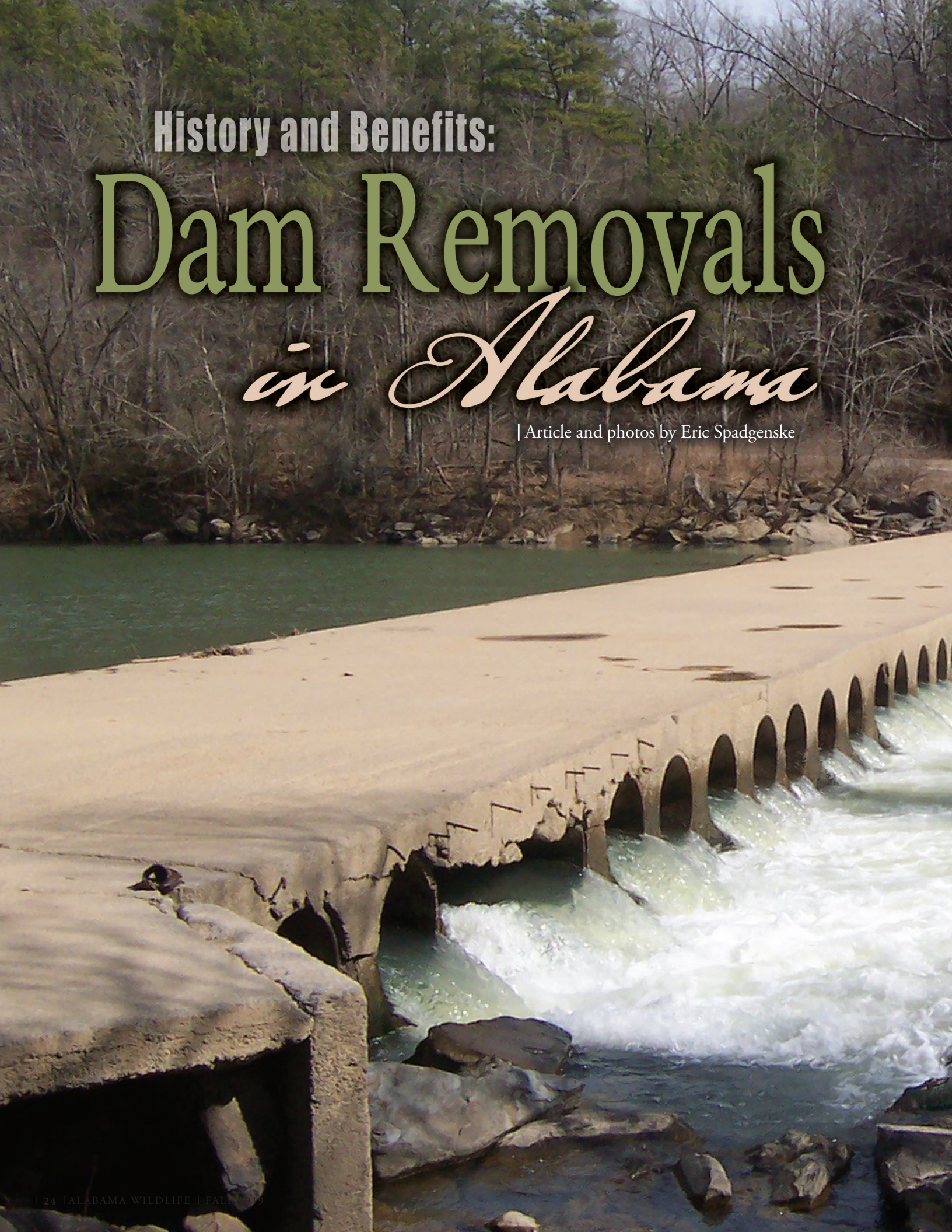


History and Benefits:

Dam Removals *in Alabama*

| Article and photos by Eric Spadgenske





2004: Marvel Slab, Cahaba River

The idea of dam removal for aquatic restoration is a relatively new reality in Alabama. At the turn of this century conservationists could claim no successes in dam removals in a state well known for its incredible aquatic biodiversity. Then someone said, “Why not?” On a misty autumn morning in 2004, after years of tedious planning, negotiating, and fundraising, the silence over the Cahaba River in rural Shelby County was broken by the reverberating thump of a huge jack hammer. The Marvel Slab, a 210’ long, 24’ wide concrete relic of coal mining history was coming down. Piece by piece, over the course of the next several days, Alabama history was made as the Cahaba River was released to meander freely over the bedrock and cobble sholas that define its beauty. Emboldened by success, and led by The Nature Conservancy, multiple conservation partners joined the effort and pledged to continue restoring Alabama’s waterways. Stakeholders joined from every corner of the state. Almost everyone could agree that it was time to revisit some of the obsolete barriers that continued to stand in our waterways. Today, this thriving coalition of partners is organized as the Alabama Rivers and Streams Network.

Howle and Turner Dam



The Howle and Turner Dam is a significant part of our history as Alabamians and Americans. A center of commerce for over a half century, the grist mill and cotton gin powered by the Tallapoosa River were a centerpiece of rural life in early 1900s east Alabama. When power generation ceased in the late 1990s, the dam became obsolete and its negative impacts quickly came into focus.

After more than four years of planning, it took less than five days for the equipment operators to chip away and remove a barrier that had stood for nearly 100 years. Before the dam was completely removed from the river, fish of at least four species could be seen straining against the flow in salmon-like runs over the rubble and past the century-old barrier to migration.

Howle and Turner Dam on the Tallapoosa River was removed for fish passage and boater safety in 2019.

Water, water, everywhere.

Alabama is blessed with over 130,000 miles of rivers and streams. With the exception of recent droughts, water is not often viewed as a limiting resource because we enjoy abundant surface and groundwater supplies. Early settlers were able to expand into every county by taking advantage of these resources. The ability to “capture” water was a form of currency that many people used to survive and thrive in the late nineteenth and early twentieth centuries. Dams serve many valuable purposes. Power generation, flood control, water supply, and navigation to name a few. Harnessing the energy stored in flowing water has been incredibly important to Alabamians. Impoundments created by dams provided the energy to operate grist mills, and saw mills, and later to bring electricity to remote corners of Alabama. Today approximately 7.5% of our electricity in the U.S. is generated at hydropower facilities on our major rivers. Dams provide an important societal benefit by increasing capacity to store flood waters, and by storing water for agricultural or industrial uses. Dams can improve commerce by increasing our ability to navigate through waterways carrying goods from the Tennessee River to the Port of Mobile. Impoundments created by dams are also highly valued for aesthetics and the recreational opportunities they provide.

With all of these benefits, some might ask why we would want to remove existing dams or carefully consider the impacts of building new dams. Alabama’s dam building history has tallied some losses in addition to its successes. Dams have been attributed to one of the greatest extinction events in modern history. In the early to mid-1900s, a series of dams were built on the Coosa River to generate electricity for a growing populace. Back then, little was known about the diversity of mussels, snails, and fish that were unique to Alabama and the swift-flowing, rocky shoals where only the most dedicated naturalists were recording a relatively unknown segment of our natural history. As the dams went up, the shallow, rocky sections of highly oxygenated water were transformed into lakes sometimes over a hundred feet deep. The character of these rugged, wild rivers was changed. By impounding water, dams alter water chemistry and temperature profiles. The entire food web is interrupted because sunlight, the engine that drives life in these systems, cannot reach the tiny plants that provide food and produce oxygen. The crevices that formed among the boulders and bedrock quickly fill in with soft sediments and mud when the coursing waters are stopped. The snails, mussels, fish, and crayfish that evolved over thousands of years in these free-flowing rivers were suddenly challenged beyond their capability to adapt. Some of these unique species, found nowhere else in the world, were either lost immediately or isolated to the point where they could no longer adequately reproduce. One after another they were lost – forever.

Scientists now understand many more of the relationships between these inconspicuous aquatic species and the distinctive habitats where they are found. We are



more aware of the water quality parameters such as dissolved oxygen, which must be maintained to support these native organisms. We better understand the unique life history of mussels that require a fish host and a parasitic stage in early development. We now see the connection between the ability of certain fish species to migrate upstream, sometimes hundreds of miles, to either spawn, or assist in the life cycle of mussels. The detrimental effects of dams are better understood now than ever before, and we have the resources and will to restore these habitat connections in an effort to rescue our most sensitive species from extinction.

From an ecological perspective, we have been able to document remarkable results following dam removals. The best, long-term dataset on aquatic species recovery comes from more than a decade of monitoring at the Marvel Slab on the Cahaba River. Spearheaded by Paul Freeman, previously of The Nature Conservancy, multiple organizations and citizens tracked the incredible biological response of species in the Cahaba River. Case in point is the round rocksnail, a federally protected Threatened species, found only in the Cahaba River. Downstream of the Marvel Slab, currents were so strong and erratic that habitat was unsuitable for this tiny specialist that is often found among rafts of Cahaba lilies. Prior to removal of the dam, there were no round rocksnails detected in this zone; by 2007, there were over 385 per square meter! Mussels were slower to respond, but there are now reproducing populations of several species within the old footprint of the slab. Within 2 years post-removal, four fish species had extended their range and moved upstream past the former fish passage barrier. The recovery continues.

Similarly encouraging results have been documented at other dam removal sites including a near doubling of fish species present upstream of the Goodwins Mill Dam on Big Canoe Creek, the discovery of the Endangered vermilion darter upstream of the Old Shadow Lake Dam on Turkey Creek just outside of Birmingham. Since 2004, the combined length of streams re-opened to fish passage resulting from Alabama dam removals is over 1000 miles. Fish now have access to historic spawning grounds, mussels are recolonizing habitats that have been hidden for over 100 years, and improvements to water quality have been nothing short of amazing.



Enjoying the Cahaba River



Cahaba Lilies Landscape



Round Rocksnails Cahaba River Tributary

Old Shadow Lake Dam on Turkey Creek

As mentioned earlier, every stakeholder in aquatic restoration has a slightly different motivation. We have welcomed support from landowners, both small and corporate, who are interested in improving safety and reducing liability. Recreationists from paddlers, to swimmers, to anglers have applauded dam removal efforts as they enjoy the benefits of unimpeded streams. We've even learned of benefits to industrial river users who find it more cost-effective to meet their permit requirements when streams are flowing freely instead of being dammed and stagnant. The value of increased safety around some of these obsolete dams cannot be overstated. Sadly, almost every year, we learn of a tragic accident involving a lowhead dam where a boater, swimmer, or other river user gets caught up in the dangerous hydraulic currents that form around these structures.

Therefore is no good accounting of just how many dams we have in Alabama. Some estimates range from as few as 2200 to as many as 10,000 when small farm ponds and spring impoundments are considered. Many of these dams have outlived their usefulness and have become obsolete, or worse. Dangerous. Looking ahead, we are more convinced than ever that carefully planned dam removal restoration projects are a benefit to society whether your interests are dominated by obscure aquatic organisms, sport fishing, limiting liability, halting soil erosion, or enjoying a day on the water with family – healthy waters benefit us all! 🐟

For more information, visit the Alabama Rivers and Streams Network's web site at <http://alh2o.org/> If you know of a dam or fish passage barrier that should be considered for removal, please contact the author at Eric_Spadgenske@fws.gov or 251-441-5872. Eric Spadgenske is the State Coordinator for the Partners for Fish and Wildlife Program with the US Fish and Wildlife Service.



Old Shadow Lake Dam near Pinson AL



Vermilion Darter at Turkey Creek