

# TVA River Neighbors



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

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## Living Waters

### Biological Diversity in the Tennessee River System

It's a colorful cast of characters: fishes like the flame chub, the tangerine darter, the saffron shiner, and the southern redbelly dace. A crayfish called the blue burrower. A dragonfly known as the river cruiser. The Elk River file snail and the hellbender salamander. And just listen to a few of the mussel names: the purple heelsplitter, the spectaclecase, the fine-rayed pigtoe, the threehorn wartyback, and the Appalachian monkeyface.

Our rivers and streams in the Tennessee Valley are home to more species of aquatic life than anywhere else in North America. Take fish, for example: the Tennessee River system harbors about 230 different species—compared to only around 132 in the entire upper Mississippi River system.

The greatest diversity occurs in free-flowing or mostly free-flowing tributary rivers. For example, at least 145 species of fish—more than are found in all of Europe—are known to exist in middle Tennessee's Duck River watershed. On a single day last year at one particular site on the Duck, biologists collected an astonishing 78 fish species. On the North Fork Holston River in southwest Virginia, a quick survey can easily result in

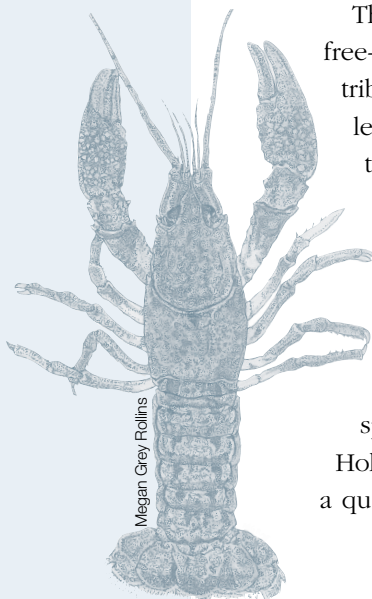


Bruce Yeager

*Federally-endangered oyster mussels, found only in a few of the Valley's streams, display to attract the attention of fish. When certain species come close enough to investigate, the mussel releases its larvae—which then attach to the fish as the next stage in their life cycle.*

more than 100 species of invertebrates—animals without backbones, such as mussels, snails, worms, insects, and crayfish.

One reason for this extraordinary diversity is the broad range of habitats that exist in our rivers—from swift, cool mountain streams to the more sluggish, warmer creeks that meander through the lowlands. Another is the very long time that these freshwater habitats have remained unchanged. The glaciers that covered many other parts of North America never reached as far south as the Tennessee Valley, so more species survived the Ice Age here than in areas further north.



Megan Grey Rollins



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## River Journey Continues

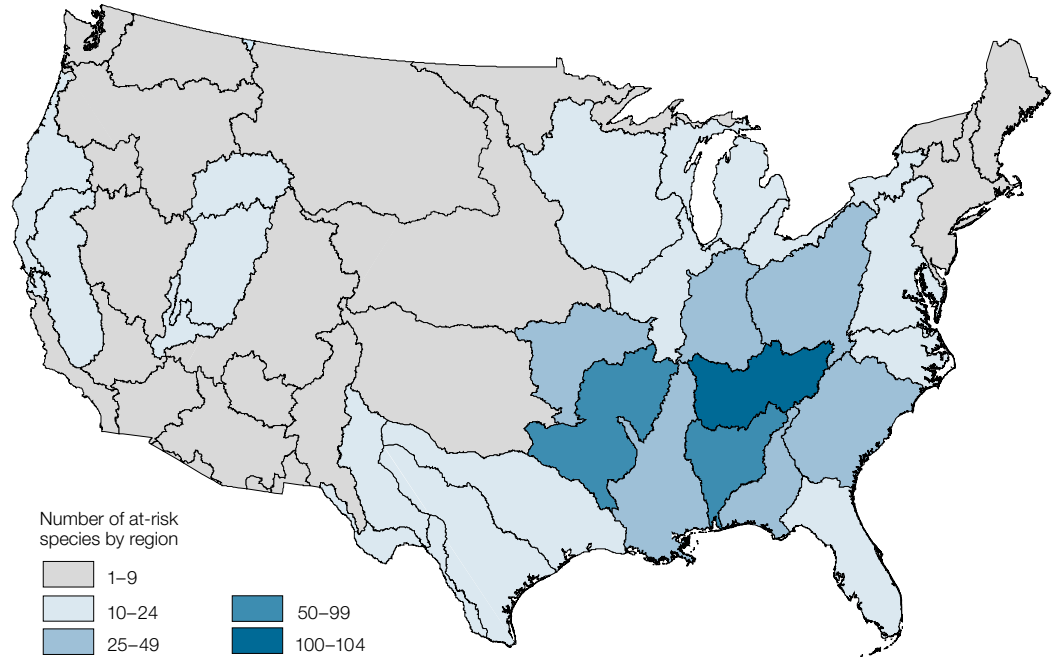
At press time, Mimi Hughes was undergoing the physical training and mental preparation for swimming another 125-mile leg of the Tennessee River. This 45-year-old mother of four is in the third year of a five-year quest to swim the river's entire length—a distance of 650 miles from Knoxville, Tennessee to Paducah, Kentucky. Her goal: to generate interest among Valley residents in protecting the river for future generations.

This year's schedule calls for Hughes to begin her swim on July 23 near the mouth of Crow Creek (24 miles below Nickajack Dam) and to finish August 1 near the mouth of the Elk River (just upstream of Wheeler Dam).

To arrange for Hughes to speak to your civic, school, or community group, please call her at 931-425-6726.



## Ground Zero for Aquatic Diversity



**Based on the number of at-risk fish and mussel species, the Tennessee Valley and surrounding river basins are home to an extraordinary variety of freshwater animal species.**

Many aquatic creatures are found in a wide range of freshwater habitats throughout the Tennessee Valley, and some are occasional visitors. One fish species, the American eel, migrates from as far away as the Sargasso Sea near Bermuda. But a surprising number of species are extremely restricted in their geographic distribution. Portions of the Tennessee River in Tennessee and Alabama are home to around three dozen fish species that are found nowhere else in the world.

The Clinch River on the Tennessee-Virginia border has the highest number of globally imperiled and vulnerable freshwater species in the U.S. It is home to 29 rare mussel species and 19 rare fish species—including two dozen that are federally listed as endangered or threatened. The seasonal seeps and springs of North Alabama are home to a wide variety of unique wetland animals. Several threatened or endangered cave-dwelling creatures—including blind and super-sensitive fish, crayfish, and shrimp—have been found in caves located on or near Pickwick Reservoir's Wheeler Wildlife Refuge.

## Progress toward protection

So what's it like to work at identifying and protecting these freshwater species? According to Peggy Shute, aquatic biologist with TVA's Natural Heritage Project, "It's so exciting to think that—at any given moment during your field work—you might encounter something that's never been seen before: maybe a new kind of fish previously unknown to science. That's a distinct possibility in the kind of work that we do."

While that kind of thrill doesn't happen often, Shute finds satisfaction in making progress toward long-term protection of the Valley's aquatic creatures. "It's a real challenge because there's so much left to learn about the more sensitive species—what will be necessary in order to support populations that may be at risk."

As one important step in that direction, TVA is participating on the multi-agency Southeastern Imperiled Fishes Recovery Committee. TVA biologists will provide data on where species occur, share information on stream health, and help identify waters



*TVA Aquatic Biologist Charlie Saylor thought he'd collected a native minnow while conducting an assessment of Horn Branch Creek on the Cumberland Plateau. But further study revealed it to be a species previously unknown to science. In recognition of Saylor's discovery—and of his contributions to aquatic biology—the fish was recently named in his honor. "Phoxinus saylori" is just one more example of the Valley's remarkable freshwater diversity.*

that may prove suitable for reintroduction efforts. Meanwhile, TVA Watershed Teams are making considerable gains in protecting aquatic habitat in streams, rivers, and reservoirs, and the agency's Reservoir Releases Improvement program is boosting dissolved oxygen levels and improving conditions for aquatic life below dams. The recent reintroduction of the lake

sturgeon below Douglas Dam is just one example of the ongoing effort to protect and restore diversity to Valley waters.

*To learn how you can be a part of important efforts designed to protect water quality and aquatic creatures that live in the streams and rivers you care about, contact your local TVA Watershed Team.*

## Benefits of Freshwater Diversity

Freshwater biological diversity is important for many reasons. Filter-feeding animals like mussels remove nutrients and toxic substances from the water, and smaller fish are important as food for bass and other game fish. All aquatic species are linked in a complex web of interactions and interdependencies. If even one species is threatened, it can have far-reaching implications for the entire aquatic ecosystem.

Plus, many species have direct economic value. Commercial fishing, mussel harvesting, and sport fishing bring millions of dollars into the Valley's economy. We are dependent on



*Once found throughout the upper part of the Tennessee River basin, the federally-threatened yellowfin madtom is now found only in segments of three streams. Efforts are underway to reintroduce this small and very secretive nocturnal catfish to Abrams Creek in the Great Smoky Mountains National Park.*

biological diversity for food, medicines, and other products—and there is reason to believe that even more uses have yet to be discovered.

In a broader sense, biological diversity also has a basic value in and of itself. Ecologists agree that intact communities are more resilient and stable than ones that have lost species. While the loss of one species—such as a rare and diminutive fish like the yellowfin madtom—probably would not be noticeable to most people, its survival is important to the environmental integrity of the waters of the Tennessee Valley.

### 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:  
**423-697-6006**

Guntersville:  
**256-571-4280**

Wheeler:  
**256-386-2560**

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

Kentucky, Beech River Project:  
**731-641-2000**

Tims Ford, Normandy:  
**256-386-3442**

## Drought Conditions Continue

Despite TVA's best efforts to store as much water as possible this spring, six tributary reservoirs—Douglas, Cherokee, Fontana, Chatuge, Hiwassee, and Nottely—were below their minimum targeted elevations on June 1.

Although parts of the Valley actually saw near-normal rainfall in May, most of it was absorbed into the ground, producing little or no runoff to fill nearby reservoirs. The problem: a 34-inch rainfall deficit since July 1998.

In June and July, TVA worked to keep reservoirs at or above their targeted minimum summer level or, if they did not reach this level, at or above their observed June 1 elevation. Unless a reservoir was above the targeted minimum or the June 1 level, TVA released only enough water to provide minimum flows to protect downstream aquatic habitat and for waste assimilation. By press time, only Chatuge and Hiwassee were below their minimum targeted levels.

The table to the right shows the reservoir levels projected at press time for August 1. Actual levels may be higher or lower depending on July rainfall. The drawdown to January 1 flood guide levels, also shown in the table, is now underway.

## TVA Reservoir Levels<sup>1</sup>

Tributary Reservoirs	Predicted August 1 Levels		January 1 Flood Guide Levels	
	feet	meters	feet	meters
Blue Ridge	1682	512.7	1668	508.4
Boone	1382	421.2	1357	413.6
Chatuge	1920	585.2	1912	582.8
Cherokee	1059	322.8	1030	313.9
Douglas	987	300.8	940	286.5
Fontana	1686	513.9	1644	501.1
Hiwassee	1506	459.0	1465	446.5
Normandy	873	266.1	864	263.4
Norris	1010	307.8	985	300.2
Nottely	1770	539.5	1745	531.9
South Holston	1721	524.6	1702	518.8
Tims Ford	886	270.1	873	266.1
Watauga	1949	594.1	1940	591.3
<b>Main-River Reservoirs</b>				
Chickamauga	681.5	207.7	677	206.4
Fort Loudoun/Tellico	812	247.5	809	246.6
Guntersville	594	181.1	593	180.7
Kentucky	357.5	109.0	354	107.9
Nickajack	633	192.9	633	192.9
Pickwick	413	125.9	410	125.0
Watts Bar	740	225.6	737	224.6
Wheeler	555	169.2	552	168.3
Wilson	506.2	154.3	506.2	154.3

<sup>1</sup> Elevations above mean sea level.

## Reservoir Operations Update

**Boone Drawdown**—Starting November 1, TVA will accelerate the drawdown on Boone Reservoir until the water level reaches elevation 1348 (about seven feet lower than normal) on December 10. This is necessary for repairs to the rollers on one of the spillway gates. During this time, TVA will also replace the wire ropes used to lift the gates and retrofit the dam to accommodate a bulkhead, which should reduce the need for future drawdowns below normal winter levels. The work is scheduled for completion by early January. Boone should be back to normal levels by February 2002.

**Whitewater Recreation Releases**—Releases for whitewater recreation will continue on specified dates below Ocoee No. 2 and No. 3 Dams through November and below Apalachia, Wilbur, and Tims Ford Dams and on the Bear Creek Floatway through Labor Day. For the latest information on recreation releases, visit [www.tva.gov](http://www.tva.gov) or call TVA's toll-free information line: 632-2264 in Knoxville, 751-2264 in Chattanooga, 386-2264 in Muscle Shoals, and 1-800-238-2264 from all other locations. If you are hearing impaired, call 1-800-438-2264.

**Special Events**—TVA will provide special flows and/or reservoir elevations to benefit a variety of events in the coming months—from the Tennessee Regatta and Boomsday on Fort Loudoun to the Fall Color Cruise on Nickajack, the annual Ruth's Golden Aster survey on the Ocoees, the Girl Scout River Raft Race on Apalachia, and the Fall Festival on Blue Ridge. Flows also will be adjusted to support cleanups on South Holston, Apalachia, Chickamauga, Nickajack and other reservoirs.

**Mosquito Fluctuations**—Fluctuations to strand mosquito eggs and larvae on the shoreline will continue through August 17 on Wheeler and through September 14 on Guntersville. Fluctuations for mosquito control on Chickamauga and Pickwick ended in July.

## Water Supply Issues Take Center Stage

**P**articipants in a regional conference on water issues, held June 14-15 in Knoxville, heard the same message from speaker after speaker: the days of taking the Valley's abundant water resources for granted are over. No more just assuming that there'll always be enough water—clean, on demand, and in sufficient quantity. An end to the mindset that this precious commodity just comes from the tap.

“How limited supplies of water will be allocated among a growing number of users will change our communities and existing power structures, challenge our institutions and government leadership, and largely determine our future quality of life,” predicted Miles Mennell, the conference moderator, in her opening remarks. Mennell is executive director of the Association of Tennessee Valley Governments, which joined TVA in co-sponsoring the event.



### Emerging patterns of water use

Approximately nine billion gallons of water are withdrawn from the Tennessee River system every day—mostly by municipal water systems and industrial and business users, including TVA's thermoelectric generating plants which rely on the river for cooling water. Most of this water—about 95 percent—is returned to the river for reuse, but there are developments on the horizon which could place increased stress on existing patterns of water use.

Growing water needs in urban areas such as Atlanta, Georgia, and in other states bordering the Valley pose new competition for water from the Tennessee River. These new demands are significant because much of the water withdrawn for use in those areas would not be returned to the basin. Drought, rapid growth in the amount of water used by Valley industries, and increased pressure to leave water in streams and rivers for environmental and recreational needs also increase the likelihood of future water conflicts. In fact, a small number of areas in the region already face water shortages.

### Water for the future

Conference presenters discussed a variety of actions to meet these water challenges, including the need to plan ahead; to combine multiple, small water development projects into regional projects that can attract federal assistance; and to encourage water conservation. Regional governance of the Tennessee River system was identified as a key advantage—enabling TVA to efficiently and fairly distribute the benefits of the river and its tributaries, while assuring local communities of control and influence over their water resources.

The answer, according to Mennell, is to begin a new dialogue on water supply and other issues facing Valley local governments and their partners in both the public and private sectors. “We need to be proactive and to work together in finding solutions to problems of mutual concern.”

### Tennessee Launches New Water Supply Web Site

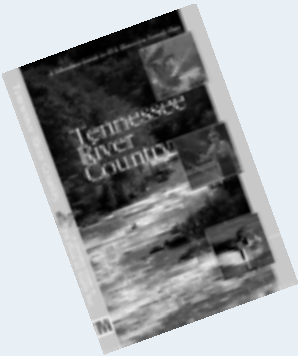
The Tennessee Department of Environment and Conservation has a new web site aimed at keeping the public up-to-date on current and emerging water supply issues in Tennessee. Visit [www.tdec.net/watersupply](http://www.tdec.net/watersupply) for links to Tennessee water facts and information about state policy initiatives, water supply legislation, and public notices for water supply proposals.



### One-Stop Guide To Tennessee River Country

Looking for some place new to explore this summer? You'll find TVA's recreation guidebook indispensable. *Tennessee River Country: A Glovebox Guide to TVA Places for Family Fun* offers 102 pages filled with maps, full-color photography, and detailed information on outdoor activities at 35 public recreation areas.

The guide can be purchased for \$10 from Barnes & Noble, B. Dalton, and Books-A-Million bookstores, and can be ordered through the mail from TVA by calling 865-632-4220 in Knoxville or 423-751-7904 in Chattanooga.



## Reservoir Health Update

**S**ame old, same old. That's pretty much the story when it comes to describing ecological conditions in TVA reservoirs since the current drought began in July 1998. "Based on preliminary monitoring results, it looks like this year will be almost a mirror image of last year—and what we found last year was very similar to what we saw the year before," says TVA aquatic biologist Don Dycus. "We'll know more as the summer goes on, but at this point it looks like low dissolved oxygen levels and high chlorophyll levels will continue to depress overall reservoir health scores."

Because oxygen is as important to life in the river as it is to life on land, TVA checks this indicator in most reservoirs monthly. Dissolved oxygen (DO) levels already are lower this year than in preceding years—especially on the main Tennessee River system. Levels near bottom were quite low in some areas at the end of May, due to the effort to hold water to try to meet target summer pool levels for recreation. At press time, DO levels had started to improve with recent rainfall, but the lack of water in storage due to very dry conditions earlier in the year means that there is increased potential for lower DOs by late summer than we've seen in past years.

Chlorophyll, a measure of the amount of algae in the water, also is an important ecological health indicator because a certain amount is important for a strong food web, but too much can cause a variety of water quality problems. At press time, chlorophyll levels were similar to those found in 1999 and 2000—also drought years—and generally higher than levels found in earlier years. This particular indicator varies widely from sample to sample, which is why it is rated based on a seasonal average. Chlorophyll levels are expected to climb as the summer continues.

"The decline in ecological health scores that we've seen in recent years is clearly related to the extended drought," says Dycus. "We just haven't had the volume of



*TVA uses a variety of physical, chemical, and biological tests to tell whether a reservoir is healthy and to identify problems that should be studied more closely.*

water we need to 'flush' the system—to cool, mix, and oxygenate the water." But there's good news, too. "While conditions for aquatic life definitely suffer during periods of drought, we've been able to keep things from getting as bad as they otherwise could by detecting problems early, adjusting flows, and stepping up the use of our aeration equipment." This equipment adds oxygen to the water as it passes through the turbines or through the operation of surface-water pumps, which push oxygen-rich surface water toward the bottom, and aerating weirs, which function much like natural waterfalls.

A couple of examples of special operations (occasions when reservoir levels are held steady or release schedules are modified to accommodate a specific request) serve to illustrate how TVA manages the reservoir system to protect water quality. The months of April and May were the driest on record for the Hiwassee watershed. Rising water temperatures threatened the cold-water trout fishery. Working in cooperation with the U.S. Forest Service and the Appalachian

Chapter of Trout Unlimited, TVA installed temperature monitors in the river. The duration of releases for minimum flows was increased, in keeping with TVA’s decision to provide additional flows to keep the tailrace downstream of Apalachia Dam cool in support of recreation interests.

On Ft. Loudoun Reservoir, TVA monitoring detected extremely low dissolved oxygen levels at the mid-reservoir sampling site in late May and early June. Low DO is fairly common at the lower end of the reservoir, but to find such low DO at the mid-reservoir sampling site was unprecedented. Serious concerns were raised as to the potential impact on the animals that live on the reservoir bottom. A special release was authorized to create mixing. Flows from Cherokee, Douglas, and Fontana added oxygen by “flushing” water through the

system. Since those tributary reservoirs were below their target summer pool levels for recreation, extra care was taken to release just enough water to fix the problem.

Sampling just prior to press time confirmed the fact that DO levels improved substantially with this inflow of oxygen-rich water.

Dycus sums it up this way: “If it weren’t for our efforts to protect reservoir quality—from conducting additional monitoring activities to operating aeration systems to providing special reservoir releases—there would be noticeable impacts on aquatic life. So much so that the average reservoir user would be concerned. The steps we’ve taken are definitely making a difference.”

*Visit [www.tva.gov/environment/ecohhealth/](http://www.tva.gov/environment/ecohhealth/) or call TVA at 423-751-3164 for a printed summary of TVA’s latest monitoring results.*

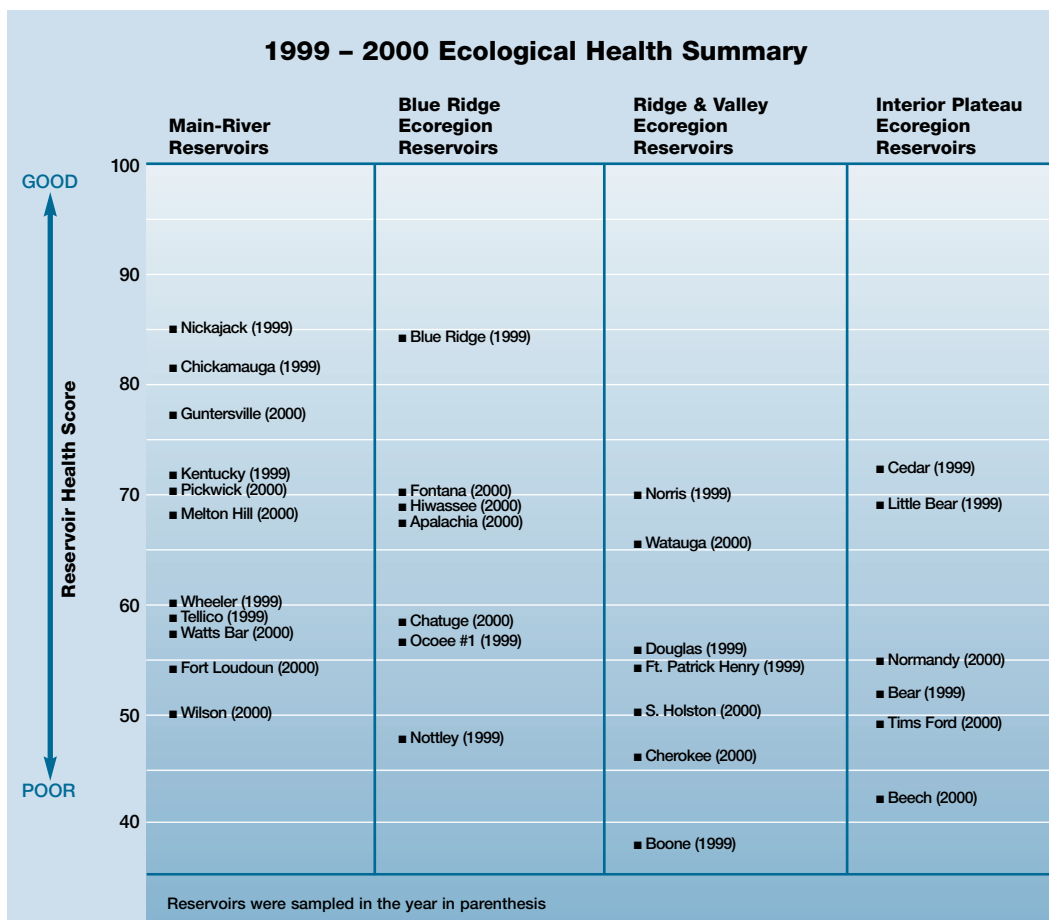
### New Features on TVA’s Web Site

If it’s been a while since you last visited TVA’s web site ([www.tva.gov](http://www.tva.gov)), you may want to check out a few of the site’s new features.

From the home page, go to the section on Environment. From there, you can download TVA’s second Annual Environmental Report—which includes information on watershed conditions and TVA’s improvement efforts in the past year. (To request a printed copy, call 865-632-4677.)

Click on “Water Quality” from the Environment page, and you can find several items of special interest to those who care about TVA reservoirs:

- “Reservoir Ratings” includes up-to-date reports on the ecological health of Valley reservoirs.
- “Catch Depletion Surveys” contains reservoir-by-reservoir profiles of black bass populations.
- “Sport Fishing Ratings” offers anglers in-depth information on where to go for the best chance of catching different species of fish.



*In comparing the ecological health of TVA reservoirs, it is important to consider their environmental setting—the geology, soils, vegetation, and land use in the surrounding area. Reservoirs in similar environmental settings, or ecoregions, generally have similar water quality conditions and similar communities of fish, insects, and other aquatic life. Significant differences among reservoirs in the same ecoregion can help in deciding where to focus resource protection efforts.*

## Keeping the Lights On . . .

# The Role of the River In Meeting the Region's Energy Needs

Status Report:

### Planning for TVA Reservoir Lands

Read any good reservoir land plans lately? If not, you just may want to add one to your summer reading list. It's an important document in terms of your reservoir's future.

Reservoir land management plans are generated as part of a process for evaluating the most suitable uses of public land under TVA stewardship. These plans seek to integrate land and water resources, provide for the greatest public benefit, and balance competing (and sometimes conflicting) resource uses—never an easy thing to do.

Reservoir land management plans have been completed and implemented for seven main-river and five tributary reservoirs. Plans for Cherokee and Norris will be submitted to the TVA Board for review this summer. In addition, updated versions of existing reservoir plans for Guntersville and Pickwick are scheduled for completion in 2001 and 2002, respectively.

As part of the public scoping process, Valley citizens are encouraged to provide comments on land plans. To learn more about how you can provide feedback (including information on public meetings), call 1-800-TVA-LAND.

*The issue of reliable electric power is front and center in the national consciousness right now. Rolling blackouts in California, the prolonged drought in the Pacific Northwest, record power use in urban centers like New York City . . . a number of complicated factors are contributing to a significant energy crisis in many parts of the country.*

*So what's to prevent the same thing from happening here? In light of ever-increasing demands for electricity in our region, are we looking at the possibility of being left in the dark? Of course there are no absolute guarantees, but residents of the Tennessee Valley can face what is traditionally the hottest part of the summer with confidence. Barring the most unlikely of circumstances, the lights will stay on . . .*

**T**here are many reasons why the Tennessee Valley enjoys a reliable power supply, but TVA's ability to manage the Tennessee River as an integrated system is one of the most important. Most people might assume that's because of the river's role in providing electricity through hydrogeneration, and that's undoubtedly a benefit that can hardly be overestimated: a clean, renewable power source—available at low cost and capable of coming online almost instantaneously to meet peak power demands.

Hydropower is an important part of TVA's generating mix. Not so much because of the volume of electricity produced by this method—only around 12 percent of TVA's total generation in an average year—but rather because of the inherent flexibility it provides. No other generating method

allows for such a rapid response to changes in the amount of power used at different times of the day—from morning peaks when people are getting ready for work and school to the middle of the night when everyone is bed and the lights are out. While some of the larger coal-fired plants may take anywhere from 12 to 24 hours to reach full capacity from initial start-up, a hydro plant can go from shutdown to full load in just a few minutes.

And hydropower is a vital part of TVA's "spinning reserves," the extra capacity TVA is required to have on hand, ready at any time to respond to the varying loads and disturbances experienced by the system.

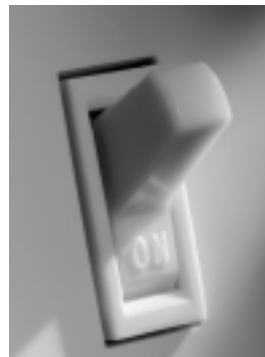
Having a variety of fuels with which to generate electricity is important, too. TVA's generation mix (coal, nuclear, natural gas, plus hydroelectric and other renewable energy sources such as sunlight, wind, and landfill gas) reduces the region's dependence on a single source of power production. This allows TVA to respond

to fluctuations in price resulting from changing market supplies and prevents the possibility of being held "hostage" to any single high-cost source.

But it isn't all about hydropower. What many people don't know is that the river also provides cooling water for TVA's fossil and nuclear plants—the

workhorses of the power system. TVA's ability to provide these plants with enough cooling water at the right time and temperature is critical to keeping them at full and efficient operation, especially during extended periods of hot, dry weather like we've experienced in recent years.

With all this built-in flexibility and diversity of generating sources, it might be tempting to sit back and get complacent. After all, if TVA can successfully meet







**Sequoyah Nuclear Plant**

demands during the very hottest part of the summer, doesn't that essentially mean we're out of the woods? It's not quite that simple, according to Greg Vincent, Senior Vice President, TVA Power Resources & Operations Planning: "Unfortunately, we don't have the luxury of just focusing on the immediate concerns related to peak demands. We have to concentrate instead on what we expect will happen years from now. TVA's job is to do what's necessary to ensure long-term system reliability."

In recognition of the role the Tennessee River plays in that effort, TVA is striving toward making the water work harder for the people of the Valley. The agency has undertaken an aggressive program to modernize and automate hydrogeneration operations and equipment. While the primary purpose is to maintain reliability, efficiency and capacity are being increased as well. Thirty-eight units have been modernized to date, adding 370 MW of peaking capacity and boosting efficiency by more than four percent. By the time this effort is completed—somewhere around 2013—TVA will have added an additional 720 MW of installed peaking capacity.

Vincent explains: "We are working very hard to avoid the problems they've had in California—spiraling electric bills and

blackouts—through our modernization efforts and by making prudent investments in new generation to meet the region's growing power demand." The basic difference between our situation here in the Valley and what's happened in other parts of the country? Says Vincent: "It all comes down to the fact that TVA has the planning processes in place to anticipate market trends and to be ready to respond to changing circumstances."

This is one of the real strengths of public power: its emphasis on long-term benefits over short-term goals. As a public power provider, TVA's role is to serve the interest of stakeholders—the citizens of the Tennessee Valley. Investor-owned utilities, by contrast, are focused on financial returns to shareholders. The whole idea of public power came about because private utilities didn't want to have to serve the less profitable customers. That's a distinction that is still important to remember today and will remain important as restructuring is implemented. As Vincent notes: "We are continuing to reduce our debt as we invest in the system—with the goal of ensuring a reliable power supply at a reasonable price and without degrading water quality. It's all about making sure that electricity is available, reliable, and competitively priced for everyone."

## **Balancing Benefits Under Drought Conditions**

TVA's integrated river management approach means that the individual dams and power plants built along the Tennessee River and its tributaries are operated as a single unit to provide the most benefits for the greatest number of people. The goal is to balance the use of the water for multiple purposes, including navigation, power supply, flood reduction, recreation, water quality and supply, and land use.

Always a challenge, this balancing act becomes even more difficult when nature doesn't cooperate. Rainfall and runoff have been below normal since July 1998, and the outlook for this summer is for continued dry weather. But the integrated approach still applies: the idea is to continually seek ways to get the most value from the available water. Given current conditions, TVA's objective is to keep enough water behind the dam to support reservoir recreation while releasing enough to protect conditions for aquatic life and to keep downstream industries and TVA thermal plants in operation.



## Regional Council Regional Resource Stewardship Council

### UPDATE

The Regional Resource Stewardship Council, a federal advisory committee created to advise TVA on the management of the region's natural resources, is scheduled to meet again August 28-29 in Guntersville, Alabama.

All meetings are open to the public and include a session for public remarks to the Council. More information, including reports on subcommittee recommendations approved by the Council at its last meeting, is available on the web at [www.tva.gov/rrsc/index.htm](http://www.tva.gov/rrsc/index.htm). You may contact Council members directly or by e-mail through the web site. To provide comments to TVA, call 865-632-2333.

## GOOD IDEAS FROM RESERVOIRS ACROSS THE VALLEY

# Working Together for the Future of the Fishery

**A** group of around 250 northwest Alabama anglers has organized around a single issue: improving recreational fishing on the four TVA reservoirs known collectively as the Bear Creek projects.

Calling themselves the “Little Bear Millennium Project,” this forward-thinking group of mostly bass anglers has dedicated themselves to reversing the trend they’ve observed over the past couple of decades: the fishing on their reservoirs keeps getting worse. The group is up against a couple of formidable enemies: time and nature. These multipurpose reservoirs are undergoing an aging process which generally results in a gradual decline in the fishery. The waters are crystal-clear and lovely for swimming, but are beginning to show a decrease in the productivity necessary for thriving fish populations.

Back in 1999, project members first turned to federal and state agencies for answers. Surveys conducted to assess the fishery revealed what the group felt was a key piece of information in forming their improvement strategy: the reservoirs were lacking in forage fish.

A concerted effort since that time to increase the numbers of minnows and shad has resulted in some remarkable achievements:

- Project members planted close to 7,000 cypress trees on the shores of Cedar Creek and Little Bear Creek Reservoirs. This vegetation will eventually stabilize eroding soils, provide cover for young fish, and lower water temperatures in shallow areas under the shade of the tree branches.
- The group built and installed a number of spawning benches (structures designed to provide shade and cover) and other fish habitat structures on Little Bear Creek Reservoir.
- This fall, project members will work with agency partners and B.A.S.S. in an intensive effort to enhance minnow populations in the Trace Branch tributary of Little Bear Creek. Round hay bales will be unrolled and staked down with the hope that this organic material will provide food and cover for forage fish.

TVA’s Pickwick Watershed Team member Jim Shedd has worked closely with the group since its beginning. He acknowledges that it will take time to measure the success of the project, but is encouraged by the group’s dedication to their goal. “The folks involved in the Little Bear Millennium Project are making an investment in the future of the fishery. They know that some of those tiny cypress trees they planted will have to be 20 feet tall before they produce the results they’re after,” he explains, “yet they are willing to do what it takes—even if it means that their grandchildren will be the first to reap the benefits.”



*Following the example set by the Little Bear Millennium Project, a group of high-school students recently worked to install some 300 feet of natural materials designed to stabilize soils along the shores of Cedar Creek Reservoir.*

*To learn more about the strategies and techniques used by the Little Bear Millennium Project and how they might be effective on your reservoir, contact Jim Shedd at 256-386-2739.*

## Reducing Pollution: What's All the Talk About TMDLs?

**T**hey're just four little letters, but they represent a major attempt to clean up the most polluted waters in the Tennessee Valley.

The TMDL program (the acronym stands for "Total Maximum Daily Load") is a joint effort by the U.S. Environmental Protection Agency (EPA) and individual states nationwide. Its goal is to restore water quality in streams and rivers that don't meet the standards set by the states for drinking, fishing, swimming, aquatic habitat, and other uses. The term "TMDL" refers to the maximum amount of a particular pollutant that a waterbody can take in and still meet those standards. Bottom line? If a certain stream is at or above that amount, a strategy must be developed to restore it to the point where it can be used safely.

The TMDL process is specifically designed to attack pollution regardless of its source. That means it includes not only obvious contributors such as factories and sewage treatment plants, but also non-point sources—things like erosion or pollutant runoff from farms, urban areas, and construction sites and poorly operating septic tanks.



### Here's how the program works:

- States assess the condition of their streams, rivers, and reservoirs and compare them to standards adopted to support and protect designated uses.
- Waters not meeting the standards are placed on a special list and prioritized, so that the most seriously polluted can be treated first.
- Based on these priorities, pollution sources are identified, and the maximum amount of pollutant that can be allowed from all sources is determined.
- This pollutant load is then allocated among all the sources—giving each

source a specific amount that becomes the maximum they are allowed to contribute—within a margin of safety.

- The results are submitted to the EPA for review and approval as a TMDL.

Because each Valley state has slightly different water quality standards, different levels of need, and varying amounts of resources available to them, progress will vary from state to state. And, because new discharge permits or expanded efforts to control non-point source pollution may be required to actually meet the requirements of an approved TMDL, results will take time. But the good news is that the TMDL process promises to provide a lasting framework to ensure clean waters for generations to come.

### Opportunities for public involvement

So, with all this serious science going on, how can you be involved? The TMDL process provides you with the opportunity to comment on draft restoration plans for individual streams, rivers, or reservoirs. In some cases, public meetings will be held to solicit feedback. "There's a real opportunity for Valley citizens to have an impact on the future of their water resources through participation in this process," says TVA's Bridgette Ellis, Vice President for Resource Stewardship. "Because water pollution problems throughout individual watersheds are ultimately manifested downstream, we hope those who live along and use the river system will take the time to make their voices heard."

*To learn more about the TMDL process in your area—and to find out about opportunities for public involvement—visit EPA's web site at <http://www.epa.gov/owow/tmdl/>.*

### What Better Way To Spend a Saturday?

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 29. From shoreline cleanups to removing invasive plants and improving wildlife habitat—there's a project for you if you're willing to help.

National Public Lands Day is the invention of the National Environmental Education & Training Foundation (NEETF). It 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 or visit the NEETF web site at [www.neetf.org](http://www.neetf.org).



## If Your Water Garden Is Overrun . . .

*TVA River Neighbors is published three times a year for people who care about the Tennessee River and TVA's stewardship programs.*

*TVA River Neighbors is available on TVA's web site at <http://www.tva.gov/river/neighbors/>.*

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

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

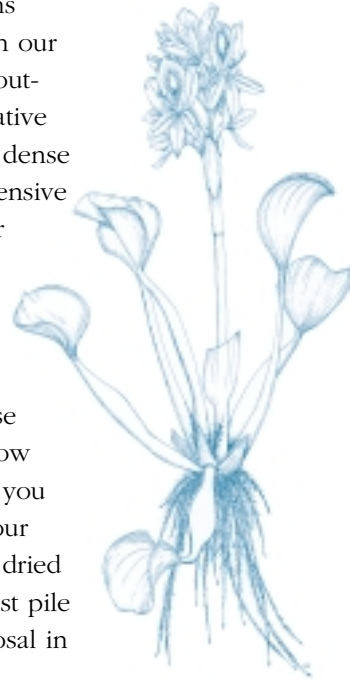
**W**ater gardens—rock-bordered waterfalls and lined ponds filled with aquatic plants—have become a popular trend in residential landscaping. But their popularity could be a problem for Valley reservoirs.

Homeowners often stock their gardens with exotic (nonnative) aquatic plants—such as water hyacinth, water lettuce, water ferns, and parrot's feather. These plants reproduce quickly, which means they must be thinned to keep gardens from becoming overrun. The trouble arises when gardeners decide that these attractive plants would look pretty growing in the cove of a local reservoir or simply toss them out near the water.

Many of these plants are invasive and have the potential to cause severe ecological

impacts. If populations become established in our reservoirs, they may out-compete beneficial native plants—becoming so dense that they require expensive methods of control or management.

If you have unwanted plants in your water garden, it is important to dispose of them properly. Allow them to dry out after you remove them from your pond; then place the dried plants in your compost pile or bag them for disposal in the landfill.



*Water hyacinth*

If you have a new address or no longer want to receive our newsletter, please contact:

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