

Ceratolithaceae biostratigraphy of ODP Site 1237, equatorial Pacific

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Site 1237 was drilled during Ocean Drilling Program (ODP) Leg 202 in the equatorial Pacific at a water depth of 3212 m on the easternmost flank of the Nazca Ridge, approximately 140 km off the coast of Peru. Four boreholes were drilled: Holes 1237A, 1237B, 1237C, and 1237D. Forty-two smear slides were studied from Hole 1237B between 179.67 meters composite depth below seafloor (mcd) and 113.53 mcd. To determine the fine details of the nannofossil structures, 63 samples from Holes 1237B, 1237C, and 1237D were prepared for scanning electron microscopy (SEM) using a technique of centrifugation/filtration. The focus of our work is from the lowest occurrence of *Amaurolithus primus* at 149.86 mcd in sample 1237B-15H-6, 75 cm, which evolved from *Orthorhabdus rugosus*, to the highest occurrence of *Amaurolithus delicatus* at 54.49 mcd (sample 1237B-6H-4, 75 cm).

Amaurolithus delicatus, which evolved from *A. primus*, first appears at 143.81 mcd, followed by *Nicklithus amplificus*, which also evolved from *O. rugosus* and first occurs at about 135.22 mcd. At 124.84 mcd, *A. primus* is no longer present, and at 115.04 mcd, *N. amplificus* is also absent. In the latest Messinian, a new ceratolith branch evolved from *O. rugosus*. The first species to evolve is *Ceratolithus finifer*, which we found at 94.01 mcd. This sample also contains *A. delicatus*, the only species left from the previous ceratolith branch. After the appearance of *C. finifer*, the following species rapidly appear: *C. acutus* (90.67 mcd), *C. armatus* (87.71 mcd), *C.? tricorniculatus* (86.45 mcd), *C. larrymayeri* (86.34 mcd), *C.? atlanticus* (84.96 mcd), and *C. cristatus* (83.54 mcd). The highest occurrences of *C. armatus* (81.12 mcd), *C. acutus* (80.01 mcd), and *C. larrymayeri* and *C.? tricorniculatus* (both at 77.30 mcd) are found in close succession, whereas *A. delicatus* is present to 54.49 mcd. *Ceratolithus cristatus* is the only ceratolith present above 54.49 mcd. *Ceratolithus? atlanticus* is scarce in studied samples.