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A new heterobranch gastropod, *Chelidonura radwanskii* sp. nov., from the middle Miocene of the Korytnica Basin (Holy Cross Mountains, Poland)

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ABSTRACT:

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A new species of heterobranch gastropods, the hammerhead *Chelidonura radwanskii* sp. nov., found in the so-called *Pleurotoma-clays* of middle Miocene (Langhian) age in the environs of Korytnica, southern Holy Cross Mountains, Poland, is described. It is the first fossil representative of *Chelidonura* A. Adams, 1850. This tiny gastropod is named in honour of the late Professor Andrzej Radwański.

Key words: Heterobranch gastropod; Middle Miocene; Littoral boulder; Korytnica Basin.

INTRODUCTION

Almost fifty years ago, when I was studying Miocene strata from Niskowa near Nowy Sącz (Bałuk 1970), Andrzej Radwański encouraged me to start working on the fauna of the Miocene Korytnica Clays (so-called *Pleurotoma Clays*). His main interest was the Miocene transgression on the southern slopes of the Holy Cross Mountains (Radwański 1969), including a study of the Korytnica Basin, its sediments and fauna. Although he was aware that this locality has been known for almost 200 years (Jaśkiewicz 1787), the knowledge about its fossil content was far from satisfactory. I am extremely grateful for his inspiring me to start research on this fauna. The result is not only my monographic series of publications on the Korytnica gastropods (Bałuk 1975–2006), chitons, scaphopods and cuttlefish (Bałuk 1971, 1972, 1977, 1984), but also a long list of our joint papers on other groups of fossils occurring in the locality (see publication list in Walaszczyk, this volume). Moreover, our students have completed nearly 30 Master's and Doctoral dissertations on the Korytnica fossils.

During my study on the heterobranch gastropods from Korytnica, I have discovered several undescribed species. By naming one of them, I would like to honour Andrzej Radwański, my school mate from the Tadeusz Reytan Public Secondary School in Warsaw. This gastropod is known only from two specimens collected from clay infilling a boring within a boulder (Text-fig. 1) derived from littoral structures on the north-eastern slope of Mt. Grodzisko in the south-western part of the Korytnica Basin.

SYSTEMATIC PALAEONTOLOGY

The classification used herein follows Bouchet *et al*. (2017). The specimens are housed in the Stanisław Józef Thugutt Geological Museum of the Faculty of Geology, University of Warsaw and are prefixed with MWG UW ZI/93.

Class Gastropoda Cuvier, 1795
Subclass Heterobranchia Gray, 1840

Order Cephalaspidea Fischer, 1883
Superfamily Philinoidea Gray, 1850 (1815)
Family Aglajidae Pilsbry, 1895 (1847)
Genus *Chelidonura* A. Adams, 1850

TYPE SPECIES: *Bulla hirundinina* Quoy and Gaimard, 1833.

Chelidonura radwanskii sp. nov.
(Text-fig. 2)

HOLOTYPE: Specimen MWG UW ZI/93/1252, presented in Text-fig. 2B1 and B2.

PARATYPE: Specimen MWG UW ZI/93/1251, presented in Text-fig. 2A1 and A2.

TYPE HORIZON: Middle Miocene (Langhian).

TYPE LOCALITY: Korytnica, 24 km to the SSW of Kielce, southern slopes of the Holy Cross Mountains, Central Poland.

DERIVATION OF NAME: *radwanskii* – in memory of the late Professor Andrzej Radwański (1934–2015), a highly honoured researcher of the University of Warsaw and a prominent expert of the Korytnica Basin.

DIAGNOSIS: Small conch, composed of protoconch and 1.5 incomplete whorls terminated with (rather) large wing.

MATERIAL: Two specimens.

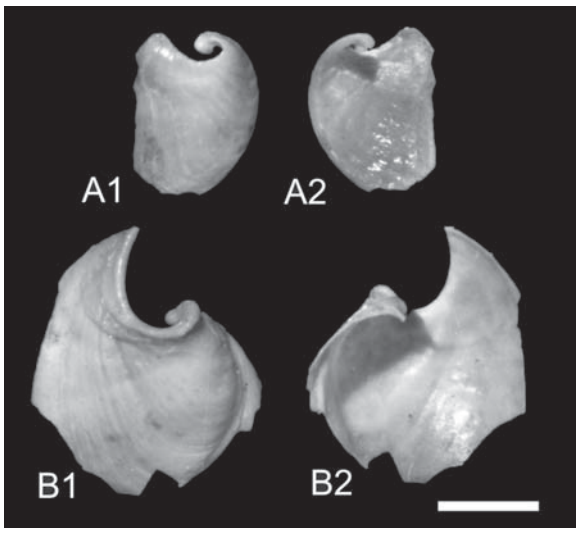
DIMENSIONS: The larger specimen is c. 2.8 mm long (reaching a total of c. 3.5 mm) and 2.2 mm wide.

DESCRIPTION: Protoconch very small, several microns in cross-section, with oval knob shape. Remaining part of shell composed of 1.5 strongly bent shield, straightening gradually towards front, becoming almost flat and much thinner. Also present wing increasing in size towards the posterior. Distinct thickening, in form of ridge running along posterior margin till end of wing, visible both on inner and outer side. Growth lines visible on external surface; internal surface smooth.

REMARKS: I have found no report on the genus *Chelidonura* in the references on Miocene and Pliocene gastropods that I am aware of. The Korytnica locality is thus the first site where this gastropod occurs in Miocene deposits. Presently, the genus is a cosmopolitan taxon, with 17 species known, and with many others with uncertain status. All these gastropods have a characteristic shape, reflected in their common name – hammerhead or headshield slugs. They inhabit warm, tropical or subtropical seas, both in the Atlantic Ocean (from the Caribbean Sea to South Africa), and the Indo-Pacific (from Madagascar to the Philippines, and as far as northern Australia). The gastropods usually live near the shore, at 0.5 to 12 m depth, rarely down to 30 m.

The genus is very small, e.g., *Chelidonura fulvipunctata* (Baba, 1938) inhabiting seas around the islands of the Indo-Pacific has a length of 10–

Text-fig. 1. Pebble from the littoral structures with many abraded borings of *Gastrochaena* spp. The shells of the newly described snail have been found in the sediment infilling the borings. Scale bar equals to 2 cm



Text-fig. 2. Cephalaspid gastropod *Chelidonura radwanskii* sp. nov. from the middle Miocene of Korytnica, Holy Cross Mountains, Poland. A1, A2 – paratype MWGUW ZI/93/1251; B1, B2 – holotype MWGUW ZI/93/1252. Scale bar equals to 1 mm

17 mm, whereas *Chelidonura hirundinina* (Quoy and Gaimard, 1833), living near Guadeloupe, attains 5–40 mm. They both occur on sandy and rocky seabeds, also under boulders. The latter setting can be suggested for the Korytnica locality. The background colour of the genus is usually almost black, but its ornamentation can be very colourful (e.g., *Chelidonura varians* Eliot, 1903 has blue stripes; *Ch. hirundinina* has blue and orange stripes; *Chelidonura livida* Yonow, 1994 has blue oval spots).

The Aglajidae have a thin internal shell that is very rarely preserved (Wenz and Zilch 1959–1960). The shell occurs in the posterior part of the body, in the shell cavity. It is variably calcified, in some species completely, in some – only a small part along the margin is calcified, whereas the rest with the wing is composed of conchioline. Finally, in some species the shell is composed entirely of conchioline and referred to as membranous. Most of the *Chelidonura* species have a calcified shell. The taxonomic significance of the shell is variably interpreted (Rudman 1974; Gosliger 1980).

Risbec (1951) presented detailed descriptions of the shell in *Ch. hirundinina* and in his new species *Chelidonura pallida* demonstrated that the shape, the initial part of the whorl and the wing are different. Incidentally, the shell of *Ch. hirundinina* as interpreted by Risbec (1951, p. 132, fig. 4) is clearly different from that presented for this species by Wenz and Zilch (1959–1960, p. 32, fig. 103).

REFERENCES

Adams, A. 1850. Monograph of the family Bullidae. In: Sowerby II, G.B. (Ed.), Thesaurus Conchyliorum, vol. 2, 553–608. Privately published; London.

Baba, K. 1938. Opistobranchia of Kii, Middle Japan. *Journal of the Department of Agriculture, Kyushu Imperial University*, **6**, 1–19.

Bałuk, W. 1970. The Lower Tortonian at Niskowa near Nowy Sącz, Polish Carpathians. *Acta Geologica Polonica*, **20**, 101–157. [In Polish]

Bałuk, W. 1971. Lower Tortonian chitons from the Korytnica clays, southern slopes of the Holy Cross Mts. *Acta Geologica Polonica*, **21**, 449–472.

Bałuk, W. 1972. Lower Tortonian scaphopods from the Korytnica clays, southern slopes of the Holy Cross Mts. *Acta Geologica Polonica*, **22**, 545–571.

Bałuk, W. 1975. Lower Tortonian gastropods from Korytnica, Poland. Part I. *Palaeontologia Polonica*, **32**, 1–186.

Bałuk, W. 1977. A new species of the cuttlefish from the Korytnica Clays (Middle Miocene; Holy Cross Mountains, Poland). *Acta Geologica Polonica*, **27**, 169–176.

Bałuk, W. 1984. Additional data on chitons and cuttlefish from the Korytnica Clays (Middle Miocene; Holy Cross Mountains, Central Poland). *Acta Geologica Polonica*, **34**, 281–297.

Bałuk, W. 1995. Middle Miocene (Badenian) gastropods from Korytnica, Poland; Part II. *Acta Geologica Polonica*, **45**, 153–255.

Bałuk, W. 1997. Middle Miocene (Badenian) gastropods Korytnica, Poland; Part III. *Acta Geologica Polonica*, **47**, 1–7.

Bałuk, W. 2003. Middle Miocene (Badenian) gastropods from Korytnica, Poland; Part IV – Turridae. *Acta Geologica Polonica*, **53**, 29–78.

Bałuk, W. 2006. Middle Miocene (Badenian) gastropods from Korytnica; Poland; Part V – Addenda et Corrigenda ad Prosobranchia. *Acta Geologica Polonica*, **56**, 177–220.

Bouchet, P., Rocroi, J.-P., Hausdorf, B., Kaim, A., Kano, Y., Nützel, A., Parkhaev, P., Schrödl, H., and Strong, E.E. 2017. Revised classification, nomenclator and typification of gastropod and monoplacophoran families. *Malacologia*, **61** (1–2), 1–526.

Cuvier, G. 1795. Second mémoire sur l'organisation et les rapports des animaux à sang blanc, dans lequel on traite de la structure des Mollusques et de leur division en ordres, lu à la Société d'histoire naturelle de Paris, le 11 Prairial, an III. *Magazin Encyclopédique, ou Journal des Sciences, des Lettres et des Arts*, **2**, 433–449.

Eliot, C.N.E. 1903. Notes on some new or little-known members of the Family Doridiidae. *Proceedings of the Malacological Society of London*, **5**, 331–337.

Fischer, P. 1883. Manuel de conchyliologie et de Paléontologie Conchyliologique, Fasc. 6, pp. 513–608. Savy; Paris.

Goslinger, T.M. 1980. Systematics and phylogeny of the Aglajidae (Mollusca: Opisthobranchia). *Zoological Journal of the Linnean Society*, **68**, 325–360.

Gray, J.E. 1840. Shells of molluscous animals. *Synopsis of the contents of the British Museum*, **42**, 105–152.

Gray, J.E. 1850. Figures of molluscous animals selected from various authors. Etched for the use of students by M.E. Gray. Vol. 4, 219 p. Longman, Brown, Green & Longmans; London.

Jaśkiewicz, J. 1787. Dyssertacya na pybliczney sessyi Szkoly Głownej Koronnej w przytomności Nayjaśnieyszego Pana czytana, 10 p. Kraków.

Pilsbry, H.A. (1895–1896). Manual of conchology, structural and systematic, with illustrations of the species, Ser. 1, Vol. 16: Philinidae, Gastropteridae, Aglajidae, Aplysiidae, Oxynoeidae, Runcinidae, Umbraculidae, Pleurobranchidae, pp. i–vii [1896], 1–112 [1895], 113–262 [1896], pls 1–31 [1895], 32–74 [1896]. Conchological Section, Academy of Natural Sciences; Philadelphia.

Radwański, A. 1969. Lower Tortonian transgression onto the southern slopes of the Holy Cross Mts. *Acta Geologica Polonica*, **19**, 1–164. [In Polish]

Risbec, J. 1951. Notes sur les Tectibranches de Nouvelle Caledonie. *Journal de la Societe des oceanistes*, **7**, 123–158.

Rudman, W.B. 1974. A comparison of *Chelidonura*, *Navanax* and *Aglaja* with other genera of Aglajidae. *Zoological Journal of the Linnean Society*, **54**, 183–212.

Quoy, J.R.C. and Gaimard, J.P. 1833. Zoologie IV: Zoophytes. In: Zoologie. Voyage de la corvette l'Astrolabe: exécuté par ordre du roi, pendant les années 1826–1827–1828–1829 / sous le commandement de J. Dumont d'Urville, 390 p. J. Tastu; Paris.

Walaszczyk, I. 2018. Andrzej M. Radwański 24th July 1934 – 7th January 2016. *Acta Geologica Polonica*, **68**, 487–498.

Wenz, W. and Zilch, A. 1959–1960. Gastropoda. Teil 2. Euthyneura, 834 p. Gebruder Borntraeger; Berlin.

Yonow, N. 1994. A new species and a new record of *Chelidonura* from the Red Sea (Cephalaspidea: Aglajidae). *Journal of Conchology*, **35**, 141–147.

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