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A Salamander's Sanctuary

Severely restricted distribution and competition with rivals threaten the Shenandoah salamander's numbers.

BY JENELL TALLEY

Shenandoah National Park supports more than 2,000 species, estimated to be more than in all of Europe. Seventy-four rare species have been recorded in the park, testament to its rich biodiversity, but the seldom-seen Shenandoah salamander is the site's sole federally listed endangered species.

The small terrestrial creatures, first described in 1967 and federally listed in 1989, are found only in the central district of Shenandoah National Park in Virginia. The salamanders occupy the rocky hillsides of the The Pinnacle, Hawksbill, and Stony Man mountains.

James Atkinson, a fisheries and wildlife biologist at the park, says the salamander has fairly dense populations in the specific areas it inhabits. But he adds, "The species has an extremely restricted geographical range, which is the principal cause for concern."

Even though the species' entire geographic range lies within a national park, its long-term security is not guaranteed. Potential threats include acid deposition, forest defoliation caused by exotic insects, and fire.

The *Plethodon Shenandoah* resembles a lizard on first glance, but its skin is moist and lacks scales. Because salamanders breathe through their skin, the species typically inhabits cool, moist



After eight months of gestation, Shenandoah salamanders find secure, moist areas to give birth.

areas and is most active during periods of darkness and high humidity. The creature's slender body grows to be about two to four inches long. They usually have a narrow mid-dorsal stripe extending from the neck to the tail, and range in color from reddish to brown.

The Shenandoah salamander is often confused with the similar-looking red-backed salamander, one of the Shenandoah species' principal threats. Preliminary research suggests that aggressive encounters between the two species hinder the Shenandoah salamander's potential to expand its range. The two species also compete for food such as spring flies, worms, and other small invertebrates.

Ring-neck snakes, garter snakes, and other native predators are known to prey on the salamanders, but Atkinson says predation does not have a significant

effect on the species' numbers.

Shenandoah, the topic of NPCA's recently released State of the Parks® report, harbors more than 200 resident and transient bird species, 50 mammal species, 30 fish species, and 51 reptile and amphibian species. Shenandoah National Park is the largest fully protected area in the mid-Appalachian region.

Protecting the park's habitat from human intrusion and gaining an increased understanding of the salamanders needs and its interactions with the red-backed salamander could serve to maintain and protect the species' current

populations; however, Atkinson notes that de-listing the Shenandoah salamander is highly unlikely because of the threats associated with the species' geographic isolation.

"It doesn't look like the animal has the potential for range expansion, and there's certainly potential for acidification to ultimately pose a much greater threat," he says, adding that it's difficult for Shenandoah staff to prescribe remedies to increase the species' numbers and range. "They're in such a hostile type of setting—difficult to access and work in—that meaningful monitoring is going to be a difficult proposition."

Even so, Atkinson says, park staff "provide protective measures in terms of planning the timing and scope of proposed maintenance activities within or near known Shenandoah salamander habitat."



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