



## New southeastern Nearctic *Rhynchelmis* (*Rhynchelmoides*) species and the description of *Pararhynchelmis* n. gen. (Annelida: Clitellata: Lumbriculidae)

STEVEN V. FEND<sup>1</sup> & DAVID R. LENAT<sup>2</sup>

<sup>1</sup>U.S. Geological Survey, 345 Middlefield Rd., Mailstop 496, Menlo Park, California, 94025 USA. E-mail: svfend@usgs.gov

<sup>2</sup>Lenat Consulting Services, 3607 Corbin St, Raleigh, North Carolina, 27612 USA

### Abstract

The first verified records of *Rhynchelmis* from the southeastern Nearctic represent two new species. Both belong to *R. (Rhynchelmoides)* (Hrabě) n. comb., which is defined here. *Rhynchelmis bolinensis* n. sp. resembles other *R. (Rhynchelmoides)* species with elongate spermathecae, but differs in details of the reproductive structures. *Rhynchelmis croatanensis* n. sp. is similar in many respects, but the gonads and male and female pores are shifted anteriorly by one segment, a character previously unknown within the genus. *Pararhynchelmis murdocki* n. gen., n. sp. has the spermathecal pores in VIII and IX and male pores in X, and the spermathecae connect to the gut. These characters associate the new species with *Rhynchelmis*, but the combination of differences in morphology or arrangement of atria, spermathecae, blood vessels and nephridia, and the absence of a proboscis, suggest that it be placed in a related genus. *Rhynchelmis bolinensis* was collected at several sites in North Carolina, but the other two species are known only from single localities.

**Key words:** Clitellata, Oligochaeta, Lumbriculidae, taxonomy, *Rhynchelmis*, *Pararhynchelmis*, *Rhynchelmoides*, new species, new genus

### Introduction

The genus *Rhynchelmis* Hoffmeister has a Holarctic distribution, with about 21 species plus a few subspecies and variants described from Europe, northern Asia, and the western Nearctic. The genus can be defined by several probable apomorphies: a filiform proboscis, spermathecae two segments anterior to the atria, spermathecae joining the gut, anterior male funnels and vasa deferentia reduced or absent, posterior vasa deferentia without a loop into the post-atrial segment, very elongate-tubular atria, and branched lateral blood vessels. Although some of these characters are absent in one or more species, their probable loss/reversal can in most cases be inferred to be autapomorphies by association of individual species with otherwise similar congeners. Of these characters, only the junction of spermathecae with the gut is unique within the family, but it is more problematic when used to define the genus. Several clearly-related species lack this character, and instead have elongate-sacciform spermathecal ampullae.

Fend & Brinkhurst (2000) suggested that *Rhynchelmis* was absent from the eastern Nearctic, as all verifiable Nearctic records were from the western part of the continent. This has subsequently been contradicted by collections from montane springs and mid-winter collections from lowland sites in southeastern USA, which have included a number of mature *Rhynchelmis*-like specimens. Two of the new species described herein lack a spermatheca-gut connection, but can be assigned to a group of species that are sometimes attributed to *Rhynchelmoides* Hrabě, 1936. The third new species has some *Rhynchelmis*-like characters, including positions of the genital pores and junction of spermathecae with the gut, but otherwise differs from known *Rhynchelmis* in most respects.