Ceratolithus rugosus Bukry & Bramlette, 1968


Description:

This extinct species is characterized by the pronounced robustness and rugose surface of its ceratoliths and by the orientation of its constituent calcite. Between crossed polarizers these ceratoliths go from dark to bright as the microscope stage is rotated, indicating the same crystallographic orientation as in C. cristatus. As with that species, teeth are conspicuous in some specimens, particularly in the upper part of its range.

Maximum length: 18 μ.

Remarks:

These ceratoliths occur throughout the Pliocene. When seen in a few scattered samples, they might be dismissed as Ceratolithus cristatus with heavy secondary calcite overgrowth. However, examination of many marine cores has shown these forms to have a wide geographic range and to occur in assemblages where other calcareous nanofossils have excellent preservation. Mor-
Phologic gradation of forms between C. cristatus and this species is not common but can be found within their overlap in range.

**Type level:**

Pliocene.

Distribution: The earliest occurrence is from the late Miocene portion of the Lamont Atlantic Ocean core V16–21, from 700 to 550 centimeters. These earliest occurrences are rare, with Ceratolithus tricorniculatus Gartner, emended, dominating the assemblage, but are abundant in the Pliocene section between 500–170 centimeters. The latest occurrence is found in the Albatross Swedish Pacific deep-sea core 62 at 900 centimeters and core 58 at 550 centimeters. Both of these latest occurrences are above the Discoaster brouweri extinction level and overlap the beginning of the range of C. cristatus in these cores. This overlap can thus be placed in the early Pleistocene. Other occurrences in the Pliocene sections of all oceans include Lamont V3–153, sparsely present near the Miocene-Pliocene boundary from 161 to 210 centimeters; Scripps Indian Ocean DODO–141G from 75 to 120 centimeters (core bottom), with the Pliocene-Pleistocene boundary near 90 centimeters as determined by other calcareous nannofossils and foraminifers; Scripps CAP–38P from 395 centimeters (with overlapping C. cristatus) to 572 centimeters (with C. tricorniculatus overlapping from 545 to 625 centimeters); and Lamont V12–5 from 570 to 700 centimeters with the Pliocene-Pleistocene boundary near 600 centimeters (Ericson and others, 1963).

**Type locality:**

Pacific Ocean.

**Depository:**


**Author:**

Bukry D. and Bramlette M. N., 1968, p. 152; pl. 1, figs. 5–9.

**Reference:**

Stratigraphic Significance of two genera of Tertiary calcareous nannoplankton. Tulane Studies in Geology, vol. 6, no 2, pp. 149–155, plas. 1, 2.