A new *Pseudamnicola* (Gastropoda: Hydrobiidae) from the Island of Limnos (Greece)

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Abstract
Many *Pseudamnicola* species have been found in the Aegean Islands reported by Szarowska *et al.* (2015) and Radea *et al.* (2015), all regional endemic. We found an additional *Pseudamnicola* from the island of Limnos and described this species here as new for science. The holotype and two paratypes are depicted in addition to the penis, which is characteristic for the genus *Pseudamnicola*. A map of all hitherto mentioned *Pseudamnicola* taxa is given.

**Key words:** *Pseudamnicola*, new species, Aegean Islands, Greece.

Introduction
Representatives of the genus *Pseudamnicola* are distributed in the entire Mediterranean and the Middle East as far as Iran. They occur especially in mountainous regions and on Mediterranean islands. Altogether, about 70 species are known from the Mediterranean region, summarized in Glöer *et al.* (2015). However, there are two large gaps in distribution along the Adriatic coast between Croatia and the Peloponnese as well as along the southern Mediterranean coast from Libya to Israel (Glöer *et al.* 2015).

Regarding Schütt (1980) and Bank (2004) six *Pseudamnicola* spp. have been described from Greece mainland and islands: *P. negropontina* (Clessin, 1878), *P. chia* (Martens, 1889), *P. exilis* (Frauenfeld, 1863), *P. macrostoma* (Küster, 1853), *P. brachia* (Westerlund, 1886) and *P. pieperi* (Schütt, 1980). Four of these species inhabit the insular region (*P. brachia, P. chia, P. negropontina, and P. pieperi*) while the other two species are known from continental Greece. In 2015 Radea *et al.* added two more *Pseudamnicola* species, from Rhodos: *P. ianthe* Radea & Parmakelis, 2015 and *P. ilione* Radea & Parmakelis, 2015.

Szarowska *et al.* (2015) found by COI sequencing eight additional clades, possibly on species level, but unfortunately they did not describe these species as new. Their morphological studies of all these species from Greece revealed that the penis is not suitable to distinguish between *Pseudamnicola* spp., but the penis morphology is genus-characteristic in the Rissooidea (Szarowska *et al.* 2006). All the *Pseudamnicola* spp. have a globular shell with a prominent body whorl which differ in spire height and shell height and the penis is triangular.
Considering the results of Szarowska et al. (2015) as well as Radea et al. (2015) the *Pseudamnicola* spp. of Greece are all locally endemics (fig. 1).

![Figure 1](image-url)

**Figure 1.** The *Pseudamnicola* taxa of Greece. Red = *P. limnosensis* n. sp., cyan = *P. chia* (Martens, 1889), violet = *Pseudamnicola negropontina* (Clessin, 1878), light blue = *P. macrostoma* (Küster, 1853), light green = *P. exilis* (Frauenfeld, 1863), brown = *P. brachia* (Westerlund, 1886), blue = *P. pieperi* (Schütz, 1980), magenta = *Pseudamnicola ianth Radea & Parmakelis 2015*, dark green = *Pseudamnicola ilione Radea & Parmakelis 2015*, black = undescribed taxa.

**Material and Methods**

The specimens were collected by hand and preserved in 95% ethanol. The dissections and measurements were carried out by means of a Zeiss stereo microscope with an eye-piece micrometer; and the photographs were taken with a Leica digital camera system. The holotype and part of the paratypes are deposited in the Zoological Museum Hamburg (ZMH), Germany, whilst some paratypes are deposited in the private collections of the authors.

**Systematic part**

**Genus Pseudamnicola Paulucci, 1878**
Type species: *Bithynia lucensis* Issel, 1866

**Pseudamnicola limnosensis n. sp.**

**Type materials:** Holotype: shell height 3.0 mm, width 2.1 mm, spire height 0.6 mm (ZMH 87634); paratypes: 2 adult specimens, 1 juv., 1 embryonic shell, 2 empty shells (ZMH 87635), and 2 specimens in coll. Glöer.

**Type locality:** Limnos island, Greece, small well near Katalakko village, N39.962662 E25.139903, 89 m a.s.l. 01.-10.09.2017, T. Stefanov leg.
Figure 2. *Pseudamnicola limnosensis* n. sp. 1: holotype (photographed under ethanol), 2-3: paratypes, 4: head with penis in situ. Abbreviations: e = eye, p = penis, s = snout.

**Etymology**: Named after the name of the island where the species was found.

**Description**: The corneous shell is silky, ovate conical to globular, with a prominent body whorl and a pointed apex. The 4 whorls are slightly convex with a deep suture. The lateral line is slightly convex. The aperture is ovate, the peristome is thickened, the umbilicus is slit-like. The shell is 2.5-3.0 mm high and 1.9-2.2 mm broad, the spire height is 0.5-0.6 mm.

**Differentiating characters**: The only difference to the other *Pseudamnicola* spp. of the region lies in shell proportions: *P. limnosensis* n. sp. is broader than the other species and the spire compared to most of the other species is higher.

**Anatomy**: Penis broad and triangular, female sex tract unknown.

**Habitat and Ecology**: The specimens have been collected from a small well with flowing water in the NW part of the island, W of Katalakko village. The water was flowing first to a concrete hod and then to the ground. The snails were collected from the small waterbody formed around the well. This was the only flowing fresh water in this part of Limnos Island. The well was situated in sandy, dry, barren landscape with grass vegetation on a NW slope of a small hill (340 m a. s. l.). Valley of a small river was crossing the landscape in the area, which was dry in the time of sampling.

**Distribution**: Only known from type locality.

**Discussion**
The species of the circum-mediterranean genus *Pseudamnicola* can be distinguished by shell-proportions in most regions, like Algeria (Glöer *et al.* 2010), the Balearic Islands (Delicado *et al.* 2014) and Turkey (Glöer & Georgiev 2012, Glöer *et al.* 2014, 2015). In the Aegean Islands it is not possible to distinguish *Pseudamnicola* spp. by shell characters because there is a high inter- and intra-population variability and the characters of one species overlaps with the characters of the others (Szarowska *et al.* 2015). *P. limnosensis* n. sp. differs in the proportions of shell height to shell width and spire height but these differences are very slight. On the other hand, however, all *Pseudamnicola* populations from the Aegean Islands are endemic, so we dare to say that *Pseudamnicola limnosensis* n. sp. is distinct from the other *Pseudamnicola* species known so far.
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