



## ***Securicauda hermani* and *Carinacauda stormi*, two new genera and species of slug from the Pacific Northwest of the United States (Gastropoda: Stylommatophora: Arionidae), with notes on *Gliabates oregonius* Webb 1959**

WILLIAM P. LEONARD<sup>1</sup>, LYLE CHICHESTER<sup>2</sup>, CASEY H. RICHART<sup>3</sup> & TIFFANY A. YOUNG<sup>4</sup>

<sup>1</sup>223 Foote Street NW, Olympia, WA 98502, USA. E-mail: mollusca1@comcast.net

<sup>2</sup>209 Chestnut Springs Way, Williamston, SC 29697. E-mail: lfchichester@charter.net

<sup>3</sup>Biology Department, San Diego State University, San Diego, CA, 92182-4614. E-mail: pileated@gmail.com

<sup>4</sup>Willamette National Forest, Sweet Home Ranger District, Sweet Home, OR 97386. E-mail: tayoung@fs.fed.us

### **Abstract**

Two new genera and species of arionid slug, *Securicauda hermani* **n. gen. et n. sp.** and *Carinacauda stormi* **n. gen. et n. sp.**, are described from the United States in northern Idaho and western Oregon, respectively. This taxonomic decision is based on anatomical comparisons to the ten genera of Arionidae native to northwestern North America. *Securicauda* lacks an atrium and atrial accessory structures and the epiphallus is almost entirely buried in the penis; *Carinacauda* has an atrium, a pair of atrial accessory structures, and a long epiphallus that is not embedded in the penis.

**Key words:** axetails, anatomy, Idaho, Oregon, Cascade Mountains, Northern Rocky Mountains, Western Hemlock Zone

### **Introduction**

The Western Hemlock Zone (Daubenmire 1978; Franklin & Dyrness 1988) of the Pacific Northwest, with its nearly perpetual moisture, is home to a rich biodiversity of litter-dwellers including terrestrial gastropods. A characteristic of this habitat, which is interesting to many naturalists, is a disjunct “island” in the northern Rocky Mountains of northern Idaho, western Montana and southeastern British Columbia (e.g., Wilke & Duncan 2004). Around 200 groups are known to have this disjunct distribution—be it an intraspecific disjunction or one recognized by taxonomists to represent sister species (Brunsfeld *et al.* 2001). The mesic forests of northern Idaho have been known to house a diverse assemblage of terrestrial gastropods, including many endemics, since the work of Horace B. Baker in the 1930s (e.g. Baker 1932), and Allyn G. Smith in the 1940s (e.g. Smith 1943). Some 60 years later, terrestrial invertebrate collecting trips to northern Idaho frequently reveal novel species or large range extensions of terrestrial gastropods (e.g. Frest & Johannes 2000, Leonard *et al.* 2003, Ovaska *et al.* 2004). The year 2000 was no exception. We encountered a small arionid slug that we were unable to identify based on external appearance. Subsequently, we learned of a slug with a similar external appearance in the Cascade Mountains of western Oregon that some naturalists believed to be *Gliabates oregonius* Webb 1959. Due to an incomplete and brief description of *G. oregonius* (Webb 1959, 1977) there has been controversy concerning the taxonomy of this Oregon slug (Roth 2004). Recently, a slide mount of the genitalia of Webb’s holotype was uncovered at the Field Museum in Chicago; an image of this mount is presented here. Dissection and examination of a series of slugs from both Idaho and Oregon reveal that both of our new taxa are distinct from *G. oregonius*. A morphological comparison with other arionid slugs native to the western United States leads us to the conclusion that they represent two new genera and species.