

**Amaurolithus delicatus** GARTNER & BUKRY, 1975

- 1968, *Ceratolithus tricorniculatus* GARTNER, Bukry & Bramlette (in part.), p. 152; pl. 2, fig. 1. Tulane Studies Geology, vol. 6.  
1969, *Ceratolithus tricorniculatus* GARTNER, Gartner (in part), p. 596; pl. 2, fig. 2. Trans. Gulf Coast Ass. Geol. Societies, vol. 19.  
1973, *Ceratolithus tricorniculatus* GARTNER, Stradner (in part), p. 1197; pl. 36, figs. 4-6. Initial Reports DSDP, vol. 13.  
1974, *Ceratolithus tricorniculatus* GARTNER, Müller (in part), p. 591; pl. 11, figs. 7-9. Initial Reports DSDP, vol. 25.  
1973, *Ceratolithus primus* BUKRY & PERCIVAL, Bukry, p. 676; pl. 1, fig. 11. Initial Reports DSDP, vol. 16.  
1973, *Ceratolithus primus* BUKRY & PERCIVAL, Hekel, p. 236, figs. 15, 16. Initial Reports DSDP, vol. 20.

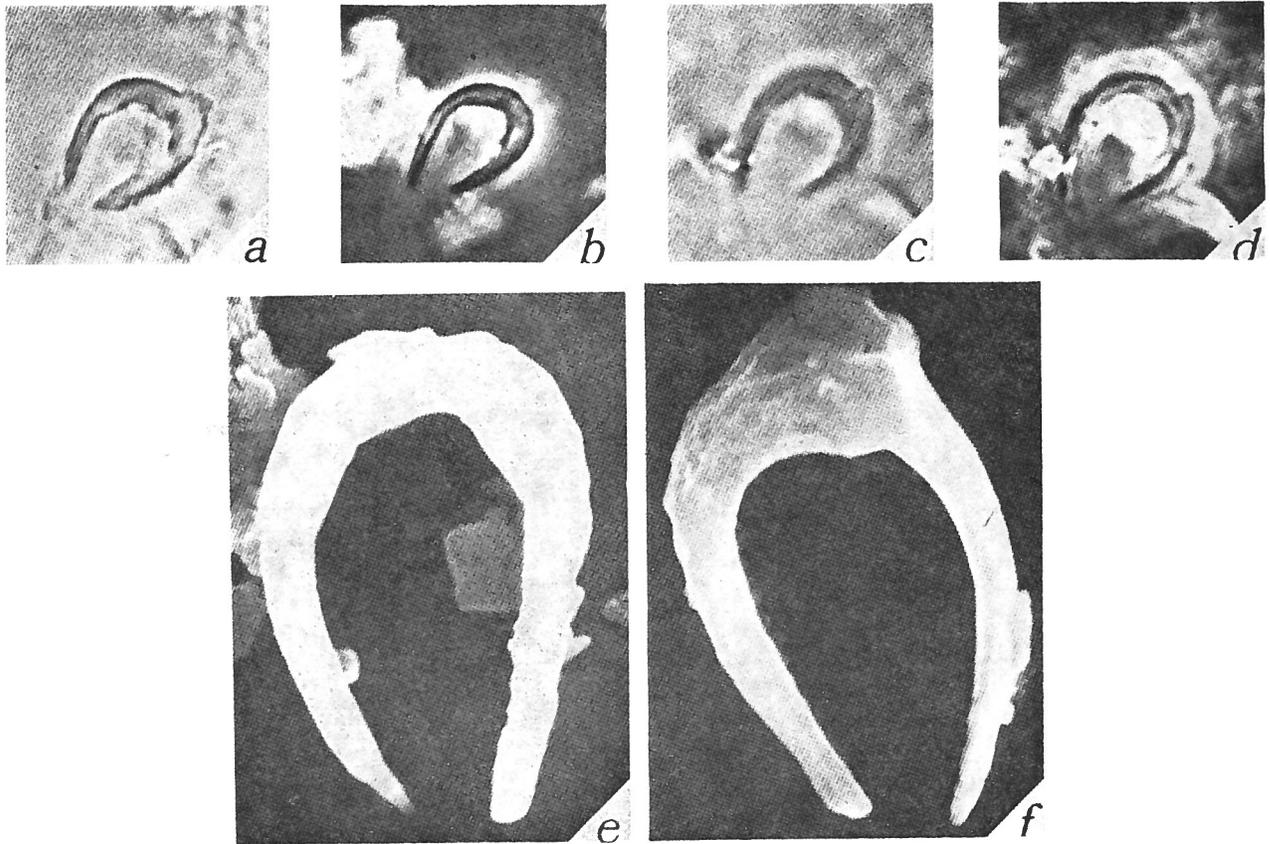


Fig. 7a-f — *Amaurolithus delicatus* n. sp. — a-d, Photomicrographs,  $\times 2,400$ , late Miocene. a,c, Transmitted light. a, Indian Ocean. c, Central Pacific. b,d, Phase contrast, late Miocene, central Pacific. e,f, Scanning electron micrographs,  $\times 9,400$ , late Miocene.

**Description:**

*Amaurolithus delicatus* has a delicate, slightly asymmetrical horseshoe-shaped

form. The two horns of the ceratolith are unequal to subequal in length and point together so as to indicate closure of the open end of the horseshoe. The horns are of about equal thickness and taper regularly to a point. The arch may be no thicker than the horns or it may be slightly thickened. The arch of the horseshoe generally is smoothly curved but occasionally it may bear a small asymmetrically placed spur or a large apical lump. *A. delicatus* is nonbirefringent and remains gray when rotated in cross-polarized light.

**Remarks:**

*Amaurolithus delicatus* is similar to *A. primus*, with which it occurs. They differ from one another in that *A. delicatus* is distinctly longer than wide and has delicate, uniformly thick horns and arch. *A. delicatus* differs from *A. tricorniculatus* with which it occurs in the early Pliocene in that it lacks the third horn or apical spine and generally has longer horns. *A. delicatus* is no doubt closely related to *A. primus*, with which it may be associated throughout its range, although commonly in many samples only one of the two species is present, suggesting a possible ecologic relation. *A. delicatus* along with *A. primus* was formerly included in one broadly defined species under the name *Ceratolithus tricorniculatus* (= *Amaurolithus tricorniculatus*). Morphologic and stratigraphic differences, however, suggest that three distinct taxa may be differentiated.

**Type level:**

Occurrence: *Amaurolithus delicatus* occurs in late Miocene and early Pliocene sediments. Its earliest occurrence follows closely the earliest occurrence of *A. primus* and the latest occurrence of *Discoaster neohamatus*. Its last occurrence is less reliable in some areas, especially in deep-pelagic sediments. It may be recorded no higher than slightly above the earliest occurrence of *Ceratolithus acutus*. Elsewhere it may be found substantially higher, overlapping in part the range of *C. rugosus*. Its youngest well dated occurrence seems to be in the uppermost event of the Gilbert reversed polarity epoch, at about 3.6 m.y., B.P.

**Type locality:**

DSDP 22-214-9-3, 22-23 cm; Indian Ocean (lat. 11°20' S; long 88°43' E.).

**Depository:**

University of Miami, Florida.  
Holotype: fig. 7e.

**Author:**

Gartner S. and Bukry D., 1975, p. 456, fig. 7a-f.

**Reference:**

Morphology and Phylogeny of the Coccolithophycean Family Ceratolithaceae. Journ. Research U.S. Geol. Surv., vol. 3, no. 4, pp. 451-465, 5 pls.