**Taxonomy**

A detailed taxonomic section is not provided, although taxa referred to in this paper are listed alphabetically in Appendix B. Taxonomic references not included in the reference list can be found in Bown et al. (1998). New species and combinations are detailed below and shown in Figure/Plate S2. A 5 µm scale bar is indicated on the photographs.

Genus *Rhagodiscus* Reinhardt, 1967

*Rhagodiscus manifestus* new species

(Plate S2, 17-20)

**Derivation of name**:Latin *manifestus,* meaning “evident” or “palpable.”

**Diagnosis**: Loxolith coccolith with narrow, low rim and central-area filled with a coarse granular plate and a very broad central spine base. Rim image is unicyclic in XPL. *Rhagodiscus manifestus* differs from *R. splendens* by not having a striated central spine. *R. manifestus* also appears to have a coarsely perforated central area. These two species do not overlap in stratigraphic range with *R. splendens* not evolving until the Albian.

**Stratigraphic range**: late Berriasian to early Hauterivian

**Dimensions:** L: 5.5–8.0 µm (mean length 6.6 µm), 30 specimens measured.

**Holotype:** Eastern Gulf of Mexico well Shiloh 18640ft, Plate S2:18

**Paratypes:** Plate S2: 17, 19-20

**Type locality and horizon**. Eastern Gulf of Mexico well Shell Shiloh Desoto Canyon 269-1 (spud 2003)

**Geographical range:** Recorded from the late Valanginian of offshore Suriname and the Gulf of Mexico. Also recorded from Valanginian to late Berriasian of offshore Atlantic margin Canada and Porcupine Basin (offshore Ireland).

**Depository:** sample material is held at NARG, Manchester University.

Genus Tripinnalithus Young and Bown 2014

Tripinnalithus *surinamensis* new species

(Plate S2, 26-29)

**Derivation of name:**Discovered in offshore Suriname.

**Diagnosis:** Elongate to diamond nannoliths with triradiate cross-section, c-axis parallel to nannolith length. Differs from Tripinnalithus *shetlandensis* in consisting of two triradiate lathes.

**Stratigraphic range:** Valanginian

**Dimensions:** L: 13–23.0 µm (mean length 18 µm), 30 specimens measured.

**Holotype:** Suriname Well Demerara A2-1, Plate S2: 27

**Paratypes:** Plate S2: 26, 28-29

**Type locality and horizon:** Suriname Well Demerara A2-1; 11350ft.

**Geographical Range:** *Tripinnalithus surinamensis* is recorded from Valanginian shelf environments of the Central Atlantic. It has not yet been observed from co-eval deep-water environments from DSDP boreholes (Jeremiah, pers. obs.). *T. surinamensis* has been recorded from Suriname, offshore Atlantic margin Morocco and from the Upper Valanginian of the North Sea (Jeremiah pers. obs.). Broken single lathes of *T. surinamensis* resemble *T. shetlandensis*. Its recorded stratigraphic range is also similar to *T. shetlandensis*, being confined to the Valanginian.

**Depository:** sample material is held at NARG, Manchester University.

Genus Zeugrhabdotus Reinhardt, 1965

Zeugrhabdotus scutula (Bergen, 1994) Rutledge & Bown, 1996 subspecies. turonicusnew subspecies

(Plate S2: 24-25)

**Derivation of name:**Characteristic form of the early Turonian.

**Diagnosis:** Medium-large Zeugrhabdotus with relatively narrow unicyclic or diffusely bicyclic rim and wide central area spanned by a complexly constructed transverse bar. Four triangular projections support the two, distally-fused bars of the bridge and are conspicuous in the XPL. The narrow bridge consists of two optically separate bars that are fused and surmounted by a diamond-shaped distal process. The whole coccolith is moderately birefringent (grey-white), with the distal process yielding the brightest birefringence.

Z. scutula ssp. turonicus looks very similar to *Z. scutula* under the light microscope. They are, however, divided stratigraphically by the whole of the Aptian, Albian and most of the Cenomanian. The LO of *Z. scutula* is at the Barremian / Aptian boundary (pers. obs.).

The FO of *Z. scutula ssp. turonicus* is a useful stratigraphic marker in the late Cenomanian immediately above the LO of *Gartnerago nanum*. Its LAD is less defined. In the current investigation it was not found above the Turonian but Bown et. al (1998) identified similar forms as young as the Santonian. It is possible that *Z. scutula ssp. turonicus* is the evolutionary precursor for *Reinhardtites anthophorus*.

**Stratigraphic range:** late Cenomanian – ?Santonian

**Dimensions:** L: 7-9.5 µm (mean length 8 µm), 30 specimens measured.

**Holotype:** ODP Site 1258C; 414.2m, Plate S2: 24

**Paratype:** Plate S2: 25

**Type locality and horizon:** ODP Site 1258C; 414.20m

**Geographical Range:** Offshore Guyanas, Morocco, Ireland (Porcupine Basin).

**Depository:** sample material is held at NARG, Manchester University.