

Promoting and Conserving the Biodiversity of the Little River, Blount County, Tennessee: 2015-2017

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Final Report for 2015-2016 and Progress Report for 2017 Field Season

To:
Tennessee Valley Authority
Cooperative Agreement No.'s 10217 and 271349
22 September 2017



Sickle Darter, *Percina williamsi*, in the Little River

BACKGROUND INFORMATION: The Little River has one of the most diverse fish faunas of any system of its size in Tennessee or anywhere in the southeast US, with more than 100 species documented. Unfortunately, this remains unknown to most of the general public, with the result that there is poor support for conservation measures needed to combat declining water and habitat quality in the lower portions of the river, primarily due to the cumulative impacts of nonpoint source pollution from agricultural, municipal, and development sources. Numerous efforts are in progress to attempt to correct many of these issues, involving a broad array of partners, including TVA, TWRA, TDEC, USFWS, EPA, NRDC, UTK and NGOs like CFI and the Little River Watershed Association (LRWA) (all part of the Little River Watershed Forum, begun by TVA). While these are producing many positive results, cumulative impacts from sedimentation still appear to be increasing, with apparent resulting declines in many rare and sensitive fish populations.

The Little River harbors several rare fish species, including one that is found nowhere else on earth, the federally endangered Marbled Darter, *Etheostoma marmorpinnum*. The population of Ashy Darters, *E. cinereum*, in the river is unique, even more rare, and in apparent severe decline. The infamous Snail Darter, *Percina tanasi*, is found in low numbers in Little River. Two additional rare darters, the Blotchside Logperch, *P. burtoni*, and the Sickie Darter, *P. williamsi*, appear to be faring better than the others, but the latter has seen population declines in recent years. The Little River is an incredibly valuable last stronghold for these imperiled fish as well as many other rare aquatic species such as mussels and hellbenders. The Sickie Darter is one of three aquatic species that are subjects of a listing decision lawsuit brought against FWS by the Center for Biological Diversity.

GOAL: The ultimate goal of this project is to document population trends of some of the rare fish populations in the Little River, with resulting benefits to the entire river's aquatic biodiversity, and to complement existing efforts with the same goal. The general approach will be threefold: 1) initiate standardized monitoring of sensitive fish species, focusing on the Sickie Darter, as bio-indicators to reveal habitat and water quality trends; 2) initiate recovery efforts for at least one of the rare fish, Sickie Darter; and 3) increase public awareness regarding the significance, value, and wonder of the underwater biodiversity in the river.

METHODS:

1) TVA, TDEC, TWRA, and UTK partner to conduct annual Index of Biotic Integrity (IBI) surveys at Little River sites, and CFI has initiated efforts to monitor and recover the Marbled Darter, Ashy Darter, and Blotchside Logperch populations in the Little River, but (with the exception of a pair of UTK graduate student studies) the Sickie Darter has been neglected to date. We initiated regular, standardized surveys with the establishment of GPS and permanent marker-defined snorkel survey reaches at two Little River sites, River John's Island (river mile 14.6) and below Coulter's Bridge (river mile 20.3), to establish baseline data on Sickie Darter population status as well as Marbled Darter, Ashy Darter, and Blotchside Logperch (Table 1). The River John's Island site (LRM 14.6) was monitored in 2015 and 2017, but not in 2016 due to drought conditions. In late summer and fall 2016, Little River water levels were extremely low making snorkeling efforts ineffective especially at this site. CFI has already determined along with TVA biologists that snorkel surveys are by far the most effective and efficient technique for locating and monitoring this and other rare species. Population monitoring was conducted with mask and snorkel. Experienced biologists systematically searched equidistantly-spaced up the stream, counted individual fish, and tracked time. Indices of Sickie Darters observed per person-hour (fish/p-hr) were then calculated, similar to Catch Per Unit Effort (CPUE), or, in this case, Observation Per Unit Effort (OPUE). CFI biologists also searched for three additional rare fish species, Marbled Darter, Ashy Darter, and Blotchside Logperch (Table 1).

2) Sickie Darter was formerly included as a subspecies of the well-known Longhead Darter (*P. macrocephala*) therefore this closely related species is believed to exhibit similar life history traits. Spawning is presumed to occur in gravel shoals in late winter (Page & Near 2007). Almost nothing is known about the reproduction and early life history of the Sickie Darter, areas of knowledge that may be critical to informed management and conservation of the species. We initiated efforts to develop captive

propagation protocols for the species in order to gather such needed ecological information and to prepare for potential reintroduction and restoration efforts to nearby recovered (but isolated) waters such as the lower Tellico River above Tellico Reservoir and/or above the Perry's Mill Dam on the Little River which is currently a barrier to natural dispersal of the species upstream to suitable habitat. A small group of broodstock were collected each year from Little River and brought to the CFI hatchery for husbandry and conditioning in order to induce spawning the following spring and development of rearing methods. Sickle Darters were collected from the Little River from two different sites: 1) Perry Mill's Dam, TWRA access (LRM 21.9); and 2) US 411 bridge, Brabson Ford (LRM 17.3) by snorkeling and using hand-held dipnets and/or seining, then held in bags in the stream and packed with oxygen into coolers for transport back to the CFI facility in Knoxville (Table 2). Six adults were collected in July 2015; twelve were collected in July and September 2016; and another two adults were collected in 2017 (Table 2).

The fish were held in a separate, dedicated multi-tank system similar to others currently used to house and propagate other fish species at CFI (Rakes et al. 1999). Individual tanks ranged in size from 38 to 220 liters, depending on size and space needs of the species. Systems were typically 1500-2500 liters. Filtration included individual tank sponge filters and airstones as well as system filters; circulation/water flow was enhanced within a tank with a small submersible powerhead pump or "fan". Sickle Darter breeder tanks were equipped with a reverse flow under gravel filter. This variant of an under gravel filter pumped water up through the gravel (rather than pulling it down through the gravel in the 'typical' way using air lift tubes). Both types of undergravel filters provided mechanical and biological filtration, but reverse flow kept the substrate cleaner and less compact while providing oxygenated interstitial water flow for spawned/buried eggs. The filter consisted of a grid of perforated PVC pipes (1/2" Schedule 40) placed on the bottom of the aquarium and then covered in gravel and sand. A 15kW generator insured back-up power for essential life support functions for the entire facility in the event of an electrical outage.

New fish initially were held in isolated aquaria to undergo quarantine and aquarium acclimation. Abundant cover was provided in the form of slab rocks, PVC pipes, and ceramic tile slabs on a mixed sand and gravel substrate with some woody debris. Fish were provided live blackworms (*Lumbriculus variegatus*, a small aquatic annelid) and live *Daphnia* as a first food. Frozen bloodworms (chironomids) and other frozen foods were also provided as the fish became acclimated to captivity. Subsequent to the quarantine period and aquarium acclimation fish were housed in breeding tanks with a ratio of males to females between 2:1 and 2:2 based on observations of spawning activity in the wild (Page & Near 2007). Behavioral observations, however, dictated ratio adjustments to obtain optimal spawning success. Males and females were periodically shuffled as breeding season length and available broodfish numbers permitted. Territorial behavior required separating and isolating sexes or even individuals. If necessary and/or when possible, gravid females with ovipositors protruding were paired with the most robust males. Sickle Darters live to at least 36-48 months of age and can become sexually mature during the reproductive season at age 11-13 months for males and 22-25 months for females; few if any individuals reach age 4 (Page & Near 2007). Paige (1990) reported similar age-at-maturity for the Longhead Darter. Sickle Darter males are typically larger than females of the same age. Spawning events are believed to occur in late winter when water temperatures in the Little River likely range from 10-16°C.

Sickle Darters bury their eggs in fine substrates, as do Longhead Darters. For other darters, including *Percina*, that exhibit this behavior, years of propagation protocol development at CFI have resulted in a minimally invasive egg incubation technique--simply leaving the eggs where the adults spawn until they hatch. Yolk-sac larvae were also left in the substrate and allowed to swim up when ready, at which point they were captured and removed from the breeding tank as quickly as possible to minimize predation/cannibalism by the adult darters. This was performed passively via the overflow drain out of the breeding tank. This outflow was directed through a flexible tube to a 'capture tub', currently constructed from 50 L, white plastic trash cans with the tops cut off. The tubs were equipped with a central overflow standpipe with a very fine mesh (420 micron) screen to prevent escape of the larvae. The white color allowed for easier detection of the larvae. Larvae of Sickle Darter were pelagic immediately after hatching and become demersal at just over 30 days. Presumably, larval Sickle Darter exhibit similar pelagic behavior and other life history traits as Longhead Darter.

Once the larvae hatched and swam up, they were transferred to a larger black rearing tub measuring 70 cm wide and 33 cm deep. The dark color of these tubs was important because pelagic darter larvae were phototropic--attracted to light-- and were typically confused in glass or light-colored containers, attracted against the container sides until they die from lack of feeding. In dark circular containers with light overhead the larvae stayed suspended out in the water column and were able to see and capture food items. This tub also had a PVC standpipe widened at the top with a 250-500 μ screen around it. The standpipe was positioned in the center of the tub with a flexible air wand around it to prevent larval drift into the overflow screen. In addition to passive larval capture in 2018, at least a few eggs will be collected from the substrate by vacuuming with aquarium-cleaning siphons in order to observe and describe egg development and estimate hatch time after spawning events. Eggs will be incubated in a 4 L plastic flow-through tray nested over a 75 L aquarium.

The rearing of tiny pelagic larvae required a balance between providing adequate zooplanktonic food densities while simultaneously maintaining adequate water quality and avoiding excessive larval densities. Rearing tubs were set up with a reservoir, timer and solenoid for constant food dispersal during the day. The timers opened the solenoid valves for ten seconds every two minutes during daylight hours. The feeding reservoir was filled with water from the system, then with a portion of *Brachionus* rotifers, Nanno 3600™ *Nannochloropsis* sp. (Instant Algae® produced by Reed Mariculture Inc.), *Ceriodaphnia dubia* neonates, brine shrimp (*Artemia*) nauplii and grindal worms (*Enchytraeus buchholzi*, a tiny annelid white worm). To supplement the reservoir feeding, commercial larval feed/powder was lightly dusted on top of the rearing tub several times daily. Routine cleaning of the feeding reservoirs, rearing tubs, and tanks was necessary to maintain water quality and prevent unwanted bacterial and/or fungal growths on uneaten food and waste. The use of aquatic snails aided in maintaining a clean environment for the larvae by eating excess powders.

Health screening of captive fish is a critical component of any established propagation program in order to detect any unobserved parasitological or other infections. Prior to any transfer of fish from CFI to any other facility, or any releases to the wild, a sample of the appropriate captive population was sent to the U.S. Fish and Wildlife Service National Fish Health Center in Warm Springs, Georgia to screen for any detectable disease pathogens. Disease detection would initiate actions necessary to prevent the transfer of any pathogens between facilities or to wild populations of fish.

3) One of the most successful programs in the history of public outreach to increase awareness of underwater aquatic biodiversity has been the snorkel outing program initiated by fisheries biologist Jim Herrig with the Cherokee National Forest in the Conasauga River and Citico Creek (http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5299548.pdf and <https://vimeo.com/103358996>). We built upon this model by bringing the public to snorkel in the Little River to literally “open their eyes” to the amazing life hidden under the water’s surface. To test the feasibility in the highest diversity lower portion of the river we initiated efforts on a small scale for the first two years 2015-2016, refined locations and logistics, and in 2017 expanded the program as possible and as needed. A key partner with CFI in this effort is the Little River Watershed Association (LRWA), particularly in targeting/inviting participants, media relations, and marketing. We initiated the effort with high need, high impact youth population such as the Boys and Girls Club in south Knoxville, with whom CFI is currently developing an ongoing education and outreach relationship. Although this will be limited first to public participation, a large part of the first outing(s) involved media coverage and publicity.

LRWA Background and Commitment:

LRWA is a 501(c)(3) non-profit organization with a history of broad community support, an active volunteer base, and a diverse and active board of directors, committed to engaging community to take action on behalf of the Little River, and to providing education and information to neighbors, friends and stakeholders. The mission of the Little River Watershed Association is to foster stewardship and conservation of the Little River and its watershed.

Little River 101 (LR101) is an educational and outreach program designed to increase awareness and appreciation for the Little River. The purpose of each LR101 event is to educate the public about

watershed issues and to explain why the watershed is a unique natural resource worthy of stewardship. Since inception in 2012, over 600 members of the community have attended LR101 events and programs. A top LR101 priority is K-12 environmental education, primarily delivered through a program called Stream School for Kids, a place-based learning program that focuses on STEM concepts and incorporates environmental, chemical and aquatic sciences and stream flow mathematics. Students learn how to measure river flow, identify fish, observe macroinvertebrates, and run chemical tests on water samples. Stream School is currently offered on two Saturdays in the summer and through after school and summer programs offered through the Blount County Parks and Recreation Department. In addition to Stream School, LRWA provides teachers and civic groups stream monitoring kits to assess the visual, physical, chemical, and biological components of the watershed. These kits are provided to encourage citizen science, promote an understanding of the importance of water quality and to help foster the discussion on how to maintain the health of the watershed.

LR101 events are typically free and open to the public. The events and programs are usually geared towards either residents of the watershed, vacationing tourists, or other entities utilizing the resource. To reach constituents, LRWA advertise through newsletters and social and traditional media. In 2015 LR101 programs are expected to engage 700+ residents in Blount County and the surrounding region.

LR101 Program Goals

- Identify new stakeholders and supporters through educational programs that utilize volunteer efforts and engage stakeholders on the health and status of the rivers and streams of the watershed.
- Promote STEM understanding as it relates to the watershed and to public health and stewardship.
- Program participants will be able to define the causes and sources of water pollution.
- Program participants will be able to describe the overall health of the Little River.

LRWA has been interested in developing a similar program to the snorkeling outings conducted by the Cherokee National Forest. In 2014 in-kind donations (15 masks and snorkels) were received, but limited fisheries expertise and insufficient physical space to properly store and care for scuba and snorkel gear have limited the successful implementation of such an effort. By coordinating with CFI and other partners, LRWA will be able to add another LR101 program, and one that will likely be of great interest to the public and stakeholders. LRWA will be responsible for marketing events, providing volunteers, teaching the on-shore stream education components and reporting event results to stakeholders.

The LRWA board of directors sees this partnership with CFI as an asset and one that will build awareness and capacity for both organizations. The LRWA Board of Directors is committed to working in partnership with CFI beyond the pilot program, but anticipates that once the program is well developed, there will be the need to charge a registration fee to help cover programming and marketing staff time. This project fits under the LR101 umbrella and will extend the Little River Watershed Association outreach programs designed to educate participants on water conservation and stewardship. Like Stream School for Kids, students will learn about stream health and water quality. By identifying aquatic organisms, students will learn about ecological diversity and pollution sensitivity. These programs will help students learn why portions of the Little River are designated as Outstanding National Resource Waters, but also why more than 17 miles of streams are listed as threatened, and over 230 miles as impaired.

RESULTS 2015-2017:

(1) Although long term monitoring requires dedicated permanent support, this effort located, established, and quantitatively defined two permanent survey sites and survey protocols for the imperiled Sickle Darter, Marbled Darter, Ashy Darter, and Blotchside Logperch, bio-indicator fish species: River John's Island (river mile 14.6) and below Coulter's Bridge (river mile 20.3). The long term monitoring will be repeatable by any entities with necessary future support or capacity. The River John's Island site (LRM 14.6) was monitored in 2015 and 2017, but not in 2016 due to drought conditions. In late summer and fall 2016, Little River water levels were extremely low making snorkeling efforts ineffective, especially at this site. Table 1 summarizes the monitoring observations at the two permanently defined survey sites

including numbers observed, year class, sampling effort in person-hours and observations per unit effort (fish/p-hr) including yearly as well as average indices for all years.

- For River John's Island (LRM 14.6): in 2015, no Sickle Darters were observed with 3 p-hrs effort expended; in 2017, seven were observed with 3.75 p-hrs effort (OPUE = 1.87 fish/p-hr); average OPUE for both years = 1.04 fish/p-hr.
- For Coulter's Bridge (LRM 20.3): in 2015, fifteen Sickle Darters were observed with 6.75 p-hrs effort expended (OPUE = 2.22 fish/p-hr); in 2016, none were observed with 3 p-hrs effort; in 2017, nine were observed with 3 p-hrs effort (OPUE = 3.00 fish/p-hr); average OPUE for 3 years = 1.88 fish/p-hr.

Sickle Darter abundance indices appeared to increase at the upstream site (LRM 20.3) as well as indices for both Marbled Darter and Blotchside Logperch. However, additional years of data (5 years minimum at each site) are still needed for a more informed perspective about population trends on all four species, especially the Ashy Darter that was not detected at all during the monitoring of these two sites (Table 1).

(2) Information on reproduction and early life history of the imperiled Sickle Darter potentially necessary for informed conservation in the future was acquired by developing techniques for captive production of juveniles for restoration efforts. In 2017, gravid females (N=5) with ovipositors protruding were paired with the most robust males (N=7) during a spawning period extending from mid-February to late March 2017 when water temperatures ranged 11-15°C (52-59°F). Successful, though limited, captive propagation ultimately produced 25 juvenile Sickle Darters (40-45mm TL) that were released to Nars Ford site, Tellico River on 26 June 2017 to extend the range of the species. CFI will expand on knowledge gained in 2017 to hopefully increase production next spring.

(3) A program to reveal the Little River's biodiversity in a first-hand high impact experience was initiated in 2015 and eventually scaled up in 2017, looking forward to even more in the future. Snorkel gear had been acquired and storage space developed at CFI for protection and storage of gear for long term future use by program participants thanks to funding provided by TVA. CFI and LRWA and other interested partners developed program logistics such as optimal snorkel locations and dates and target participants, beginning with disadvantaged youth, but eventually included local schools' students and teachers and the general public, with media coverage as appropriate.

CFI biologists assisted other scientists and volunteers with interested partners helping to lead with fifteen Little River Watershed Association's Stream School events during 2015—2017. Elementary and middle school age students from across Blount County and the greater Knoxville area came together to learn about one of the Valley's most treasured resources- the Little River. The students often included disadvantaged youths from the Vestal Boys & Girls Club and Lonsdale schools, as well as kids and parents from the general public. An estimated average of 25 kids and 15 adults participated at each event. Some of the early events held upwards of 40 kids before we had to start capping it at 25 participants. Every event "sold out" at capacity.

The Little River is home to over 80 species of fish which includes the marbled darter- a fish found nowhere else on earth. Students had a first-hand look at some of this incredible diversity as well as having the opportunity to learn about the water cycle, water chemistry, and the overall importance that biodiversity plays in our community and the numerous impacts that threaten our waterways.

It's not hard to imagine the highlight of each event was the chance for students to put their heads under the water and snorkel with the various array of fish, turtles, and aquatic insects. Led by biologists from various agencies, institutions and organizations, students were encouraged to observe these animals in their natural habitat. Students first participated in fish seining which allowed them to see the various types of fish in hand in hopes to better identify them underwater. Stream school is one of the many events that highlight TVA's commitment to help foster education and promote a healthy and sustainable future of the Valley's resources.

High points from Stream School events:

- 2015 Dates: 6 June, 1 August, 22 August, 16 October
- 2016 Dates: 10 June, 17 June, 24 June, 30 July, 13 August
- 2017 Dates: 16 June, 17 June, 20 July, 29 July, 25 August, 26 August
- Location: Little River, Blount, TN at Whispering River RV Resort, Coulter's Bridge or River John's Island
- Leaders: Little River Watershed Association staff and members, Conservation Fisheries Inc. biologists, University of Tennessee Knoxville students and professors, TVA, TWRA, TDEC, Cherokee National Forest, Trout Unlimited, Sierra Club, The Nature Conservancy, and USFWS personnel
- Participants: ~25-40 kids, elementary and middle school age from Blount/Knox County
- Stream School Activities: Snorkeling, fish seining, aquatic macroinvertebrate collection, water chemistry, water cycle, and nature walk
- What students learned: Importance of biodiversity, importance of Little River, threats to water quality and biodiversity, what a watershed is, connection of the land to a river, aquatic and terrestrial fauna

The geographic area LRWA focuses on encompasses the entire Little River Watershed, including parts of Sevier and Knox County, and most of Blount County. The Little River provides the drinking water for over 95,000 residents. Given the economic impact of tourism in Blount County and the presence of a National Park, LRWA sees the affected community comprised of the entire county and surrounding gateway communities associated with regional tourism. Little River is a bellwether for this community and the health of the river directly affects all citizens, businesses, landowners, and area visitors.

ACKNOWLEDGMENTS

Promoting and conserving the biodiversity of the Little River, Blount County, Tennessee, is made possible with funds provided by Tennessee Valley Authority (TVA). Conservation Fisheries would also like to thank all of the partners, including Little River Watershed Association (LRWA), TWRA, UTK, TDEC, USFWS, EPA, and NRDC (all part of the Little River Watershed Forum, founded by TVA). Without their valuable expertise and assistance including the numerous efforts that are in progress, this project would not be possible.

Scientific Name	Field Note #	Date	Locality	# Obsvd	Effort (p-hrs)	# Coll'd	OPUE fish/p-hr	Year class
<i>Percina williamsi</i>	CFI15-063	29-Jul-15	Below Coulter's Bridge down to riffle (LRM 20.3)	15	6.75	6	2.22	14 AD/1 YOY
	CFI15-064	1-Aug-15	River John's Island (LRM 14.6)	0	3.00		0	
	CFI16-103	30-Aug-16	Below Coulter's Bridge down to riffle (LRM 20.3)	0	3.00		0	
	CFI17-047	19-Jul-17	Below Coulter's Bridge down to riffle (LRM 20.3)	9	3.00		3.00	8 AD/1 YOY
	CFI17-048	19-Jul-17	River John's Island (LRM 14.6)	7	3.75	2	1.87	5 AD/2 YOY
	Total:				31	19.5	8	
				Number fish/person-hour LRM 20.3:		1.88		
				Number fish/person-hour LRM 14.6:		1.04		
<i>Etheostoma marmorpinnum</i>	CFI15-063	29-Jul-15	Below Coulter's Bridge down to riffle (LRM 20.3)	3	6.75		0.44	1 AD/2YOY
	CFI15-064	1-Aug-15	River John's Island (LRM 14.6)	1	3.00		0.33	YOY
	CFI16-103	30-Aug-16	Below Coulter's Bridge down to riffle (LRM 20.3)	4	3.00		1.33	YOYs
	CFI17-047	19-Jul-17	Below Coulter's Bridge down to riffle (LRM 20.3)	13	3.00		4.33	4 AD/9 YOY
	CFI17-048	19-Jul-17	River John's Island (LRM 14.6)	9	3.75		2.4	5 AD/4YOY
	Total:				30	19.5		
				Number fish/person-hour LRM 20.3:		1.57		
				Number fish/person-hour LRM 14.6:		1.48		
<i>Etheostoma cinereum</i>	CFI15-063	29-Jul-15	Below Coulter's Bridge down to riffle (LRM 20.3)	0	6.75		0	
	CFI15-064	1-Aug-15	River John's Island (LRM 14.6)	0	3.00		0	
	CFI16-103	30-Aug-16	Below Coulter's Bridge down to riffle (LRM 20.3)	0	3.00		0	
	CFI17-047	19-Jul-17	Below Coulter's Bridge down to riffle (LRM 20.3)	0	3.00		0	
	CFI17-048	19-Jul-17	River John's Island (LRM 14.6)	0	3.75		0	
	Total:				0	19.5		
				Number fish/person-hour LRM 20.3:		0		
				Number fish/person-hour LRM 14.6:		0		
<i>Percina burtoni</i>	CFI15-063	29-Jul-15	Below Coulter's Bridge down to riffle (LRM 20.3)	2	6.75	1	0.30	YOYs
	CFI15-064	1-Aug-15	River John's Island (LRM 14.6)	0	3.00		0	
	CFI16-103	30-Aug-16	Below Coulter's Bridge down to riffle (LRM 20.3)	0	3.00		0	
	CFI17-047	19-Jul-17	Below Coulter's Bridge down to riffle (LRM 20.3)	1	3.00		0.33	AD
	CFI17-048	19-Jul-17	River John's Island (LRM 14.6)	0	3.75		0	
	Total:				3	19.5		
				Number fish/person-hour LRM 20.3:		0.24		
				Number fish/person-hour LRM 14.6:		0		

Table 1. Summary of survey observations in Little River 2015-2017 at the two permanent monitoring sites.

Field Note #	Date	Locality	Effort P-hrs	# Obsrvd	# Coll
CFI15-063	7/29/15	Below Coulter's Bridge (LRM 20.3)	6.75	15	6
CFI16-057	7/19/16	Perry Mill's Dam, TWRA access (LRM 21.9)	3.00	2	2
CFI16-058	7/19/16	US 411 (Brabson Ford) bridge (LRM 17.3)	3.00	13	4
CFI16-113	9/20/16	US 411 (Brabson Ford) bridge (LRM 17.3)	2.00	5	2
CFI16-116	9/22/16	US 411 (Brabson Ford) bridge (LRM 17.3)	3.00	7	4
CFI17-048	7/19/17	River John's Island (LRM 14.6)	3.75	7	2
				Total:	20
				Total remaining @ CFI:	15

Table 2. Sickie Darter surveys/broodstock collections by CFI personnel in 2015-2017.

PICTURES FROM LRWA'S STREAM SCHOOL FOR KIDS









