri Trawl Locations 2004-2011.

Darter (*Percina phoxocephala*) were extended several miles downstream into the navigation channel, while the River Darter, previously known only from the lower navigation channel, was collected many miles upstream at Carver, MN.

The Missouri trawl has since been used quite extensively elsewhere in Minnesota without the expertise of Bob and the two Dave's (Figure 2).

Despite the "lack of supervision," I have stumbled along collecting Crystal Darters in the Mississippi River at Alma, WI in 2008 and the St. Croix River at St. Croix Falls, WI in 2009. Trawling attempts were also made in Lake Superior, but after a large, ice-cold wave swept over our bow drenching us, it was a unanimous decision of my crew a 14 foot boat will forever be banned in this sea! However, the very limited effort there still managed to collect the Spoonhead Sculpin (*Cottus ricei*) at Grand Marais and both Spoonhead and Deepwater Sculpin in Taconite Harbor.

Bob's Return to the Land of 10,000 Lakes

In October 2011, Bob flew in for a whole week to slay dragons. Our hunting grounds were going to be three large tributaries of the Mississippi River in southeastern Minnesota: the Vermillion (Dakota Co.), Cannon (Goodhue Co.) and Zumbro (Wabasha Co.) Rivers (Figure 3).

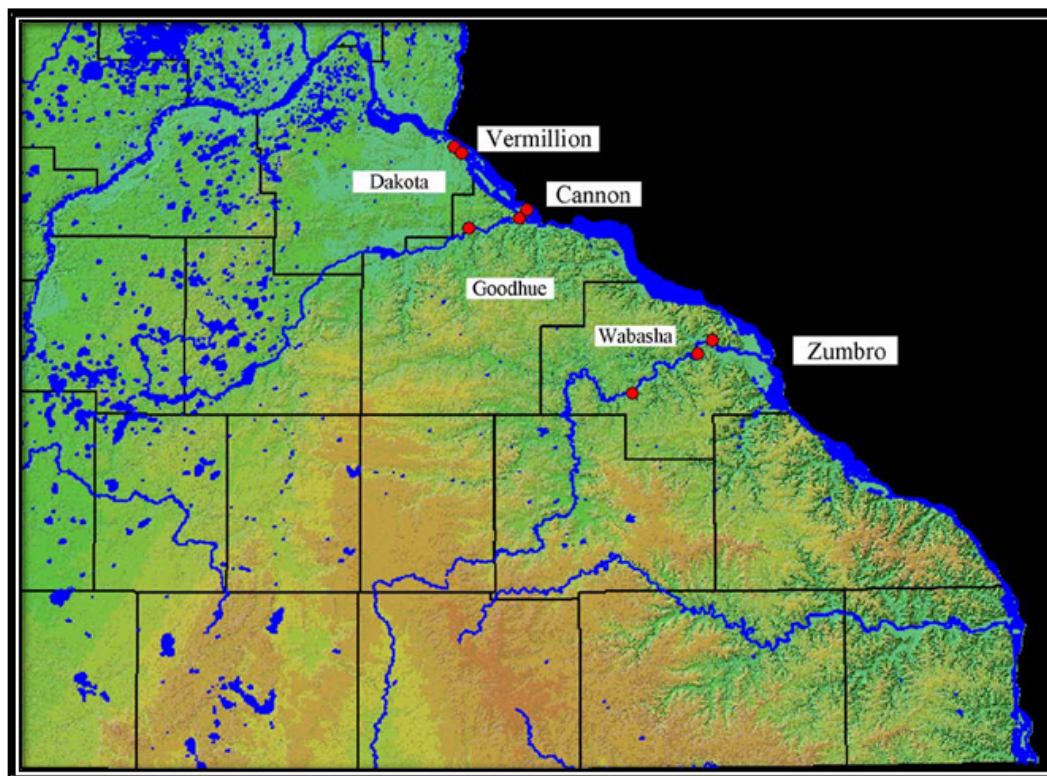


Fig. 3.
Missouri Trawl 2011 Locations.

Our confidence was very high to set new records for rare species, and of course, new occurrences in all these streams. We hit the Vermillion first and soon ran into gravel bars which shredded my recently rebuilt prop. On one of the first hauls, we collected a Shoal Chub. I was hoping this species would pop up. Dr. James Underhill, former curator of the Bell Museum of Natural History, collected the only known specimen from this stream in 1963. Several common species followed in subsequent hauls, but after referring to my stream checklist, I realized there were no extant voucher specimens for many of these species. Bob rectified this deficit by madly pickling specimens until I “insisted” he cease and desist. We finished our first day on very high note, but the winds of change were coming.

The next morning, Bob, George Cunningham and I headed to the Cannon River. George had arrived the night before from Nebraska. We met Jay Hatch from the University of Minnesota at the idyllic town of Welch. I glanced at the “ramp” we had to use at a canoe outfitter and whispered to myself, “I wish I had a four-wheel drive!” Nevertheless, I backed the boat trailer down and launched without mishap until I attempted to drive up the very steep grade. After several deep ruts and a lot of huffing and puffing from three pushers, we finally got the car up on level ground. I was uneasy how the heck we were going to get the boat and trailer out later, but had no time to worry about that now as we jumped in the boat and headed upriver in search of our hidden treasures. Unfortunately, hauls here were scanty with fish and boulders quickly made short work of my second just-rebuilt prop. We decided to try a deep run and everything went smoothly until I hit a boulder and reflexively attempted to lift the prop up using the tiller handle. In a split second, I was looking in disbelief at the handle and throttle completely detached from the outboard. I shut off the motor and told

my loyal crew with deep resignation in my voice, “WE’RE DONE.” On the drive home an idea hit me to call a friend who I thought may have a spare outboard on hand I could use. We were in luck and back in business the next day.

We met Phil Cochran from St. Mary’s University at Kellogg and headed west up the Zumbro River valley. A narrow forest road brought us to our access, which was a poor horse crossing at best. However, today I was prepared with a bag winch to lower the boat trailer down this even steeper grade than the day before. With great relief and sense of triumph, I found this could not have worked any slicker! We were heading upriver in no time, but at a very slow pace through a maze of large woody snags. We were very optimistic, but all our hauls proved to be few in fish and plagued with frequent snags. We decided to give the Zumbro one more try the next day at the most recent site where Mike Davis (Minnesota DNR) collected Crystal Darters (*Crystallaria asprella*) in 2004.



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© Dave Ostendorf Missouri Dept of Conservation



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Fig. 4.

Several species dredged from the depths by Konrad and crew. Photos clockwise from top right: Crystal Darter (*Crystallaria asprella*); Shoal Chub (*Macrhybopsis hyostoma*) from the Vermillion River (Dakota Co. MN); Deepwater Sculpin (*Myoxocephalus thompsonii*).

Common Name	Scientific Name	Vermillion	Cannon	Zumbro
	Acipenseridae - Sturgeon			
Shovelnose Sturgeon	<i>Scaphirhynchus platyrhynchus</i>		X	
	Cyprinidae - Minnow			
Spotfin Shiner	<i>Cyprinella spiloptera</i>	X		X
Shoal Chub	<i>Macrhybopsis hyostoma</i>	X	X	
Emerald Shiner	<i>Notropis atherinoides</i>	X	X	X
Bigmouth Shiner	<i>Notropis dorsalis</i>			X
Spottail Shiner	<i>Notropis hudsonius</i>	X	X	
Sand Shiner	<i>Notropis stramineus</i>	X	X	X
Mimic Shiner	<i>Notropis volucellus</i>	X	X	X
Channel Shiner	<i>Notropis wickliffi</i>	X	X	X
Bluntnose Minnow	<i>Pimephales notatus</i>	X		
Bullhead Minnow	<i>Pimephales vigilax</i>	X		
Longnose Dace	<i>Rhinichthys cataractae</i>		X	X
	Catostomidae - Sucker			
Northern Hog Sucker	<i>Hypentelium nigricans</i>			X
Golden Redhorse	<i>Moxostoma erythrurum</i>	X		
Shorthead Redhorse	<i>Moxostoma macrolepidotum</i>	X		
Unknown Redhorse	<i>Moxostoma sp.</i>			X
	Ictaluridae - Catfish			
Channel Catfish	<i>Ictalurus punctatus</i>	X		
Tadpole Madtom	<i>Noturus gyrinus</i>	X		
	Esocidae - Pike			
Northern Pike	<i>Esox lucius</i>	X		
	Centrarchidae - Sunfish			
Rock Bass	<i>Ambloplites rupestris</i>	X		
Bluegill	<i>Lepomis macrochirus</i>	X		
	Percidae - Perch			
Western Sand Darter	<i>Ammocrypta clara</i>			X
Rainbow Darter	<i>Etheostoma caeruleum</i>			X
Johnny Darter	<i>Etheostoma nigrum</i>	X	X	X
Banded Darter	<i>Etheostoma zonale</i>		X	X
Yellow Perch	<i>Perca flavescens</i>		X	
Logperch	<i>Percina caprodes</i>	X	X	X
Slenderhead Darter	<i>Percina phoxocephala</i>	X	X	X
River Darter	<i>Percina shumardi</i>	X	X	
	Families	6	3	3
	Species	20	14	15

Table 1.
Missouri Trawl 2011 Species List.

We met Mike and Bruce Brekke who guided us to a unique rapids in the lower Zumbro where the typical habitats are sand runs and pools. Most of the rapids were too shallow to run a boat and required hand trawling. The Western Sand Darter proved to be the only highlight here. Otherwise, the hauls consisted of the same common faces. Since we arrived at the site, Bob had been eyeing a deep, fast chute along the far bank. We cruised up through it in the boat and it appeared very doable so in the trawl went, but we drifted a hair too close to the bank and jolted to a stop snagged on a log. We tried to yank it off using the outboard, but the prop tangled in the trawl. We were now literally dead in the water. After an hour of tugging and groaning, Bob finally said, "OK, give me a knife." We were able to salvage the trawl, but it still needs some serious mending. That night on a whim I checked the Minnesota Geographic Names website for the source of the name Zumbro River. The French named it the "River of Difficulties" because of the abundance of driftwood in the channel. How true that description has remained for two centuries!

Armed with a new trawl and joined by Minnesota NANFA Rep, Jenny Kruckenberg, we decided to spend our last two days on the lower Cannon River. Snags were once again a constant challenge, but we managed to again collect Shoal Chubs and the first recorded occurrence of Shovelnose Sturgeon (*Scaphirhynchus platyrhynchus*). Jenny spotted the young-of-the-year fish thinking at first glance it was a piece of plastic or a child's toy. I knew exactly what her reaction would be, saying, "Wow, that's a perfect pickler!" Oh the scolding I got! I followed up with a few animated grabs, but she blocked everyone shielding "her baby" from harm. Bob and I found this absolutely hilarious and gladly settled for photos before she joyously released it back to the river. The trawl also snared a couple of non-fish species in the Cannon: one Common Map Turtle (*Graptemys*

geographica) and one Devil Crayfish (*Cambarus diogenes*). Both were identified through images sent to John Moriarty, author of *Amphibians and Reptiles Native to Minnesota* (1994) and Dr. Tom Simon, respectively.

Overview and Outlook

Six days of trawling yielded 28 species representing seven families which included three Species in the Greatest Conservation Need: Shovelnose Sturgeon, Shoal Chub and Western Sand Darter (Table 1). Meager wages for the effort expended, but I remain undaunted looking forward to next year. The number one priority will be a return to the River of Difficulties (Zumbro) to sample historic localities of the Crystal Darter. After that, the canvassing of the state will slowly proceed westward to the Dakotas.

Acknowledgements

These surveys could not have been accomplished without the assistance of so many volunteers mentioned above. How I wish I could pay them their fair due!

Literature Cited

Herzog, D. P., V. A. Barko, J. S. Scheibe, H. A. Hrabik and D. E. Ostendorf. 2005. Efficacy of a Benthic Trawl for Sampling Small-Bodied Fishes in Large River Systems. *North American Journal of Fisheries Management* 25: 594–603.

Herzog, D. P., H. A. Hrabik, D. E. Ostendorf and V. A. Barko. 2009. The Mini-Missouri Trawl: A Useful Methodology for Sampling Small-Bodied Fishes in Small and Large River Systems. *Journal of Freshwater Ecology* 24: 103–108.



Fig. 5.

Bob sifts through the catch from a trawl haul while Konrad keeps tally.

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Up to \$1000 for Environmental Education Projects to be Awarded in 2012

Grants Available for Projects to Educate the Public about Native Fishes

In 2012 the North American Native Fishes Association (NANFA) is again offering up to \$1000 to sponsor a project or projects to educate the general public about native North American fishes and their environment. The Gerald C. Corcoran Education Grant will fund such educational projects as:

- * Producing and distributing educational materials (books, brochures, posters, displays, video, Internet resources, etc.)
- * Stream surveys with public education as a primary goal
- * Public lectures
- * Nature center displays
- * School materials and displays
- * Teacher training workshops

The award was established in memory of past NANFA President Gerald C. Corcoran, who stressed public education regarding the continent's native fishes. NANFA is an organization made up of home and professional aquarists, university and other professional researchers, conservationists, anglers and naturalists. As its name implies, the group is dedicated to the study and conservation of North America's native fishes.

Grant proposals are due March 31, 2012. Proposals will be evaluated and ranked by a review committee, and funding awarded on June 1, 2012. Qualifying applicants must be members of NANFA but non-members may submit their annual dues with their proposals. For additional information, contact:

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