

56. *Lophodolithus mytiliformis* Steurbaut (2011)

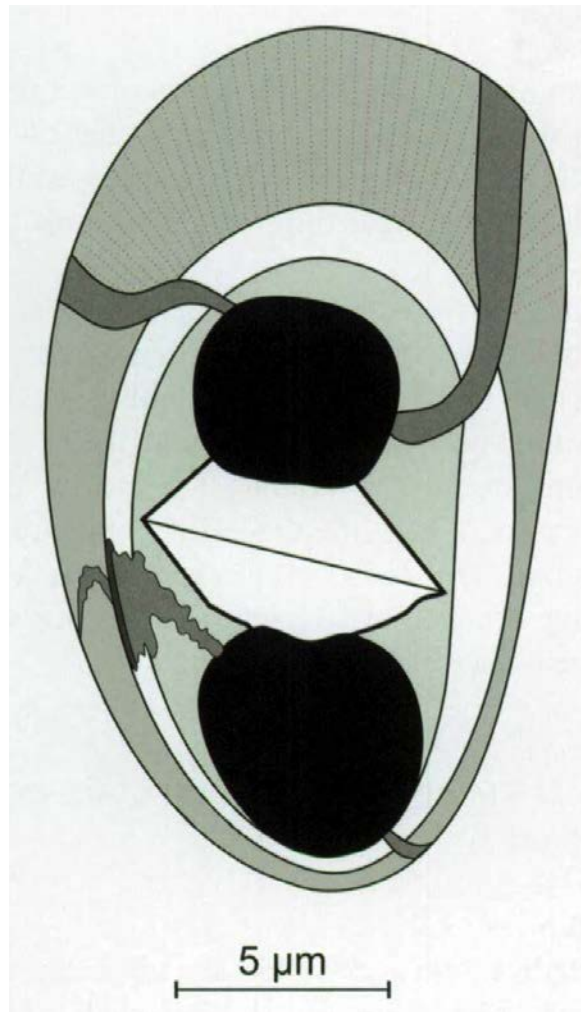
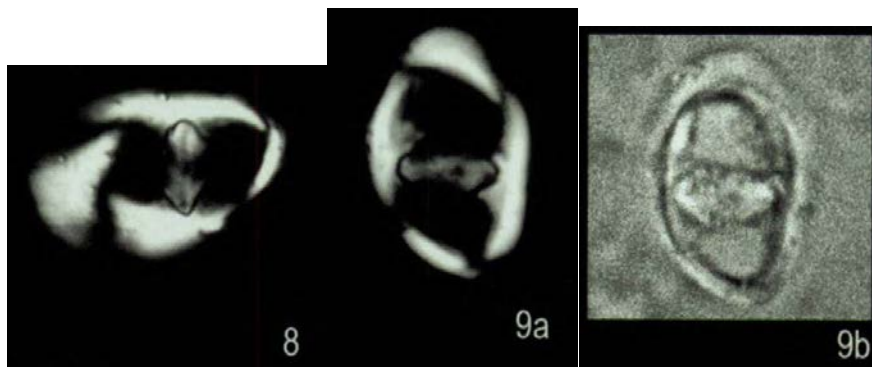
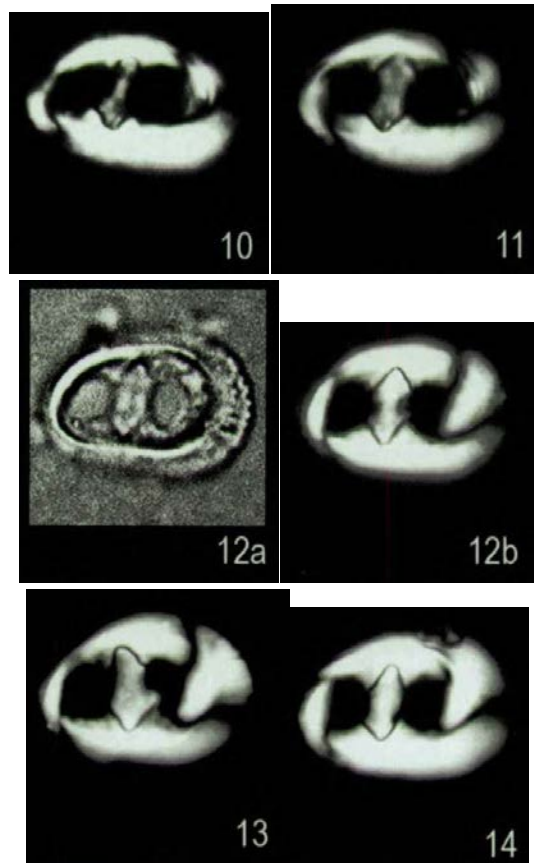


Fig. 24

Fig. 24. Composite drawing of the holotype of *Lophodolithus mytiliformis* sp. nov. (IRSNB b6422) from sample AL44 at Albaek Hoved.





Pl. 2 Fig 8-14

Pl. 2, figs. 8-14. *Lophodolithus mytiliformis* sp. nov. 8: AL44, holotype, m-NP12, c. p., L=16.4  $\mu$ m, (IRSNB b6422); 9: AL43, paratype, m-NP12, a = c. p., b = t. l., L = 16.4  $\mu$ m, (IRSNB b6423); 10: BH 81/46A, 149 (85.12 m), paratype, l-NP12, c. p., L = 11.6  $\mu$ m, (IRSNB b6424); 11: BH 81/46A, 148 (84.72 m), paratype, l-NP12, c. p., L = 13.6  $\mu$ m, (IRSNB b6425); 12: BH 81/46A, 147 (84.25 m), paratype, l-NP12, a = t. l., b = c. p., L = 15.2  $\mu$ m, (IRSNB b6426); 13: BH 81/46A, 144 (82.92 m), paratype, l-NP12, c. p., L = 14.0  $\mu$ m, (IRSNB b6427); 14: BH 81/46A, 144(82.92m), paratype, l-NP12, c. p., L = 14.0  $\mu$ m, (IRSNB b6428).

**Derivatio nominis:** The name refers to the strong asymmetrical structure of these heterococcoliths, resembling the outline of the valve of the edible blue mussel *Mytilus edulis* LINNAEUS, 1758.

**Holotype:** Fig. 24 and Pl. 2, Fig 8 (IRScNB b6422) (negative stored in the collections of the RBINS).

**Locus typicus:** Albaek Hoved section, Klakring, Denmark· 55° 4 L '44" N, 9° 58' 06" E; sample AL44 at -11.70 m above the base of the Ølst Formation.

**Stratum typicum:** Upper middle part of the Røsnæs Clay Formation; middle part of NP12, lower part of nannofossil zone VIa of STEURBAUT (199 ); within base of chron 2n (STEURBAUT, 1998, fig. 11 based on ALL, 1988); Ypresian, ~51.6 Ma.

**Paratypes:** Six paratypes figured, one from Albaek Roved, sample AL43 (Pl. 2, Fig. 9) (IRScNB b6423), and five from borehole 81/46A, respectively from 85.12 m (Pl. 2, Fig. 10)(IRScNB b6424), 84.72 m (Pl. 2, Fig. 11)(IRScNB b6425), 84.25 m (Pl. 2, Fig. 12)

(IRScNB b6426) and two from 82.92 m (Pl. 2, Figs 13-14) (IRScNB b6427- b6428) depth. For stratigraphical detail see Figs 5 and 6.

**Diagnosis:** Asymmetric heterococcoliths, as well in longitudinal as transversal directions, of which the outline resembles that of a mussel valve; furthermore marked by a rather short, but extremely broad central bar.

**Description:** These heterococcoliths are highly asymmetric, the outline of which is very similar to that of the valve of the edible blue mussel *Mytilus edulis*. The central plate, which is open over most of its surface (dark in cross-polarized light, see Fig. 24), is also asymmetric and slightly kidney-shaped. It contains a very robust, broad and slightly oblique central bar. Its width is about half of its length. It has a flattened hexagonal outline and is split into two trapezoidal structures along its longest diagonal. The central plate is surrounded by a raised wall and rim, which are also asymmetrical. The marginal flange is circumperipheral, although poorly developed at the smallest end and also less well developed at the less curved side (see Fig. 24). There are some fine traces of crenulation at the broadest end of the flange. The central plate is dark over most of its surface in cross-polarized light. Optically, the central bar acts as one single unit, with interference colors opposite to these of the rest of the central plate (when bar is orange colored with the quartz plate inserted, than the remainder of the plate is colored blue, and vice versa). The extinction lines are laevogyre in proximal view (e.g. holotype, Fig. 24). They are small when seen at intermediate position (22.5° to polarization directions).

**Dimensions:** Length = 11.6 to 16.4  $\mu\text{m}$  (mean 14  $\mu\text{m}$ ), W = 8.4 to 12.0  $\mu\text{m}$  (holotype: L = 16.4  $\mu\text{m}$ , H= 12.0  $\mu\text{m}$ ).

**Discussion:** This new species is clearly distinguished from all described *Lophodolithus* species (*L. acutus*, *L. mochlophorus*, *L. nascens* (Pl. 2, Figs 15-16) (IRScNB b6429-b6430), *L. reniformis* and *L. rotundus*; see AUBRY, 1990, p. 28-34 for descriptions and illustrations) through its strong asymmetric outline, the form of which reminds a mussel shell, its well developed marginal flange, and by the compact form and substantial width of its central bar (see Fig. 24 and Pl. 2, Figs 8-14). At its broadest end the flange is finely crenulated, much clearer than in *L. nascens*, but less well developed and much finer than in *L. mochlophorus*.

**Distribution:** Known from several localities in the North Sea Basin, occurring in a 1.20 m thick interval (AL42 to AL44, see Fig. 5) within the upper middle part of the Rønæs Clay Formation in Denmark, a 6.30 m thick interval within the middle part of Unit 3 of offshore hole 81/46A (149 to inclusive 134, see Fig. 6) and in a 1.50 m thick interval in the middle of Unit B1 (AK103-AK104) of the Aktulagay Formation. It seems to be

restricted to the interval top subzone V - subzone VI of STEURBAUT (1998), within the middle of NP12.

Steurbaut, E., 2011. New calcareous nannofossil taxa from the Ypresian (Early Eocene) of the North Sea Basin and the Turan Platform in West Kazakhstan. *Bulletin de l'Institut royal des Science naturelles de Belgique, Sciences de la Terre*, **81**: 247-277.