



Cave millipeds of the United States. X. New species and records of the genus *Pseudotremia* Cope. 2. Species from Virginia, USA (Diplopoda, Chordeumatida, Cleidogonidae)

WILLIAM A. SHEAR

Department of Biology, Hampden-Sydney College, Hampden-Sydney, Virginia 23949 USA. E-mail: wshear@hsc.edu.

Abstract

The milliped genus *Pseudotremia* Cope 1869 as it occurs in Virginia, USA, is reviewed, with new records and species, mostly from caves. Seventeen new species, *Pseudotremia loomisi*, *P. contorta*, *P. cerberus*, *P. pomarium*, *P. orndorffi*, *P. peponocranium*, *P. glaber*, *P. fergusonii*, *P. jaculohamatum*, *P. fremens*, *P. hubbardi*, *P. ryensis*, *P. piscator*, *P. culveri*, *P. salfodina*, *P. johnholsingeri* and *P. inexpectata* are described, for a total Virginia fauna of 25 species. Additional species are predicted to occur. New locality records are given for seven previously described species, *Pseudotremia alecto* Shear 1972, *P. hobbsi* Hoffman 1950, *P. sublevis* Loomis 1944, *P. tuberculata* Loomis 1939, *P. momus* Shear 1972, *P. nodosa* Loomis 1939, and *P. valga* Loomis 1943. Taxonomic characters useful in delimiting species of *Pseudotremia* are discussed.

Key words: Troglobionts, speleobiology, caves, Virginia, *Pseudotremia*, Cleidogonidae

Introduction

Subsequent to my 1972 revision of the genus *Pseudotremia* Cope 1869, and additional taxonomic work by Hoffman (1981), Hoffman and Lewis (1997), Lewis (2000, 2003, 2005, 2009), and Shear (2008), collections from several speleobiologists and a review of an extensive museum collection (Virginia Museum of Natural History) have revealed yet more new species of this remarkably diverse genus of North American millipeds.

In my 2008 update on the genus as it occurs in the state of West Virginia, I also reviewed the general distribution of the genus and what little is known of its ecology. In this paper I will discuss and illustrate taxonomic characters that are proving useful in delimiting species, describe 17 new species from Virginia, and provide new records for seven previously known species.

The distribution of *Pseudotremia* species in Virginia ranges from Bath County in the north, southwesterly to Lee and Russell Counties along the Tennessee border. The species are found, in the majority of cases, west of the Blue Ridge, in the Shenandoah Valley and in the Ridge and Valley Province. However, species from Patrick Co. occur along or on the western declivity of the Blue Ridge itself, which broadens there to a high plateau. Within this region there are probably very few caves that do not host *Pseudotremia* populations. In my experience, these millipeds are the most common arthropods inhabiting caves of the southern Appalachians. In contrast, outside of caves species of *Pseudotremia* seem to be rare, found only as occasional individuals, and limited to cool, moist habitats at higher elevations or in predominantly coniferous forests. This may be collecting bias. Caves in Virginia have been deliberately and intensively surveyed, while surface collections have been picked up on a hit-or-miss basis.

While the Blue Ridge consists of metamorphic rocks of Precambrian origin, now exposed by erosion, the Ridge and Valley Province consists of folded and deeply eroded strata, with the ridges held up by resistant sandstones and conglomerates, while the intervening valleys are cut into soft Paleozoic limestones. It is in these karstic limestones, rich in caverns, that the numerous troglotibiotic and troglophilic species of *Pseudotremia* abound. Similarly, the broad Shenandoah Valley is floored with limestone and is highly karstic. The largest number of troglomorphic species is to be found in the far southwestern counties where narrow karst areas are separated from adjacent ones by impermeable silicoclastic ridges, setting a stage for the isolation of cave populations.