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The *Bythinella* spp. of Greece (Gastropoda: Hydrobioidea: Bythinelliidae)

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Received 17 February 2020 | Accepted by V. Pešić: 12 March 2020 | Published online 14 March 2020.

Abstract

In this article the type localities of 21 *Bythinella* spp. hitherto known from Greece are presented on a map. Twelve of these species are described as new for science. Unfortunately we had not enough materials for dissections, so the descriptions are based on the shell characters only, like almost all other known *Bythinella* spp. from Greece.

Key words: *Bythinella*, Greece, Crete, Peloponnese, Samos, Lesbos, Evia, new species.

Introduction

When Schütt (1980) studied the *Bythinella* spp. from Greece, he could only list *B. charpentieri* (Roth, 1855) from the mainland, and described *B. kosensis* and *B. cretensis* from the islands of Kos and Crete. In 1988 Reischütz described *B. charpentieri cabirius* from the island of Samothraki by the shells of which Glöer & Georgiev 2012 could add the anatomy. In 2008 Reischütz et al. described *B. beckmanni* and *B. atypicos*, both from Peloponnese.

Molecular genetic studies by Falniowski & Szarowska (2011) revealed ten *Bythinella* clades from continental Greece. Unfortunately the authors only worked with clades and did not deal with species names. In 2016 Falniowski & al. described *B. walensae* from the island of Naxos and Glöer & Hirschfelder (2019) could describe two more species: *B. rethymnonensis* and *B. sitiensis* from the island of Crete. *B. rethymnonensis* was originally described as *B. magdalenae* (homonym, preoccupied by Yildirim et al. 2012) and got the replacement name *B. rethymnonensis* Glöer & Hirschfelder 2020.

Analyses of *Bythinella* spp. revealed several cases where conclusions from morphological and sequence data would be inconsistent or even contradictory (Haase et al. 2007).

Recent investigations showed that the diversity in *Bythinella* is much larger than hitherto believed, thus this article is intended to present all the known *Bythinella* from Greece and to describe 12 new species which were found between 2009 and 2020.

Material and methods

The snails have been collected by Robert Reuselaars and fixed in 80% ethanol. The specimen were taken by hand or with a tweezers. In most cases only a few specimen were collected to avoid disturbing the small populations too much. Of the 12 new species, 7 are living in a habitat of less than 1 m² and in low densities (see figures 4, 5, 8, 13 and 14). In 2 cases even less than 0,25 m² (see figures 10 and 12).

The measurements of the shells were carried out using a stereo microscope (ZEISS) with an eye-piece micrometer; the photographs were made with a digital camera system (Leica R8). The type material is stored in RMNH (Rijksmuseum van Natuurlijke Historie Naturalis Leiden, The Netherlands) and in the collection of Robert Reuselaars.

Study Area

Greece is a hotspot for land and freshwater molluscs. Despite the fact that Greece is visited by many malacologists in the past, there is a continuous flow of new discoveries. In this article we present our findings on the freshwater genus *Bythinella*. As shown on the map, the distribution of this genus is almost horseshoe shaped, starting on the western side of continental Greece in Epirus, down to the Peloponnese, Crete and then moving upwards along the Turkish coast on the islands of Kos, Samos, Lesbos and Thassos with a few dispersed localities near Athens and on the islands of Naxos and Evia. It seems to be absent in the eastern continental part, roughly between Thessaloniki and Lamia. On many visits in this area in the past 20 years, no *Bythinella* sps were discovered. In the northern continental part of Greece, roughly below Bulgaria and FYROM, *Bythinella* sps. seems to be replaced by *Grossuana*. Species of this genus are known from FYROM and Bulgaria, but in 2018 four species were discovered in this region, three of which were new species (Glöer, Reuselaars & Papavasileiou).

Results

In Greece *Bythinella* spp. were assumed to local endemics and species of populations which occur at nearby locations are very different in shell shape (e.g. nos. 3-6). However, Glöer & Hirschfelder 2019 could show that 3 distinct species occur endemically on the island of Crete. We conclude with our present study that there is more diversity of species within this genus than formerly known. We present an identification key (Table 2) on the 21 known species. Although most species are only known from the type locality, we cannot exclude that there might be new discoveries of new or the here presented species in nearby localities and this identification key will be helpful in further studies on this genus.

Family **Bythinellidae** Locard, 1893

Genus ***Bythinella*** Moquin-Tandon, 1856

Type species by designation: *Bulimus viridis* Poiret, 1801

Differentiating characters: Because the *Bythinella* spp. in Greece are locally or regional endemic we compare the species only with those which live in the same region each. For species delimitation see also the identification key at the end (table 2).

***Bythinella kyriaki* n. sp.** [fig. 2.1]

Material examined: Holotype (RMNH.MOL.340494) and 2 paratypes (RMNH.MOL.340495) from type locality.

Holotype: 2.2 mm high, 1.5 mm broad from type locality.

Paratypes: 2 paratypes from type locality, 1 adult and 11 subadult ex. in coll. Robert Reuselaars (no. 1264).

Locus typicus: spring 2 km of monastery Kapina, Epirus, Greece at 620 meters altitude (Figure 4), 39° 34' 01.13475" N 21° 07' 19.90862" E, 11.09.2019 Robert Reuselaars leg.

Habitat: strong running spring, the specimen were sparsly found on the small stones (1 per 5-6 stones) beneath the outflow of the spring. This species occupies an area of only 1 m².

Etymology: Named after Kyriakos Papavasileiou who accompanied Robert Reuselaars at several trips in Greece and as to thank him for his help and support.

Description: The shell is ovate with 4-4.5 slightly convex whorls which are separated by a deep suture. The aperture is broad ovate to circular, angled at the top. The peristome is slightly reflexed at the columella. The umbilicus is closed. The body whorl takes 0.7 of shell height. The aperture is 0.8 mm high and 0.8 mm broad. The ratio of shell height to shell width is 1.6. The shell is 2.2-2.3 mm high and 1.4-1.5 mm broad.

Differentiating characters: The aperture is more circular than in *B. gregoi*, the umbilicus is closed and not slit-like.

Distribution: only known from type locality.

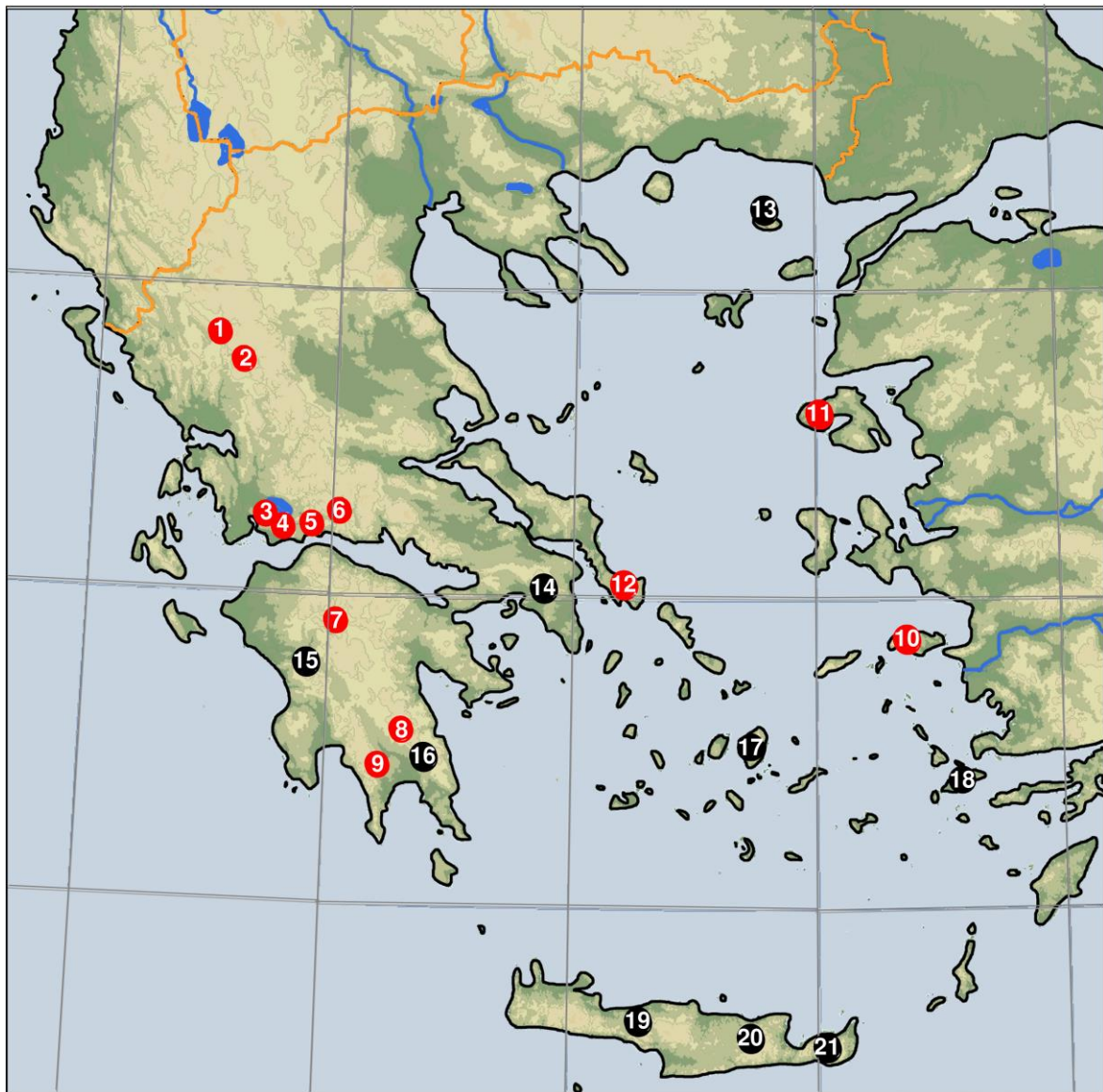


Figure 1. The type localities of the *Bythinella* spp. in Greece. Marked in red: the here described new *Bythinella* species, marked in black: the known *Bythinella* spp. 1: *Bythinella kyriaki* n. sp., 2: *B. gregori* n. sp., 3: *B. pesici* n. sp., 4: *B. klimaensis* n. sp., 5: *B. righaensis* n. sp., 6: *B. radomani* n. sp., 7: *B. kwanti* n. sp., 8: *B. petrosensis* n. sp., 9: *B. liandinaensis* n. sp., 10: *B. konstadinensis* n. sp., 11: *B. olymbosensis* n. sp., 12: *B. dimitrosensis* n. sp., 13: *B. charpentieri cabirius*, 14: *B. charpentierri*, 15: *B. beckmanni*, 16: *B. atypicos*, 17: *B. walensae*, 18: *B. kosensis*, 19: *B. rethymnonensis*, 20: *B. cretensis*, 21: *B. sitiensis*.

Table 1 The type localities of the *Bythinella* spp. in Greece

1	<i>Bythinella kyriaki</i>	Spring 2 km of monastery Kapina, Epirus, Greece
2	<i>Bythinella gregoi</i>	Spring southwest of Anthousa, Greece
3	<i>Bythinella pesici</i>	Spring north of Klima, Aetolia, Greece
4	<i>Bythinella klimaensis</i>	Spring in Klima, Aetolia, south of lake Trichonida, Greece
5	<i>Bythinella righanesis</i>	Spring in Righani, north of Nafpaktos, Aetolia, Greece
6	<i>Bythinella radomani</i>	Spring between Kokinochori & Perivoli, Fokidha, Greece
7	<i>Bythinella kwanti</i>	Spring in Planitero, south of Kalavrita, northwest Peloponnesos, Greece
8	<i>Bythinella petrosensis</i>	Spring 5-6 km southeast of Aghios Petros, Parnon mountains, Peloponnesos, Greece
9	<i>Bythinella liandinaensis</i>	Spring between Liandina and Vasiliki, Peloponnesos, Greece
10	<i>Bythinella konstadinensis</i>	Monia Konstadinou en Elenis, 2 km east of Kosmadei, Samos island, Greece
11	<i>Bythinella olymbosensis</i>	Spring at Olymbos mountain, approximately 3 km before the top, south Lesvos island, Greece
12	<i>Bythinella dimitrosensis</i>	Spring of Aghios Dimotros, Evia, Greece
13	<i>Bythinella charpentieri cabirius</i>	Spring at the road below Palaiopolis, Samothraki, Greece
14	<i>Bythinella charpentieri</i>	Attika
15	<i>Bythinella beckmanni</i>	Spring in Mari, south of Leonidion, Nomos Argolida, Peloponnese, Greece
16	<i>Bythinella atypicos</i>	Spring in Faskomilia east of Nea Figalia, north of Neda, Nomos Iliia, Peloponnes, Greece
17	<i>Bythinella walensae</i>	Aria spring (Aria Pygi), Naxos island, Greece
18	<i>Bythinella kosensis</i>	Kos island, spring above Agios Dimitrios, Greece
19	<i>Bythinella rethymnonensis</i>	Argiróupoli, 14 km southwest of Réthymnon, Crete island, Nómo
20	<i>Bythinella cretensis</i>	Réthymnon, Greece
21	<i>Bythinella sitiensis</i>	Exo Potami, Crete island, Greece
		Fountain in Zou, 6 km south of Sitía, Nómo
		Lasíthi, Crete island, Greece

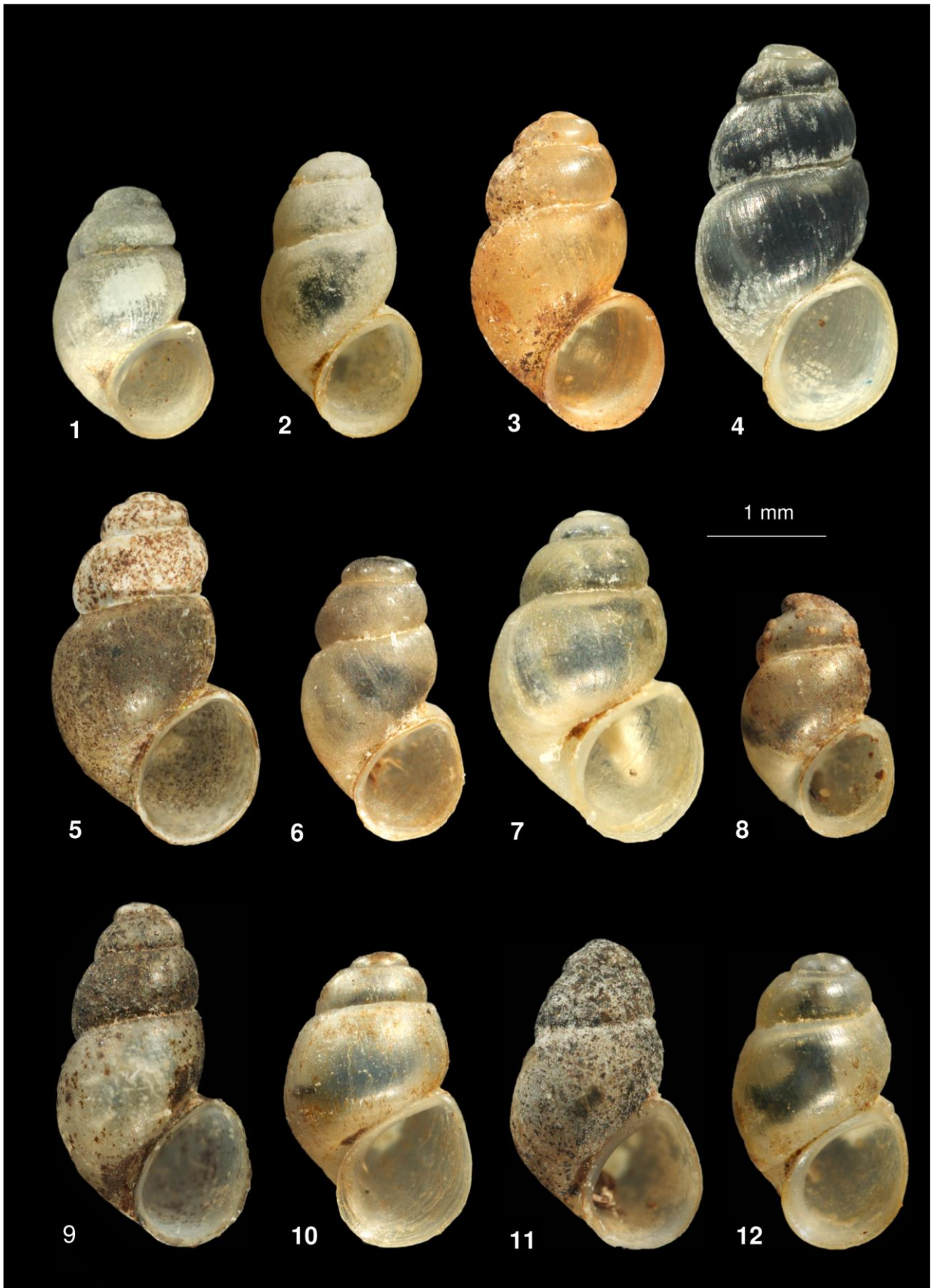


Figure 2. The new *Bythinella* spp., described below. 1: *Bythinella kyriaki* n. sp., 2: *B. gregori* n. sp., 3: *B. pesici* n. sp., 4: *B. klimaensis* n. sp., 5: *B. righaensis* n. sp., 6: *B. radomai* n. sp., 7: *B. kwanti* n. sp., 8: *B. petrosensis* n. sp., 9: *B. liandinaensis* n. sp., 10: *B. konstadinensis* n. sp., 11: *B. olymbosensis* n. sp., 12: *B. dimitrosensis* n. sp.

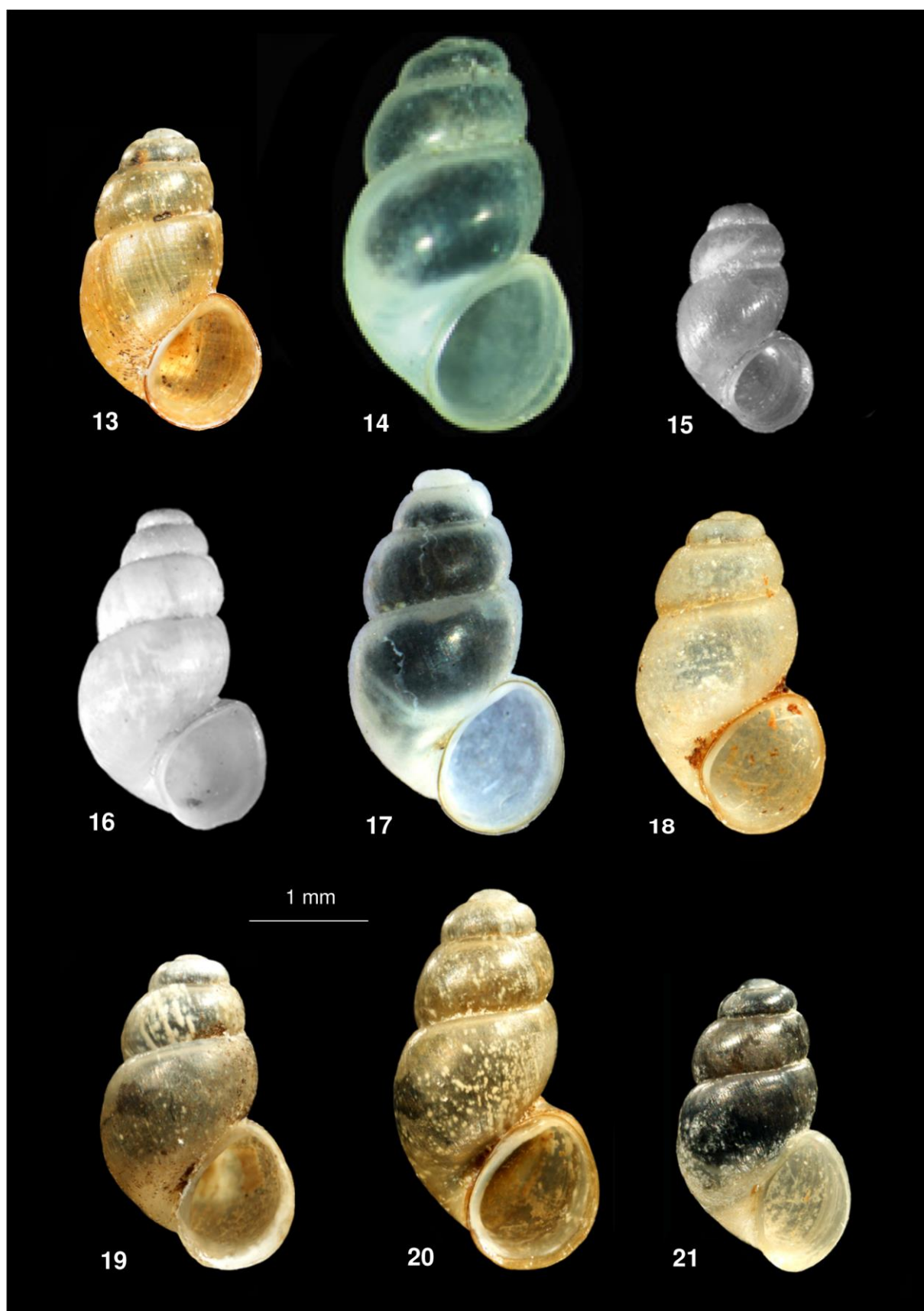


Figure 3. The hitherto known *Bythinella* spp. From Greece. 13: *Bythinella charpentieri cabirius* (topotype), 14: *B. charpentieri* (after Falniowski et al. 2011, fig. 13), 15: *B. beckmanni*, 16: *B. atypicos* (15, 16 holotypes after Reischütz et al. 2008), 17: *B. walensae* (holotype after Falniowski et al. 2016), 18: *B. kosensis* (topotype), 19: *B. rethymnonensis* (holotype), 20: *B. cretensis* (holotype), 21: *B. sitiensis* (holotype)

Bythinella gregoi n. sp. [fig. 2.2]

Material examined: Holotype (RMNH.MOL.340496) and 2 paratypes (RMNH.MOL.340497) from type locality.

Holotype: 2.5 mm high, 1.4 mm broad from type locality.

Paratypes: 2 paratypes from type locality, 2 adult and 5 subadult ex. in coll. Robert Reuselaars (no. 839).

Locus typicus: Spring SW of Anthousa, Greece, at 1.000 meters altitude, 39° 39' 31.97786" N 21° 12' 27.76905" E, 09.05.2013 Robert Reuselaars leg.

Habitat: Slow running spring, the specimen were collected from old leaves.

Etymology: Named after Jozef Grego who did so much for our knowledge of the hydrobiids from the Balkan.

Description: The shell is slim ovate with 4-4.5 slightly convex whorls which are separated by a clear suture. The aperture is ovate, slightly angled at the top. The peristome is broadened at the columella. The umbilicus is slit-like. The aperture is 0.8 mm high and 0.7 mm broad. The ratio of shell height to shell width is 1.7. The shell is 2.4-2.7 mm high and 1.4-1.5 mm broad.

Differentiating characters: See *Bythinella kyriaki* n. sp.

Distribution: Only known from type locality.

Bythinella pesici n. sp. [fig. 2.3]

Material examined: Holotype (RMNH.MOL.340499) and 3 paratypes (RMNH.MOL.340499) from type locality.

Holotype: 2.8 mm high, 1.7 mm broad from type locality.

Paratypes: 3 paratypes from type locality, 1 adult and 6 subadult ex. in coll. Robert Reuselaars (no. 1267).

Locus typicus: Spring north of Klima, Aetolia, Greece (south of lake Trichonida) at 660 meters altitude (Figure 14), 17.06.2019 Robert Reuselaars leg.

Habitat: In the concrete canal and on old leaves of the artificial basin. This species occupies an area of less than 0,5 m².

Etymology: Named after Vladimir Pešić who did so much for our knowledge of the freshwater molluscs from the Balkans.

Description: The shell is ovate with 4-4.5 convex whorls which are separated by a deep suture. The aperture is ovate. The peristome is somewhat broadened at the columella. The umbilicus is closed. The body whorl takes 0.75 of shell height. The aperture is 0.9 mm high and 0.8 mm broad. The ratio of shell height to shell width is 1.6. The shell is 2.3-2.8 mm high and 1.5-1.7 mm broad.

Differentiating characters: The shell is smaller than *B. klimaensis* n. sp. and *B. rigaensis* n. sp., but larger than *B. radomani* n. sp. In *B. klimaensis* n. sp. and in *B. radomani* n. sp. the aperture is angled at the top. In *B. rigaensis* n. sp. the whorls of the spire are more convex than in *B. pesici* n. sp.

Distribution: Only known from type locality.

Bythinella klimaensis n. sp. [fig. 2.4]

Material examined: Holotype (RMNH.MOL.340500) and 3 paratypes (RMNH.MOL.340501) from type locality.

Holotype: 3.4 mm high, 1.9 mm broad from type locality.

Paratypes: 4 paratypes from type locality, 21 dry ex. in coll. Robert Reuselaars (no. 1274).

Locus typicus: Spring in Klima, Aetolia, south of lake Trichonida, Greece at 625 meters altitude (Figure 6), 38° 28' 09.57291" N 21° 28' 54.52199" E, 17.06.2019 Robert Reuselaars leg.

Habitat: Artificial canal below outflow of the spring, the specimens were collected from small stones and old leaves.

Etymology: Named after Klima town.

Description: The shell is elongated ovate with 4.5-5 slightly convex whorls which are separated by a deep suture. The apex is oblique. The aperture is ovate, slightly angled at the top. The peristome is broadened at the columella. The umbilicus is closed. The body whorl takes 0.7 of shell height. The aperture is 1.0 mm high and 0.9 mm broad. The ratio of shell height to shell width is 1.9. The shell is 2.6-3.4 mm high and 1.7-1.9 mm broad.

Differentiating characters: See *B. pesici* n. sp.

Distribution: Only known from type locality.

Bythinella righaensis n. sp. [fig. 2.5]

Material examined: Holotype (RMNH.MOL.340502) and 2 paratypes (RMNH.MOL.340503) from type locality.

Holotype: 3.1 mm high, 1.8 mm broad from type locality.

Paratypes: 2 paratypes from type locality, 2 adult and 10 subadult ex. in coll. Robert Reuselaars (no. 1270).

Locus typicus: Spring in Righani, north of Nafpaktos, Aetolia, Greece at 565 meters altitude (Figure 7), 38° 28' 56.07778" N 21° 46' 05.08430" E, 13.06.2019 Robert Reuselaars leg.

Habitat: On small stones of the bottom of the springbasin. This species occupies an area of about 2 m².

Etymology: Named after Righani town.

Description: The shell is elongated ovate with 4.5-5 convex whorls which are separated by a deep suture. The aperture is ovate. The peristome is somewhat broadened at the columella. The umbilicus is closed. The body whorl takes 0.7 of shell height. The body whorl takes 0.7 of shell height. The aperture is 1.0 mm high and 0.8 mm broad. The ratio of shell height to shell width is 1.6. The shell is 3.1 mm high and 1.8 mm broad.

Differentiating characters: See *B. pesici* n. sp.

Distribution: Only known from type locality.

Bythinella radomani n. sp. [fig. 2.6]

Material examined: Holotype (RMNH.MOL.340504) and 4 paratypes (RMNH.MOL.340505) from type locality.

Holotype: 2.5 mm high, 1.5 mm broad from type locality.

Paratypes: 4 paratypes from type locality, 1 adult and 12 subadult ex. in coll. Robert Reuselaars (no. 1268)

Locus typicus: Spring between Kokinochori & Perivoli, Fokidha, Greece at 785 meters altitude (Figure 13), 38° 30' 24.98346" N 22° 01' 16.56789" E, 14.06.2019 Robert Reuselaars leg.

Habitat: On small stones and old leaves in small canal below the spring. This species occupies an area of about 1 m².

Etymology: Named after Pavle Radoman to honour his work on hydrobiid snails of the Balkans.

Description: The shell is slim ovate with 4.5-5 convex whorls which are separated by a deep suture. The aperture is ovate, slightly angled at the top. The peristome is broadened at the columella. The umbilicus is closed. The body whorl takes 0.7 of shell height. The aperture is 0.9 mm high and 0.7 mm broad. The ratio of shell height to shell width is 1.8. The shell is 2.5-2.8 mm high and 1.5-1.7 mm broad.

Differentiating characters: See *B. pesici* n. sp.

Distribution: Only known from type locality.

Bythinella kwanti n. sp. [fig. 2.7]

Material examined: Holotype (RMNH.MOL.340506) and 2 paratypes (RMNH.MOL.340507) from type locality.

Holotype: 2.9 mm high, 1.8 mm broad from type locality.

Paratypes: 2 paratypes from type locality, 2.6 mm high and 1.7 mm broad, + 1 juv, 2 adult and 10 subadult ex. in coll. Robert Reuselaars (no. 1273).

Locus typicus: Planitero, south of Kalavrita, NW Peloponnesos, Greece at 495 meters altitude (Figure 9), 37° 55' 59.61717" N 22° 09' 45.61220" E, 09.06.2019 Robert Reuselaars leg.

Habitat: stong running spring with medium sized stones with algae cover.

Etymology: Named after Henkdrikjan Kwant who joined Robert Reuselaars on many trips in the last 20 years.

Description: The shell is ovate with 4.5-5 slightly convex whorls which are separated by a deep suture. The aperture is ovate, slightly angled at the top. The peristome is broadened at the columella. The umbilicus is slit-like. The body whorl takes 0.76 of shell height. The aperture is 1.0 mm high and 0.8 mm broad. The ratio of shell height to shell width is 1.6. The shell is 2.6-2.9 mm high and 1.7-1.8 mm broad.

Differentiating characters: This species is much higher and broader than *B. beckmanni*.

Distribution: Only known from type locality.

Bythinella petrosensis n. sp. [fig. 2.8]

Material examined: Holotype (RMNH.MOL.340508) and 1 paratype (RMNH.MOL.340509) from type locality.

Holotype: 2.9 mm high, 1.8 mm broad from type locality.

Paratypes: 1 paratype from type locality, 2.0 mm high and 1.3 mm broad, 4 (dry) in coll. Robert Reuselaars (no. 682).

Locus typicus: Spring 5-6 km Se of Aghios Petros, Parnon mountains, Peloponnesos, Greece at 1.105 meters altitude (Figure 10), 37° 17' 36.115787" N 22° 35' 30.35337" E, 24.09.2010 Robert Reuselaars leg.

Habitat: This species occupies an area of only less than 0,15 m² in an artificial basin of a slow running spring

Etymology: Named after Aghios Petros town.

Description: The shell is elongated ovate with 3-4.5 convex whorls which are separated by a deep suture. The aperture is ovate. The peristome is thickened at the columella. The umbilicus is closed. The body whorl takes 0.8 of shell height. The aperture is 0.8 mm high and 0.7 mm broad. The ratio of shell height to shell width is 1.6. The shell is 2.0-2.2 mm high and 1.3 mm broad.

Differentiating characters: This species is much smaller than *B. liandinaensis* n.sp. and much smaller than *B. atypicos* as well.

Distribution: Only known from type locality.

Bythinella liandinaensis n. sp. [fig. 2.9]

Material examined: Holotype (RMNH.MOL.340510) and 3 paratypes (RMNH.MOL.340511) from type locality.

Holotype: 3.0 mm high, 1.8 mm broad from type locality.

Paratypes: 3 paratypes from type locality, 6 adult and 8 subadult (dry) in coll. Robert Reuselaars (no. 683).

Locus typicus: Spring between Liandina and Vasiliki, Peloponnesos, Greece, at 70 meters altitude (Figure 8), 36° 54' 42.86614" N 22° 26' 33.74825" E, 19.09.2010 Robert Reuselaars leg.

Habitat: On old leaves in a smal spring, this species occupies an area of about 1 m².

Etymology: Named after Liandina town.

Description: The shell is elongated ovate with 4.5-5 slightly convex whorls which are separated by a deep suture. The aperture is ovate, slightly angled at the top. The peristome is sharp. The umbilicus is slit-like. The body whorl takes 0.67 of shell height. The aperture is 1.0 mm high and 0.8 mm broad. The ratio of shell height to shell width is 1.8. The shell is 2.4-3.0 mm high and 1.4-1.6 mm broad.

Differentiating characters: See *B. petrosensis* n. sp.

Distribution: Only known from type locality.

***Bythinella konstadinensis* n. sp.** [fig. 2.10]

Material examined: Holotype (RMNH.MOL.340512) and 2 paratypes (RMNH.MOL.340513) from type locality.

Holotype: 2.6 mm high, 1.9 mm broad from type locality.

Paratypes: 3 paratypes from type locality, 2 adult and 3 subadult (dry) in coll. Robert Reuselaars (no. 558).

Locus typicus: Monia Konstadinou en Elenis, 2 km E of Kosmadei, Samos isl., Greece at 313 meters altitude (Figure 11), 37° 45.76320' N 26° 40.93519' E, 10.10.2008 Robert Reuselaars leg.

Habitat: On old leaves and medium sized stones.

Etymology: Named after the monastery of Konstadinou en Elenis.

Description: The shell is ovate with 4.5-5 slightly convex whorls which are separated by a deep suture. The aperture is ovate, slightly angled at the top. The peristome sharp. The umbilicus is closed. The body whorl takes 0.8 of shell height. The aperture is 1.0 mm high and 0.9 mm broad. The ratio of shell height to shell width is 1.6. The shell is 2.5-2.7 mm high and 1.7-1.9 mm broad.

Differentiating characters: See *B. petrosensis* n. sp.

Distribution: Only known from type locality.

***Bythinella olymbosensis* n. sp.** [fig. 2.11]

Material examined: Holotype (RMNH.MOL.340514) and 3 paratypes (RMNH.MOL.340515) from type locality.

Holotype: 2.6 mm high, 1.7 mm broad from type locality.

Paratypes: 3 paratypes from type locality, 3 adult and 8 subadult ex. (dry) in coll. Robert Reuselaars (no. 754).

Locus typicus: Spring at Olymbos mountain, apr 3 km before the top, south Lesvos isl., Greece at 804 meters altitude (Figure 12), 39° 04.15127' N 26° 21.01430' E, 08.05.2007 Robert Reuselaars leg.

Habitat: On algae on the bottom and sides of an artificial basin, this species occupies an are of less than 0,25 m².

Etymology: Named after Olymbos mountain.

Description: The shell is ovate conical with 4.5-5 slightly convex whorls which are separated by a clear suture. The aperture is ovate, slightly angled at the top. The peristome is thickened at the columella. The umbilicus is closed. The body whorl takes 0.75 of shell height. The aperture is 1.0 mm high and 0.8 mm broad. The ratio of shell height to shell width is 1.6. The shell is 2.1-2.6 mm high and 1.4-1.7 mm broad.

Differentiating characters: No other *Bythinella* sp. known on this island.

Distribution: Only known from type locality.

***Bythinella dimitrosensis* n. sp.** [fig. 2.12]

Material examined: Holotype (RMNH.MOL.340516) and 3 paratypes (RMNH.MOL.340517) from type locality.

Holotype: 2.6 mm high, 1.6 mm broad from type locality.

Paratypes: 3 paratypes from type locality, 7 adult and 15 subadult ex. (dry) in coll. Robert Reuselaars (no. 776).

Locus typicus: Spring of Aghios Dimitros, island of Evia, Greece at 330 meters altitude (Figure 5), 38° 06' 29.05401" N 24° 26' 12.21897" E, 10.06.2011 Robert Reuselaars leg.

Habitat: on small stones and old leaves, this species occupies an area of about 1 m².

Etymology: Named after Aghios Dinitros town.

Description: The shell is ovate with 4.5 slightly convex whorls which are separated by a clear suture. The apex is pointed. The aperture is oblique ovate, angled at the top. The peristome is thickened at the columella. The umbilicus is closed. The body whorl takes 0.77 of shell height. The aperture is 1.0 mm high and 0.8 mm broad. The ratio of shell height to shell width is 1.7. The shell is 2.4-2.7 mm high and 1.5-1.7 mm broad.

Differentiating characters: *B. dimitrosensis* n. sp. is smaller than *B. charpentieri* and the whorls are less convex.

Distribution: Only known from type locality.



Figures 4-9: Sampling sites. **4.** Kapina monastery (type locality of *Bythinella kyriaki* n. sp.), **5.** Aghios Dimitros (type locality of *Bythinella dimitrosensis* n. sp.), **6.** Klima (type locality of *Bythinella klimaensis* n. sp.), **7.** Righani (type locality of *Bythinella righaensis* n. sp.), **8.** Liandina (type locality of *Bythinella liandianensis* n. sp.), **9.** Planitero (type locality of *Bythinella kwanti* n. sp.).



Figures 10-14: Sampling sites. **10.** Aghios Petros (type locality of *Bythinella petrosensis* n. sp.), **11.** Monia Konstadinou (type locality of *Bythinella konstandinensis* n. sp.), **12.** Olymbos mountain (type locality of *Bythinella olymbosensis* n. sp.), **13.** Kokinochori (type locality of *Bythinella radomani* n. sp.), **14.** N. of Klima (type locality of *Bythinella pesici* n. sp.), **15:** spring above Eftalophos (type locality of *Daphniola eptalofos*).

Conservation

Our contribution to the knowledge on the freshwater springsnails from Greece is important if we want to protect these species. Due to the human impact, most species in Greece are serious under stress. Most springs are used for drinking water or irrigation, see the examples in the figures 6, 7, 10, 12, 13 and 14. Another example: a short visit at the spring above Eftalopos 38° 35' 34.91509" N 22° 30' 13.77271" E (figure 15), after visiting the area around Nafpaktos and on the way to Athens in 2019, the type locality of *Daphniola eptalophos*, showed a similar picture. This species lives in a small artificial basin of less than 0,25 m². It is also serious under stress by pollution of the tobacco from cigarettes which were thrown in the small basin. Subsequently it seems that this spring is also drying out slowly. During the visit only two alive specimen were observed.

Of the *Bythinella* spp which are described in this article, we consider the species *kyriaki*, *pesici*, *radomani*, *righaensis*, *petrosensis*, *olybosensis*, *liandianensis* and *dimitrosensis* as critically endangered due to a single spring, tiny area where they live in and low numbers of specimen. The others are considered as endangered because they only live in one spring with a higher number of specimen and less chance of human disturbance.

Table 2. Identification for the *Bythinella* spp. of Greece.

1	Shell small, <2.5 mm,	2
–	Shell larger than 2.5 mm	4
2	Shell about 2 mm high, peristome sharp, umbilicus closed, W-Peloponnese east of Nea Figalia	<i>Bythinella beckmanni</i>
–	Shell 2.1-2.3 mm high, N-Greece or S-Peloponnese	3
3	Whorls slightly convex, aperture angled at the top, peristome reflexed at the columella, near monastery Kapina, Epirus	<i>Bythinella kyriaki</i>
–	Whorls convex, aperture not angled, body whorl : shell height = 0.8, S-Peloponnese, spring between Liandina and Vasiliki	<i>Bythinella petrosensis</i>
4	Shell elongated and slightly conical	5
–	Spire not conical	6
5	Shell elongated ovate, S-Peloponnese, umbilicus slit-like	<i>Bythinella liandinaensis</i>
–	Shell elongated ovate, S-Peloponnese, umbilicus closed	<i>Bythinella atypicos</i>
6	Shell higher than 3 mm,	7
–	Shell 2.6-2.9 mm high	11
7	Shell elongated ovate, Umbilicus slit-like	8
–	Umbilicus closed	9
8	Naxos island	<i>Bythinella walensae</i>
–	Shell slim, elongated cylindrical, Exo Potami, Crete	<i>Bythinella cretensis</i>
9	Whorls inflated, spring in Righani, Aetolia	<i>Bythinella righanensis</i>
–	Whorls not inflated	10
10	Peristome broadened at the columella, spring in Klima, Aetolia	<i>Bythinella klimaensis</i>
–	Shell up to 3.6 mm high and 2 mm broad, Peristome sharp, region of Athen	<i>Bythinella charpentieri</i>
11	Whorls nearly straight with a flat suture, umbilicus slit-like, Spring southwest of Anthousa	<i>Bythinella gregoi</i>
–	Whorls convex	12
12	Shell broad, umbilicus slit-like, Spring 5-6 km southeast of Aghios Petros	<i>Bythinella kwanti</i>
–	Umbilicus closed,	13
13	Occurs on an island	15
–	Occurs on in Aetolia	14
14	Aperture ovate, Spring north of Klima, Aetolia	<i>Bythinella pesici</i>
–	Aperture angled at the top, Apex pointed, Spring between Kokinochori & Perivoli, Fokidha	<i>Bythinella radomani</i>

15	Crete	16
–	Outside crete	17
16	Umbilicus closed, Fountain in Zou, 6 km south of Sitía, Nómos Lasíthi	<i>Bythinella sitiensis</i>
–	Umbilicus slit-like, Argiroúpoli, 14 km southwest of Réthymnon, Crete island, Nómos Réthymnon,	<i>Bythinella rethymnonensis</i>
17	Spring at the road below Palaiopolis, Samothrake island	<i>Bythinella cabirius</i>
–	Kos island, spring above Agios Dimitrios	<i>Bythinella kosensis</i>
–	Samos island	<i>Bythinella konstadinensis</i>
–	Spring at Olymbos mountain, apr 3 km before the top, south Lesbos island	<i>Bythinella olymbosensis</i>
–	Spring of Aghios Dimotros, Evia	<i>Bythinella dimitrosensis</i>

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