

The southernmost occurrence of lepidocyclinids from the Pacific coast of South America: the Los Choros Member (Paracas Formation, East Pisco Basin, southern Peru)

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Large benthic foraminifera (LBF) of the family Lepidocyclinidae originated in the Americas during the Eocene and then spread worldwide, persisting until the Miocene. Like other clades of foraminifera, they are characterized by an evolutionary trend, the “neponic acceleration”, that favors their use in biostratigraphy. The East Pisco basin of southern Peru includes the Eocene Paracas Formation, whose basal Los Choros Member is characterized by shallow-water sediments rich in LBF. The Zamaca outcrop, investigated here, is located in the Ica desert and consists of mixed bioclastic-siliciclastic fine gravels of the Los Choros Member that nonconformably overlie the basement rocks. The bioclastic fraction is dominated by LBF with subordinate bivalves, echinoids, and barnacles. Lepidocyclinids are the most common group of LBF and to our knowledge they represent the southernmost occurrence of this family along the Pacific coast of America. Rare specimens of *Nummulites* and *Discocyclina* were also observed. Within lepidocyclinids, the primitive species *Lepidocyclina douvillei*, characterized by a small embryo and large and often slightly asymmetric principal auxiliary chambers, is the most common species, occurring together with *Lepidocyclina cf. trinitatis* and two different species of *Polylepidina*. The co-occurrence of *L. douvillei* and *Polylepidina*, coupled with the lack of *Helicolepidina* and *Helicostegina*, suggests a middle Eocene age (43.6–40.0 Ma), probably close to the Lutetian–Bartonian boundary. This interpretation is supported by the nannofossils assemblage (CNE14 biozone, 42.37–40.34 Ma) of the base of the overlying Yumaque Member. These results highlight the potential of lepidocyclinids for biostratigraphic analyses in the South American region.

Unity makes strength: high contribution of intertidal benthic foraminifera to sediment reworking

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Although benthic foraminifera are one of the most abundant components of the meiofauna, their role in intertidal ecosystems functioning has been overlooked. Specifically, benthic foraminifera may contribute to bioturbation process by sediment reworking. Whether this contribution is significant remains, however, to be assessed. The aim of this study was to quantify the sediment-reworking rate (SRR) of 5 foraminiferal species characteristic of European temperate mudflat: *Ammonia tepida*, *Haynesina germanica*, *Cribolepidium williamsoni*, *Milliammina fusca* and *Quinqueloculina seminula*. Sediment surface was scrapped-off to collect living benthic foraminifera for the experiment. In the laboratory, individuals were sorted and spread over a thin layer of sediment in a beaker filled with seawater. Movements of all