Magyarhoni Földtani Társulat
Földtani Közlöny
Hungarian Geological Society

138/4, 357–362., Budapest, 2008

On the identity of *Projenneria neumayri* (HILBER, 1879) with the description of a new species of the genus *Projenneria* DOLIN, 1997 from the Badenian of the Central Paratethys

(Mollusca: Gastropoda: Cypraeoidea)

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A Projenneria neumayri (HILBER, 1879) validitása és egy új Projenneria DOLIN, 1997 faj a Középső-Parathetys badeni korú rétegeiből

Összefoglalás

Az Ománi Szultánság (Arab-félsziget) miocén rétegeiből nemrég előkerült új *Projenneria sabaae* FEHSE in HARZHÄUSER, 2008 faj leírása miatt szügségessé vált a család eddig ismert fajainak revíziója. Ennek eredményeképp a Középső-Parathetys bádeni rétegeiből – Ausztria, Magyarország és Románia – leírt *Projenneria neumayri* (HILBERT, 1879) validitása megerősítést nyert. Ezidáig a *neumayri* szinonímájaként elfogadott *Projenneria lapugyensis* (SACCO, 1894) önálló fajnak bizonyult. A lapugyensis mellett egy harmadik *Projenneria* DOLIN, 1997 fajt sikerült elkülönítenünk melyet jelen cikkünkben *Projenneria albopunctata* sp. nov-ként írjuk le. Az új fajt számos lelőhelyen sikerült megtalálni: Forchtenau (Ausztria), Lapugiu de Sus (Romania), Sámsonháza, Márkháza (Magyarország). Az elkülönítés megerősítése érdekében az új faj részletes összahasonlítását adjuk a család többi világszerte előkerült tagjával.

Tárgyszavak: Mollusca, Cypraeoidea, Pediculariidae, Projenneria, badeni, Ausztria, Románia, Magyarország

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Abstract

The identity of *Projenneria neumayri* (HILBER, 1879) has been ascertained withouth anz doubt. The validity of *Projenneria lapugyensis* (SACCO, 1894) as a distinct species has also been confirmed. However, *Cypraea* (*Pustularia*) *rudolphhoernesi* HALAVÁTS, 1884 has onlz been identified under the category *nomen dubium*.

In this paper a third species, referred to as *Projenneria albopunctata* nsp. from the Middle Miocene (Badenian) of the Paratethys of Forchtenau (Austria), Lapugiu de Sus (Romania), and Sámsonháza, Márkháza,(Hungary) is described. Comparisons are made with similar species of the genus.

Keywords: Mollusca, Cypraeoidea, Pediculariidae, Projenneria, Badenian, Austria, Romania, Hungary

Introduction

During the description of a new *Projenneria* from the Early Miocene of Oman (FEHSE *in* HARZHÄUSER, *in press*) it was necessary to study related species. The most similar species is *Projenneria neumayri* (HILBER, 1879). Unfortunately, it seems that HILBER's species has been the subject of an incorrect identification. Namely, HOERNES & AUINGER (1880: 58, pl. 8, fig. 3) mentioned *P. neumayri* once again and they only cited HILBER, HOERNES & AUINGER did not mention why they considered a description to be necessary. However, HILBER's description can be regarded as the valid one and has preference over any other. HOERNES (1852: 71, pl. 8, fig. 13) and HOERNES & AUINGER (1880: 61, pl. 7, figs. 7, 8) also mentioned *Jenneria duclosiana* (BASTEROT, 1825) from the Badenian deposits. The Badenian specimen is not identical with BASTEROT's species. Therefore, SACCO (1894: 57) renamed the Badenian form as *Jenneria duclosiana* var. *lapugyensis*. SCHILDER (1925: 128) started the confusion in his revision of the Cypraeoidea. He argued, in a passage which is not easy to follow: "*Cypraea neumayri* ist ohne Zweifel eine junge *duclosiana*, da sie aber aus dem Verbreitungsgebiete ihrer östlichen Rasse *lapugyensis* beschrieben wurde, nur auf diese zu beziehen; ihr Name muß also an Stelle des jüngeren Namens *lapugyensis* treten." ["*Cypraea neumayri* is without doubt a juvenile *duclosiana*, but since it was described from the distribution area of its eastern race (*lapugyensis)*, it can be to applied only on the

first; its name has to be placed before the younger name *lapugyensis*."]. SCHILDER equated the specimens shown by HOERNES & AUINGER in plate 7, figs. 7 and 8 — "*duclosiana*" (= *lapugyensis*) — with the specimen shown in plate 8, fig. 3 – "*neumayri*". In SCHILDER's opinion the latter is only a juvenile form of the specimens in plate 7, figs. 7 and 8. Indeed *P. neumayri* is based on a subadult specimen — i.e. the shell already shows an almost developed dentition but the spiralling threads are not fully covered by the callus, it seems that it was this that misled SCHILDER into making his assumption. Here SCHILDER was mistaken. In reality, the specimens shown by HOERNES & AUINGER represent in reality two distinct species — *Projenneria lapugyensis* (SACCO, 1894) in plate 7, figs. 7 and 8 and *Projenneria neumayri* (HILBER, 1879) in plate 8, fig. 3. Unfortunately, DOLIN (1997: text figs. 5a, 5b) accepted SCHILDER's misinterpretation.

Seven years later SCHILDER (1932: 206) increased the confusion when he accepted HALAVÁTS' species *rudolphhoernesi* (1884: 176, pl. 4, figs. 3a, 3b) as subspecies of *P. neumayri*. However, HALAVÁTS' form has nothing in common with the genus *Projenneria*. He based his description on eroded and subadult specimens of uncertain identity. His description concerning the colouration — red dorsum with white spots — can be seen in well-preserved specimens of *P. lapugyensis,* however, the specimens shown by him are similar to *Miolyncina hieroglyphica* (SCHILDER, 1923). Therefore, HALAVÁTS' species is a *nomen dubium*.

The genus *Jenneria* JOUSSEAUME, 1884 — well-known by the recent Panamaian species *J. pustulata* (SOLANDER, 1786) — is characterised by dorsally distinctly pustulated shells with denticles extended as strong folds onto both ventral margins. In contrast to this genus *Projenneria* DOLIN, 1997 consists of shells that are dorsally smooth or almost so, with ventral folds that are usually absent before reaching the margins. Juvenile shells of both genera are ornamented by a shell grid, reminiscent of the shells of the genus *Cypraedia* SWAINSON, 1840. The shell ornament is completely covered by a callus when fully matured. Therefore, the genera *Jenneria* and *Projenneria* belong to the family Pediculariidae.

While studying specimen Nos. 512, 514, 515, 517, 11167, 11171, 11174 to 11177 — labelled as "*Cypropterina* (*Cypraeotrivia*) *neumayri*" in SCHILDER's collection deposited at the Humboldt Museum at Berlin — it turned out that specimens numbers 517, 11167 and 11171 represent a third Badenian species of the genus *Projenneria*. This species is described in the following as *Projenneria albopunctata* sp. nov.

Systematic part

Abbreviations:

CS — the collection of FRANZ ALFRED SCHILDER, deposited in the Zoological Museum of Natural History, Humboldt University, Berlin, Germany.

DFB — the collection of DIRK FEHSE, Berlin, Germany.

GIH — the collection the Geological Institute of Hungary.

ZVH — the collection of Zoltán VICIÁN, Budapest, Hungary.

ct — columellar teeth.

lt — labral teeth.

Phyllum: Mollusca
Classis: Gastropoda
Superfamily: Cypraeoidea TROSCHEL, 1863
Family: Pediculariidae ADAMS & ADAMS, 1854
Subfamily: Jenneriinae THIELE, 1929
Genus: *Projenneria* DOLIN, 1997
Type species: *Cypraea ludoviciana* JOHNSON, 1899 by original designation. Found in the Moodys Branch Formation, Late Eocene, U.S.A.

Projenneria albopunctata sp. nov.

Pl. 1, figs. 1–3.

Holotype: Pl. 1, fig. 1a–d (CS, No. 517)

Paratype 1: Pl. 1, fig. 2a–d (CS, No. 11167)

Paratype 2: Pl. 1, fig. 3a–d (CS, No. 11171)

Locus typicus: Forchtenau, Austria.

Stratum typicum: Middle Badenian, Middle Miocene.

Derivatio nominis: Its name is derived from the Latin adjectives *albus*, *-a*, meaning white, and *punctatus*, *-a*, meaning spotted.

Shell formula: [17 (69–52) 24:20]. In this study the shell formula proposed by SCHILDER (1935: 327) has been used. This formula is derived from measurements taken from all available fully mature and normally formed specimens. It consists of the following elements: [L (W–H) LT:CT]. [#] denotes that the teeth are partly absent or, for various reasons, cannot be counted. L: average length in mm; W: average width/length ratio in %; H: average height/length ratio in %; LT: normalized number of labral teeth; CT: normalized number of columellar teeth. The normalised number of teeth — in relation to a shell of 25 mm length — is calculated as follows: $T = 7 + [(c-7)*\sqrt{(25/L)}]$ T: normalized number of teeth or ribs, c: teeth or ribs counted, L: length.

Description: The shell is medium-sized, solid and ovate. The spire covered by callus. The body whorl is subtriangular, inflated and rounded, about 90% of total height, and with both terminals produced and separated from the dorsal elevation by an indentation. The terminal tips are blunt. The dorsum is slightly and evenly elevated. The middorsal sulcus is distinct. The ventrum is slightly convex, with an outer margin that is roundly callused. The aperture is narrow and widens towards the siphonal canal; it is almost straight, slightly curved posteriorly. The labrum is broad and is ventrally convex. The inner labral margin is keeled, slightly sinuous and bears 21–23 fine denticles. The outer labral margin is roundly callused. The parietal lip is slightly

callused and bears 17–19 fine denticles. The labral and columellar denticles continue as folds onto the ventrum. The labral folds are close-set, and they continue anteriorly and posteriorly to the outer margin. The columellar folds are spaced, somewhat irregular, and usually disappear before reaching the outer margin. The siphonal and anal canals are indented. The columella is slightly convex, relatively narrow and tapers steeply inwards. There is no inner adaxial carinal ridge. The fossula is long, shallowly concave and is not clearly delimited from the rest of the columella. The inner fossular margin is slightly protruded and roundly edged. The juvenile shell grid is not visible due to callosity.

The dorsal colouration is reddish with white dots of different sizes. The callosities and base are whitish.

Variations: The terminal tips vary from slightly protruded to slightly indented. Sometimes the columellar folds reach — anteriorly and posteriorly — the outer margin. Both lateral margins are sometimes pustulated with the pustules being only slightly embossed. Some shells might be somewhat more inflated than others.

Material and measurements:

Holotype: L = 17.7 mm, W = 11.3 mm, D = 8.5 mm, ct 19, lt 21 (CS, No. 517) Forchtenau (Austria)

Paratype 1: L = 13.9 mm, W = 9.4 mm, D = 7.2 mm, ct 17, lt 21 (CS, No. 11167) Lapugiu de Sus (Romania)

Paratype 2: L = 19.7 mm, W = 13.0 mm, D = 10.1 mm, ct 18 , lt 21 (CS, No. 11171) Lapugiu de Sus (Romania)

Paratype 3: L = 19.3 mm, W = 13.0 mm, D = 9.8 mm, ct 18, lt 23 (CS, No. 11173) Lapugiu de Sus (Romania)

Paratype 4: L = 15 mm, W = 9.2 mm, D = 7.3mm, ct 16, lt 23 (GIH, H.08.1.1 M.2567) Lapugiu de Sus (Romania)

Paratype 5: L = 21.7 mm, W = 14.6 mm, D = 11.1 mm, ct 18, lt 23 (ZVH, No. 1458) Márkháza (Hungary)

Paratype 6: L = 16.2 mm, W = 10.4 mm, D = 8.1 mm, ct 15, lt 20 (ZVH, No. 1169) Sámsonáza (Hungary)

Discussion

The new species seems to be similar to its congener *Projenneria lapugyensis* (Sacco, 1894). Both share similar colouration — i.e. reddish dorsum with white dots — but their shell morphometry distinguishes them immediately. *Projenneria lapugyensis* possesses an almost circular shell outline whereas *Projenneria albopunctata* sp. nov. has an ovate outline. The ratio width to length of *P. lapugyensis* lies in between 71–74 (79)[1], the same measurements for *P. albopunctata* is between 63–68. Therefore, all shells below the ratio 68 belong to the new species and all shells above 71 are *P. lapugyensis (Figure 1). Projenneria albopunctata* sp. nov. has rounded margins in contrast to the edged laterals of *P. lapugyensis*. The fossula of the new species is also more elongated.

Dolin (1997: 22) maintained, "In this way, '*Cypraea* (*Pustularia*)' *gampingensis* Martin, 1912, that Schilder & Schilder (1971, p. 71) put in the subgenus *Cypraeotrivia* (= *Jenneria* s. str.), is a typical Erosariinae of the subgenus *Staphylaea* ..." Unfortunately, he produced no explanation for his claim. Martin (1912: 134, pl. 9, fig. 1) introduced *Cypraea* (*Cypraedia*) *feuilletaui* together (1912: 134, pl. 9, fig. 2) with *Cypraea* (*Pustularia*) *gampingensis*. "*Cypraea*" *feuilletaui*, however, is a juvenile shell of the genus *Jenneria* or *Projenneria* showing still the typical shell grid so typical for Pediculariidae. "*Cypraea*" *gampigensis* is from the same locality and formation of Java and shows two terminal ridges. The doubled terminal ridge is found in all species of *Jenneria* and *Projenneria* but never in any Cypraeidae. "*Cypraea*" *feuilletaui* is very probably a juvenile stage of *Projenneria gampingensis* comb. nov., as already suggested in Schilder & Schilder (1971: 71). Therefore, Dolin's statement is without any foundation. Dolin (1997: 22) based his description of *Projenneria eniwetokensis* only on the holotype. He overlooked the description of "*Staphylaea* (*Nuclearia"* [sic]) *borzattii* Bini, 1982 from a Neogene, most probably Miocene deposit of Luzon, Philippines. Also the latter was based only on the holotype and has not been discussed with *P. gampingensis*. All three Miocene taxa are very similar and share features such as an ovate shell, a dorsal sulcus and edged lateral margins. Therefore, it is very likely that "*S.*" *borzattii* and *P. eniwetokensis* are junior synonyms of Martin's *P. gampingensis*. A different structure of the shell grid could differentiate one of the younger taxon but here they are treated as one species.

The ovate shell outline of *P. albopunctata* sp. nov. resembles to that of the Indo-Pacific *P. gampingensis* but the latter differs essentially from the new species due to its edged lateral margins. Furthermore, *P. albopunctata* possesses pustulated laterals.

The second congener of *P. albopunctata* is *P. neumayri* but the new species differs from the latter and similar shells — e.g. *P. laeviappenninica* (Sacco, 1894) and *P. sabaae* Fehse *in* Harzhäuser, *in press* — with respect to its ovate and somewhat flattened shell outline, furthermore, the structure of the dentition is quite different.

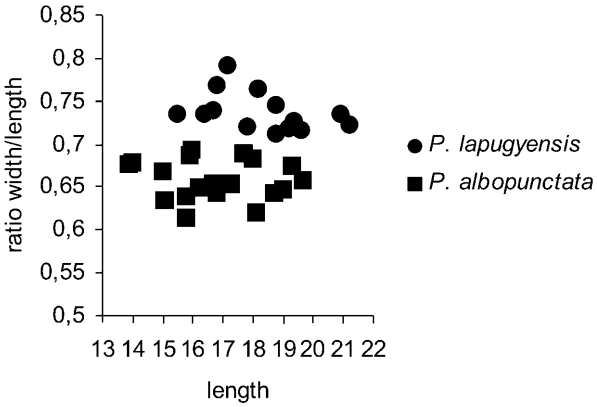

Figure 1. Comparison of shell morphometry of *P. albopunctata* sp. nov. and *P. lapugyensis*

1. ábra. *A P. albopunctata* sp. nov. és a *P. lapugyensis morfológiai összehasonlítása*

[1] The shell with the ratio 79 of *P. lapugyensis* has unusually developed lateral edges.

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Kézirat beérkezett: 2007. 11. 15.

Plate I — I. tábla

1. *Projenneria albopunctata* sp. nov. Holotype, coll. CS, No. 517, 1.5×, Middle Badenian, Middle Miocene, Forchtenau, Austria.

2. *Projenneria albopunctata* sp. nov. Paratype 1, coll. CS, No. 11167, 1.5×, Early Badenian, Middle Miocene, Lapugiu de Sus, Romania.

3. *Projenneria albopunctata* sp. nov. Paratype 2, coll. CS, No. 11171, 1.5×, Early Badenian, Middle Miocene, Lapugiu de Sus, Romania.

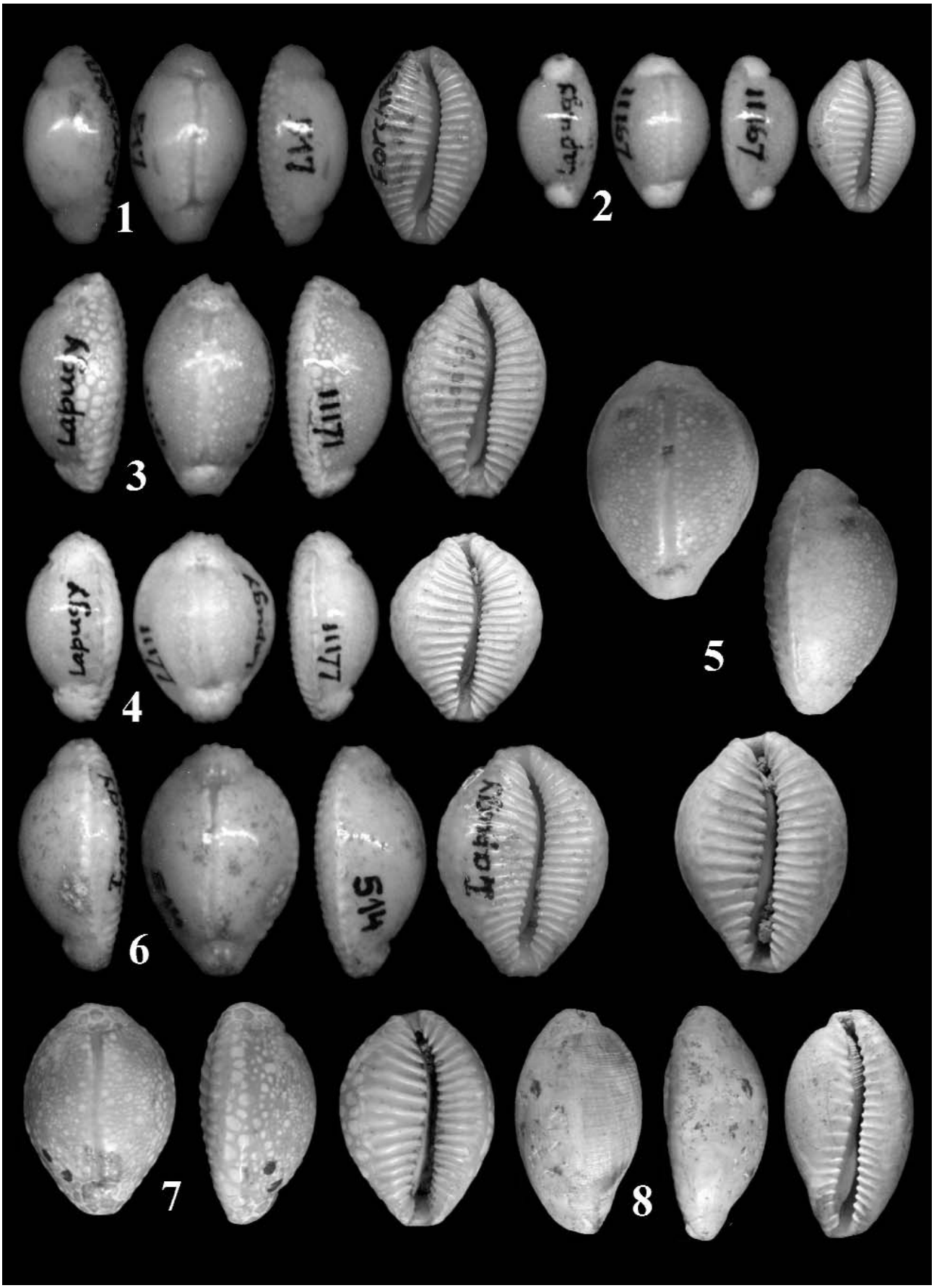
4. *Projenneria lapugyensis* (SACCO, 1894). coll. CS, No. 11177, 1.5×, Early Badenian, Middle Miocene, Lapugiu de Sus, Romania.

5. *Projenneria lapugyensis* (SACCO, 1894). Lectotype, coll. NMHW, unnumb., 1.5×, Early Badenian, Middle Miocene, Lapugiu de Sus, Romania.

6. *Projenneria lapugyensis* (SACCO, 1894). coll. CS, No. 514, × 1.5, Early Badenian, Middle Miocene, Lapugiu de Sus, Romania.

7. *Projenneria lapugyensis* (SACCO, 1894). Paralectotype, coll. NMHW, unnumb, 1.5× Early Badenian, Middle Miocene, Lapugiu de Sus, Romania.

8. *Projenneria neumayri* (HILBER, 1879). Holotype, coll. NMHW, unnumb. 1.5×, Badenian, Middle Miocene, Pöls, Austria.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