Fiscal Year 2021 Executive Summary

The CATT theme for Fiscal Year 2021 was overcoming challenges to deliver on our mission. We had a productive year, completing work on 8 field projects across 6 national forests and continuing our support of several Southern Research Station projects. We deployed our field teams to areas as far away as Louisiana, Arkansas, and Florida while tackling projects from stream fish and habitat monitoring to outreach and education. We provided our partners with information and resources they needed to maintain or restore healthy watersheds, connect people to the outdoors, and deliver high quality science.

Covid once again presented significant challenges. We began on a positive note – our field teams were back on the job and able to complete several projects before the holidays. Unfortunately, the holiday season led into a second Covid wave and our field teams were once again sidelined for several months. We kept our field teams engaged by putting them to work on converting a hardcopy Forest Service history book into a 508-compliant PDF document that could be read by people with visual impairments. We very much appreciated the patience and flexibility of our field personnel during this challenging period. We returned to the field in April and have been chipping away on the backlog of field projects ever since.

We extend much gratitude to our partners for their understanding as we worked through all the starts and stops throughout FY21. We are keeping our fingers crossed for a return to full speed in FY22!

What is CATT?

The Center for Aquatic Technology Transfer (CATT) is a science delivery program. CATT biologists and technicians are Southern Research Station (SRS) employees working hand-in-hand with the National Forest System (NFS) and other partners to put science to work. Guided by core values of communication, partnership, inclusion, accountability, and safety, we collaborate with the Forest Service science community and others to develop custom solutions for our project partners.

When was CATT created, and why?

The CATT was created in 1995 in response to the growing need for research technologies to be applied directly to management challenges. The number of research personnel was, and still is, too small relative to the number of fisheries and aquatics resource managers to satisfy specific needs. Our mission is to increase the capacity of our partners through delivery of science-based support.

Where does CATT work?

Full-time CATT personnel are stationed in Blacksburg, VA and provide services throughout the U.S.

What services does CATT provide?

Our focus is on aquatics related management challenges. Our flexible organizational structure allows us to rapidly develop and apply custom solutions to both short and long term projects. Past projects range from providing a field technician for an afternoon of fish sampling, to region-wide, multi-year efforts, including sampling design, personnel management, data analysis, and reporting.

How can I learn more about CATT?

Contact Craig Roghair 540 230-8126 (craig.n.roghair@usda.gov), or visit our website: http://www.srs.fs.usda.gov/catt.
CATT field teams were able to complete projects on six national forests (green) and a national park (orange) in fiscal year 2021. The USDA-FS, SRS CATT is headquartered in Blacksburg, VA (red circle).

FY 2021 CATT field projects.

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Cherokee National Forest
Ocoee, Tellico, and Watauga Ranger Districts

**Project Type**
Road-stream crossing inventory

**Goal**
Provide information needed to prioritize crossing improvement projects

**Objectives**
Complete road-stream crossing inventory in high-priority watersheds in November 2020 and August/September 2021

**Approach**
Forest selects high-priority watersheds for inventory; CATT hires, trains, and deploys field teams to complete standardized crossing assessments; CATT submits data to SARP for inclusion in the regional fish passage barrier database; The Forest, partners, and CATT apply decision support tools to prioritize crossings for replacement

**Accomplishments**
Assessed 259 crossings in 2020 and 627 crossings in 2021; Entered field data into project database; Worked with national forest staff and partners to apply decision support tools

**Partners and Contacts**
Partner: Southeast Aquatic Resources Partnership (SARP); Forest Contact: Ali Reddington, Forest Hydrologist

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**Project Summary**
The Forest Service and its partners are engaged in a multi-year effort to identify, assess, prioritize, and remediate road stream crossings in areas of mutual interest. Road-stream crossings that provide for a safe and efficient transportation system, provide resilience to a changing climate, and maximize benefits for aquatic and riparian species are a key component in reaching shared goals. The information collected by CATT field teams will be incorporated into an online prioritization tool to allow resource managers on the Cherokee National Forest and their partners to identify problematic crossings and prioritize among potential remediation projects. The online tool is available at: [https://connectivity.sarpdata.com/](https://connectivity.sarpdata.com/). The CATT will return in spring 2022 to resume road-stream crossing inventories.

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A moderately perched circular culvert

A severely perched box culvert
Francis Marion & Sumter National Forests
Enoree Ranger District

Project Type
Stream fish and habitat inventory

Goal
Provide stream biota and habitat information needed for project-level and forest-level planning

Objective
Complete stream fish and habitat inventory in July 2021

Approach
Forest identifies streams with gaps in fish or habitat information
The CATT trains and deploys field teams to complete inventories
The CATT provides project database for incorporation into forest datasets

Accomplishments
Completed 25 miles of inventory on 37 streams
Sampled fish in 13 streams
Entered data into project database and provided to project partner

Partners and Contacts
Forest Contact: Keith Whalen, Forest Fisheries Biologist

Log jam encountered during habitat inventory

Dry 'underground' stream channel

Project Summary
Periodic aquatic resource assessments provide the information national forest managers need to effectively identify current status and trends, management options and impacts, and threats and impacts of fire, insects, disease, and other natural processes on aquatic resources. In 2021, Sumter National Forest partnered with the CATT to assess stream habitat and fish in high-priority management areas, the latest effort in a long history of inventory and monitoring partnerships on the forest. Our current effort is intended to fill data gaps and update aquatic resource information needed for forest- and project-level analyses. We will return to the Sumter to continue stream assessments as needed in high priority watersheds identified by the Sumter National Forest.
Francis Marion & Sumter National Forests
Long Cane Ranger District

Project Type
Non-native species detection

Goal
Use genetic techniques to identify areas where non-native bass are hybridizing with native bass

Objective
In August 2021, collect fin tissue from bass so investigators can use genetic approaches to identify streams that contain native Bartram’s Bass, non-native Alabama Bass, or their hybrids

Approach
Forest identifies streams that may contain target bass species
The CATT trains and deploys field teams to collect tissue samples
Tissue samples are sent to genetic lab for analysis
The CATT provides project database for incorporation into forest datasets

Accomplishments
Sampled 17 streams total
Found bass in 7 of the streams
Collected fin tissue from 67 bass
Entered data into project database and provided to project partners

Partners and Contacts
Partner: Clemson University; Forest Contact: Keith Whalen, Forest Fisheries Biologist

Backpack electrofishing for bass
Genetics are used to identify hybrid bass

Project Summary
The Forest Service manages some of the best remaining habitat for many rare fishes. Bartram’s Bass is a rare fish found only in the Savannah River basin in western South Carolina and eastern Georgia. Several streams on the Long Cane Ranger District may contain Bartram’s Bass. Bartram’s Bass is threatened by the introduction of non-native Alabama Bass, which competes for resources and hybridizes with Bartram’s Bass. Identifying streams that contain genetically pure Bartram’s Bass populations is a key to their conservation. In 2021, Clemson University and Sumter National Forest partnered with the CATT to collect fin tissue from bass in several streams. Genetic analysis of the samples will provide the national forest with information needed to prioritize conservation efforts for Bartram’s Bass.
**George Washington & Jefferson National Forests**  
*Clinch, James River, North River, and Glenwood-Pedlar Ranger Districts*

**Project Type**  
Stream channel classification

**Goal**  
Provide information needed to provide adequate stream channel protection in timber management units

**Objective**  
Classify stream channels in timber management units in October 2020 – September 2021

**Approach**  
Forest provides list of timber units with pending harvest; CATT works with forest and districts staffs to develop standardized classification system; CATT deploys field teams to classify stream channel; CATT supplies project GIS to forest

**Accomplishments**  
Classified stream channels in 174 timber stand sale units across 4 districts  
Submitted maps of classifications to district and forest personnel

**Partners and Contacts**  
Forest Contacts: Dawn Kirk, Forest Fisheries Biologist; Pauline Adams, Forest Hydrologist

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**Assessing riparian characteristics**  
**Classifying a headwater channel**

**Project Summary**  
Functioning riparian areas are important in all aquatic habitats. The George Washington and Jefferson National Forest seeks to retain, restore, or enhance ecological and physical processes and functions of riparian areas along all perennial, intermittent, and ephemeral streams and wetlands by identifying, classifying, and delineating all stream channels within the project areas of timber management units. Central to this goal is the ability to accurately and efficiently identify perennial, intermittent, and channeled ephemeral streams. The forest has partnered with the CATT to develop and apply a standardized approach for stream channel classification. We developed a field guide to channel classification and then hired, trained, and deployed field teams to classify channels in timber management units across the George Washington and Jefferson National Forests. The Forest uses the classifications to lay out Riparian Corridors and Channeled Ephemeral Zones in timber management units, as prescribed in the forest plan.
George Washington & Jefferson National Forests
Eastern Divide Ranger District

Project Type
Connecting people to the outdoors

Goal
Provide an opportunity for school children to learn how healthy lands sustain healthy animal communities

Objective
Host 5th grade class at Pandapas Pond Recreation Area in October 2020 for a day of outdoor exploration

Approach
Eastern Divide Ranger District provides access to facilities
CATT provides team of outdoor educators

Accomplishments
20 local students and chaperones visited 3 activity stations

Partners and Contacts
Partner: Blacksburg New School; Forest Service Contact: Beth Christensen, District Ranger

Electrofishing equipment and fish display
Crayfish display

Project Summary
National forests are home to many fascinating animals and developed recreation areas provide an ideal setting for connecting people to the animals that live in our forests. Many people, even those that live adjacent to national forests are unfamiliar with the animals that may live right in their own back yard. In October 2020, the Eastern Divide Ranger District and CATT welcomed 15 local 5th grade science students to the Pandapas Pond Recreation Area. Our guests rotated among three activity stations: an aquatic insect station where students used insect diversity as a measure of stream health, a reptile station where students learned about native and non-native reptiles, and a fish station where students learned about how fish are adapted to live in different environments. The program supplemented the science curriculum at the school and provided the students with a direct connection to the animals that live on the national forest lands adjacent to their community. Feedback from the students and their teachers suggested that many of the students intended to return to the recreation with their family and friends in the future.
Kisatchie National Forest
Calcasieu, Catahoula, Kisatchie, and Winn Ranger Districts

Project Type
Forest Plan monitoring

Goal
Provide information needed for forest-level planning

Objective
Complete stream fish and habitat samples following established monitoring protocols in April 2021

Approach
Forest, CATT, and partners document standardized methods for collecting monitoring data
Forest selects monitoring locations distributed across entire national forest
CATT deploys field teams to collect fish and habitat data
CATT supplies project database to partner at Louisiana State University for data analysis

Accomplishments
Monitored 10 sites across 4 districts; Sent project database to LSU for data analysis; Updated monitoring methods document

Partners and Contacts
Partner: Louisiana State University; Forest Contacts: Ted Soileau, Natural Resource Specialist; David Byrd, Staff Officer

Collecting fish at a long-term monitoring site

Seining to collect additional fish

Project Summary
The Kisatchie National Forest has a need to assess long-term status and trends in aquatic species and to determine the effectiveness of land management actions in maintaining or restoring aquatic habitats and resources. In 2016, the Kisatchie National Forest requested a review of their long-term stream monitoring program; CATT biologists worked with forest staff and partners at LSU to evaluate and update stream monitoring methods and plan a 4-year effort to collect data at all existing long-term monitoring sites. This long-term, forest-wide monitoring project compares current conditions with those observed over previous decades of monitoring. The 2021 sample was the final year of sampling that will provide the national forest with information needed to determine impacts of current land management practices on aquatic biota. A detailed trend analysis report is currently being drafted by our project partners at LSU.
National Forests in Florida
Ocala Ranger District

Project Type
Connecting people to the outdoors

Goal
Support Get Black Outside (GBO) Day activities at Alexander Springs

Objective
Provide staffing and equipment for snorkeling at Alexander Springs during GBO Day in June 2021

Approach
GBO organizers recruit participants and advertise event; DIVERSe Orlando provides staffing; WO provides funds to support programming; Ocala National Forest provides logistical support; CATT provides coordination, staffing, and equipment for snorkeling station

Accomplishments
We put over 20 snorkelers into the water and discussed how healthy lands result in healthy waters

Partners and Contacts
Partners: GBO organizers, DIVERSe Orlando, Outdoor Afro; Forest Service Contact: Tonee Davis, Natural Resource Specialist

Project Summary
Public lands are places where people are welcomed to recreate, relax and recharge regardless of race. Yet, a 2019 study found that people of color accounted for only 5 – 12% of visits to our national forests, parks, and other federally managed public lands. GBO seeks to increase participation by people of color in outdoor activities by hosting culturally tailored events on public lands. GBO partnered with the Forest Service to host a Get Black Outside (GBO) Day event on the Ocala National Forest, June 25-27, 2021. The event focused on attracting black youth, youth leaders, and families to participate in snorkeling, hiking, biking, and sharing stories around the campfire. The CATT participated in planning meetings, sent 6 snorkeling educators to the event, and outfitted each participant with a mask, snorkel and wetsuit. The GBO concept was so well received that events on the Ocala, Cherokee, George Washington & Jefferson, and Monongahela national forests earned a Regional Forester’s Honor Award. Planning is already underway for GBO Day 2022.
Ozark St. Francis National Forest  
Big Piney Ranger District

**Project Type**  
Stream fish and habitat inventory

**Goal**  
Provide stream biota and habitat information needed for project-level and forest-level planning

**Objective**  
Complete stream fish and habitat inventory in June 2021

**Approach**  
Forest identifies streams with gaps in fish or habitat information  
The CATT trains and deploys field teams to complete inventories  
The CATT provides project database for incorporation into forest datasets

**Accomplishments**  
Completed habitat and fish inventories on 2 streams. Entered data into project database and provided to project partner. Heavy rains and high stream flows in June halted fieldwork which will resume in 2022.

**Partners and Contacts**  
Forest Contact: Matthew Anderson, Fish and Wildlife Biologist

**Project Summary**  
Periodic aquatic resource assessments provide the information national forest managers need to effectively identify current status and trends, management options and impacts, and threats and impacts of fire, insects, disease, and other natural processes on aquatic resources. However, many national forests lack the capacity to complete regular inventory or monitoring activities. The CATT can fill these gaps, by providing access to scientists, biologists, and technicians that can design and execute inventory and monitoring projects. In 2021, Ozark St. Francis National Forest partnered with the CATT to assess stream habitat and fish in high-priority management areas, the latest effort in a long history of inventory and monitoring partnerships on the forest. Our current effort is intended to fill data gaps and update aquatic resource information needed for forest- and project-level analyses. We will return to the Ozark St. Francis National Forest in 2022 to continue stream assessments.
Southern Research Station  
Research Work Unit 4353, Blacksburg, VA

**Project Type**  
Brook Trout population monitoring

**Goal**  
Use long-term population monitoring to better inform Brook Trout management

**Objective**  
Complete 28th year of annual May and October sampling on 2 long-term study streams

**Approach**  
Southern Research Station established long-term monitoring study in 1993  
Shenandoah National Park supplies research and sampling permits  
CATT provides personnel and organizes volunteers to support annual sampling efforts  
Southern Research Station produces presentations, reports, papers based on results

**Accomplishments**  
Completed sampling on 2 long-term study streams  
Data are incorporated into project database

**Partners**  
Partner: Shenandoah National Park  
Forest Service Contact: Dr. Andy Dolloff, Southern Research Station

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**Project Summary**  
Long term studies allow researchers to describe trends that may not be evident from shorter studies.  
Since 1993, the Southern Research Station has conducted annual surveys using a combination of diver counts, backpack electrofishing, and fish tagging to estimate the distribution, abundance, and growth of Brook Trout and other coldwater fishes in two Shenandoah National Park streams. The CATT has provided field support for the project since 1995 and maintains the project database. We are examining the role that environmental factors such as acid precipitation, floods, droughts, water temperature, and invasive species may have on Brook Trout populations. Understanding such effects allows resource specialists to more effectively manage Brook Trout and other coldwater fish populations.
Southern Research Station  
Research Work Unit 4353, Blacksburg, VA

**Project Type**  
American Eel growth and movement

**Goal**  
Use long-term monitoring to better inform American Eel conservation and management efforts

**Objective**  
Complete 22nd year of annual July eel sampling at long-term study site

**Approach**  
Southern Research Station established long-term monitoring study on Tye River in 2000  
George Washington and Jefferson National Forests provides research permits and personnel  
VA Dept. of Wildlife Resources supplies sampling permits and personnel  
CATT provides personnel and organizes volunteers to support annual sampling efforts  
Southern Research Station produces presentation, reports, and papers based on results

**Accomplishments**  
Completed sampling on 1.2 mile study section of Tye River; Incorporated data into long-term dataset

**Partners and Contacts**  
Partner: Virginia Department of Wildlife Resources;  
Forest Service Contacts: Dr. Andy Dolloff, Southern Research Station; Dawn Kirk, Forest Fisheries Biologist

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**Project Summary**  
American Eels may live for 20 – 30 years in freshwater streams before swimming out to the Sargasso Sea to reproduce and die, yet little is known of their biology or behavior in headwater mountain streams. The Southern Research Station began a long-term study in 1999 to monitor the growth, movement, and longevity of eels in several George Washington & Jefferson NF streams. The CATT has worked with Southern Research Station scientists annually since 2000 to collect and tag eels in 2 streams. We are still collecting American Eels that were originally tagged in 2000 demonstrating that adult eels reside for long periods of time in short reaches of mountain streams. In addition to providing information needed for the management of eels in headwater mountain streams, the project also often attracts the attention of local residents and media, providing the opportunity to for outreach about eels and forest management.
**Southern Research Station**
**Research Work Unit 4353, Blacksburg, VA**

**Project Type**
Movement of wood in streams

**Goal**
Monitor long-term movement of wood in small trout streams to better inform watershed management

**Objective**
Complete 28th year of annual log sampling in June 2021

**Approach**
Southern Research Station designs and implements log movement study in 1993
Jefferson National Forest provides personnel to place logs into streams in 1993
CATT provides personnel annually to document changes in log location

**Accomplishments**
Located 150 study logs in 2 long-term study stream reaches; Incorporated data into long-term dataset

**Partners and Contacts**
Forest Service Contacts: Andy Dolloff, Southern Research Station; Dawn Kirk, Forest Fisheries Biologist

**Project Summary**
Trees that fall in streams increase the amount of food and shelter available to animals living in and near the water, but also can cause damage to roads and other structures if they move during floods. Resource managers may be asked to remove wood from streams as a preemptive measure against property damage. A better understanding of the mobility of wood in mountain streams is needed to inform managers faced with the decision between retaining wood to improve stream quality or removing wood from streams to protect nearby infrastructure. In 1993, the Southern Research Station began to study wood movement in two mountain streams. Large logs were purposely added to streams and their location was recorded. The CATT has surveyed the logs for movement each year since 1994 and maintains the project database. Log movement information is updated annually is incorporated into presentations to resource managers tasked with managing wood in streams.