

78. *Discorhabdus* Noel (1965) emend. de Kaenel & Bergen (1993)

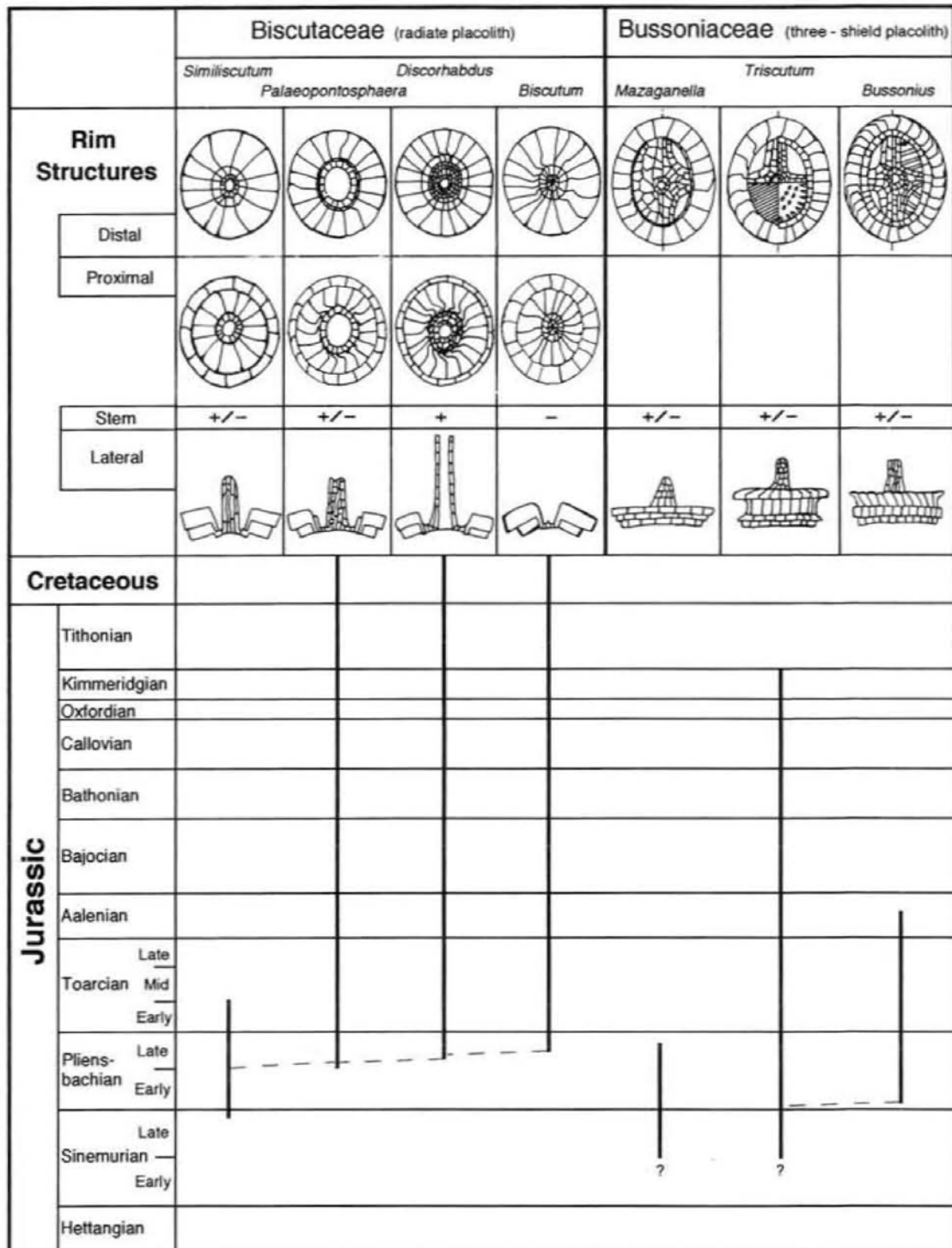


Figure 3. Overview of rim ultrastructure characteristics of genera in the Biscutaceae and Bussoniaceae, and their stratigraphic distribution.

Figure 3

**Type species.** *Discorhabdus patulus* (DEFLANDRE 1954) Noel 1965.

**Junior synonym.** *Podorhabdus* NOEL 1965.

**Original diagnosis.** “Circular base composed of two simple discs, joined firmly, perforated in the center to allow the passage of a variably developed and diversified spine. The upper disc is constructed from a single series of calcite lamellae which are radially disposed, joined all along their length giving the disc a nearly continuous surface, without festoons. The lower disc, generally smaller than or at most equal to the upper disc, is formed from the same number of calcite plates, flat, often thinner, also joined and radially disposed. This lower disc, slightly convex, forms a solid base pierced only at its center at the root of the spine (fig. 56. pl. 21, figs. 5-12, pl. 22, fig. 1).

The axial spine, of a more or less large diameter, and of variable length and morphology, is made up of crystals of calcite, almost cubic, or elongated rhombohedra, arranged around a central canal (pl. 21, fig. 7). The outer edge of the spine is closely contacted to the inner edge of the perforations of the upper and lower discs” (Noel 1965, p. 138).

**Emended diagnosis.** Elliptical to circular placoliths composed of two, broad, unicyclic shields constructed of non-imbricate to slightly overlapping, radially-arranged elements. Proximal shield sutures are often slightly curved or kinked near the inner rim margin. A distal projection fills the central area. It extends above the distal shield and is attached at the proximal surface. The shape and outline of the distal projection are highly variable: the width of its central axial canal is also highly variable. Perforations may be present near the base of the distal projection. The distal projection [sic] can be very delicate and is frequently not preserved intact.

**Discussion.** *Podorhabdus* NOEL (1965, p. 100) was described for non-imbricate placoliths with a narrow shield and a large central area spanned by four bars aligned with the major axes of the coccolith. The original diagnosis of this genus also mentioned that the bars support a thick, hollow stem of variable shape. Wind & Wise (in Wise & Wind 1977) recognized that the type species of *Podorhabdus*, *Podorhabdus grassei* NOEL (1965) is based on a holotype with two large central perforations. Because of this contradiction, they erected the genus *Axopodorhabdus* for forms with four central perforations and bars aligned with the major ellipse axes, and emended *Podorhabdus* for species with two large pillars separated by an arch. The concept of the family Podorhabdaceae NOEL (1965, p. 100) which has developed in published literature includes a group of non-imbricate, elliptical placoliths with a thin rim and large central area. Species classified within this family are also characterized by an inner rim wall (clearly evident as a second inner distal cycle), which gives the inner rim margin a 'beaded' appearance in cross-polarized and phase contrast light. *Podorhabdus grassei* does not have this rim construction, but is instead composed of two circular, unicyclic shields. Such a rim construction is instead typical of the genus *Discorhabdus*. It is further related to members of this genus by its broadly flaring stem, in contrast to the tapered stems of the elliptical placoliths which

have been placed in the family Podorhabdaceae NOEL (1965). The holotype of *Podorhabdus grassei* is an electron photomicrograph, which has two distinct, large perforations near the base of the stem. The holotype of *Discorhabdus patulus* (DEFLANDRE 1954) Noel (1965), which is the type species of *Discorhabdus*, is illustrated as two light photomicrographs (cross-polarized and transmitted light). Perforations are not clearly visible on the holotype. However, the outline of the distal stems of the two holotypes are identical and both were recovered from the Oxfordian of the Paris Basin. From examination of the original samples from which both holotypes were recovered and detailed investigations of the Moroccan and Portuguese Jurassic, we have observed that two perforations are always present near the base of stems with this outline. Therefore, we consider *Podorhabdus grassei* to be a junior synonym of *Discorhabdus patulus* and herein assign priority to the genus *Discorhabdus* NOEL (1965, p. 138). The original diagnosis of *Discorhabdus* included only circular forms with a single perforation at their centers (an axial canal). *Discorhabdus* is emended herein to allow for variation in coccolith outline and the presence of perforations near the base of the distal projection.

**Differentiation.** Both *Discorhabdus* and *Biscutum* are constructed of two non-imbricate, unicyclic shields. *Discorhabdus* differs from *Biscutum* by having a distal projection. *Similiscutum* is distinguished from both these genera by its unique proximal shield construction, which extends proximally at the inner rim margin and may form a second proximal cycle of elements. The resulting bicyclic rim extinction pattern distinguishes *Similiscutum* from both *Discorhabdus* and *Biscutum* in cross-polarized light. *Palaeopontosphaera* has a bicyclic distal shield and also displays a bicyclic rim extinction pattern.

**Distribution:** The lowest occurrence of *Discorhabdus* is near the base of the upper Pliensbachian in Portugal (*margaritatus* Zone), Switzerland (*margaritatus* Zone), and Morocco (*lavinianum* Zone). Thus, this event may be a useful datum for correlation between Mesogean (Morocco), northern Tethyan (Switzerland), and marginal Boreal (Portugal) provinces.

de Kaenel, E. & Bergen, J.A., 1993. New Early and Middle Jurassic coccolith taxa and biostratigraphy from the eastern proto-Atlantic (Morocco, Portugal and DSDP Site 547B). *Eclogae Geologicae Helvetiae*, **86(3)**: 861-907.