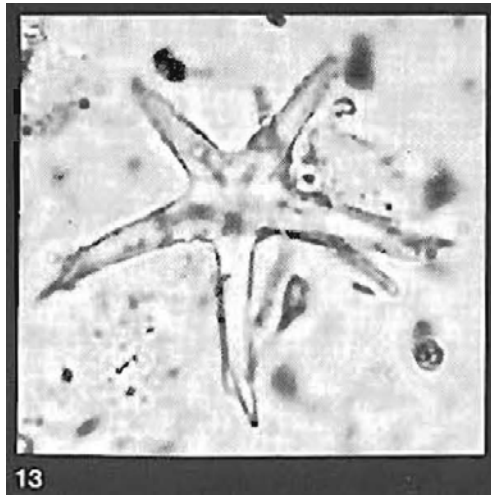
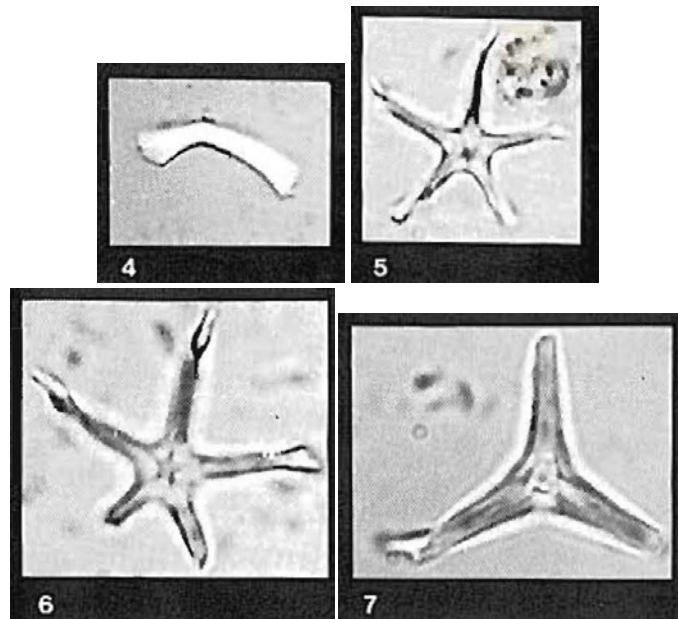


86. *Eu-discoaster hamatus* (Martini & Bramlette, 1963) Theodoridis (1983) emend.
Theodoridis (1984)



Pl. 12, fig. 13



Pl. 37, figs 4-7

Discoaster hamatus Martini and Bramlette 1963, pp. 852-853, pl. 105, figs. 8, 10-11

Discoaster hamatus Martini and Bramlette 1963 – Bramlette and Wilcoxon 1967, p. 110, pl. 7,
figs. 9-11

Discoaster hamatus Martini and Bramlette 1963 - Martini 1971, pl. 4, fig. 1

Discoaster hamatus Martini and Bramlette 1963 - Perch-Nielsen 1972, pl. 9, fig. 3; pl. 11, figs.
2, 4, 6

Discoaster hamatus Martini and Bramlette 1963 - Bukry, 1973 pl. 4, fig. 16

Discoaster hamatus Martini and Bramlette 1963 - Jafar 1975, p. 49, pl. 5, fig. 15

Discoaster hamatus Martini and Bramlette 1963 - Haq and Berggren 1978, pl. 4, fig. 18

Clavodiscoaster hamatus (Martini and Bramlette, 1963) Prins 1971, pl. 5, fig. 48, Invalid: ICBN art. 33, 2

Eu-discoaster hamatus (Martini and Bramlette, 1963) Theodoridis 1983, p. 17

Description: The species includes asteroliths with 3 to 5 segments. The predominant variants are symmetrical with 5 segments. Asymmetrical 5-segmented variants are rare. The variants with 4 segments are cross-shaped.

The asteroliths of *E. hamatus* show a large variation in size. The central area is relatively small. The arms are long and slender and they bend proximally. The cross-section of the arms is roughly circular.

The arms may have a tiny V-shaped notch at their tips which produces two small, pointed and unequal limbs. The arms possess ridges only on their proximal surface. The ridges are situated along the right sides of the arms and they extend towards the centre of the asterolith where they form a low and stellate proximal knob. The proximal knob is slightly rotated and its tips pointed towards the right sides of the arms (in proximal view).

The proximal ridges extend beyond the bifurcations, and bend proximally and slightly to the right (in proximal view) producing a sense of a clockwise rotation of the arm tips.

The distal face of the central area is ornamented with depressions and a small knob. Some specimens exhibit ridges along the sutural lines of this face of the central area (compare e.g. pl. 11, figs. 2, 4, 6 in Perch-Nielsen, 1972).

Differential diagnosis: *E. hamatus* is distinguished from all other pentaradial discoasters by the clockwise pointing of its arms in proximal view. It differs from *E. calcaris* in the number of arms.

Emendation: From the species concept of *E. hamatus* are excluded variants with 6 segments. This emendation is essential for the differentiation of the species from *E. calcaris* (see also to the description of *E. calcaris*).

Occurrence: This species ranges from the *E. hamatus* Subzone to the *E. pseudovariabilis* Subzone.

Theodoridis, S., 1984. Calcareous nannofossil biozonation of the Miocene and revision of the helicoliths and discoasters. *Utrecht Micropaleontological Bulletins*, **32**: 271pp.