

# KARST Secrets

of the Highland Region

*Travel back in time to around 420 million years ago and you'd find tropical coral reefs being deposited off the coast of ancestral North America. As continental plates drifted and collided, these reefs were thrust up and out of the sea and are*



*Remains of coral reef.*

*now preserved as the cave-riddled limestones of the Alleghany highlands. In places, the reef deposits look as*

*though they formed yesterday. In a few places such as the Warm Springs Valley, even more ancient limestones host the caves. Follow us into the Virginia Highlands region and learn the wonders hidden underneath.*

## Development of Highland karst

Over millions of years, mildly acidic waters carved through the folded and faulted limestones of the Highlands and produced a fascinating world of maze caves that offers us a world-class glimpse into the beauty of the subterranean realm.

## Caves in the Highlands

The Highlands are home to many of Virginia's most impressive caves, many of which were sealed off from the outside world for millennia. Persistent cave explorers predicted where these caves lay and worked with eagerly interested landowners to find ways into these fascinating lost worlds. In the extensive passages beneath the mountains, they found complex ecosystems, beautiful crystalline formations, fossils of ancient beasts, and underground lakes and streams.



*Photo by Nikki Fox.*

But despite their majesty, these cave environments are extremely fragile; what took thousands of years to form can be forever destroyed in seconds. Therefore, be vigilant and respect these ancient wonders if you choose to visit them.

## Karst groundwater in the Highlands

Much of the groundwater in the Virginia Highlands flows through subterranean conduits and caves that comprise karst aquifers. The hidden pathways along which karst waters flow can only be discovered with extensive scientific studies and are only well known in a few parts of the state, such as Burnsville Cove along the Bath-Highland county line. There, members of the caving community worked with other landowners and scientists to comprehensively delineate groundwater flow paths. The success of such studies depends on the interest and cooperation of landowners. If you are drinking water from springs or wells in karst

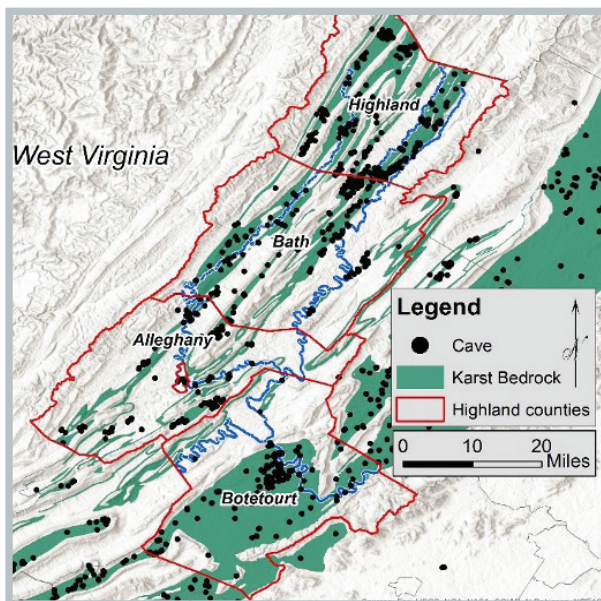
This brochure was developed with support from the Cave Conservancy of the Virginias: [caveconservancyofvirginia.org](http://caveconservancyofvirginia.org).



Sediment spilled into the cave while drilling for a well.



Federally endangered Virginia Big-eared Bats roosting in a Highlands cave.



lands, the water flows through such conduits before reaching your faucet, in many cases across long distances from places you may not suspect. Understanding and defining the watershed for springs and wells in karst is essential to protect water quality.

## Subterranean life in the Highlands

The Highlands underground is home to over 50 cave-dwelling invertebrate species, the Alleghany Woodrat and seven bat species, including the federally endangered Virginia Big-eared Bat and Indiana Bat. The majority of the invertebrate species are only known from a handful of caves in the region and nowhere else on Earth. Although adapted for the challenges of living in caves without light and with limited food, cave species are extremely vulnerable to any changes in their environment, including disturbance to areas that overlie or drain to the caves. Such species can be protected with proper land management. Landowners can help these species by using best management practices when farming, and, in some cases, choose to pursue conservation easements designed to help protect the land into the future.



Cave Beetle. Photo by Matthew L. Niemiller.

## Burnsville Cove and Butler Cave Conservation Society

Burnsville Cove is one of the most significant karst areas in Virginia. That is mainly thanks to the Butler Cave Conservation Society, which works closely with local landowners and has dedicated over 50 years to cave and karst exploration in the area. Society members discovered over 50 miles of cave passages and increased the understanding of karst landscapes and karst vulnerability of the area. Such organizations are invaluable to efforts to protect karst landscapes. Learn more at [www.butlercave.org/content/bccsinfo.html](http://www.butlercave.org/content/bccsinfo.html).

## Protection of karst in Virginia

The Virginia Cave Protection Act helps protect karst resources, which receive a few other protections under state or federal regulations. The identification and protection of sensitive karst areas through appropriate land use planning helps ensure a safe, clean water supply for everyone. These actions also protect rare species and natural communities. Therefore, do something for yourself and others — be aware of the karst that surrounds you, and help protect it.

Learn more at:

<http://www.dcr.virginia.gov/natural-heritage/karsthome>.