

## A NEW SPECIES OF *BYTHIOSPEUM* (PROSOBRANCHIA: HYDROBIOIDEA: MOITESSIERIIDAE) FROM SOUTHERN POLAND

ANDRZEJ FALNIOWSKI<sup>1</sup>, †JOZEF ŠTEFFEK<sup>2</sup>

<sup>1</sup>Department of Malacology, Institute of Zoology, Jagiellonian University, Gronostajowa 9, 30-387 Cracow, Poland (e-mail: [andrzej.falniowski@uj.edu.pl](mailto:andrzej.falniowski@uj.edu.pl))

<sup>2</sup>Institute of Biology and Ecology, Faculty of Science, Pavol Jozef Šafárik University, Moyzesova 11, SK-04001 Košice, Slovakia

**ABSTRACT:** In the paper the authors describe *Bythiospeum neglectissimum*, a new species of *Bythiospeum* Bourguignat, 1882 found at a few stations in Southern Poland. It is characterised by its stout and low, conical and minute shell with the aperture closely adjoining and narrow, and by the slender, multifolded verge having a terminal dagger-shaped filament and medially an apparent lobe. The description comprises the shell, operculum, mantle, head, ctenidium, osphradium, radula, stomach, verge, and female reproductive organs. The species surpasses far the known range of the genus *Bythiospeum*, and its bionomy is completely unclear.

**KEY WORDS:** shell, mantle/head pigmentation, verge, female reproductive organs

Folia Malacologica 3/1989 was originally published as No. 1216 of Scientific Bulletins of University of Mining and Metallurgy, Cracow. This digitalised version was prepared by the Association of Polish Malacologists and first published on-line on December 30th, 2016.

ANDRZEJ FALNIOWSKI AND JOZEF ŠTEFFEK

**A NEW SPECIES OF BYTHIOSPEUM  
(PROSOBRANCHIA: HYDROBIOIDEA:  
MOITESSIERIIDAE) FROM SOUTHERN POLAND**

**Abstract:** In the paper the authors describe Bythiospeum neglectissimum, a new species of Bythiospeum Bourguignat, 1882 found at a few stations in Southern Poland. It is characterised by its stout and low, conical and minute shell with the aperture closely adjoining and narrow, and by the slender, multifolded verge having a terminal dagger-shaped filament and medially an apparent lobe. The description comprises the shell, operculum, mantle, head, ctenidium, osphradium, radula, stomach, verge, and female reproductive organs. The species surpasses far the known range of the genus Bythiospeum, and its bionomy is completely unclear.

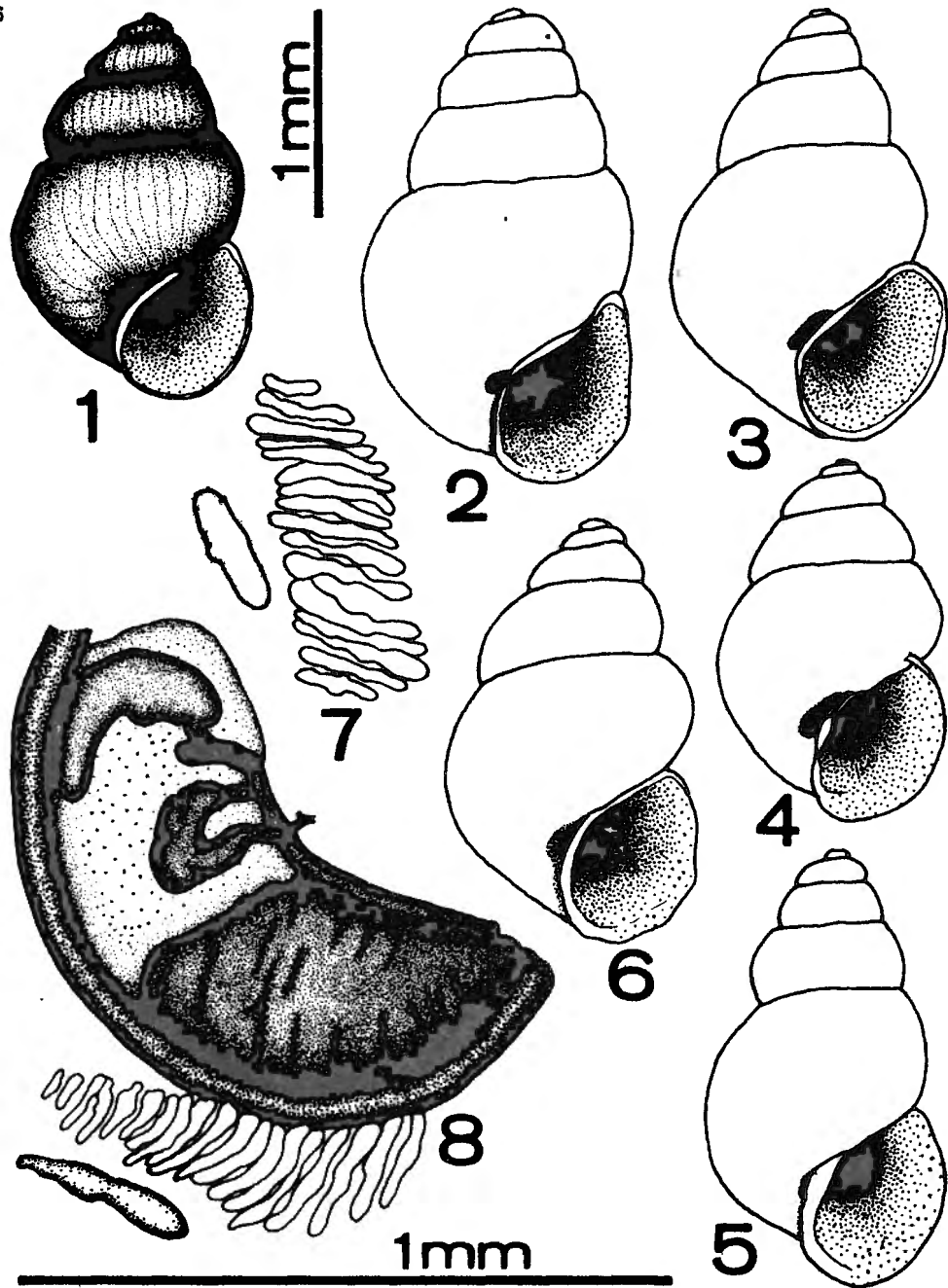
Bythiospeum neglectissimum n. sp.

**DIAGNOSIS**

A species of Bythiospeum Bourguignat, 1882 with a stout and low shell with the aperture narrow and closely adjoining, and the verge slender, multifolded, terminally with a dagger-shaped filament while medially with an apparent lobe.

**DESCRIPTION**

**Shell:** conical and rather low and stout (Figs. 1 - 6), sometimes more slender (Fig. 5). Whorls' growth regular but rapid. Body whorl broad and high, slightly variable in height. Whorls moderately convex, suture rather shallow and usually poorly marked. Whorl number:  $4 \frac{1}{2} - 5 \frac{1}{2}$ ,



Figs 1-8 - *Bythiospeum neglectissimum* from the locus typicus: 1 - holotype, 2-6 - shell variability, 7 - ctenidium and osphradium 8 - renal and pallial regions of female reproductive organs together with rectum, ctenidium and osphradium

usually about 5. Apex narrow but rather blunt. Mouth relatively small and narrow, elliptical in outline, angle in its right upper part marked rather strongly - strongly. Mouth not protruded but closely adjoining to body whorl. Peristome nearly continuous or continuous but parietal lip slightly marked. Outer lip absent. Umbilicus conspicuous and always present, although more or less trough-shaped since partly covered with parietal lip. Holotypus (Fig. 1) dimensions: shell height: 1.85 mm, shell breadth: 1.16 mm, mouth height: 0.75 mm, mouth breadth: 0.66 mm; 5 whorls. Variability range of shell dimensions: height: 1.85 - 2.31 mm, mean: 2.08 mm, standard deviation: 0.1745; breadth: 1.12 - 1.37 mm, mean: 1.24 mm, standard deviation: 0.0930. Shell proportions slightly variable (correlation coefficient for shell height and breadth:  $r = 0.9041$ ). Shell yellow to brownish, translucent, dark-pigmented mantle clearly visible through shell walls. Shell surface smooth and glossy, without any conspicuous sculpture: only with very fine and slightly marked growth lines. Shell variability slight.

**Operculum:** conchiolin and spiral, extremely thin and transparent, nearly colourless.

**Soft part external morphology:** mantle on body whorl uniformly deep black; outer surface of visceral hump somehow less intensively pigmented black, pigment diluted laterally. Head (Figs 10 - 12) typically hydrobioid, with moderately long snout and rather slender tentacles. Tentacles and foot with no pigment, while snout intensively pigmented black. Head pigmentation (Figs 10 - 12), in general, composed of black and grey big spots combined with an area completely lacking pigment. Eyes very big, Proportionally twice bigger than in Bythinella.

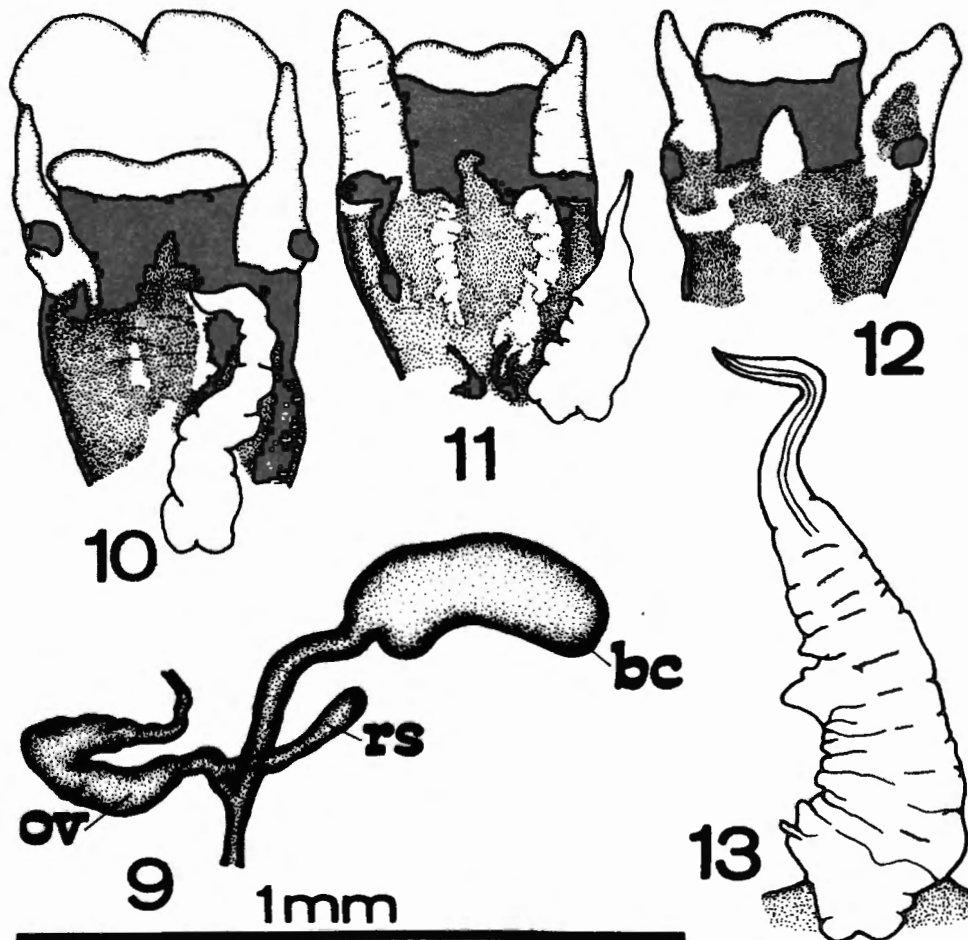
**Ctenidium:** typically hydrobioid (Figs 7 - 8), with 15 - 19 moderately long and straight lamellae.

**Osphradium:** long and narrow, almost straight, tube-shaped (Figs 7 - 8).

- **Radula:** resembles the radulae of Paladilhopsis photographed by Pezoli and Giusti (1975 and 1980). All cusps prominent, long and narrow, and sharp. Central tooth formula:  $\frac{3-1-3}{1-1-3}$ , especially basal cusps as well as three central ones at tooth plate markedly long. Lateral tooth: 1 - 1 - 3, domination of biggest cusp sharply marked.

**Stomach:** similar as drawn for Bythiospeum by Bernasconi (1985).

**Verge:** straight and uni-armed but with an apparent lobe on its left side (Fig. 13). Long and slender, proximally and medially with numerous folds, distally in the form of a long and narrow, unfolded, dagger-shaped filament. Vas deferens clearly visible inside filament. Penis length: about 0.6 mm.



Figs 9-13 - *Bythiospeum neglectissimum* from the locus typicus: 9 - fragment of female reproductive organs (bc - bursa copulatrix, ov - loop of oviduct, rs - receptaculum seminis), 10-12 - head habitus and pigmentation, 13 - verge (not to scale)

Female reproductive organs: typical of *Bythiospeum* (Figs 8-9), with loop of oviduct moderately thick and prominent, bursa copulatrix big, broad and arched, and receptaculum seminis long but narrow, sac-shaped (Fig. 9). Accessory gland complex about 0.7 mm long, nidamental gland sharply distinguishable from albuminoid one (Fig. 8), much better than in the other Polish *Hydrobioidea* (Falniowski 1987).

Derivatio nominis: from Latin: neglectum, -issimum - the most neglected, since the occurrence of any representative of the genus

Bythiospeum in Poland and/or neighbouring countries was astonishingly overlooked for so long.

*Locus typicus*: Brama Krakowska Rocks in the Prądnik Valley, Ojców National Park. In the litter covering the ground in the close neighbourhood of the rocks, in a deciduous forest. The Prądnik Valley is composed of Jurassic limestones.

#### MATERIAL EXAMINED, KNOWN DISTRIBUTION

The material from the *locus typicus* consisted of eight empty shells and nine animals still alive although dormant and desiccated. After keeping the animals for a few days in 100% humidity, the material was ready for dissection. The holotypus (Fig. 1) as well as all the paratypes, are in the collection of the Zoological Museum of Jagiellonian University, Kraków, Poland.

Besides the *locus typicus*, some specimens of *B. neglectissimum* were found also in the Mników Valley and at Panieńskie Skały in Kraków. Both the localities are similar in character to the *locus typicus*.

#### DISCUSSION

*Taxonomy*: both the shell and soft part morphology and anatomy, when compared with drawings and descriptions in the literature (e. g. Geyer 1927, Bolling 1965, Boeters 1971, Bernasconi 1976, 1984 and 1985, and Giusti and Pezzoli 1980) confirm the placement of the described new species within the genus *Bythiospeum*. All the above data, however, confirm the species distinctness of the Polish *Bythiospeum* which displays several distinct character states. On the other hand, the question of the relations between this species and the other known representatives of *Bythiospeum* remains open. It must also be checked if *B. neglectissimum* is the only *Bythiospeum* species occurring in Poland.

*Zoogeography*: the occurrence of *Bythiospeum* is especially noteworthy since the closest localities of the genus are about 500 km far from the Polish ones. This throws a new light on the distribution character of some hydrobioid gastropods.

*Ecology*: the representatives of the genus *Bythiospeum* are commonly known as inhabitants of underground waters. In connection with this habitat character, they usually have the mantle slightly pigmented or even unpigmented, and rudimentary eyes. *B. neglectissimum* has the mantle intensively deeply pigmented black, and the eyes well developed, relatively very big. In general, the troglotic animals may have no eyes or enormously big ones. *B. neg-*

lectissimum may be the latter case. Anyway, the species seems only facultatively trophobiotic. It has not been found in any spring in Poland, and all its stations known are typically terrestrial. Only some periodical water percolation might occur there, although it still has not been observed. The collected gastropods were dormant, their rectums and bursae copulatrix empty, but still alive. Hence, the bionomy of B. neglectissimum seems enigmatic and unusual, and needs further study.

## REFERENCES

- BERNASCONI R. 1976. Les Hydrobides cavernicoles de Suisse at des régions limitrophes VI: Anatomie de Bythiospeum charpyi Pal. *Annls spéléol.*, 31: 189-191.
- BERNASCONI R. 1984. Hydrobides de France: Moitessieria, Bythiospeum et Hauffenia des départements Gard, Ain, Isère (Gastéropodes Prosobranchies). *Revue suisse Zool.*, 91 (1): 203-215.
- BERNASCONI R. 1985. Bythiospeum (Mollusca Gasteropoda Hydrobidae) de France, nouveaux ou faisant l'objet d'une révision. *Revue suisse Zool.*, 92 (2): 333-349.
- BOETERS H. D. 1971. Iglica pezzoli n. sp. und ein neues Merkmal zur Unterscheidung zwischen Bythiospeum und Paladilhia (Prosobranchia, Hydrobiidae). *Arch. Moll.*, 101, 1/4: 169-173.
- BOLLING W. 1965. Beiträge zum Problem des Genus Bythiospeum Bourguignat. *Naturforschende Gesellschaft Bamberg*, 40: 21-102.
- FALNIOWSKI A. 1987. Hydrobioidea of Poland (Prosobranchia: Gastropoda). *Folia Malacologica*, 1: 1-122.
- GAYER D. 1927. *Unsere Land- und Süßwassermollusken*. 3. Aufl. K. G. Lutz' Verlag, Stuttgart.
- GIUSTI F., PEZZOLI E. 1980. *Gasteropodi*, 2 (Gastropoda: Prosobranchia: Hydrobioidea, Pyrguloidea). Consiglio Nazionale delle Ricerche AQ/1/47, *Guide per il riconoscimento delle specie animali delle acque interne Italiane*, 8, Verona.
- PEZZOLI E., GIUSTI F. 1975. Nuovi dati sulla distribuzione geografica e sulla posizione sistematica di Paladilhia vobarnensis Pezzoli e Toffoletto (Prosobranchia, Hydrobioidea). *Natura Bresciana, Ann. Mus. Civ. St. Nat. Brescia*, 12: 17-28.
- PEZZOLI E., GIUSTI F. 1980. "Lartetia concii Allegretti, 1944 e "Paludestrina" forumjuliana Pollonera, 1886, due specie sinonime dell' Arco Prealpino centro-orientale da ascrivere al genere Paladilhiosis Pavlovic, 1913 ed il problema del genere Iglica in Italia (Prosobranchia, Hydrobioidea). *Boll. Malacologico*, 16, 3-4: 53-78.

Andrzej Falniowski  
Institute of Zoology  
Jagiellonian University  
ul. M. Karasia 6  
30-060 Kraków, Poland

Jozef Šteffek  
Ust. Exp. Biol. a Ekol. SAV  
Obrancov Mieru 3  
CS-814 34 Bratislava,  
Czechoslovakia

NOWY GATUNEK BYTHIOSPEUM (PROSOBRANCHIA: HYDROBIOIDEA: MOITESSIERIIDAE)  
Z POŁUDNIOWEJ POLSKI

**Streszczenie:** W pracy opisano nowy dla nauki gatunek z rodzaju Bythiospeum Bourguignat, 1882 - B. neglectissimum - znaleziony na kilku stanowiskach w Południowej Polsce. Slimak ten odznacza się drobną stożkową muszlą, niską i krępą, o ujściu wąskim i ciasno przylegającym, a także prąciem wysmukłym z licznymi fałdami, terminalnie opatrzonym sztyletowatym filamentem a medialnie wyraźnie zaznaczonym płatem. Opis obejmuje muszlę, wieczko, płaszcz, głowę, ktenidium, osfradium, tarkę, żołądek, prącie i żeńskie narządy rozrodcze. Gatunek ten wykracza daleko poza znany dotąd zasięg rodzaju Bythiospeum, a jego bionomia jest zupełnie niejasna.