

TVA River Neighbors

Navigation • Flood Control • Power Supply • Land Use • Water Supply • Water Quality • Recreation

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Did you know?

TVA is financially self-supporting. All of its programs are paid for from power sales of nearly \$7 billion a year. TVA pays more than \$325 million each year in lieu of taxes to state and local governments. These payments help fund schools, roads, and other public services.



Focus on Fishing

TVA Efforts Benefit Fish— and the Anglers Who Pursue Them

Face it: most folks who spend time fishing on TVA reservoirs are never going to win big money in a bass tournament. They are much more likely to enjoy angling as a hobby—a relaxing way to spend a weekend. But regardless of whether their catch ends up in a frying pan, mounted on the family room wall, or released back into the river, they will have spent many quality hours on the water. And chances are, they will pass on their love for the sport to a child or grandchild.

Given its importance to the people who use the Tennessee River system, it comes as no surprise that TVA engages in many efforts designed to support and enhance recreational fishing. But most people may not realize the scope and variety of those activities or the number of partnerships in place to carry them out—partnerships involving TVA and community groups, angling organizations, local governments, and state agencies.

Ron Pasch, Aquatic Biologist with TVA's Resource Stewardship organization, gets a lot of questions about the division of responsibility between TVA and state agencies

when it comes to fisheries management. He explains it this way: "We share our data with the states and are involved in a number of cooperative projects. The state fishery management agencies have ownership, as it were, of the fish. TVA's role is to manage the water they live in—consistent with our mission of environmental stewardship."

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PHOTO COURTESY OF TWRA

Latest Sport Fishing Index Ratings Now Available on the Web

The results from TVA's 2002 Sport Fishing Index are in and the news for Valley anglers is generally good.

While Kentucky Reservoir is still rated highest for crappie, biologists found a much-improved situation on Douglas. South Holston may be the premier spot for smallmouth, but Norris and Pickwick are not far behind. Scores for Watauga smallmouth were down, due largely to poor quality of individual fish and fewer angler visits. Nickajack is far and away the best place overall for largemouth bass.

TVA and state fisheries agencies created the Sport Fishing Index to help anglers decide where they have the best chance of catching their favorite types of fish. Scores for different species on each TVA reservoir are based both on population measures (overall size and average health, along with the number of fish present) and angler use and success information (the number of anglers looking for a particular type of fish, and the number of that type that they actually catch).

Visit www.tva.com/environment/water/sportfish.htm for complete results.



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Whether it's out on the water, in a hydro plant control room, or in a laboratory, you don't have to look very far to find somebody from TVA doing something that supports recreational fishing. Here are a few examples:

Assessment

TVA scientists regularly check many aspects of fish health, as well as trends related to fish populations. Fish are sampled as part of TVA's overall monitoring program, which provides information about the ecological health of 31 reservoirs. Additional information regarding species diversity and abundance is obtained through TVA's annual spring sportfish survey. Fish are temporarily stunned using electrofishing equipment and then counted, weighed, and measured before being released unharmed. TVA biologists also analyze fish tissue to detect the presence of metals, chemicals, or other harmful substances. The results are provided to state agencies to assist in determining the need for consumption advisories. Even shoreline development is regularly assessed to identify potential impacts on sportfish habitat so state agencies can pinpoint locations where brushpiles might be added to improve fish habitat or identify potential nursery areas for stocking juvenile sportfish.

Watershed improvement

TVA Watershed Teams work with communities to improve water and shoreline conditions so that both people and aquatic life can benefit from having clean water. These teams are engaged in a variety of efforts that improve fish habitat by improving water quality—for example, stabilizing shorelines and streambanks to control erosion, helping farmers and developers adopt agricultural and construction best management practices, and working with marinas to minimize boating-related pollution.

Reservoir operations

TVA supports recreational fishing through its operation of the river system. Each spring, for example, priority is given to holding reservoir levels steady for a two-week period when bass and crappie come into the shallows to lay their eggs. It is especially important to avoid stranding the eggs above the water line where they would dry out and die. In addition, flows are frequently provided, or releases restricted, to facilitate fish sampling, special studies, fish stocking, and other activities. Since 1992, TVA has provided releases from Watts Bar Dam every spring to benefit downstream sauger reproduction.



PHOTO COURTESY OF TWRA

A cooperative effort to develop an impoundment to enhance crappie spawning is currently under way on Cherokee Reservoir. Partners in the Shields Creek Crappie Nursery include TVA's Cherokee-Douglas Watershed Team, TWRA's Eagle Bend Fish Hatchery, and the Cherokee Lake Users Association.

Tailwater improvements

Since 1991, TVA has undertaken a variety of efforts to improve conditions for fish and other aquatic life below its dams. The centerpiece—a five-year, \$44-million program to improve water flows and dissolved oxygen levels downstream of 16 dams—is featured in a separate story on page 6. Other efforts have focused on enhancing cold tailwater trout fisheries below Normandy, Tims Ford, Norris, South Holston, Wilbur, Blue Ridge, and Chatuge dams and below the powerhouse at Apalachia. Studies conducted in partnership with Trout Unlimited (TU) have led to a better understanding of trout populations.

TVA also is a partner in a cooperative project designed to restore lake sturgeon to the Valley's waters. Thousands of young

fish already have been released into the French Broad River below Douglas Dam and into the Holston River below Cherokee Dam. Project supporters credit TVA's tailwater improvements with making the reintroduction possible.

Facility facelifts

TVA is involved in ongoing efforts to upgrade boat ramps, fishing piers, and other facilities important to the recreational fishing experience. Restrooms are being added, wheelchair access is being improved, and boat ramps are being lengthened to afford greater reservoir access during winter months.

For more information on TVA activities to support recreational fishing, visit www.tva.gov/environment/water/.



In Answer to Your Question...

How can I get a good map of my reservoir?

It's easy, says TVA Map and Photo Records manager Raymond Mitchell. Just call TVA at 800-627-7882 (MAPSTVA) or send an e-mail to mapstore@tva.com. According to Mitchell, a variety of maps and related products are available.

Depending on the reservoir, there are several options. At \$7 each, "Recreation and Fishing Guide" maps are probably the best bet for people who want a map to use when they're boating or fishing. These maps, produced by Atlantic Mapping from base maps provided by TVA, are printed on waterproof paper. They show numerous reservoir features—from selected fish shelters to underwater contours and hazard areas—as well as roads, boat ramps, campgrounds, and other commercial facilities in the area.

A lot of recreation users also find navigation maps useful. These maps, produced by TVA and the U.S. Army Corps of Engineers, show sailing lines, locations of buoys and navigation lights, bridges and power lines, and latitude and longitude in addition to much of the same information shown on the Recreation and Fishing Guide maps. Navigation maps for individual tributary reservoirs are \$5 each. Navigation maps for reservoirs on the main Tennessee River are available in a \$12 publication covering the river's entire 652-mile length.

TVA Map and Photo Records also offers other products of possible interest to recreation users, including topographical maps of Valley states, National Geographic Society maps of the United States and the world, and historical and current aerial photography. A shipping and handling charge is added to all orders.



TVA Watershed Teams

Boone, Bristol Projects, Fort Patrick Henry, South Holston, Watauga, Wilbur:
423-239-2000

Cherokee, Douglas, Nolichucky:
865-632-3791

Norris:
865-632-1539

Melton Hill, Watts Bar, Great Falls:
865-988-2440

Fontana, Fort Loudoun, Tellico:
865-988-2420

Apalachia, Blue Ridge, Chatuge, Hiwassee, Nottely, Ocoee 1, 2, 3:
828-837-7395

Chickamauga, Nickajack:
423-876-6706

Guntersville:
256-571-4280

Wheeler, Tims Ford, Normandy:
256-386-3782

Pickwick, Wilson, Bear Creek Projects:
256-386-2228

Kentucky, Beech River Project:
731-641-2000

Rainfall Update

“It’s a nice change,” admits River Forecasting Manager Randy Kerr. “After almost three years of drought, we’ve had water to work with this summer.”

At the end of July, the TVA reservoir system had the fourth highest amount of water in storage in the past 32 years, and TVA was still in the process of evacuating stored flood water from most of the tributary reservoirs in an effort to return them to their normal operating levels. Rainfall for the year was 5 inches above normal.

That’s quite a difference from the past couple of summers. From mid-1998 to mid-2002, the Valley experienced a rainfall deficit of 37 inches.

With so much water to move through the system, May, June, and July were challenging months for Kerr and his co-workers, but they aren’t complaining. “We’ve been able to maintain excellent reservoir recreation opportunities throughout the summer, and we’re in a good position to supply ample hydro generation during the hot days ahead.”



TVA Reservoir Levels¹

	Observed August 1 Levels		January 1 Flood Guide Levels	
	feet	meters	feet	meters
Tributary Reservoirs				
Blue Ridge	1683.6	513.2	1668	508.4
Boone	1383.6	421.7	1357	413.6
Chatuge	1925.2	586.8	1912	582.8
Cherokee	1068.4	325.6	1030	313.9
Douglas	992.0	302.4	940	286.5
Fontana	1700.5	518.3	1644	501.1
Hiwassee	1520.6	463.5	1465	446.5
Normandy	875.3	266.8	864	263.4
Norris	1018.3	310.4	985	300.2
Nottely	1773.9	540.7	1745	531.9
South Holston	1727.9	526.7	1702	518.8
Tims Ford	888.0	270.7	873	266.1
Watauga	1955.0	595.9	1940	591.3
Main-River Reservoirs				
Chickamauga	682.9	208.2	677	206.4
Fort Loudoun/Tellico	813.1	247.8	809	246.6
Guntersville	594.7	181.3	593	180.7
Kentucky	358.3	109.2	354	107.9
Nickajack	634.2	193.3	633	192.9
Pickwick	413.7	126.1	410	125.0
Watts Bar	740.9	225.8	737	224.6
Wheeler	554.7	169.1	552	168.3
Wilson	507.2	154.6	506.2	154.3

¹ Elevations above mean sea level.

For the latest information on reservoir levels and releases, visit TVA’s Web site at <http://lakeinfo.tva.gov>, or call our toll-free information line: 632-2264 in Knoxville, 751-2264 in Chattanooga, 386-2264 in Muscle Shoals, or 800-238-2264 for all other locations. If you are hearing-impaired, call 800-438-2264.

Reservoir Operations Update

Bear Creek Drawdowns – TVA will lower water levels below normal on two Bear Creek reservoirs this fall. Little Bear Creek will be lowered about three feet below normal beginning September 2 to allow vegetation to be planted along the shoreline. Cedar Creek will be lowered about 16 feet below normal beginning September 15 for construction of a raw water intake structure. For more information, call TVA at 865-632-6065.

Blue Ridge Drawdown – A deep drawdown of Blue Ridge Reservoir will begin September 2. Water levels will be lowered to around elevation 1620 (about 48 feet below normal winter pool level) by late November, held there for three to four weeks, and then allowed to return to normal as rainfall permits. The drawdown is necessary to reduce the water pressure on the outside of the penstock (the underwater pipe at the dam that carries water from the reservoir to the turbines in the powerhouse) so that workers can go inside and safely conduct the necessary studies. A second deep drawdown will be required to reinforce the penstock walls. The date and duration of the second drawdown will be determined as the project progresses.

Kentucky Dam Visitor Center Reopens

TVA’s Kentucky Dam Visitor Center reopened on July 21, giving visitors an opportunity to view videos and historical photos of the dam’s construction. Children and others also can generate electricity by hand-cranking a model hydro-electric generator. Located on the Kentucky Dam Reservation near Grand Rivers, Kentucky, the visitor center offers a view of the largest man-made reservoir in the eastern United States. The area around Kentucky Dam has more than 17 million recreation visits each year.



TVA visitor centers were closed earlier this year while TVA evaluated their safety and cost-effectiveness. Visitor centers at TVA’s Raccoon Mountain Pumped-Storage Plant near Chattanooga, Tennessee, and at Fontana Dam in western North Carolina also have reopened. TVA will continue to close visitor centers when the national Homeland Security Office imposes an orange alert or higher.

May Flood Puts Reservoir System to the Test

The heavy rain started on Monday afternoon, May 5, and it didn't let up until late in the day on Wednesday, May 7. The rain fell so hard and so quickly, that the river rose almost 17 feet in one day at Chattanooga. By the time it stopped, some parts of the Valley had received over 12 inches. The river crested at six feet above flood stage at Chattanooga—with the exception of a March 1973 storm, the highest level since the creation of the TVA reservoir system.

The May event was especially challenging for a couple of reasons, according to TVA River Forecasting Manager Randy Kerr: “The brunt of the storm was centered in the area between Knoxville and Chattanooga—the worst possible location, since only tributary reservoirs [located, for the most part, above Knoxville] are capable of significant flood storage. Also, in early May, main-river reservoirs are at summer levels and most tributary storage projects are well on their way, so we don't have as much storage space as we do at other times of the year.

“Because the rainfall occurred so quickly, we had to make some crucial decisions with very little lead time. During the worst of the flood, we issued more than 70 water orders [directions to move spillway gates which increase or decrease the flow of water through a dam] that resulted in hundreds of complex operations throughout the system. We worked round-the-clock in the Forecast Center, and data collection personnel and gate crews were on call 24 hours a day for the duration of the event.”

The May flood was expensive, causing considerable property damage across the Tennessee Valley. But it could have been much worse. Without the TVA system of dams and reservoirs, the river would have risen much higher and caused more than



Flooding at Coolidge Park in downtown Chattanooga on May 7, 2003.

\$440 million in damages.

And while Kerr and his co-workers in the Forecast Center are grateful that a situation similar to what happened this spring is the exception rather than the rule, they cite the May event in explaining why TVA reservoirs are drawn down every year before the start of the official flood season. “The May flood was considered to be close to a ‘hundred-year event’ for the Chattanooga area,” says Kerr, “but that doesn't mean that a flood of this magnitude will only occur once in every one-hundred-year time period. The odds of it happening in any given year might only be 100:1, but there is always at least that one-percent chance of it happening every year. In reality, a flood like the one we experienced this spring can happen again at any time. That being the case, there is compelling reason to make flood storage space available, and that means drawing down the tributary reservoirs.”

The May event also is a good reminder of why it's so important to use flood-prone land wisely, says Kerr. “A system of dams, even as sophisticated as TVA's, cannot prevent all flooding. So it's important to find out your flood risk before you purchase or rent land, houses, or businesses.”

Forecasts and Floods

So why doesn't TVA wait to lower reservoir levels until the forecast calls for heavy rain? Long-range forecasts aren't reliable enough, says TVA River Scheduling Manager Greg Lowe.

National Weather Service Meteorologist Jerry McDuffie agrees: “We can predict rainfall during the next 24 hours with a fairly high degree of confidence, and our three-to-five day precipitation forecasts have improved considerably over the past 10 years. But when it comes to predicting rainfall for more than five days out, there's a lot of uncertainty. A front can stall out, or a storm system can change direction. Predicting how much rain a system will produce involves a lot of educated guesswork.”

That's why TVA is careful about relying on weather forecasts, says Lowe. “It takes time to move water through the system efficiently. If we waited until the three-to-five day forecast calls for heavy rain, we'd have to draw the water level down very quickly, which could mean flooding low-lying land downstream. If the predicted rain doesn't materialize—or we don't get as much rain as predicted—we'd have released water needlessly. That means less water for recreation, navigation, water supply, and other purposes. Also, if dry weather sets in, refilling the affected reservoirs could be difficult.”



Healthy Tailwaters Mean Better Conditions for Fish—and Fishing

Reservoir Health Update

Ecological health scores for TVA reservoirs will likely show an upward trend this year—thanks to higher flows throughout the Tennessee River system.

“All the precipitation so far this year has helped to keep the water column from separating into thermal layers and has reduced retention times in many reservoirs,” says TVA Scientist Tyler Baker. “Consequently, we’re seeing improved dissolved oxygen levels, especially in main-river reservoirs, which tend to be much shallower and have shorter retention times.”

The contrast with the past several years is striking, says Baker. “The Valley experienced an extended period of drought from mid-1998 to mid-2002, resulting in almost stagnant conditions at times.”

Higher-than-normal inflows can be a mixed blessing, however. Although they add much-needed oxygen, they also wash organic material and nutrients (which tend to increase chlorophyll levels) into the reservoirs, and they can cause warmer water temperatures in the lower water column. It’s a bad combination, says Baker. “Since warm water holds less oxygen and high organic loading means increased oxygen demand, we could see noticeable decreases in late summer oxygen levels.”

For detailed information on the health of your reservoir, visit www.tva.com/environment/ecohealth.

Twelve years and \$44 million later, where do things stand? TVA’s ground-breaking Reservoir Releases Improvement (RRI) program was started back in 1991, with the ambitious goal of significantly enhancing conditions for aquatic life in the areas just below dams. As part of the program, surface water pumps, oxygen injection systems, auto-venting turbines, and aeration weirs were installed to add oxygen to the water before it is released from 16 dams, and TVA committed to keeping the riverbed wet during times when hydropower is not being generated, using turbine pulsing, weirs, and small hydropower units.

To learn whether these improvements are making a difference, we went to TVA aquatic biologist Charlie Saylor. Saylor has spent the better part of his 31-year career at TVA studying impacts to the fish, insects, and other creatures that thrive in streams and tailwaters (the river reach just below dams).

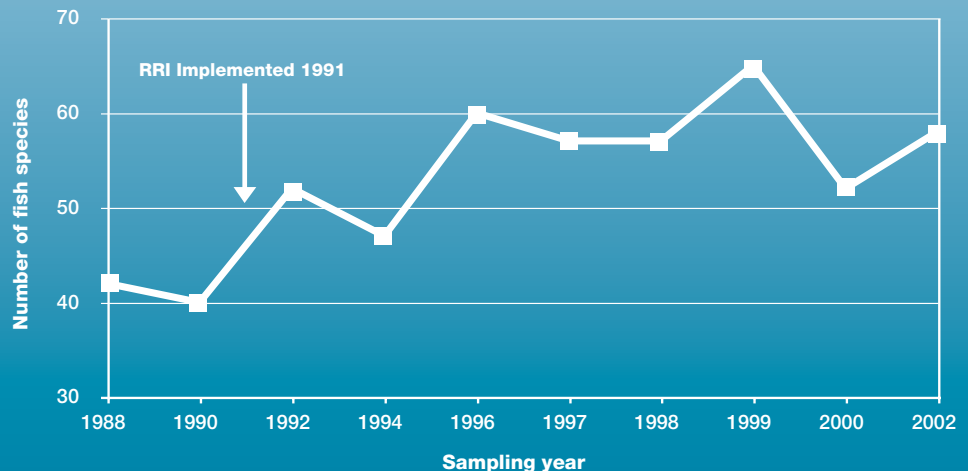
“If somebody had told me 10 years ago that we’d have bluebreast darters in the upper Douglas Dam tailwater,” says Saylor,



“I’d have said they were crazy. The success of the program has far exceeded expectations. This has been one great investment—and the payoff for aquatic life is likely to continue for years to come.”

The situation at Douglas a decade ago was typical of conditions in tailwaters at other locations. Biological monitoring before 1991 revealed fish and aquatic

Numbers of Fish Species Collected from Douglas Tailwater By Sampling Year



The number of fish species collected from the Douglas tailwater has increased significantly since TVA’s RRI program was implemented in 1991.

insect populations characterized by low diversity and dominated by species typically found in degraded situations, such as carp, gizzard shad, segmented worms, and blackflies. Biologists found very few examples of pollution-sensitive fish such as darters or madtoms. Intolerant aquatic insects such as mayflies, stoneflies, and caddisflies were extremely rare.

According to Saylor, aquatic life in the Douglas tailwater has made an impressive comeback: “The latest monitoring results show that both aquatic insects and fish have rebounded dramatically. We’re seeing significant increases in both numbers and

types found at every sampling location.”

Similar successes have been achieved at many other TVA hydropower projects—most notably, Cherokee and Normandy. The bottom line: the RRI program has increased dissolved oxygen levels by 400 percent in over 300 miles of river downstream from TVA dams, and flows have improved in 180 miles.

The fishing public has responded to the improvements, says Saylor. “The number of angler visits has doubled in some tailwaters since the RRI program was implemented, which is good news for those local economies.”

Gray Bats

MYSTERIOUS AND MISUNDERSTOOD

Most people just don’t like bats. They only come out at night. They’re strange looking. And they’re surrounded by superstitions and Halloween lore. But, when you get down to it, most people really don’t know very much about bats.

Actually, bats are interesting, intelligent, and beneficial animals. They possess many fascinating traits—including the ability to navigate in complete darkness. Bats also play an important part in our region’s ecosystem by helping to control insect populations.

Gray bats, in particular, are closely associated with the Tennessee River system. This federally endangered species has established important maternity colonies along several TVA reservoirs—making the Tennessee Valley home to the most significant gray bat population in the entire country.

TVA’s Natural Heritage Program includes 12 caves. The largest—Nickajack Cave on Nickajack Reservoir—is home to more than 60,000 gray bats. Hambrick’s Cave and Sauta Cave National Wildlife Refuge, both on Gunter’sville Reservoir, also offer prime opportunities for viewing often-spectacular bat emergences (at a respectful distance).



These locations are critically important to the bats’ future since less than one percent of all caves have adequate microhabitats (temperatures, humidity, etc.) for gray bats.

Fifteen other species of bats live in our region—several of which are also in danger of becoming extinct. In order to prevent further decline, it’s important to stay out of caves that are gated or have signs posted. Never shoot at, poison, or otherwise harm bats, and help keep pesticides and other chemicals from entering waterways. If you find a live bat, leave it alone. Relatively few bats carry rabies, but like most wild animals they can bite in self-defense.



TVA has an active cave-gating program designed to prevent bats from being disturbed by human activity. This newly constructed gate at the entrance of Norris Dam Cave will help protect a colony of about 4,000 gray bats.

Volunteers Needed for Public Lands Day

Public land managers across the Valley are seeking volunteers for a variety of projects in support of National Public Lands Day, scheduled to take place this year on Saturday, September 20. From cleaning up the shoreline to removing invasive plants and improving wildlife habitat, there’s a project for you if you’re willing to help.

National Public Lands Day was created by the National Environmental Education & Training Foundation (NEETF). The event provides Americans with an opportunity to pitch in and help improve the special places they go to hike, camp, fish, and otherwise enjoy the outdoors.

TVA coordinates activities in the Tennessee Valley in support of National Public Lands Day. For information on how to participate, please call TVA’s Jason Mitchell at 865-632-1803, check with your local Watershed Team, or visit the NEETF Web site at www.neetf.org.



ROS Update

TVA River Neighbors is published three times a year for people who live near and use the Tennessee River, its tributaries, and reservoirs.

Send comments and suggestions to Editor, TVA River Neighbors, 400 West Summit Hill Drive, WT 10D, Knoxville, TN 37902.

TVA River Neighbors is available on the TVA Web site at www.tva.com/river/neighbors. You can help us save resources by reading it online. Just send an e-mail to riverneighbors@tva.com, and we'll let you know when a new issue is posted instead of mailing you a printed copy.

For alternate formats of this document, call 865-632-6824 and allow five working days for processing.

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At press time, TVA was halfway through a series of 12 community workshops being held to obtain comments on the draft Environmental Impact Statement (EIS) developed as part of TVA's Reservoir Operations Study. To find out how the workshops were going and what Valley citizens can expect next, we talked with the Project Manager, David Nye.



TVA staff members gather public input at the ROS community workshop in Knoxville, Tennessee.

"It's been gratifying to see the numbers of people who are turning out at the meetings to give us feedback. Over 1,300 people attended the first six meetings, and we expect the last six to be equally well-attended. Many others are taking advantage of the opportunity to provide comments through the TVA Web site, by letter, e-mail, or fax.

"Comments from the public, along with input from other agencies, will be carefully considered in identifying TVA's preferred alternative. In late December or early January, we will issue a final Environmental Impact Statement, which will include public comments about the draft EIS and responses to those comments. TVA's Board of Directors will then decide whether TVA's reservoir operations policy will be changed based on the final EIS, public comments, recommendations by TVA staff, and other factors."

The draft EIS is available on the TVA Web site at www.tva.com/environment/reports and in local public libraries. Citizens can submit comments through September 4.