

The Outside Story

Hidden Jewel of Northern Grasslands: Smooth Green Snake

By Loren Merrill

Most of our northeastern snakes draw their coloring from the palette of earthly tones, coming in browns, grays, and yellows. Some species have bright patterns that fade as the snake ages, and others have eye-catching yellow, red, or orange scales on the belly that are mostly hidden except when the snake feels threatened. But one species stands out: the smooth green snake (*Opheodrys vernalis*), an emerald reptile that looks like it would be more at home in a tropical rainforest than in our northern biomes.

Despite its seemingly conspicuous coloring, the smooth green snake is perfectly camouflaged for its preferred habitats of grasslands and grassy margins, an association that has led to its other common name: grass snake. When I learned of the snake's existence as a child, I was smitten. But it is so well disguised that I did not find a live smooth green snake until about four years ago, many years removed from my initial childhood snake-crush.



My eureka moment came when I was hiking on an island about 10 miles off the coast of Maine. As I crested a low rise in the trail, I noticed a half-inch-wide, sinuous green ribbon lying halfway across the dirt path. Had the snake been a few inches to the side, it would have been invisible among the short grassy vegetation. I may have let out a little whoop of excitement at my first-ever green snake. After snapping a few documentary (and celebratory) photos, I watched the snake for a few minutes as it slowly surveyed the terrain, occasionally flicking out its bifurcated tongue to taste the air. The small reptile soon slithered off the trail and melted into the vegetation.

The smooth green snake is a small to medium-sized snake with most adults between 14 and 20 inches long. Living in the northeastern and midwestern United States and southern Canada, this non-venomous snake feeds on invertebrates – mostly insects – which it hunts in grassy environs. Smooth green snakes locate potential prey using keen eyesight and by tracking chemical cues picked up by the tongue and deposited into the Jacobson's organ in the roof of the mouth, a specialized auxiliary sense organ that identifies the smells and communicates the information to the brain.

Smooth green snakes rely on insects for more than just a meal, though; in 2023, scientists in Illinois published an account of snakes laying eggs within an active citronella ant nest. This finding was remarkable because it was the first documented case of a North American snake laying eggs in an active ant nest, and the scientists also found 137 smooth green snake eggs within the ant nest, greatly surpassing the previous known record of 85 eggs in a single communal nest. Clutch sizes for smooth green snakes vary from 1 to 13 eggs, which suggests that at least 11 females used that ant nest as their egg deposition site.

Prior to this discovery, smooth green snakes were known to utilize *Formica* mound-building ant nests for refugia and hibernacula and abandoned small animal burrows for nest sites (often creating communal nests), but the use of active ant nests for nest sites had only been documented in snake species in Central and South America and Africa. The researchers are not sure why smooth green snakes nest communally, but the eggs are cohesive (they stick together), which could help with water loss or reducing predation risk. The scientists also speculated that there may be several benefits to depositing eggs into active ant nests. Ants are generally very good at maintaining relatively stable humidity and temperature within their nests, and these are two key elements in the successful development of snake eggs. Ants may also provide protection from microbial attacks and invertebrate egg-predators, thereby creating a climate-controlled, safe nursery for the developing embryos.

The data on smooth green snake populations are sparse, but scientists think that the number of smooth green snakes has declined steeply over the past few decades because of pesticide use (and subsequent decline in insects and the potential for bioaccumulation of the chemicals in the snakes), habitat loss, and egg failure. Protecting the grassy habitats this serpentine jewel depends on – and reducing pesticide use – may help ensure that the smooth green snake remains an elusive but continuing part of our northern landscapes.

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