

**A new hydrobiid from subterranean waters of the Timavo River
(Friuli-Venetia Julia, NE. Italy)
(Gastropoda Prosobranchia: Hydrobiidae)**

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A new hydrobiid species, "*Plagigeyria*" *stochi*, is described from subterranean waters of the Timavo River (Trieste, Italy). Because the new species is only known from shells, no definitive taxonomic statement can be made. Moreover, the two genera (*Lanzaia* and *Plagigeyria*) which have species with shells recalling that of the new species, are not well defined, due to the lack of anatomical data on most of the species assigned to them, particularly their type species.

Key words: Gastropoda, Prosobranchia, Hydrobiidae, *Plagigeyria*, taxonomy, stygobiont, Italy.

INTRODUCTION

The Timavo River is important in the study of the underground hydrology of the Karst (Carso or Kras) because of the remarkable karstic phenomena along its course. The Timavo (Reka) arises in Slovenia and enters the Karst through a large cave, the Grotte di S. Canziano. After a long subterranean course, it emerges at the Risorgive del Fiume Timavo (N° 3919 VG) in Italy and flows over a short distance into the Adriatic Sea near Monfalcone. The lower course is also fed by karstic waters from the Karst and waters from the Isonzo-Vipacco system (Mosetti, 1983). Near Trieste, there is a very deep cave (about 320 m), the Grotta di Trebiciano (N° 17 VG), through which part of the subterranean course can be reached.

The faunistic importance of this karstic system is evident from the richness of stygobiont species, many of which are endemic or of limited distribution (for a recent faunistic survey see Stoch & Dolce, 1994).

The first survey of the stygobiont molluscs from the Timavo River was published by Stammer (1932). Pezzoli (1988) listed the species known to date from the Risorgive del Fiume Timavo, adding unpublished data of one of us (M.B.). Further collecting in the Risorgive del Fiume Timavo, especially in the spring on the first branch of the Timavo River identified by Stammer (1932) as "q", and in the Grotta di Trebiciano (as part of the "Progetto Timavo"), provided a more exact picture of the stygobiont malacofauna of this complex (Stoch & Dolce, 1994). Four stygobiont species have so far been ascertained to live in the underground waters of the Timavo River (Appendix 1). Other species reported in the literature (Stossich, 1899; Stammer, 1932; Stoch & Dolce, 1994) need to be confirmed, are misidentifications, or are epigeal species not typical of underground waters (Appendix 2).

However, due to the problems of collecting in such a large river, current knowledge of the stygobiont malacofauna may not be definitive. Only recently, in fact, a *Plagigeyria*-like hydrobiid species was discovered. It is only known from empty shells mostly collected in the Risorgive and it is probably a species of subterranean karstic waters. This new, endemic, stygobiont species is the subject of this paper.

SYSTEMATIC PART

"Plagigeyeria" stochi n. sp.

Plagigeyeria sp., Stoch & Dolce, 1994: 61, 65, 66. Bodon et al., 1995: 26, 54.

Plagigeyeria (?) sp., Gasparo, 1995: 29.

Diagnosis. — Prosobranch snail, tentatively assigned to the genus *Plagigeyeria*, with shell very small, thin, amnicoloid-bythinelloid, conical, rarely ovate-conical, characterized by convex whorls with evident radial growth riblets, some well raised and varix-like, very deep sutures, very wide aperture with peristome continuous, almost circular to elliptical in contour, its margins reflected.

Description. — Shell dextral, very small, thin, amnicoloid-bythinelloid, usually conical, rarely ovate-conical, with apex obtuse, waxy and whitish when fresh (figs. 1-5). Surface of protoconch finely pitted (figs. 6-8); surface of teleoconch with evident, variably raised, irregularly spaced, oblique, radial growth riblets (figs. 9-11), on last whorl, some well raised and varix-like (fig. 5); thin periostracal layer covering surface of teleoconch and giving rise to system of parallel, very thin, caducous spiral crests; spiral crests absent on old shells and on upper portion of larger growth riblets in fresh shells. Spire variably raised, consisting of 3-3½, convex whorls, last whorl very large, 3/4 to 5/6 of shell height, variably wide and descending near aperture. Sutures very deep. Umbilicus small, slit-like, covered to greater or lesser extent by reflected columellar margin of peristome. Aperture wide, oblique, round to oval. Peristome continuous, circular to elliptical in contour, its entire margin reflected; upper vertex of peristome not angled, contacting last whorl for a short distance; external margin of peristome sometimes slightly sinuous.

Dimensions. — Height of the shell: 1.15-1.57 mm; diameter of the shell: 0.87-1.13 mm; aperture height: 0.64-0.85 mm; aperture diameter: 0.50-0.72 mm.

Operculum. — Unknown.

Anatomy. — Unknown.

Type locality. — Risorgive del Fiume Timavo, S. Giovanni al Timavo (municipalities of Duino and Aurisina, province of Trieste, Italy). UTM references: 33T UL9071.

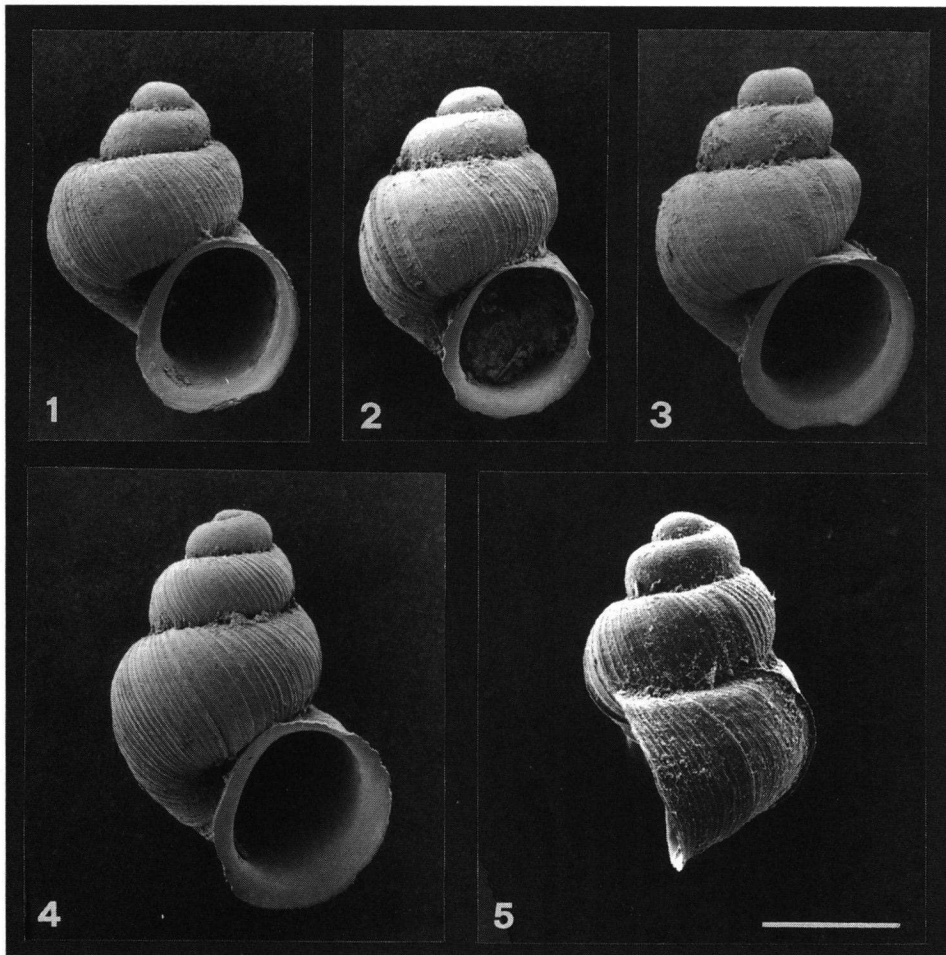
Other locality. — Grotta di Trebiciano N° 17 VG (municipality of Trieste, province of Trieste; Italy). UTM references: 33T VL0959.

Type material. — Holotype: shell collected at the type locality, M. Bodon leg., 31.3.1991. Paratypes: 44 shells collected at the type locality, M. Bodon leg., 31.3.1991; 1 shell collected in the Grotta di Trebiciano, S. Dolce leg., 8.12.1991. Holotype in the Museo Friulano di Storia Naturale in Udine (Udine, Italy); paratypes in Giusti collection (Siena, Italy), in Bodon collection (Genova, Italy), in Maassen collection (Duivendrecht, The Netherlands), in Nationaal Natuurhistorisch Museum (Leiden, The Netherlands).

Origin of the name. — The new species is dedicated, as a token of friendship, to Dr. F. Stoch, who was recently studying the karstic complex of the Timavo River and gave the material to us.

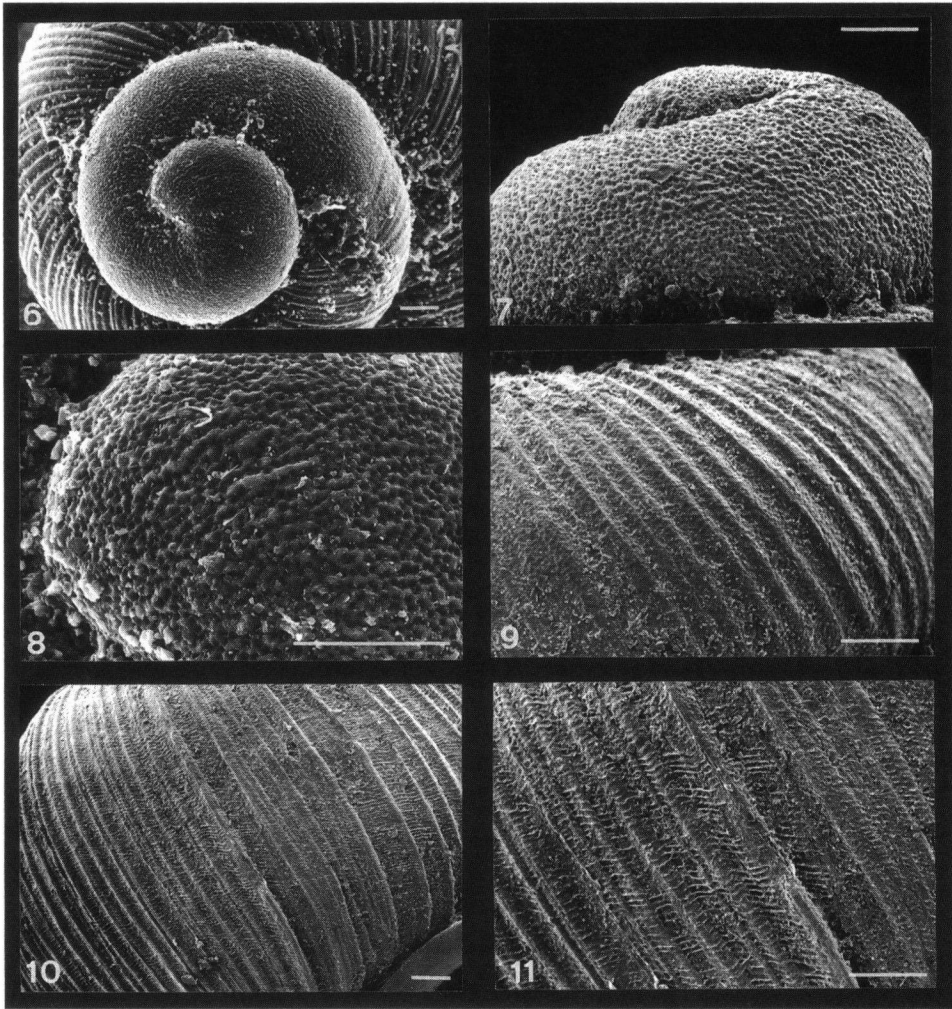
Generic position. — The new species is only known from shells because no live specimen has been collected to date, despite of careful research by one of us (M.B.). Its generic attribution is, therefore, tentative and preliminary.

The European hydrobiids to which the new species should be compared (those having a bythinelloid/amnicoloid shell, more or less elongated and with radial growth riblets



Figs. 1-5. Shells of "*Plagigeyeria*" *stochi* n. sp. from the Risorgive del Fiume Timavo (Trieste, Italy). Paratypes in Giusti collection, Siena. Scale bar = 0.5 mm.

on teleoconch) include some entities known from the underground waters of the Balkan Peninsula. They are attributed to five distinct genera, all poorly defined for lack of anatomical data: *Lanzaia* Brusina, 1906 (type species: *Turbo elephantotus* sensu Brusina, 1906, i.e. *Lanzaia brusinai* Kuščer, 1933a, but a junior synonym of *Turbo elephantotus* Mühlfeld, 1824, according to Schütt, 1968), *Plagigeyeria* Tomlin, 1930 (type species: *Geyeria plagiostoma* Wagner, 1914), *Costellina* Kuščer, 1933a (type species: *Costellina turrata* Kuščer, 1933a), *Saxurinator* Schütt, 1960 (type species: *Paladilhopsiopsis buresi* Wagner, 1927), *Lanzaioopsis* Bole, 1989 (type species: *Lanzaioopsis savinica* Bole, 1989) (Bole & Velkovrh, 1986; Bole, 1989) (table 1).



Figs. 6-11. Microsculpture of external surface of protoconch and teleoconch in shells of "*Plagigyria*" *stochi* n. sp. from the Risorgive del Fiume Timavo (Trieste, Italy). 6: Protoconch seen from above; 7: protoconch seen in profile; 8: detail of the microsculpture of protoconch seen from above; 9: surface of the second whorl; 10: surface of the last whorl; 11: detail of the surface of the last whorl. Scale bar = 50 μ m.

The type species of *Lanzaia*, *L. brusinai* [a junior synonym of *L. elephantotus* according to Schütt, 1968; not "*elephantota*" as in Brusina (1906), Bole (1960), Bole & Velkovrh (1986), but "*elephantotus*", because "-otus" is a noun], has been found in central-southern Dalmatia (S. Croatia) (type locality: "Strožanac in der Bucht von Stobreč in Dalmatien"; Brusina, 1906: 160; Kuščer, 1933a: 63). Its anatomy is unknown. Only two of the many entities assigned to *Lanzaia* have been studied anatomically: *L. vjetrenicae*

Kuščer, 1933a, of central-southern Dalmatia and Montenegro (Bole, 1970) and *L. bosnica* Bole, 1970, of NW. Bosnia (Radoman, 1983)(table 1). Both differ in shell characters from the type species and occur in areas disjunct from that of the type species (Bole, 1960, 1970; Schütt, 1968; Radoman, 1983; Bernasconi & Riedel, 1994).

The type species of *Plagigeyeria*, *P. plagostoma*, inhabits Bosnia-Hercegovina (type locality: "Die Bosnaquelle bei Sarajevo"; Wagner, 1914: 46) and has never been studied anatomically. The anatomy of only two species of the many attributed to the genus is known: *P. montenegrina* Bole, 1961 of Montenegro (Bole, 1970; Radoman, 1983) and *P. piroti* Bole & Velkovrh, 1987, of E. Serbia (Bole & Velkovrh, 1987)(table 1). Just as for *Lanzaia*, they have a shell which is different from that of the type species and occur in localities very distant from that of the latter (Schütt, 1972; Bole & Velkovrh, 1987).

Costellina includes only the type species, *C. turrita*, which lives in central-northern Dalmatia (S. Croatia) (type locality: "Izvor v dolini Jadre"; Kuščer, 1933a: 64). Its anatomy is unknown (Kuščer, 1933a, 1933b).

The anatomy of the type species of *Saxurinator*, *S. buresi*, reported from N. Bulgaria (type locality: "die Höhle Temnata Dupka bei Lakatnik im Iskerdéfilé"; Wagner 1927: 293) is also unknown. Among the ten species assigned to this genus, only one has been studied anatomically: *S. sketi* (Bole, 1960) of Dalmatia (Bole, 1970)(table 1). This species is conchologically very similar to *S. buresi*, but the areas inhabited by the two species are so distant that prudence is needed when hypothesizing close affinity between the two (Wagner, 1927; Bole, 1960; Schütt, 1968; Maassen, 1978).

Finally, *Lanzaioopsis* is a monotypic genus introduced for a species reported from Slovenia, *L. savinica* [type locality: "Kraški izvir Pečovski studenec, 1.6 km severozahodno od Luč v Savinjski dolini (Savinjske Alpe)"; Bole, 1989: 69] recently described and studied anatomically (Bole, 1989).

All the anatomically known species attributed to these genera have substantially uniform male and female genital anatomy. The males have a conical penis without lobes or swellings and the females have only one very developed seminal receptacle (corresponding to the distal, first or rs1), and a rather similarly shaped bursa copulatrix the duct of which does not open on the anterior side. Differences in the shape and size of the different parts of the genitalia (penis variably elongated; anterior portion of the bursa copulatrix variably developed; bursa copulatrix duct opening into the bursa at different points: at the angle between the posterior and lower sides or at the centre of the lower side) are not particularly distinctive at the genus level, but may be at a species level and some of them must be confirmed: compare point at which bursa copulatrix duct opens into bursa in *P. montenegrina* in Bole (1970: 105-106, fig. 7c) and Radoman (1983: 107-108, fig. 55).

Since shell shape and size in the species assigned to *Lanzaia* (Karaman, 1954; Schütt, 1961b, 1968; Bole, 1970, 1992), *Plagigeyeria* (Schütt, 1961a, 1972; Starobogatov, 1962; Bole & Velkovrh, 1987) and *Saxurinator* (Wagner, 1927; Schütt, 1960, 1968; Angelov, 1972; Maassen, 1978) are variable and some species have intermediate characters, it is clear why many doubts exist about the real taxonomic validity of these genera. This is also true of *Lanzaioopsis*, recently distinguished from *Lanzaia* on the basis of alleged anatomical differences with respect to the anatomically known species of *Lanzaia* (*L. vjetrenicae* and *L. bosnica*) (Bole, 1989). All this suggests that these genera can be combined into one. However, until the anatomy of their type species is studied, any action in this sense is premature. The diagnosis of each of these genera, presently based only on the conchological characters of their type species, is as follows:

Lanzaia (*L. brusinae*): conical, slightly elongated shell with evident radial sculpture and



Fig. 12. Distribution of "*Plagigeyeria*" *stochi* n. sp. and species of the genus *Costellina* Kuščer, 1933a, *Lanzaia* Brusina, 1906 and *Lanzaiopsis* Bole, 1989 in the Balkans. Ct, *Costellina turrata* Kuščer, 1933a; Lbo, *Lanzaia bosnica* Bole, 1970; Lbr, *L. brusinai* Kuščer, 1933a (a junior synonym of *L. elephantotus*, according to Schütt, 1968); Led, *L. edlaueri* Schütt, 1961; Lko, *L. kotlusae* Bole, 1992; Lku, *L. kusceri* Karaman, 1954; Lkv, *L. kvarnerica* nomen nudum, in Bole & Velkovrh (1986); Lj, *L. latecostata* Schütt, 1968; Lr, *L. rudnicae* Bole, 1992; Ls, *L. skradinensis* Bole, 1992; Lv, *L. vjetrenicae* Kuščer, 1933a; Lz, *L. zrnovnicae* nomen nudum, in Bole & Velkovrh (1986); LSs, *Lanzaiopsis savinica* Bole, 1989; Ps, "*Plagigeyeria*" *stochi* n. sp. *Lanzaia elephantotus* (Mühlfeld, 1824) is reported from Dalmatia without exact localities.

spiral microsculpture; very expanded peristome, particularly at upper vertex; aperture axis very oblique (Brusina, 1906, as *L. elephantota* [sic]; Schütt, 1968, as *L. elephantota* [sic]; Bernasconi & Riedel, 1994, also as *L. elephantota* [sic]).

Plagigeyeria (*P. plagiostoma*): conical, slightly elongated shell with weak radial sculpture; expanded, slightly pyriform, flared peristome; aperture axis slightly oblique (Wagner, 1914, 1927; Schütt, 1972; Radoman, 1983).

Costellina (*C. turrata*): conical, elongated, ribbed shell; slightly expanded, superiorly narrowed peristome; aperture axis rather oblique (Kuščer, 1933a, 1933b).

Saxurinator (*S. buresti*): conical, elongated shell with weak radial sculpture; slightly



Fig. 13. Distribution of "*Plagigygeria*" *stochi* n. sp. and species of the genus *Plagigygeria* Tomlin, 1930 in the Balkans. Pe, *P. edlaueri* Schütt, 1961; Pg, *P. gladilini* Kušter, 1936; Pk, *P. klemmi* Schütt, 1961; Pmir, *P. minor* Schütt, 1961; Pmit, *P. minuta* Bole & Velkovrh, 1987; Pmon, *P. montenigrina* Bole, 1961; Pmos, *P. mostarensis* Kušter, 1933a; Pn, *P. nitida* Schütt, 1963; Po, *P. ovalis* Kušter, 1933a; Ppa, *P. pageti* Schütt, 1961; Ppi, *P. piroti* Bole & Velkovrh, 1987; Ppl, *P. plagiostoma* (Wagner, 1914); Ppr, *P. procerula* (Angelov, 1965); Pr, *P. robusta* Schütt, 1959; Ps, "*Plagigygeria*" *stochi* n. sp.; Pt, *P. tribunicae* Schütt, 1963; Pzd, *P. zetadidyma* Schütt, 1960; Pzp, *P. zetaprotogona* Schütt, 1960; Pzt, *P. zetadidyma* Schütt, 1960; *P. conilis* Boeters, 1974 from Vaucluse (France), *P. horatiaeformis* (Starobogatov, 1962) and *P. valvataeformis* (Starobogatov, 1962) from the Caucasus have also been assigned to this genus.

expanded peristome; aperture axis rather oblique (Wagner, 1927).

Lanzaioopsis (*L. savinica*): conical, elongated shell with radial sculpture and spiral microsculpture; peristome as in *Lanzaia*, very expanded; aperture axis very oblique (Bole, 1989).

Certain shell features of the new species (conical, shortened shell with a slightly flared, not superiorly angled peristome) make it more similar to *Lanzaia* and *Plagigygeria* than to the other genera. The new species has a less dilated peristome and a less oblique aperture than *L. brusinai* and its spiral microsculpture is very fine and visible only at high magnification. The new species has a more rounded peristome than *P. plagiostoma*

and a fine, spiral microsculpture (descriptions in the literature indicate that *P. plagiostoma* does not have spiral microsculpture. However, this fact must be carefully checked, as a fine microsculpture like that of the new species has also been found in some other *Plagigeyeria* species; personal unpublished data).

Since no certain conclusion can be reached about the generic status in these circumstances, the new species is provisionally placed in the genus *Plagigeyeria*. This is supported by the fact that the new species shares some shell characters with *P. plagiostoma* (peristome not expanded above, spiral microsculpture not visible at low magnification), whereas all the species in the genus *Lanzaia* have a very expanded upper vertex of the peristome and a very oblique aperture axis.

Specific discrimination. — *P. stochi* n. sp. is easily distinguished from the type species of *P. plagiostoma* by virtue of its more obese shell shape, shorter spire, more robust ribbing and varices. Besides the type species, *Plagigeyeria* includes many other species (table 1), most of them reported from the central Balkan peninsula (central-southern Dalmatia, Bosnia-Herzegovina and Montenegro to Serbia and Bulgaria). Only three species are found outside the Balkans: *P. conilis* Boeters, 1974, of Vaucluse (France); *P. horatiaiformis* (Starobogatov, 1962) and *P. valvataiformis* (Starobogatov, 1962) of the Caucasus (ex USSR). However, the inclusion of the latter two in *Plagigeyeria*, is entirely speculative: apart from the enormous distance between the Caucasus and the Balkans, their shells (judging from the figures published by Starobogatov, 1962) are very different from those of *Plagigeyeria* species.

Apart from *Plagigeyeria plagiostoma*, the new species is easily distinguished from *P. conilis* Boeters, 1974, *P. edlaueri* Schütt, 1961, *P. gladilini* Kuščer, 1936, *P. klemmi* Schütt, 1961, *P. mostarensis* Kuščer, 1933a, *P. montenigrina* Bole, 1961; *P. nitida* Schütt, 1963 (including *P. n. nitida* and *P. n. angelovi* Schütt, 1972), *P. procerula* (Angelov, 1965), *P. zetatrityma* Schütt, 1960, by the lack of a markedly conical shell. It is also easily distinguished from other *Plagigeyeria* species, with a short spire such as *P. ovalis* Kuščer, 1933a, *P. robusta* Schütt, 1959 (including *P. r. robusta* and *P. r. asculpta* Schütt, 1972), *P. zetaprotogona* Schütt, 1960, by the lack of an obese shape, and, finally also from *P. pageti* Schütt, 1961, *P. piroti* Bole & Velkovrh, 1987, *P. tribuniciae* Schütt, 1963, and *P. zetadidyma* Schütt, 1960, by the lack of a depressed shell (Kuščer, 1933a, 1933b, 1936; Schütt, 1959, 1961a, 1963, 1972; Angelov, 1965; Boeters, 1974; Bole & Velkovrh, 1987; Maassen, 1978; Radoman, 1983).

The small dimensions of the shell (height always less than 2 mm) and its fragility are additional distinctive characters. Only two *Plagigeyeria* species are similar in shell shape and size: *P. minor* Schütt, 1961, and *P. minuta* Bole & Velkovrh, 1987. However, *P. minuta* has a peristome which narrows above and both *P. minor* and *P. minuta* have slightly sinuous radial (longitudinal) riblets which are approximately parallel to the shell axis (Bole & Velkovrh, 1987: fig. 2; Schütt, 1972: fig. 18) instead of markedly oblique as in the new species. This excludes any possible confusion with the new species.

As stressed above, because the peristome of the new species is not expanded superiorly and the aperture axis is only slightly oblique, it can be easily distinguished from *Lanzaia brusinai*. Similar characters and the less elongate shell also support distinction from the other species of the genus *Lanzaia* from the western Balkan Peninsula (from Croatia to Montenegro): *L. bosnica* Bole, 1970, *L. edlaueri* Schütt, 1961, *L. elephantotus* (Mühlfeld, 1824), *L. kotlusae* Bole, 1992, *L. Kušceri* Karaman, 1954, *L. latecostata* Schütt, 1968, *L. rudnicae* Bole, 1992, *L. skradinensis* Bole, 1992, and *L. vjetrenicae* Kuščer, 1933a (Brusina, 1906; Kuščer, 1933a, 1933b; Karaman, 1954; Schütt, 1968; Bole, 1970,

1992; Maassen, 1978; Radoman, 1983; Bernasconi & Riedel, 1994). Two other species listed by Bole & Velkovrh (1986), *L. kvarnerica* (from Velebit) and *L. zrnovnicae* (from Dalmatia), do not seem to have been described to date.

ACKNOWLEDGEMENTS

We thank Leonardo Gamberucci and Antonella Daviddi for technical assistance, Helen Ampt for revising the English, Anita Eschner (Vienna, Austria) for bibliographical research and Fabio Stoch (Muggia, Trieste) for material from the Grotta di Trebiciano.

This research was financially supported in part by CNR (Sistematica e Zoogeografia della Regione Palearctica) and MURST 40% and 60% grants.

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APPENDIX 1. STYGOBIONT SPECIES ASCERTAINED IN THE KARSTIC SYSTEM OF THE TIMAVO RIVER

Hadziella cf. *ephippiostoma* Kuščer, 1932

Known from a few shells collected in the Risorgive del Fiume Timavo. This identification requires confirmation even if the shells seem to correspond to those of *H. ephippiostruma* from Slovenia and not to those from other localities of Friuli assigned to *H. anti* Schütt, 1960 (Bodon et al., 1995).

Hauffenia tellinii (Pollonera, 1898)

The identification is based on an anatomical study of live specimens collected in the Risorgive del Fiume Timavo. *Hauffenia* sp. cited by Stammer (1932) from the Grotta di Trebiciano was probably this species. In the Risorgive del F. Timavo, *H. tellinii* lives in interstitial waters.

Hauffenia subpiscinalis Kuščer, 1932

The identification is based on an anatomical study of live specimens collected in the Risorgive del Fiume Timavo and the Grotta di Trebiciano. The specimens from the Risorgive identified by Pezzoli (1988) as "*Islamia* (?) sp." belong to this species. This species lives in underground running waters.

"*Plagigyera*" *stochi* n. sp.

See text.

APPENDIX 2. HYDROBIID SPECIES REPORTED FROM THE KARSTIC SYSTEM OF THE TIMAVO RIVER: MISIDENTIFIED, UNCONFIRMED, AND EPIGEAN SPECIES NOT TYPICAL OF UNDERGROUND WATERS

Bythinella schmidtii (Küster, 1852)

According to Stammer (1932) and Ant (1962), the "*Valvata spelaea* Hauffen" reported by Stossich (1899) was *Bythinella schmidtii* (Küster, 1852), which is doubtful because the presence of this species has never been confirmed. The specimens reported by Stossich may have been *H. subpiscinalis*.

Graziana pupula (Westerlund, 1886)

This species was reported by Stoch & Dolce (1994) from the Grotta di Trebiciano on the basis of a single shell fragment. It awaits of confirmation.

Sadleriana fluminensis (Küster, 1852)

This species was reported, presumably erroneously, by Stoch & Dolce (1994) from the Grotta di Trebiciano. It is a strict crenobiont species which has been found in the Risorgive del Fiume Timavo, outside the subterranean habitat.

Table 1. - Distribution and main references to stygobiont hydrobiid species assigned to the genera *Costellina* Kuščer, 1933a, *Lanzaia* Brusina, 1906, *Lanzaioopsis* Bole, 1989, *Plagigeyeria* Tomlin, 1930, and *Saxurinator* Schütt, 1960

Taxon	Distribution	References to shell figures	References to anatomical figures
<i>Costellina</i> Kuščer, 1933a			
<i>C. turrita</i> Kuščer, 1933a	Dalmatia (S. Croatia)	Kuščer, 1933a, 1933b	
<i>Lanzaia</i> Brusina, 1906			
<i>L. bosnica</i> Bole, 1970	NW.-Bosnia	Bole (1970), Radoman (1983)	Radoman (1983)
<i>L. brusinae</i> Kuščer 1933a	Dalmatia (S. Croatia)	Brusina (1906, as <i>L. elephantota</i> [sic]), Karaman (1954), Schütt (1968, as <i>L. elephantota</i> [sic]), Bernasconi & Riedel (1994, also as <i>L. elephantota</i> [sic])	
<i>L. edlaueri</i> Schütt, 1961	Dalmatia	Schütt (1961, 1968), Maassen (1978)	
<i>L. elephantotus</i> (Mühlfeld, 1824)	Dalmatia	Mühlfeld (1824)	
<i>L. kotlusae</i> Bole, 1992	Dalmatia (S. Croatia)	Bole (1992)	
<i>L. kusceri</i> Karaman, 1954	Dalmatia	Karaman (1954), Schütt (1968)	
<i>L. kvarnerica</i> Bole & Velkovrh, 1986 nomen nudum	Velebit (W. Croatia)		
<i>L. latecostata</i> Schütt, 1968	Dalmatia	Schütt (1968)	
<i>L. rudnicae</i> Bole, 1992	W. Croatia	Bole (1992)	
<i>L. skradinensis</i> Bole, 1992	Dalmatia (S. Croatia)	Bole (1992)	
<i>L. vjetrenicae</i> Kuščer, 1933a	Dalmatia, Montenegro	Kuščer (1933a, 1933b), Schütt (1968), Maassen (1978), Bole & Velkovrh (1986)	Bole (1970)
<i>L. zrnovnicae</i> Bole & Velkovrh, 1986 nomen nudum	Dalmatia (S. Croatia)		
<i>Lanzaioopsis</i> Bole, 1989			
<i>L. savinica</i> Bole, 1989	Slovenia	Bole (1989)	Bole (1989)
<i>Plagigeyeria</i> Tomlin, 1930			
<i>P. conilis</i> Boeters, 1974	Vaucluse (France)	Boeters (1974)	
<i>P. edlaueri</i> Schütt, 1961	Dalmatia (Herzegovina)	Schütt (1961, 1972), Maassen (1978)	
<i>P. gladilini</i> Kuščer, 1936	Serbia	Kuščer (1936), Schütt (1972)	
<i>P. horatiaeformis</i> (Starobogatov, 1962)	Caucasus	Starobogatov (1962)	
<i>P. klemmi</i> Schütt, 1961	Dalmatia (Herzegovina)	Schütt (1961, 1972)	
<i>P. minor</i> Schütt, 1961	Montenegro	Schütt (1972)	
<i>P. minuta</i> Bole & Velkovrh, 1987	W. Serbia	Bole & Velkovrh (1987)	
<i>P. montenigrina</i> Bole, 1961	Montenegro	Schütt (1972), Maassen (1978), Radoman (1983)	Bole (1970), Radoman (1983)
<i>P. mostarensis</i> Kuščer, 1933a	Herzegovina	Kuščer (1933a, 1933b) Schütt (1972), Bole & Velkovrh (1986)	
<i>P. nitida angelovi</i> Schütt, 1972	Dalmatia	Schütt (1972)	
<i>P. nitida nitida</i> Schütt, 1963	Dalmatia	Schütt (1963, 1973)	

Taxon	Distribution	References to shell figures	References to anatomical figures
<i>P. ovalis</i> Kuščer, 1933a	Herzegovina	Kuščer (1933a, 1933b), Schütt (1972)	
<i>P. pageti</i> Schütt, 1961	Montenegro	Schütt (1961, 1972), Maassen (1978)	
<i>P. pivoti</i> Bole & Velkovrh, 1987	E. Serbia	Bole & Velkovrh (1987)	Bole & Velkovrh (1987)
<i>P. plagiotoma</i> (Wagner, 1914)	Bosnia	Wagner (1927), Schütt (1972), Radoman (1983)	
<i>P. procerula</i> (Angelov, 1965)	Bulgaria	Angelov (1965), Schütt (1972)	
<i>P. robusta asculpta</i> Schütt, 1972	Dalmatia	Schütt (1972)	
<i>P. robusta robusta</i> Schütt, 1959	Herzegovina	Schütt (1959, 1972)	
<i>P. tribunicae</i> Schütt, 1963	Herzegovina	Schütt (1963, 1972), Bernasconi & Riedel (1994)	
<i>P. valvataeformis</i> (Starobogatov, 1962)	Caucasus	Starobogatov (1962)	
<i>P. zetadidyma</i> Schütt, 1960	Montenegro	Schütt (1960, 1972)	
<i>P. zetaprotogona</i> Schütt, 1960	Montenegro	Schütt (1960, 1972)	
<i>P. zetatridyma</i> Schütt, 1960	Montenegro	Schütt (1960, 1972)	
<i>Saxurinator</i> Schütt, 1960			
<i>S. brandi</i> Schütt, 1968	Dalmatia	Schütt (1968), Maassen (1978)	
<i>S. buresi</i> (Wagner, 1927)	N. Bulgaria	Wagner (1927)	
<i>S. copiosus</i> (Angelov, 1972)	N. Bulgaria	Angelov (1972)	
<i>S. hadzi</i> (Bole, 1961)	Montenegro	Schütt (1968), Maassen (1978)	
<i>S. labiatus</i> (Schütt, 1963)	Dalmatia	Schütt (1963, 1968), Maassen (1978)	
<i>S. microbeliscus</i> Schütt, 1968	Dalmatia (S. Croatia)	Schütt (1968)	
<i>S. montenegrinus</i> (Schütt, 1959)	Herzegovina, Montenegro	Schütt (1959, 1968), Maassen (1978)	
<i>S. orthodoxus</i> Schütt, 1960	Montenegro	Schütt (1960)	
<i>S. schlickumi</i> Schütt, 1960	Montenegro	Schütt (1960)	
<i>S. sketi</i> (Bole, 1960)	Dalmatia	Bole (1960), Schütt (1968), Maassen (1978)	Bole (1970)