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Protecting Imperiled Species in the Southern Appalachians Protects Whole Ecosystems

National Nonprofit Conserves Threatened Turtles and Salamanders in Appalachia, Resulting in Healthier Ecosystems for Region's Biodiversity

SOUTHERN APPALACHIANS, US, February 21, 2024 - Actions are underway to protect two highly threatened species in the Southern Appalachians, which means protecting entire ecosystems in the region. The Amphibian and Reptile Conservancy (ARC), a national nonprofit to conserve imperiled wildlife, has several on-the-ground conservation projects in progress focused on the federally-listed Threatened bog turtle, North America's smallest turtle, and the eastern hellbender, the heaviest salamander on the continent. These two species and the larger groups to which they belong, reptiles and amphibians (herpetofauna), are among the most endangered worldwide.

The Southern Appalachian Mountains—including parts of West Virginia, Virginia, North Carolina, South Carolina, Tennessee, and Georgia—contain some of the world's most important places for amphibian and reptile conservation. This is why ARC established the Southern Appalachian PARCAs, or Priority Amphibian and Reptile Conservation Areas, where the organization works to conserve herpetofauna. "Not only is Appalachia the global salamander biodiversity hotspot, but the region, which happens to be my backyard, hosts a wide range of other amphibian and reptile species that are easily among the most incredible and endangered on Earth," said ARC Executive Director JJ Apodaca.

Among the many challenges, from disease to pollution, threatening these species, habitat destruction and degradation are the most problematic. For example, the bog turtle only exists in the mountain wetlands of the area. However, more than 90% of the shallow wetland habitats they need have disappeared since the 1700s. The draining of these habitats was historically incentivized because wetlands were thought to breed disease, impede travel, and limit agricultural production. In fact, it's estimated that by 1955, the US government had supported more miles of drainage projects than existing miles of highways.

Apodaca explained, "The main problem for bog turtles is that most of their habitats are long gone, and those that remain are isolated from each other." Tiny bog turtles, which hatch out at about the size of a quarter and grow to only four inches, need more habitat than might be expected. Plus, it's crucial that

their populations are connected with suitable wetlands so that genes can flow and they'll be less vulnerable to catastrophes.

To combat these issues, ARC works with other organizations and private landowners to restore the hydrology of the bogs the turtles need by locating and removing drainage tiles and ditches and more. The organization also conducts extensive surveys for bog turtles across the region to determine where populations are located and how to best connect them.

In addition, ARC Biologists carry out direct actions to protect bog turtles when they're most vulnerable and give them their best chance to reach adulthood. In some areas, they surround bog turtle nests with wire cages each fall to exclude nest predators, like raccoons, which have increased with increased human development. In other areas, they conduct headstarting, which involves collecting bog turtle eggs and bringing them into captivity to hatch them and raise the young turtles until they're larger and more likely to survive when released back into the wild.

Also facing habitat loss and degradation, aquatic eastern hellbenders need clear, cold, fast-flowing streams and rivers. Their giant, wrinkly, flattened bodies are well adapted for sliding under rocks and into crevices in these waterways. However, development, cattle grazing, and agriculture have caused siltation in the waters they inhabit. The resulting sediment settles into the spaces between rocks, making them unsuitable for the salamanders and increasing the water's temperature. ARC works on public and private lands in the Southern Appalachian PARCAs to restore the watersheds the salamanders use. These efforts range from fencing cattle out of streambanks to installing large slabs of rock for eastern hellbender breeding and nesting.

“Our first consideration is always how best to restore whole ecosystems because when streams are healthy for fish, they're also healthy for eastern hellbenders, and when wetlands are suitable for birds, they're also suitable for bog turtles,” said Apodaca. ARC's large-scale restoration efforts not only help protect native herpetofauna; they serve to protect entire ecosystems and the biodiversity that depends on them. Plus, as Apodaca stated, “the well being of these species is tied to ours. When the future looks good for reptiles and amphibians, it's good for us too.”

About Amphibian and Reptile Conservancy (ARC)
Amphibian and Reptile Conservancy, or ARC, is a 501(c)(3) nonprofit focused on identifying and conserving the highest priority places for amphibians and reptiles in the United States. We protect endangered amphibians and reptiles through a strategic, scientific, and passionate approach. We believe the conservation of amphibians, reptiles, and the habitats they depend on is vitally important. To learn more, visit ARCProtects.org.

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