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New hydrobiid species from Peloponnese, West Greece (Gastropoda: Hydrobiidae)

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ABSTRACT

The valvatiform hydrobiids have a circum-Mediterranean distribution, from Morocco over Spain, France, Italy to Greece. A hotspot of genera can be found in Greece, which includes the stygobiont genus *Fissuria* and the crenobiont genera *Islamia* and *Pseudoislamia*, the last one endemic of lake Trichonis. Recent investigations of the freshwater gastropods of the region of Pirgos and Patras (W Greece) revealed one new species of the genera *Pseudamnicola* and *Islamia*, as well as two new genera of valvatiform hydrobiids. Photographs of the shells and male copulatory organs of the new species are presented.

RESUM

Els gastròpods valvatiforms de la família Hydrobiidae tenen una distribució circummediterrània, des del Marroc passant per Espanya, França, Itàlia i fins Grècia. Un punt calent de la seva biodiversitat es troba a Grècia, incloent el gènere estigobiont *Fissuria* i els gèneres crenobionts *Islamia* i *Pseudoislamia*, aquest darrer endèmic del llac Trichonis. Investigacions recents dels gastròpodes d'aigua dolça de la regió de Piros i Patras (Grècia occidental) van revelar una nova espècie dels gèneres *Pseudamnicola* i *Islamia*, així com dos nous gèneres d'hidròbis valvatiforms. Es presenten fotografies de les conquilles i dels òrgans copuladors masculins de les noves espècies descrites.

Introduction

Representatives of the genus *Pseudamnicola* Paulucci, 1878 have a circum-Mediterranean distribution, with hotspots in Algeria (15 species) and Greece (17 species), with a large gap along the Adriatic coast and the Mediterranean coast in Libya and Egypt (Glöer *et al.* 2010, 2015).

In Greece they are especially known from the Aegean islands (Szarowska *et al.* 2015; Glöer & Reuselaars, 2020). Szarowska *et al.* (2015) found by DNA sequencing that there are some more *Pseudamnicola* species which occur on the Aegean islands, but these species have not yet been formally described. *Pseudamnicola* species are globular to elongated-conical, the whorls are convex or have a straight tangent line. The size varies from 2-4 mm in height. Characteristic are the triangular penis and the black renal oviduct (Glöer, 2022).

Islamia Radoman,1973 is a genus with representatives distributed from Morocco (Glöer *et al.*, 2020) to Turkey and the Near East (Radoman, 1983; Vidal-Abarca *et al.*, 1986; Bodon *et al.* 2001; Glöer 2022). The shells of *Islamia* are valvatoid, flat to conical with a wide umbilicus and a circular aperture. The penis is bilobed, a bursa copulatrix is missing, and two receptacula exist. Some *Islamia* species of Greece have been originally described as *Horatia* Bourguignat, 1887 or *Hauffenia* Pollonera, 1898, but both genera do not occur in Greece (Bodon *et al.*, 2001) so we list these species under the genus *Islamia*.

The second author found two populations, one in the region of Pirgos and one near Patras, exhibiting a remarkable different and characteristic penis morphology, not known from any other hydrobiid species. The observed feature justifies the description of new genera, since hydrobiid genera can be characterised by the shell shape in combination with the penis morphology (Radoman, 1983; Szarowska, 2006; Glöer, 2022). This paper is intended to describe one new *Pseudamnicola* species, one new *Ismania* species, in addition to two new valvatoid genera. With these descriptions, we expand the knowledge of the freshwater gastropods of the Peloponnese (Greece).

Material and methods

The snails were collected by Nikolaos Manolas by sieving collected substrate, firstly with a 2 mm sieve and later with a 1 mm sieve. They were later picked out with a pinser and then preserved in ethanol (95%). To identify the collected samples, they were compared with the known species of *Pseudamnicola*, *Islamia* and other valvatoid genera from the Balkans.

The measurements of the shells were carried out using a stereomicroscope (Leica M205 C) mounted with a digital camera (Leica DMC 5400). The type material is stored in the Zoological Museum of Hamburg (ZMH).

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Figure 1. The regions of the sampling sites (red dots) in West Greece.

Systematic

Genus *Pseudamnicola* Paulucci, 1878

Pseudamnicola lucetibia n. sp. (figs 2-5, 24)

Material examined:

Holotype: shell height 3.5 mm, shell width 2.4 mm, ZMH 141477.

Paratypes: 20 specimens (ZMH 141478), 30 paratypes in coll. Glöer.

Type locality: region of Pirgos, 37.682494°N 21.455809°E, 17 m a.s.l. 02.01.23, Nikolaos Manolas *leg.*

Habitat: freshwater spring.

Etymology: Derived from "Lucet Ibi" which in Latin means "It shines there", which is the literal translation of the etymology of the village where the species was found (Lampeti= λάμπει εκεί, lámbi ekí= it shines there).

Description: The corneous shell is ovate conical, surface silky to glossy, apex small, 4–5 rounded and stepped whorls that increase regularly. The aperture is ovate with a sharp peristome, the umbilicus is closed. The body whorl takes about 0.5-0.75 of shell height. The shell is 3.5 mm high and 2.4 mm wide.

The penis is triangular with a broad basis.

Differentiating characters: In *Pseudamnicola stasimoensis* Glöer & Reuselaars, 2020 the peristome is more thickened at the columella and the shell is much smaller (H = 2.0 mm in *P. stasimoensis*).

Distribution: Only known from type locality. Associated species: *Physella acuta* (Draparnaud, 1805).

Genus *Islamia* Radoman, 1973

Islamia pirgosensis n. sp. (figs 6-11, 25)

Material examined:

Holotype: shell height 1.0 mm, shell width 1.2 mm (ZMH 141479).

Paratypes: 6 specimens (ZMH 141480), 3 specimens in coll. Glöer.

Type locality: Spring in Kouzouli village near Pirgos, 37.719915°N 21.448100°E, 85 m a.s.l. 31.12.22, Nikolaos Manolas *leg.*

Habitat: The species has been found in a spring.

Etymology: Named after the region where the new species has been found.

Description: The valvatiform shell has 2.75 whorls with a small conical spire. The aperture is circular and touches the shell wall over a short distance and is slightly tapered at the top. The peristome is sharp; the umbilicus is wide. The shell is 0.9-1.4 mm high and 1.1-1.5 mm wide. The penis is long and bifid at the distal end.

Differentiating characters: In this region only *Islamia edlingeri* (A. Reischütz & P.L. Reischütz, 2004) occurs, which is flat and has been described as *Hauffenia edlingeri* A. Reischütz & P.L. Reischütz, 2004). From *Fissuria,* it differs in the eye spots, which are absent in this genus.

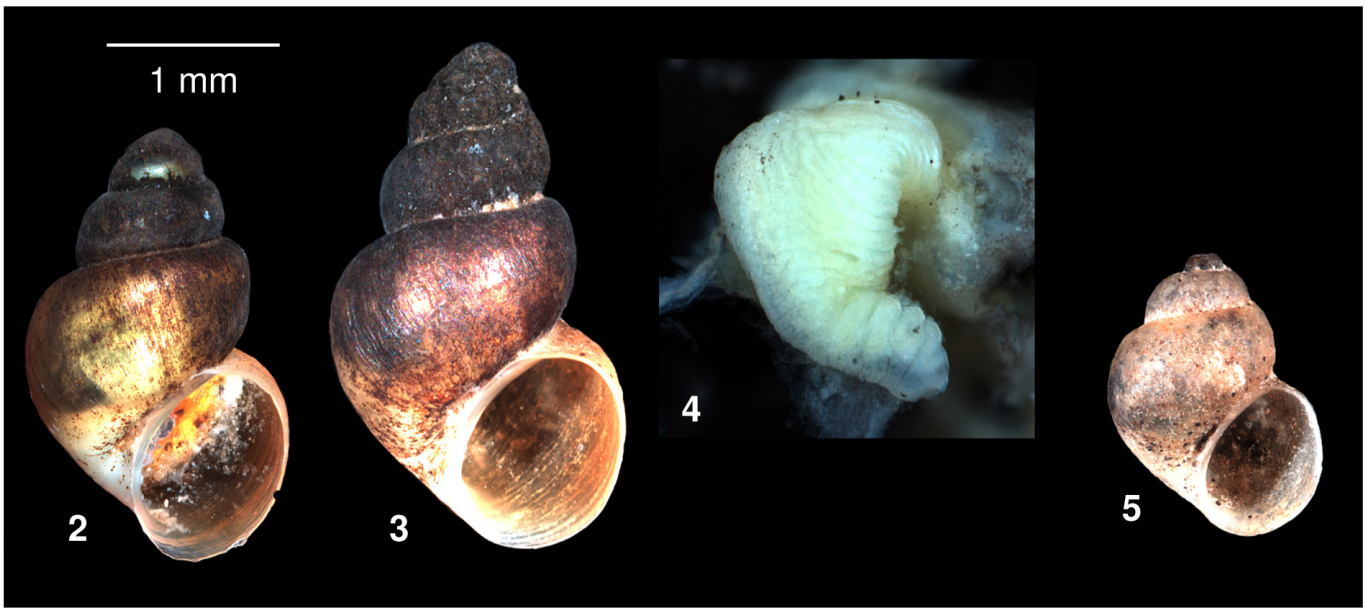
Distribution: The species was found in many springs and rivulets around Pirgos town.

Genus *Lampetiia* n. gen.

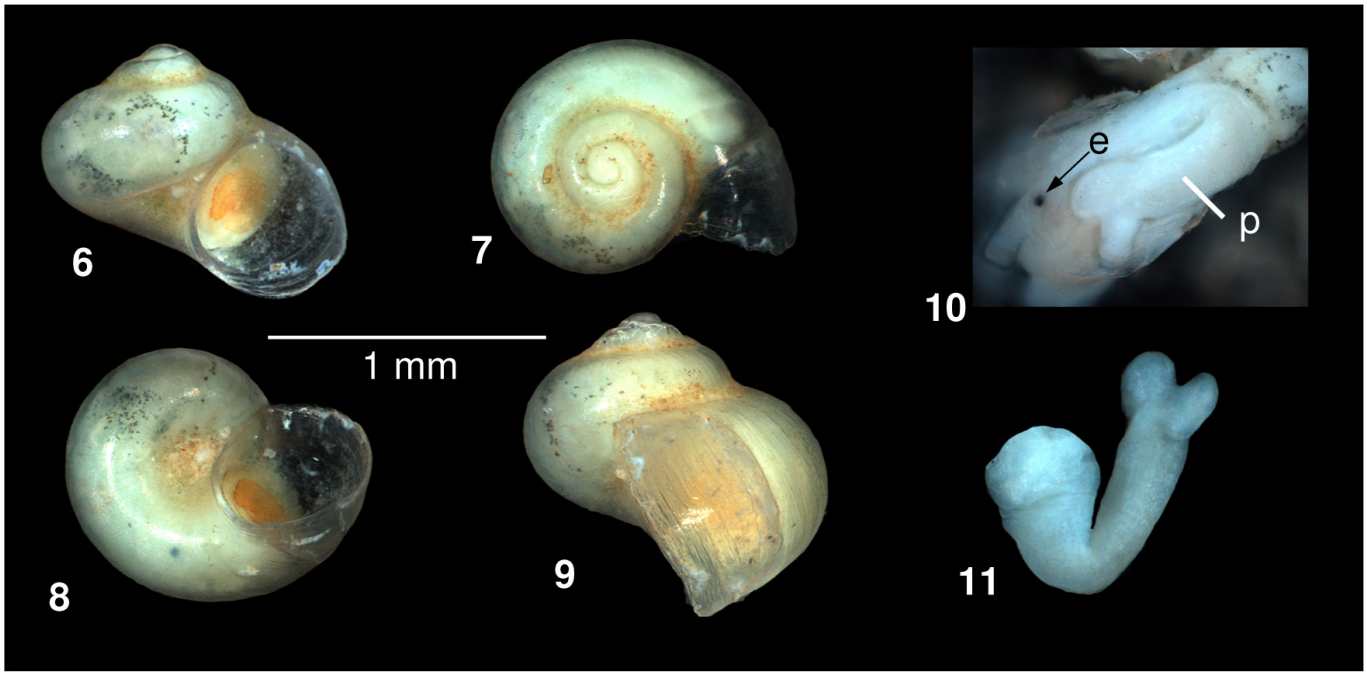
Type species: *Lampetiia panagiotae* n.sp.

Etymology: Named after the Sun's daughter Lampetia (Lampetii in Greek) in Greek mythology. She and her sister Phaethusa were in charge of the Sun's sacred cattle herds in the mythical island of Thrinacia. The name means "shiny" in ancient Greek.

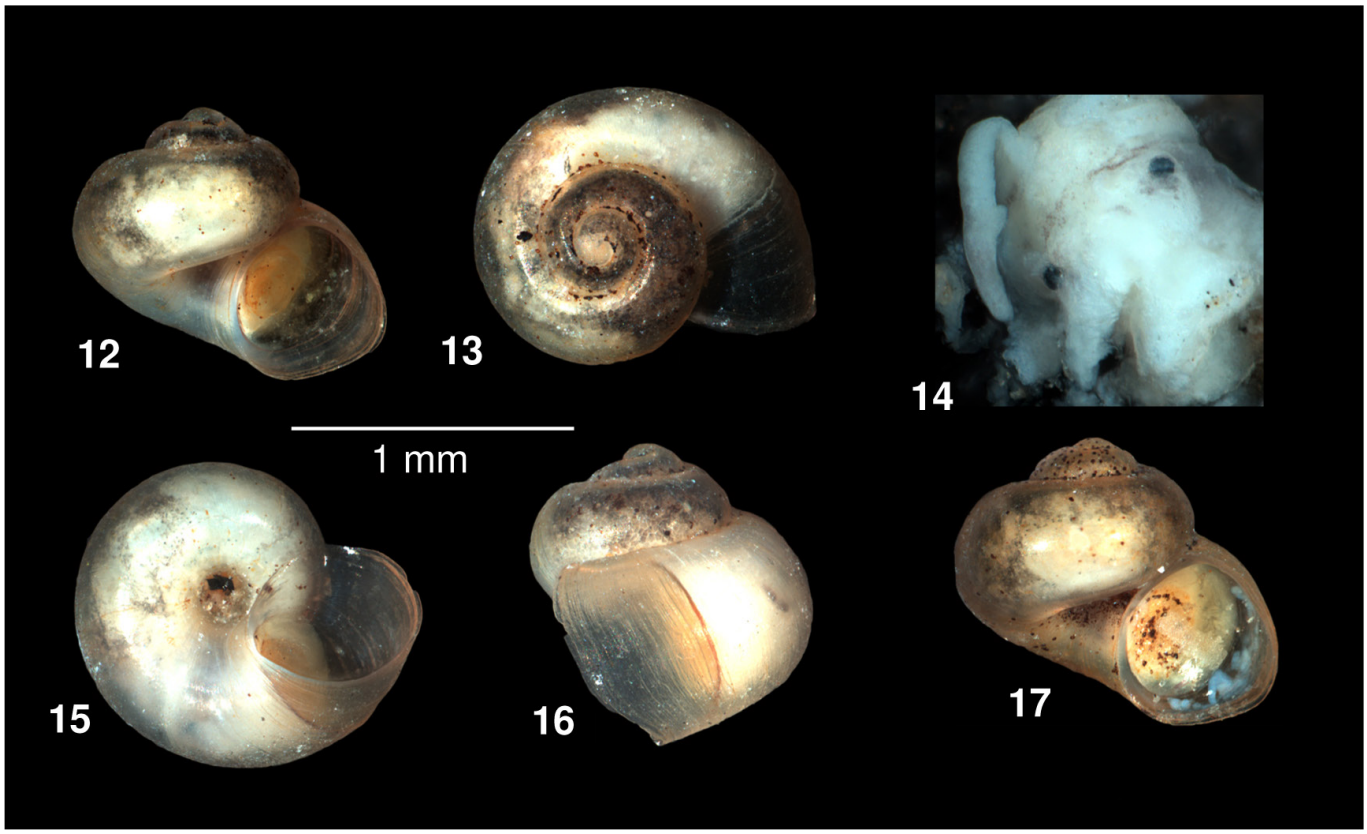
Diagnosis: The shells are valvatoid, glossy and translucent when fresh. The penis is long and tapered at the end. At the left side there is a small outgrowth.



Figures 2-5. *Pseudamnicola lucetibia* n. sp. (2: holotype, 3: paratype, 4: penis in situ).



Figures 6-11. *Islamia pirgosensis* n. sp. 6-8: holotype. 10; head with penis in situ, 11: penis.



Figures 12-17. *Lampetiia panagiotae* n,gen. n.sp. 12-13, 15-16: shell of holotype, 14: head with penis in situ, 17: paratype.

Lampetiia panagiotae n. sp. (figs 12-17, 26)

Material examined:

Holotype: shell height 1.09 mm, shell width 1.26 mm (ZMH 141481).

Paratypes: 10 specimens (ZMH 141482), 5 paratypes in coll. Glöer.

Type locality: Pirgos town, 37.672933°N 21.461293°E, 18 m a.s.l. 31.12.22, Nikolaos Manolas *leg.*

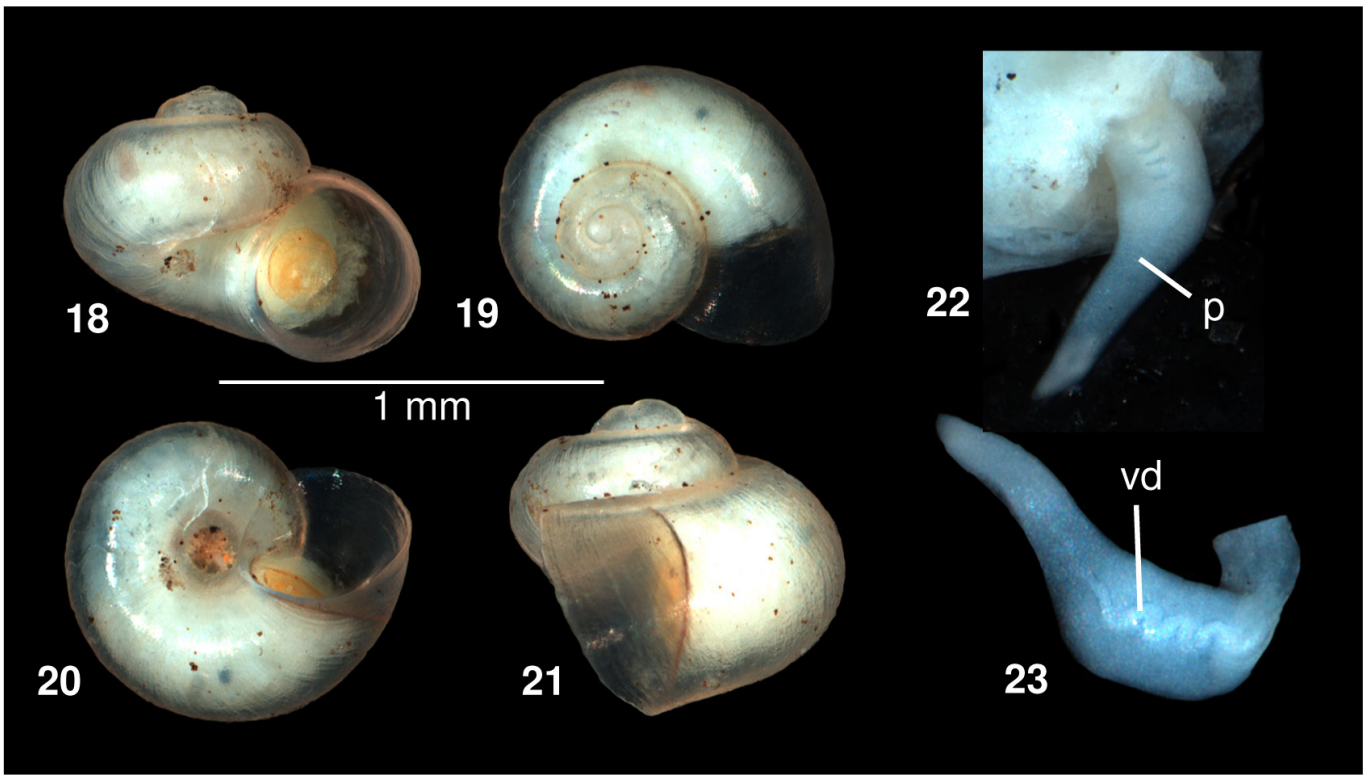
Habitat: Freshwater spring.

Etymology: Named after the second author's oldest sister.

Description: The globular conical shell has 2.75-3 whorls which are glossy and translucent, when fresh. The aperture is nearly circular, the umbilicus is deep and of medium width. The shell is 1.05-1.09 mm high and 1.19-1.26 mm wide. The penis is long and slender with a small outgrowth on the left side.

Distribution: Only known from the type locality.

Associated species: *Ancylus recurvus* Martens, 1873, *Physella acuta* (Draparanaud, 1805), *Pseudobithynia zogari* Glöer, Falniowski & Pešić, 2010, *Anisus spirorbis* (Linnaeus, 1758), *Pisidium casertanum* (Poli, 1791).



Figures 18-23. *Phaethusa johannae* n.gen. n.sp. 18-21: shell of holotype, 22: penis in situ, 23: penis. (Abbreviations: p = penis, vd = vas deferens)

Genus *Phaethusa* n. gen.
Type species: *Phaethusa johannae* n.sp.

Diagnosis: The tiny shell is translucent and glossy. The umbilicus is wide. The penis is rectangular near the basis and triangular and tapered at the distal part.

Etymology: Named after the Sun's daughter *Phaethusa* in Greek mythology. She and her sister Lampetia were in charge of the Sun's sacred cattle herds in the mythical island of Thrinacia. The name means "the one the moonlight shines upon her" in ancient Greek.

Phaethusa johannae n. sp. (figs 18-23, 27)

Material examined:

Holotype: shell height 0.74 mm, shell width 0.94 mm (ZMH 141483).

Paratypes: 22 specimens (ZMH 141484), 12 specimens in coll Glöer.

Type locality: Saravali village near Patras, 38.189192°N 21.759495°E, 126 m a.s.l. 18.12.22, Nikolaos Manolas *leg.*

Habitat: Freshwater spring whose stream was covered with fallen *Platanus* leaves.

Etymology: Named after the second author's youngest sister.

Description: The very tiny shell is globular/conical and has 3 whorls which are glossy and translucent, when fresh. The aperture is nearly circular, the umbilicus is deep and of medium width. The shell is 0.74-0.86 mm high and 0.94-1.05 mm wide. The penis is rectangular near the basis and triangular and tapered at the distal part. There are no outgrowths.

Distribution: Only known from the type locality. Seven additionally springs were researched in the region (coordinates: 38.192036 21.760604, 38.191702 21.754440, 38.187258 21.761355, 38.184957 21.749968, 38.184699 21.748482, 38.185068 21.747618 and 38.178508 21.748805) but no aquatic gastropods where found in any of them.

Figures 24-25. The sampling sites. 24: *Pseudamnicola lucetibia* n. sp., 25: *Islamia pirgosensis* n. sp.

Figures 26-27. The sampling sites. 26: *Lampetiia panagiotae* n. gen. n. sp., 27: *Phaethusa johannae* n. gen. n. sp. (Photo: Maria Kantzaridou).

Possible threats to the species: The spring where species was found lies near a soft drink factory which until recently damped wastewater in a small rivulet nearby the spring. The spring may prove to be vulnerable to bad water management in the future.

Associated species: *Radomaniola filiola* (Westerlund, 1881).

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