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Middle Miocene (Badenian) chitons (Mollusca, Polyplacophora) from the Central Paratethys 4: Letkés (Börzsöny Mts, Hungary)

Alfréd Dulai

Hungarian National Museum Public Collection Centre – Hungarian Natural History Museum, Department of Palaeontology and Geology, H-1083 Budapest, Ludovika tér 2, Hungary. E-mail: dulai.alfred@nhmus.hu

Abstract – Letkés village at the western edge of the Börzsöny Mts has long been a well-known Middle Miocene fossil site. It has a particularly rich Mollusca fauna, but no Polyplacophora remains have ever been published from there. Only 65 chiton valves have so far been recovered from the screen-washed residue, but the diversity is nevertheless surprisingly high: 8 species of 7 genera have been identified. The three most abundant taxa are *Acanthochitona, Cryptoplax,* and *Rhyssoplax,* which together account for 87% of the specimens. The genera *Lepidopleurus, Parachiton, Ischnochiton,* and *Craspedochiton* are accessorial members of the Polyplacophora assemblage. At the species level, *Parachiton africanus* (Nierstrasz) and *Acanthochitona lacrimulifera* Bałuk are noteworthy, found only in the recently processed materials from Várpalota and Devecser in Hungary, but their occurrence in Letkés indicates that they may have been present in small numbers over a larger area in the Central Paratethys. The most outstanding and important find is *Craspedochiton schafferi* (Šulc), represented by a single tail valve only. This species was found for the first time in Hungary and is the first known record of this species since its original description in 1934. With 29 figures.

Key words – *Acanthochitona, Craspedochiton, Cryptoplax, Ischnochiton, Lepidopleurus,* lower Badenian, *Parachiton,* polyplacophorans, *Rhyssoplax*

INTRODUCTION

The chiton (Mollusca, Polyplacophora) species are an important component of the recent marine fauna, and this was obviously true in the geological past. However, they are often under-represented in fossil materials. One of the main reasons for this is that, after the death of the animal, the eight calcareous shells protecting the soft body are embedded in the sediment, separated from each other. These more or less eroded, often small-sized shells are sometimes difficult to recognise in the screen-washed residues among similar-looking bivalve fragments. However, with some experience, numerous and diverse Polyplacophora valves can be collected from some Neogene samples.

In the present series of papers, the Polyplacophora materials found in Hun-

garian Middle Miocene sites in the last decade are discussed. After the new results published from Várpalota (Dulai & Katona 2024), Borsodbóta (Schwabe & Dulai 2024), and Devecser (Dulai 2025), the fourth part of the series is focussing on the Letkés site, located at the western margin of the Börzsöny Mts, Northern Hungary. Previously, Dulai (2001) reported four chiton species from the Szokolya-2 borehole on the eastern side of the Börzsöny Mts, including the new species *Cryptoplax margitae* Dulai.

GEOLOGICAL SETTINGS

For information on the Central Paratethys and its regional stratigraphic subdivision, see previous papers in this series (Dulai & Katona 2024; Schwabe & Dulai 2024; Dulai 2025).

Letkés is a famous Badenian (Middle Miocene) palaeontological site located at the western margin of the Börzsöny Mts, best known from the Mollusca monograph of Szob and Letkés localities by Csepreghy-Meznerics (1956). The Börzsöny Mts are basically composed of volcanic formations (Börzsöny Andesite Complex: Karátson *et al.* 2000; Karátson 2024), but on its margins there are a variety of sedimentary rocks that belong to the Pécsszabolcs Member of the Lajta Limestone Formation (Selmeczi *et al.* 2024). The investigated site (not the same as studied by Csepreghy-Meznerics), was discovered by Zoltán Vicián private collector (Fig. 1) and is located about 400–500 m east of the village, on the western side of the Bagoly Hill (N 47.888319°, E 18.784647°).

No clear layers are distinguished in the temporary excavation (Fig. 2), it presumably represents some redeposited sediments. Slightly limonitic marly sands, andesite tuff, andesite rock fragments and fragments of eroded colonial corals occur in the section. Apart from colonial and solitary corals (Kovács 2024), the most spectacular faunal elements are molluscs, of which gastropods have been

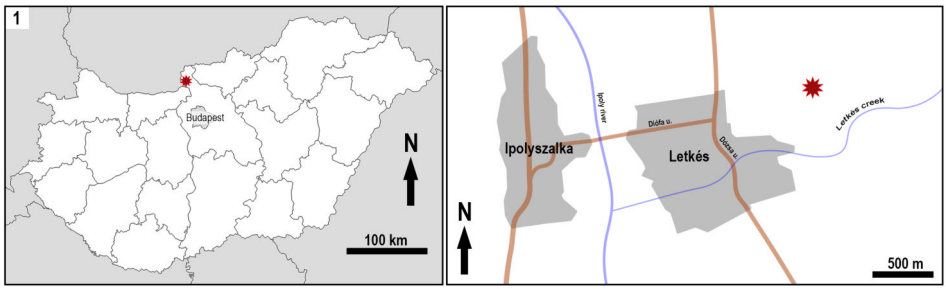


Fig. 1. Locality map showing the position of the lower Badenian (Middle Miocene) fossil locality at Letkés, Bagoly Hill

Fig. 2. Temporary excavation at Letkés, Bagoly Hill locality (Photo by Zoltán Vicián)

published in several publications (e.g., Kovács & Vicián 2013, 2017; Kovács *et al*. 2018). In addition, bivalves, scaphopods, polyplacophorans, serpulids, echinoids, decapods, brachiopods, bryozoans, and occasionally fish teeth are also present. The different fossil groups show a mixture of elements from rocky intertidal, neritic, and coral reef environments.

MATERIAL AND METHODS

The studied material was collected by the author, from the screen-washed residue of about 2 kg sandy sediment. The investigated specimens are deposited in the Palaeontological Collection of the Hungarian National Museum Public Collection Centre – Hungarian Natural History Museum, Budapest.

Abbreviations used in the text: H = head valve; I = intermediate valve; T = tail valve; II = second valve of *Cryptoplax*; fr = fragments; HNHM = Hungarian National Museum Public Collection Centre – Hungarian Natural History Museum, Budapest; INV = Invertebrate Collection.

The identified Polyplacophora fauna is the following:

Parachiton africanus (Nierstrasz, 1906), 2 I (HNHM INV 2024.595–596; Figs 3–4);
Lepidopleurus cajetanus (Poli, 1791), 1 I, 2 T (HNHM INV 2024.597–599; Figs 5–7);
Ischnochiton rissoi (Payraudeau, 1826), 2 I (HNHM INV 2024.600–601; Figs 8–13);
Rhyssoplax corallina (Risso, 1826), 2 H, 12 I (HNHM INV 2024.602–606; Figs 14–16);
Rhyssoplax olivacea (Spengler, 1797), 2 H (HNHM INV 2024.607–608; Figs 17–19);
Acanthochitona lacrimulifera Bałuk, 1971, 22 I, 2 T (HNHM INV 2024.609–611; Figs 20–22);
Craspedochiton schafferi (Šulc, 1934), 1 T (HNHM INV 2024.612; Figs 23–25);
Cryptoplax weinlandi Šulc, 1934, 2 II, 12 I, 3 T (HNHM INV 2024.613–616; Figs 26–29).

SYSTEMATIC PALAEONTOLOGY

Class Polyplacophora Gray, 1821
Subclass Neoloricata Bergenhayn, 1955
Order Lepidopleurida Thiele, 1909
Family Leptochitonidae Dall, 1889
Genus *Parachiton* Thiele, 1909

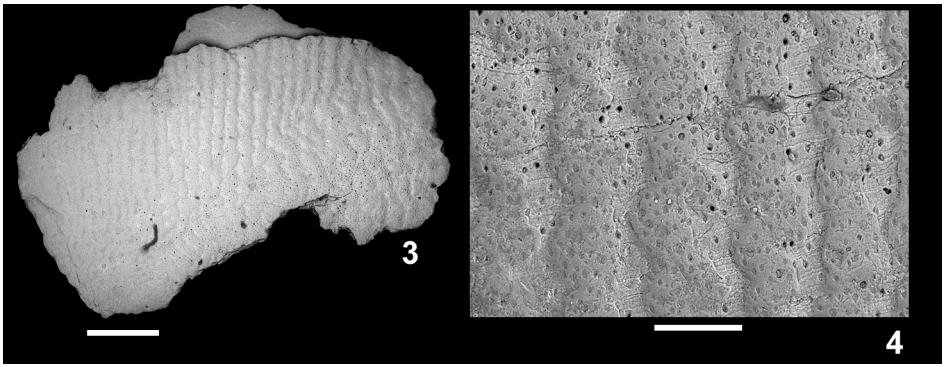
Parachiton africanus (Nierstrasz, 1906) (Figs 3–4)

2015 *Parachiton africanus* (Nierstrasz, 1906) – Ruman & Hudáčková, p. 158, fig. 2.1. (cum syn.)
2024 *Parachiton africanus* (Nierstrasz, 1906) – Dulai & Katona, pp. 35–37, figs 8–9.
2025 *Parachiton africanus* (Nierstrasz, 1906) – Dulai, pp. 6–7, figs 9–11.

Material – 2 intermediate valves.

Remarks – The species *P. africanus* was until recently unknown from the Hungarian Miocene, but in the new materials currently processed, some valves have been found at different sites: Várpalota (Dulai & Katona 2024), Devecser (Dulai 2025), and Letkés (this paper). For more detailed discussion on the species see the paper by Dulai & Katona (2024).

Fragmentary intermediate valves were found in the screen-washed Letkés



Figs 3–4. *Parachiton africanus* (Nierstrasz, 1906). Fragmentary intermediate valve, HNHM INV 2024.595. – **Fig. 3.** Dorsal view. – **Fig. 4.** Enlarged detail of surface ornamentation of the central area. Scale bars: 3: 0.5 mm; 4: 100 μm

samples, but they can be well identified with the species *africanus* on the basis of their characteristic ornamentation. The central area is ornamented with rows of strongly flattened granules, which are completely fused in the longitudinal direction to form definite costellae, but also widen laterally to such an extent that only minimal space is formed between the costellae.

From the Central Paratethys, this species is referred to in older literature as *Lepidopleurus thielei* (Šulc 1934; Bałuk 1971).

Habitat – P. africanus is typically associated to rhodalgal facies between 25–150 m, loose valves are not rare within calcareous algal-rich biogenic sediments (Dell'Angelo *et al*. 1998).

Distribution within the Central Paratethys – Austria (Šulc 1934), Hungary (Dulai & Katona 2024; Dulai 2025; this paper), Poland (Bałuk 1971), and Slovakia (Ruman & Hudáčková 2015). It is a rare species in both the recent (Dell'Angelo & Smriglio 1999) and fossil record. It is also known from the Pliocene–Pleistocene strata of the Mediterranean (e.g., Laghi *et al*. 1980; Dell'Angelo *et al*. 2004).

Genus *Lepidopleurus* Risso, 1826

Lepidopleurus cajetanus (Poli, 1791)
(Figs 5–7)

2007 *Lepidopleurus* (*Lepidopleurus*) *cajetanus* (Poli, 1791) – Dell'Angelo *et al*., pp. 40–41, fig. 4a. (cum syn.)

2015 *Lepidopleurus cajetanus* (Poli, 1791) – Ruman & Hudáčková, pp. 158–160, fig. 5.4a–b. (cum syn.)

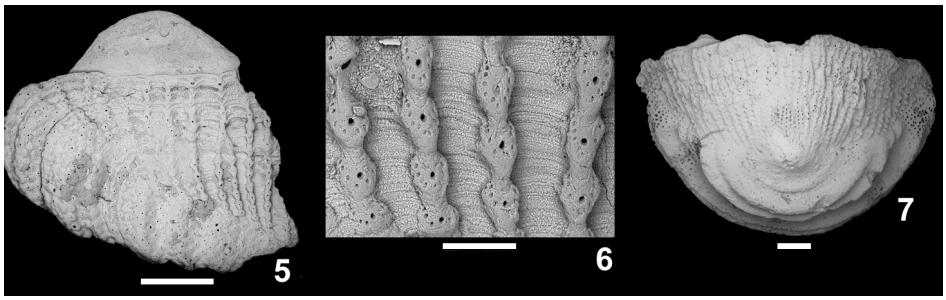
Material – 1 intermediate and 2 tail valves.

Remarks – The lateral area of the intermediate valve (Fig. 5) and the postmucronal area of the tail valve (Fig. 7) are ornamented with strong, concentric, terrace-like ribs, while the central area of the intermediate valve and the antemucronal area of the tail valve are ornamented with granules arranged in longitudinal, often bifurcated rows. On the intermediate valve illustrated, characteristic and regular arrangement of the aesthetes is clearly visible: a large macroaesthete in the centre, surrounded by a series of microaesthetes (except above the macroaesthete) (cf. Dell'Angelo & Smriglio 1999: pl. 7, fig. L; Dulai 2005: pl. I, fig. 7).

From the Central Paratethys area, this species is referred to as *Chiton decoratus* Reuss in earlier literature (e.g., Reuss 1860; Rochebrune 1883; Šulc 1934; Bałuk 1965, 1971). The classification of some particularly large specimens is disputed. These are treated in some literature as a separate species under the name *subcajetanus* (e.g., Sacco 1897; Kroh 2003). Some authors have classified them under *L. virgifer* (e.g., Dell'Angelo & Palazzi 1989), and others consider them synonymous with *cajetanus* (e.g., Šulc 1934; Studencka & Dulai 2010), stressing that they are identical in all but size, and very large recent *cajetanus* specimens were also described in the literature (e.g., Malatesta 1962; Poppe & Goto 1991; Dell'Angelo & Smriglio 1999). Recently Dell'Angelo *et al.* (2018) attributed one of the large head valves published from Szuszkowce, Ukraine (Studencka & Dulai 2010: Text-Fig. 3E) to *Lepidopleurus benoisti* (Rochebrune, 1883).

The most common *Lepidopleurus* species alive today is not ubiquitous in the fossil record, despite its thick and massive shells. It is the most common Polyplacophora species in the Korytnica clay of similar age (Bałuk 1971). It is common in the Vienna Basin (Reuss 1860; Šulc 1934), but not very frequent in Hungarian Miocene deposits (Bánd: Dulai 2005; Letkés: this paper).

Habitat – It is a shallow water species under rocks and shells (between 0.5–



Figs 5–7. *Lepidopleurus cajetanus* (Poli, 1791). – **Figs 5–6.** Fragmentary intermediate valve, HNHM INV 2024.597. – **Fig. 5.** Dorsal view. – **Fig. 6.** Enlarged detail of surface ornamentation of the central area. – **Fig. 7.** Tail valve, HNHM INV 2024.598, dorsal view. Scale bars: 5, 7: 0.5 mm; 6: 100 μm

40 metres, but most common between 1–5 metres) (Dell'Angelo *et al.* 1998). It is a typical species of the hard surfaces of the infralittoral (Sabelli & Taviani 1979) and partly of the circalittoral (Poppe & Goto 1991) zones.

Distribution within the Central Paratethys – Austria (Šulc 1934; Kroh 2002, 2003), Czech Republic (Šulc 1934), Hungary (Dulai 2005, this paper), Romania (Zilch 1934; Marinescu 1964; Dell'Angelo *et al.* 2007), Poland (Bałuk 1965, 1971, 1984; Macioszczyk 1988; Studencka & Studencki 1988), Slovakia (Ruman & Hudáčková 2015), and Ukraine (Studencka & Dulai 2010). It is also known from the Miocene – Pleistocene strata of the Mediterranean (e.g., Dell'Angelo *et al.* 2004).

Order Chitonida Thiele, 1909
Suborder Chitonina Thiele, 1909
Superfamily Chitonoidea Rafinesque, 1815
Family Ischnochitonidae Dall, 1889
Subfamily Ischnochitoninae Dall, 1889
Genus *Ischnochiton* Gray, 1847

Ischnochiton rissoi (Payraudeau, 1826)
(Figs 8–13)

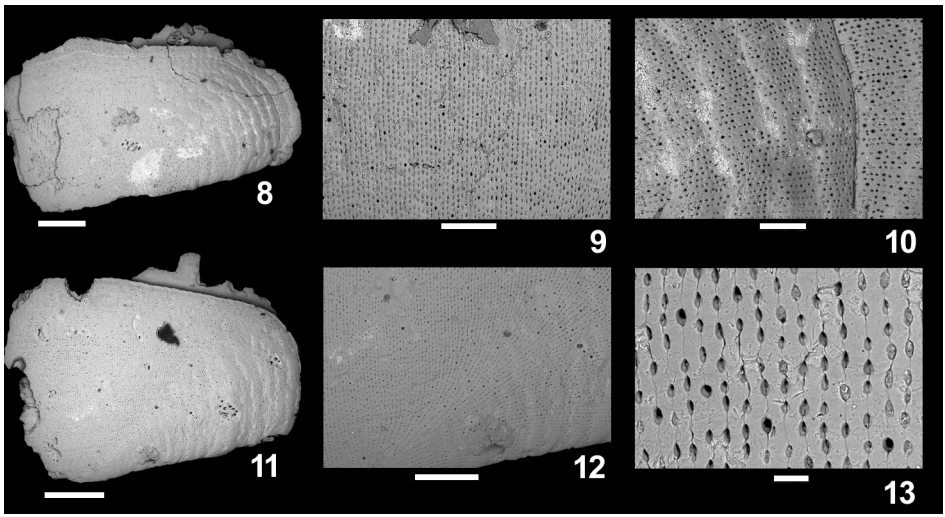
2005 *Ischnochiton rissoi* (Payraudeau, 1826) – Dulai, pp. 33–36, pl. 3, figs 1–5. (cum syn.)
2024 *Ischnochiton rissoi* (Payraudeau, 1826) – Dulai & Katona, pp. 37–38, figs 10–18.
2025 *Ischnochiton rissoi* (Payraudeau, 1826) – Dulai, pp. 7–8, figs 12–13.

Material – 2 intermediate valves.

Remarks – Only two, rather fragmentary intermediate valves have been found in Letkés, but the lateral area is clearly identifiable with the species *rissoi* by the characteristic concentric vermicular ornamentation. *I. rudolticensis* (Šulc 1934; Bałuk 1971), described from the Central Paratethys, is a junior synonym of *I. rissoi* (Laghi 1977). Among the known Badenian (Middle Miocene) Polyplacophora sites in Hungary, *I. rissoi* occurs in several localities (Bánd: Dulai 2005, Várpalota: Dulai & Katona 2024, Devecser: Dulai 2025, and Letkés: this paper), but usually in small numbers. Another *Ischnochiton* species described from the northern part of the Central Paratethys (Poland), *I. korytnicensis* Bałuk has not been reported so far from Hungary, despite the fact that it is distributed to the Mediterranean (Dell'Angelo *et al.* 1999, 2015) as well as to the Atlantic Ocean (Aquitaine Basin: Dell'Angelo *et al.* 2020).

Habitat – The species inhabits in very shallow water (1–5 metres, rarely down to 100 m) under stones and dead shells (Dell'Angelo & Smriglio 1999).

Distribution within the Central Paratethys – Austria, Czech Republic, Hungary, Poland, Romania, and Ukraine (see details in Dulai & Katona 2024). It is



Figs 8–13. *Ischnochiton rissoi* (Payraudeau, 1826). – **Figs. 8–10.** Fragmentary intermediate valve, HNHM INV 2024.600. – **Fig. 8.** Dorsal view. – **Fig. 9.** Enlarged detail of the surface ornamentation of the central area. – **Fig. 10.** Enlarged detail of the wrinkles at the lateral area. – **Figs 11–13.** Fragmentary intermediate valve, HNHM INV 2024.601. – **Fig. 11.** Dorsal view. – **Fig. 12.** Enlarged detail of the surface ornamentation of the central area. – **Fig. 13.** Enlarged detail of pore system of the central area. Scale bars: 8, 11: 0.5 mm; 9: 150 μm, 10: 100 μm, 12: 250 μm; 13: 25 μm

also known from the Miocene – Pleistocene formations of the Mediterranean (Dell'Angelo *et al*. 2021).

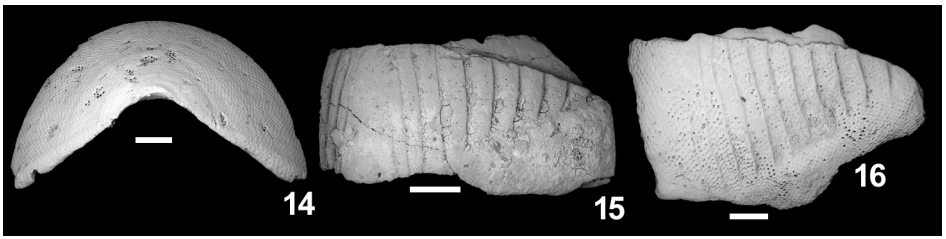
Family Chitonidae Rafinesque, 1815
Subfamily Chitoninae Rafinesque, 1815
Genus *Rhyssoplax* Thiele, 1893

Rhyssoplax corallina (Risso, 1826)
(Figs 14–16)

2015 *Chiton corallinus* (Risso, 1826) – Ruman & Hudáčková, pp. 160–162, figs 3.7, 4.1. (cum syn.)
2024 *Rhyssoplax corallina* (Risso, 1826) – Dulai & Katona, pp. 41–42, figs 27–29.
2024 *Rhyssoplax corallina* (Risso, 1826) – Schwabe & Dulai, pp. 60–61, figs 8–10.
2025 *Rhyssoplax corallina* (Risso, 1826) – Dulai, pp. 8–9, fig. 14.

Material – 2 head and 12 intermediate valves.

Remarks – It is one of the most common Middle Miocene chiton species of the Central Paratethyan Polyplacophora fauna, found in several localities in Hungary (Bánd, Várpalota, Borsodbóta, Devecser, Letkés, and Mecsekpölöske).



Figs 14–16. *Rhyssoplax corallina* (Risso, 1826). – **Fig. 14.** Head valve, HNHM INV 2024.602, dorsal view. – **Fig. 15.** Fragmentary intermediate valve, HNHM INV 2024.603, dorsal view. – **Fig. 16.** Fragmentary intermediate valve, HNHM INV 2024.604, dorsal view. Scale bars: 0.5 mm

Mostly the intermediate valves are present, which are also dominant here, but 2 head valves were also discovered in Letkés. The head valve is semicircular, its surface is smooth, the openings of the aesthetes are frequent and clearly visible (Fig. 14). 8–10 longitudinal grooves run along the pleural area of the intermediate valves, up to the anterior margin (Figs 15–16).

Habitat – It is an eurybathial species, living between 0 and 100 metres and deeper mostly on coralligenous bottoms (Dell'Angelo & Smriglio 1999).

Distribution within the Central Paratethys – Austria, Czech Republic, Hungary, Poland, Romania, Slovakia, and Ukraine (see details in Ruman & Hudáčková 2015 and Schwabe & Dulai 2024).

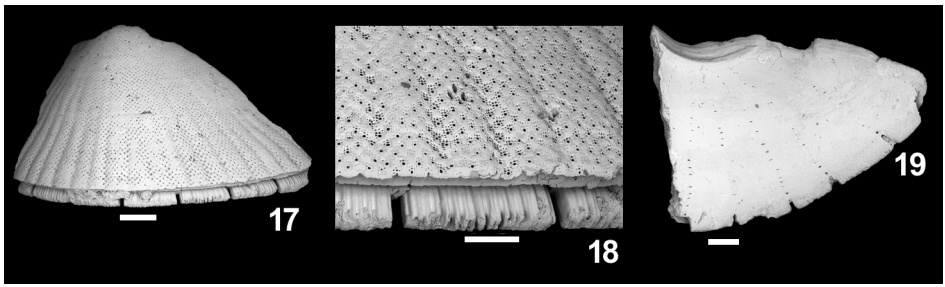
Rhyssoplax olivacea (Spengler, 1797)
(Figs 17–19)

2015 *Chiton olivaceus* Spengler, 1797 – Ruman & Hudáčková, pp. 162–164, fig. 4.2. (cum syn.)
2025 *Rhyssoplax olivacea* (Spengler, 1797) – Dulai, pp. 9–10, fig. 15.

Material – 2 head valves.

Remarks – It is less common than the other *Rhyssoplax* species (*R. corallina*) in the Central Paratethys and until now it has been found in Hungary at Bánd, Devecser and Letkés. It can be distinguished from the species *corallina* by the presence of radial grooves in the head valve (Fig. 17), the lateral area of the intermediate valve, and the postmucronal area of the tail valve. The enlarged image of the surface of the head valve shows the grouped aesthetic openings (Fig. 18), similar to those figured by Dell'Angelo & Smriglio (1999: pl. 57, fig. M). The same figure shows the narrow slits between teeth of uniform width and the strong pectination. In ventral view of the head valve, several slit rays are well-visible (Fig. 19).

Another form, similar to the species *olivaceus*, is *Rhyssoplax miocenicus* Michelotti, which is thought by some authors to be conspecific with *R. olivacea*. The more accepted view is that the species *miocenicus* has a significantly greater



Figs 17–19. *Rhyssoplax olivacea* (Spengler, 1797). – **Figs 17–18.** Head valve, HNHM INV 2024.607. – **Fig. 17.** Dorsal view. – **Fig. 18.** Enlarged detail of surface ornamentation with teeth and slits. – **Fig. 19.** Fragmentary head valve, HNHM INV 2024.608, ventral view to show slits and slit rays. Scale bars: 17, 19: 0.5 mm; 18: 250 μm

number of longitudinal grooves (e.g., Dell'Angelo *et al.* 2004). A third similar species is *Rhyssoplax etruscus* Dell'Angelo et Forli from the Pleistocene of Italy (Dell'Angelo & Forli 1995), in which, from among the 5–8 grooves running on each side of the intermediate valve, the 1–2, nearest to the jugal area, are much shorter than the others and do not run to the anterior margin.

Habitat – It lives under stones and rock fragments, from the lower mesolittoral zone down to 5–6 metres, rarely down to 35–40 metres (Dell'Angelo & Smriglio 1999).

Distribution within the Central Paratethys – Austria, Czech Republic, Hungary, Poland, Romania, Slovakia, and Ukraine (see details in Dulai 2025).

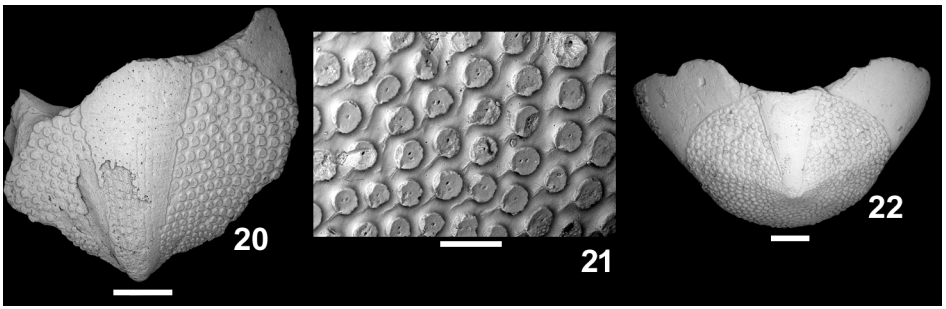
Suborder Acanthochitonina Bergenhayn, 1930
Superfamily Cryptoplacoidea H. et A. Adams, 1858
Family Acanthochitonidae Pilsbry, 1893
Genus *Acanthochitona* Gray, 1821

Acanthochitona lacrimulifera Bałuk, 1971
(Figs 20–22)

2025 *Acanthochitona lacrimulifera* Bałuk, 1971 – Dulai, pp. 11–13, figs 19–21. (cum syn.)

Material – 22 intermediate and 2 tail valves.

Remarks – Specimens identical to the *Acanthochitona* material published from Devecser were also found at Letkés. The flattened granules covering the pleurolateral area of the intermediate valves (Fig. 20) and the postmucronal area of the tail valves (Fig. 22) are all associated with a low but distinct ridge pointing towards the apex (Fig. 21). This morphotype, which is also frequently mentioned in the literature (described as *fascicularis* or *crinita*; see details in Dulai 2025), is in-



Figs 20–22. *Acanthochitona lacrimulifera* (Bałuk, 1971). – **Figs 20–21.** Fragmentary intermediate valve, HNHM INV 2024.609. – **Fig. 20.** Dorsal view. – **Fig. 21.** Enlarged detail of surface ornamentation of the lateropleural area. – **Fig. 22.** Tail valve, HNHM INV 2024.610, dorsal view. Scale bars: 20, 22: 0.5 mm, 21: 150 μm

cluded in the species *A. lacrimulifera* described by Bałuk (1971, 1984), in which the granules are teardrop-shaped. As in many other Middle Miocene sites in the Central Paratethys, *Acanthochitona* remains are the most common elements of the Polyplacophora assemblage at Letkés, Bagoly Hill locality (36.9%).

Habitat – *A. lacrimulifera* is an extinct taxon; the morphologically most similar species, *A. crinita* occurs both in shallow-water (intertidal zone) and deeper (down to about 50 m deep) coralligenous environments (Dell'Angelo & Smriglio 1999).

Distribution within the Central Paratethys – Poland, Ukraine, and Hungary (see details in Dulai 2025).

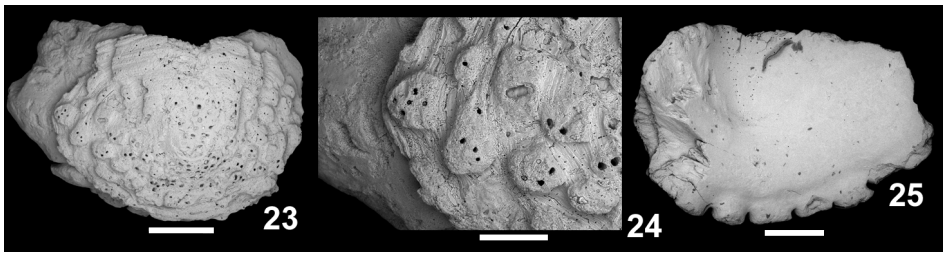
Genus *Craspedochiton* Shuttleworth, 1853

Craspedochiton schafferi (Šulc, 1934)
(Figs 23–25)

1934 *Cryptoconchus* (*Notoplax*) *schafferi* n. sp. – Šulc, p. 15, pl. 1, figs 22–24.
non 1971 *Craspedochiton schafferi* Šulc, 1934 – Bałuk, p. 465, pl. 2, figs 13–14.
2003 *Notoplax schafferi* (Šulc, 1934) – Kroh, p. 135, pl. 2, fig. 4.

Material – 1 tail valve.

Remarks – It is one of the rarest and least known Middle Miocene Polyplacophora species of the Central Paratethys. *Cryptoconchus* (*Notoplax*) *schafferi* was described by Šulc (1934) on the basis of a tail valve (Niederleis, Austria) and three intermediate valves (Kninice, Czech Republic). Later, the holotype tail valve was re-illustrated by Kroh (2003) as *Notoplax schafferi* and Kroh also noted that no new material has been found since Šulc (1934)'s description. Bałuk (1971) reported the species from the Korytnica locality, but later revised this designation himself and



Figs 23–25. *Craspedochiton schafferi* (Šulc, 1934). Fragmentary tail valve, HNHM INV 2024.612. – **Fig. 23.** Dorsal view. – **Fig. 24.** Enlarged detail of surface ornamentation. – **Fig. 25.** Ventral view. Scale bars: 23, 25: 0.5 mm; 24: 200 μm

reclassified the Polish material as *Craspedochiton profascicularis* (Boettger) (Bałuk 1984). The latter species is still disputed: some authors consider it a valid species, while others regard it as a junior synonym of *C. altavillensis* (Seguenza) (for a discussion of this issue, see Schwabe & Dulai 2024, in the previous part of this series).

European Neogene representatives of the genus *Craspedochiton* were summarized by Dell'Angelo *et al.* (1999). In this work, the authors cautiously mention the species *schafferi* as a possible third species alongside *C. altavillensis* and *C. minutulus* Bałuk, indicating the need to study the type specimen. More recently, Dell'Angelo *et al.* (2020) have compared in detail the species *schafferi* with *altavillensis* and *lozoueti* Dell'Angelo *et al.* 2020, *fontlevensis* Dell'Angelo *et al.* 2020, and *brunettii* Dell'Angelo *et al.* 2016, which were partially introduced as new species (l.c. Table 5). As the comparison was based on the tail valves, this allows for a correct identification of the single tail valve recovered from the Letkés site. According to Dell'Angelo *et al.* (2020), the tail valve of *C. schafferi* is circular in outline, the jugal area is smooth, the mucro subcentral, not elevated and poorly developed, the posterior slope is slightly concave, the ornamentation is composed of large irregular granules (except in the jugal area), the apophysis is trapezoidal in shape but not expanded, and there are 7 slits on the insertion plate. The Letkés tail valve meets all of these criteria, making it the first known record of *C. schafferi* since the original description by Šulc (1934).

The species *C. schafferi* is very similar to *C. brunettii*, known from a single tail valve, described from the Northern Italian Miocene (Montegibbio, Tortonian) by Dell'Angelo *et al.* (2016). However, the species *brunettii* can be distinguished by its bell-shaped tegmentum and by the more densely spaced and more irregularly shaped granules of variable size.

Habitat – *C. schafferi* is an extinct species. The recent *Craspedochiton laqueatus* (Sowerby) in the Red Sea is living under rocks in shallow water (0.5 m) up to about 50 metres deep (Strack 1993).

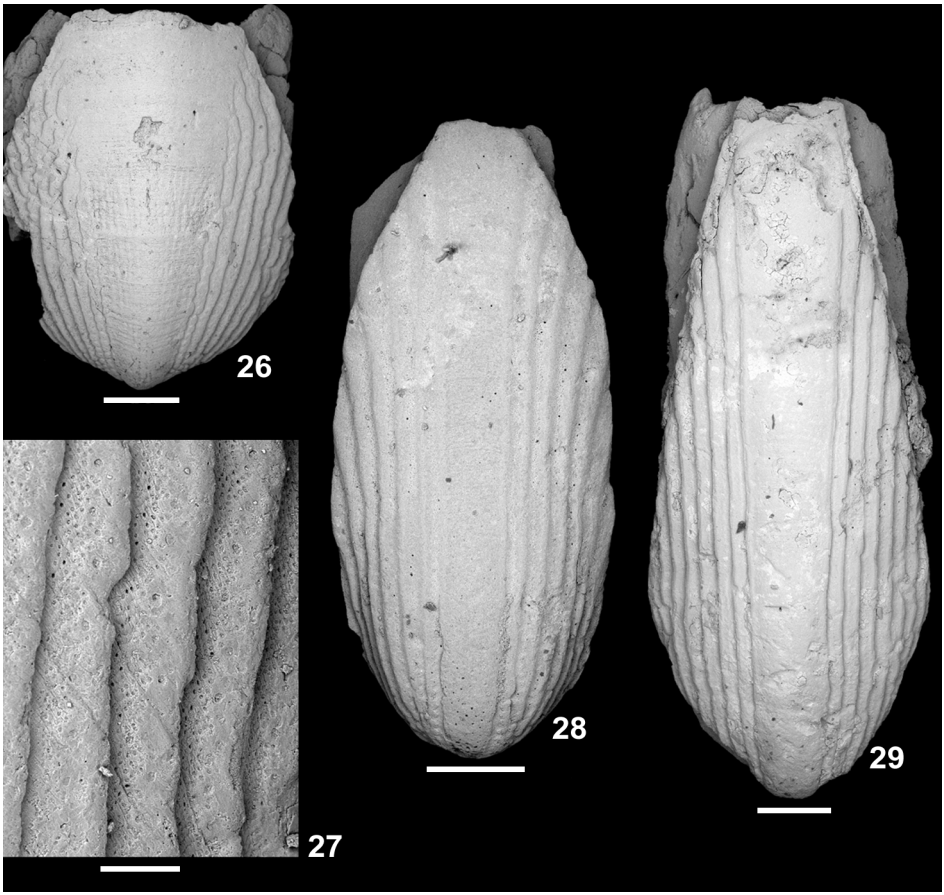
Distribution within the Central Paratethys – One of the rarest Polyplacophora species of the Central Paratethys, with a total of five known valves: Austria (Šulc 1934), Czech Republic (Šulc 1934), and Hungary (this paper).

Family Cryptoplacidae H. et A. Adams, 1858
Genus *Cryptoplax* De Blainville, 1818

Cryptoplax weinlandi Šulc, 1934
(Figs 26–29)

2007 *Cryptoplax weinlandi* Šulc, 1934 – Dell'Angelo *et al.*, pp. 45–47, figs 2, 3, 5. (cum syn.)
2024 *Cryptoplax weinlandi* Šulc, 1934 – Dulai & Katona, pp. 46–47, figs 43–45.
2025 *Cryptoplax weinlandi* Šulc, 1934 – Dulai, pp. 13–15, figs 22–29.

Material – 2 second (II), 12 intermediate, and 3 tail valves.



Figs 26–29. *Cryptoplax weinlandi* Šulc, 1934. – **Figs 26–27.** Second (II) valve, HNHM INV 2024.613. – **Fig. 26.** Dorsal view. – **Fig. 27.** Enlarged detail of surface ornamentation of the lateropleural area. – **Fig. 28.** Intermediate valve, HNHM INV 2024.614, dorsal view. – **Fig. 29.** Intermediate valve, HNHM INV 2024.615, dorsal view. Scale bars: 26, 28, 29: 0.5 mm, 27: 100 μm

Remarks – The second most common Polyplacophora species of the Letkés site is *C. weinlandi* Šulc, which is ubiquitous in the Middle Miocene Central Paratethys. The valves recovered are a perfect match with the specimens described in the literature. From the Montegibbio site in northern Italy, Laghi (1977) described *Criptoplax* (sic) *lanceolatus* based on two valves, and recently Dell'Angelo *et al.* (2016) confirmed the existence of the species with the discovery of a third valve, but it is still known from only a single site. The species *lanceolatus* can be clearly distinguished from *weinlandi* by the pentagonal outline and the differences in the ornamentation (irregular granules with obliquely running ridges in *lanceolatus vs.* slightly undulating straight ridges parallel to the jugum in *weinlandi*). The outline and ornamentation of *C. lanceolatus* is more similar to that of *C. margitae* Dulai described from the Szokolya-2 borehole, but is also clearly distinct from it (see details in the discussion of the Mecsekpölöske material in the next paper of this series; Dulai & Szabó in prep.).

Habitat – *C. weinlandi* Šulc is an extinct species, the living representatives of the genus occur in temperate and tropical areas of the Indo-Pacific and the Red Sea (Gowlett-Holmes 1998).

Distribution within the Central Paratethys – *C. weinlandi* is a typical Polyplacophora species of the Central Paratethys (Austria, Czech Republic, Hungary, Poland, Romania, and Slovakia; see details in Dell'Angelo *et al.* 2007 and Dulai & Katona 2024), and also known from the Miocene of the Mediterranean (Serravallian, Tortonian, Messinian; Laghi 1977; Ruggieri 1982; Dell'Angelo *et al.* 1999, 2016).

CONCLUSIONS

Until now, only the Szokolya–2 borehole has yielded Middle Miocene Polyplacophora remains in the Börzsöny Mts (Dulai 2001). Recently a few dozen chiton valves were found in the screen-washed residue of about 2 kg sandy sediment collected from the new site near Letkés. Despite the low number of specimens (65), a surprisingly diverse Polyplacophora assemblage (8 species of 7 genera) has been identified. As in the other sites of the Central Paratethys, *Acanthochitona* (*lacrimulifera*, 36.9%) and *Cryptoplax* (*weinlandi*, 26.1%) dominate, but the genus *Rhyssoplax* (*corallina* + *olivacea*, 24.5%) is also found in almost equal abundance. The other four taxa are accessory elements. *Parachiton* was unknown from Hungary until recently, but after Várpalota (Dulai & Katona 2024) and Devecser (Dulai 2025) (both in the Bakony Mts) it was found in the Börzsöny Mts, indicating a limited but general distribution in the Central Paratethys. The same is true for *Ischnochiton rissoi*, which is found in many localities but nowhere in predominant abundance. *Lepidopleurus cajetanus* is a significant member of the Poly-

placophora assemblage at some sites, but has so far been found in small numbers at Letkés. For the Polyplacophora fauna of the Central Paratethys, the most important find at Letkés is *Craspedochiton schafferi* (Šulc). Although only a single tail valve was found, this is a real curiosity, as it is the first record of this species since Šulc (1934)'s original description. This find confirmed the presence of the species in the Central Paratethys and also significantly extended its known palaeogeographical range from the Vienna Basin (Austria and Czech Republic) to the Börzsöny Mts (Hungary). Considering the relatively small sample of the material presented here, which nevertheless yields diverse fauna and contains some very rare faunal elements, it will be worthwhile to examine further screen-washed samples from the site in order to gain a better understanding of the Letkés Polyplacophora assemblage.

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