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SHORTER CONTRIBUTIONS

DOCUMENTED INTERACTION BETWEEN A SOUTHERN FLYING SQUIRREL (*GLAUCOMYS VOLANS* [L., 1758]) AND AN ALLEGHENY WOODRAT (*NEOTOMA* *MAGISTER BAIRD*, 1857)

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ABSTRACT

While conducting game camera surveys for Allegheny woodrats (*Neotoma magister*) in a boulderfield along the Blue Ridge Parkway in Patrick Co., Virginia, we documented an unusual interaction between an Allegheny woodrat and a southern flying squirrel (*Glaucomys volans*). In a series of camera images, the flying squirrel appears to take flight upon the arrival of the woodrat. The woodrat, in turn, holds up a front paw as the squirrel flies towards the camera. Once the flying squirrel has departed, the woodrat continues on its pathway across the extent of the camera view. While we can only speculate as to the nature of the relationship between the two species, a literature review suggests that direct competition or aggression is unlikely. Further, direct interactions are likely scarce, due to the minimal overlap in habitat specialization and in general nesting and food habits.

Keywords: Animal behavior, Blue Ridge Parkway, camera trapping, game camera.

As part of an effort to detect Allegheny woodrats (*Neotoma magister* Baird, 1857) in Patrick Co., Virginia, we surveyed suitable habitats along the Blue Ridge Parkway (exact location withheld for sensitive species protection). We deployed nine game cameras at a steeply sloped boulderfield along a hiking trail from 13–18 May 2026. The boulderfield contains dense stinging nettle (*Urtica dioica* L.) wherever soil or deep leaf litter exists. The surrounding forest includes moderate understory vegetation dominated by great laurel (*Rhododendron maximum* L.) and a mixed deciduous overstory (e.g., oaks [*Quercus* spp.], American basswood [*Tilia americana* L.]). A first-order stream is ca. 200 m south (downhill) of the boulderfield.

At 02:44h on 17 May 2026 (16.1 °C, winds from NE at 3km/h; Weather Underground, 2026), a game camera (Bushnell Core DS-4K No-Glow Trail Camera, Bozeman, MT, USA) took a series of three images at ca. 1-s intervals (Fig. 1) of an adult southern flying squirrel (*Glaucomys*

volans [L., 1758]) in frame with an adult Allegheny woodrat. In the image just prior to the 3-image interaction (Fig. 1A), the southern flying squirrel looks to be descending a tree. Thirty-two seconds later (Fig. 1B), an adult woodrat is at the base of the same tree and the flying squirrel is leaping away from the tree and towards the game camera. The woodrat reacts with its right front paw reaching out as the flying squirrel departs the tree in a balled-up posture. Immediately thereafter (Fig. 1C), the southern flying squirrel assumed a gliding posture with limbs outstretched in an apparent attempt to control its exfiltration. The woodrat is directly behind the squirrel in this photo. Finally, the Allegheny woodrat is alone (Fig. 1D) and leaves the view of the camera after the interaction.



Figure 1. Series of game camera images, depicting an adult southern flying squirrel (*Glaucomys volans*) before (A), and during (B, C) an interaction with an adult Allegheny woodrat (*Neotoma magister*) in Patrick Co., Virginia, on 17 May 2026. In (D), the woodrat continues its pathway, out of camera view.

Interactions between these species appear to be anecdotal, with no obvious direct competition for nesting space (tree cavities for flying squirrels [Dolan & Carter, 1977] vs. middens in rock crevices and on cave ledges [Castleberry et al., 2006]). While both are nocturnal granivores, woodrat and flying squirrel diets are quite generalized and appear opportunistic (Thomas & Weigl, 1998; Castleberry et al., 2002). Resource competition is either undescribed or unexplored for these two species. Neither *Mammalian Species* account mentions direct interactions, co-existence, or competition between the southern flying squirrels and Allegheny woodrats (Dolan & Carter, 1977; Castleberry et al., 2006). Only congeneric associations are reported for western species, e.g.,

dusky-footed woodrats (*Neotoma fuscipes* Baird, 1857) and northern flying squirrels (*Glaucomys sabrinus* Shaw, 1801) are habitat associates (Carraway & Verts, 1991). Further, in 6 y of camera surveys of Allegheny woodrats in Virginia (2017-2022, ca. 13,000 image events with mammals detected), flying squirrels only appeared in 7 image events, and never with Allegheny woodrats (n=3,778 images; Powers et al., 2023). Until this event, continued contemporary camera surveys from 2023-2026 had not detected further interactions between the two species in woodrat habitats (Powers, unpublished data). We suggest that southern flying squirrel presence in the specialized boulderfield habitats of Allegheny woodrats is uncommon, and therefore, so are direct interactions.

Indirect relationships between southern flying squirrels and Allegheny woodrats have been suggested for other ecological contexts, such as real and perceived threats. Both species are natural hosts to raccoon roundworm (*Baylisascaris procyonis* Stefanski and Żarnowski, 1951; LoGiudice, 2003; Mahan & Steele, 2022). In both genera, this parasite is transmitted via the fecal-oral route and is typically fatal due to parasitic invasion of the brain. Further, both species share similar predation risks, like barred owls (*Strix varia* Barton, 1799), great horned owls (*Bubo virginianus* [J.F. Gmelin, 1788]), hawks, snakes, and weasels (Dolan & Carter, 1977; Powers et al., 2020; Beckner et al., 2023).

Subsequent live-trapping of this site 15-18 June 2026 captured a 357-g adult female woodrat, who is presumably the individual woodrat in the interaction. No other adult rats were captured on camera or in traps in May and June surveys. This adult woodrat is more than four times the typical weight range of southern flying squirrels (46.5-85 g; Dolan & Carter, 1977). Comparatively, on this same camera, we also observed a southern flying squirrel in the same frame as a mouse (*Peromyscus* sp.; typical weight of *P. leucopus* [Rafinesque, 1818] is 16-30g; Kurta, 1985), but they did not interact.

We acknowledge limitations in our analysis; our standard protocol for Allegheny woodrat surveys may not further elucidate this relationship. While we utilize a series of three still images (at ca. 1-s intervals) in our long-term surveying effort, the use of video files in the future may better explain these brief and unexpected interactions. However, we report this unusual interaction to encourage further exploration of species relationships.

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