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The *Radomaniola*/*Grossuana* group from the Balkan Peninsula, with a description of *Grossuana maceradica* n. sp. and the designation of a neotype of *Paludina hohenackeri* Küster, 1853 (Caenogastropoda: Truncatelloidea: Hydrobiidae)

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Abstract. *Grossuana maceradica* n. sp. from the Radika drainage, Macedonia is described. A lectotype is selected for *Amnicola marginata* Westerlund, 1881, and a neotype is designated for *Paludina hohenackeri* Küster, 1853. Photographs of type material of these and 2 other Balkan taxa, *Amnicola filiola* Westerlund, 1881 and *Hydrobia haesitans* Westerlund, 1881, are published here for the first time.

Key words. *Paludina hohenackeri*, *Amnicola filiola*, *Amnicola marginata*, *Hydrobia haesitans*, endemism in the Balkans, Radika river, Crni Drim river.

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Introduction

Species of *Belgrandiella* A.J. Wagner, 1928 are distributed from southern France (Boeters 1970, 2008), eastern Austria (Haase 1994), northern Italy (Giusti & Pezzoli 1980, Haase 1994), and through the Dinarides (Radoman 1975). They have also been reported from Bulgaria (Angelov 1959, 1972, 1976, Georgiev 2011, 2013, Glöer & Georgiev 2009, Pintér 1968, Wagner [1928]) and Greece (Schütt [1980]). Although Radoman (1973) described a Greek species as *Orientalia delphica* (now *Radomaniola delphica* (Radoman, 1973)), Schütt [1980] insisted that it belongs to *Belgrandiella*. Radoman (1985: 64) wrote, "We, however, have not found any of its representatives either in the Hellenides, the southern Balkan peninsula, Macedonia or Greece, nor in Asia Minor". Instead, he believed that Greece is inhabited by representatives of *Grossuana*, such as *G. serbica vurliana* Radoman, 1966, and of *Radomaniola*, such as *R. curta albanica* Radoman, 1973 and *R. delphica* (Radoman, 1973) (Radoman 1983). However, he did not consider relevant earlier-named taxa. Recently Rysiewska et al. (2016) gave evidence, based on genetic analyses, that Bulgaria is not inhabited by species of *Belgrandiella*, but rather by *Pontobelgrandiella* Radoman, 1973.

To clarify the identity of a recently detected unknown hydrobiid snail from Mavrovo National Park, Macedonia, within the Crni Drim river drainage, we analysed all known Balkan and Greek species of *Belgrandiella*, *Pontobelgrandiella*, *Radomaniola*, and *Grossuana*.

Material and Methods

Abbreviations of collections.

BOE	Boeters Collection (München)
CHARP	Charpentier Collection (Lausanne)
GLÖER	Glöer Collection (Hetlingen)
NMW	Naturhistorisches Museum (Wien)
REI	Peter & Alexander Reischütz Collection (Horn)
SMF	Forschungsinstitut Senckenberg (Frankfurt am Main)
WEST	Westerlund Collection (Göteborg)

Examined material. Spring region of the Rosochka reka [river] (41° 34′6.7″ N, 20° 41′34.4″ E), 1010 m above sea level, Radika drainage, Nacionalen park mavrovo [Mavrovo National Park], about 12 km E of Debar, Macedonia; V. Slavevska-Stamenković leg., 25.iv.2011; GLÖER/2 animals; BOE 3366/7 animals dissected + 2 mature + 1 juvenile animal; SMF 349125/1 animal (holotype).

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The snails were collected using a hand-net with a mesh size of 500 µm and preserved in 75% ethanol. Whorls were counted following Gittenberger et al. (1970). Anatomical investigations were done in accordance with Boeters (1999). Drawings of shells and animals were made with a Zeiss 45° drawing prism. Length and diameter of shells were measured with a 5 mm grid measure plate (0.05 mm grating) at 25× magnification; measurements were rounded to the nearest 0.05 mm. Shells were photographed using a Leica R8 camera with a Digital-Modul-R.

Systematics. To show that the new species belongs to *Grossuana*, we have taken 13 genera with similar morphological and anatomical characters into consideration (Table 1).

To justify the new species, we compare it to known representatives of *Belgrandiella* A.J. Wagner, 1928, *Pontobelgrandiella* Radoman, 1973, *Grossuana* Radoman, 1973, and *Radomaniola* Szarowska, 2006 because the assignment of known species to one of these genera is still unconfirmed due to insufficient descriptions (Figs 1–4, Appendices 1–4).

Thus, in addition to the newly decribed *Grossuana* species of the *Radomaniola*/*Grossuana* group sensu Falniowski et al. (2012), we summarize data on the types, type localities, anatomy, and genetics of representatives of *Belgrandiella*, *Pontobelgrandiella*, *Radomaniola*, and *Grossuana* from the Balkan Peninsula (Table 1, Appendices 1–4).

Despite having a penis with a simple outgrowth and the presence of RS1 and RS2, as in *Grossuana*, *Daphniola* Radoman, 1973 is not mentioned in Table 1 because *D. graeca* Radoman, 1973, the type species of this genus and a junior synonym of *Valvata exigua* A. Schmidt, 1856, is characterised by a valvatiform shell (Radoman 1983: pl. 5 fig. 87, Bodon et al. 2001: 111).

Table 1. Comparison of *Belgrandiella* and related genera.

Genus	Type species	Intestine in roof of mantle cavity	Caecum of stomach	Penis	Receptaculum
Belgrandiella A.J. Wagner, 1928 [a]	*Belgrandia kusceri* A.J. Wagner, 1914	Simply bent	Missing	Simple outgrowth	RS1
Boleana Radoman, 1973 [b]	*Belgrandiella umbilicata* Kuščer, 1932	Simply bent	Missing	Simple outgrowth	RS1
Graecorientalia Radoman, 1973 [c]	*Pseudamnicola vrissiana* Radoman, 1966	?	?	Furcated outgrowth	RS1+RS2
Grossuana Radoman, 1973 [d]	*Grossuana serbica* Radoman, 1973	Simply bent	?	Simple outgrowth	RS1+RS2
Trichonia Radoman, 1973 [e]	*Trichonia kephalovrissonia* Radoman, 1973	?	?	Furcated outgrowth	RS1+RS2
Turkorientalia Radoman, 1973 [f]	*Turkorientalia anatolica* Radoman, 1973	?	?	Weakly furcated outgrowth	RS1+RS2
Graziana Radoman, 1975 [g]	*Paludina lacheineri* Küster, 1853	?	Present	Simple outgrowth	RS1
Sarajana Radoman, 1975 [h]	*Frauenfeldia lacheineri apfelbecki* Brancsik, 1888	?	?	Simple outgrowth	RS1
Cavernisa Radoman, 1978 [i]	*Belgrandiella zaschevi* Angelov, 1959	?	?	Simple outgrowth	RS1
Pontobelgrandiella Radoman, 1978 [j]	*Belgraniella nitida* Angelov 1972	Simply bent	?	Two outgrowths	RS1
Terranigra Radoman, 1978 [k]	*Terranigra kosovica* Radoman, 1978	?	?	Simple	RS1+RS2
Alzoniella Giusti & Bodon, 1984 [l]	*Alzoniella finalina* Giusti & Bodon, 1984	Z-like loop	Missing	Basal and medial outgrowth	RS1+RS2
Radomaniola Szarowska, 2006 pro *Orientalina* Radoman, 1978 pro *Orientalia* Radoman, 1972 [m]	*Paludina curta* Küster, 1853	?	?	Furcated outgrowth	RS1+RS2

[a] Male genitalia of *Belgrandia kusceri*: Bole (1967: fig. 2A), Radoman (1975: fig. 1, 1983: fig. 50). Female genitalia of *B. kusceri*: Bole (1967: fig. 2A) and Radoman (1975: fig. 1, 1983: fig. 50). In all species with investigated female genitalia (*B. crucis*, *B. kusceri*, *B. robusta*, *B. schleschi*, *B. substricta*, *B. superior*, and *B. umbilicata*) the receptaculum (RS1) touches the bursa (Bole 1967: fig. 1B3, 82 fig. 2A3, Radoman 1975: fig. 2, Bole 1967: fig. 3B3, fig. 5B3, fig. 2B3, fig. 2C3). Based on Falniowski & Beran (2015), *B. krupensis* and *B. zermanica* can be included. Distribution in the Balkans: Radoman (1975: fig. 11) and Falniowski & Beran (2015: fig. 1).

[b] According to Falniowski & Beran (2015), *Boleana* is a synonym of *Belgrandiella*. Male and female genitalia of *B. umbilicata*: Bole (1967: fig. 2C) and Radoman (1983: fig. 53).

[c] This genus might preoccupy *Radomaniola* Szarowska, 2006, but more study is needed; compare Radoman's (1983) figures 17 and 18 of *R. curta* and *G. vrissiana*, respectively.

[d] Intestine of *Grossuana codreanui*: Szarowska et al. (2007: figs 15, 16). Male and female genitalia of *G. serbica*: Radoman (1983: fig. 24).

[e] Falniowski et al. (2012: fig. 14) referred to *Radomaniola* sensu stricto a genetially analysed sample of the type species, *Trichonia kephalovrissonia*, but not from the type locality. Male and female genitalia of *T. kephalovrissonia*: Radoman (1983: fig. 43).

[f] Male and female genitalia of *Turkorientalia anatolica*: Radoman (1983: fig. 49).

[g] Caecum of *Graziana acheineri* at the proximal end of stomach: Haase (1994: fig. 7), but not confirmed by Szarowska (2006: figs 141–142, 153–157, 243–244). Male and female genitalia of *G. lacheineri*: Bole (1967: fig. 1A), Radoman (1975: fig. 3, 1983: fig. 51), and Haase (1994: figs 5B, 6E, F).

[h] A junior synonym of *Belgrandiella*. Male and female genitalia of *Sarajana apfelbecki*: Radoman (1975: fig. 6, 1983: fig. 52).

[i] See Appendix 2, footnote 4. Male and female genitalia of *Cavernisa zaschevi*: Radoman (1983: fig. 60).

[j] Intestine of *Pontobelgrandiella pandurskii*: Georgiev (2011a: fig. 1.1). Male and female genitalia of *P. nitida*: Radoman (1983: fig. 59). Male genitalia of *P. tanevi*: Georgiev (2013: figs 3, 4).

[k] Male and female genitalia: Radoman (1978: fig. 1, 1983: fig. 30).

[l] Stomach and intestine of *Alzoniella finalina*: Giusti & Bodon ([1984]: fig. 2G, H). Male and female genitalia of *A. finalina*: Giusti & Bodon ([1984]: figs 2A–F, 2G). The relationship between *Alzoniella* and *Terranigra* has not yet been discussed.

[m] Male and female genitalia of *Radomaniola curta*: Radoman (1983: fig. 17).

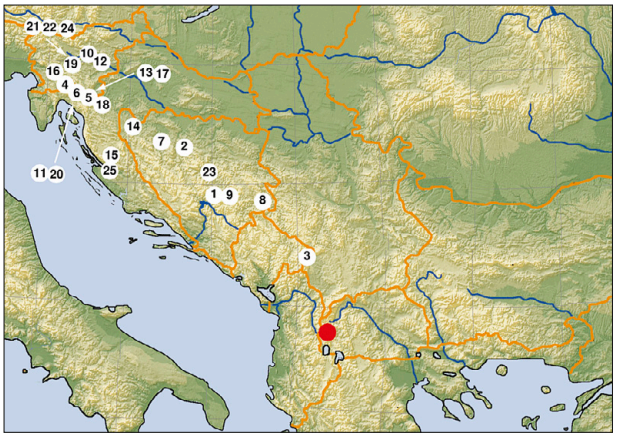

Figure 1. Type localities of species of *Belgrandiella*; red dot: *Grossuana maceradica* n. sp. Localities: **1**, *B. apfelbecki* (Brancsik, 1888). **2**, *B. bozidarcurcici* Glöer & Pešić, 2014. **3**, *B. bumasta* Schütt, 1960. **4**, *B. conica* Radoman, 1975. **5**, *B. croatica* (Hirc, 1881). **6**, *B. crucis* (Kuščer, 1928). **7**, *B. dabriana* Radoman, 1975. **8**, *B. driniana* (Radoman, 1975). **9**, *B. erythropoma* Schütt, 1959. **10**, *B. fontinalis* (F.J. Schmidt, 1847). **11**, *B. globulosa* Bole, 1979. **12**, *B. hershleri* Slapnik, 1997. **13**, *B. hyalis* Westerlund, 1886. **14**, *B. koprivnensis* Radoman, 1975. **15**, *B. krupensis* Radoman, 1973. **16**, *B. kusceri* (A.J. Wagner, 1914). **17**, *B. novoselensis* Radoman, 1975. **18**, *B. pageti* Schütt, 1970. **19**, *B. robusta* Radoman, 1975. **20**, *B. schleschi* Kuščer, 1932. **21**, *B. substricta* (Kuščer, 1932). **22**, *B. superior* Kuščer, 1932. **23**, *B. travnicensis* (Radoman, 1975). **24**, *B. umbilicata* Kuščer, 1932. **25**, *B. zermanica* Radoman, 1973.

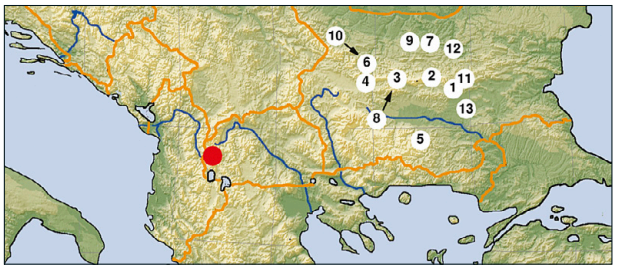

Figure 2. Type localities of species of *Pontobelgrandiella*; red dot: *Grossuana maceradica* n. sp. Localities: **1**, *P. angelovi* (Pintér, 1968). **2**, *P. bachkovoensis* (Glöer & Georgiev, 2009). **3**, *P. bulgarica* (Angelov, 1972). **4**, *P. bureschi* (Angelov, 1976). **5**, *P. dobrostanica* (Glöer & Georgiev, 2009). **6**, *P. hessei* (A.J. Wagner, 1928). **7**, *P.* (?) *maarensis* (Georgiev, 2013). **8**, *P. nitida* Angelov, 1972. **9**, *P. pandurskii* (Georgiev, 2011). **10**, *P. pusilla* (Angelov, 1959). **11**, *P. stanimirae* (Georgiev, 2011). **12**, *P. tanevi* Georgiev, 2013. **13**, *P. zagoraensis* (Glöer & Georgiev, 2009).

Figure 3. Type localities of *Grossuana* species in the Balkans; red dot: *Grossuana maceradica* n. sp. Localities: **1**, *G. angeltsekovi* Glöer & Georgiev, 2009. **2**, *G. codreanui* (Grossu, 1946). **3**, *G. delphica* Radoman, 1973. **4**, *G. derventica* Georgiev & Glöer, 2013. **5**, *G. euxina* (A.J. Wagner, 1928). **6**, *G. falniowski* Georgiev, Glöer, Dedov & Irikov, 2015. **7**, **8**, not shown, see Appendix 3 for *G. hohenackeri* (Küster, 1853) and *G. marginata* (Westerlund, 1881). **9**, *G. serbica* Radoman, 1973. **10**, *G. slavyanica* Georgiev & Glöer, 2013. **11**, *G. thracica* Glöer & Georgiev, 2009. **12**, *G. vurliana* (Radoman, 1966).

Figure 4. Type localities of species of *Radomaniola* and of *Graecorientalia*; red dot: *Grossuana maceradica* n. sp. Localities: **1**, *R.* (?) *aytosensis* Georgiev, 2012. **2**, *R. bosniaca* Radoman, 1973. **3**, *R. bulgarica* Glöer & Georgiev, 2009. **4**, *R. curta* (Küster, 1853). **5**, *R. elongata* Radoman, 1973. **6**, *R.* (?) *filiola* (Westerlund, 1881). **7**, *R.* (?) *haesitans* (Westerlund, 1881). **8**, *R.*(?) *hessei* (Kobelt, 1891). **9**, *R. lacustris* Radoman, 1983. **10**, *R. montana* Radoman, 1973. **11**, *R. radostinae* Georgiev, 2012. **12**, *R. rhodopensis* Glöer & Georgiev, 2009. **13**, *R. seminula* (Frauenfeld, 1863). **14**, *R. strandzhica* Georgiev & Glöer, 2013. **15**, *R. tritonum* Bourguignat, 1852. **16**, *Graecorientalia vrissiana* (Radoman, 1966).

Systematics

***Grossuana maceradica* n. sp.**

Figures 5A–C, 6

Holotype. SMF 349125.

Paratypes. GLÖER/2 specimens; BOE 3366/7 specimens.

Type locality. Spring region of the Rosochka reka [river] (Radika drainage), above the village of Rosoki (41° 34′ 6.7″ N, 20° 41′ 34.4″ E), 1010 m above sea level, southern nacionalen park Mavrovo [Mavrovo National Park], c. 12 km E of Debar, Macedonia.

The Rosochka reka is a river in the Radika drainage, which is a right tributary of the Crni Drim [=Black Drim], which flows to the Adriatic Sea.

Etymology. The species' name is a composite word and refers to Macedonia and the Radica river.

Shell (Fig. 5A–C). Ovoid, transparent, smooth; whorls 3¾–4, conical, with straight sides and pronounced suture, neither ascending nor descending on shell wall; parietal

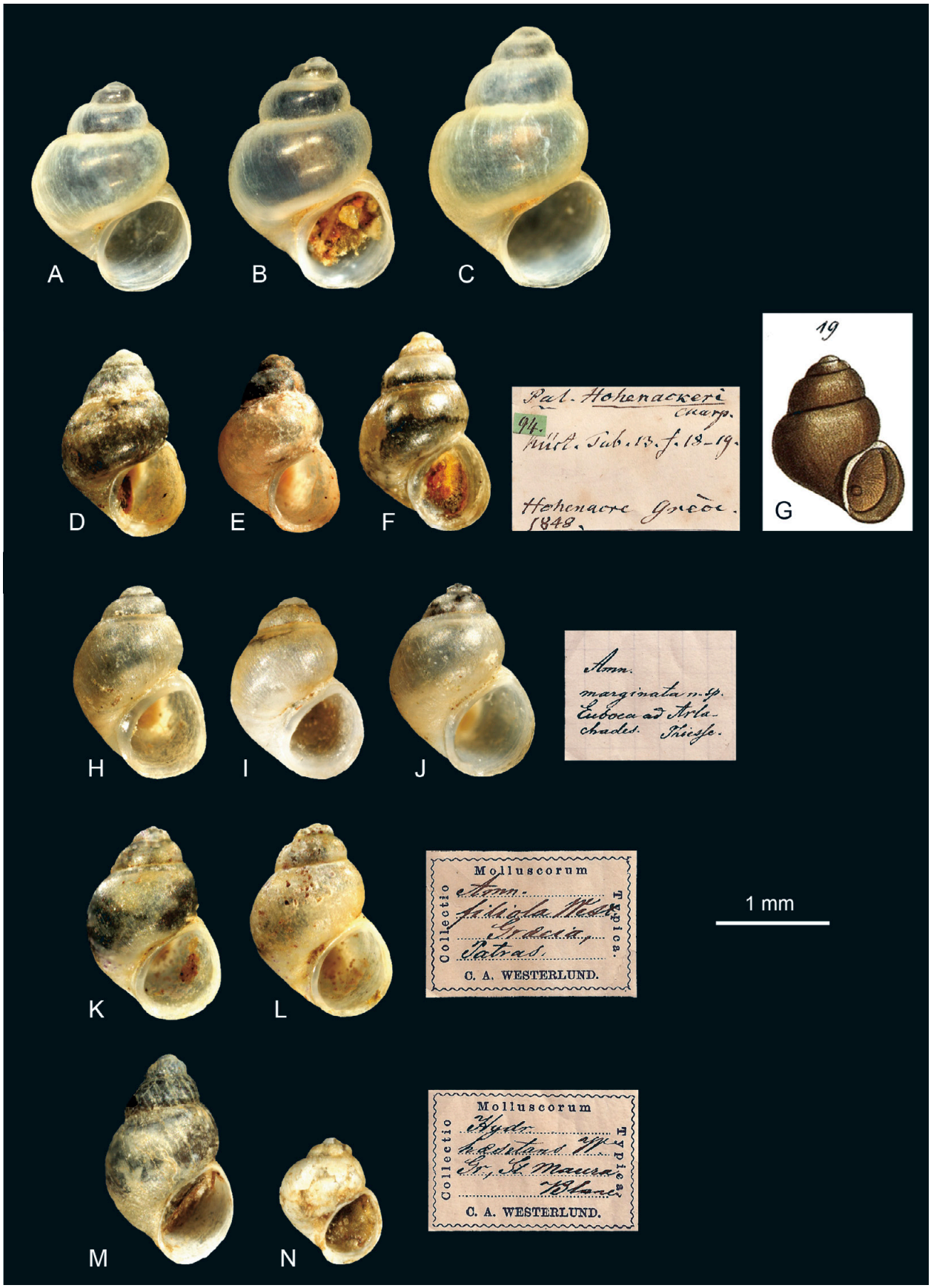

Figure 5. A–C. *Grossuana maceradica* n. sp. Macedonia, Rosochka reka; V. Slavevska-Stamenković leg. 2015: (**A, C**) BOE 3366/2 paratypes; (**B**) SMF 349125/holotype). **D–G.** *Grossuana* (?) *hohenackeri* (Küster, 1853), shells: (**D**) neotype (CHARP); (**E, F**) 2 other shells (CHARP); (**G**) shell [Küster 1853: pl. 10 fig. 20; height of shell 1.69 mm]). **H–J.** *Grossuana* (?) *marginata* (Westerlund, 1881). "Graecia ad Avlochades", Evia [= Euboea]; WEST (Göteborg)/4526: (**H**) lectotype.; (**I, J**) 2 paralectotypes. **K, L.** *Radomaniola* (?) *filiola* (Westerlund, 1881). "Graecia, Patras, Fonte Salevale"; WEST (Göteborg)/4527 (2 syntypes?). **M, N.** *Radomaniola* (?) *haesitans* (Westerlund, 1881), "Graecia, Santa Maura, Megali Vressi"; WEST (Göteborg)/4385: (**M**) syntype; (**N**) syntype?).

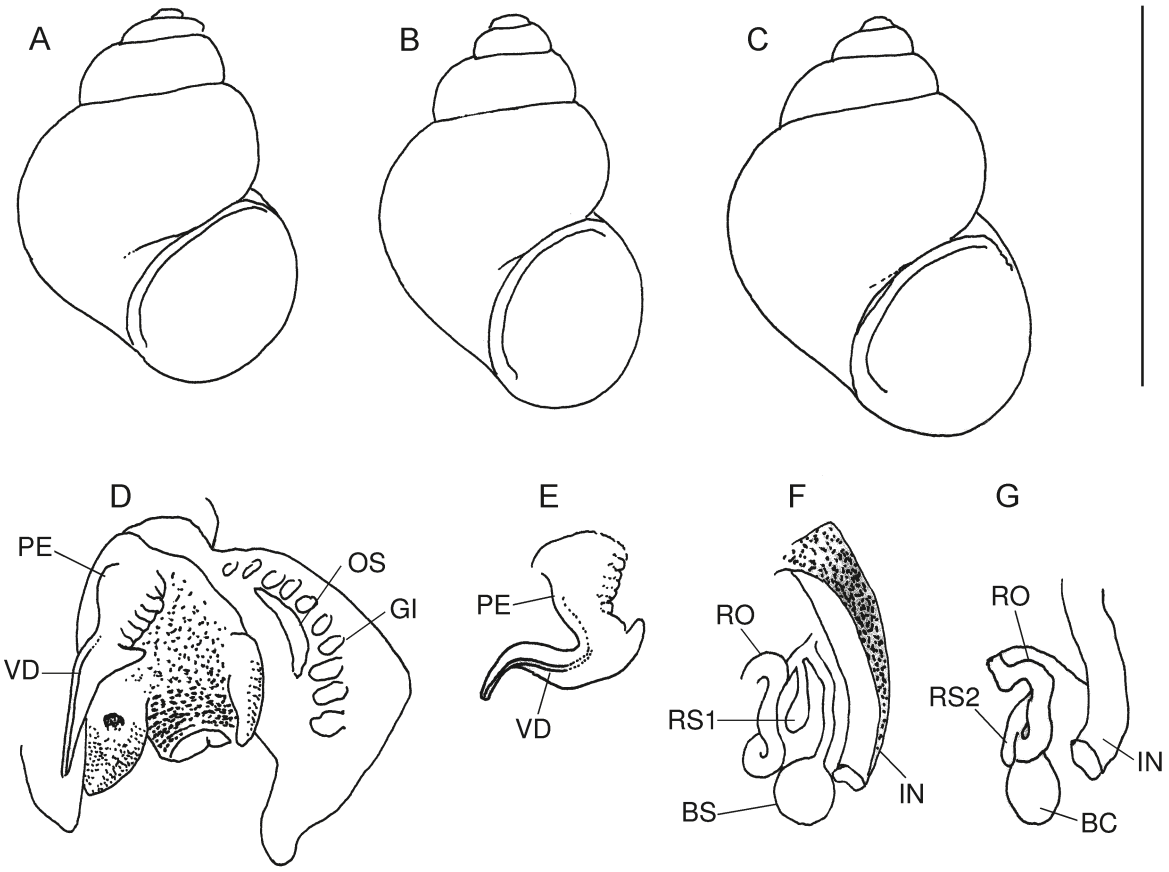

Figure 6. *Grossuana maceradica* n. sp. Macedonia, Rosochka reka; V. Slavevska-Stamenković leg. 2015; BOE 3366/paratypes. **A, B.** Shells, ♂. **C.** Shell, ♀. **D.** Same ♂ as A, head, mantle cavity opened to show penis and gill. **E.** Same ♂ as B, penis. **F.** Same ♀ as C, renal oviduct with RS1 and bursa, intestine partially broken away. **G.** ♀, renal oviduct with bursa, oviduct slightly turned to show RS2, intestine partially broken away. Abbreviations: BC = bursa copulatrix; GI = gill; IN = intestine; OS = osphradium; PE = penis; RO = renal oviduct; RS1 = distal receptaculum seminis; RS2 = proximal distal receptaculum seminis; VS = vas derens. Scale bar: 2 mm in A–C, 1 mm in D–G.

border of aperture fused with shell wall; palatal and basal border of aperture neither broadened nor thickened; columellar border slightly broadened; umbilicus closed by columellar border or narrowly open as a slit.

Measurements: height 1.97–2.33 mm, mean 2.11 mm ($N = 4$); diameter 1.44–1.58 mm, mean 1.51 mm ($N = 4$); height:diameter = 1.40.

Operculum. Light brownish, transparent, showing an unpigmented middle field of the foot, flanked by 2 black fields.

Animal (Fig. 6). Head, mantle and body whorls pigmented black; 10 ctenidium filaments ($N = 1$♂); intestine simply bent in the roof of the mantle cavity ($N = 4$).

Males:females = 2:5 ($N = 7$).

Male genitalia: penis flat, unpigmented; as seen from top, formed like a long wedge provided with a hook-like middle appendix. Penial duct runs laterally down to the tip of the penis on the opposite side of the appendix. Base of penis shows in its inactive state bellows-like folds ($N = 2$) in front of appendix.

Female genitalia: bursa spherical, provided with a long duct, distal spherical receptaculum (RS1) with a pronounced duct, which, however, is too short to allow receptaculum to touch bursa; proximal receptaculum (RS2) tube-like, branching off from renal oviduct distally in front of its turn at bursa and accompanies renal oviduct to the turn, where proximal receptaculum touches bursa ($N = 2$). Proximal receptaculum iridescent, a muscular tube.

Habitat and distribution (Fig. 7). Known only from the type locality. Here, the Rosochka reka is a small mountain stream with clean, cold, fast running water. Living animals were found on limestone substrates, mostly on stones covered with aquatic mosses.

Species differentiation. Taxa of the *Radomaniola*/*Grossuana* group reported from neighbouring areas are *R. curta kicavica* Radoman, 1973, *R. curta albanica* Radoman, 1973, *G. serbica serbica macedonica* Radoman, 1973, and *G. serbica scupica* Radoman, 1973.

According to Radoman (1985: fig. 3), both of these subspecies of *R. curta* occur in the area of the Adriatic drainage, and *R. c. kicavica* allegedly even in Crni Drim river drainage (Radoman 1983), the same drainage as the new species. The shells of both subspecies of *R.*

Figure 7. Type locality of *Grossuana maceradica* n. sp., Mavrovo National Park, Macedonia. Photograph: D. Jovanovska.

curta are more elongate than shells of the new species, height : diameter 1.70 and 1.80 (Radoman 1983: pl. 2 figs 26–27) versus 1.40. Furthermore, whereas the penis of *R. curta* is provided "with a 'double' ('fisured' at the top) outgrowth on the left side" (Radoman 1983: figs 17, 41, Falniowski et al. 2012: fig. 8M10), in *G. maceradica* n. sp. the penis shows a simple hook-like outgrowth. Finally, in females of the new species, the proximal receptaculum (RS2) is tube-like and not, as in *R. curta*, drop-like and borne by a short duct (Radoman 1983: fig. 17).

Whereas Radoman (1983: 56, fig. 24) described the penis of *G. serbica* as "long, with a very prolonged, pointed top and a weak outgrowth on the left side, which is hardly visible in many specimens", in *G. maceradica* n. sp. the penis shows a prominent hook-like outgrowth.

Radoman (1983: 59) described the shell of *G. s. macedonica* as "roundish, more shortened than that in all up to now known subspecies of the genus, with weakly developed first whorls compared to the last one". In *G. maceradica* n. sp. the shell is somewhat more elongate, which is expressed by a height:diameter ratio of 1.40 instead of 1.35 (Radoman 1983: pl. 4 fig. 51).

In *G. s. scupica* the axis of the ovoid aperture is less inclined to the axis of the shell than in *G. maceradica* n. sp. (i.e., 18° vs 20°).

The type localities of *G. s. macedonica* and *G. s. scupica* are both within the Vardar drainage. This system is part of the Aegean drainage area and not the Adriatic drainage area where *G. maceradica* n. sp. occurs.

Discussion

Discrimination of spring snails

Geological and topographical aspects. Common wisdom has it that species of spring snails are locally restricted to small areas, as for example in *Belgrandiella*. Recently, however, Falniowski & Beran (2015) critically discussed this view with regards to 4 nominal Balkan taxa. They argued that shells alone cannot be the basis for species discrimination in the Truncatelloidea. But they also cited Radoman (1983) as claiming that congeneric species need not differ in their anatomy. Falniowski's and Beran's view, based on their interpretation of Radoman, should be adopted not just for *Belgrandiella* but for other so-called spring snails.

The traditional understanding is perhaps still too inflexible, but that spring snails may indeed be geographically restricted to very small areas has been corroborated, for example, for *Bythinella badensis* (Boeters, 1981), based on conchological, anatomical, genetic, and geographical data. Although *Bythinella dunkeri* (Frauenfeld, 1857) and *B. badensis* inhabit the same massif, *B. badensis* only occurs in a small southern part of the Schwarzwald. These species were isolated from each other in pre-Quaternary times because the southern Schwarzwald was drained by the Saone flowing into the Rhone, and not into the Rhine as today. Thus, Radoman's approach of using drainage systems as a guide to distribution patterns can be useful.

Grossuana maceradica n. sp. is the only species of *Grossuana* yet known from an Adriatic drainage. All neighbouring localities reported by Radoman (1983, 1985) and corroborated by Falniowski et al. (2012: fig. 1M) for *Grossuana* are within the Crna reka drainage, part of the Vardar system, which flow to the Aegean Sea.

In the Radika drainage only 2 *Radomaniola*/*Grossuana* taxa are known. These are *G. maceradica* n. sp. and *R. R. curta kicavica.* According to Radoman (1983: 44), *R. c. kikavica* is "Spread … in springs in drainage areas of the rivers Radika, and Crni Drim [entered by the Radika at Debar], including some springs in the Ohrid Basin … and in the Prespa Basin". However, the type locality of *R. c. kicavica* is "Izvor, a big spring about 16 km [west] from Kicevo town" (Radoman 1983: 44), and the Izvor spring supplies the Treska river, which belongs to the Aegean drainage and not to the Adriatic drainage, as does the Radika.

Radoman (1985: 110) described the Drim as "mainly a mountain river, about 300 km long, with many whirlpools, rapids and waterfalls ... naturally it contains no marsh or spring forms except for *Theodoxus fluviatilis* ... this river could not have played the role of an immigration way ...". This view might apply to species which have not invaded interstitial habitats.

Concerning the alleged occurrences of *R. curta kicavica* in springs that supply Lake Ohrid and *R. c. curta* in the Zeta river drainage (Küster 1853, Radoman 1983, Falniowski et al. 2012), Radoman (1985: 111) argued that "Ohrid non-endemic forms", such as *R. c. kicavica*, "date in this area from the remote past of this basin [Lake Ohrid], from the time of its broad intercommunication with neighbouring waters at a very low altitude above sea level". However, with regard to an invasion of the Drim drainage by the *Radomaniola*/*Grossuana* group, Popov

et al. (2004: map 10) showed that in the Middle–Late Pliocene (3.4–1.8 Myr) the southernmost foothills of the Dinarides and the Hellenides flanked an area with freshwater lakes and marshes.

It is strange that Radoman (1983: 44) thought that *R. c. kicavica* occurs in 2 separate drainages. Even if passive transport by birds or water beetles (Boeters 1979, 1982, 1993) is not excluded, it is questionable whether his *R. c. kicavica* from Radika and Crni Drim river drainages is the same as that from its type locality in Treska river drainage.

From Radoman's (1983) ideas on speciation in the Lake Ohrid basin, it might be concluded that the ancestors of *G. maceradica* n. sp. immigrated to its current locality "in the remote past", and that it is an endemic, not non-endemic, species. This might explain the unique characters seen in males of this species.

Anatomical aspects. Whether the soft parts differ among species of spring snails, such those of the *Radomaniola*/*Grossuana* group, depends on which species are being compared. In *R. maceradica* n. sp., the penis carries a pronounced hook instead of a weak outgrowth, as described for the type species, *G. serbica* (Radoman 1983).

In contrast, Falniowski et al. (2012: fig. 8G13–G15, 8G19) have shown that in *Grossuana* the penis may not have any outgrowth. Falniowski et al. (2012) investigated females of *G. serbica* from the type locality, but their results differ remarkably from Radoman's description. Radoman (1983: 57) described this species as having the "Genital chamber of a characteristic pear-shaped form, elongated and proportionally strongly developed". However, Falniowski et al. (2012: table 1, row M3) depicted a spherical bursa. Furthermore, Radoman (1983: fig. 24) shows that the distal receptaculum (RS1) nearly touches the base of the bursa, but according to Falniowski et al. (2012: figs 9, 10M3), it is located well in front of the bursa. These striking differences need clarification as to whether they represent only physiological, stochastic variation, or something else.

Excursus for some Greek taxa of the *Radomaniola*/*Grossuana* group

Radoman (1966) described from Greece *Pseudamnicola vrissiana* and *Pseudamnicola vurliana*, and later, *Orientalina delphica, Trichonia kephalovrissonia*, and *Trichonia trichonica* (Radoman 1973), but he did not consider taxa described from that country earlier. After *Hydrobia tritonum* Bourguignat, 1852 and *Paludina curta* Küster, 1853, *Paludina hohenackeri* Küster, 1853, from the Balkans, is the third of the 15 *Radomaniola* taxa to be described (Appendix 4). Radoman (1983) had overlooked that lectotypes of *Radomaniola seminula* (Frauenfeld, 1863) [*Amnicola*] and *R.* (?) *hessei* (Kobelt, 1891) [*Pseudamnicola*] were selected by Schütt ([1980]: pl. 10 fig. 23 and pl. 9 fig. 17, respectively).

Schütt [1980] misleadingly thought that *R. seminula* and *R.* (?) *hessei*, as well as *R.* (?) *filiola* Westerlund, 1881 [*Amnicola*] and *R.* (?) *haesitans* Westerlund, 1881 [*Hydrobia*], belong to *Belgrandiella*.

Falniowski et al. (2012) studied *R. tritonum* (Bourguignat, 1852) [*Hydrobia*], *Grossuana hohenackeri* (Küster, 1853) [*Paludina*], and *G. marginata* (Westerlund, 1881) [*Amnicola*] but without making any comparisons with type specimens. However, among these 3 taxa, *R. tritonum* seems to be sufficiently redescribed, although only by topotypes. According to Bourguignat (1853: 64), "Ce Mollusque habite sous les feuilles des plantes aquatiques des eaux fangeuses du marais de Lerne, en Grèce" [This mollusc lives under the leaves of aquatic plants from the muddy waters of the marsh of Lerne in Greece]. Falniowski et al. (2012: 22, fig. 2G5, fig. 7G5) examined a sample from a spring at Mili (Lérni), Peloponnisos.

Here, we discuss the identity of *Paludina hohenackeri* Küster, 1853, *Amnicola filiola* Westerlund, 1881, *A. marginata* Westerlund, 1881, and *Hydrobia haesitans* Westerlund, 1881.

Paludina hohenackeri Küster, 1853

Figures 5D–G, 9B, C

Material. Syntypes of *Paludina hohenackeri* are unknown (cf. Bank 2006: 70); we have not found any syntypes at SMF and NHMW. Original material in the Charpentier Collection: 31 shells + 1 juvenile shell incrusted within aperture. Three labels accompany the syntypes: (1) label with green sticker "94", "*Pal. Hohenackeri* Charp. Küst. Tab. 13 f[ig]. 18–19. Hohenacre Grèce 1848"; (2) label: "208 [in red] *Hohenackeri* Charp. *Paludina brevis* ["*brevis*" crossed out] *Hohenaceri* Graecia 1848"; (3) label affixed on box, "*Hohenackeri* Charp." In Charpentier's catalogue it is listed under *Paludina* as "94 *Hohenackeri* Charp.- Grèce"; the number of specimens is given as 25.

Neotype. Küster (1853: 77) received his material from Charpentier ("*Paludina hohenackeri*, Charpentier in litt"). To clarify the identity of *B. hohenackeri*, we hereby select a neotype from the original material.

Measurements of neotype: height 1.68 mm, diameter 1.10 mm.

The shape and measurements of this neotype correspond to Küster's (1853) data and his plate 13 figures 18, 19. When converting his data ("Höhe [height] ¾‴, Breite [diameter] ½‴"; Küster 1853: 77) by taking 1 Paris line as 2.26 mm, the result is a height of 1.69 mm and a diameter of 1.13 mm (cf. the conversion by Westerlund 1886: 76, "G. 1⁷⁄₁₀ ... mm" [= 1.7 mm]). Küster's measurements and those of the neotype are shown in Table 2.

***Paludina hohenackeri* sensu Schütt [1980] and Bank (2006).** The type locality of *P. hohenackeri* is Greece, without a specific locality. Schütt [1980] treated *P.*

Table 2. Measurements of *Paludina hohenackeri* Küster, 1853.

Taxonomic reference/collection	Height (mm)	Diameter (mm)	Height:diameter
Paludina hohenackeri Küster, 1853: 77	1.69 [¾‴]	1.13 [½‴]	1.50:1
Neotype of *Paludina hohenackeri* (Charpentier Collection)	1.68	1.10	1.53:1
Grossuana hohenackeri sensu Falniowski et al. 2012: 25 fig. 3 G19	1.63	1.07	1.52:1
Grossuana hohenackeri sensu Schütt 1980: pl. 10 fig. 20; SMF 262 332	1.83	1.27	1.44:1

hohenackeri as a species of *Belgrandiella* and gave its distribution as "(restr. Thessalien) ... Insel Euböa ... Thrazien ...". Bank (2006: 55), refering to Schütt [1980], gave its distribution as follows: "GR-AEG [= North Aegean Islands] (Limnos), GR-GRC [= Greek mainland (including Andikíthira, Evia, the Ionian Islands, Samothráki, the Northern Sporades, and Thassos] (mainland; Evia; Thassos). Endemic for Greece". However, neither Schütt nor Bank had clarified the identity of *P. hohenackeri*. In comparison to specimens of the original material (see below), the shell of *B. hohenackeri* sensu Schütt [1980] is less conical.

***Paludina hohenackeri* in the literature.** Falniowski et al. (2012, 2015) treated *P. hohenackeri* as a species of *Grossuana*.

Operculum and pigmentation. The dried animal of the neotype, seen through the shell wall, is black. Its operculum is chestnut-coloured.

Attempted identification of the type locality. Concerning the *Radomaniola*/*Grossuana* group in Greece, we have compared the original material in the Charpentier Collection to shells from 56 localities scattered throughout the country, including 29 samples collected by P. and A. Reischütz, 6 shells figured by Schütt [1980], 2 shells figured by Radoman (1983), and 19 shells figured by Falniowski et al. (2012). All localities of samples collected by P. and A. Reischütz and of the shells figured by Schütt, Radoman and Falniowski et al. are shown in Figure 9. At a glance, 2 samples only, collected by P. and A. Reischütz (Figs 9A, 9C) might be *P. hohenackeri.* These are:

Locality 4 (Fig. 8): Thermo, a spring at Trihonida lake (Fig. 9A).
Locality 9 (Fig. 8): a spring in Kefalari at Lerna (Fig. 9C).

A detailed comparison of the neotype (Fig. 9B) with the shells from these 2 localities (Figs 9A, 9C) shows, however, that only the shell from Kefalari at Lerna represents *G.* (?) *hohenackeri*. The shell from Thermo (in front view of Fig. 9A) has a narrower second whorl and a less-vaulted last whorl; the angle of the aperture, as formed by the palatal and parietal border, is not lifted upwards, and the columellar border is much less turned over the umbilicus.

Because of its wealth of water, Lerna was an important ancient place rich in myths and has always attracted travellers. One such traveller, Louis Félicien Joseph Caignart de Saulcy, a globetrotter, botanist, paleontologist, entomologist, and malacologist, collected a sample of snails in Lerna; these were used by Bourguignat for his decription of *Hydrobia tritonum*, a species of *Grossuana*.

It is our view that Charpentier's material originated from Lerna. Charpentier was a well-known collector who maintained strong contacts in the field of malacology. After receiving this material, he forwarded it to Küster for description. It is not a surprise that the Charpentier Collection also contains a sample of Bourguignat's *Hydrobia tritonum* collected by Saulcy (Charpentier catalogue: 20, no. 63). Therefore, we cannot accept Schütt's ([1980]: 127, caption of pl. 10 fig. 20) attempt to restrict the type locality to Thessaly. Schütt had seen neither syntypes nor the original material in the Charpentier Collection, and his photograph of *P. hohenackeri* (Schütt [1980]: pl. 10 fig. 20) does not correspond to the original material (Table 2).

Further investigations are needed to determine if *P. hohenackeri* Küster, 1853 is a junior synonym of *Hydrobia tritonum* Bourguignat, 1852. Its type locality is number 42 in Figure 8.

Amnicola marginata Westerlund, 1881

Figure 5H–J

Material. Westerlund Collection (Göteborg), 4526: (1) numerous shells + 1 shell *Bythinella* sp.; label: "*Amn. marginata* n. sp. Euboea ad Arlachades. Thiesse"; (2) c. 50 shells + 3 shells *Bythinella* sp.; label: "*Amn. marginata* n. sp. Euboea, Arlachlades [sic]. Blanc"; (3) 3 shells; label: "2. *Amnicola marginata* West. Eubée".

We have not seen the material in the Westerlund Collection (Stockholm), RM 14.20.

Lectotype. We have selected a lectotype from the first sample mentioning "Thiesse". Measurements of the shell: height 1.73 mm, diameter 1.20 mm. For comparison, Westerlund's (1881: 68) measurements are "Long. 1¾, diam. 1 mm".

***Amnicola marginata* in the literature.** Schütt [1980], followed by Bank (2006), treated this species as *B. hohenackeri marginata*, but according to Falniowski et al. (2012, 2015), *A. marginata* is a species of *Grossuana*.

Operculum and pigmentation. The dried animal of the lectotype, seen through the shell wall, is black. Its operculum is chestnut-coloured.

Type locality. We have not been able to identify the type locality "Graecia ad Avlochades", even by taking the

Figure 8. Localities of species of the *Radomaniola/Grossuana* group in Greece: **1**, Drama, municipal pool, P. & A. Reischütz leg.. vii.2006; BOE 3369; **2**, spring at Monolithio [at Kalendini?], P. & A. Reischütz leg.; BOE 3370; **3**, Louros, valley at Ag. Georgios, P. & A. Reischütz leg.; BOE 3371; **4**, Thermo, spring at Trihonida lake, P. & A. Reischütz leg.; BOE 3372; **5**, Quelle at Amphitea at Ioannina, P. & A. Reischütz leg.; BOE 3373; **6**, spring at Olimbias–Arnea road at crossroads Varvara, P. & A. Reischütz leg.; BOE 3374; **7**, spring in Kristallopigi W of Oliki [at Paramithia?], P. & A. Reischütz leg. viii.2003; BOE 3375; **8**, Peloponisos, ancient spring of Phigalia E of Za[c]haro, viii. 2003 P. & A. Reischütz leg. viii.2003; BOE 3376; **9**, Peloponisos, spring in Kefalari at Lerna, P. & A. Reischütz leg. viii.2008; BOE 3377; **10**, Peloponisos, spring S of Vrisari W of Kalavrita, P. & A. Reischütz leg. viii.2005; BOE 3378; **11**, Peloponisos, Altomira S of Kambos, P. & A. Reischütz leg. viii.2005; BOE 3379; **12**, Peloponisos, spring in Aetos at Dorio, P. & A. Reischütz leg. viii.2005; BOE 3380; **13**, Evvia, spring in Steni Dirfos, P. & A. Reischütz leg. vii.2006; BOE 3381; **14**, spring at Kastro Livadia, P. & A. Reischütz leg. vii.2007; BOE 3382; **15**, Evvia, spring 3 km SW of Agriopotamo [Agriovotano?], P. & A. Reischütz leg. vii.2007; BOE 3383; **16**, Maked, spring in Paradeissos [Paradisos] W of Nestos [?], P. & A. Reischütz leg. vii.2007; BOE 3384; **17**, Anatoliko Frangista NW of Karpenision [Karpenisi], spring at open-air swimming pool, P. & A. Reischütz leg. vii. 2008; BOE 3385; **18**, spring in Eptahori W of Konitsa, P. & A. Reischütz leg. vii.2010; BOE 3386; **19**, Ag. Sophia, at Trihonida lake, spring, P. & A. Reischütz leg. vii.2010; BOE 3387; **20**, captured spring downhill Anavra S of Thermopiles, P. & A. Reischütz leg. vii.2010; BOE 3388; **21** Peloponisos, Likeo, spring at church in direction of Neda, P. & A. Reischütz leg. vii.2010; BOE 3389; **22**, Ag. Oros, Athos, spring Agiasma at Ag. Athanasio, P. & A. Reischütz leg. ix.2013; BOE 3390; **23**, Ag. Oros, Athos, spring S of Megistis Lavras, P. & A. Reischütz leg. ix. 2013; BOE 3391; **24**, Nagia N of Parga, spring, P. & A. Reischütz leg. iv.2014; BOE 3392; **25**, Peloponisos, Killini, Roman baths, P. & A. Reischütz leg. iv.2014; BOE 3393; **26**, spring W of Vonitsa, at road at Pla Panagia, P. & A. Reischütz leg. iv.2014; BOE 3394; **27**, Evvia, spring between Kokkinohori and Karistos, P. & A. Reischütz leg. iv.2016; BOE 3395; **28**, Piges Vellas S of Konitsa, P. & A. Reischütz leg. v.2016; BOE 3396; **29**, spring in Vrisoula in direction of Kranea N [W?] of Amvrakikos Kolpos, P. & A. Reischütz leg. v. 2016; BOE 3397; **30**, Levkas, Kaligoni; Schütt 1980: pl. 9 fig. 16; **31**, Zante; loc. cit.: pl. 9 fig. 17; **32**, Moules at Arta; loc. cit.: pl. 9 fig. 18; **33**, Delphi; loc. cit.: pl. 9 fig. 19; **34**, Velestinon; loc. cit.: pl. 10 fig. 20; **35**, Kavalla; loc. cit.: pl. 10 fig. 20; **36**, Delfi; Radoman 1983: 46, pl. 2 fig. 31; **37**, Vrissia; loc cit.: 85, pl. 6 fig. 88; **38–52**, Falniowski et al. 2012: 21 fig. 1 G1-G15, 24 fig. 2 G1–G15; **53–56**, loc. cit.: 21 fig. 1 G17–G20, 24 fig. 2 G17–G20.

labels of the syntypes into consideration. Westerlund & Blanc (1879: 141) mentioned "Nord de l'Eubée à Arlachades [sic]", but in another context (i.e., the label of the first sample).

At the type locality, *A. marginata* apparently co-exists with a species of *Bythinella* (shell height 2.95–3.35 mm, $N = 2$). This may be useful for the rediscovery of the type locality.

Amnicola filiola Westerlund, 1881

Figure 5K, L

Material. In Westerlund Collection (Göteborg) 4527: (1) 4 shells, label (printed: "Collectio Molluscorum Typica C. A. Westerlund"): "*Amn. filiola* West. Graecia, Patras"; (2) 4 shells; label: "*Pal. filiola* W. Gr., Patras."

Measurements of the largest shell: height 1.75 mm, diameter 1.35 mm, height:diameter = 1.30 [instead of "Long. 2, diam. 1⅓ mm" (Westerlund 1881: 68), height:diameter = 1.50].

Because of the remarkably differing measurements of the original description and the syntypes, and because we have not seen material in Westerlund Collection (Stockholm) RM 14.21, we hesitate to select a lectotype.

***Amnicola filiola* in the literature.** According to Schütt ([1980]: 128), *A. filiola* is a junior synonym of *Amnicola seminula* Frauenfeld, 1863, which he regards to be a species of *Belgrandiella*. Bank (2006) accepted this synonymy. Falniowski et al. (2012) examined a specimen from near Patras, although they did not provide it with a name.

Hydrobia haesitans Westerlund, 1881

Figure 5M, N

Material. Westerlund Collection (Göteborg) 4385: (1) 4 shells; label (printed: "Collectio Molluscorum Typica C.A. Westerlund"): "*Hydr. haesitans* W. Gr., St. Maura Blanc"; (2) 3 shells; label: "*Pal. haesitans* W. Graecia, Santa Maura."

Measurements of the largest shell in the first sample: height 1.925 mm, diameter 1.175 mm [instead of "Long. 2¾ diam. 1½ mm" (Westerlund 1881: 69)]. The heights of the 6 mature shells, belonging to another species, are ≤1.40 mm.

We hesitate to select this single shell as the lectotype, because its aperture is not fully developed and because

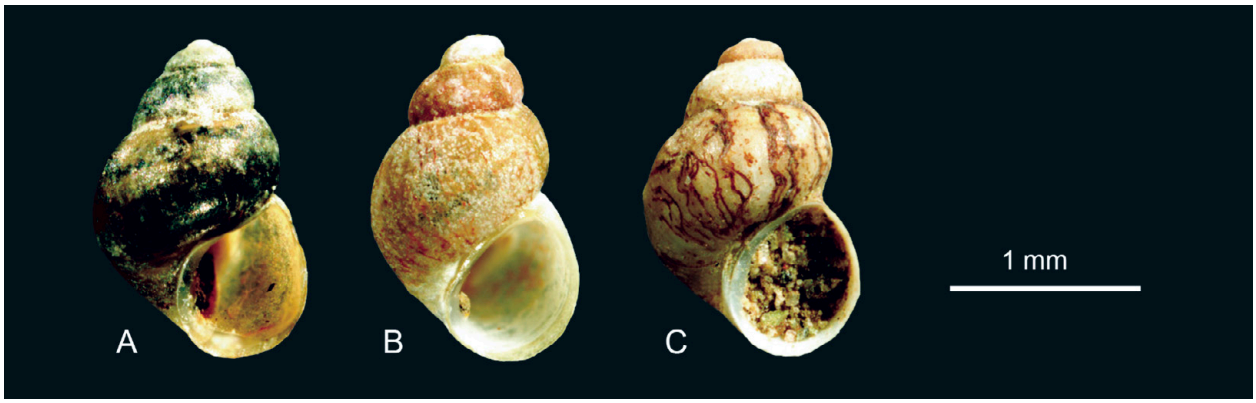

Figure 9. A. *Grossuana* (?) sp., Greece, Thermo, spring at Trihonida lake (locality 4 in Fig. 8), P. & A. Reischütz leg.; BOE 3372. **B, C.** *Grossuana* (?) *hohenackeri* (Küster, 1853): (**B**) neotype (CHARP); (**C**) Greece, Peloponisos, spring in Kefalari at Lerna (locality 9 in Fig. 8), P. & A. Reischütz leg. viii.2008; BOE 3377).

the remaining 3 shells of the first sample, as well as the entire second sample, belong to another species; we have also not seen the material in the Westerlund Collection (Stockholm) RM 13.129. Whether 2 different species co-exist at the type locality needs to be determined.

***H. haesitans* in the literature.** Schütt ([1980]: 127) interpreted this species as belonging to *Belgrandiella* and wrote "penis slim with appendix; one receptaculum seminis". However, there is no accompanying figure and no indication of the locality from where the dissected material came. Bank (2006) accepted Schütt and placed this species in *Belgrandiella*.

Operculum and pigmentation. The dried animal of the specimen with the largest shell, as seen through the shell wall, is black. The operculum is horn-coloured and not chestnut-coloured.

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Appendix 1

List of nominal taxa of *Belgrandiella,* or regarded as belonging to this genus, on the Balkan Peninsula[1]

For type localities see Figure 1.

B. apfelbecki **(Brancsik, 1888)** [*Frauenfeldia lacheineri*]. Type locality: "im Bosnaursprung (Vrelo Bosne)" [at Ilitza, c. 10 km SW of Sarajevo, Bosnia-Herzegovina]. Lectotype: Boeters 1970: pl. 9 fig. 30. Male and female genitalia: Radoman 1975: fig. 6, 1983: fig. 52.

B. bozidarcurcici **Glöer & Pešić, 2014.** Type locality: "Bosnia and Herzegovina, Republic of Srpska, Banjaluka, canyon of the Cvrcka River, rheocrene spring, 44°33.156′ N, 17°23.872′ E, 403 m a.s.l." Holotype: Glöer & Pešić 2014: fig. 2.4.

B. bumasta **Schütt, 1960.** Type locality: "Spaltengewässer der Rugovska Klisure bei Pec, autonomer Bezirk Kosmet". Holotype (?): Schütt 1960: fig. 6 (drawing).

B. conica **Radoman, 1975.** Type locality: "Mrzlik, a spring in the southern border of Cerknica field, 3 km W of Obrh" [Slovenia]. Lectotype: Jovanovic (1991: pl. 6 fig. 48), corresponding to Radoman (1983: pl. 6 fig. 97, non 1975: pl. 1 fig. 5).

B. croatica **(Hirc, 1881)** [*Bythinella*]. Type locality: "in einem Bächlein bei Brod [na Kupi] gegen das Dorfe Lesnica zu" [Croatia]. Topotype: Boeters (1970: pl. 8 fig. 14).

B. crucis **(Kuščer, 1928)** [*Frauenfeldia* (?)]. Type locality: "Krizna jama (Keuzberghöhle) bei Loz (45°45′ N, 44°38′ E)" [Slovenia]. Syntype: Boeters 1970: pl. 9 fig. 32. Male and female genitalia: Bole 1967: fig. 1B.

B. dabriana **Radoman, 1975.** Type locality: "source of the river Dabar, about 6–8 km southern of Sanski most, by Dabarska pecina (Dabar cave)" [Bosnia-Hercegovina]. Lectotype: Jovanovic 1991: pl. 7 fig. 52, corresponding to Radoman 1983: pl. 6 fig. 105, non 1975: pl. 2 fig. 13.

B. driniana **(Radoman, 1975)** [*Sarajana*]. Type locality: "spring in the village Kaostica, about 2 km above Drina river, above the road Visegrad–Ustipraca" [Bosnia-Hercegovina]. Lectotype: Jovanovic 1991: pl. 8 fig. 62, corresponding to Radoman 1983: pl. 7 fig. 119, non 1975: pl. 4 fig. 4.

B. erythropoma **Schütt, 1959.** Type locality: "in einer Quelle unterhalb Vrelo Knijeginjac und oberhalb des Wasserreservoir [sic] Maratin am Abhange des Berges Trebovic [Trebevic] nach Sarajewo hin" [Bosnia-Hercegovina]. Paratype: Boeters 1970: pl. 9 fig. 31.

B. fontinalis **(F. J. Schmidt, 1847)** [*Paludinella*]. Type locality: "in einer Quelle bei Lustthal [dol c. 11 km NE of Ljubljana]" [Slovenia]. Lectotype: Boeters 1970: pl. 8 fig. 17.

B. globulosa **Bole, 1979.** Type locality: "Mrzla jama pri Blocicah, 3,5 km NNW od Loza"; "Kleine Wasserhöhle Mrzla jama bei Blocice, 3,5 km NNW von Loz." Holotype: Bole [1979]: fig. 1 (drawing).

B. hershleri **Slapnik, 1997.** Type locality: "Spring by Prusnik, Sava hills, south of the main Sava valley road between Sp. Sklendrovec and the turn-off for Kum, 40 km east of Ljubljana, Slovenia." Paratypes: Slapnik 1997: fig. 1a–c. Male genitalia: Slapnik 1997: fig. 3 second row, right.

[1]The objective of this appendix is not to determine whether taxa that have not yet been anatomically or genetically studied belong to *Belgrandiella* or *Graziana*. It is also not our objective to clarify whether the *Graziana* species described by Radoman (1975), *G. adriolitoralis*, *G. glinensis*, *G. papukensis, G. slavonica*, and *G. vrbasensis*, actually belong to *Graziana,* or rather, to *Belgrandiella*. Based on genetic analyses by Rysiewska et al. (2016), *Belgrandiella* is not present in Bulgaria. Thus, the following 7 species, described as *Belgrandiella*, belong to *Pontobelgrandiella*: *angelovi, dobrostanica, nitida, pandurskii, stanimirae*, and *zagoraensis*. According to Haase (1994: 223) *B. kuesteri* Boeters, 1970, pro *Paludina minutissima* Küster, 1853 non Grateloup, 1838, belongs to *Graziana*. Type locality: "in Krain [Slovenia] am Grosskahlenberg [Smarna Gora c. 8 km NW of Ljubljana] in Quellen". Topotype of original sample in F.J. Schmidt Collection (Boeters 1970: pl. 8 fig. 22). For *Belgrandiella zaschevi* Angelov, 1959, see Appendix 2, footnote 4. We could not determine whether *Belgrandiella kropae,* described by Slapnik (1994) in his dissertation, is valid according to Chapter 3 of the Code (ICZN 1999).

***B. hyalis* Westerlund, 1886** [*Paludinella* (*Bythinella*)]. Type locality: "Croatien bei Skrad" [between Rijeka and Karlovac, Croatia]. Lectotype: Boeters 1970: pl. 8 fig. 20.

***B. koprivnensis* Radoman, 1975.** Type locality: "spring Krcana, about 2 km from the road Cazin-Buzim, near the village Donja Koprivna" [Bosnia-Hercegovina]. Lectotype: Jovanovic 1991: pl. 7 fig. 51, corresponding to Radoman 1983: pl. 6 fig. 104, non 1975: pl. 2 fig. 12.

***B. krupensis* Radoman, 1973** [not figured].[2] Type locality: "spring of small river Krupa, the right tributary of Zrmanja river" [Croatia]. Lectotype: Jovanovic 1991: pl. 7 fig. 53, corresponding to Radoman 1975: pl. 2 fig. 14, 1983: pl. 6 fig. 106.

***B. kusceri* (A.J. Wagner, 1914)** [*Belgrandia*].[3] Type locality: "im Schlamme des Rakbaches (Rakowski potok) bei Rakek [c. 5 km SE of Planina] in Krain" [Slovenia]. Syntype: Boeters 1970: pl. 7 fig. 9. Male and female genitalia: Bole 1967: fig. 2A, Radoman 1975: fig. 1, 1983: fig. 50.

***B. novoselensis* Radoman, 1975.** Type locality: "small spring in Nova sela, by the road Kocevje-[Brod-na-Kupi-] Delnice, on the left side of the river Kupa" [Slovenia]. Lectotype: Jovanovic 1991: pl. 6 fig. 50, corresponding to Radoman 1983: pl. 6 fig. 103, non 1975: pl. 2 fig. 11.

***B. pageti* Schütt, 1970.** Type locality: "Tounjcica-Höhle und Quelle der Tounjcica, eines Nebenflusses der Rudnica bei Tounj nahe Ogulin, Kroatien." Holotype: Schütt 1970: pl. 15 fig. 20.

***B. robusta* Radoman, 1975.** Type locality: "Obrh, the big source near the village Vrhnica in Loska dolina (field), eastern from Cerknika field" [Slovenia]. Lectotype: Jovanovic 1991: pl. 6 fig. 49, corresponding to Radoman 1983: pl. 6 fig. 99, non 1975: pl. 1 fig. 7. Male and female genitalia: Radoman 1975: fig. 2, Bole [1979]: fig. 4.2.

***B. schleschi* Kuščer, 1932** [*Pseudamnicola*]. Type locality: "Höhle Krizna jama [at Loz, Slovenia]. Topotype?: Radoman 1975: pl. 1 fig. 2. Male and female genitalia: Bole 1967: fig. 3B.

***B. substricta* (Kuščer, 1932)** [*Microsalpinx*]. Type locality: "Bistraquellen" [in Bistra c. 3 km SE of Vrhnika, Slovenia]. Syntype: Kuščer 1932: pl. 5 fig. 5 (drawing). Male and female genitalia: Bole 1967: fig. 5B.

***B. superior* Kuščer, 1932** [*Belgrandiella kusceri*] [not figured]. Type locality: "in … dem Zirknitzer Becken [Cerknica basin] … Originalfundort die Speiquelle Jezerski obrh" [Slovenia]. Topotype?: Radoman 1975: 63 pl. 1 fig. 4, 1983: pl. 6 fig. 96. Male and female genitalia: Bole 1967: 82 fig. 2B.

***B. travnicensis* (Radoman, 1975)** [*Sarajana*]. Type locality: "Plava voda in Travnik town" [Bosnia-Hercegovina]. Lectotypes: Jovanovic 1991: 233, pl. 8 fig. 61, corresponding to Radoman 1983: pl. 7 fig. 118, non 1975: 69 pl. 4 figs 3.

***B. umbilicata* Kuščer, 1932.** Type locality: "Mocilnik (die Hauptquelle der Ljubljanica)" [at S border of Vrhnika, Slovenia]. Topotype: Boeters 1970: pl. 9 fig. 28. Male and female genitalia: Bole 1967: fig. 2C.

***B. zermanica* Radoman, 1973 [not figured].** Type locality: "the middle course of Zrmanja river, Dalmatia" [Croatia]. Lectotype: Jovanovic 1991: pl. 7 fig. 54), corresponding to Radoman 1975: pl. 2 fig. 15, 1983: pl. 6 fig. 107.

Appendix 2

List of nominal taxa of *Pontobelgrandiella*, or regarded as belonging to this genus, from the Balkan Peninsula

For type localities, see Figure 2.[4]

***P. angelovi* (Pintér, 1968)** [*Belgrandiella*]. Type locality: "Bulgarien, Balkan-Gebirge (Stara Planina), eine Quelle im Schipka-Paß [42° 45′ N, 25° 19′ W], nördlich vom gleichnamigen Dorf." Holotype: Pintér 1968: fig. 1. Paratype: Boeters 1970: pl. 9 fig. 29, Glöer & Georgiev 2009: fig. 9. Molecular data: Rysiewska et al. 2016: table 1.

***P. bachkovoensis* (Glöer & Georgiev, 2009)** [*Belgrandiella*]. Type locality: "Bachkovo village, West Rhodopes. stream [sic]", 42° 57′ 10.1″ N, 24° 51′ 41.2″ E, 320 m alt. [Bulgaria]. Holotype: Glöer & Georgiev 2009: fig. 12. Male genitalia: Glöer & Georgiev 2009: fig. 12 (penis simple).

***P. bulgarica* (Angelov, 1972)** [*Belgrandiella*]. Type locality: "Karstquelle beim Höhlenausgang bei dem Dorf Polaten, nördlich der Stadt Tetewen [42° 55′ N, 24° 15′ E]"

[2]Falniowski & Beran (2015), concluded that *B. krupensis* together with 3 other nominal species (i.e., *B. kusceri*, *B. umbilicata* and *B. zermanica*), constitute a single biological species with slight genetic variation. However, Falniowski and Beran may not have investigated animals from the type locality; shells of *B. krupensis* figured by Radoman (1975: 65 pl. 2 fig. 14, 1983: pl. 6 fig. 106) differ from shells figured by Falniowski & Beran (2015: 189 figs 8–11).

[3]*B. kusceri* and *B. umbilicata*. According to Falniowski & Beran (2015), the COI sequences of both were identical.

[4]The type locality of *Belgrandiella zaschevi* Angelov, 1959 is "Die große Karstquelle bei der Höhle 'Duschnik', Dorf Iskrez [Iskretz N of Sofia, 42° 58′ N, 23° 15′ E], W-Balkangebirge" in Bulgaria. Syntype: Angelov 1959: 52 fig. 2 (drawing); male and female genitalia: Radoman 1978: 32 fig. 4, 1983: 111 fig. 60. It is questionable whether this species is the sole member of the monotypic *Cavernisa* Radoman, 1978, or if it belongs to *Pontobelgrandiella* because of its Bulgarian type locality, or if it belongs to *Belgrandiella*, as perhaps does *P.* (?) *maarensis* also, because the anatomies of these 2 species are not strikingly different.

[Bulgaria]. Holotype: Angelov 1972: fig. 2 (drawing). Male genitalia: Angelov 1972: fig. 2 (penis simple).

***P. bureschi* (Angelov, 1976)** [*Belgrandiella*]. Type locality: "Karstquelle, die das Bad beim Dorf Bankja (Bezirk Trn [Tran, Bulgaria, 42° 50′N, 22° 40′E]) mit Wasser versorgt." Syntype: Angelov 1976: fig. 1.

***P. dobrostanica* (Glöer & Georgiev, 2009)** [*Belgrandiella*]. Type locality: "Gargina Dupka cave, about 20 m from the entrance, Mostovo village, 41° 51′0.4″N, 24° 55′57.1″E, 915 m alt." [Bulgaria]. Holotype: Glöer & Georgiev 2009: fig. 11.1–3. Male genitalia: Glöer & Georgiev 2009: fig. 11.4. Molecular data: Rysiewska et al. 2016: table 1.

***P. hessei* (A.J. Wagner, 1928)** [*Belgrandia* (*Belgrandiella*)]. Type locality: "die Höhle Temnata Dupka bei Lakatnik [43° 05′N, 23° 40′E] im Iskerdéfilé, Balkan in N. Bulgarien". Syntype: Wagner 1928: pl. 13 figs 74–77); topotype: Pintér 1968: fig. 2.

***P.* (?) *maarensis* (Georgiev, 2013)** [*Belgrandiella*].[5] Type locality: "Urushka Maara cave, near village of Krushuna, Devetashko Plateau, Northern Bulgaria, 43° 14′41.7″N, 25° 02′45.4″E, 191 m alt." Holotype: Georgiev 2013: fig. 1A. Male genitalia: Georgiev 2013: fig. 1C, 61 fig. 2B ("penis … with … a small lobe in the middle on its left side.").

***P. nitida* Angelov, 1972** [*Belgrandiella*]. Type locality: "Karstquelle beim Höhlenausgang bei dem Dorf Polaten, nördlich der Stadt Teteven [42° 55′N, 24° 15′E]" [Bulgaria]. Holotype: Angelov 1972: fig. 3 (drawing); topotype: Radoman 1983: pl. 8 fig. 129. Male and female genitalia: Radoman 1978: fig. 3, 1983: fig. 59.

***P. pandurskii* (Georgiev, 2011)** [*Belgrandiella*]. Type locality: "Devetashka cave [43° 14′N, 24° 53′E], near village of Devetaki, Lovech town area, Devetashko plateau, northern Bulgaria". Holotype: Georgiev 2011a: 9 fig. 1.1, 1.2). Male genitalia: Georgiev 2011a: fig. 1.3. Molecular data: Rysiewska et al. 2016: table 1.

***P. pusilla* (Angelov, 1959)** [*Belgrandiella*]. Type locality: "Die Karstquelle 'Petreski Isvor' in der Umgebung der Bahnstation Lakatnik [43° 05′N, 29° 49′E], West-Balkangebirge" [Bulgaria]. Syntype: Angelov 1959: fig. 1 (drawing); topotype: Pintér 1968: fig. 3.

***P. stanimirae* (Georgiev, 2011)** [*Belgrandiella*]. Type locality: "Zmeyova Dupka cave, near Tryavna town, Stara Planina Mtn, Bulgaria", 42° 52′35.0″ N, 25° 28′35.1″E, 512 m alt. Holotype: Georgiev 2011b: fig. 5. Male genitalia: Georgiev 2011b: fig. 5. Molecular data: Rysiewska et al. 2016: 3 table 1.

***P. tanevi* Georgiev, 2013.** Type locality: "Parnitsite cave, near village of Bezhanovo, Pre-Balkan area, northern Bulgaria, 43° 12′02.1″N, 25° 25′58.4″E". Holotype: Georgiev 2013: fig. 3A. Male genitalia: Georgiev 2013: figs 3C, 4. Molecular data: Rysiewska et al. 2016: table 1).

***P. zagoraensis* (Glöer & Georgiev, 2009)** [*Belgrandiella*]. Type locality: "spring near Bedechka River, park 'Krairechen', town of Stara Zagora" [Bulgaria]. Syntype: Glöer & Georgiev 2009: fig. 10.1. Male genitalia: Glöer & Georgiev 2009: fig. 10.2. Molecular data: Rysiewska et al. 2016: 3 table 1.

Appendix 3

List of nominal taxa of *Grossuana,* or regarded as belonging to this genus, from the Balkan Peninsula

For type localities, see Figure 3.[6]

***G. angeltsekovi* Glöer & Georgiev, 2009.** Type locality: "Bachkovo village, W Rhodopes, spring in sand", 41° 57′8.5″N, 24° 51′37.3″E, 303 m alt. Holotype and paratype: Glöer & Georgiev 2009: fig. 19.1, Georgiev et al. 2015: figs 6, 7. Male genitalia: Glöer & Georgiev 2009: fig. 19.4, Georgiev et al. 2015: fig. 5.2 (penis with 2 outgrowths). Molecular data: Falniowski et al. 2015: table 1.

***G. codreanui* (Grossu, 1946)** [*Paladilhiopsis*].[7] Type locality: "dans la grande source captée et murée d'Ac-Bnar, près de Balcic [43° 24′N, 28° 10′E], en Dobroudja" [Bulgaria]. Syntype: Grossu 1946: fig. 1 (drawing); shell from Balcic: Zettler 2008: fig. 2, Georgiev et al. 2015: fig. 9. Male genitalia: Szarowska et al. 2007: figs 19, 20, Zettler 2008: fig. 2 (penis with minute simple outgrowth), 165 fig. 3; female genitalia: Szarowska et al. 2007: figs 15–18. Molecular data: Falniowski et al. 2015: table 1.

[5]Because the type locality of *Belgrandiella maarensis* Georgiev, 2013 lies within the distribution of *Pontobelgrandiella*, which is clearly separate from *Belgrandiella* because of its distinctive male genitalia, this species is here listed with reservation as *P.* (?) *maarensis*.

[6]This list does not include the nominal taxa treated by Radoman (1983) as subspecies of *Grossuana serbica* or of *Radomaniola curta*, except for *G. codreanui* and *G. vurliana*, which Szarowska et al. (2007) and Falniowski et al. (2015) recognized as valid species. According to Radoman (1983) the following taxa are synonyms of *R. curta*: *Amnicola miliaria* Frauenfeld, 1863, *Amnicola montenigrana* Frauenfeld, 1865, and *Hydrobia consociella* Frauenfeld, 1863. The types have not yet been figured. For *Grossuana aytosensis* Georgiev, 2012, see Appendix 4.

[7]According to Zettler (2008), *Paladilhiopsis codreanui* Grossu, 1946 may be a junior synonym of *Pseudamnicola consociella euxina* A.J. Wagner, 1928.

***G. delphica* Radoman, 1973** [*Orientalia*] [not figured].[8] Type locality: "spring in Delphi, by the main road Athens–Mesolongion, Greece". Lectotype: Jovanovic 1991: pl. 3 fig. 10, corresponding to Radoman 1983: pl. 2 fig. 31. Molecular data: Szarowska et al. 2007: table 3, Falniowski et al. 2012: table 1 G10, figs 3G10, 14G10, 2016: table 1.

***G. derventica* Georgiev & Glöer, 2013.** Type locality: "Dratchi Dupka cave, near village of Melnitsa, Derventski Heights, southeastern Bulgaria", 42° 02′ 52.8″ N, 26° 32′ 17.9″ E. Holotype: Georgiev & Glöer 2013: fig. 5A, Georgiev et al. 2015: fig. 4. Male genitalia: Georgiev & Glöer 2013: fig. 5B ("penis … bearing a small single outgrowth on its left side") and Georgiev et al. 2015: fig. 5.1 (penis with 2 outgrowths).

***G. euxina* (A.J. Wagner, 1928)** [*Pseudamnicola consociella*]. Original localities: "Quelle Reka Devna bei Gebece [Beloslar, 43° 11′ N, 27° 42′ E] und Quelle bei Alaca Monastyr nächst Varna [43° 13′ N, 27° 55′ E] in Bulgarien". Syntypes: Wagner 1928: pl. 10 figs 12, 21–24 (drawings).

***G. falniowski* Georgiev, Glöer, Dedov & Irikov, 2015.** Type locality: "Spring directly flowing into Bedechka River, Krayrechen Park, city of Stara Zagora, Bulgaria, situated right on the river bank, close to the main flow, 42° 26′ 24.9″ N, 25° 38′ 24.0″ E, 219 m a.s.l." Holotype: Georgiev et al 2015: 160 fig. 1. Male genitalia: Georgiev et al. 2015: figs 1, 5.3) ("Penis … with broad base, bearing small single lobe on its left side."). Molecular data: Falniowski et al. 2015: table 1.

***G. hohenackeri* (Küster, 1853)** [*Paludina*]. Type locality: "in Griechenland". Neotype: herein, Figure 9B.

***G. marginata* (Westerlund, 1881)** [*Amnicola*] [not figured]. Type locality: "Graecia ad Avlochades" ["Nord de l'Eubée à Arlachades [sic]" (Westerlund & Blanc 1879: 141); "Euboa, Arlachlades [sic]" (Blanc label in Westerlund Collection)].

***G. serbica* Radoman, 1973** [not figured]. Type locality: "spring zone of the river Raska, near monastery Sopočani [43° 7′ N, 20° 22′ E], Serbia". Lectotype: Jovanovic 1991: pl. 3 fig. 19, corresponding to Radoman 1983: pl. 4 fig. 48. Male genitalia: Radoman 1983: fig. 24 ("penis … with … a weak outgrowth"); female genitalia: Radoman 1983: fig. 24, Falniowski et al. 2012: figs 9, 10 M3). Molecular data: Szarowska et al. 2007: table 3, Falniowski et al. 2012: table 1 M3, fig. 14M3, 2015: table 1.

***G. slavyanica* Georgiev & Glöer, 2013.** Type locality: "Stream below water source at Goleshovo village, Slavyanka Mts, southwestern Bulgaria", 41° 25′ 52.8″ N, 23° 35′ 19.0″ E, 762 m alt. Holotype and paratype: Georgiev & Glöer 2013: fig. 3A, B, Georgiev et al. 2015: fig. 8. Male genitalia: Georgiev & Glöer 2013: fig. 3C ("penis bears a small lobe on its left side"). Molecular data: Falniowski et al. 2015: table 1.

***G. thracica* Glöer & Georgiev, 2009.** Type locality: "where the water emerges from the spring of Chirpan Bunar cave, flowing into a small pond, 3 km east of the village of Bolyarino, Upper Thracian Lowland, southern Bulgaria", 42° 13′ 59″ N, 25° 5′ 3.2″ E, 155 m alt. Holotype and paratypes: Glöer & Georgiev 2009: fig. 18.1–18.3, Georgiev et al. 2015: figs 4.2, 4.3. Male genitalia: Glöer & Georgiev 2009: fig. 18.4 (no outgrowth of penis) and Georgiev et al. 2015: fig. 5.6.

***G. vurliana* (Radoman, 1966)** [*Pseudamnicola*]. Type locality: "Zivi u izvoru Kamena Vurla, blizu mesta Sv. Konstantin, kod glavnog druma Larisa-Atina, iznad ceste (Grcka)" ["the spring Kamena Vurla near the place Ag. Konstantinos, above the main road Larisa–Athens, Greece"; Radoman 1983: 60]. Syntype (?): Radoman [1966b]: fig. 2 (drawing); lectotype: Jovanovic 1991: pl. 4 fig. 23, corresponding to Radoman 1983: pl. 4 fig. 53. Molecular date: Szarowska et al. 2007: table 3, Falniowski et al. 2016: table 1.

Appendix 4

List of nominal taxa of *Radomaniola* and *Graecorientalia,* or regarded as belonging to these genera, from the Balkan Peninsula[9]

For type localities, see Figure 4.

***R.* (?) *aytosensis* Georgiev, 2012** [*Grossuana*]. Type locality: "Water source in a park forest north of Aytos town, East Stara Planina Mts, southern Bulgaria", 42° 42′ 52.3″ N, 27° 16′ 8.9″ E. Holotype and paratype: Georgiev 2012: fig. 5.1, 5.2, Georgiev et al. 2015: fig. 5. Male genitalia: Georgiev 2012: 120 fig. 5.3–5.5 ("penis … bearing a small single or bi-lobed [!] outhgrowth on its left side"). Molecular data: Falniowski et al. 2015: table 1.

***R. bosniaca* Radoman, 1973** [not figured]. Type locality: "spring in the village Miljevci, between Bosanska Krupa and Sanski Most, Bosnia". Lectotype: Jovanovic 1991: pl. 2 fig. 9, corresponding to Radoman 1983: pl. 2 fig. 30.

***R. bulgarica* Glöer & Georgiev, 2009.** Type locality: "Thermal spring south of the village of Ostra Mogila, southern slope of Sarnena Sredna Gora Mts, Southern Bulgaria, 42° 27′ 10.8″ N, 25° 28′ 27.5″ E, 368 m alt." Holotype and paratype: Glöer & Georgiev 2009: fig. 14.1, 14.2. Male genitalia: Glöer & Georgiev 2009: fig. 14.3 ("penis bears a double lobe on its left edge"). Molecular data: Falniowski et al. 2015: table 1.

[8] Szarowska et al. (2007) and Falniowski et al. (2012, 2016) treated *Orientalia delphica* Radoman, 1973 as a species of *Grossuana.*

[9] For *Graecorientalia*, see also Table 1.

***R. curta* (Küster, 1853)** [*Paludina*].[10] Type locality: "in einem Arm des Zetaflusses in Montenegro". Topotypes?: Radoman 1966a: fig. 1 (drawing), 1983: pl. 2 figs 19, 20, Falniowski et al. 2012: fig. 4M10. Male genitalia: Radoman 1972: 196 ("Penis mit einem Appendix an der linken Seite"), 1983: fig. 17 (lobe furcated), Falniowski et al. 2012: fig. 8M10 (lobe furcated). Female genitalia: Radoman 1966a: fig. 6, 1983: fig. 17. Molecular data: Falniowski et al. 2012: table 1 M10, fig. 14M10.

***R. elongata* Radoman, 1973** [not figured]. Type locality: "spring near monastery Vranjina, Virpazar, Crna Gora" [Vranjina island, lake Skutary; Radoman 1983]. Lectotype: Jovanovic 1991: pl. 2 fig. 7, corresponding to Radoman 1983: pl. 2 fig. 28. Female genitalia: Falniowski et al. 2012: fig. 11M17, non *R. curta*; see fig. 14M17.

***R.* (?) *filiola* (Westerlund, 1881)** [*Amnicola*] [not figured]. Type locality: "Graecia, Patras [Patrai], Fonte Salevale". Possible syntypes: herein, Figure 5K, L.

***R.* (?) *haesitans* (Westerlund, 1881)** [*Hydrobia*] [not figured]. Type locality: "Graecia, Santa Maura [island Levkas = Levkada], Megali Vressi [Megali Vrisi at Kaligoni]". Topotype: Schütt 1980: pl. 9 fig. 16.

***R.* (?) *hessei* (Kobelt, 1891)** [*Pseudamnicola*]. Type locality: "auf Zante [Zakinthos, Greece]". Lectotype: Schütt 1980: pl. 9 fig. 17.

***R. lacustris* Radoman, 1983.** Type locality: "Lake Skutary, along the sandy beach on the south lake bank, below Murici village" [Montenegro]. Syntype (?): Radoman 1983: fig. 16 (drawing). Holotype (?): Jovanović 1991: 117, not figured).

***R. montana* Radoman, 1973.** Type locality: "spring near stream Lukavac, about 15 km (above the main road) north-west from Budva, Crna Gora." Lectotype: Jovanovic 1991: pl. 2 fig. 8, corresponding to Radoman 1983: pl. 2 fig. 29.

***R. radostinae* Georgiev, 2012** [*Grossuana*]. Type locality: "small stream near the beginning of the path to 'Madarski Konnik' monument at Shumensko Plateau area, near village of Madara, 20 km from Shumen town, northern Bulgaria", 43° 16′N, 27° 6′E. Holotype and paratype: Georgiev 2012: fig. 3.1, 3.2, paratype: Georgiev et al. 2015: fig. 10. Male genitalia: Georgiev 2012: 116, 118 fig. 3.3, 3.4 ("penis … bearing well visible bi-lobed outgrowth on the left side"). Molecular data: Falniowski et al. 2015: table 1.

***R. rhodopensis* Glöer & Georgiev, 2009.** Type locality: "a small spring (water source), tributary of the Pavelsko village main river, south of the village, 41° 51′9.7″N, 24° 42′29.4″E, 791 m alt." Holotype and paratype (?): Glöer & Georgiev 2009: figs 15.1, 15.2. Male genitalia: cf. Glöer & Georgiev 2009: 132 ("penis bears a double lobe on its left edge").

***R. seminula* (Frauenfeld, 1863)** [*Amnicola*] [not figured]. Type locality: "aus Arcadien" [Greece]. Lectotype: Schütt 1980: pl. 10 fig. 23.

***R. strandzhica* Georgiev & Glöer, 2013.** Type locality: "in the spring emerging from the Izvora cave, west of Mladezhko village, Strandzha Mt." 42° 09′03.7″N, 27° 21′27.3″E, 215 m alt. Holotype and paratype: Georgiev & Glöer 2013: fig. 7A, B. Male genitalia: Georgiev & Glöer 2013: 4, fig. 7C ("penis … with two outgrowths on its left side").

***R. tritonum* Bourguignat, 1852** [*Hydrobia*] [not figured]. Type locality: "Graeciam, in aquis paludosis lacus Lernae, habitat" ["Ce Mollusque habite sous les feuilles des plantes aquatiques des eaux fangeuses du marais de Lerne [Lerni at Mili], en Grèce"; Bourguignat 1853: 64]. Syntype: Bourguignat 1853: pl. 2 figs 29–31 (drawings); topotypes: Falniowski et al. 2012: 22, fig. 2G5, Schütt 1980: pl. 9 fig. 6 is doubtful. Male genitalia: Falniowski et al. 2012: fig. 7G5 (penis lobe furcated).

***Graecorientalia vrissiana* (Radoman, 1966)** [*Pseudamnicola*]. Type locality: "Zivi u malom izvoru kod mesta Vrisija, pored glavnog druma Larisa–Atina, ispod ceste (Grcka)" ["a small spring by the place Vrissia [SW of Farsala], near the main road Larisa–Athens (below the road), Greece"; Radoman 1983: 85]. Syntype: Radoman [1966b]: fig. 1 (drawing). Lectotype: Jovanovic 1991: pl. 6 fig. 45, corresponding to Radoman 1983: pl. 6 fig. 88. Male and female genitalia: Radoman 1983: fig. 46 ("Penis … with … a 'double' outgrowth on the left side").

[10]The list does not comprise nominal taxa treated by Radoman (1983) as subspecies of *Radomaniola curta*. According to Radoman (1983: 41) the following taxa are synonyms of *Paludina curta* Küster, 1853: *Amnicola miliaria* Frauenfeld, 1863, *Amnicola montenigrana* Frauenfeld, 1865, and *Hydrobia consociella* Frauenfeld, 1863. The types have not yet been figured.