

Slimy Salamanders

By Frederick Boyce

One of the most pervasive and difficult-to-dispel myths having to do with snakes—and there are many—is that snakes are “slimy.” Many snakes do, in fact, have smooth, highly polished scales that are actually *shiny*, but all snakes, and all other reptiles for that matter, are naturally dry skinned and do not produce slimy skin secretions.

Along with the pivotal innovation of the self-contained shelled egg, which does not have to be laid in water, the dry, impermeable skin of reptiles is a key adaptation that allowed these ancient tetrapods (terrestrial vertebrates) to completely move away from the water and occupy dry-land environments, including even deserts. In so doing, the reptiles left behind an even more ancient group of tetrapods, the amphibians, which remain tied to water in order to reproduce and develop. Amphibian eggs are gelatinous and not protected by an enclosing shell, so if they are not laid in water, or at least in a very moist place, they will dry out and die.

Most, but not all, amphibians must undergo a larval stage—the most familiar examples being tadpoles, which are larval frogs and toads. Most amphibian larvae are entirely aquatic and live as fish do, breathing through gills. A few retain their gills and remain aquatic throughout life, but most undergo *metamorphosis*—literally a change of shape—and eventually emerge onto land, losing their gills and adapting to a more-or-less terrestrial life. The name “amphibian” essentially means “both lives.”

Some amphibians, such as toads, have comparatively dry skins that retain moisture, allowing them to move farther away from water and inhabit drier surroundings, though they must return to water to reproduce. The great majority of amphibians, however, have very smooth, delicate and permeable skin which allows moisture to pass freely back and forth. Such animals can easily dry out and die if they do not keep their skins moist, and they are also very susceptible to contaminants in their environment. For this reason, most amphibians, including frogs and salamanders, are indeed what one might call “slimy,” as they produce a protective skin secretion—slime—that keeps them from desiccating. A few take things even a step further and produce a slime so sticky and distasteful that it can actually be a deterrent to predators.

One group of common North American woodland salamanders has taken this strategy to such an extreme that it has inspired their name: the slimy salamanders. So sticky is the goeey slime they produce that it is actually capable of gluing a would-be predator’s mouth shut, and as any budding young herpetologist who has ever picked one up can attest, it is extremely difficult to get off one’s hands.

Until recently the slimy salamander was considered to be a single species that occupied an extensive range across the eastern half of the United States, but taxonomists using modern laboratory techniques have decided that there are actually 10 separate species, though they are virtually indistinguishable by appearance and can only be reliably identified by location. In the Coastal Plain of North Carolina, we have the Atlantic coast slimy salamander, *Plethodon chlorobryonis*, to my knowledge the only salamander that has ever been found on Bogue Banks, and the one most frequently encountered in the woods of Carteret and neighboring counties.

Slimy salamanders belong to a large and diverse family, the *plethodontid* or lungless salamanders, which are, in fact, the most diverse group of not just salamanders but of all vertebrates in the southeastern United States. All of them lack lungs and breathe instead through their skins or with gills. North Carolina is known around the world for its great diversity and abundance of salamanders, but the majority of them live in the mountains and Piedmont. Fewer salamanders live in the Coastal Plain, in part because of the typically higher temperatures and drier conditions, but also because their permeable skins make them very susceptible to even trace amounts of salt in the air or water. Slimy salamanders seem to be more resistant to our salty environment than other salamanders, perhaps due to their glutinous coating.

They are secretive little animals, a deep bluish-black in color with light, whitish or silver speckles and bulging eyes. Like other *plethodontid* salamanders, slimy salamanders do not undergo metamorphosis, but lay their small round eggs on land in moist places—often under loose bark or in the rotting wood of logs and stumps, both favorite haunts. The mother salamander guards the eggs until they hatch into fully formed miniatures of the adults. Real home-bodies, slimy salamanders live in the same small patch of woods for their entire lives, venturing no more than 30 feet away from where they first hatched.

Source for this article: *Salamanders of the Southeast* by Joe Mitchell and Whit Gibbons

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A slimy salamander in the Croatan Forest—Photo by Fred Boyce



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