



***Pseudorientalia karahanensis* sp. n., a New Species of the Genus *Pseudorientalia* Radoman, 1983 from Türkiye (Caenogastropoda: Truncatelloidea: Hydrobiidae)**

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Academic Editor: Vesela Evtimova

Abstract: The genus *Pseudorientalia* Radoman, 1983 is a little-known taxon of the family Hydrobiidae and until now has been represented worldwide by four species, all reported from Türkiye. In this study, we describe *Pseudorientalia karahanensis* sp. n. from Aksaray Province in Central Anatolia. Specimens were collected from submerged stones in a spring and preserved in ethanol. Comparative analyses were conducted with the topotypes of *P. natolica* Küster, 1853 the type material of *P. ceriti* Gürlek, 2017 and the original descriptions of *P. intranodosa* Schütt & Şeşen, 1993 and *P. kanari* D. A. Odabaşı, 2024. The new species is characterized by its ovate-conic shell with deep sutures and a cylindrical penis that differs from congeners in both shape and pigmentation. With this addition, the number of *Pseudorientalia* species known from Türkiye increases to five. This finding reveals the diversity of the genus in Central Anatolia and provides important information on its taxonomy, morphology and distribution.

Key words: New species, Central Anatolia, *Pseudorientalia karahanensis* sp. n.

Introduction

The genus *Pseudorientalia* was described by Radoman (1983), and the species previously known as *Paludina natolica* and *Pseudamnicola natolica* were included in this genus. Radoman first mentioned this genus in 1973, but he provided its diagnosis and description in 1983. (Küster 1853, Schütt 1965, Radoman 1973, 1983, Glöer 2022). The type locality of the type species is the village of Gedelek in Bursa; however, Schütt (1965) also reported its occurrence in Kahramanmaraş along with several

other localities. In subsequent studies conducted in the Kahramanmaraş region, three new species of *Pseudamnicola* were described, particularly in and around the Aksu River as noted by Schütt (1965); however, *Pseudorientalia natolica* was not recorded (Glöer et al. 2014, Gürlek 2019). Gürlek (2018) redescribed *P. natolica* based on topotypes and, for the first time, provided detailed morphological and anatomical data on the species. Another species of this genus, *P. ceriti*, was described by Gürlek (2017) (with its type locality reported as Kahramanmaraş, Çağlayancerit), while *Pseudorientalia kanari* was

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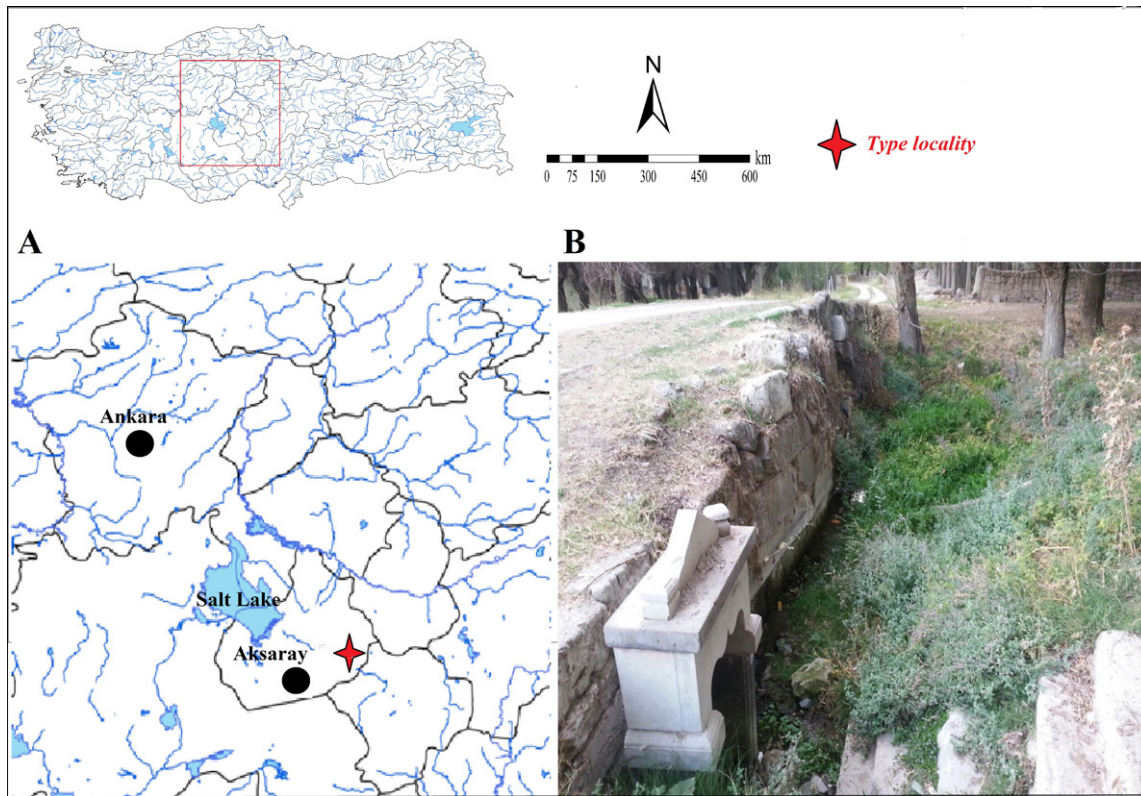


Fig. 1. A. Map of the study area. B. Type locality of *Pseudorientalia karahanensis* sp. n.

described from North-Western Türkiye (Odabaşı et al. 2024). The species previously described as *Pseudamnicola intranodosa* by Schütt & Şeşen (1993) was reclassified as *Pseudorientalia intranodosa* due to differences in penis morphology from other species of *Pseudamnicola* (Glöer 2022). Therefore, with the addition of the newly described species, the number of species of this genus known to occur in Türkiye has increased to five.

Apart from these, this genus has been represented by a single species outside Türkiye. *Pseudorientalia tzekovi* was described by Glöer & Georgiev (2012) and the type locality was given as the village of Kefalari in Northern Greece but now this species is placed in the genus *Turcorientalia* Radoman, 1973 (Glöer 2022). The present study aimed to describe the new species *Pseudorientalia karahanensis* sp. n. from central Anatolia, Türkiye.

Materials and Methods

Field studies were done in Aksaray-Ağzıkarahan Village in Central Anatolia (38°26'42.18"N, 34°08'20.83"E) (Figs. 1A, B). Specimens were collected from submerged stones by hand then they were preserved in plastic tubes in 80% ethanol. Dissections and measurements of the shells and male organ were carried out using a stereo microscope

(Olympus SZX7), while photographs were taken with a digital camera system (Olympus DP26).

The new species was compared with the topotypes of *P. natolica*, the type specimens of *P. ceriti*, and original description of *P. intranodosa* and *P. kanari*. The holotype and some paratypes are housed in the Istanbul University, Science Faculty, Hydrobiology Museum, Istanbul (IUSHM) while the remaining materials are stored in the collection of the author (coll. Gürlek, Mehmet Akif Ersoy University, Türkiye).

Results

Family: Hydrobiidae Stimpson, 1865

Genus: *Pseudorientalia* Radoman, 1983

Pseudorientalia karahanensis Gürlek, sp. n. (Figs 2, A, B, C)

Holotype: Shell height 2.24 mm, width 1.47 mm, Aksaray Ağzıkarahan Village, on the road of Aksaray-Nevşehir, Türkiye, [38°26'42.18"N, 34°08'20.83"E], 1281 m a.s.l., 7.vi.2016, M.E. Gürlek leg., IUSHM 20250922-01. Paratypes (all same data as holotype): 5 specimens, IUSHM 20250922-02, 26 specimens in coll. Gürlek (Burdur Mehmet Akif Ersoy University, Türkiye).

Description: Thick, ovate-conic, yellowish-horn shell, with 3.5-4 rounded whorls separated

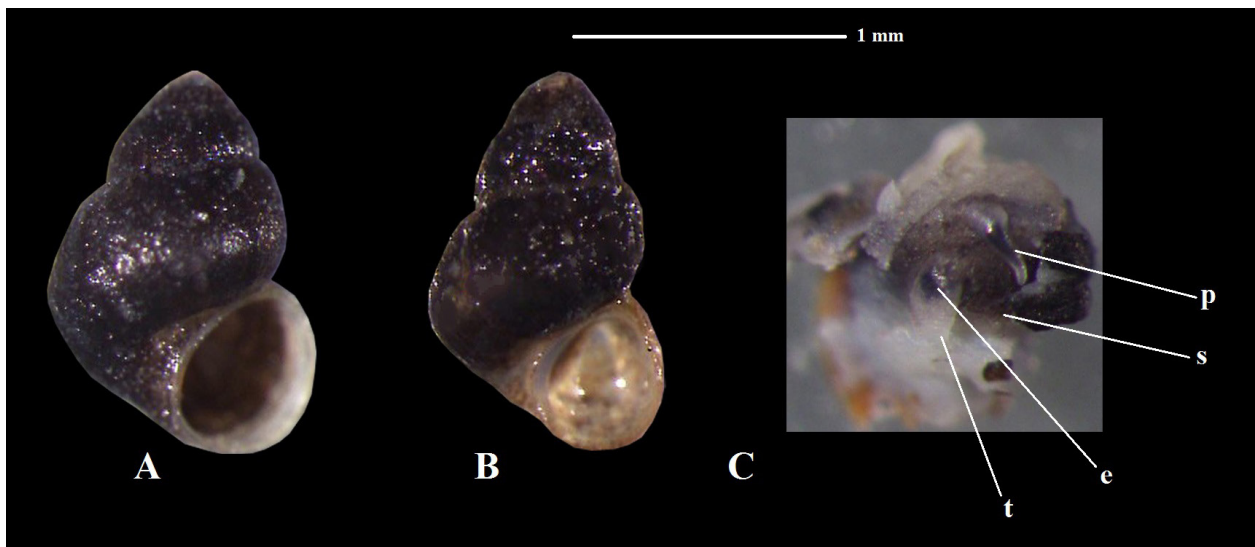


Fig. 2. A—B The shell of *Pseudorientalia karahanensis* sp. n. C. Penis in situ. Abbreviations: e = eye spot, p = penis, s = snout, t = tentacle.

Table 1. Morphological characteristics of Turkish species of *Pseudorientalia*.

Species	Shell (min-max)	Aperture	Penis	Locality	Literature
<i>Pseudorientalia natolica</i>	Thick, ovoid 1.85-2.85 mm	Ovoid	Long, dark colored, awl-like	Bursa-Gedelek Village, Pınarbaşı spring, Türkiye	Radoman 1973, 1983 Gürlek 2018
<i>Pseudorientalia intranodosa</i>	Elongated-conical 1.9 mm	Oval	short and curved to the right	Şanlıurfa- Diphisar Village, Türkiye	Schütt & Şeşen 1993
<i>Pseudorientalia ceriti</i>	Thin, ovoid 1.36-1.83 mm	High and angular at the top	Long, pointed at the tip	Kahramanmaraş-Çağlayancerit, Türkiye	Gürlek 2017
<i>Pseudorientalia kanari</i>	Conical 1.72 -2.49 mm	Ovoid, angled at the top	Simple, awl-like	Göktepe village, Sivrihisar district, southeast of Eskişehir province, Türkiye.	Odabaşı et al. 2024
<i>Pseudorientalia karahanensis</i> sp. n.	Thick, elongated 1.73-2.58 mm	Oval, slightly angled at the top	Long, proximal part is broad	Aksaray Ağzıkarahan Village, on the road of Aksaray-Nevşehir, Türkiye	-

by deep suture. Umbilicus slit-like, aperture oval, slightly angled at top and with broad periostome. Mantle and snout dark-colored, penis gradually tapering, simple and darkly pigmented on its middle section, proximal part is broad. (Fig. 2C). Tentacles short and cylindrical. Eyes clearly visible.

Differentiating features: *Pseudorientalia karahanensis* sp. n. can easily be distinguished by the penis being more cylindrical than in *P. natolica* and *P. ceriti*. *Pseudorientalia natolica* and *P. ceriti*'s penes are warped to the distal end and *P. kanari* has longer and awl-like penis. *P. karahanensis* sp. n., *P. natolica* and *P. ceriti* species have black pigmentation on the middle part of the penis. Umbilicus of *P.*

karahanensis sp. n., *P. kanari* and *P. ceriti* semi-open, while that of *P. natolica*'s slit-like. A comparison with *P. intranodosa* can only be made based on the illustrations in Schütt & Şeşen (1993). In that paper, cylindrical pigmented penis is mentioned. Although *P. intranodosa* is similar to *P. karahanensis* sp. n. with its elongated oval shell and cylindrical pigmented penis, *P. karahanensis* sp. n. with strongly deep sutures and longer penis (Table 1).

Habitat: Natural spring and its small outflow. The species was collected from submerged stones.

Etymology: Named after the shortened name of the village (Ağzıkarahan) where the new species was collected.

Discussion

Since Radoman's first description (Radoman 1973) and later his detailed description (Radoman 1983), this genus has been thought to be similar to genus *Pseudamnicola*, and as a result of this, it was named *Pseudamnicola natolica* by some authors (Yıldırım 1999). Genus *Pseudorientalia* has a restricted distribution, with all known species so far recorded only from freshwater habitats in Türkiye. Its range is confined to Anatolia, where the species inhabit isolated springs and streams (Schütt 1965, Radoman 1983, Gürlek 2017, Gürlek 2018, Odabaşı et al. 2024). In contrast, the closely related genus *Pseudamnicola* Paulucci, 1878 has a much wider distribution, extending across the Mediterranean Basin, including the Aegean and Ionian Islands, mainland Greece, the Balkans, North Africa, and the Iberian Peninsula (Glöer et al. 2014, Glöer et al. 2015, Gürlek 2017, Odabaşı et al. 2024). This broad geographical range indicates a higher ecological tolerance and dispersal potential compared to *Pseudorientalia*.

Although the genus *Pseudorientalia* is similar to *Pseudamnicola* in terms of its shell morphology, it differs by its weakly developed, slim, long, narrow and spindle-shaped penis structure (Gürlek 2017). The penis of *Pseudamnicola* is more triangular (Glöer et al. 2014). Morphological characters have been consistently used to describe both these species and other species within the same genus. The descriptions were based on these morphological traits. Szarowska et al. (2014) reported that the specimen they found in their study on the island of Samos belonged to the genus *Pseudorientalia* based on morphological characteristics. However, the island specimens may represent a distinct new species, since molecular comparisons with specimens from the type locality could not be conducted.

Future molecular studies are expected to provide a clearer understanding of the genus and further clarify its taxonomic status in relation to the described species. When considered together, *Pseudorientalia* can be interpreted as a lineage endemic to Anatolia and more regionally restricted, whereas *Pseudamnicola* represents a taxon that has spread across the Mediterranean. The localized distribution of *Pseudorientalia* genus reflects the pattern of endemism observed in many stygobiotic and spring water species of the Hydrobiidae family. Furthermore, this comparison highlights Anatolia as both a center of endemism and a potential refugium for the diversity of the family Hydrobiidae, while also providing insights into the historical biogeographic processes between the two genera.

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Received: 07.03.2025

Accepted: 07.10.2025