



**PYCNOPYRA SULCATA GEN. ET SP. N. (BIVALVIA, OSTREINA)
FROM LOWER TURONIAN OF BOHEMIAN CRETACEOUS BASIN
(CZECH REPUBLIC)**

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Abstract. A new genus and species of Cretaceous oyster, *Pycnogyra sulcata* gen. et sp. n., is described from the Lower Turonian of Bohemia Cretaceous Basin. The new genus distinguishes itself from all the other genera of grypheoidal oysters by deep radial posterior sulcus and well-detached posterior flange.

■ Bivalvia, oysters, *Pycnogyra sulcata* gen. et sp. n., taxonomy, Cretaceous, Lower Turonian, Bohemia, Czech Republic.

A large depression in the pre-Cretaceous basement was exposed in the upper part of the eastern wall of the quarry at Plaňany near Kolín within mining activities in the last year. The depression lies on the 1st level of the quarry. It is filled with Cretaceous sediments: a bed of calcareous, glauconite-bearing sandstone with abundant coprolites and shells of an assemblage of ostreoid bivalves showing a relatively low species diversity (see Žitt 2001). This assemblage appeared to contain also several unknown species or species not reported from the Bohemian Cretaceous yet. These finds include the herein newly described genus and species *Pycnogyra sulcata* gen. et sp. n.

The specimens studied are deposited in the Department of Palaeontology, National Museum, Prague (abbr. NM O 6314 – O 6324).

SYSTEMATIC PALAEONTOLOGY

Suborder Ostreina FÉRUSAC, 1882

Superfamily Ostreacea RAFINESQUE, 1815

Family Gryphaeidae VIALOV, 1936

Subfamily Pycnodonteinae STENZEL, 1959

Genus *Pycnogyra* gen. n.

Type species: *Pycnogyra sulcata* sp. n., Upper Cretaceous, Lower Turonian; Cretaceous Basin, Bohemia, Czech republic.

Diagnosis. Medium to large, markedly inequivalve, strongly inequilateral shell. Anterior shell margin exogyroidally curved, corresponding to general coiling of shell in its arched outline. Posterior shell margin tapering into a prominent, undulatory or even tubular lobe in area of exhalant pseudosiphon. Ligamental area short, very low. Muscle imprint broadly oval to circular in shape, small and shallow, lying high in upper part of

umbonal cavity on the inner valve surface, positioned almost centrally, only slightly shifted to left valve margin. Vesicular shell structure of pycnodont type, best visible on outer surface of umbonal region of left valve. No chomata. Left valve highly arched, exogyroidally curved towards posterior margin. Umbonal region low, with bluntly gryphaeiform beak, deformed in area of attachment to substrate. Attachment area small. A prominent, deep and relatively broad radial sulcus located in posterior part of outer surface of left valve, running from the umbonal region of valve and ending on its ventral margin, separating central part of valve from its posterior flange. Umbonal cavity of left valve typically bearing a gryphaeiform depression. Commissure wavy. Right valve smaller than left valve, usually flattened, cap-like or only slightly depressed, with its commissure precisely copying wavy left valve margin. Margins of growth squamae on outer shell surface well-defined, grouped into broader, less distinct concentric ridges on left valve. Shell surface otherwise smooth.

Remarks and relations. *Pycnogyra* gen. n. from the Lower Turonian of the Bohemian Cretaceous Basin parallels the genus *Pycnodonte* FISCHER DE WALDHEIM in many features (for generic description see Stenzel 1971, Záruba 1996). These include particularly the presence of a characteristic vesicular shell structure, the size, shape and position of the muscle imprint, the presence of a radial sulcus separating the posterior flange of the left valve, the size of the attachment area and the almost smooth shell surface. It, however, differs from the genus *Pycnodonte* in the coiling in the umbonal region, which has the character of a three-dimensional spiral and is of typically exogyroidal type. It differs from the genus *Gryphaea* LAMARCK in the presence of a vesicular shell structure and exogyroidal shell coiling. In contrast with the genus *Exogyra* SAY, it possesses a very low and short ligamental area and a bluntly gryphaeiform beak. The undulatory tubular lobe in the posterior part of the left valve (posterior flange), a typical morphological feature of the genus *Pycnogyra* gen. n., is also developed to some degree in the left valves of the Jurassic subgenus *Gryphaea* (*Bilobisa*) STENZEL and in the Upper Cretaceous genus *Texigryphaea* STENZEL. Nevertheless, both the latter mentioned taxa possess shells with gryphaeate-coiled umbonal region.

Occurrence. Upper Cretaceous, Lower Turonian; Czech Republic.

Species included: *Pycnogyra sulcata* sp. n.

***Pycnogyra sulcata* sp. n.**

Holotype. Specimen NM O 6314, figured here (Pl. 1, Fig. 1), isolated left valve.

Paratypes. NM O 6315–O 6324.

Stratum typicum. Upper Cretaceous, Lower Turonian.

Locus typicus. Plaňany quarry near Kolín.

Material. 11 left valves, 2 right valves, 15 fragments.

Diagnosis. See the genus.

Description. Holotype, NM O 6314 is a highly inequivalved shell with almost complete, perfectly preserved left and incomplete right valve. Left valve is very convex, and capacious, especially so in the anteroposterior cross section with spiral, well-defined, rounded keel, surmounted by broad, shallow well marked radial groove, which runs subparallel with the keel and is on the posterior side of valve. This groove separates the posterior flange from the main body of the left valve. The posterior margin forms a distinct tube-like lobe in the area of the exhalant siphon. The small beak of the left valve is slightly opisthogyally spiral, not projecting much beyond the outline of the right valve. The upper part of the flattened right valve is broken off. The attachment area of the left valve

Tab. 1 Measurements of the left valves of species *Pycnogyra sulcata* n. sp. from the quarry at Plaňany.

| Inv.No. | O 6314 | O 6315 | O 6316 | O 6317 | O 6318 | O 6319 | O 6320 | O 6321 | O 6322 | O 6323 | O 6324 |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Height | 30.7 | 27.2 | 31.5 | 31.2 | 26.9 | 33.3 | 35.7 | 29.7 | 28.6 | 21.6 | 23.0 |
| Length | 38.2 | 25.2 | 28.0 | 28.6 | 29.7 | 45.4 | 39.9 | 34.4 | 35.1 | 28.8 | 20.4 |
| Width | 19.6 | - | - | - | - | - | - | - | - | - | - |

and the inner part of the shell is hidden in compact glauconitic organodetrital limy sandstone. Sculpture of the left valve consisting of foliaceous closely-packed growth squamae. No radial ribs, costellae, or threads.

Occurrence. Upper Cretaceous, Lower Turonian; Plaňany near Kolín.

Discussion. In its shape and character of the surface sculpture, the left valve of the species *Pycnogyra sulcata* sp. n. resembles the Upper Cretaceous species *Gryphaeostrea canaliculata* (SOWERBY), described and figured (Pl. 27, figs. 46, 47) from the Bohemian Cretaceous by A. E. Reuss (1846) (in conjunction with species *Exogyra lateralis* REUSS) (see Záruba 2001). The individuals figured come from the bed of marly sediments at the classic Reuss' locality of *Schillinge bei Bilin*. This was the Reuss' name for the western slope of the Bílinské údolí near Libčice. Now, this slope is all vegetated and covered with talus. Inaccessibility and decline of this locality were mentioned already by J. Krejčí (1870). A revision of the original Reuss' samples is impossible as the whole of his collection was destructed years ago. Both figured valves differ from the species *Pycnogyra sulcata* sp. n. in their umbonal region, which is straight, with beaks of gryphaeate type. The species of *Gryphaeostrea canaliculata* (Sow.), relatively common in the Lower Turonian sandy marlstones, is considerably smaller (less than 10 mm in height), its left valve is shorter, more strongly arched, with its posterior margin never tapering into a tubular lobe. The attachment area in the umbonal region of the left valve is distinct and always easily visible.

Paratypes Inv. No. NM O 6325 and O 6326 represent isolated fragments of separate left valves with exposed outer and inner surfaces. Well-defined vesicular shell structure is present on the outer sides of the umbonal regions of all valves in the area of their original attachment to the substrate. Muscle imprints are shallow, rather indistinct, lying high in umbonal cavities of these valves. Their position is almost central, slightly shifted towards the left valve margin.

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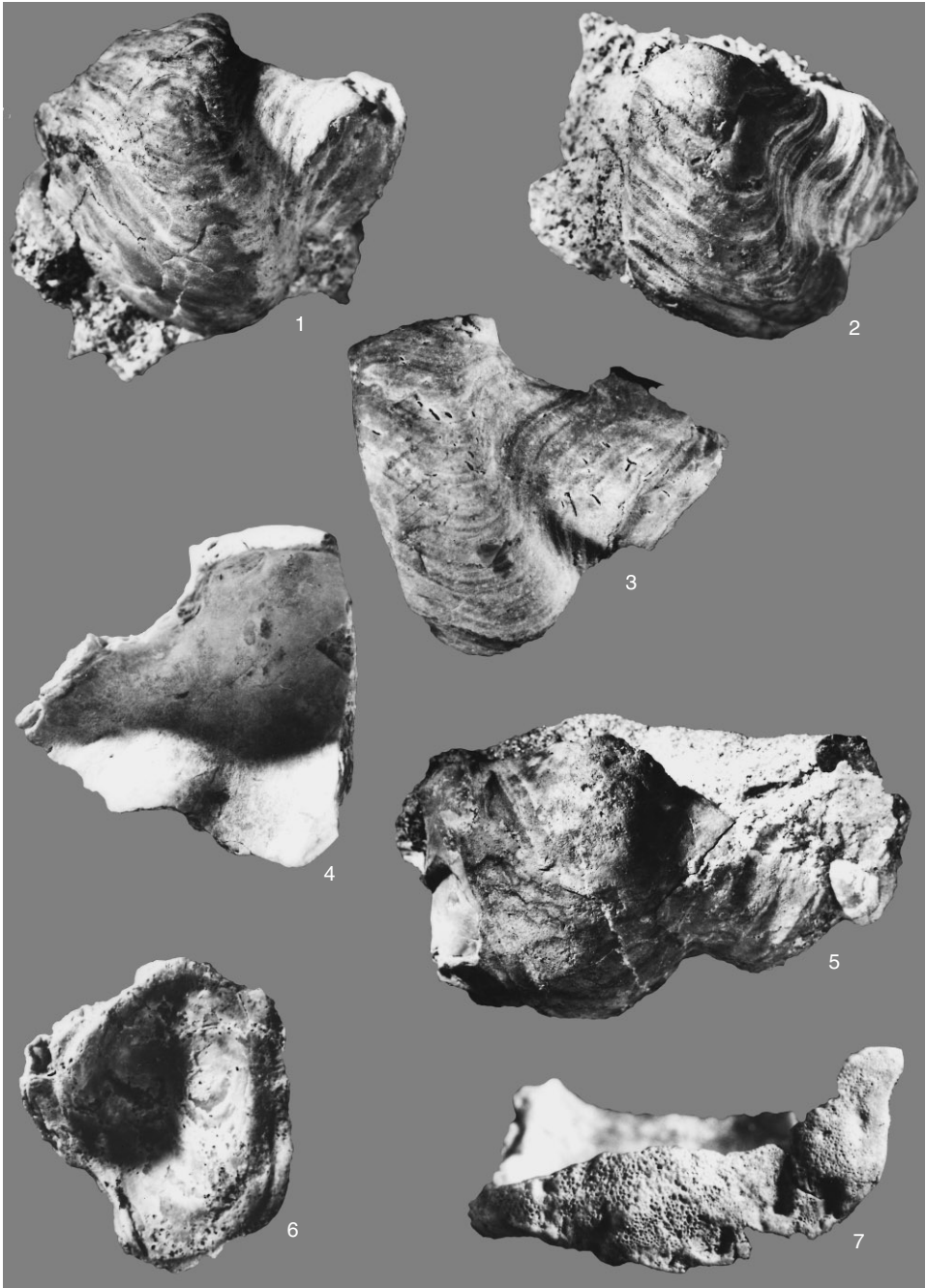


Plate I. – *Pycnogyra sulcata* gen. et sp. n., Lower Turonian, Plaňany near Kolín

1. Specimen Inv. No. O 6314; LV ext., $\times 1,5$; 2. Specimen Inv. No. O 6315; LV ext., $\times 1,5$; 3., 4. Specimen Inv. No. O 6325; LV ext., int., $\times 1,8$; 5. Specimen Inv. No. O 6319; LV ext., $\times 1,5$; 6. Specimen Inv. No. O 6327; RV int., $\times 1,3$; 7. Specimen Inv. No. O 6326; LV, vesicular shell structure, $\times 4,5$