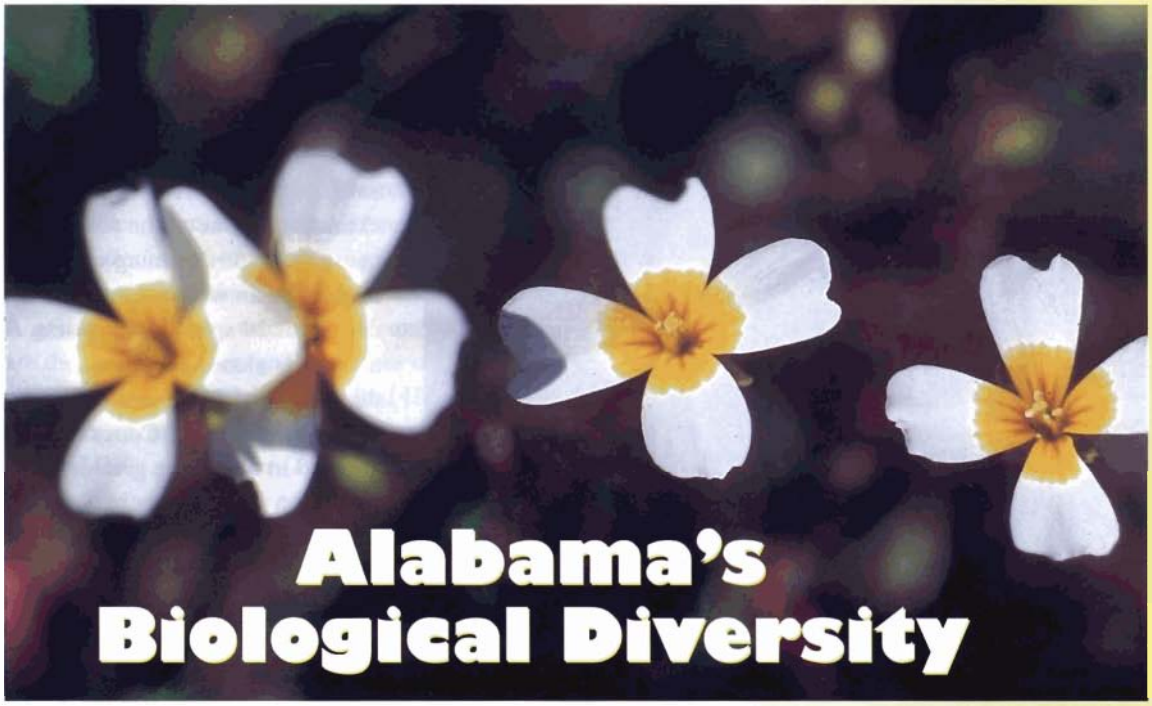

Alabama's Biological Diversity

Photos provided by the Alabama Natural Heritage Program

Alabama glade cress (Leavenworthia alabamica) endemic to Alabama and found in the limestone cedar glades of the Moulton Valley in northwest Alabama.

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It is a little known fact that Alabama ranks fourth in the nation for its incredible biological diversity. It has even been compared to the legendary treasures of the tropics, and like the tropics, plant and animal species are still being discovered and described even today. Alabama is the 29th largest state and in number of species per square mile, only Florida can match its diversity. Many of the state's 34 million acres are still relatively intact, much is still forested and most of the state is in private ownership. Even though some of the natural ecological processes like fire have been interrupted, there is still opportunity for significant restoration and conservation to occur.

Just as amazing as the terrestrial diversity spread across the landscape are Alabama's aquatic resources. Alabama has more species of fish, mussels, snails and crayfish than any other state. Its freshwater streams and rivers contain 38% of the country's native fish species, 60% of its native turtles and 43% of its native aquatic snails. Examples of nationally outstanding aquatic systems include the Cahaba and Paint Rock Rivers. The Cahaba River, which begins in the metropolitan area of Birmingham running south for 191 free-flowing miles to the Alabama River, supports 69 rare and imperiled species, including 10 fish and mussel species listed under the U.S. Endangered Species Act. The Cahaba has more fish species, 131, than any river its size in North America and harbors 13 freshwater snail and fish species endemic (found only in Alabama) to its waters.

Further north in the mountains of Jackson County, the Paint Rock River watershed is part of the Tennessee-Cumberland freshwater region which is ranked number one in the U.S. for at-risk species of fish and mussels. The Paint Rock contains the only known populations for two globally critically imperiled mussel species, the Alabama lampmussel (*Lampsilis virescens*) and pale lilliput (*Toxolasma cylindrellus*), and one of only two known populations for the globally critically imperiled fish the palezone shiner (*Notropis albizonatus*). The Paint Rock watershed is still a healthy viable system, largely due to the fact that its headwaters are cloaked in large contiguous forested lands. Continued compatible landuse will be key to the long-term health and preservation of this incredible watershed.

Perhaps equally diverse, yet even less understood, is the faunal diversity hidden underground in Alabama's subterranean habitats. At the genus level, most U.S. cave fauna diversity occurs in the large limestone karst areas of Texas, the Southeast, and the Sierra Nevada Mountain foothills of California. Alabama ranks second in the nation for its complete cave faunal diversity and contains two of the top four counties with greatest cave densities. For the number of terrestrial cave-dwelling species Alabama is number one in the nation. The Paint Rock watershed alone contains more than 760 documented caves with untold biological diversity. Unfortunately, there has been little biological exploration into these systems. Even more alarming, there are few experts available that can even identify and describe these secretive species. More study and conservation effort is greatly needed and will undoubtedly uncover many new species to come.

Plant diversity in the Southeast is also incredibly rich and diverse, especially in Alabama. Ironically there is no current state flora for Alabama so we can only estimate the number of vascular plant species present to be around 3,800. Charles Mohr, with the Alabama Biological Survey produced a first draft of an Alabama flora in 1901 but no other has since been pub-

Alabama beach mouse (Peromyscus polionotus ammobates), one of two subspecies that inhabit the Alabama Coast, found discontinuously from Ft. Morgan to the Perdido Bay inlet.

lished. Great strides have been made in the area of plant taxonomy since that time and many new species have been discovered and described. One such discovery happened as recently as 1992 when eight new plant species were revealed previously unknown to science. The plants were discovered as part of a unique terrestrial plant community called the Bibb County glades. Sparse areas of exposed veins of Ketona dolomite, a limestone laden with magnesium and calcium that crops up among the largely forest landscape mostly found adjacent to the Little Cahaba River and supports more than 61 rare species of plants. Alabama has many endemic and globally rare plant communities and more than 22 plant species found only here in our state.

Estill Fork is a major tributary of the Paint Rock River and habitat for the Alabama lampmussel.

Unfortunately, Alabama also ranks second only to Hawaii in extinction of species and over 50% of the aquatic species in the state are considered endangered or threatened. Alabama is top in extinction rates for the mainland, with 98 species gone, and one of every four species of plants and animals considered imperiled. But one has to examine closely some of the reasons for these extinctions. One of the primary causes was the damming of the Mobile Basin which resulted in the demise of 54 species of mussels and snails alone. Just the damming and drowning of the cobble shoals of the Coosa River resulted in one of the greatest extinction catastrophes in North American history with the loss of 27 aquatic snail species. Continued destruction of fragile and unique habitats further exacerbates the problem.

Another angle to consider is that Alabama had more species to lose than other states to begin with. This does not justify our past but we must also look to the future and work to preserve the incredible richness that still remains. Alabama is a place where a number of physiographic provinces come together, from the southern foothills of the Appalachians grading down through the coastal plains and prairies to the Gulf of Mexico. Sixty million years ago the ocean invaded part of

the state pushing fresh* [illegible] animals upstream into isolated pockets and drains which lead to the present day levels of diversity. Alabama also escaped the glaciers of the Pleistocene which scoured life forms from the north but left Alabama as a warm refugia for plants and animals to further diversify themselves. As a result, we have a rich and complex fauna and flora with many unique natural communities, some of which are globally rase or completely endemic to the state.

A good example of a rare habitat found only in Alabama are the moist beech-magnolia ravines of the Hatchetigbee and Tallahatta formations in the Red Hills region of Alabama. A large brownish-red salamander, aptly called the Red Hills salamander (*Phaegnathus hubrichtii)* occupies burrows in the sides of steep ravines associated with this geological formation. The salamander, which spends most of its time underground, was only discovered in recent years and exists nowhere else in the world but Alabama. The Red Hills themselves are a refugia for many plant species known from further north in the Appalachians. The unique habitat occupied by the salamander is a forest climax type with a rich duff layer supporting a diverse array of insects and other invertebrate life forms all tied to the seclusion of these forested ravines. There is very little known about the natural history of this salamander or the system it is so integrally tied to. Even so, there are efforts afoot to protect this animal and its unique habitat. Private forest landowners are working in partnership with the US Fish and Wildlife Service through Habitat Conservation Plans for the salamander. Other efforts are underway to better understand the salamander and the extent of its habitat through biological monitoring conducted by the Alabama Natural Heritage Program in partnership with the ADCNR, Nongame Program of the Wildlife and Freshwater Fisheries Division. Academic research is also underway at Auburn University to better understand important aspects of the natural history of this elusive species.

Alabama leatherflower (Clematis socialis), endemic to Alabama and found in Ridge and Valley prairie habitat of St. Clair and Cherokee Counties.

Flattened musk turtle (Sternotherus depressus), endemic to Alabama and found in the Black Warrior system.

The list of rare and endemic plants, animals, and natural communities in Alabama is long indicating a natural heritage we can be proud of. The key to protecting this treasure for future generations is to increase our base of knowledge on what we have and how to take care of it. If we don't know the names of these amazing creatures and plants how can we hope to recognize them and understand what conditions they need for survival. We t w are a part of the landscape and require clean water, air, and natural places to enjoy. What befalls our natural heritage will eventually befall each of us. Let's hope the future is as diverse in life as the present.