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Late Eocene evolution of *Spiroclypeus* in Europe

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Eocene *Spiroclypeus* from ten European localities (one of them is topotypical), extending from Spain to Turkey and covering the whole Priabonian have been morphometrically investigated and the equatorial section of A-forms were statistically evaluated. Based on the reduction of the average number of pre-heterosteginid, post-embryonic chambers, populations are grouped into two successive, phylogenetically linked species, *S. sirottii* n. sp. and *S. carpaticus*. The evolution is also proven by the ontogenetical increase of the number of secondary chamberlets in particular chambers, by the increase of the diameter of the first two whorls and by that of the size of the proloculus, although the latter turned out to be also ecologically controlled. This evolution is supported by the stratigraphical succession of populations in the Mossano section (N Italy) and also by the change of accompanying fossils.

Lacking in upper Bartonian beds, the first appearance of genus *Spiroclypeus* seems to be synchronous with the beginning of the late Eocene. The newly described *S. sirottii* is associated with *Heterostegina reticulata mossanensis* and orthophragmines containing still survivor middle Eocene forms, both marking the lower part of the Priabonian. Meanwhile *S. carpaticus* co-occurs with *H. gracilis* and/or with orthophragmines not consisting of survivor middle Eocene forms, both characteristic for the upper part of the Priabonian. The further evolution of the genus in the early Oligocene is not recorded in the northern Mediterranean realm. Thus, at least in Europe *Spiroclypeus sirottii* is a zonal marker for the shallow benthic zone (SBZ) 19 (early Priabonian) while *S. carpaticus* detects the SBZ 20 (late Priabonian).

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