Eco Logic...

from The Nature Conservancy

BY SALLY ROLLINS PALMER

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Averting a Water Supply Crisis While Protecting Endangered Species: Partnerships Pay Off for Tennessee's Duck River

In 1999, the Tennessee chapter of The Nature Conservancy launched one of its first river projects—on the Duck River in Middle Tennessee. Our Duck River program quickly became involved with many federal, state, and local partners who were beginning to tackle the water supply challenges facing several communities in the river's watershed. One of the Nature Conservancy's key partners and the local force behind water resource planning in the watershed is the Duck River Agency (DRA). From 2000 to 2002, DRA members worked to build trust between all partners within the watershed—improving tools for water management planning and coordinating research priorities and efforts. Little did we know that these first steps we made together would pay off so soon. When Tennessee's exceptional drought came along in 2007, it put our relatively new collaboration straight to the test.

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The Tennessee General Assembly created the Duck River Agency in 1965 to aid economic and water resource development in a largely rural, five-county region of the Duck River watershed.

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The Duck River Agency expanded its partnership-building efforts in 2002 by inviting a number of interested parties, including The Nature Conservancy, to join a group focused on issues of water quality, land use planning, endangered species monitoring, and recreational access. Leslie Colley, shown here, is the director of The Nature Conservancy's Duck River Program.

OVERCOMING A HISTORY OF CONFLICT AND DISAPPOINTMENT

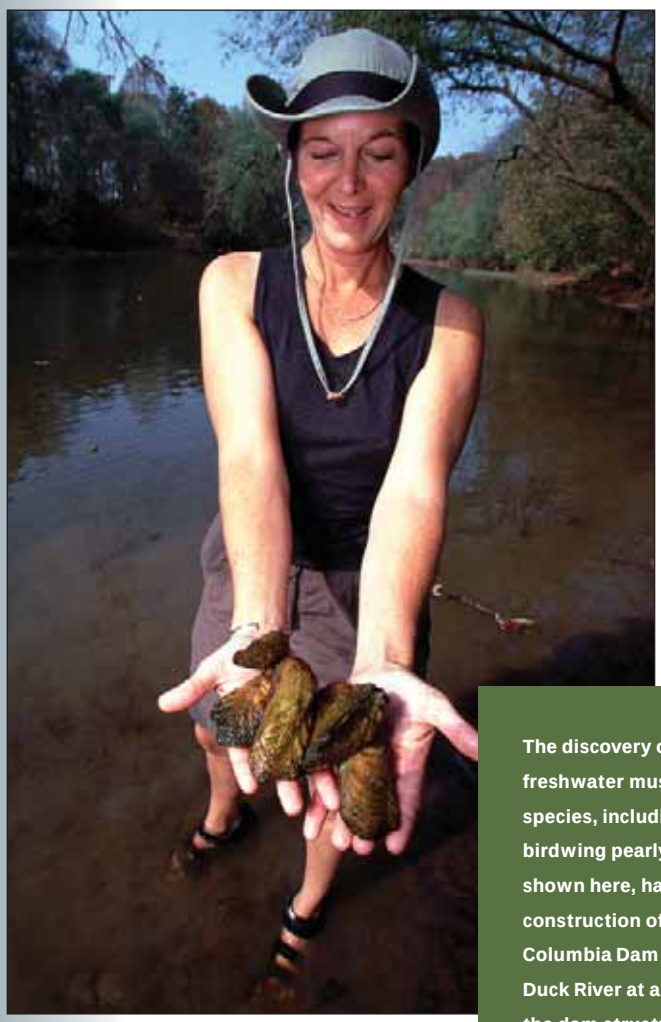
The history of water resource planning for the Duck River has unfortunately been marked by conflict, failed plans, and unmet expectations. The DRA was created in 1965 by the Tennessee General Assembly for the purpose of aiding economic and water resource development in a largely rural, five-county region of the Duck River watershed. To accomplish its goals, the DRA enlisted the Tennessee Valley Authority (TVA) to build two reservoirs on the Duck River, one near the headwaters in Normandy, Tenn., and the other approximately 115 river miles downstream near Columbia, Tenn.

Construction of the dam that created Normandy Reservoir was completed in 1976. The Columbia Dam project, however, was slowed and ultimately halted because of the discovery of freshwater mussel species, including the birdwing pearlymussel (*Lemiox rimosus*), considered endangered by the US government. When TVA ended the project in 1983, the dam structure itself was almost complete, and the 12,800-acre footprint of the reservoir was under federal control. The unfinished dam remained in place until 1999, when TVA demolished the structure and deeded the land to the state of Tennessee. Over the decades, resentment and distrust simmered among local community members, who had seen farms and homesteads transferred out of family ownership, and tens of millions of dollars spent with no reservoir to show for the sacrifices. This led more than one person to conclude—with much resignation—that those had been some very expensive mussels.

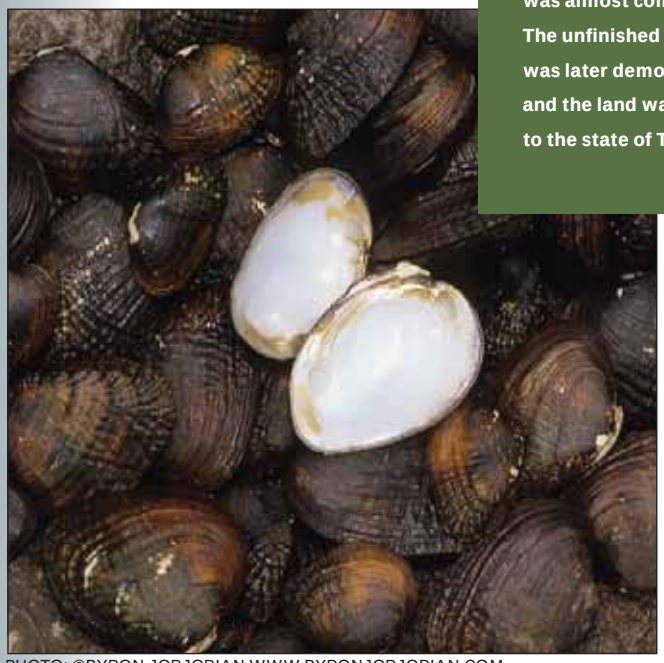
MENDING FENCES AND MOVING AHEAD

Although there was a tendency to lay blame for the project's curtailment entirely on endangered species, TVA had harbored a number of concerns regarding the long-term economic viability of the Duck River project. Neither of the dams had been designed to produce electricity for distribution and sale. In fact, Normandy Reservoir remains the largest non-power-generating TVA dam on a tributary river. With only half of TVA's Duck River project complete, the DRA and local communities faced some unexpected challenges in meeting future water supply and wastewater assimilation demands. The presence of federally endangered species in the river further complicated management decisions. Once the Columbia dam came down in 1999, it was unclear how concerned agencies, organizations, and citizens would be able to work together and move beyond the unfortunate events of the past.

Making progress required focused leadership, a willingness to find new ways to address complicated issues, and a desire to build trust among entities that



The discovery of freshwater mussel species, including the birdwing pearlymussel shown here, halted the construction of the Columbia Dam on the Duck River at a point when the dam structure itself was almost complete. The unfinished dam was later demolished, and the land was deeded to the state of Tennessee.



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previously had been suspicious of one another's motives. In 1998, DRA's board of directors—led by local citizens—adopted a new mission statement and organizational focus. DRA is funded by contributions of $.05/1,000 gal of water sold by its member utilities. As a way of engaging all of the DRA utilities in the process of collaborative water resource planning, DRA's executive director reached out to the organization's member utilities in 1999 and formed the DRA Technical Advisory Committee (DRATAC).

In 2002, the DRA expanded its partnership-building efforts by inviting The Nature Conservancy, the US Geological Survey, the Tennessee Department of Environment and Conservation (TDEC), TVA, the US Fish and Wildlife Service, and other interested agencies to join a group known as the Duck River Water Resources Council (DRWRC). For the past several years, members of DRWRC and DRATAC have worked individually and collectively on a number of projects that have included water quality and hydrologic monitoring, land use planning in local communities, improvements in agricultural production practices, endangered species monitoring and recovery, stream restoration, and recreational access. One project sponsored by The Nature Conservancy—the development of a computer model for the Duck River with OASIS software from Hydrologics Inc.—helped transform initial decision-making regarding additional supply alternatives proposed by TVA. The outcomes of this modeling effort also helped set the stage for more specific consideration of all future demands on the river, which include serving as a water supply, assimilating waste, and meeting ecosystem health requirements.

NEW PARTNERSHIPS PAY BIG DIVIDENDS

When the drought of 2007 hit the Duck River watershed, most of the DRA partners were caught off guard, with the exception of the Duck River Utility Commission (DRUC), which withdraws its drinking water directly from Normandy Reservoir.

By August 2007, the Normandy area had received a total of 15 in. of rain—only half of the lowest amount previously recorded—and the reservoir was almost 15 ft below its normal operating level. DRUC began serious conversations with DRA, other DRATAC members, and DRWRC regarding reservoir releases from Normandy Reservoir. All parties shared a concern that if the drought persisted and management adjustments were not made to dam discharges, then water users of the reservoir and downstream reaches both faced unacceptable risks to water quantity and quality.

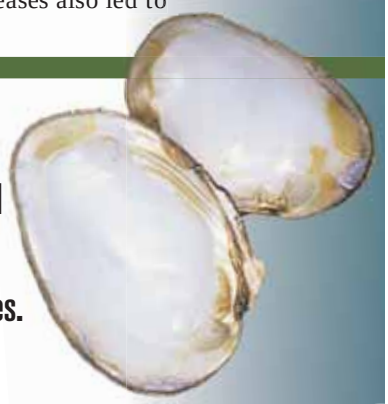
Because of the investments in partnership that had been made during the previous five years, the decision-making process for adjusting flow releases moved relatively swiftly in the latter half of 2007. By mid-August, DRATAC members had mandatory water-use restriction plans. By the end of September, TDEC had led a successful meeting to reach consensus on flow reductions. By mid-October, TVA had been able to produce an environmental assessment approved by all partners (including the US Fish and Wildlife Service) that outlined the potential impacts of flow reductions and a detailed collaborative monitoring program. Operational changes began in mid-October and were evaluated through November and December. They were revisited in January, and with an updated assessment document, additional reductions were allowed in February. Monitoring data from the spring months of 2008 have informed operating policies for the summer months of 2008. Details of these operational plans are available in TVA's environmental assessment documents, which may be found at www.tva.gov/environment/reports/normandy/normandy_release_change_ea.pdf and www.tva.gov/environment/reports/normandy/sea_2008.pdf.

IS IT ALL SMOOTH SAILING?

As the saying goes—so far, so good. We seemed to have dodged the drought-of-record bullet in the Duck River watershed in 2007. With the well-managed release reductions and improved inflows, Normandy Reservoir is returning to normal. During the drought management process, we learned a good deal more about the water use conflicts that probably lie ahead. How can we improve our collaborative efforts to face these challenges?

Although we worked well together during the 2007 crisis, had we heeded DRUC's call earlier in the year, we might have been able to negotiate changes before Normandy's levels dropped so severely—a situation that lowered the water quality in the reservoir and hampered DRUC's ability to supply water to its customers. Addressing the reservoir releases also led to important discussions regarding water supply versus assimilative capacity demands for in-stream flows. Another question surfaced—how do we continue to incorporate data on ecosystem health requirements, including natural flow variability and water quality for endangered species, in a meaningful fashion? All of these issues must be addressed as the DRA and its partners start working together on a long-term water resource management plan.

Making progress required focused leadership, a willingness to find new ways to address complicated issues, and a desire to build trust among entities that previously had been suspicious of one another's motives.



The Duck River remains one of the most biologically diverse rivers in North America, and it is an outstanding national resource. Our recent studies have documented a level of mussel fauna recovery in the Duck River which is unprecedented in the Tennessee River basin. Although the history of water resource planning in the region may at times be an obstacle, the people living within the watershed have a strong sense of place and want to make the best decisions possible to grow vibrant local economies while protecting their natural resources. It is hoped that we can draw on our experiences from the 2007 drought and continue to work collaboratively—overcoming challenges and conflicts—and design just such a future together.

—Sally Rollins Palmer grew up playing in the Little Duck River where it flows into the Duck River in Manchester, Tenn. Palmer has been with the Tennessee chapter of The Nature Conservancy for 10 years and now serves as the statewide director of science. She may be contacted at spalmer@tnc.org.