Little Tennessee River
Native Fish Conservation Partnership
2018 Accomplishments Report

What is the Little Tennessee Native Fish Conservation Partnership?

The mission of the Little Tennessee Native Fish Conservation Partnership (NFCP) is to promote conservation and restoration of habitat in the Little Tennessee River Basin for the benefit of native fishes and other aquatic wildlife.

Highlights:

- **Communications**
  - **Social Media**: A Facebook page "Little Tennessee Native Fish Conservation Area" was created.
  - **Photos**: High quality photos were purchased for the website and outreach efforts.
  - **Maps**: The Tuckasegee River Blue Trail map is completed and is available in the community. The NFCP Conservation Web Mapper is being used to identify high priority projects in the basin.
  - **Publications**: American Rivers, the North Carolina Wildlife Federation, and the NC Wildlife Resources Commission collaborated and submitted a chapter about the NFCP to the American Fisheries Society for inclusion in a book chapter to be published in 2019. The Great Smoky Mountains National Park published two papers on fish species recovery and on a framework for reintroducing fish into streams.
  - **Videos**: Film screenings of the videos by Freshwaters Illustrated were hosted by partners in the Great Smoky Mountains National Park and at Innovation Station Brewing. Several films were finished in 2018 and the remaining few will be completed in 2019.
- **In The Field**
  - **Snorkeling**: More than 7 snorkeling outings were offered in the basin by partners.
  - **Restoration**: Partners removed the Walnut Creek barrier to reconnect more than 6 miles of stream to the Cullasaja River. Over 20 high priority restoration projects were identified for implementation in the basin.
  - **Fish and Mussel Reintroduction**: Several species were reintroduced into historically inhabited streams, and monitoring of past reintroductions was performed.
- **Funding:**
  - The Tennessee Valley Authority, the Fisheries Conservation Foundation, the Community Foundation of Western North Carolina, the Merck Family Fund, the North Carolina Clean Water Management Trust Fund, Duke Energy Water Resources Grant, and others funded efforts of the NFCP.

Eastern Hellbender, North Carolina | Photo Credit: Isaac Szabo

Accomplishments of NFCA Partners:

American Rivers

- Hired a Conservation Associate to identify high priority conservation projects to implement in service of the NFCA mission with funding from the Clean Water Management Trust Fund, the Tallassee Fund, and the Merck Family Fund.
- Surveyed the North Carolina portion of the Little Tennessee River basin for prospective restoration, barrier-removal, and riverside land protections projects. Projects were reviewed at five stakeholder meetings to inform the feasibility and priority of projects for implementation in the future. A final report of projects from North Carolina and Tennessee will be completed in June 2019.
- Convened the Tuckasegee River Visioning Group, a group dedicated to a healthy Tuckasegee River, five times to review priority projects for implementation, support the development of the Tuckasegee River Blue Trail, and plan film screenings.
- Printed and distributed the Tuckasegee River Blue Trail map to partners thanks to funding support from the Community Foundation of Western North Carolina.
- Provided a feasibility study on the potential to remove the Cullowhee dam, and replace the intakes to function for water supply without the dam, to Western Carolina University and the Tuckaseigee Water and Sewer Authority. Partners continue to collaborate on next steps for this potential dam removal.
- With NCWF and NCWRC, American Rivers co-authored a book chapter titled Little Tennessee Native Fish Conservation Partnership: Aquatic Conservation on a Landscape Scale for publication in an American Fisheries Society book.
- American Rivers produced this 2018 Accomplishments document for the NFCP.

Tangerine Darter, Southeast Tennessee | Photo Credit: Isaac Szabo

Conservation Fisheries, Inc.

- Quantitative snorkel monitoring of reintroduced and restored Citico Darter and Smoky and Yellowfin Madtom populations in Abrams Creek continued for a sixth year by Great Smoky Mountains National Park and CFI. Similar monitoring has been conducted by CFI in the source stream Citico Creek for the fourth year. Numbers in both streams were still reduced following the drastic drought in 2016, but all species have persisted and are slowly rebounding. We also saw Citico Darters and Smoky Madtoms in portions of Abrams where they have either not been seen, or have not been seen in a while.
- We continue to propagate, stock, and monitor Smoky and Yellowfin Madtoms, Citico Darters, and Spotfin Chubs in Tellico River. It's not possible to conclusively state that all four populations are now viable populations, but all evidence to date suggests they probably are. We have been stocking small numbers of Ashy Darters, Sickle Darters, and Blotchside Logperch over the past couple of years.
- Good numbers of Spotfin Chubs were propagated and stocked into Cheoah River.
- We saw only modest success propagating Olive Darters and Sickle Darters last year and this year. Olive Darters again essentially failed to spawn (we had one larva that did not thrive). We have also had difficulty collecting breeders from the Little Tennessee system to produce fish to reintroduce to the Cheoah River. Sickle Darters were successfully spawned, but only a few individuals were produced and released to join the 25 released in Tellico last year.
- Sicklefin Redhorse were reared from eggs collected from broodstock from the lower Oconaluftee River and a small number produced and reintroduced to the Tuckasegee River upstream.
- New water testing equipment in the hatchery led to discovery and correction of water hardness issues negatively affecting larval survivorship. The result was a banner year for production of Spotfin Chubs and we hope to see similar results with every species next year!

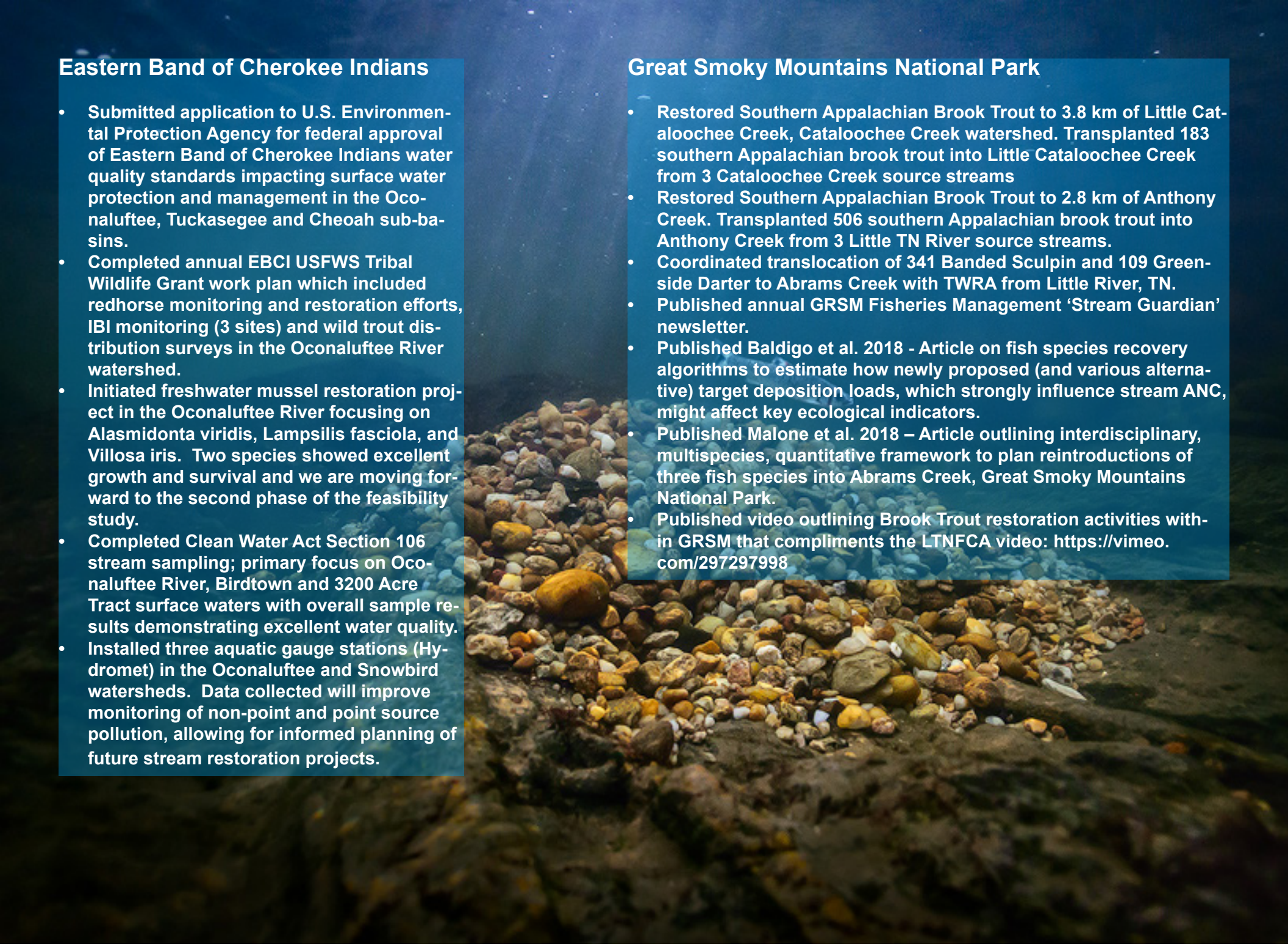
Striped & Warpaint Shiners, North Carolina | Photo Credit: Isaac Szabo

Eastern Band of Cherokee Indians

- Submitted application to U.S. Environmental Protection Agency for federal approval of Eastern Band of Cherokee Indians water quality standards impacting surface water protection and management in the Oconaluftee, Tuckasegee and Cheoah sub-basins.
- Completed annual EBCI USFWS Tribal Wildlife Grant work plan which included redhorse monitoring and restoration efforts, IBI monitoring (3 sites) and wild trout distribution surveys in the Oconaluftee River watershed.
- Initiated freshwater mussel restoration project in the Oconaluftee River focusing on Alasmidonta viridis, Lampsilis fasciola, and Villosa iris. Two species showed excellent growth and survival and we are moving forward to the second phase of the feasibility study.
- Completed Clean Water Act Section 106 stream sampling; primary focus on Oconaluftee River, Birdtown and 3200 Acre Tract surface waters with overall sample results demonstrating excellent water quality.
- Installed three aquatic gauge stations (Hydromet) in the Oconaluftee and Snowbird watersheds. Data collected will improve monitoring of non-point and point source pollution, allowing for informed planning of future stream restoration projects.

Great Smoky Mountains National Park

- Restored Southern Appalachian Brook Trout to 3.8 km of Little Cataloochee Creek, Cataloochee Creek watershed. Transplanted 183 southern Appalachian brook trout into Little Cataloochee Creek from 3 Cataloochee Creek source streams
- Restored Southern Appalachian Brook Trout to 2.8 km of Anthony Creek. Transplanted 506 southern Appalachian brook trout into Anthony Creek from 3 Little TN River source streams.
- Coordinated translocation of 341 Banded Sculpin and 109 Greenside Darter to Abrams Creek with TWRA from Little River, TN.
- Published annual GRSM Fisheries Management 'Stream Guardian' newsletter.
- Published Baldigo et al. 2018 - Article on fish species recovery algorithms to estimate how newly proposed (and various alternative) target deposition loads, which strongly influence stream ANC, might affect key ecological indicators.
- Published Malone et al. 2018 – Article outlining interdisciplinary, multispecies, quantitative framework to plan reintroductions of three fish species into Abrams Creek, Great Smoky Mountains National Park.
- Published video outlining Brook Trout restoration activities within GRSM that compliments the LTNFCA video: https://vimeo.com/297297998



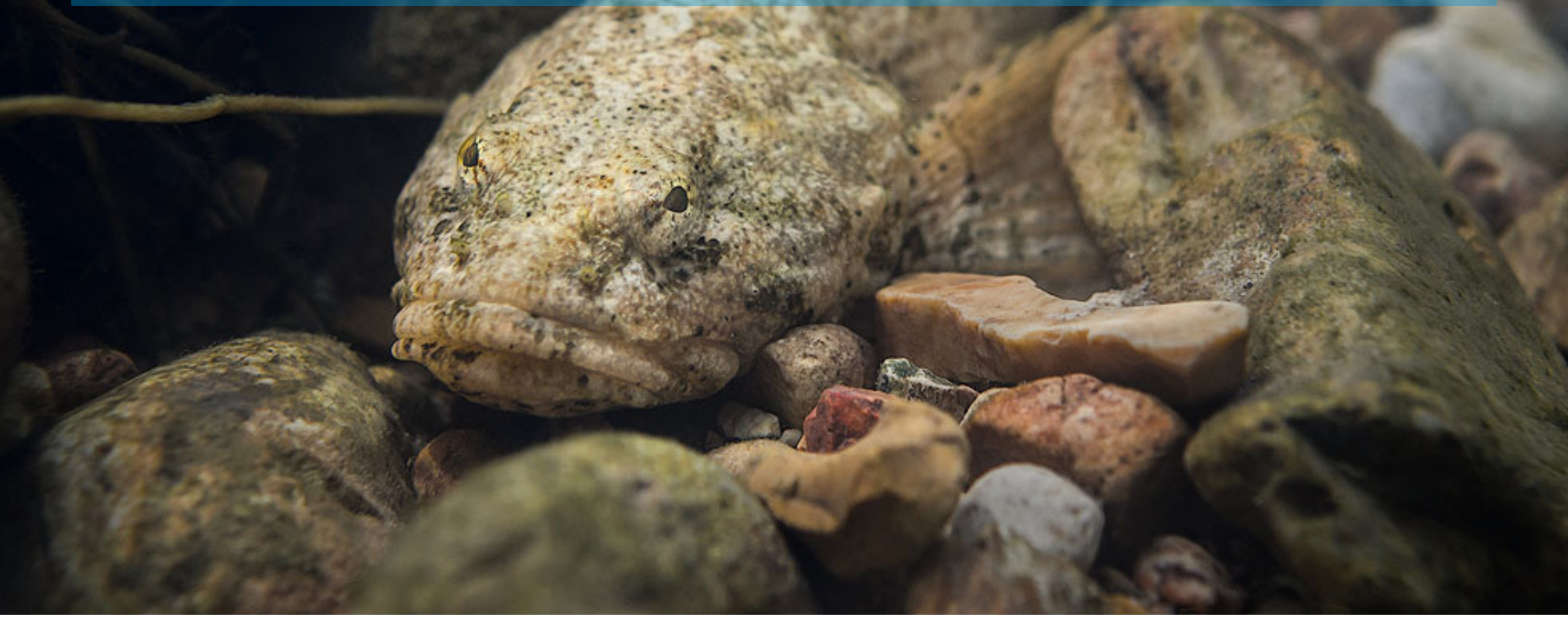
Warpaint Shiner & Chub Mound, North Carolina| Photo Credit: Isaac Szabo

Mainspring Conservation Trust

- Stabilized 1500 linear feet of streambank and used 45 volunteers through the Shade Your Stream program.
- Hosted 7 snorkel events within the Basin.
- The Walnut Creek barrier was removed with NCWRC to reconnect more than 6 miles of stream to the Cullasaja River.
- Co-hosted “Rain, Rivers, Forests, and Faucets” as the 2nd Little Tennessee Watershed Conference.
- Deployed hellbender huts with NCWRC in 3 streams with known species occurrences
- Partnered with TVA biologists to sample mainstem Little TN and Tuckasegee Rivers.
- Installed parking area and interpretive sign along property adjacent to historic Cowee Mound, Partnership with the Eastern Band of Cherokee Indians.

North Carolina Wildlife Federation

- The North Carolina Wildlife Federation administered the distribution of funds for the Duke Energy Water Resources Grant. A final payment was made for the Little Tennessee River videos, which closed out this project.
- NCWF continues to be the fiscal agent for the Sicklefin Redhorse project, which involves multiple partners engaged in an effort to restore populations of this native red horse sucker.



Banded Sculpin | Photo Credit: Isaac Szabo

North Carolina Wildlife Resources Commission

Fish Work

- 28 fish surveys were completed in tributaries of the Little Tennessee River Basin searching for Smoky Dace and other North Carolina Species of Greatest Conservation Need.
- Fish were translocated from Cowee Creek, Scott Creek, and Savannah Creek to the restoration section of the Cheoah River in an effort to increase biodiversity. Species translocated included Gilt Darter (Percina evides), Greenfin darter (Etheostoma chlorobranchium), Banded darter (Etheostoma zonale), Tennessee shiner (Notropis leuciodus), Mirror shiner (Notropis spectrunculus), Telescope shiner (Notropis telescopus), Fatlips minnow (Phenacobius crassilabrum), and River chub (Nocomis micropogon).
- Sicklefin Redhorse, Moxostoma sp., augmentation and research efforts continued. Approximately 6,000 juvenile Sicklefin Redhorse were stocked into the upper Oconaluftee River Basin from broodstock collected in the Tuckasegee River in Spring of 2018.
- 16 surveys for Spotfin Chub, Erimonax monachus, were completed in the restoration section of the Cheoah River.
- Spotfin Chub were abundant with multiple year classes present.
- 1830 Spotfin Chub were stocked by Conservation Fisheries Inc. into the restoration section of the Cheoah River.
- Staff are continuing work to try to stabilize walleye recruitment in Lakes Fontana, Glenville, and Santeetlah.
- NCWRC is characterizing the genetics of our Black Bass populations, with Largemouth Bass in Lakes Fontana and Glenville as the current focus. Smallmouth Bass will likely be a future focus of this project.

Mussel Work

- 8 mussel surveys were completed in the Little Tennessee River between Franklin and Fontana Reservoir
- Appalachian Elktoe (Alasmidonta raveneliana, n=2), Slippershell (Alasmidonta viridis, n=6), Tennessee Clubshell (Pluerobema oviforme, n=9) were seen along with Rainbow (Villosa iris), Wavyrayed Lampmussel (Lampsilis fasciola), and Spike, (Eurynia dilatata), all of which were abundant.
- Three mussel surveys were completed in the Tuckasegee River downstream of Cullowhee. Appalachian Elktoe are still abundant in some areas.
- Two mussel surveys in the restoration section of the Cheoah River found abundances of stocked Appalachian Elktoe, Slippershell, Rainbow, and Wavyrayed Lampmussel.
- Mussel reintroduction efforts for the restoration section of the Cheoah River continued; Appalachian Elktoe, Slippershell, Rainbow, and Wavyrayed Lampmussel were stocked. Appalachian Elktoe broodstock were collected from the Tuckasegee River, while Rainbow and Wavyrayed Lampmussel broodstock were collected from the Little Tennessee River for future stocking.

Crayfish Work

- Three crayfish surveys were completed in the Little Tennessee River Basin and multiple crayfish sightings were recorded during fish and mussel surveys.

Brook Trout| Photo Credit: Isaac Szabo

Tennessee Wildlife Resources Agency

- TWRA has conducted aquatic educational programs for Carpenters Elementary School in Blount County emphasizing the Little TN watershed.
- Brook trout restoration efforts have continued in the Tellico River watershed this past year, primarily in Sycamore Creek.
- Whirling Disease was confirmed in North River (Tellico River trib.) this past year and educational outreach is underway to inform the public and help prevent the spread of this trout disease. Wader wash stations have been established at Tellico Hatchery and the North River check station.
- TWRA coordinated with Great Smoky Mountains National Park to collect and relocate Banded Sculpin and Greenside Darter from Little River (outside of Park) to Abrams Creek as part of the native fish recovery effort.
- TWRA has continued to fulfill warm water species stocking obligations for Chilhowee Reservoir that were funded by Brookfield. Fish have been stocked the last two years following the refilling of the reservoir and will conclude this spring.

Tennessee Department of Environment and Conservation Division of Water Resources

- Over 200 chemistry and pathogen samples collected from streams in the watershed.
- 32 biological samples collected from streams in watershed.
- Population of Tennessee Dace (Chrosomus tennesseensis) found in a stream within Little TN watershed where they had not been previously documented.
- The Division of Water Resources has conducted 6 complaint investigations and 50 inspections in the watershed.

Blotchside Logperch | Photo Credit: Isaac Szabo

University of Tennessee at Knoxville

The Golden Riffleshell mussel (Epioblasma aureola) was repatriated back to Citico Creek after having discovered shell specimens in the North Carolina State Museum of Natural Sciences that proved it once inhabited Citico Creek in the early 20th century. The species is federally endangered and currently wild populations are known only from Indian Creek in Virginia, part of the Holston River drainage. The Virginia Department of Game and Inland Fisheries rears Golden Riffleshell at its hatchery in Marion for stocking into the Holston River, and 18 individuals from 3 genetic strains were PIT-tagged at the hatchery and stocked into Citico Creek in 2018. Scientists at the University of Tennessee-Knoxville will be monitoring the growth and survival of these mussels over the next several years. Another mussel species that is a candidate for listing under the Endangered Species Act is the Tennessee Clubshell (Pleurobema oviforme), and 16 individuals were tagged and translocated from the Hiwassee River to Citco Creek, where it is known to exist in low numbers, to enhance this species chance of remaining stable across its range. It too will be monitored for growth and survival by the University of Tennessee-Knoxville over the next several years.

Fisheries Conservation Foundation

The Fisheries Conservation Foundation continued its financial support of the Partnership by contributing $8,000 to complete the funding of the initial set of the Little Tennessee River videos.

Why the Little Tennessee River?

The Little Tennessee River basin begins in Georgia and flows through North Carolina to Tennessee, where it joins the Tennessee River. From high elevation brook trout streams to large rivers, the basin hosts a unique assemblage of fish, amphibians, mollusks, crayfish, and aquatic insects; some stretches of the Little Tennessee host the complete assemblage of aquatic wildlife believed to be present before colonial settlement. The basin offers economically important recreational opportunities like fishing and boating as well as strong collaborative partnerships to support the protection and restoration of the basin's resources. Designating the Little Tennessee River Basin as a Native Fish Conservation Area supports a coordinated approach at basin-level conservation.

Snail Darter | Photo Credit: Isaac Szabo

Little Tennessee Native Fish Conservation Partnership Executive Committee:

- Chair: Jason Meador, Mainspring Conservation Trust, jmeador@mainspringconserves.org
- Vice-Chair: Brian Alford, University of Tennessee at Knoxville, jalfor12@utk.edu
- Vice-Chair: Mike LaVoie, Eastern Band of Cherokee Indians, michlavo@nc-cherokee.com
- Assessment and Implementation Team Co-Chairs: Andrew Henderson, US Fish and Wildlife Service, andrew_henderson@fws.gov, Warren Stiles, US Fish and Wildlife Service, warren_stiles@fws.org
- Communications and Outreach Team Co-Chairs: Christian Hunt, Defenders of Wildlife, chunt@defenders.org, and Erin McCombs, American Rivers, emccombs@americanrivers.org
- Fundraising Team Chair: Fred Harris, NC Wildlife Federation, fred@ncwf.org
- Immediate Past Chair: Andrea Leslie, NC Wildlife Resources Commission, andrea.leslie@ncwildlife.org

Our core values are:

1. We work to conserve and restore aquatic and terrestrial habitats within the Little Tennessee River Basin, benefiting native fish and other aquatic wildlife.
2. We support educational and cooperative efforts that foster a strong ethic of stewardship so that citizens, decision makers, and land managers are aware of the values of the Basin's aquatic biodiversity and consistently work to protect and enhance it.
3. We build upon an active partnership comprising agencies, organizations and individuals, in order to achieve common goals.
4. We communicate clearly and openly within the Native Fish Conservation Partnership and with other interested stakeholders.

Partners:

American Rivers, Conservation Fisheries, Inc., Defenders of Wildlife, Duke Energy, Eastern Band of Cherokee Indians, Fisheries Conservation Foundation, Georgia Department of Natural Resources, Great Smoky Mountains National Park, Mainspring Conservation Trust, The Nature Conservancy, N.C. Wildlife Federation, N.C. Wildlife Resources Commission, Sierra Club - Tennessee Chapter, Tennessee Department of Environment and Conservation, Tennessee Valley Authority, Tennessee Wildlife Re-sources Agency, Trout Unlimited, University of Tennessee, U.S. Fish and Wildlife Service, U.S. Forest Service, Watershed Association of the Tuckasegee River, and Western Carolina University.

Kayaking Former Citico Creek Dam Removal Site | Photo Credit: Matt Jackson