

## 27. Mazaganellaceae Bown (1987)

**Type genus:** *Mazaganella* gen. nov.

**Diagnosis:** Coccoliths which possess a rim composed of three shields, the elements of each shield displaying very little or no imbrication and joined along radial or near radial sutures; the distal shield may be vertically extended. The central area is wide and may be filled with a variety of crossbars and grills.

**LM characteristics:** Large dark shields in p-c with constituent elements usually visible. Dark to grey in c-p. The three-shielded structure is occasionally seen in side view.

**Remarks:** The genus *Mazaganella* has a morphology quite distinct from most other coccoliths of the Lower Jurassic. The two species included in this genus are both large, elliptical coccoliths which possess a fairly narrow rim composed of three shields of non-imbricating, radial elements and a central area spanned by a composite plate or cross bearing a central spine. The type species, *M. pulla*, has adpressed shields and resembles members of the Cretaceous family Arkhangelskiellaceae, which have a similar shape, rim construction, and central area filling.

However, the second species of *Mazaganella*, *M. protensa*, which clearly evolved from the first, shows a modification to this rim structure with the distal shield elements being vertically extended. This trend is similar to that seen in the Biscutaceae with the evolution of *Calyculus*, although this genus possesses only two shields. The only other coccoliths in the Lower Jurassic with a similar rim morphology to *M. protensa* is a species of *Triscutum* which is found in the late Toarcian of the Picun Leufu and Brenha sections and in the Middle Jurassic in north-west Europe (Dockerill, 1987). Both genera have a similar rim construction with the trend towards vertical extension, first seen in *M. protensa*, continued in *Triscutum*. The two genera do differ, however, with species of *Triscutum* in the Middle Jurassic having complex central area grills as opposed to the composite plate and crosses of *Mazaganella*. Thus, any evolutionary development between the two genera would have involved central area modifications but as this is often observed in coccolith lineages it appears quite feasible. The two genera *Mazaganella* and *Triscutum* are thus thought to be closely related and are grouped together in the Mazaganellaceae. The only other three-shielded coccoliths found in the Lower Jurassic, *Bussonius prinsii* and *B. leufuensis*, are only superficially similar in structure to *Mazaganella* and *Triscutum* and are actually constructed from imbricating and inclined elements and are evolutionary relations of *Lotharingius*.

The Mazaganellaceae is at present placed in the Order Podorhabdales due to the non-imbricating and radial nature of their rim elements. Further work may reveal that their true affinities lie elsewhere as they do not appear typical of this group.

**Included genera:** *Mazaganella*, *Triscutum*.

**Range:** Sinemurian to Middle Jurassic.

Bown, P. R., 1987. Taxonomy, evolution, and biostratigraphy of Late Triassic-Early Jurassic calcareous nannofossils. *Special Papers in Palaeontology*, **38**: 1-118.