

## THE FIRST RECORDED OCCURRENCE OF *SMILIUM* ? *PARVULUM* WITHERS, 1914 (CIRRIPEDIA, THORACICA) FROM THE BOHEMIAN CRETACEOUS BASIN (THE CZECH REPUBLIC)

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Abstract. A single minute cirriped carina of *Smilium* ? *parvulum* WITHERS, 1914 was recorded in deposits of the Cenomanian-Turonian boundary interval, preserved in the Velim locality (western part of the quarry – “Václav pocket”). This specimen represents the first recorded occurrence of the species in the Bohemian Cretaceous Basin.

■ Cirripedia, *Smilium* ? *parvulum*, Upper Cretaceous, Bohemian Cretaceous Basin, Velim

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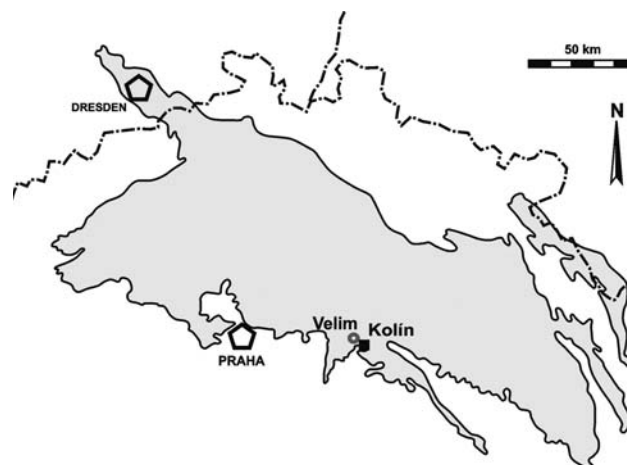
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### Introduction

The cirripeds from the Bohemian Cretaceous Basin (BCB) were studied by Reuss (1844, 1845–46, 1864), who described them from the Ohře area (W of the BCB). The first scientist to study cirripeds from the nearshore/shallow water facies in the BCB was Kafka (1885). He described several species from the well-known locality of Kamajka near Chotusice, followed by Fritsch and Kafka (1887) and Frič (1911a, b), who described an additional cirriped specimens from the BCB. Withers (1935) published the first modern revision of the Cretaceous cirripeds (including specimens from the BCB). He revised several specimens recorded by Dr. A. Fritsch and Dr. J. Šulc from the following localities: Kaňk, Kamajka, Na Vinici (overgrown locality, NE from Kolín according to J. Šulc), Kučlín near Bílina, Koštice, Duchcov, Bílá Hora in Prague, Holice, Lhota Úhřetická and Choceň. Withers (1935) mentioned 11 species from the BCB: *Zeugmatolepas cretae* (STEENSTRUP), *Calantica (Scillaelepas) conica* (REUSS), *Calantica (Titanolepas) tuberculata* (DARWIN), *Cretiscalpellum glabrum* (F. A. ROEMER), *Cretiscalpellum striatum* (DARWIN), *Scalpellum (Arcoscalpellum) angustatum* (GEINITZ), *Scalpellum (Arcoscalpellum) maximum* (J. DE C. SOWERBY), *Loriculina laevissima* (VON ZITTEL), *Stramentum pulchellum* (G. B. SOWERBY, jun.), *Proverruca vinculum* WITHERS, *Brachylepas fallax* DARWIN.

### Methods and history of cirriped research in the Velim locality

The first systematic revision of cirripeds from the nearshore/shallow water facies Velim – Skalka (text-fig. 1) was undertaken by Kočí and Kočová Veselská (2012a, b, c). They described the following species, which were collected and sieved from a further 100 kg of rubble during 2001–2013: *Zeugmatolepas* sp., *Cretiscalpellum glabrum*



Text-fig. 1. Geographical setting of the nearshore/shallow water locality of Velim (circle) within the Bohemian Cretaceous Basin (grey).

(ROEMER), *Cretiscalpellum striatum* (DARWIN) and *Arcoscalpellum angustatum* (GEINITZ). The species *Zeugmatolepas* sp. was re-described later as a new species *Zeugmatolepas sklenari* (Kočová Veselská et al. – submitted). During these fieldworks, in April 2012, a further 10 kg of rubble was collected and sieved from the underlying sediments of the so-called “Václav pocket” – section VII *sensu* Žitt et al. (1997a) in the western part of the former quarry (Text-fig. 2), with the net result of one plate – a minute carina of *Smilium* ? *parvulum* WITHERS, 1914 (Kočí and Kočová Veselská 2013). The stratigraphic position is probably the Lower Turonian. Unfortunately, further details could not be determined, because this locality has been a protected National Monument since 1986 and collecting in the geological profile is forbidden. However, the specimen probably comes from grey claystones developed in section VII *sensu* Žitt et al. (1997a), and occurs with a paleo-association of oysters *Amhidonte* (*A.*) *reticulatum* (REUSS), *Amphidonte* (*A.*) *sigmoideum* (REUSS), *Gryphaeostrea canaliculata* (SOWERBY), stems of octocorals *Moltkia* sp., sabellid worms *Glomerula serpentina* (GOLDFUSS), spines of echinoids *Stereocidaris sorigneti* (DESOR) and *Stereocidaris vesiculosa* (DESOR), stem plates of crinoids *Isocrinus* sp., brachiopods *Terebratulina striatula* (MANTELL) and other fossils typical for rocky coast facies. The most recent palaeontological research carried out at Velim locality was by Žitt et al. (1997a, b). Then Košťák et al. (2010) referred to the occurrence of two species of cirripeds at Velim, *Pollicipes glaber* REUSS and *Scalpellum* sp., figured in Tab. 2 as fauna associated with rhyncholites *Nautilorhynchus simplex* (FRITSCH). The local bio-stratigraphical potential of these nautilid jaws was mentioned by these authors, who also assumed the Lower Turonian age of the rhyncholite-bearing sediments.



**Text-fig. 2.** The western part of Velim (former quarry) shows sections VII and VIII *sensu* Žitt et al. (1997a) – (photographed by T. K.).

A single carina of *Smilium* ? *parvulum* (NM O7133) was photographed using SEM in low vacuum (JEOL JSM-6380LV) at the Institute of Geology and Palaeontology (Charles University, Prague). When using SEM, the specimen was not coated with any metal and therefore low vacuum was used instead.

## Systematic palaeontology

Classification of the genus *Smilium* Withers, 1914 follows that of Darwin (1851), Withers (1912, 1914, 1928, 1935), Newman et al. (1969) and Newman and Ross (1971). The minute carina specimen was compared with other cirriped specimens stored in the collection of the National Museum in Prague.

### Class Cirripedia BURMEISTER, 1834

#### Order Thoracica DARWIN, 1854

#### Suborder Lepadomorpha PILSBRY, 1916

#### Family Scalpellidae PILSBRY, 1916

#### Subfamily Calanticinae ZEVINA, 1978

#### Genus *Smilium* LEACH, 1825

Type species. *Scalpellum* sp. (in Darwin 1851); a single carina from the Cenomanian of Cambridge vicinity.

#### *Smilium* ? *parvulum* (WITHERS, 1914)

Text-fig. 3

- 1851 *Scalpellum* sp.; Darwin, p. 21.  
 1912 *Scalpellum* sp.; Withers, p. 231.  
 1914 *Scalpellum parvulum* WITHERS; Withers, p. 496, text-figs 1–6.  
 1935 *Smilium* (?) *parvulum* (WITHERS); Withers, p. 141, pl. 12, figs 9–15.  
 2013 *Smilium* (?) *parvulum* (WITHERS); Kočí and Kočová Veselská, p. 179, figs 1–2.

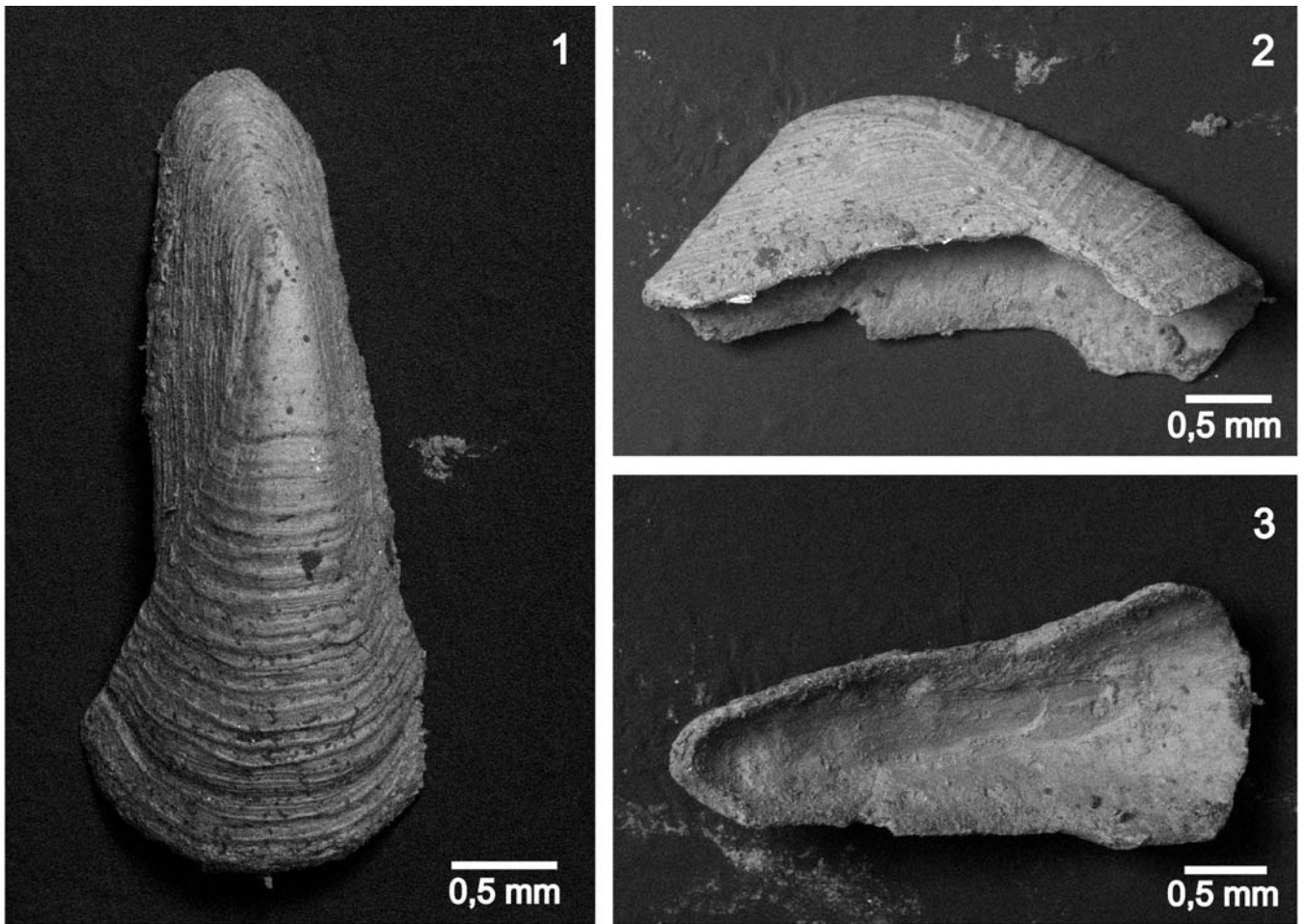
**Material.** NM O7133, the single specimen exhibits a minute carina in the palaeontological collections of the National Museum (Prague).

**Distribution.** England – Upper Albian – Cambridge Greensand: locality Cambridge; Lower Cenomanian – Chalk Marl, *Schloenbachia varians* Zone: localities Cambridge, Burham and Kent; Upper Turonian – *Plesiocorys plana* Zone: localities Alton District, Hampshire.

Czech Republic – Lower Turonian – ? *Mytiloides labiatus* Zone: Velim.

**Description.** The umbo is removed from the apex by about one-third the length of the carina. The uppermost third of this plate is rounded with well-developed longitudinal ridges on the tectum. Parieties, lateral sides with distinct transversal lines, are developed in the lower two thirds of the plate. The internal lateral sides, intraparieties, form an elongation of the plate and give it a tapered beaked shape. Incremental growth lines are fine and distinct. The inner surface is smooth without growth lines. The carina length equals 4 mm and the width at its basal edge is 1.4 mm.

**Remarks and relationships.** Withers (1935) mentioned and described only four specimens of minute carina of *Smilium* ? *parvulum* from the Cenomanian of England. These carinae are of exceptionally minute size. Because all the carinae are of the same small size, it indicates that they belong to adult specimens. Withers (1928) noted that some specimens of the Cenomanian



Text-fig. 3. *Smilium ? parvulum* (WITHERS, 1914), carina, specimen NM O7133, 1 – outer view of carina with umbo under apex, 2 – lateral view of carina, 3 – inner view of carina with remains of claystone after preparation. Specimen is to scale.

species *Arcoscalpellum lineatum* (DARWIN) show a slight tendency for the intraparieties to extend a little beyond the umbo, but there is no relationship with the Cenomanian *Smilium ? parvulum*. Withers (1928, 1935) mentioned an identical tendency in the Upper Senonian species *Scalpellum hagenowianum* BOSQUET, and *Scalpellum beisseli* BOSQUET et MÜLLER from the Middle and the Upper Senonian of England (*Micraster coranguinum* Zone, Upper Coniacian – Lower Santonian; *Belemnitella mucronata* Zone, Upper Campanian – Lower Maastrichtian) and in the Maastrichtian species *Scalpellum gabbi* PILSBRY, *Scalpellum darwinianum* BOSQUET, *Scalpellum hagenowianum* BOSQUET and *Scalpellum ryckholti* WITHERS from Belgium, the Netherlands and the United States of America. These scalpellid species were recently placed in the genus *Virginiscalpellum* WITHERS, 1935. *Smilium ? parvulum* is distinguished from the aforementioned species of *Virginiscalpellum* on the basis of a less complex structure of carina. The umbo of the genus *Virginiscalpellum* is closer to the apex than in the genus *Smilium*. In the Cenomanian–Turonian species *Smilium ? parvulum* WITHERS, extant species *Smilium peronii* GRAY (see Withers 1953: 170, fig. 69) and extant species *Euscalpellum rostratum* (DARWIN), the carinae run straight from the base to the umbo, and the umbo has moved from the apex along the carina, about one-third of the way down its length (see Withers 1953:173, fig. 75).

## Conclusions

The one minute carina of *Smilium ? parvulum* was described from the nearshore/shallow water facies at Velim as the first recorded occurrence in the Bohemian Cretaceous Basin. This species is problematic and very rare in the context of the European Cretaceous cirripeds. Withers (1935) mentioned only four carinae and fifteen scuta of this species; carinae come from the Chalk Marl and are deposited in the British Museum of Natural History, the largest of which measures 2.1 mm; scuta were collected from different horizons, one of them, deposited in the Sedgwick Museum in Cambridge, comes from the Cambridge Greensand. In addition, there is one carina of length 3.8 mm from the *Plesiocorys plana* Zone in Hampshire, deposited in the private collection of Mr. R. M. Brydone (No. 131).

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