



***Nearctomeris*, a new genus of Pill Millipedes from North America, with a comparison of genetic distances of American Pill Millipede Genera (Glomerida, Glomeridae)**

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Abstract

A new genus and species of the pill millipede order Glomerida, *Nearctomeris inexpectata* n. sp., n. gen., is described from the Eastern United States. The description of *Nearctomeris* brings the total number of American Glomerida genera to three. In two of three known localities, *Nearctomeris* co-occurs with species of the genus *Oneris* Cook, 1896. *Oneris* and *Nearctomeris* have almost an identical size (4–5.5 mm) and dark colour, but can be readily distinguished by numerous non-sexual and sexual characters. Sexual characters of the male telopod also place *Nearctomeris* into the family Glomeridae, while the third American pill millipede genus *Glomeroides* Chamberlin, 1922 belongs to the Protoglomeridae. A key to all American genera of Glomerida is presented. For the first time in the order Glomerida, the partial cytochrome *c* oxidase I mitochondrial gene was analyzed for the three American genera of the Glomerida, *Glomeroides*, *Oneris*, and *Nearctomeris* together with European genera currently placed in different families, *Glomeridella* and *Trachysphaera*, as outgroups. Distance, maximum parsimony and maximum likelihood methods were employed. Maximum parsimony and likelihood analyses did not lead to a well-resolved phylogeny, but found a weakly supported sister-group relationship between *Nearctomeris* and *Oneris*. All five analyzed pill millipede genera differ greatly in their uncorrected basepairs (15–22%), and moderately in their amino acids (5–10%). As in *Oneris*, the closest relative of *Nearctomeris* can probably be found among the Asian genera *Hyleoglomeris* Verhoeff, 1910 or *Hyperglomeris* Silvestri, 1917. In America, more attention should be given to the search for other small-bodied, cryptic, rare Glomerida.

Key words: soil arthropod, Glomerida, U.S.A., systematics, barcoding, cytochrome *c* oxidase I gene

Introduction

The pill millipedes of the order Glomerida are a basal order of the Diplopoda (Sierwald & Bond 2007). Glomerida currently includes 33 genera and approximately 280 species (Wesener 2010), which show a holarctic distribution, being present in southern North America, Europe and North Africa, and Asia, with the unusual exception of India (Shelley & Golovatch 2011). The higher classification of Glomerida is still contested. The system preferred by Hoffman (1980) divides the order into the Glomeridellidae, Glomeridae and Trachysphaeridae, while the more elaborate system dividing the families into subfamilies and tribes developed by Mauriès (1971, 2005) divides the order into the families Glomeridellidae, Protoglomeridae and Glomeridae. Both systems are chiefly based on the shape of the male telopods, which could be a problematic character due to parallelisms and secondary reductions, as already discussed by Hoffman (1980: 64–66).

The 33 genera of pill millipedes are unevenly distributed, with a maximum of 22 occurring in Europe, a second maximum of nine genera present in SE Asia, but only two genera, *Glomeroides* Chamberlin, 1922 and *Oneris* Cook, 1896, recorded from America. In the classification system by Mauriès, *Glomeroides* is placed in the family Protoglomeridae, and *Oneris* in the Glomeridae, while both are listed under the Glomeridae in Hoffman's system. *Glomeroides* is the most diverse American pill millipede genus, widely distributed with 16 species (Hoffman 1999) described from northern Guatemala through Mexico. A single species (*G. primus* Silvestri, 1929) has been recorded from northern California, and one additional, still undescribed, species is present in the Big Bend National Park in Texas (Wesener 2010). *Oneris* includes three species and was recently redescribed (Wesener 2010); its species are restricted to an area in the SE United States (see Fig. 1).