



Tennessee Wildlife Resources Agency

ANNUAL REPORT



2021-22



Cover Photo: Jennifer Jenson
Black Bear: Frank Snyder
Foxes: Jennifer Jenson
Golden Eagle: Daniel Istvanko
Elk: James Richards

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Photo: Tom Wood

WHO WE ARE

The Mission of the Tennessee Wildlife Resources Agency is to preserve, conserve, manage, protect, and enhance the fish and wildlife of the state and their habitats for the use, benefit, and enjoyment of the citizens of Tennessee and its visitors. The Agency will foster the safe use of the state's waters through a program of law enforcement, education, and access.

750 TOTAL EMPLOYEES	250 WILDLIFE OFFICERS	350 BIOLOGISTS AND TECHNICIANS	150 SUPPORT STAFF
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TWRA has come a long way since it was established in 1949 as the Game and Fish Commission. Today, TWRA is unique among state agencies. Unlike most departments, which are supported by tax revenues, the TWRA is funded largely through the monies generated by licenses and permits purchased by hunters, anglers, and other outdoor enthusiasts. Yet the Agency plays a major, though often unseen role in the life of every Tennessean.



"TO LEAD THE TWRA IN MANAGING AND PROTECTING TENNESSEE'S FISH AND WILDLIFE IN AN EVOLVING LANDSCAPE, I WILL PARTNER WITH THE TENNESSEE FISH AND WILDLIFE COMMISSION TO IMPLEMENT THE AGENCY'S STRATEGIC PLAN TO MEET THE CHALLENGES OF TODAY AND PREPARE FOR THE FUTURE WITH AN EYE ON THE PAST."

**JASON MAXEDON,
EXECUTIVE DIRECTOR**

TENNESSEE FISH AND WILDLIFE COMMISSION



ANGIE BOX
(CHAIR)
2017-2023
DISTRICT 8



TOMMY WOODS
(VICE CHAIR)
2019-2025
DISTRICT 1



JIMMY GRANBERY
(SECRETARY)
2019-2025
DISTRICT 5



KENT WOODS
2017-2023
DISTRICT 2



BRIAN MCLERRAN
2017-2023
DISTRICT 3



CHRIS DEVANEY
2021-2027
DISTRICT 4



STAN BUTT SR.
2021-2027
DISTRICT 6



MONTE BELEW
2021-2027
DISTRICT 7



DR. HANK WRIGHT
2019-2025
DISTRICT 9



STEVE JONES
2019-2023
STATEWIDE



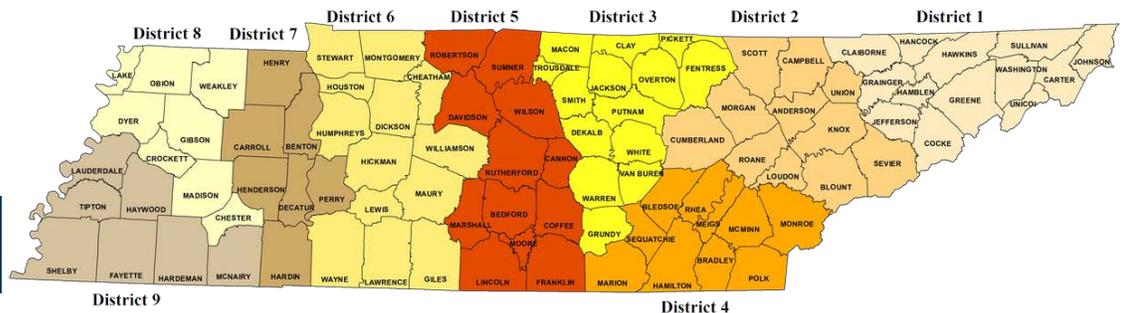
BILL COX
2021-2025
STATEWIDE



WALLY CHILDRESS
2021-2025
STATEWIDE



CHIP SALTSMAN
2022-2023
STATEWIDE



TWRA's governing body is the 13-member Tennessee Fish and Wildlife Commission. Members receive four or six-year appointments from the Governor, Lt. Governor, and Speaker of the House. The Governor, Commissioner of Agriculture, and Commissioner of Environment and Conservation also serve as ex-officio members.

Commissioners are non-salaried public servants who spend countless hours corresponding with constituents and engaging on outdoor and wildlife public issues.

WILDLIFE & FORESTRY

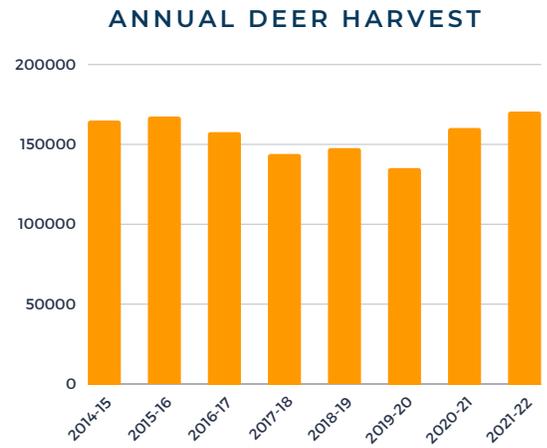
Among our state's greatest success stories is the restoration of species that had been threatened or even eliminated by the loss of habitat, overhunting, or environmental issues. With populations of key game species such as white-tailed deer, black bear, elk, and waterfowl now stable, TWRA can focus on much needed habitat restoration and enhancement.

Research is at the core of wildlife management, and TWRA biologists are continually studying populations, monitoring disease, working to control non-native species, and collaborating with other agencies to implement best practices that help Tennessee's wildlife flourish. With habitat loss occurring at an alarming rate, this work is critically important to our state's future.



White-tailed Deer

During the 2021-22 season, 154,706 adult hunters and 31,187 youth hunters harvested 170,572 deer. Our state's deer herd is stable at an estimated 1.6 million, but it hasn't always been that way. Thanks to TWRA conservation efforts, the population has recovered from just 1,000 deer in the 1940s.



Chronic Wasting Disease Response and Management Plan

Chronic Wasting Disease (CWD) was discovered in West Tennessee in 2018 and presents a significant and growing threat to white-tailed deer. TWRA will soon finalize an updated response and management plan that includes 5 overarching goals:

PREVENT THE INTRODUCTION OR SPREAD OF CWD TO NEW AREAS.

SURVEILLANCE AND MONITORING TO IMPROVE EARLY DETECTION OF THE DISEASE AND BETTER TRACK THE NUMBER AND LOCATION OF CASES.

ACTIVATE MANAGEMENT AND RESPONSES TO MINIMIZE THE IMPACTS OF CWD WHERE THE DISEASE HAS BEEN DETECTED AND PROACTIVELY RESPOND TO ANY NEW CASES.

MORE RESEARCH TO OPTIMIZE ALL OF TWRA'S CWD PROGRAMS.

OUTREACH AND COMMUNICATIONS TO ENSURE THE PUBLIC AND OUR HUNTERS HAVE THE INFORMATION THEY NEED ABOUT CWD.

FIGHT CWD INCENTIVE PROGRAM

TWRA is helping people that harvest CWD-positive deer in 2 new ways.

Hunters who harvest a positive deer will receive a **voucher worth \$75** redeemable for processing fees on their next deer harvest at participating processors.

Residents who kill 2 or more CWD-positive deer during this season will receive an **annual sportsman's license** for 2022. If the hunter has a lifetime license, they can gift that license to someone of their choosing.



CWD INCENTIVE PROGRAMS:

EARN-A-BUCK

Unit CWD hunters can earn additional bucks by harvesting antlerless deer and submitting them for CWD testing.

REPLACEMENT BUCK PROGRAM

Hunters will receive a replacement buck if they harvest an antlered deer with an official test result of positive.

LANDOWNER MANAGEMENT PROGRAMS:

LANDOWNER PERMITS

Permits are issued directly to landowners to remove deer on their property outside of deer season in Fayette and Hardeman counties OR on properties that are within a 3-mile radius of a TWRA-confirmed CWD-positive location.

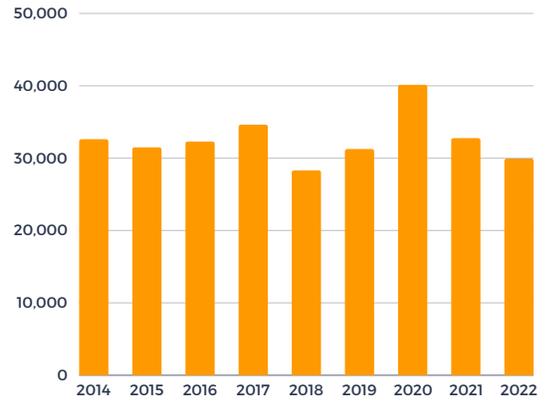
TARGETED REMOVAL

TWRA is contacting landowners in Chester, Crockett, Gibson, Hardeman, Haywood, Henry, Lauderdale, Madison, and Weakley counties to recruit them to volunteer to fight CWD. TWRA is partnering with USDA Wildlife Services to remove deer in these areas after hunting seasons through March 31st.

Wild Turkey

The middle of the 20th century saw wild turkey populations at their lowest in Tennessee, with total flocks numbering only in the hundreds. Today, we estimate a total of **250,000 birds** across all 95 counties. However, turkey population growth appears to be slowing in different regions of the state. TWRA is currently in the midst of a turkey reproduction project with the University of Tennessee Knoxville and a gobbler banding study to better understand populations. We are also reaching out to hunters and landowners for their perspectives on turkeys. In 2022, hunters reported **29,940 turkeys** harvested, a 10% reduction from the 5-year average.

WILD TURKEY SPRING HARVEST

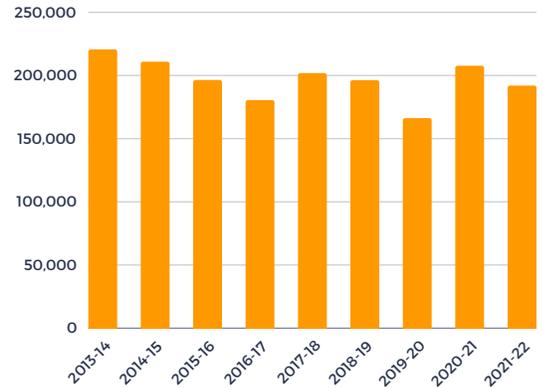


Waterfowl

Tennessee offers a variety of public land duck hunting options. In 2022, TWRA offered 453 Tier 1 blind locations. Another 42 Tier 2 Agency built blinds were available for 1, 2, 3, or 4 day periods. The TWRA is committed to providing as much access as possible. Offering shorter hunts allows more individual waterfowl hunters the opportunity to hunt each season.

During the 2021-2022 duck hunting season, approximately **192,000 ducks** were harvested, bringing the 5-year average harvest to 192,819 ducks.

DUCK HARVEST

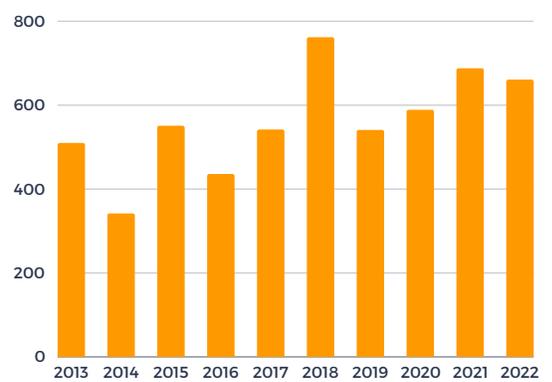


Black Bears

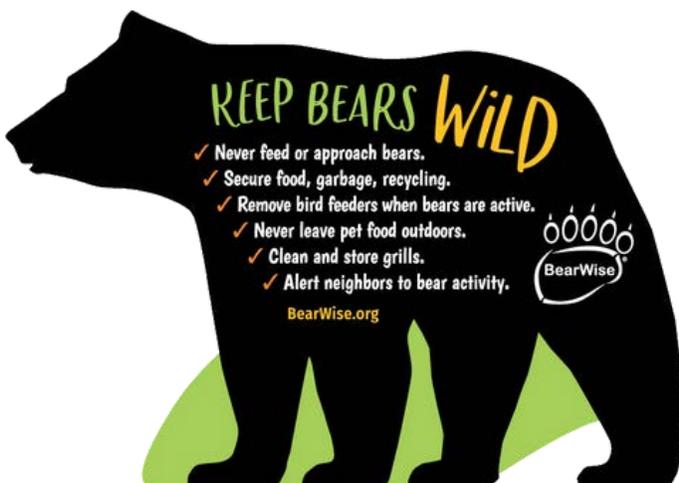
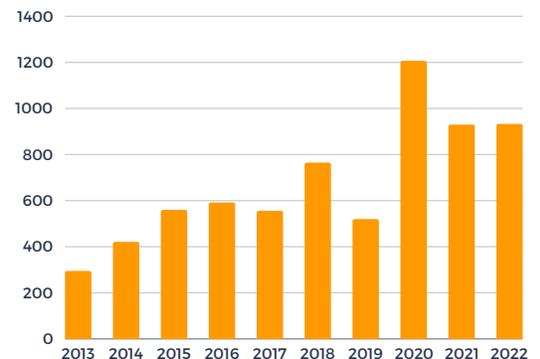
Wildlife managers understand the future of natural resources depends on positive human-wildlife interactions. TWRA is closely monitoring the rise in nuisance bear calls to determine the best strategy to keep wildlife and the public safe. Responsible harvest of black bears is one tool to control the number of bears and ensure available habitat supports the population.

Another tool is public education. TWRA supports the nationally recognized Bearwise program to help educate the public about the best ways to stay safe around bears and prevent damage to homes and properties. Learn more at bearwise.org.

BEAR HARVEST

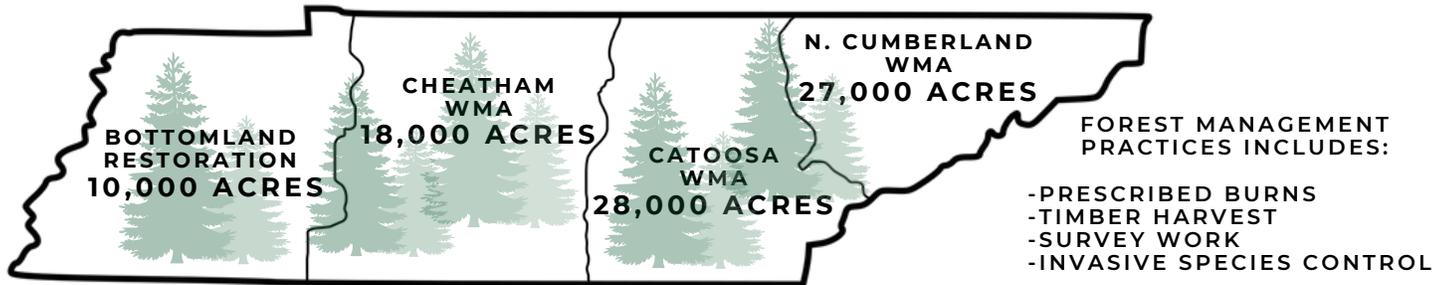


BEAR CONFLICT REPORTS



PROTECTING CRITICAL HABITAT

Habitat management and restoration work isn't always pretty at first, but it is essential for healthy ecosystems and the protection of at-risk species. The TWRA manages more than 1.6 million acres of land for wildlife species and their habitat. Work focuses on conservation and the restoration of fish, wildlife, and plant resources for the benefit of all Tennesseans for generations to come. Wildlife Management Areas (WMAs) also support recreational activities such as hunting, fishing, bird watching, and hiking.

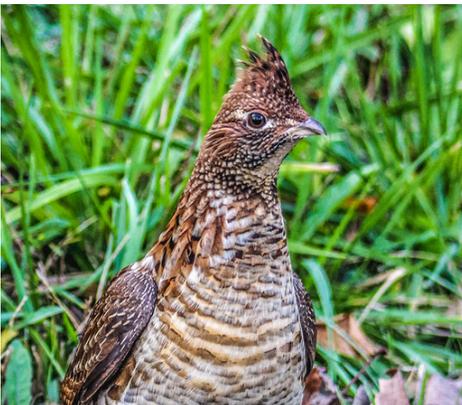


Looking across the state, TWRA focuses on bottomland hardwood restoration and forest improvement in West Tennessee, where roughly 10,000 acres of bottomland habitat has been restored. In Middle and West Tennessee, TWRA has 3 main WMAs for intensive forest management activity. Cheatham WMA has 18,000 acres in forest management compartments out of nearly 21,000 total acres. Catoosa manages 28,000 out of 82,000 acres in management compartments, and North Cumberland has 27,000 acres being managed out of 200,000 total acres across 5 counties. All these managed acres contribute to the overall forest health and sustainability of our natural resources.

PARTNERSHIP SPOTLIGHT:

TWRA partners with the Tennessee Department of Agriculture Division of Forestry (TDF) and the Ruffed Grouse Society to improve 10,000 acres of forest health and habitat for at-risk wildlife through dynamic forest restoration and management across the Cumberland Plateau. Visitors to Lone Mountain State Forest and Catoosa Wildlife Management Area will reap the benefits of enhanced wildlife viewing and interpretive signage for ruffed grouse, golden-winged warblers, and other woodland and savanna-dependent species.

During the course of this multi-year initiative, TDF's Prescribed Fire Strike Team will implement prescribed burning on some areas of the state forest and forest management on WMAs through timber harvests. Forest management will also be conducted to diversify forest structure through thinning and regeneration treatments. Additional acreage will be improved through activities like controlling non-native invasive species.



EARLY SUCCESSIONAL HABITAT

Early successional habitat is the scientific term for young forest or the shrubby brush that grows in and along the edges of open fields. It may seem inconsequential, but it's actually critical habitat for wildlife, including songbirds, nesting turkeys, fawns, and game birds like the bobwhite quail and ruffed grouse. Historically, bison maintained these habitats as their hooves thinned saplings. Today, land managers must preserve early successional habitats with prescribed burns and timber harvests.

THE RESTORATION OF A SPECIES

A HISTORY OF ELK IN TENNESSEE

The elk that once roamed in Tennessee are extinct, but a closely related subspecies was released in 2000. The initial elk released came from Elk Island National Park (EINP) in Alberta, Canada. The EINP elk herd is closely monitored for potential health problems and is considered one of the best sources of wild disease-free elk. Another source for elk was the Elk and Bison Enclosure at Land Between the Lakes. Today, Tennessee is home to around 450 elk who range across 670,000 acres of habitat in Scott, Morgan, Campbell, Anderson, and Claiborne counties.



Elk: Tom Wood

Elk Hunting Opportunities

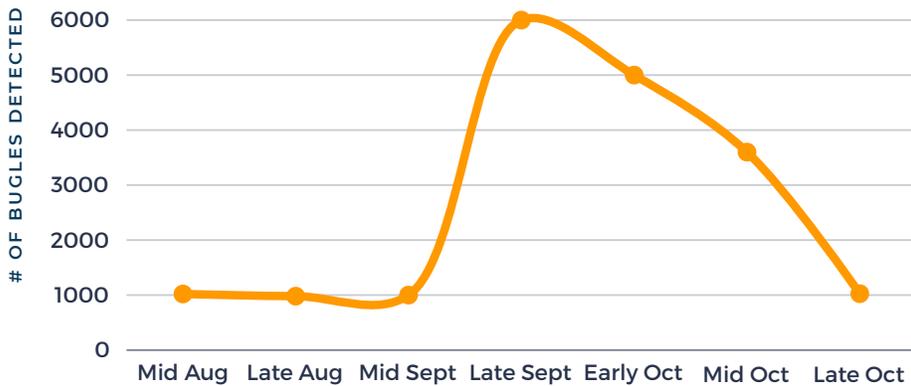
By 2009, the Tennessee elk population was large enough to allow limited hunting. Over time, the Agency has expanded hunting opportunities and now offers 15 elk tags annually for an archery hunt and a gun hunt. Each year, TWRA dedicates one tag for a youth hunting opportunity, and one tag for the Tennessee Conservation Raffle hosted by the Tennessee Wildlife Resource Foundation.

Wildlife and Tourism

The Hatfield Knob Elk Viewing Tower at the Sundquist Unit of the North Cumberland WMA opened in 2005. Since then, thousands of wildlife enthusiasts have been able to consistently view the first wild elk herd to roam Tennessee since the 1860s. In 2022, TWRA celebrated the reconstruction of the tower by naming it after longtime volunteers Jane and Terry Lewis. The tower is also outfitted with a live web camera, which allows people all over the world to view our beautiful elk herd.

From mid-August through October, bull elk can be heard bugling at twilight. The sound is made to advertise their fitness to cow elk and to show off to other bulls. Elk are most active before sunrise and after sunset but will bugle throughout the night as well.

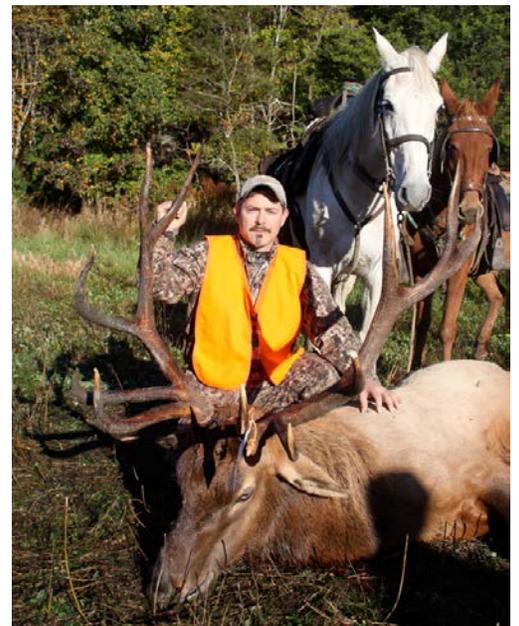
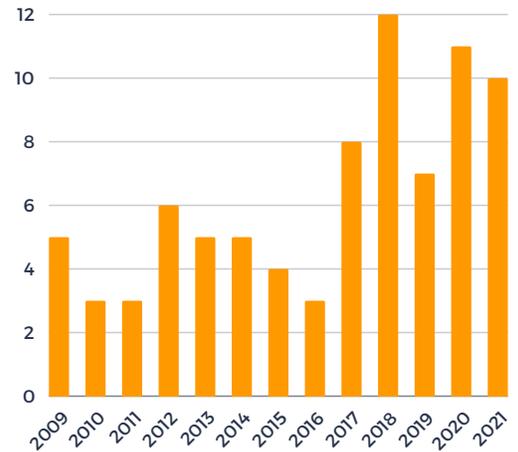
ELK BUGLE FREQUENCY THROUGH THE YEAR



\$10.25M

Estimated economic impact of elk viewing and hunting in Tennessee (Source: University of Tennessee)

BULL ELK HARVEST



FISHERIES

Tennessee is home to 32 large reservoirs, 3 major river systems, thousands of miles of tributary rivers and streams, and dozens of smaller family fishing lakes managed by TWRA. As a state with a diversity of habitats, stretching from the cold mountain streams in the east, all the way to the Mississippi River, with dozens of lakes and reservoirs in between, Tennessee has become known for trophy bass, trout, catfish, muskellunge, striped bass, and more.

Agency fisheries staff manage some fisheries by stocking from 11 hatcheries. Nearly 9 million fish are stocked each year - from fry to fingerlings, brood fish and trophies - including several species of game and non-game fish. This effort is led by TWRA biologists who monitor fish populations, angler success, and habitats to maintain the state's fisheries.

Altogether, TWRA manages more than 600,000 acres of reservoirs and lakes and 60,000 river miles for the benefit of Tennessean residents and visitors.



INVASIVE SPECIES

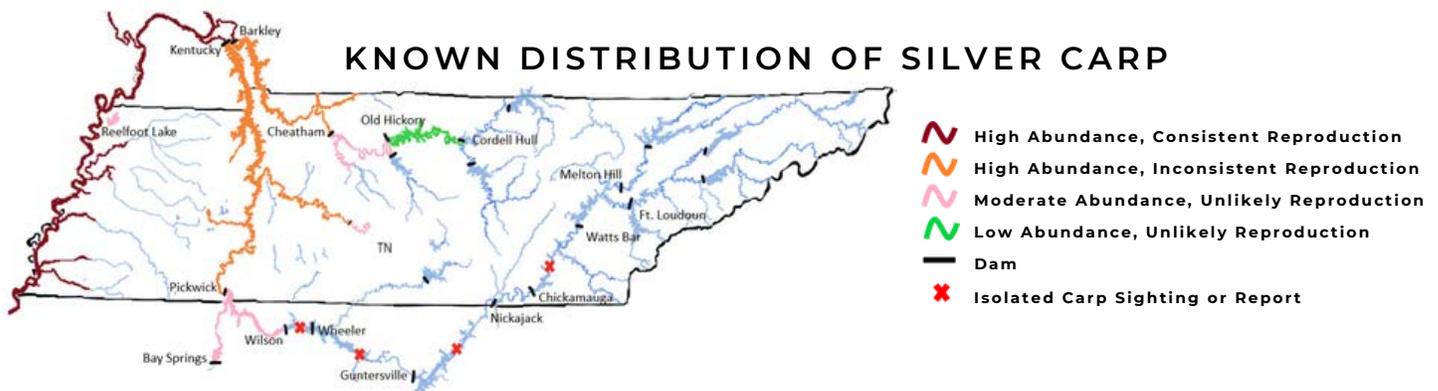
Alabama Bass



As many states in the southeast are realizing, the introduction of Alabama Bass outside its native range can be devastating. Alabama Bass have recently been detected in Tennessee waters and can impact popular species like Largemouth or Smallmouth Bass. In other states where they were introduced, Alabama Bass populations developed quickly and for a short period of time produced some large fish. However, this rapidly changed as the population increased and became overcrowded, resulting in high numbers of small fish.

Silver Carp

TWRA works with state and federal partners throughout the Mississippi River Basin to manage invasive carp, including engaging with partners to prioritize locations for deterrent implementation on the Tennessee and Cumberland rivers, and to better understand carp movement patterns. Current experimental deterrent technology utilizes lights, sound, and air to slow the movement of invasive carp upstream. TWRA biologists collect and tag adult carp to study their movement patterns. Over 1,000 carp are tagged with sonic transmitters, which are tracked by passive receivers to tell us how and when the carp are using areas of the reservoirs. This research will also be used to evaluate experimental deterrent technology. TWRA also collects larval stage fish annually to monitor for carp spawning success. Since this tracking started in 2016, no evidence of successful carp spawning has been found in the Tennessee or Cumberland River systems.



TENNESSEE CARP HARVEST INCENTIVE PROGRAM

..... **21 Million Pounds**

In 2018, the Tennessee Fish and Wildlife Commission approved a \$500,000 budget request to create the Tennessee Carp Harvest Incentive Program to support the commercial harvest of invasive carp. That investment, plus additional state and federal dollars, have resulted in more than 21 million pounds of carp being removed at Kentucky, Barkley, Cheatham, Pickwick, and Old Hickory lakes.



**NORMANDY
FISH HATCHERY**

Photo: Tom Wood
Normandy Hatchery
Crews Stocking Lake

Tennessee Trout:

The TWRA manages year-round trout fisheries to target trophy trout production and the restoration of native populations. Over the course of the entire year, TWRA expects to stock close to 1.5 million trout.

Next winter, TWRA plans to release approximately 75,000 rainbow trout into Tennessee waters. This trout stocking program provides numerous close to home trout fishing opportunities for anglers during the winter months, and opportunities for children or first-time anglers to try fishing.

There are more than 40 locations for this year's winter trout stocking program. Many of these locations are in urban areas and include walking trails, playgrounds, and pavilions making them the perfect place to take the family.

"The winter trout stocking program provides family friendly fishing opportunities in areas where there are only few or no other trout fisheries. TWRA is excited to bring these unique opportunities to various communities across the state for people to enjoy."

-Brandon Simcox, TWRA Trout Program Coordinator

Smallmouth Bass:

Tennessee is well known for its world-class Smallmouth Bass. The current world record Smallmouth Bass from Dale Hollow Reservoir is a testament to the State's status as a Smallmouth Bass angling destination. Bass fishing, the most popular type of fishing in Tennessee, is enjoyed by many Tennesseans and visitors.

Family Fishing Lakes:

TWRA manages 18 Family Fishing lakes located in Middle and West Tennessee, many of which include concessions and restroom facilities, bait and tackle, boat rentals and more. Some of these are trophy bass fisheries, but all are a convenient place to take the kids fishing or escape for a relaxing day of fishing with the family.

ANNUAL ECONOMIC IMPACT OF FISHING IN TENNESSEE IS ESTIMATED AT \$1.2 BILLION

2022 RECORD SETTING CATCHES



Paddlefish
Weight: 120 lbs.
Cherokee Reservoir
Chad Collins



Blue Catfish
Weight: 118 lbs.
Barkley Reservoir
Micka Burkhart



Cutthroat Trout
Weight: 2 lbs., 8 oz
South Fork Holston River
Daniel Scalf

HATCHERIES STOCKING BY THE NUMBERS

HUMBOLDT: 874,314

Bass, Bluegill, Redear Sunfish, Catfish, Crappie and Walleye

SPRINGFIELD: 700,336

Walleye, Bass, Bluegill, Redear Sunfish and Blacknose Crappie

NORMANDY: 2,075,838

Walleye, Striped Bass, Musky, Saugeye and Walleye

FLINTVILLE: 104,001

Cutthroat and Rainbow Trout

TELLICO: 150,000

Rainbow Trout

EAGLE BEND: 1,699,927

Walleye, Saugeye, Striper, Bass, Bluegill, Redear Sunfish and Crappie

MORRISTOWN: 617,600

Blacknose Crappie, Striped Bass, Redear Sunfish, Saugeye and Walleye

BUFFALO SPRINGS: 353,961

Rainbow Trout

ERWIN: 69,722

Rainbow Trout

Hiwassee: 220,000

Largemouth Bass

Bill Dance

SIGNATURE LAKES

The Bill Dance Signature Lakes project is well underway to highlight 18 lakes which will bear fishing legend Dance's stamp of approval. Over the course of 2022, TWRA started renovations and investments at several of the lakes, so Tennesseans can benefit from increased stocking, habitat and fisheries management, as well as improved access for fishing and boating. The collaborative effort between the Tennessee Wildlife Resources Agency, Tennessee State Parks and Tennessee Department of Tourist Development seeks to solidify Tennessee as the heart of fishing in the southeast and drive economic activity across the state.



Governor Bill Lee and
Bill Dance

OLD HICKORY

Anglers and coaches from the Mt. Juliet High School fishing team assisted TWRA personnel with the construction of 400 fish attractor structures that will improve fishing and habitat in Old Hickory Lake. The groups constructed two different attractor designs using concrete and PVC pipe. Both structures are designed to be a more permanent alternative to organic structures made from trees and wooden materials. These fish attractor sites will receive a special marker buoy as part of the new Bill Dance Signature Lakes project. Attractor locations were specially chosen to increase angler success at various times throughout the year. This project was supported by the National Fish Habitat Partnership (NFHP) and Bass Pro Shops.



LAKE HALFORD



Hundreds of structures were assembled and deployed at Lake Halford, creating two large fish attractor sites.

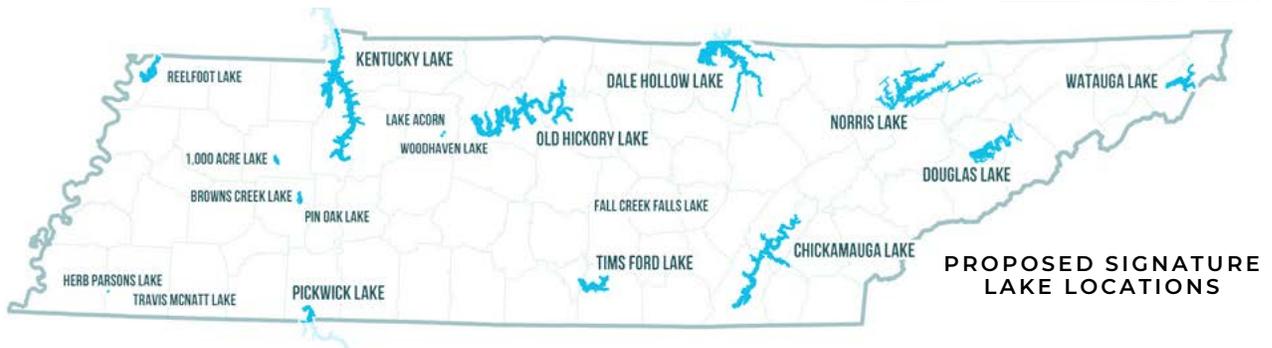
“Our goal on each one of these lakes is to try to get at least 20 percent of shoreline from 2-3 feet out to 20 feet impacted by these types of structures,” says Jason Henegar, TWRA Assistant Chief of Fisheries, “So, it varies in depth, it varies in complexity, it varies in type of structure in that area and fish should have habitat throughout the year. This improvement should increase the catch rates as well as increase the number of fish we can hold in the lake.”

This project was supported by Tennessee Bass Nation and a grant from the B.A.S.S. Hall of Fame.

HERB PARSONS

The first stage of improvements has already started at Herb Parsons Lake and will continue for several years. TWRA started by lowering the water level to make significant habitat improvement to the lake. Future projects will include dredging strategic areas to improve navigation, a new concessionaire building, expanded parking and boat ramp access, additional courtesy piers and boat slips, upgrades to picnic areas, and the installation of fish feeders to attract fish to areas near the shoreline to improve bank fishing.

Dance visited the lake in October 2022 to see the work first-hand and offer his expertise and guidance.



IF YOU BUILD IT, THEY WILL COME



Fish attractor study shows where fish tend to congregate

STORY BY
TED ALFERMANN

As I pull the boat into the gas station, boaters and anglers notice the TWRA logo. Many will strike up a conversation and it's pretty similar every time. It goes something like this:

"So, are you a game warden?"

"No, I'm a fisheries biologist."

A confused look on their face usually follows."

Oh, well what do you do?"

"We do fish population surveys, targeted research projects, habitat enhancement work, assist with fish stocking, educational events, things like that."

"Man, that sounds awesome!"

"It is. I love it!"

I got into this profession because I grew up fishing, love to fish, and ultimately wanted to help make fishing better for others. When I joined TWRA, our fish attractor/habitat enhancement program was in full swing but the angler and biologist in me wanted to know: Do the structures we deploy actually work?

Occasionally, we drove over our habitat structures and looked at the sonar, or briefly electrofished to see if fish were present. Anecdotally, we concluded from these practices that our structures did, in fact, work so we continued building and placing them in our reservoirs. But I wanted to know more. When did fish use them, how many, what species, and how did they compare to nearby spots without habitat structures? So, we set to work designing a research project evaluating the effectiveness of our fish attractors on Old Hickory and J. Percy Priest reservoirs.

Installing natural and artificial habitat in our reservoirs has been performed by biologists and anglers for decades across the United States.

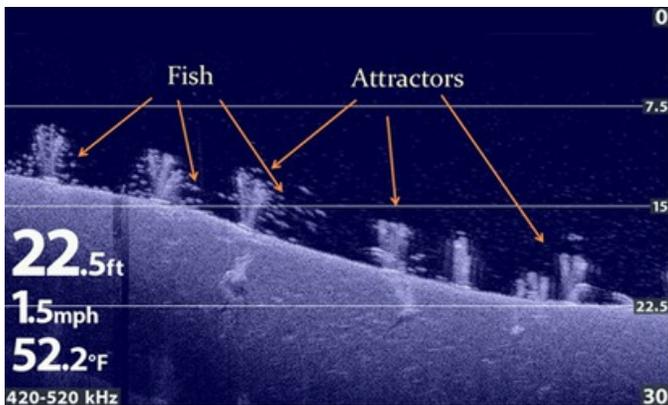
The reasons for this are threefold: (1) attract fish to a specific location to increase success for anglers, (2) provide a place for fish to ambush and feed on prey, and (3) provide cover to hide from predators. Fish attractors come in all shapes, sizes, and materials but there are certain traits that make some better than others. Cost to build, ease of building, location, and fishability (how easy it is to fish around without getting snagged) are the top considerations. None of these matter, however, if the structure isn't doing its job of attracting fish.

A challenge for those of us who manage fisheries is that we typically can't just look into the water and see if fish are present. We have to use nets and electrofishing to collect the fish and then use that data as a relative estimate of what lies below. For our study, we relied on both sonar and electrofishing to give us our answer.

We repeatedly electrofished 19 attractor sites (a boat sized area where fish attractors were previously deployed) and compared them to adjacent control sites (an area void of any habitat located within 50 yards of the attractor site) over a 12-month period on Old Hickory Reservoir to assess fish use. First, we used down-imaging sonar to locate our attractors and tossed a marker buoy to mark the spot. Similarly, a buoy was placed at the control site where no habitat was detected on the sonar. Finally, electricity was applied at each buoy for two minutes to give fish plenty of time to float to the surface and be collected. We then identified, counted, and measured each fish before returning them to the water, unharmed.

We've learned a lot from this study over the past two years. No, we haven't collected piles of huge bass or dozens of slab crappie on every structure, but our results have been positive and encouraging. Without a doubt the attractors are successful at congregating fish and providing fish with areas to hide and feed. After all, the fish wouldn't be there if the attractors didn't provide some benefit. Here are some highlights of what we've learned:

- Largemouth bass were much more likely to use the structures in the winter and early spring months when water temperatures were below 55 degrees. In fact, our largest bass we collected, a 6-pound, 13-ounce hog was electrofished on December 4 in 6 feet of 53-degree water.
- Crappie use was highest in spring and summer and lowest in fall.
- The average number of fish at each attractor site was highest in winter and lowest in summer.
- Different species use the attractors at different times of the year, highlighting the importance of evaluating habitat over the course of at least 12 months.
- You cannot assume fish aren't on a structure just because they aren't visible on sonar (see below).



Above: A sonar readout of the areas TWRA placed artificial habitat and the type of fish congregation around those spots. Below: The author's children pictured successfully fishing the attractors on Old Hickory Reservoir.



One of the more surprising results of this study was the use of the structures by largemouth bass in the winter. At a time when most anglers think bass head deep, our results showed that plenty of bass can be found shallow (less than 10 feet deep) when the water is cold. Additionally, bluegill showed up in the largest numbers in winter, with some samples containing more than 300 bluegill. The future of our habitat program will include more structures in more locations, both shallow and deep. Most of our future sites will be unbuoyed (with GPS coordinates available on our website) to ease pressure on any one site. We will use both natural and artificial structures to enhance habitat for fish while trying to continually learn which structures do best in which areas to provide the best fishing for our anglers. I want our anglers to know that we are continually trying to learn, improve, and do all we can to make fishing better.

Anglers wanting to obtain GPS coordinates for buoyed sites, unbuoyed sites, and stake bed locations can visit our website at www.TNWildlife.org and click on the "Fishing and BoatingAccess" image to be redirected to an online GIS website.

If you haven't tried fishing one of our fish attractor sites, now is a great time to try them. Don't let the cold fool you, the fish are there. And based on our research, now is one of the best times of the year to wet a line. Good luck!

Ted Alfermann is a TWRA fisheries biologist in Middle Tennessee. He helps manage fish populations in Percy Priest, Old Hickory, and Cheatham reservoirs.



AWARD WINNING COMMUNICATIONS
 TWRA received a First Place award from the Association of Conservation Information, Inc. for this article in the Tennessee Wildlife Magazine Spring Issue

WILDLIFE ACTION PLAN

The U.S. Fish and Wildlife Service approved Tennessee's 2015 State Wildlife Action Plan (TN SWAP) on June 10th, 2016. It now serves as Tennessee's comprehensive wildlife strategy through 2025.

Tennessee is one of the most biodiverse states in the nation. Currently, there are 325 species of fish, 89 mammals, 61 reptiles, 70 amphibians, and 340 birds known to inhabit or migrate through Tennessee. The number of invertebrate species, many of which are endemic to Tennessee, is equally impressive with 256 land snails, 99 aquatic snails, 120 mussels, 95 crayfish, and a multitude of insects.

Conserving this assemblage of biodiversity in the wake of economic growth and ever-changing landscapes requires funding at the state and federal level. Traditionally, conservation funding has been raised through hunting fees and excise taxes associated with game species. Although conservation of game species has been very successful, many native species are without dedicated conservation funding at the federal level and, therefore, at risk of becoming rare, threatened, or endangered.

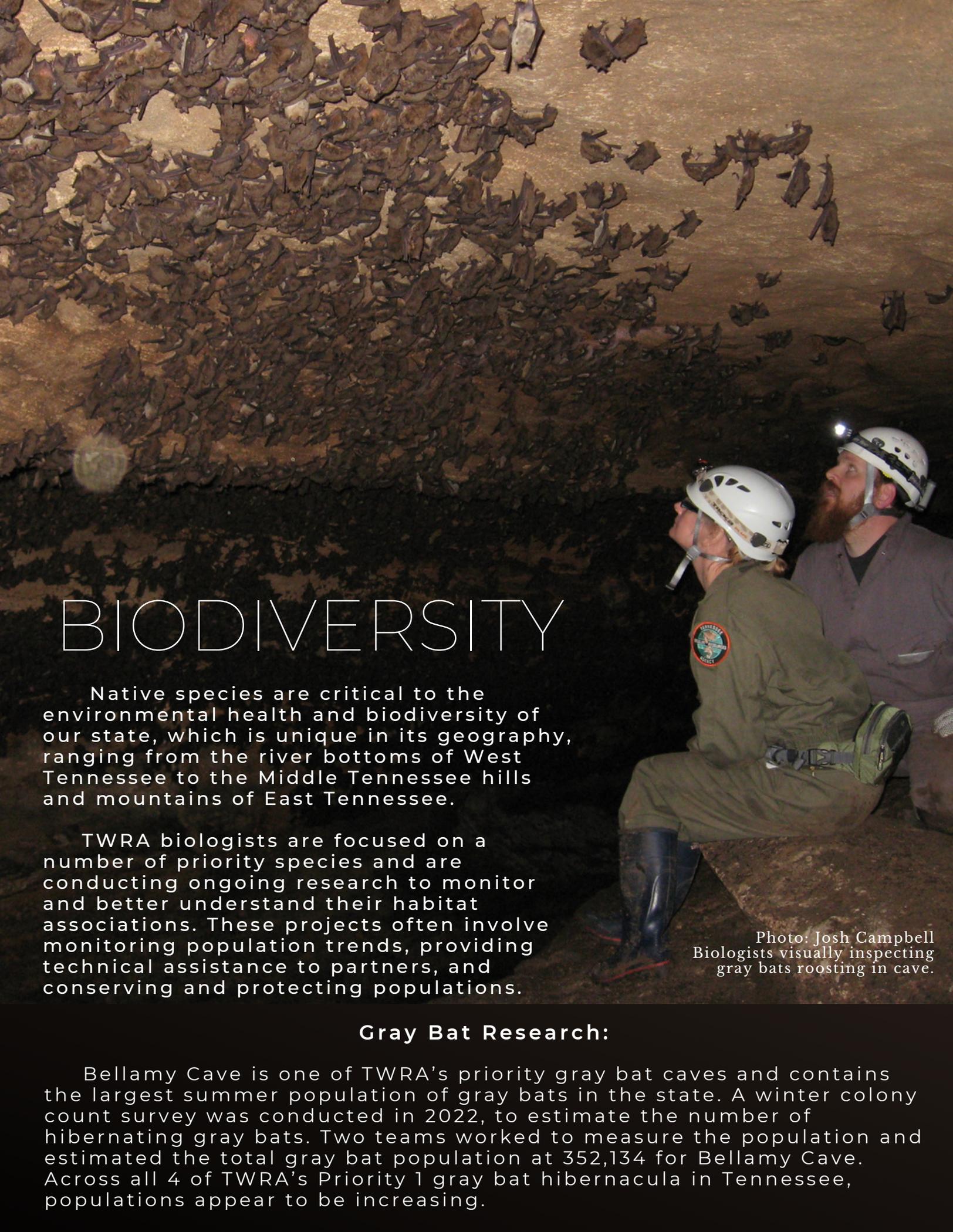




VIEW THE ENTIRE STRATEGIC PLAN AT
WWW.TNWILDLIFE.ORG

The TN SWAP outlines conservation actions led and funded by TWRA in collaboration with partners to support species of greatest conservation need (GNC) including:

- Habitat acquisition through land purchases or permanent easements
- Species restoration through habitat management for conservation and disease and pest prevention
- Research and information sharing with public relations
- Capacity building through partnerships and alliances
- Law and policy development for compliance and enforcement



BIODIVERSITY

Native species are critical to the environmental health and biodiversity of our state, which is unique in its geography, ranging from the river bottoms of West Tennessee to the Middle Tennessee hills and mountains of East Tennessee.

TWRA biologists are focused on a number of priority species and are conducting ongoing research to monitor and better understand their habitat associations. These projects often involve monitoring population trends, providing technical assistance to partners, and conserving and protecting populations.

Photo: Josh Campbell
Biologists visually inspecting
gray bats roosting in cave.

Gray Bat Research:

Bellamy Cave is one of TWRA's priority gray bat caves and contains the largest summer population of gray bats in the state. A winter colony count survey was conducted in 2022, to estimate the number of hibernating gray bats. Two teams worked to measure the population and estimated the total gray bat population at 352,134 for Bellamy Cave. Across all 4 of TWRA's Priority 1 gray bat hibernacula in Tennessee, populations appear to be increasing.

Golden-Winged Warbler Conservation:

TWRA is partnering with the University of Maine to deploy light-weight transmitters to determine their return rate and migration paths. Multiple locations were also surveyed during the year with additional trapping, banding, and tracking efforts.

The information from this project will help inform management on WMAs and help to further define habitat needs for this species in the southern Appalachian Mountains. Information collected through this project is also used to determine the need to federally list this species as threatened.

Pinesnake Telemetry Project:

Species diversity staff cooperatively initiated a telemetry project on a Northern pinesnake in Hardin County. A transmitter was implanted, and the snake has been tracked at least 1 day a week since the snake was released. During FY 21-22, 73 locations were recorded, and biodiversity personnel implemented a habitat selection protocol for each observation to assess habitat preference for pinesnakes in Tennessee. The tagged pinesnake has indicated a land use of 150 acres to date. In June 2022, a pinesnake was located in Lawrence County. TWRA staff assisted Tennessee State University with the implantation of a transmitter in this snake and are replicating the project.

Hellbender Head Start and Release:

TWRA has partnered with the Nashville Zoo and Tennessee State University to release captive raised hellbenders in the Little Buffalo River on Laurel Hill WMA. West Tennessee Biodiversity staff assisted in collecting eggs, assessing habitat, implanting transmitters, and locating released animals. Staff also collected and transported water from the Little Buffalo to Nashville Zoo, collected crayfish for feeding captive animals, selected release and nest box sites, attended release events, and assisted with radio telemetry. The data gathered will provide information on the success of releasing captive raised hellbenders, as well as habitat selection, predation on hellbenders, and hellbender site fidelity.

VOLUNTEER SPIRIT:

Tennessee volunteers typically provide 5,000 hours of labor each year, conducting wildlife and habitat management related projects.

Donated volunteer hours are critical to our work and support the Agency financially as matching funds for federal monies.

Volunteers for the biodiversity program recorded 865 hours of work during this fiscal year. Those hours translate to \$53,379.15 from the federal Wildlife Restoration Comprehensive Grant which can be reinvested in habitat development projects to support wildlife populations.

PARTNERSHIP SPOTLIGHT:

The Tennessee Valley Authority (TVA) provided TWRA with \$203,100 for habitat improvement in Wilson County. TWRA staff plan to partner with willing landowners to provide access to Indiana bat maternity areas, purchase supplies to create artificial roosts on private lands, and facilitate research.

The goal is to establish up to 50 artificial roosts on private lands where Indiana bat roosts have been previously documented during past efforts. It is likely that multiple bat species in Tennessee will be listed as threatened or endangered in coming years and continued work on bat conservation will be critical.





Photo: Mallory Tate
TWRA biologists
and partners
identify freshwater
mussels collected
from the Duck
River.

SUPPORTING AQUATIC BIODIVERSITY

The Delisting of the Snail Darter:

What started as the controversial story of a tiny fish, grew into a successful collaboration of state and federal partners to save a species. On August 12, 1973, University of Tennessee biologist and professor David Etnier discovered the snail darter in the Little Tennessee River. The fish was later listed as endangered in 1975 under the Endangered Species Act (ESA).

Controversy arose when conservationists sued over the proposed Tellico Reservoir, to be created by Tellico Dam, saying it would alter the habitat of the river to the point of killing off the endangered snail darter. It went on to become the first ESA case to reach the Supreme Court, and in 1978, the court ruled in favor of protecting the snail darter. Congress ultimately exempted the Tellico Dam from ESA consultation requirements so that the dam could be completed, and President Jimmy Carter signed the bill into law in 1979.

In October 2022, after nearly 50 years of conservation work, TWRA, the U.S. Fish and Wildlife Service and several other conservation partners gathered to celebrate the snail darter's recovery and removal from the Federal List of Threatened and Endangered Wildlife.



Pictured from left to right: TWRA Deputy Director of Field Operations Brandon Wear, Dr. David Etnier, TWRA Deputy Director of Business Operations Frank Fiss, and TWRA Executive Director Jason Maxedon

Propagation of state and federally listed mussels:

Tennessee harbors one of the most diverse assemblages of freshwater mussels in North America. The Cumberland River Aquatic Center (C-RAC) was established to propagate listed mussel species within the state. TWRA staff at C-RAC are responsible for the collection of mussel brood stock and host fish, propagation of mussels, release/reintroduction monitoring plans, and grant proposals for additional projects.

A total of 20,403 juvenile mussels of cracking pearlymussel were produced in 2022 at C-RAC. The new technology of in-vitro culture of mussel glochidia has been successfully developed and applied, and 19,546 juvenile mussels were produced through in-vitro culture. Collection of brooders was successfully accomplished, and 16 adults were collected from Elk River in 2022.

Cracking pearlymussel is a listed endangered species. In recent 5-year review, the US Fish and Wildlife Service (USFWS) indicated that this species continues to be subjected to threat from habitat degradation, destruction and fragmentation. The existing populations of cracking pearlymussel in the Powell River and Clinch River are declining as well as those populations in the Elk River and mainstem of the Tennessee River.

LAW ENFORCEMENT

Tennessee's wildlife officers have a lot of ground to cover with almost 27 million acres across the state. Any given day could include wildlife and fisheries law enforcement, safety checks, search and rescue on land or water, conducting outreach programs, and more.

Every TWRA officer is required to have a degree in wildlife or fisheries biology or wildlife and fisheries management. In addition to generalized law enforcement training, officers have received specialized wildlife law enforcement training to be able to identify wildlife-related violations. This training makes them among the most qualified wildlife law enforcement officers in the nation.

In 2022, Officer Hunter Daniels was named Tennessee's Southeastern Association of Fish and Wildlife Agencies "Officer of the Year."





The TWRA commissioned 19 new wildlife officers at the completion of the TWRA's Law Enforcement Training Academy. The new TWRA officers and their primary assigned counties are:

- Lane Coulter (Hickman County)
- Stone Payne (Hawkins County)
- Jonathan Mark (Cannon County)
- Luke Wren (Lincoln County)
- Colton Beasley (Humphreys County)
- Hunter Poore (Rhea County)
- Colt Elrod (Hamilton County)
- Jacob Jones (Hardeman County)
- Tullie White (Loudon County)
- Austin Phillips (Haywood County)
- Colby Griffin (DeKalb County)
- Dakota Adams (Houston County)
- Garrett Long (Hamilton County)
- Blake Conrad (Montgomery County)
- Spencer Wilson (Cocke County)
- William Hardwick (Sullivan County)
- Hailey Guffey (Franklin County)
- Darrell England (North Cumberland WMA)
- Cody Moore (Catoosa WMA)



TWRA welcomed 12 new members to the Honor Guard after a week of training at Smyrna Air Base. More than 30 wildlife officers are now members of the Honor Guard which is tasked with honoring fallen wildlife officers and assisting with ceremonial services including the presentation of the Colors.

The Honor Guard has represented the Agency at athletics events, including the Tennessee Titans, Nashville Predators, and the Nashville Sounds. The team made its fifth overall appearance at a Titans game this season at an October game against the Indianapolis Colts.

HUNTER EDUCATION

TWRA's Law Enforcement Division facilitates the state's hunter education program to ensure public safety related to hunting and gun ownership. The Covid-19 pandemic launched a transition to more online classes, but in-person education is starting to rebound as hunters seek mentors in the industry and hands-on learning experience.

FY 21-22 Stats:

- 118 classes taught
- 2,483 classroom graduates
- 9,206 online graduates
- 11,689 total certified hunters
- 757 certified volunteer instructors
- 237 TWRA staff certified instructors

Since the program's inception in 1972, 805,358 students have successfully graduated from the Tennessee Hunter Education Program.



BOATING AND WATERWAYS

In addition to wildlife and fisheries law enforcement, TWRA oversees boating laws and regulations. The Agency patrols for boating under the influence (BUI) violations, reckless vessel operation, regulates commercial paddlecraft operations, and offers boater education programs to further public safety.

2021 TENNESSEE BOATING SUMMARY:

186 BOATING ENFORCEMENT OFFICERS

252,239 REGISTERED VESSELS

145 REPORTABLE INCIDENTS

22 BOATING-RELATED FATALITIES

1,064 BOATING CITATIONS

72 BUI ARRESTS

663 WARNING CITATIONS

VESSEL COLLISIONS WERE THE LEADING TYPE OF BOATING INCIDENTS, AND ALCOHOL WAS THE PRIMARY CONTRIBUTING FACTOR IN 3% OF ALL INCIDENTS.



Photo: Tom Wood

Boater Education:

The Tennessee Wildlife Resources Agency is committed to reducing the number of boating fatalities and accidents through a rigorous education program.

Since 2005, TWRA has helped more than 100,000 Tennesseans complete their Boating Safety Education Certificate. Nearly 9,000 students completed the certification in 2022 alone.

Formal public classes are held across the state at various locations. For anyone born after January 1, 1989, a self-study course is available upon request as well as certain approved online courses. Plus, many presentations are made to various public groups ranging from pre-schools to safety fairs, and other community events.



2022 marked the 14th year of the “Wear It Tennessee” campaign. Wearing a lifejacket is one of the most important actions Tennesseans can take to stay safe on the water.



Paddlecraft and Non-Motorized Vessels:

In response to the challenges from the increase in water recreation and some stakeholders’ concerns about congestion and access issues on the waterways, the General Assembly passed Public Chapter 969, Acts of 2018, authorizing the Tennessee Fish and Wildlife Commission (TFWC), TWRA’s governing body, to establish rules for businesses that rent non-motorized vessels to the public for use on public waters in the state. TWRA collects data on waterway use from commercial paddlers three times a year.

In 2022 commercial outfitters reported:

- 66,086 Kayak Rentals
- 18,216 Canoe Rentals
- 8,281 SUP-Paddleboard Rentals
- 13,593 Tube Rentals
- 224 Raft Rentals
- 95,254 Total Rentals

Outdoor Recreation is Growing:

The value added to the state GDP for recreation on waterways, like fishing and paddling increased from \$617.9 million in 2018 to \$762.6 million in 2020—a 23.4% increase—according to the US Department of Commerce, Bureau of Economic Analysis Outdoor Recreation Satellite Account

RECRUITMENT, RETENTION, REACTIVATION

Recruitment, Retention, and Reactivation (R3) are at the heart of many of the activities that the Agency does. From fish stocking to creating public hunting opportunities, the work we do is to keep people hunting, fishing, trapping, target shooting, and boating for generations to come.

TWRA works to make it easy to go hunting and fishing. Beyond keeping the tradition of hunting, fishing, trapping, boating, and target shooting alive, the Agency's funding is largely based on license sales, boat registrations, and equipment purchases. If you enjoy wildlife in Tennessee, whether it has fur or feathers, you can thank a hunter, angler, boater, or recreational shooter.

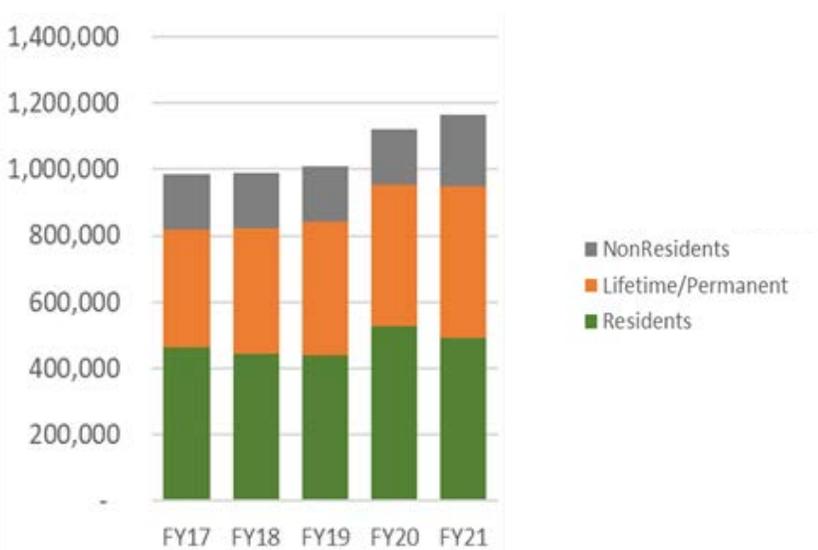
In 2020, Tennessee had the largest percentage increase in hunting license sales in the country. Since then, we have worked to retain hunters and anglers through proactive communications and marketing to lead the country in innovative strategies to help people get outdoors.

Tennessee is a destination for nonresidents to hunt and fish with numbers up 25% in the last 2 years. Our investment in the Bill Dance Signature Lakes will be a huge recruitment tool going forward for nonresidents and residents alike. Work to increase fish stocking, access, public land use, and remove barriers to participation every day, will continue to facilitate recruitment, retention, and reactivation of hunter and anglers across the state.

R3 Focused Activities

- Auto-renew and system features make it easy to renew a license with just a few taps on your phone.
- Our app allows hunters and anglers to go paperless and works with or without cell service.
- Hosted in-person and virtual outdoors skills building events attended by more than 5,000 people.
- Our virtual learning center has outdoor skills trainings and activities viewed by tens of thousands.
- Free online hunter education.
- Granting funds to universities and other partners to do R3 programming across the state.
- Granting funds to distressed counties by creating more event opportunities in those areas.

TENNESSEE LICENSE HOLDERS



Becoming an Outdoors Woman

Since 1991, the TWRA has been encouraging women to get outdoors through the Becoming an Outdoors Woman (BOW) program. This program is designed for women who are interested in learning outdoor skills that are new to the outdoors. The TWRA hosts several BOW events every year which introduce around 200 women to the outdoors each year.

Events include canoe trips, muzzleloader workshops, basic archery, basic firearms, reading the woods, ATV operation, Dutch oven cooking, fly fishing, nature photography, and much more.

R3
BY THE NUMBERS

OVER A MILLION PEOPLE A YEAR HAVE A LICENSE TO HUNT OR FISH IN TENNESSEE

RETAIN AN AVERAGE OF 80% OF CUSTOMERS EACH YEAR

PEOPLE WITH LICENSES UP 18% OVER 5 YEARS

225,000 NONRESIDENTS HUNT/FISH IN TN EACH YEAR

OVER 500,000 FIRST TIME LICENSE BUYERS SINCE 2020

99% OF THE AGENCY FUNDING IS DEPENDANT ON LICENSE SALES AND BOAT REGISTRATION

HUNTERS, ANGLERS, BOATERS, AND TARGET SHOOTERS FUND WILDLIFE CONSERVATION IN TENNESSEE





SHOOTING RANGES

The TWRA operates shooting ranges across the state for public use. Archery ranges and hunter education classes are also available at some of the ranges. Agency staff help local communities develop their own ranges by providing technical assistance and grant funding.

- BARTLETT SHOOTING RANGE
- CATOOSA WMA
- CHEATHAM WMA SHOOTING RANGE AND ARCHERY RANGE
- CHUCK SWAN WMA SHOOTING RANGE
- CROSSVILLE SHOOTING SPORTS PARK
- JOHN SEVIER HUNTER EDUCATION CENTER
- MONTGOMERY COUNTY SHOOTING COMPLEX
- NATCHEZ TRACE STATE PARK SHOOTING RANGE
- NORTH CHEROKEE WMA RANGES
- NORTH CUMBERLAND WMA SHOOTING RANGE
- PRENTICE COOPER WMA
- STONES RIVER HUNTER EDUCATION CENTER
- YANAHLI WMA SHOOTING RANGE

OUTREACH

National Archery in the Schools Program

The Tennessee NASP program began in 2004 with 12 schools and has grown to more than 700 that now participate in the program. NASP curriculum is taught during school that teaches International Style Target Archery. During the 2021-22 fiscal year, TWRA hosted 33 Basic Archery Instructor certification courses. The new hybrid certification class features 4 hours of online training, an exam, and a 4 hour in-person training.

In 2022, TWRA hosted the 15th State NASP Championships. 1,500 students participated in the event, representing 80 schools. This year, the Agency also awarded \$1,000 reimbursable grants to 10 new schools to assist with the purchase of the NASP archery equipment kit.



Kid's Fishing Events

Introducing youth to adventures in the outdoors is one of our favorite things to do. For the 2021-22 fiscal year, TWRA stocked 53,000 pounds of channel catfish into 80 bodies of water statewide. Youth fishing events were hosted at almost all of those locations, with more than 11,000 youth participating. Approximately 68% of the youth caught at least one fish, and these stocked locations continued to provide a fishery for months after the event.



Fishing 101

Fishing 101 events are held throughout Tennessee at TWRA Community Fishing Lakes in Memphis, Nashville, Chattanooga, and Maryville, as well as other locations accessible to the public. TWRA taught more than 50 classes in 2022, which featured skills like operation of a spin cast rod and reel, casting accuracy, rigging the rod with hooks, sinkers, floats, or other necessary terminal tackle, baiting hooks, catching fish, removing fish from hooks, fish care and when requested how to clean a fish to prepare for cooking.

TWRA partnered with Outdoor Afro, the Abundant Life Adventure Club, Middle Tennessee State University, the University of Tennessee at Martin, and other school groups.

PARTNERSHIP SPOTLIGHT:
TWRA supplied \$16,000 of rods and reels to Tennessee State Parks to loan to the public. This allows people who want to fish at parks, but do not have equipment, the opportunity to try it out! The only requirement is for parks to ensure the individuals that need a fishing license have or purchase one in order to borrow the rods.



YOUTUBE: OVER 1M VIEWS
@TNWILDLIFE



INSTAGRAM: 42.5K FOLLOWERS
@TNWILDLIFERESOURCESAGENCY



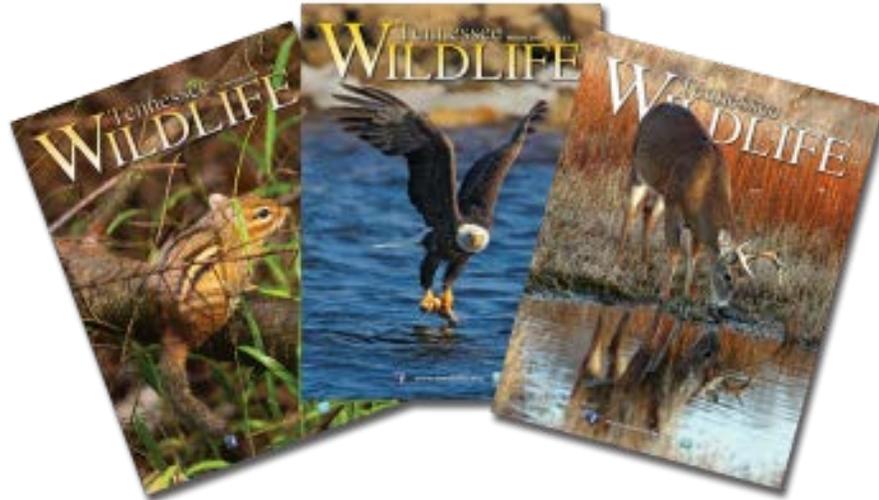
FACEBOOK: 227K FOLLOWERS
@TNWILDLIFE



TWITTER: 15K FOLLOWERS
@TNWILDLIFE

COMMUNICATIONS

The TWRA Communications and Outreach division is committed to providing the public with the information they need. Over the course of 2022, staff published nearly 100 press releases, responded to press requests, managed social media platforms, and assisted with the production of Agency reports and publications. The division also hosted or participated in hundreds of outreach events including school career days, county fairs, conventions, and educational classes.



The Tennessee Wildlife Magazine is the official publication of the Tennessee Wildlife Resources Agency with 215,000 subscribers. Published quarterly, it provides stories about all species of wildlife in our state, hunting and fishing opportunities, wild game recipes, and personal stories that warm the heart.

TWRA also publishes 350,000 copies of the Tennessee Hunting & Trapping Guide and 350,000 copies of the Tennessee Fishing Guide to distribute the rules and regulations of outdoor recreation to ensure Tennesseans have access to the information they need.

TWRA'S WEBSITE HAS 4 MILLION VISITORS ANNUALLY AT
WWW.TNWILDLIFE.ORG





Tennessee WildCast shoot at Hatfield Knob Elk Viewing Tower with Elk Biologist, Dr. Brad Miller.

TENNESSEE WILDCAST

Celebrating 5 years on air with your favorite outdoors stories!

The weekly WildCast podcast features your host, Jason Harmon, Communications Manager, and Don King, Multimedia Development Chief and longtime “Voice of the TWRA.” They bring to the air a variety of guests covering a wide array of outdoor content from fishing, hunting, boating, wildlife watching, wildlife management and so much more every week.

Other regular co-hosts include the regional TWRA Information Specialists, Amy Spencer, covering West Tennessee, Barry Cross in Middle Tennessee, Mime Barnes, from the Cumberland Plateau area and Matt Cameron, with East Tennessee news and information.

The show also provides insight into the wildlife management decisions being made by our governing board, The Tennessee Fish and Wildlife Commission, and Agency leadership including the TWRA Executive Director.

Along with the broadcast, we offer the video podcast on YouTube and government access TV as a way to reach more audiences. We deliver WildCast to 24 radio stations across the state from Bristol to Memphis. Along with the full broadcast, many of these stations include our Daily WildCast Xtra, a 5-minute version featuring fresh outdoor content each day.



SCAN ME

LIKE THIS STORY?
LEARN MORE! TUNE INTO TENNESSEE WILDCAST!

Available anywhere podcasts are found or
online at tnwildcast.com

2022 SALES AND REVENUE



TOTAL SYSTEM REVENUE:
\$58,041,108



BOAT REGISTRATIONS:
44,578



HARD CARDS SOLD:
258,258



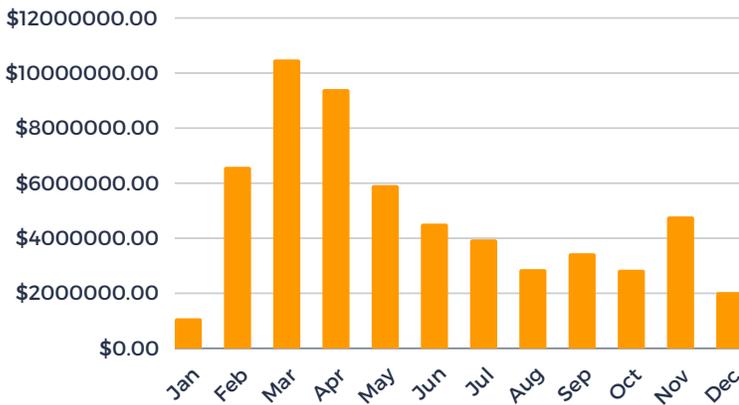
DONATIONS:
\$209,373

TWRA customers can purchase licenses individually, or they can select from our activity packages, which offer all the necessary licenses for that activity.

2022 Activity Packages Sold:

GENERAL FISHING	31,627
AVID ANGLER	15,946
10 DAY GENERAL FISHING	12,343
SPORTSMAN	11,219
10 DAY AVID ANGLER	4,051
ANNUAL GENERAL FISHING	2,549
3 DAY REELFOOT ANGLER	2,266
SMALL GAME HUNTER	1,603
WATERFOWL	1,097
7 DAY BIG GAME	1,047
7 DAY SMALL GAME	640
7 DAY REELFOOT WATERFOWL	571

2022 MONTHLY SALES



TWRA FINANCIALS

The Tennessee Wildlife Resources Agency is primarily funded by the sales of hunting and fishing licenses and boat registrations. We receive federal match dollars based on license sales to support hunter education, conservation, and research.

Federal funding sources include: The US Fish and Wildlife Service, US Coast Guard, Tennessee Valley Authority, and the US Forest Service. The majority of revenue coming into the Agency is designated into 2 funds: Wildlife and Boating.

TWRA REAL ESTATE:

The Federal Aid and Real Estate Division facilitated the acquisition of new properties to ensure Tennesseans have access to outdoor recreation opportunities and to expand wildlife habitat.

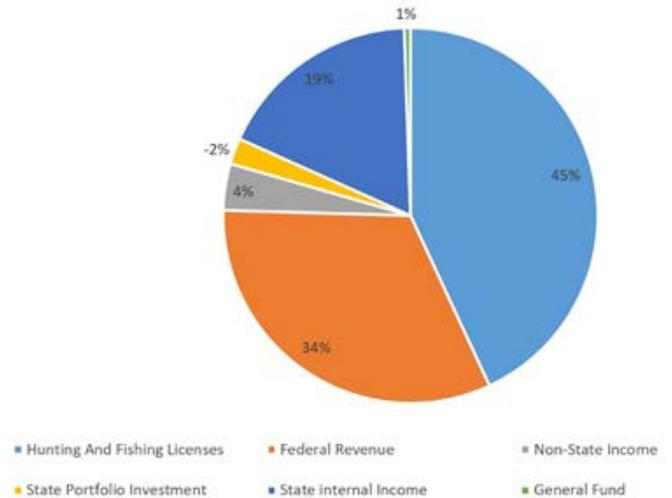
In 2022, TWRA acquired:

- 19 wetland acres at Tigrett WMA
- 219 wetland acres at Wolf River WMA
- 23 upland acres at Mt. Roosevelt WMA
- 43,611 upland acres at North Cumberland WMA
- 11,745 upland acres at Skinner Mountain WMA
- 39 upland acres at Charlotte Ann Finnell WMA
- 1,434 upland acres at Buffalo Ridge Refuge

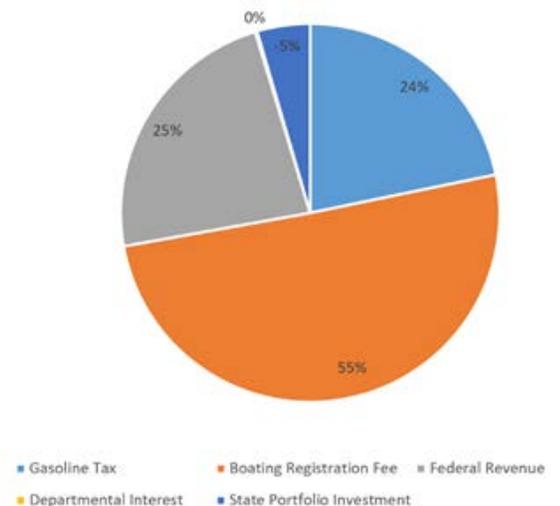
TWRA also continued work to purchase large conservation easements (CE) with recreational rights purchased at North Cumberland WMA. The lands were conserved in perpetuity and added to the TWRA's recreational lands portfolio.

The Chief of Federal Aid and Real Estate wrote, submitted, and administrated more than \$2 million in competitive grant funding for various TWRA activities.

WILDLIFE FUNDING



BOATING FUNDING



STAY CONNECTED

TENNESSEE WILDLIFE RESOURCES AGENCY

5107 Edmondson Pike, Nashville, TN 37211
615-781-6500

REGIONAL OFFICES:

WEST TN

200 Lowell Thomas Drive, Jackson, TN 38301
Phone: 731-423-5725

MIDDLE TN

5105 Edmondson Pike, Nashville, TN 37211
Phone: 615-781-6622

CUMBERLAND PLATEAU

464 Industrial Blvd., Crossville, TN 38555
Phone: 931-484-9571

EAST TN

3030 Wildlife Way, Morristown, TN 37814
Phone: 423-587-7037

QUESTIONS?

Email: Ask.TWRA@TN.gov
Web: TNWildlife.org

EVENTS AND LICENSES:

GoOutdoorsTennessee.com

MOBILE APP:

TWRA On The Go





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