

A Unique Eagle Scout Project

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Bryan's Boy Scout Troop 85 collecting Rainbow Darters from a donor population in Salem Creek (Dodge County, MN).

September 30, 1976 was the last time Rainbow Darters (*Etheostoma caeruleum*) were found in Belle Creek (Goodhue County, MN) near the town of Welch (Figure 1). Dr. James Underhill, former Curator of the fish collection at the James Ford Bell Museum of Natural History, believed flooding from a major storm event had destroyed the darter's habitat. However, I later suspected heavy rains may have also carried agricultural insecticide into the stream because this had been the source of trout kills in other southeastern Minnesota streams. Even though extirpated from Belle Creek, Rainbow Darters were still common downstream in the Cannon River, that is, until a series of fish kills occurred during the 1980s. Most were attributed to maintenance on the Lake Byllesby Dam near Cannon Falls when massive volumes of silt were released from the reservoir.

Since the early 1990s, Jenny Kruckenberg, NANFA Rep and Minnesota Aquarium Society (MAS) member, has hosted annual "Darter Hunts" in Belle Creek and Cannon River for Banded (*Etheostoma zonale*), Fantail (*E. flabellare*) and Johnny (*E. nigrum*) Darters, but no Rainbows had been found during these efforts.

In 2003, Bryan Stefansky, my son, was looking for Eagle Scout Project ideas. At that time, I was the Department of Natural Resources Nongame Fish Biologist and had this project simmering on my back burner, but no funding existed to implement it.

However, I now believed using Bryan's Boy Scout troop as volunteers, we could make it happen. The DNR's initial response was great idea, but they could not see a plausible way to certify any donor population disease free for three years. Fortunately, Bryan's proposal caught the eye and support of Huon Newburg who was Regional Fisheries Supervisor in New Ulm. He worked out all the kinks satisfying everyone's concerns and Bryan was issued a DNR permit to begin his Eagle Scout Project.

Long before Bryan selected his Eagle Scout project, I had planned to preserve genetic integrity using the two remaining Rainbow Darter populations in the Cannon River system upstream of Lake Byllesby as the donor stock. Unfortunately, my stream surveys revealed the species was extremely rare in both Chub and Prairie creeks (Figure 1). I decided we needed to go "over the hill" into the Zumbro River system and 40 miles due south of Belle Creek found an incredible abundance of Rainbow Darters in Salem Creek (Dodge County) [see page 17: Chub and Prairie creek specimens]. Bryan was then turned loose contacting landowners for access and organizing collecting trips with his fellow scouts and troop leaders. He also made it a family affair "drafting" his grandparents, aunt, and uncle. The first two trips were done in May 2004 with the hope that ripe male and female darters would spawn in Belle Creek soon after release. However, Salem Creek was still high and muddy from

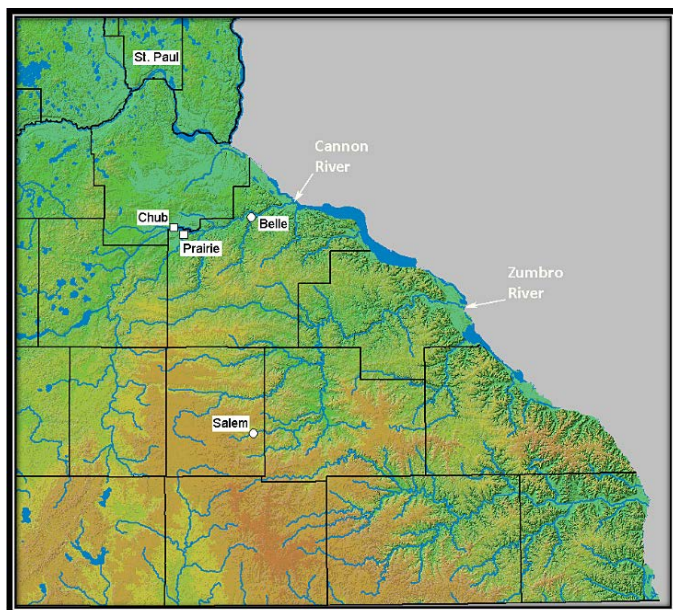


Figure 1. Locations of Belle, Salem, Chub, and Prairie creeks. Inset shows Goodhue (north) and Dodge (south) counties.



Releasing Rainbow Darters into Belle Creek.

snow melt, but still shallow enough to wade. Nevertheless, keeping our balance in swift currents and tripping over “invisible” boulders resulted in more than one baptism. During each trip, Rainbow Darters were tallied as males, females, juveniles, and adults (Table 1).

Large food coolers with air stones were used to transport the darters to Belle Creek. Following several water changes to acclimate the darters, the treasured cargo was finally released to their new home. However, later in the year when the water was clear, a small army of wading boots would muck up the water to provide temporary cover from predators such as Brown Trout (*Salmo trutta*). Bryan supervised five trips into October 2004 and “transplanted” 1,787 Rainbow Darters to three release sites on Belle Creek.

In April 2005, Bryan had his Eagle Scout award ceremony at his former grade school where many of his teachers attended to congratulate him. However, despite the hard work and well deserved award, we had no proof yet of success and were committed to monitor for reproduction in Belle Creek.

In May 2005, Bryan and I joined the MAS Darter Hunt on Belle Creek at a release site and in a very short time kick netted three adult Rainbow Darters. So far, so good. In August, we snorkeled through the release site, but saw only two adult Rainbow Darters and two lunger Brown Trout. We continued monitoring the same release site annually with MAS, but never sampled more than six Rainbow Darters which were always fat and sassy adults. Finally in 2010, juveniles made their first appearance and we could breathe a sigh of relief knowing Rainbow Darters were established in Belle Creek. Nevertheless, we will continue to check on our precious gems in Belle Creek with our friends in MAS.

DATE	DONOR POPULATION	ADULT MALE	ADULT FEMALE	SEX RATIO	JUVENILE MALE	JUVENILE FEMALE	SEX RATIO	TOTAL CATCH	RELEASE SITE	COMMENTS
5/15/2004	Salem Creek (Ness property)	151	61	2.5:1	143	62	2.3:1	417	Co Rd 7	clear, flow slightly above normal
5/22/2004	Salem Creek (Ness property)	49	85	1:1.7	118	77	1.5:1	329	MAS site	turbid, flow above normal
7/5/2004	Salem Creek (Kunz property)	80	169	1:2.1	153	201	1:1.3	603	Co Rd 7 & MAS site	clear, flow slightly above normal
7/14/2004	Salem Creek (Yocum property)	47	38	1.2:1	61	60	1:1	206	MAS site	slightly turbid, flow above normal
10/21/2004	Salem Creek (Ness property)	133	49	2.7:1	23	27	1:1.2	232	Hwy 19	normal flow
Totals		460	402	1.1:1	498	427	1.2:1	1787		

Table 1. Transplant stock structure and collection and release sites.



Konrad and Bryan snorkeling at Belle Creek release site.



Bryan's Eagle Scout ceremony.

Déjà vu: The floods of 2012

The first weekend in May, Jenny had to switch locations of her first Darter Hunt because heavy rains and floods created conditions extremely dangerous for wading in either the Cannon River or Belle Creek. A stream gauge at Welch recorded a jump in height from 4 to 8 feet (ft) and discharge of 300 to more than 4,000 cubic feet per second (cfs) (Figure 2).

Finally on May 19th, a wonderful Darter Hunt was held when the Cannon had returned to near normal flow and Rainbow Darters were again found, as expected, in Belle Creek. However, there was an apocalypse building on the horizon. In mid-June, the Cannon River experienced the worst flood in recorded history. The stream gauge height exceeded 14 ft and the discharge peaked at 20,000 cfs. I watched the news footage in awe at a location on the Cannon River where I had collected many times. The force of nature was humbling. My thoughts drifted to nearby Belle Creek. I knew it had not been spared.

On October 2nd, I returned to Belle Creek with Jenny and NANFA member Mark Hove. I hurried to the trail bridge before them and could not believe what I saw. The riffle and pool, where Darter Hunts had collected for so many years, and also, the release site for Bryan's darters was GONE, filled in with rubble and sand. The new channel had "migrated" more than 30 ft away. The water was crystal clear, but thick hair algae carpeted the entire streambed. We held a seine stationary and kicked the riffles above it. Longnose Dace (*Rhinichthys cataractae*) were the only species present and abundant. Dense clumps of algae shed into the seine and we all commented about the very distinctive green hue in the dace none of us had ever observed before. More kicking in the riffle produced only more of the same. We decided to try some slightly slower velocity habitat at the head of the riffle. SUCCESS!!! Our anxiety about their fate vanished when we found two gorgeous males and one juvenile Rainbow Darter rolled up in an algal ball [see cover page]. The ride home was a happy one as we marveled like proud parents at the species' incredible resiliency. 🐟

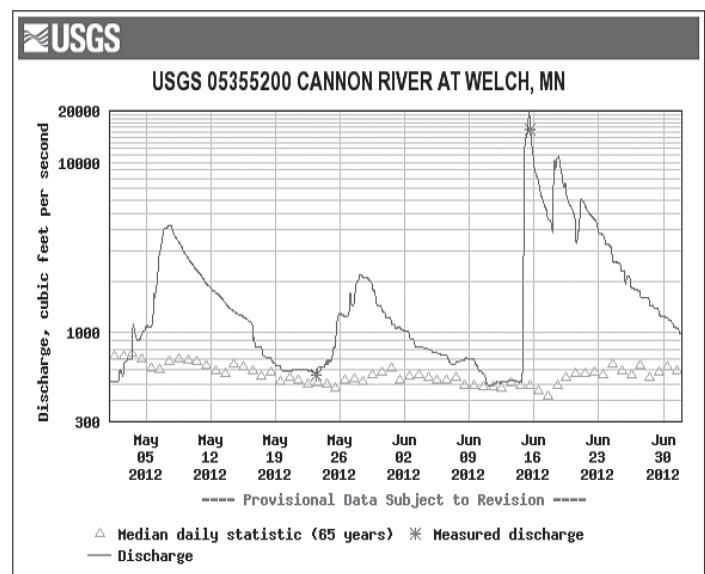
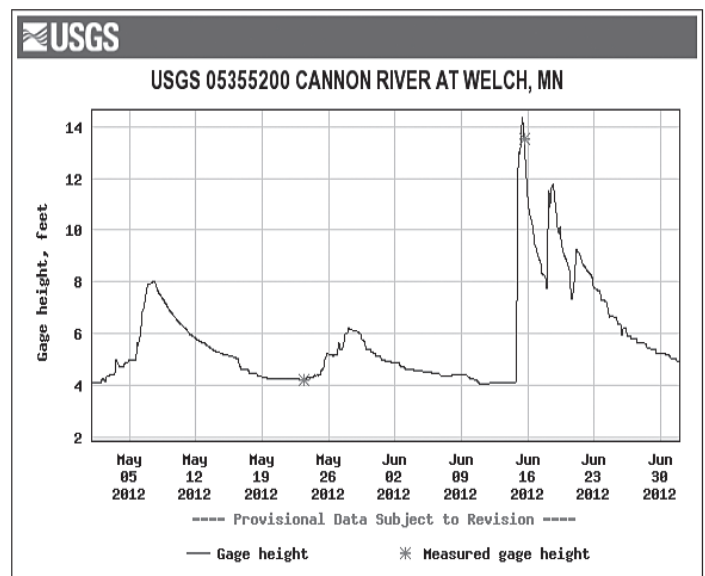


Figure 2. Stream hydrographs during 2012 floods.



Rainbow Darter captured October 2, 2012 at 2004 release site in Belle Creek