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Supposed trans-Atlantic migration of *Heterostegina* around the Eocene/Oligocene boundary

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The larger foraminiferal genus *Heterostegina* is abundant and widespread in tropical seas since late Bartonian to Recent. The short ranges of its species/subspecies permits high-resolution stratigraphical subdivision in certain time-intervals. In the former Neotethys, *Heterostegina* is very common towards the end of the Eocene (*H. reticulata* in the late Bartonian and Priabonian) and also in the Late Oligocene (*H. assilinooides* in the Chattian). These taxa, however, are not in direct phylogenetic relationship with each other, hence the absence of the genus in the entire Rupelian of the Neotethys was hypothesized (LESS et al. 2008). Since then, we discovered a new species of *Heterostegina* in the Rupelian of Sicily and NW Aquitaine (here provisionally referred to as *H. n. sp.*), which cannot, however, be considered as either the offspring of *H. reticulata* or the ancestor of *H. assilinooides*.

Although the embryo of this new species is rather small, the very early appearance of subdivided (heterosteginid) chambers during the ontogeny marks quite an advanced stage in the nepionic acceleration. This suggests the presence of ancestral heterosteginid forms outside the Neotethys. Such forms – with even smaller embryo and with later ontogenetic appearance of heterosteginid chambers – were found in the Caribbean–Central American realm. They are described from the Upper Eocene of Florida, Cuba and Panama as *Heterostegina ocalana* but not yet reported from the Lower Oligocene of Central America.

According to our hypothesis, *H. ocalana* migrated eastward through the previously much narrower Atlantic Ocean around the Eocene/Oligocene boundary. Sporadic populations of *H. n. sp.*, its phylogenetic successor, survived in the western part of the Neotethys until the end of the Rupelian, when they became extinct.

Results of strontium isotope stratigraphy (SIS) are consistent with our hypothesis: Floridian samples with *H. ocalana* indicate 33.8–34.4 Ma (late Priabonian), whereas NW Aquitanian ones with *H. n. sp.* show 28.9–30.2 Ma (late Rupelian). The SIS-age of *Heterostegina*-free samples from Florida (supposed to be Lower Oligocene) is 31.3–32.5 Ma (early Rupelian).

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References

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