REPTILES & AMPHIBIANS

A Recent Observation of the Northernmost Documented Population of Pine Woods Littersnakes (*Rhadinaea flavilata*) on the Outer Banks of North Carolina

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The Pine Woods Littersnake (*Rhadinaea flavilata*) is a small, semi-fossorial snake that occurs throughout most of peninsular Florida and in disjunct populations along the coastal plain from Louisiana to North Carolina (Krysko et al. 2019). Nearly all known populations are at elevations less than 55 m asl and within 112 kilometers of the coast (Myers 1974), although a few exceptions exist (Whiteman et al. 1995; McKelvy et al. 2016). Throughout its range, *R. flavilata* is most commonly encountered in pine flatwoods and hammocks but can also inhabit mixed pine-hardwood forests, upland pine forests, sandhills, and a variety of damp, disturbed habitats. In all habitat types, the species relies heavily on litter and coarse woody debris for shelter (Gibbons and Dorcas 2005; Krysko et al. 2019).

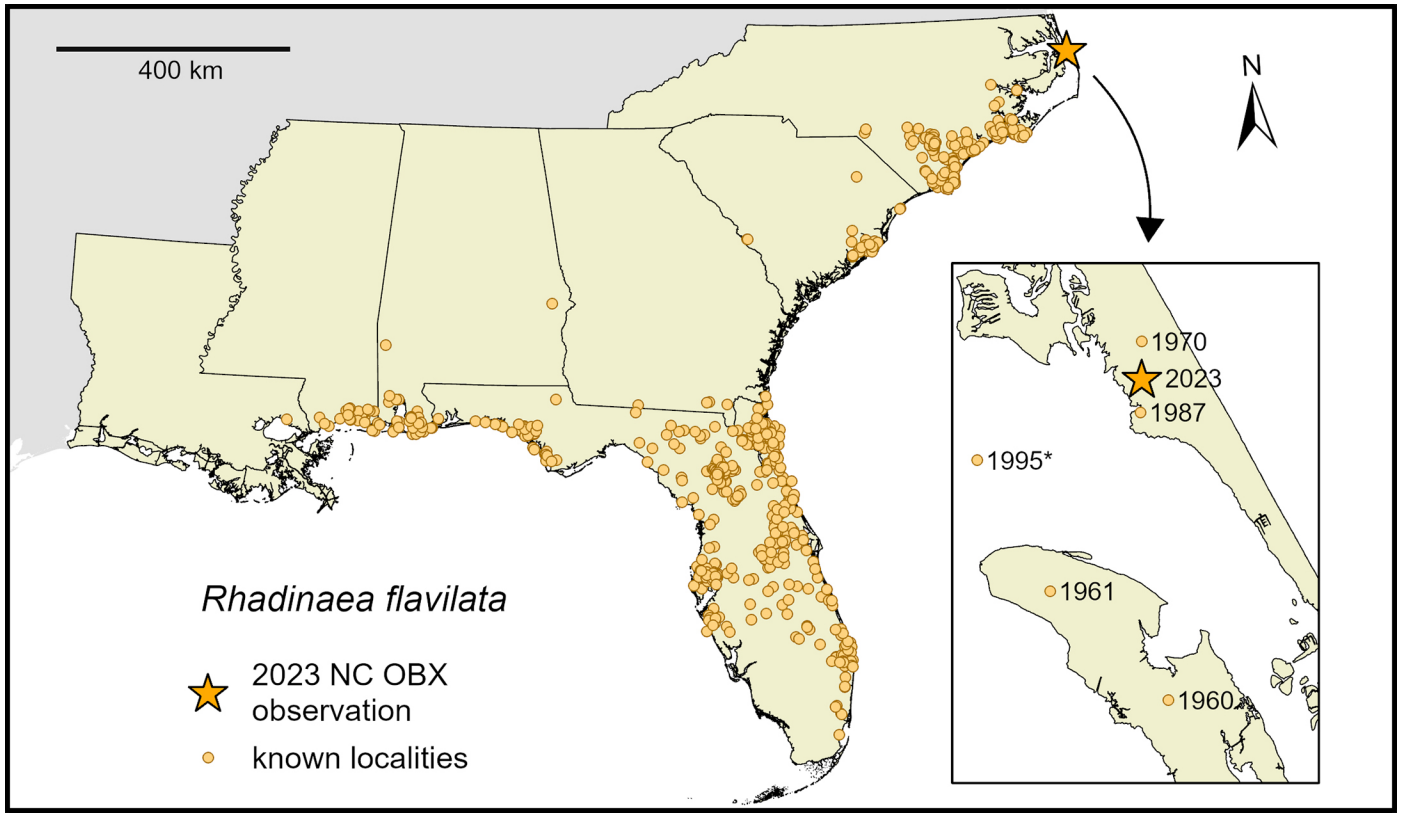

Figure 1. Map showing all known localities of the Pine Woods Littersnake (*Rhadinaea flavilata*) with the inset displaying dated locations of all known observations from the Outer Banks of North Carolina, USA (data sourced from the Global Biodiversity Information Facility; GBIF 2023). The asterisk (*) indicates an observation made in 1995 with high locational uncertainty (whether this observation was made on Bodie Island or Roanoke Island is unknown). The star indicates the location of the observation reported herein.

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The northernmost documented populations of *R. flavilata* occur in Dare County, North Carolina, USA (GBIF 2023; Fig. 1), where the species was first reported from Roanoke Island in 1960 then from Bodie Island in 1970 (Gaul and Mitchell 2007). Only a few additional observations of *R. flavilata* have since been recorded from these localities, with the last known observation in 1995 (iNaturalist observation 15801278; GBIF 2023). Although *R. flavilata* is generally cryptic due to its semi-fossorial nature, the remarkably small number of records collected from these northernmost populations over the span of six decades — along with the fact that, to our knowledge, no additional observations have been made over the past 28 years — suggests that the species is exceedingly rare (and possibly even at risk of extirpation) on the Outer Banks of North Carolina.

At 0912 h on 13 May 2023, we observed an adult female *R. flavilata* (SVL 222 mm, total length 321 mm; Fig. 2) at Nags Head Woods Preserve on Bodie Island, North Carolina, USA (35.98803°N, -75.66288°W; WGS 84). The snake was found beneath a log in a pile of woody debris and leaf litter in maritime deciduous forest habitat (Fig. 3) and, when exposed, attempted to escape by burrowing into the soil. After taking photographs, we released the snake at the site of capture. A brief but thorough survey of all other woody cover in the surrounding area (conducted immediately following our initial discovery) revealed one juvenile Common Wormsnake (*Carphophis amoenus*) but no additional *R. flavilata*.

The observation reported herein is significant because it provides confirmation that, after 28 years without a documented sighting, *R. flavilata* remains extant at its northern range boundary on the Outer Banks of North Carolina. Furthermore, that this isolated population persists on land managed and protected by The Nature Conservancy is encouraging in that existing habitat will likely remain undisturbed for the foreseeable future. No additional *R. flavilata* were observed at Nags Head Woods Preserve on 13 May 2023 or during an opportunistic follow-up survey (~16 person-hours of search effort) conducted the next day. Myers (1974) noted that *R. flavilata* is most often encountered in pine logs and stumps during March and April, so future surveys should target these favored cover sources during the spring months and should follow strict, pre-established methodological guidelines designed to avoid destruction or degradation of natural cover objects and associated habitat.

Figure 2. An adult female Pine Woods Littersnake (*Rhadinaea flavilata*) encountered on 13 May 2023 on the Outer Banks of North Carolina, USA. Photographs by Sam Bluestein.

Figure 3. Woody debris and surrounding maritime deciduous forest habitat in which a Pine Woods Littersnake (*Rhadinaea flavilata*) was observed on 13 May 2023 on the Outer Banks of North Carolina, USA. Photograph by Tyler DeVos.

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