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Early to early-middle Paleocene diatom zonation

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Knowledge of Paleocene diatoms is still in its infancy, primarily because Paleocene deposits bearing siliceous microfossils are extremely rare, both on land and under the sea. With the exception of Gombos' (1977) report of late Paleocene diatoms from hole 327A of leg 36 of the Deep Sea Drilling Project (DSDP), which is by far the most comprehensive and readily accessible reference to date, information regarding Paleocene diatom biostratigraphy is limited and inconclusive and comes almost solely from the land outcrop sections.

Gombos (1977) established three tentative late Paleocene diatom zones from the southwestern Atlantic. This article reports on an early to early-middle Paleocene diatom zonation based on submarine deposits of site 208 and nearly completes a Paleocene diatom zonation.

Site 208 of leg 21 of the DSDP was located on the northern part of the Lord Howe Rise at 26°06.61'S 161°13.27'E at a water depth of 1,545 meters (figure 1). Of the 255.4 meters of cored sediments recovered from this site, 21 meters (cores 29 through 31) were referred to as early (Danian) to middle Paleocene age on the basis of calcareous nannofossils (Martini 1971). Generally, the Paleocene sediments consist of gray, siliceous fossil-bearing and nannofossil-bearing radiolarite or diatomite. Disconformities occur above and below this section between the middle-middle Eocene/early-middle Paleocene and the Mesozoic and Cenozoic (Burns et al. 1973).

From a moderately well-preserved diatom assemblage recovered from this Paleocene section, diatom microflora of over 40 species distributed in 16 genera were recognized (dePrado 1981). We propose four new diatom zones for the early to early-middle Paleocene sections. They are (in ascending order): the *Hemiaulus characteristicus* s.l. partial range zone; the *Notiostyrax tasmanus* partial range zone; the *Riedelia* ? *cylindrica* partial range zone; and the *Stephanopyxis conici* local range zone (figures 2 and 3).

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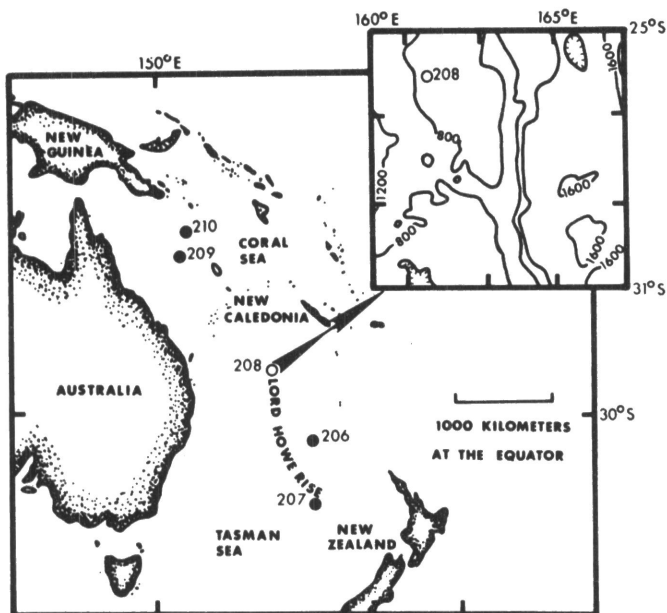


Figure 1. Location map for site 208 of leg 21 of the Deep Sea Drilling Project. Contour interval of bathymetric insert, 300 fathoms (after Mammerickx et al. 1971).

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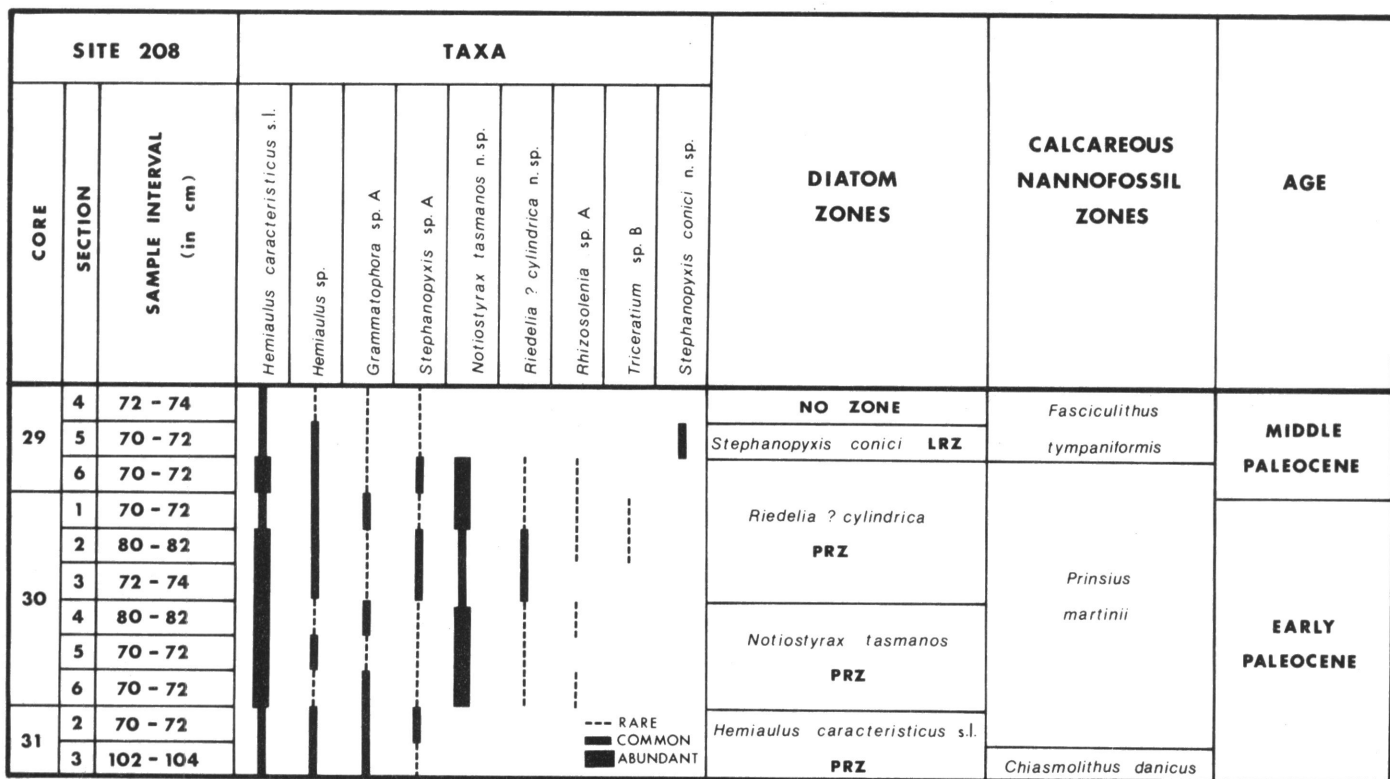


Figure 2. Early (Danian) to early-middle Paleocene diatom zones proposed in the present study showing ranges of key and selected species and correlation with the calcareous nannofossil zones of Martini (1971). Rare = less than 2 percent; Common = 2 to 10 percent; Abundant = greater than 10 percent of the total diatom assemblage.

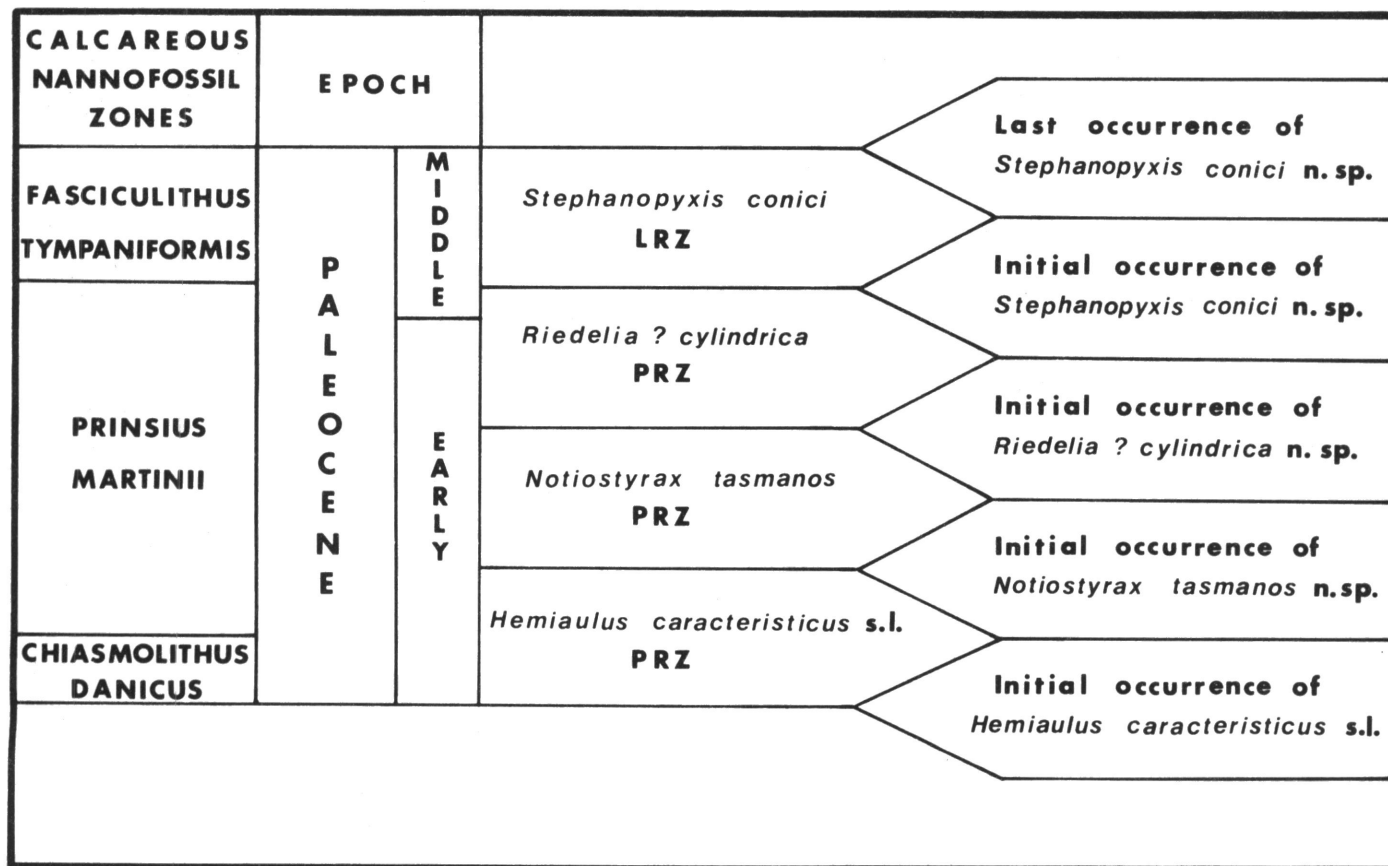


Figure 3. Definitions of the early (Danian) to early-middle Paleocene diatom zones from the southwestern Pacific. PRZ = partial range zone; LRZ = local range zone. (Calcareous nannofossil zones are after Martini 1971.)