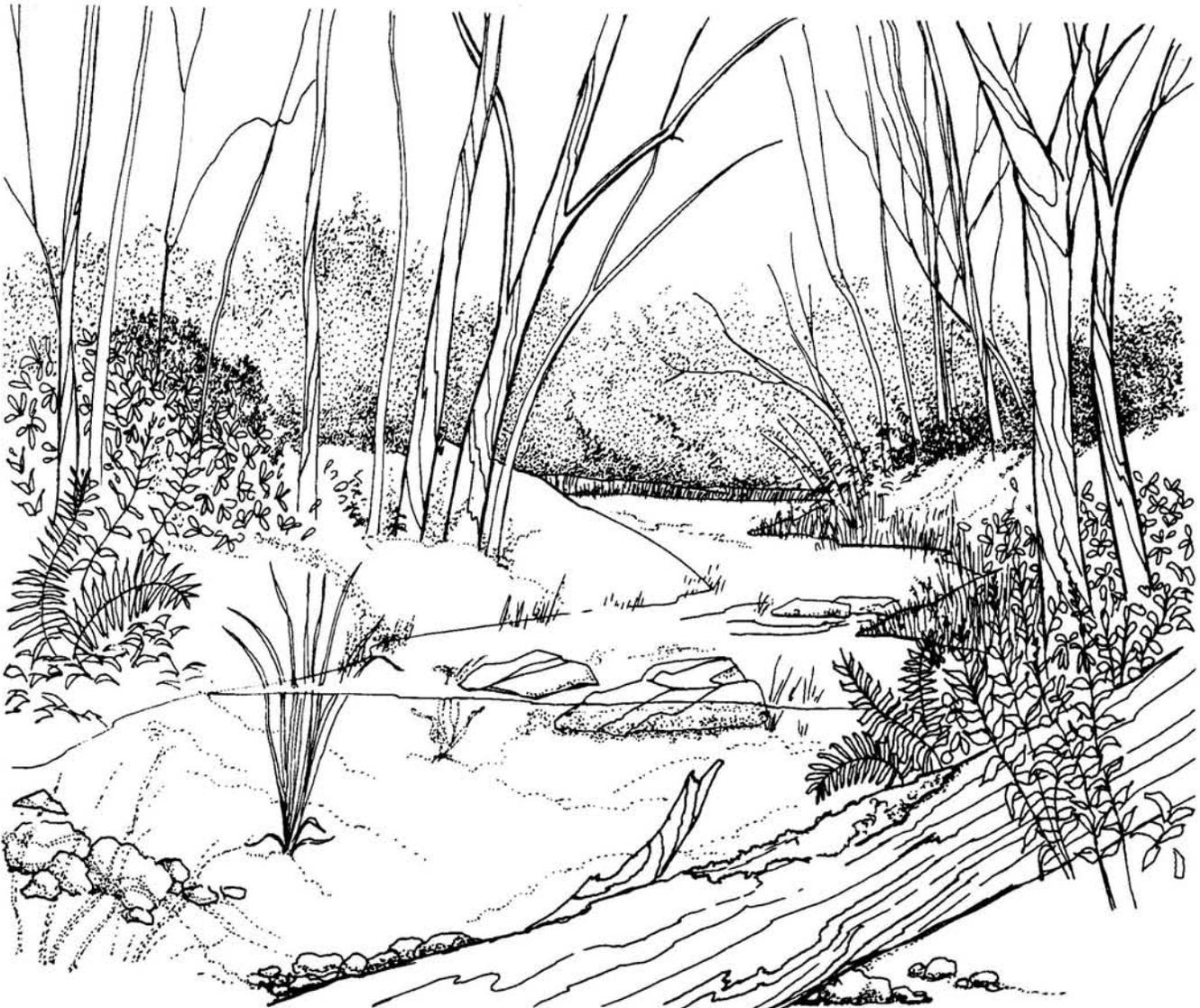


Success Stories

Recovering endangered and threatened species is challenging and can be a rewarding process. The following success stories describe recovery projects that are making a difference for endangered and threatened species in Tennessee. Remember, you can be a part of endangered and threatened species recovery. Continue to explore and learn about Tennessee's diverse and wonderful ecosystems!

Order of Appearance:

- Success on the Clinch River
- Gray Bats on the Comeback
- Abram's Creek: Reintroduction
- Success of Four Listed Fishes
- American Peregrine Falcon Delisted!



Success on the Clinch River

You Can Make a Difference!

Is there a riverine ecosystem in your community? Imagine the difference you could make for wildlife and native plants in your area by taking part in a stream restoration project! Remember, what we put on the land may eventually enter the streams! Tell a friend about the Clinch River Community Project! Participate in a local stream cleanup. Dispose of trash properly. Explore Tennessee's diverse ecosystems!

The Clinch River

The nearly pristine Clinch River flows through remote areas of the Ridge and Valley Province of northeastern Tennessee and Virginia. The Clinch forms the headwaters of the species-rich Tennessee River system and remains its most important tributary. The portion of this stream that flows through Hancock County, Tennessee, is home to 15 species of federally protected freshwater mussel and fish species. Several more endangered species occur upstream in Virginia. This diversity makes the Clinch River one of the most important sites in the world for imperiled aquatic creatures.

Threats

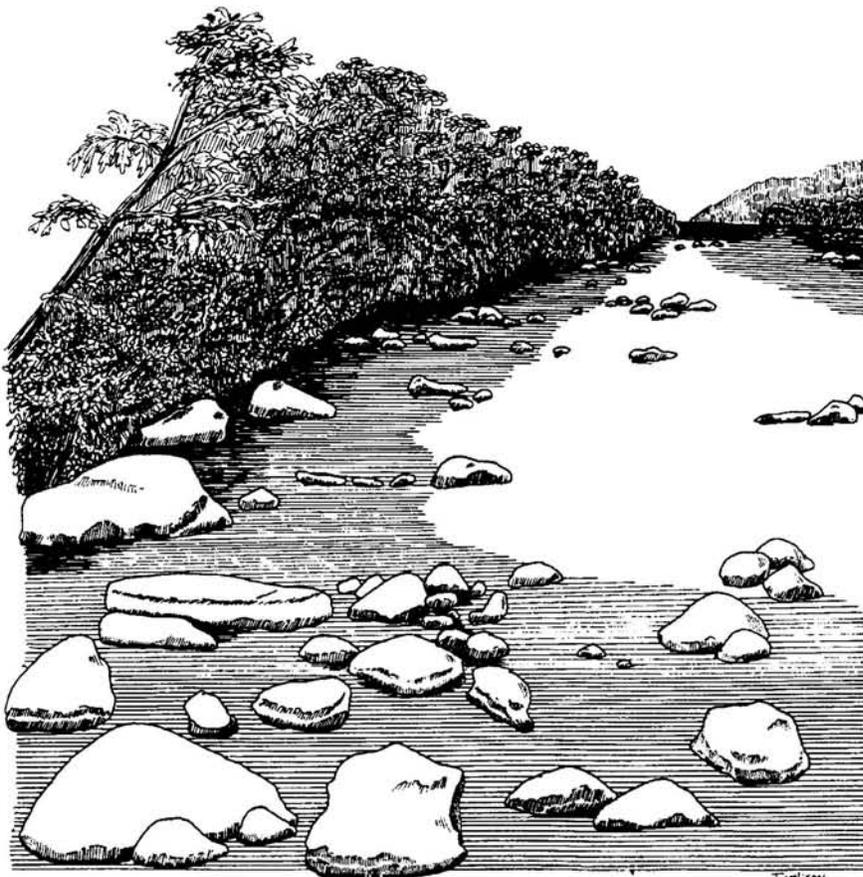
The Clinch River has been threatened by sediment from erosion caused by poor land-use practices. Riparian vegetation along some stretches of the stream has been damaged or destroyed. This riverine ecosystem has also been threatened by pollutants from isolated industrial developments.

Clinch River Community Project

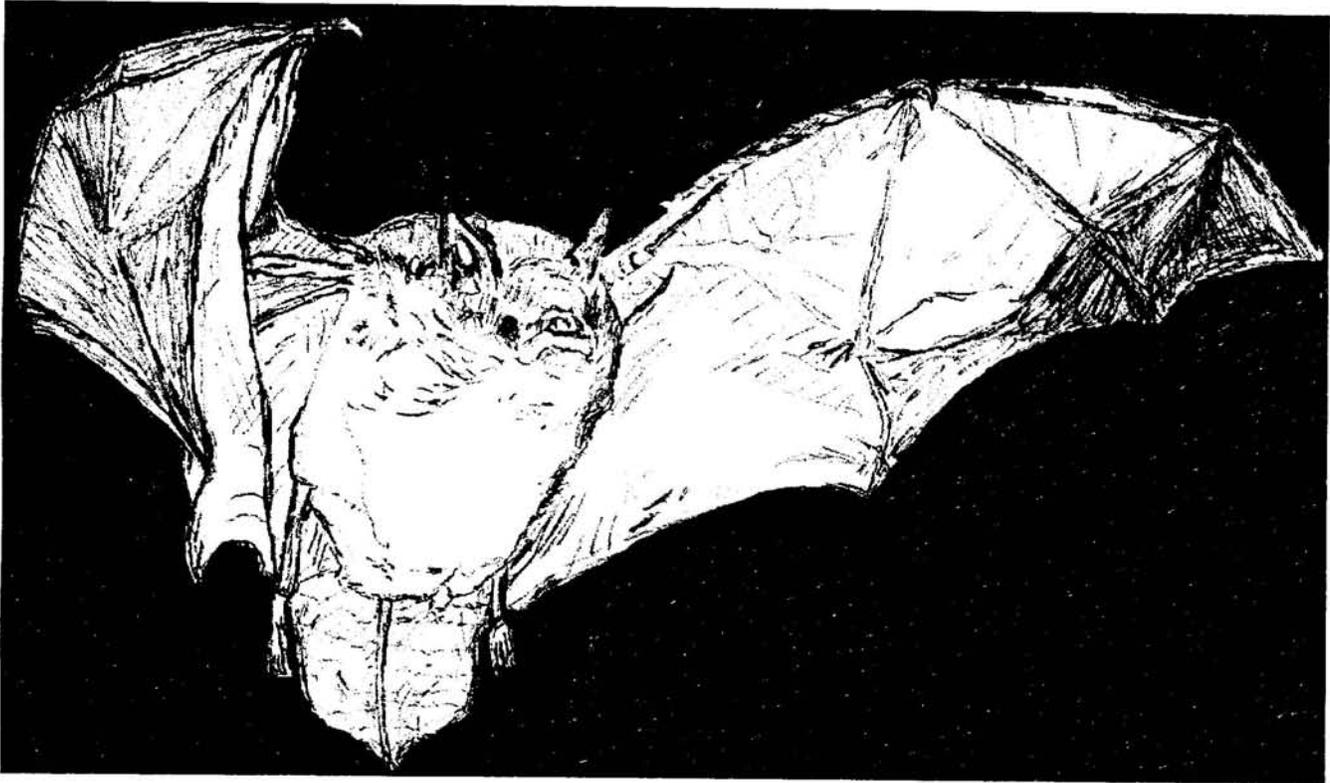
The Clinch River Community Project began in the early 1990s. The goals of the project included the protection and restoration of riparian habitats along the Clinch River in Hancock County. The Nature Conservancy has been the driving force behind this project and has partnered with government agencies, local officials, and, most importantly, landowners.

Success

Hands-on activities such as bank stabilization, trash removal, and the fencing of riparian areas to prevent trampling from livestock are all making a difference for plants and wildlife in this ecosystem. These actions have helped to preserve and enhance the Clinch's water quality. There have been significant reductions in sediment from erosion and other pollutants that threaten the aquatic life of the Clinch. Stream-bottom habitats essential for aquatic creatures have been protected from trampling by livestock and the smothering effects of silt and muck. The future of the Clinch River depends on the continuation of such efforts. Residents of Hancock County are learning more about the rich natural heritage of the Clinch River valley thanks to this ongoing project.



Gray Bats On The Comeback



Kelly Bibb

The gray bat (*Myotis grisescens*) depends on cave ecosystems throughout the year. It is perhaps more dependent on caves than any other mammal in the United States. To thrive, these bats require undisturbed caves for winter hibernation, and warm caves for raising their young in the summer. When a maternity colony is disturbed by visiting humans, thousands of young may be dropped to the cave floor and abandoned. Disturbance during hibernation causes the bats to use up the stored energy that they need to survive the winter. As a result of human disturbance and destruction of their caves, this species declined drastically and was listed as an endangered species on April 26, 1976. Thankfully, recovery efforts are working.

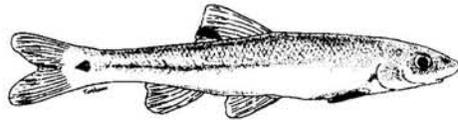
Gray bat populations are stabilized or increasing in numbers at the most important maternity and hibernation caves. Dedicated field biologists, researchers, and conservation minded cavers have made this possible by fencing or gating cave entrances and restricting access during the times the bats are present. This allows the bats to hibernate and raise their young undisturbed. The cave gates and fences are specially designed to permit bats and other cave life to freely enter and leave the caves, but keep unauthorized visitors out when the bats are present.

Gating and fencing caves is no easy feat. It takes an incredible amount of manpower to get tools, generators, fencing materials, and steel to the cave sites. In many cases, numerous volunteers have given up entire weekends and have driven long

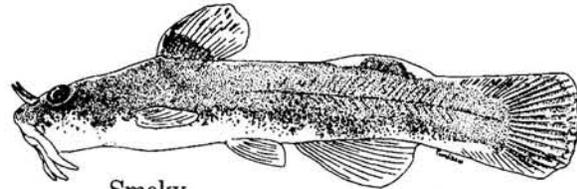
distances to help build these fences and gates. It takes many dedicated people working together to help save and recover species, but it can be done.

These efforts have been rewarded with a significant increase in the numbers of gray bats in Tennessee. As an example, the gray bat maternity colony at Nickajack Cave near Chattanooga was disturbed so frequently by recreational boaters on Bunersville Lake that they abandoned the cave. The Tennessee Valley Authority, working with the U.S. Fish and Wildlife Service and the Tennessee Wildlife Resources Agency, constructed a fence that protects the bats and the colony. As a result, the colony has recovered to pre-disturbance levels.

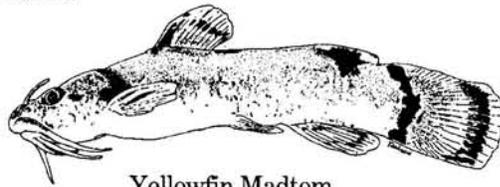
Abram's Creek: Reintroduction of Four Listed Fishes



Spotfin Chub



Smoky Madtom



Yellowfin Madtom



Duskytail Darter

Four Listed Fishes:

Duskytail darter
Smoky madtom
Spotfin chub
Yellowfin madtom

Etheostoma percnurum
Noturus baileyi
Cyprinella monacha
Noturus flavipinnis

Endangered
Endangered
Threatened
Threatened

Nongame Fishes

The smoky madtom, yellowfin madtom, duskytail darter, and spotfin chub are members of a large group of species known as nongame fishes. They each have specific habitat requirements and unique characteristics. All four of them can be found in Abram's Creek, a mountain stream that flows through the Great Smoky Mountains National Park in Blount County, Tennessee. While game fish species (those caught by fishermen for sport and food) have been successfully introduced and reintroduced throughout the country for a long time, few nongame fish reintroduction efforts have been attempted.

Threats

Ichthyocides are chemicals that were used in 1957 to eliminate unwanted nongame fishes from Abram's Creek in the hope of improving the stream's trout fishery. The chemical treatment did not improve the trout fishery, but

many nongame fish species were eliminated from the creek. At that time, resource managers did not realize the vital connection between nongame fishes and the success and health of a riverine ecosystem. Since then, some nongame fish species have returned to the creek from upstream and downstream sources. The Chilhowee Reservoir, which impounded the lower end of Abram's Creek, along with other contributing factors, blocked nearly half of the 63 fish species that once inhabited the stream from returning.

Reintroduction

The University of Tennessee at Knoxville combined efforts with the U.S. Fish and Wildlife Service, the Tennessee Wildlife Resources Agency, the National Park Service, and the U.S. Forest Service to restore the species diversity and health of Abram's Creek. In 1986, the fish restoration project in Abram's Creek began. The first steps of

the project were to (1) ensure that Abram's Creek would have consistently clean water and (2) develop propagation and reintroduction techniques for the rare fishes. Today, Conservation Fisheries, Inc. leads the reintroduction effort by researching and developing these needed techniques.

Spotfin chubs were collected from the Little Tennessee River and released directly into Abram's Creek in 1986. Yellowfin and smoky madtom eggs and young were collected from the wild in 1986 and raised in captivity, and juveniles were released into Abram's Creek later in the year. Duskytail darter nest clutches were collected from the wild in 1992, one year before the species was listed. Young darters were raised in captivity and released into Abram's Creek. Since the beginning of the project, over 2,600 adult and young spotfin chubs have been

You Can Make a Difference!

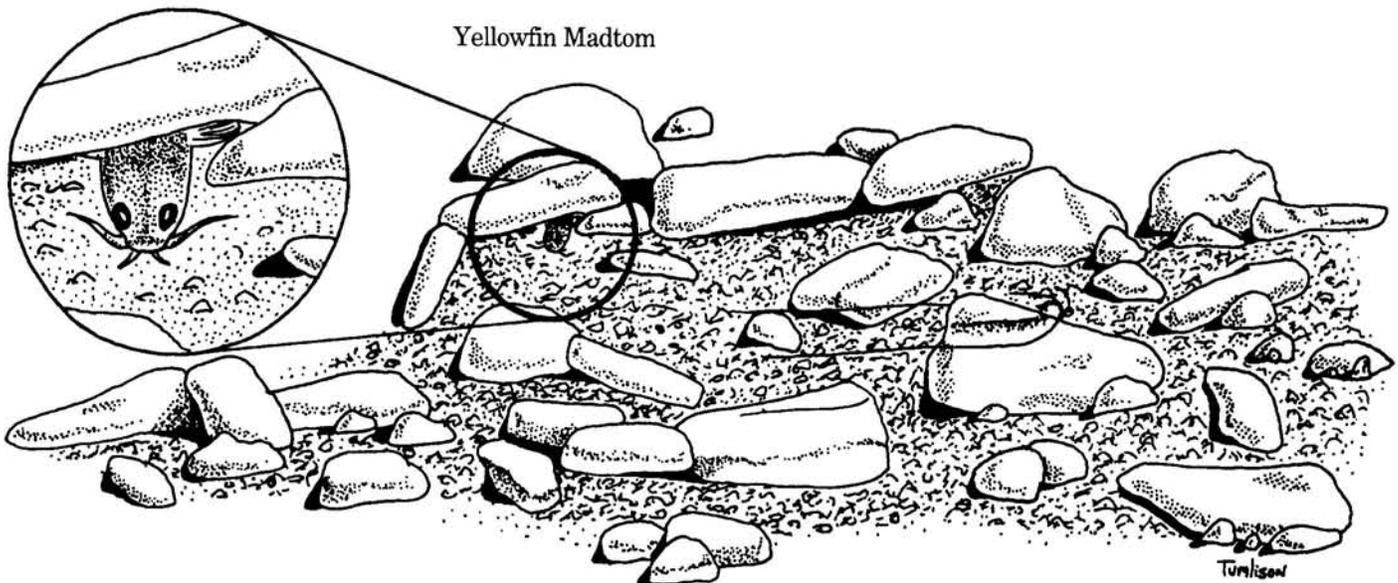
Tell a friend about Abram's Creek and this nongame fish reintroduction. Learn more about nongame fish species and their habitats. Help with local stream cleanups and water quality monitoring projects, and report illegal dumping. Explore Tennessee's diverse ecosystems!

released into Abram's Creek, as well as 1,500 smoky madtoms, 500 yellowfin madtoms, and over 1,300 duskytail darters.

Success

Beginning in 1995, consistent observations indicated that all four species were surviving in Abram's Creek. They appeared to be healthy, and three of the four reintroduced species were breeding. Male duskytail darters have been observed guarding large nests, pairs of yellowfin madtoms and smoky madtoms were seen preparing nests, male smoky madtoms were seen guarding their eggs, and young madtoms and darters have been observed. Future releases will be needed in order to ensure success, and biologists are now looking at other streams for future reintroduction sites. They hope to reintroduce these nongame fishes

into other historical habitats by the year 2000. It will take many more successful reintroductions before these species no longer need the protection provided by the Endangered Species Act.



Yellowfin Madtom

American Peregrine Falcon Delisted!

(Falco peregrinus anatum)

You Can Help!

Tell a friend about the American peregrine falcon. Protect high-elevation ecosystems by supporting local, regional, and national clean air standards. View peregrines from a distance. Use pesticides carefully and correctly or practice organic gardening. Take pride in Tennessee's wildlife!



Status

The American peregrine falcon was listed as endangered on June 2, 1970, and delisted in August, 1999. It is now protected by the Migratory Bird Treaty Act and the Lacey Act.

Description

The American peregrine falcon is a medium-sized falcon, about the size of a crow, with long, pointed wings and a long tail. The adult is slate gray above, with a white throat. The wings, tail, and sides have black bars. Black tear-shaped marks appear beneath each eye. The underparts are white to reddish-buff, with many black bars and spots. The legs and feet are yellow. The peregrine can reach speeds of up to 200 miles per hour—three times faster than any car on a highway—and can see up to a mile away!

Habitat

Peregrine falcons typically nest on cliffs that overlook the surrounding landscape. A sheltered cliff ledge with a flat floor that has small rocks or pebbles is usually best. The falcons have been known to nest on tall towers and buildings as well. Peregrines usually hunt over waterways, fields, swamps, and marshes. The peregrine can be found as far north as Alaska and as far south as Mexico. Historically, peregrine falcons only nested in Tennessee's high elevation ecosystems, but today they will also nest on bridges and buildings in cities and urban areas.

Life History

Peregrines usually choose a nesting site by March. During late March and April the female will lay 3 to 5 eggs that are yellow with brown spots. Chicks stay in the nest for 6 to 7 weeks before learning to fly and hunt. The parents will return to the same nesting site year after year. Peregrines may head for the coast during winter months to search for food, but they return to their nesting area in the spring.

Role in the Ecosystem

Peregrines are mighty predators; they sit at the top of the food chain. They hunt in the air for waterfowl, songbirds, and sometimes flying mammals, like bats, which live off of insects and plant material. Should something go wrong with any link in this chain, the peregrines will be affected. The health of these amazing birds is dependent on a healthy food chain.

Threats

The peregrine falcon declined primarily because of an insecticide called DDT. It built up in their bodies as they fed on animals that had eaten contaminated insects and seeds. The chemical caused the falcon's eggshells to be too thin, so they often were crushed before their chicks could hatch. Loss of habitat, illegal hunting, egg collecting, and disease also played a part in the peregrine's decline.

Recovery

By 1965, the entire eastern population of the American peregrine falcon had been extirpated. A captive-breeding program began in 1971 at Cornell University in New York. The United States banned the use of DDT in 1972, although it is still used in many Latin American countries. Since that time, peregrines have been successfully raised in captivity and reintroduced into the wild. Newly hatched chicks were first released in 1974. The release process, known as "hacking," involves raising the chicks in special boxes at the tops of towers and on cliff ledges. Caretakers feed the birds but are hidden from their view. Soon the birds are free to fly and hunt on their own. Nationwide, more than 1,000 peregrines have been released since 1974, and in 1997 a pair of endangered falcons nested and raised young in the Great Smoky Mountains National Park. It was the first time peregrines had nested successfully in the park since the 1940s!

