

TVA River Neighbors

Shoreline Stabilization Projects on TVA Lakes A Tale of Two Islands

It's a fact: people who live around and enjoy recreation on TVA lakes are interested in stabilizing shorelines. During public meetings on the agency's Shoreline Management Initiative, shoreline erosion was the number one topic of concern. "Valley citizens look to us for leadership on this issue, and rightly so," says TVA's Ruben Hernandez, Vice President of Land Management. "There are serious effects to the environment from erosion. Increased sedimentation impacts water quality and wildlife habitat. We're charged with the stewardship of more than 11,000 miles of public shoreline, and we're actively looking for environmentally-friendly ways to protect this valuable land by controlling erosion."

In 1994, TVA undertook an ambitious endeavor to classify shoreline erosion by extent and type. "Our shoreline erosion field assessment—which encompassed almost 6,000 shoreline miles on 22 reservoirs—provided us with a good overall view of the problem," explains Project Leader Jack Muncy. "We use that information to prioritize potential treatment sites." Assessment results have shown that more than 100 miles of shoreline fall into the "critically eroding" category.

In selecting sites for treatment, particular weight is given to the opportunity to cooperate with partners on a project with public benefits. "Our best chance of making headway is to team up with others to tackle these problems," says Muncy. Since 1995, TVA and cooperators have stabilized 53 critically eroding shoreline sites covering about 10 miles.

The following projects are good examples of cooperative efforts to apply innovative, cost-effective, and environmentally-sound solutions to control erosion on TVA reservoir lands.

Leuty Island

Watts Bar Lake

Leuty Island—better known to local boaters as "Cemetery Island"—was larger in 1953, when Pete Williams first visited it. Williams, the president of the Watts Bar Lake Association, estimates the island was three times the size it is today. "Several of our Association members noticed the erosion problem over the years, and we wanted to do something about it before the old cemetery literally washed into the lake."

At risk were five graves of a long-ago Rhea County family named Leuty—some of which date to the 1860s—and an infant grave marked

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A Tale of Two Islands *continued*

only with dates and the last name “Vinson.” (The rest of the graves were moved to other cemeteries when TVA impounded the lake. Since the Leuty gravesites were on top of a small hill, the family’s descendants requested that they not be disturbed.)

The Association approached Woody Farrell in TVA’s Melton Hill Land Management Office for help last summer, and they visited the island. “The Association does so much for the lake,” says Farrell, “and we really wanted to respond to their concerns. But we knew from the start that this project would present some special challenges. The gravesites were so close to the lake that some headstones had actually fallen into the water—which didn’t leave many options. Grading the steep banks to plant native vegetation was out of the question due to the location of the gravesites. The application of rock rip-rap was our best bet.” In July 1998, a TVA contractor with a small barge placed 300 tons of rip-rap along the island’s entire perimeter. The Association and TVA will work together to recover and relocate the submerged grave markers.

Williams is quick to give credit to the TVA team members who went to bat to get the project funded and completed—and Farrell is glad his office could help. “Stabilizing this shoreline was a ‘win-win’ prospect, all the way around,” he says. “It was the right thing to do out of respect for those who are buried there as well as for the environment.”

Patterson Island Kentucky Lake

It won’t be easy to control erosion on Patterson Island, but the folks in TVA’s Paris Land Management Office are determined to do just that. Project Engineer Jeff Butler and his colleagues have teamed up with state and federal agencies to prevent further soil losses on the island—one in a string of eight islands located on the west side of Kentucky Lake just south of the Blood River embayment.

Butler hopes that a “one-two punch” of hard-armoring (rock rip-rap) and soil bioengineering will do the trick. “We’ve already installed around 500 tons of rip-rap on the island’s critically eroding east side,” he says. “We plan to work our way around the island—putting down a couple of barge loads during each of the next two years. It’s slow going because of the shallow underwater elevations near the island. With the water level fluctuations on Kentucky Lake, there’s only about a two-week ‘window’ in which a work barge can navigate the area.”

The project is a cooperative effort. The Kentucky Department of Fish and Wildlife Resources provided 124 hours of labor and bought \$5,000 worth of rip-rap. Along with TVA’s Kentucky River Action Team, they’re establishing native vegetation along the newly-reinforced shoreline. And the U.S. Army Corps of Engineers is exploring the possibility of providing matching funds for private donations to restore fish habitat.

The drawing card for agency participation, says Kentucky’s Western District Fishery Biologist Paul Rister, is a shared interest in preserving crucial habitat for fish and waterfowl. “Patterson Island supports an excellent feeding and nursery area for sunfish, crappie, and largemouth bass. In the winter, the island’s mud flats are important staging areas for migrating waterfowl—including mallards and gadwalls.” He’s convinced that the island’s biological significance is worth the effort it takes to protect it. “There aren’t many places like Patterson Island, so we need to take care of them. That’s the bottom line.”

For more information on shoreline stabilization, contact your local TVA Land Management Office. To learn about preventing erosion along rivers and streams, call TVA’s Clean Water Initiative at 423-751-8455.

Live willow stakes planted along the shoreline of Patterson Island will grow into trees that will hold soils in place, provide shade, and improve aquatic habitat.

Lake Operations Update

Tennessee River Lock Closures — Intermittent lock closures to repair the spillway apron could cause delays of up to eight hours at Wilson Main Lock during daylight hours from October 13 through November 10.

Chickamauga Lock will be closed November 2-16 for repairs to the lock wall. Kentucky Lock will be closed November 2-18 for repairs to the lock gates. Passage around Kentucky Lock is available on the Cumberland River using Barkley Canal and Lock.

Cherokee Navigation Map — TVA has revised the navigation map for Cherokee Lake. The map shows the location of navigation aids, marinas, launching ramps, fish attractors, bridge and wire crossings, and underwater contours. To order, call TVA’s Map Store at 1-800-MAPS-TVA. The cost is \$3.00.

Boone Lake Drawdown — Boone Lake levels were held near elevation 1381.5 (about two feet higher than normal) through the end of September this year to allow the Department of Transportation to work on the State Route 390 bridge. This work is now complete, and TVA has resumed the lake’s normal drawdown to winter levels.

TVA Lake Levels¹

Tributary Lakes	Observed October 1 Levels		January 1 Targeted Operating Levels	
	feet	meters	feet	meters
Blue Ridge	1653.0	503.8	1640 - 1668	499.9 - 508.4
Boone	1378.3	420.1	1342 - 1358	409.0 - 413.9
Chatuge	1915.7	583.9	1908 - 1912	581.6 - 582.8
Cherokee	1042.1	317.6	1020 - 1030	310.9 - 313.9
Douglas	965.4	294.3	940 - 945	286.5 - 288.0
Fontana	1654.1	504.2	1580 - 1644	481.6 - 501.1
Hiwassee	1490.4	454.3	1450 - 1465	442.0 - 446.5
Normandy	873.4	266.2	864 - 866	263.4 - 264.0
Norris	996.4	303.7	970 - 985	295.7 - 300.2
Nottely	1755.3	535.0	1735 - 1745	528.8 - 531.9
South Holston	1703.2	519.2	1678 - 1702	511.5 - 518.8
Tims Ford	883.7	269.3	865 - 873	263.7 - 266.1
Watauga	1935.5	590.0	1918 - 1940	584.6 - 591.3
Main River Lakes				
Chickamauga	681.9	207.8	675 - 677	205.7 - 206.4
Fort Loudoun/Tellico	812.2	247.6	807 - 809	246.0 - 246.6
Guntersville	594.0	181.0	593 - 594	180.7 - 181.1
Kentucky	354.9	108.2	354 - 355	107.9 - 108.2
Nickajack	632.6	192.8	632.5 - 634	192.8 - 193.2
Pickwick	410.7	125.2	408 - 410	124.4 - 125.0
Watts Bar	740.3	225.6	735 - 737	224.0 - 224.6
Wheeler	552.8	168.5	550 - 552	167.6 - 168.3
Wilson	507.3	154.6	504.7 - 506.2	153.8 - 154.3

¹ Elevations above mean sea level.

Hot, Dry Summer Affects October Lake Levels

If this year’s drawdown seems more severe than usual, it’s because of the hot, dry weather this fall. The eastern part of the Valley received only 3.59 inches of rain in August and September— not nearly enough to offset the water needed in recent months to meet unusually high power demands, cool thermal power plants, and protect aquatic habitat. The result: steadily declining levels on most lakes.

The January 1 target elevations (shown in the table at left) are set to help TVA balance competing demands on the river system. The top of the range—the flood guide level—is set to reserve storage space for runoff from heavy rains that are typical in winter. It also gives TVA some flexibility to generate low-cost electricity during cold winter days. The bottom of the range is set to provide a minimum supply of water downstream for navigation and water quality. A lot depends on how much rain falls this winter, but we expect to keep lake levels in the middle to upper end of this range.

For the latest information on lake levels, call TVA’s toll-free Lake Information Line at 632-2264 in Knoxville, 751-2264 in Chattanooga, and 386-2264 in Muscle Shoals. From all other locations, call 1-800-238-2264. For the hearing-impaired, call 1-800-438-2264. Information on current and predicted lake levels and stream flows also is available on the Internet at www.lakeinfo.tva.gov.

Reading and Writing and... Riparian Zones?

A Shrub for the Shoreline

Looking for an attractive mid-size shrub to plant along your shoreline property? Silky dogwood may be the answer. A native shrub commonly found along Valley streambanks, shorelines, and wetlands, it grows to a height of 6 to 12 feet. Silky dogwood is a cousin of the flowering dogwood but its flowers lack the large, showy bracts most of us are familiar with. The shrub blooms in the spring. Small cream-colored flowers are followed in late summer by blue fruits favored by birds and other wildlife.

Silky dogwood should be planted in the fall just above normal summer pool level. (Be sure to check with your local TVA Land Management Office first.) It grows best in slightly acid soil in full sun but will tolerate partial shade. Call TVA's Clean Water Initiative at 256-386-3653 for sources and recommendations.



Silky Dogwood

When the kids in Susan Estes's eighth grade class head back to school each fall, their list of supplies includes some unconventional items. In addition to calculators and composition books, these students need waders, dip nets, and water chemistry test kits.

Since Estes started the environmental field studies class in 1994, more than 100 students

at Oak Park Middle School in Decatur, Alabama, have participated in almost two dozen different projects designed to improve and protect ecological conditions in the Flint Creek watershed of the Tennessee River. And it's not busy work, either. When these kids tackle an environmental problem, they mean *business*.

After her students expressed concern that wave action was causing erosion and undercutting banks along a three-mile nature trail bordering the river in Point Mallard Park, Estes encouraged them to see what they could do about it. After receiving the "go-ahead" from the mayor and city council, the students evaluated the trail's condition, rate of erosion, and different methods of bank stabilization. They received assistance from TVA's Clean Water Initiative, the Flint Creek Watershed Project, and the Natural Resources Conservation Service.

Thus far, the teens have planted 1,160 trees and shrubs along a 200-meter (656-foot) stretch of the riverbank. Their long-term objective is to reclaim and stabilize 1,000 meters (3,281 feet) of shoreline along the trail, preventing further soil erosion and improving water quality. This goal is now within reach, thanks to a recently-awarded grant of \$20,000 from 3M Corporation. The project is expected to take three to five years, and will involve several hundred students.

The field study classes have been involved in many other projects, including conducting an on-going water quality monitoring program, constructing two on-campus wetland cells used to grow the plants needed for their reclamation project, and writing and producing two videos about their work. They've also undertaken a variety of initiatives designed to raise public awareness about water quality issues.

According to Estes, there's a real sense of continuity among the classes, with each year's group of students working hard to further the accomplishments of the class preceding them. The most important thing her students learn, says Estes, is that they can make a difference in solving real-world problems: "These kids are developing an environmental ethic that's going to stay with them throughout their lives." As one of last year's students remarked, "I can't wait to bring my own children back here in 25 years and show them what we did."

For more information, call Susan Estes at Oak Park Middle School, 256-552-3035.



Keep an Eye Out for Dragonflies

The prehistoric monster lies stone still, secure in its camouflage, patiently waiting for its unsuspecting prey to wander within striking distance. In a split second, lightning-fast jaws and sharp teeth deal certain death to the hapless victim.

You don't have to own a time machine or rent Jurassic Park to see this monster—the nearest body of water will do. Dragonflies and their more delicate cousins, the damselflies, are miniature prehistoric creatures living among us today, having changed very little in the 250 million years they've been around.

A typical dragonfly life cycle begins when an adult female dips her long tail into the water and deposits anywhere from a few hundred to a thousand eggs. Some dragonflies and all damselflies have a sharp point at the end of their abdomens, which is used to insert eggs into the stems of aquatic plants or decaying wood.

When the eggs hatch, the larvae remain in the water until they emerge as adults. Dragonfly larvae breathe with gills, but unlike fish or other aquatic insects, their gills are inside their abdomens. They flex the muscles of their abdomens to draw in and push out water through their rectums. They can even use this flow of water as a form of "jet propulsion." You can see this if you catch one and put it into a pan of water.

Dragonfly larvae prey on other aquatic insects and sometimes even small fish. The larva's lower lip, which functions more like a jointed arm, remains folded and held closely to the underside of the head until prey is encountered. The lip then shoots out very quickly to its full length, and two hinged hooks at the end of the lip snap closed around the prey. When the lip returns to the folded position, the prey is trapped in the jaws of the dragonfly larva. All this happens faster than the human eye can follow.

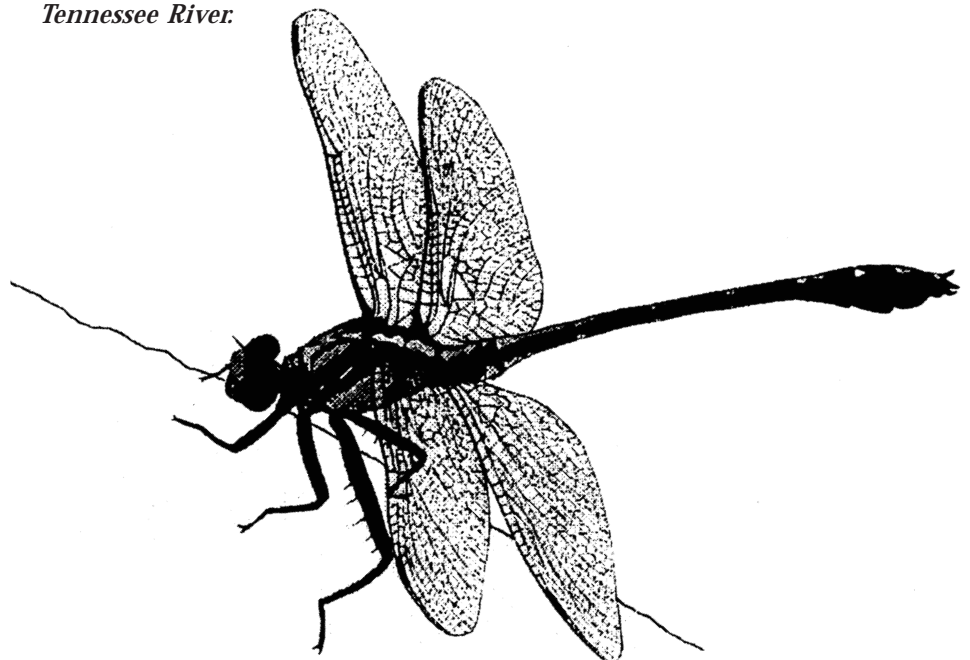
The spectacular flying abilities of adult dragonflies enable them to capture other insects in mid-air. Many species prey largely on mosquitoes, earning them the nickname "mosquito hawks"—a service to humans for which they are not always recognized. Dragonfly larvae also provide food for many of the fish we like to catch and eat, and birds and other insects feed upon both larvae and adults. Most adult dragonflies live only a few weeks, although some species may live up to three months.

Without a doubt, the world would be a much duller place without these fascinating and beneficial aquatic insects. So the next time you're near a pond or stream, keep an eye out for the many different kinds of dragonflies and remember—not all prehistoric creatures are extinct.

Editor's Note: This is the first of a series of articles profiling interesting creatures that live in or near the waters of the Tennessee River.

Call TDEC Toll-Free To Report Environmental Concerns

If you want to report a suspected environmental crime in Tennessee—an illegal dump site; a failing septic system; improper disposal of used oil, tires, or medical wastes; for example—call 1-888-891-8332. This toll-free number puts you in contact with your nearest Tennessee Department of Environment and Conservation (TDEC) office. All calls are confidential. Each inquiry is assigned an identification number so TDEC staff can let callers know how their complaints are resolved. More than 2,100 complaints have been received since the system became operational in February. Call the same number for information on recycling, pollution prevention, or permits.



Hummer Alert!



Bird-lovers across the Valley should be on the look-out for some unusually-colored hummingbirds at their feeders this fall and winter. If you spot a hummer with a bright orange spot on the top of its head, you probably haven't stumbled upon a new species—just one of the birds marked for identification at TVA's Land Between The Lakes "Hummingbird Fest '98."

Three hundred hummingbirds were captured, marked, and released during the August event, which annually provides

researchers with valuable information about migration and wintering patterns. Since hummingbirds spend winter months in southern Mexico and northern Panama, anyone living in the Southeast and Southwest has a good chance of seeing the birds as they fuel up for their journey.

If you spot a hummingbird with a painted head or leg-band or if you observe hummingbirds at your feeder over winter, you're asked to contact the Hummer/Bird Study Group by e-mail at HummerBSG@aol.com or call 256-681-2888.

A "Natural" Opportunity for Public Input

This land is over-hunted." "Sow the small fields for food for deer and turkey." "I'd like to see a campground and picnic areas." "Please leave this area to nature." "Stop the vandalism." "Keep motorized vehicles out."

People have many different opinions about how TVA should manage the 87,000 acres of lake land that have been designated for natural resource management—and now they have an opportunity to be heard.

"In the past, our management decisions were based mostly on resource conditions," says Ralph Jordan, Project Manager for TVA's natural resources planning process. "But that led to some conflicts that we thought we could avoid by providing more opportunities for public involvement." As a result, TVA adopted a new planning process that begins by asking local residents for input—how they use the land in question, what they think of TVA's current resource management activities, and how they think the land should be managed in the future—and ends with public review of a draft 25-year resource management plan.

"Natural resource conditions and the physical suitability of individual tracts for different uses are still important factors in developing appropriate management strategies," says Jordan, "and TVA is committed to making sure the land continues to support the widest diversity of plants and animals. Plus, we have to comply with applicable laws, regulations, and executive orders. But our success in managing wildlife populations, forest, and other natural resources on TVA lands depends on understanding public needs and concerns related to these resources."

TVA is developing management plans for over 11,000 acres of public land in four natural resource management units: Upper Chickamauga, Lower Watts Bar, Harmon Creek on Kentucky Lake, and Davis Creek on Norris Lake. Draft plans—based on public comments received this spring and summer—will be available for public review by the first of December and finalized in early 1999, after a 30-day public comment period.

Next spring, TVA will begin developing resource management plans for the Trace Creek management unit on Kentucky Lake, the Tellico River unit on Tellico, the Murphy Hill unit on Guntersville, and the Fullerton Bend unit on Norris. Plans already are in place for the Noeton management unit on Cherokee Lake, the Lower Flint River unit on Wheeler, and the Lower Sequatchie River unit on the Nickajack Dam reservation.

For additional information on the new planning process or for copies of completed or draft plans, call Ralph Jordan at 423-632-1604 or send an e-mail to jrjordan@tva.gov.

Watershed Forum Newsletter Due Out Soon

If you aren't on the mailing list already, call TVA at 423-751-7328 for a copy of the Southeast Watershed Forum's newsletter—a free publication featuring news about state and local watershed programs. The October issue includes the results of a recent "roundtable" at which regional watershed interests provided feedback on national watershed policy and defined needs for assistance. The Southeast Watershed Forum—an information clearinghouse serving nine states—is aimed at helping community groups find financial and technical assistance; share success stories; and access local, state, and national watershed information.

“Hats Off” to the Harrises

It would be hard to find folks more willing to “go the extra mile” for the environment than Jim and Gail Harris. They’ve generously agreed to transfer their 400-acre farm to the Foothills Land Conservancy upon their deaths. The land has been in Jim’s family since the mid-1800s. Located in the rolling foothills of Blount County, the Harris farm currently produces corn, strawberries, soybeans, and hay and pasture for about 100 head of beef cattle. “We wanted to make sure the farm would stay in agricultural production in the future,” says Jim. “It seemed to be a good fit with the mission of the Foothills Land Conservancy.” (See profile at right.)

The arrangement requires that the Conservancy maintain the property in the future as a working farm—either by leasing it to an agricultural interest or by selling it and retaining a conservation easement on the farm. “We went public with our decision to make the bequest in hopes that others might follow us,” explains Jim. “With two million acres of America’s rural land being lost to development each year, it’s increasingly important to preserve the natural and historical values of open farmlands.”

The Harris’s decision to provide an environmental legacy through their bequest is impressive—but that’s not all the story.

They’re doing something for the environment now by allowing their farm to be used as a demonstration project to highlight a variety of best management practices for streambanks.

TVA’s Fort Loudoun-Melton Hill-Watts Bar River Action Team came up with the idea to demonstrate techniques for streambank protection and restoration on the portion of Nails Creek which runs through the Harris farm before emptying into the Little River. Other partners include the U.S. Fish & Wildlife Service, the Natural Resources Conservation Service, and the Blount County Soil Conservation District.

Work thus far includes fencing to exclude cattle from the creek, the installation of two cattle crossings, grading the bank, and using a variety of different techniques to hold the soil in place until vegetation takes root. Agency partners hope to use the work on the Harris farm to encourage property owners in the area to adopt similar practices. The project is part of an on-going effort to improve water quality in the Little River watershed.

The first step in implementing best management practices on your farm is to develop a conservation plan. Call your local Soil Conservation District office for help. For additional assistance, call TVA’s Clean Water Initiative at 423-751-8455.

Profiles in Protection Foothills Land Conservancy



Founded in 1985, the Foothills Land Conservancy is dedicated to preserving “the unique ecological, agricultural, and scenic resources of the Foothills of the Southern Appalachian Mountains.” To date, the organization has protected more than 8,200 acres of land in 11 different projects using a variety of tools, including conservation easements, donations, fee simple purchases, bequests, revocable trusts, and green developments.

A key objective, according to Executive Director Randy Brown, is to create a “buffer zone” between the Great Smoky Mountains National Park and the Knoxville Metropolitan Area. The Conservancy already has raised over a million dollars to finance the purchase of thousands of acres of land. The first tract, donated by the Conservancy to the National Park and to the Tennessee Wildlife Resources Agency, provides habitat for wildlife and recreational opportunities for the public.

To learn more about the Foothills Land Conservancy, or to become a member, call 423-681-8326.



Jim Harris spent lots of Sunday afternoons in Nails Creek as a boy. He says “it’s a good feeling to know that something’s being done to make sure it stays clean and beautiful for many years to come.”

“Adopt-A-Shoreline” Kicks Off on Kentucky Lake

It's a different take on the idea of keeping trash picked up along a stretch of highway: Kentucky Lake users are being encouraged to adopt a one-mile section of shoreline.

Richard Starkey, a member of TVA's Kentucky River Action Team, says the program is open to both groups and individuals. “We encourage everyone—Scout groups, civic organizations, bass clubs, church groups, neighborhood associations, marinas, campgrounds, and folks who live along the lake—to take this opportunity to show pride and ownership of the lake we all care so much about.”

Co-owners of the Irvin Cobb Marina on the Blood River embayment, Paul and Gwinn Krueger based their decision to adopt the embankment across from their business

on both practicality and environmental awareness. “We depend upon the natural beauty of this area for our livelihood,” says Krueger. “Fishing drives my business, so it makes sense to do everything we can to improve water quality and preserve aquatic habitat. A little prevention goes a long way in terms of keeping litter picked up. Once you take the time and effort to clean it up, people will often help keep it that way.”

So far, 15 groups and individuals have signed up to participate. TVA provides trash bags for litter cleanups and an eye-catching sign for the section of adopted shoreline. To participate in the Kentucky Lake program, contact Richard Starkey at 502-924-2202. Watch for “Adopt-A-Shoreline” signs to appear on other lakes across the Valley in the future.



Paul and Gwinn Krueger were among the first to join the Adopt-A-Shoreline effort on Kentucky Lake.

TVA River Neighbors

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