

Imperiled Aquatic Species Conservation Strategy for the Upper Tennessee River Basin

Purpose

The purpose of the Imperiled Aquatic Species Conservation Strategy for the Upper Tennessee River Basin (UTRB) (Strategy) is to guide the U.S. Fish and Wildlife Service (USFWS) in the management of Federal candidate, proposed, and listed (herein collectively referred to as imperiled) aquatic species in the UTRB. Because nearly all imperiled aquatic species in the UTRB are fishes and mussels (Appendix 1), the Strategy is focused on these two faunal groups at present. The Strategy will (1) identify, prioritize, and guide implementation of on-the-ground actions, including population and habitat management, monitoring, and research, towards the recovery of imperiled aquatic species; and (2) integrate the efforts of internal and external partners, as appropriate. It is understood that implementation of many of the conservation and management actions outlined in the Strategy will directly or indirectly benefit other species that comprise aquatic communities in the UTRB. It is important to note that the USFWS does not seek to direct the work of our partners with this Strategy; rather, we seek to prioritize USFWS efforts so that we can make the most effective use of a limited budget and continue to complement the work of our conservation partners.

The USFWS will work cooperatively internally and externally to implement and monitor the progress of this Strategy. Through the Strategy, the USFWS seeks to coordinate implementation and monitoring of efforts intended to (1) conserve and recover imperiled aquatic species and the UTRB ecosystem upon which they depend, (2) lead to imperiled species stabilization and/or recovery, (3) provide information to all stakeholders and partners involved in conservation efforts, (4) encourage collaborative efforts among agencies and partners towards imperiled species conservation, and (5) help ensure compliance with pertinent laws, regulations, and policies. The goals, objectives, and management actions in this Strategy were developed for conservation implementation over a 20-year period, with periodic review and revision as needed.

Introduction and Geographic Scope

The geographic scope of this Strategy is the UTRB, which drains portions of the Blue Ridge, Ridge and Valley, and Appalachian Plateau physiographic provinces of the southern Appalachian Mountains (Figure 1). This includes southwestern Virginia, western North Carolina, eastern Tennessee, and small portions of northeastern Alabama and northern Georgia (Figure 1). The UTRB in Virginia, North Carolina, and Tennessee is the focus of the Strategy. As defined herein, the basin encompasses 22,360 square miles (an area about the size of West Virginia), and is made up of the entire Tennessee River basin upstream of its confluence with and including the Sequatchie River drainage (Figure 1). Major tributaries of the UTRB include the French Broad (5,124 square miles), Clinch (4,413 square miles), Holston (3,776 square miles), Hiwassee (2,700 square miles), Little Tennessee (2,627 square miles), and Sequatchie (602 square miles) Rivers.

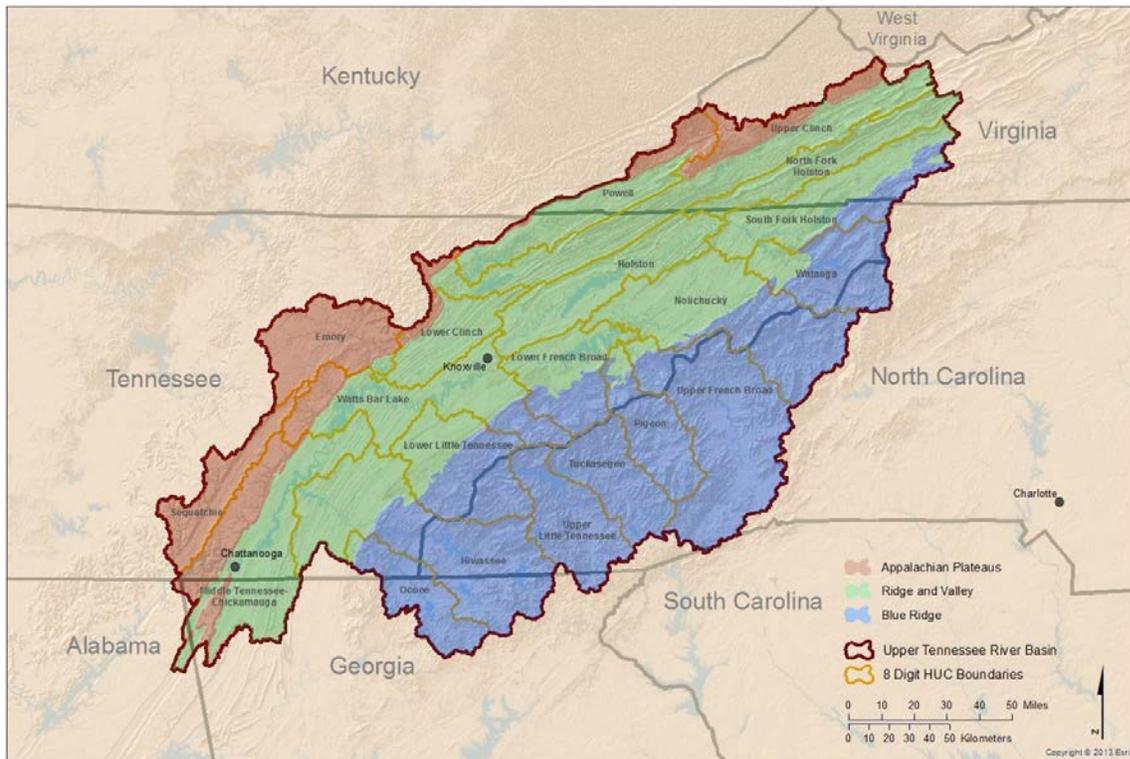


Figure 1. The UTRB encompasses about 22,360 square miles, includes the entire Tennessee River basin upstream of its confluence with and including the Sequatchie River, and falls within three major physiographic provinces.

The UTRB harbors one of the most diverse assemblages of aquatic animals, including fishes and mussels, in North America. Of the approximately 255 species of fishes and mussels known to occur historically in the UTRB (Etnier and Starnes 1993, Parmalee and Bogan 1998, Hampson 2003, Jelks et al. 2008), 45 are imperiled (Figures 2 and 3, Appendix 1). Within the United States, the UTRB is unsurpassed for its number of imperiled fishes, with 13 of the 172 species historically known from the UTRB under Federal protection (Figure 2, Appendix 1); and mussels, with 32 of the 83 species historically known from the UTRB under Federal protection (Figure 3, Appendix 1). This extraordinary biodiversity is one of the primary factors that led the United Nations Educational, Scientific, and Cultural Organization to designate the Southern Appalachians as a Man and the Biosphere Reserve in 1988

(<http://www.unesco.org/mabdb/br/brdir/directory/biores.asp?mode=all&code=USA+44>).

Further, The Nature Conservancy (TNC) identified the UTRB as one of the most significant biodiversity hotspots in the U.S. (Stein et al. 2000, Figure 4).

In addition, the UTRB forms the core of the south-central portion of the mountain region of the Appalachian Landscape Conservation Cooperative (AppLCC, Figure 5), a public-private conservation research and management partnership composed of numerous Federal and State agencies, Tribes, non-governmental organizations (NGOs), academia, and others in parts of a 15-state area (<http://applcc.org>). The goals and objectives of the Strategy and associated recommendations can be integrated within the broader regional planning efforts of the AppLCC partnership.

For several decades, the USFWS and its partners have been working to conserve the imperiled fishes and mussels of the UTRB. Conservation efforts, guided in large part by the dozens of recovery plans for UTRB species listed under the Endangered Species Act (ESA), have included life history studies, distributional surveys, relocation, marking, monitoring, propagation, genetic analyses, toxicology, spill response, land acquisition, habitat protection and restoration, outreach, and education, among others. Though past planning to coordinate such conservation actions has helped organize species recovery efforts, the Strategy reflects USFWS’s commitment to Strategic Habitat Conservation (<http://www.fws.gov/landscape-conservation/vision.html>) in managing and conserving resources at the landscape scale. It also recognizes the need for cooperative efforts to improve efficiency in the face of declining budgets and the importance of adapting management to changing conditions and knowledge. Acting on this commitment, workshops to develop this Strategy commenced in August 2011. Individuals from multiple programs in the USFWS’s Northeast and Southeast Regions were invited to participate. Biologists from Ecological Services, Fisheries, and Science Applications, with facilitation from a specialist in strategic planning and structured decision making (SDM) from the U.S. Geological Survey, worked cooperatively to develop this Strategy. These individuals are listed in the Strategy Team Members section above.

Listed, Proposed and Candidate Fish Species in the Upper Tennessee Hydrologic Subregion

Number of Species per 12 Digit HUC

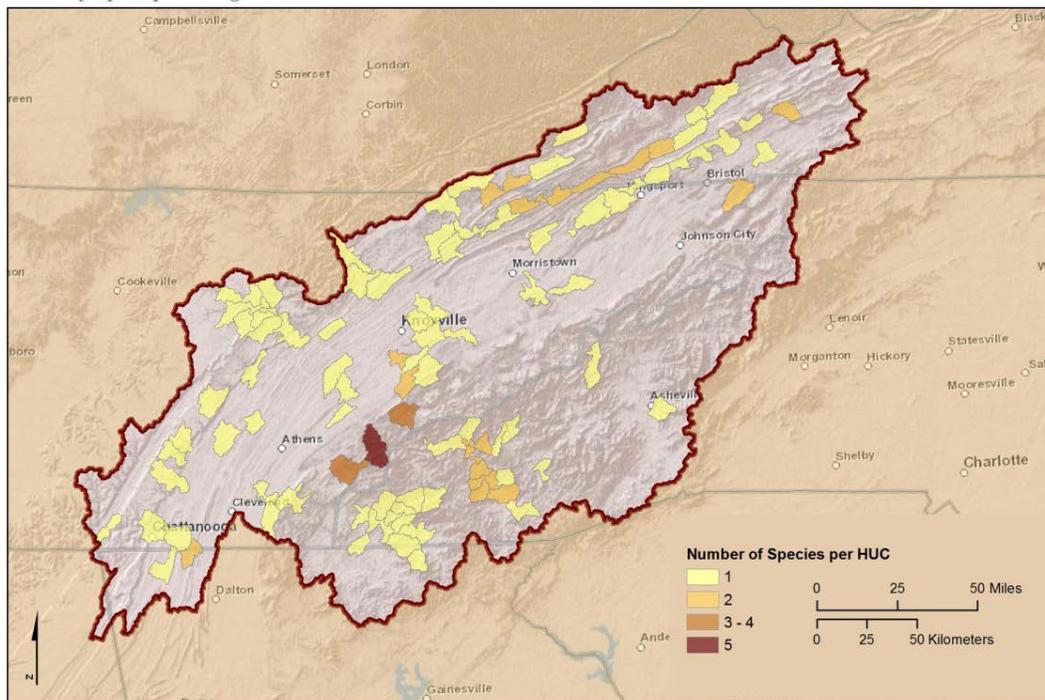


Figure 2. Imperiled fish species in the UTRB. Occurrences include extant and historical records. Areas within the UTRB boundary not shaded by a color denoted in the key have no records of imperiled fish species occurrences.

Listed, Proposed and Candidate Mussel Species in the Upper Tennessee Hydrologic Subregion
Number of Species per 12 Digit HUC

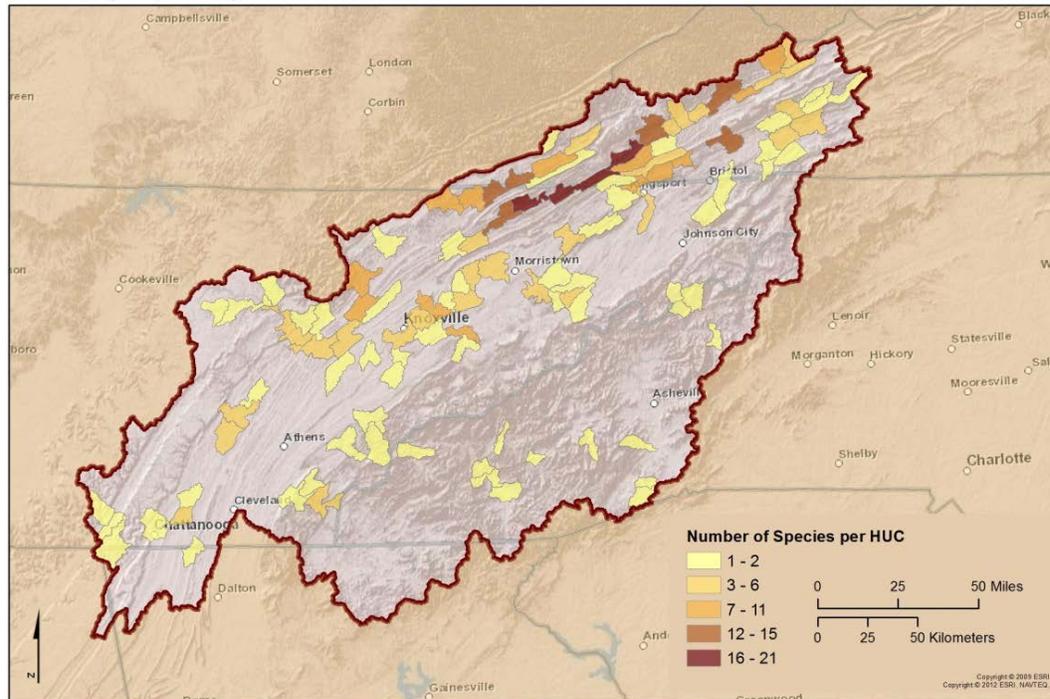


Figure 3. Imperiled mussel species in the UTRB. Occurrences include extant and historical records. Areas within the UTRB boundary not shaded by a color denoted in the key have no records of imperiled mussel species occurrences.

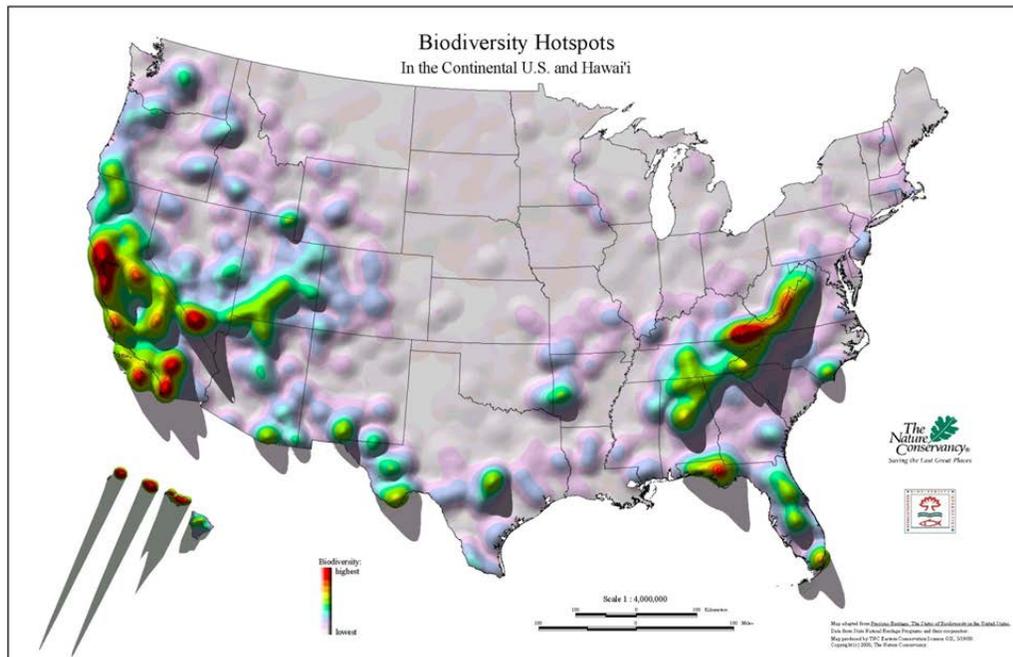


Figure 4. Biodiversity hotspots in the continental United States and Hawaii (Stein et al. 2000).