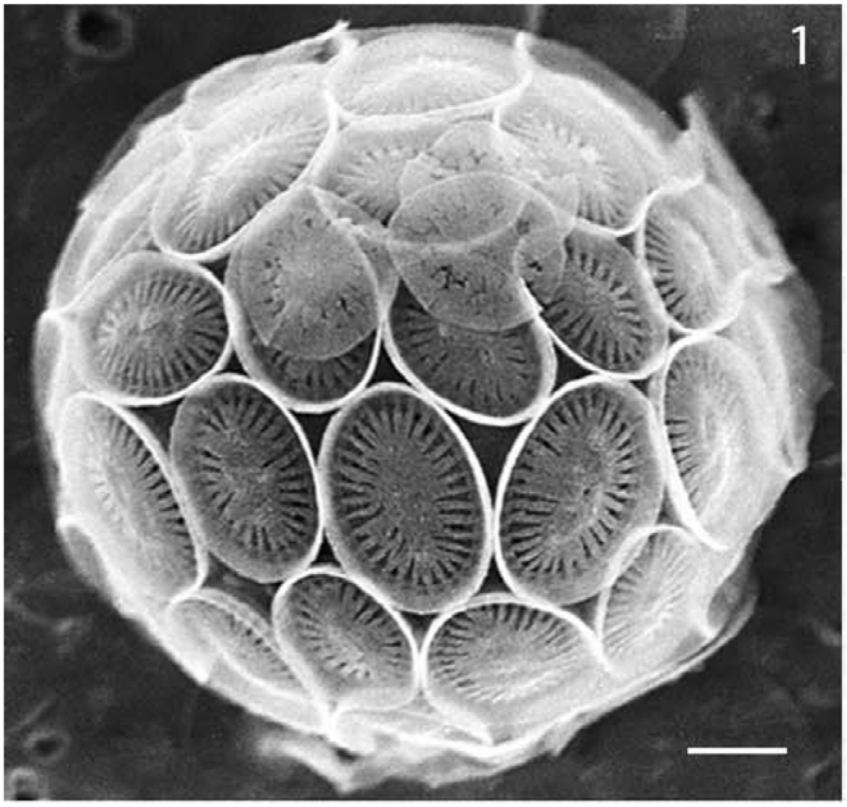
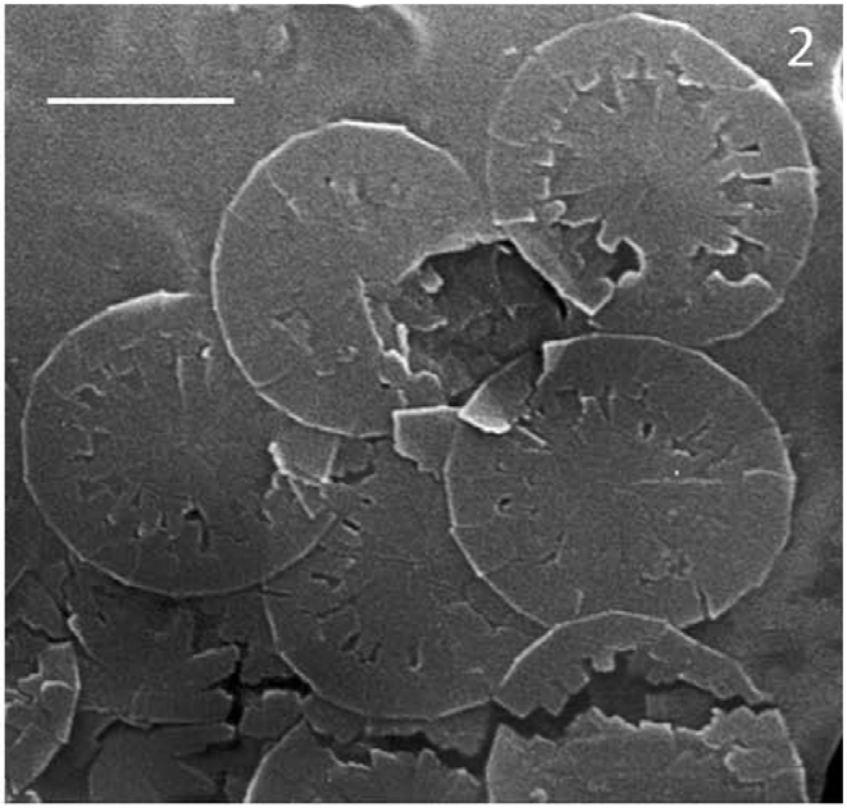
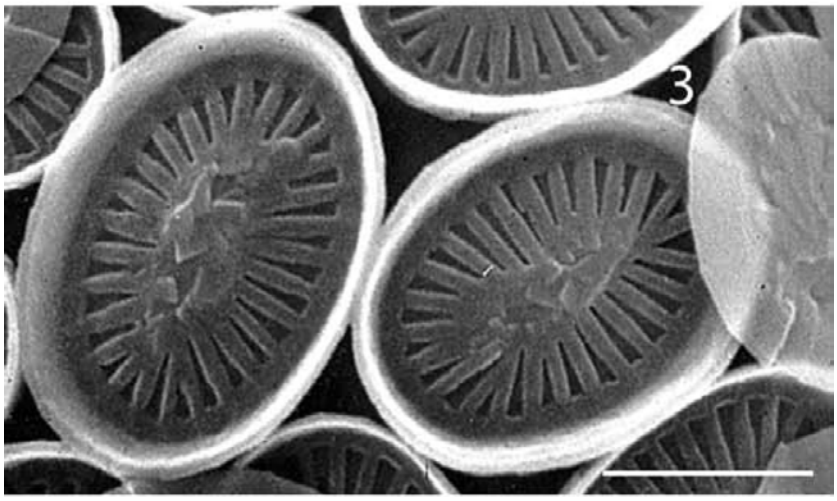
78. Syracosphaera leptolepis Kleijne & Cros (2009)



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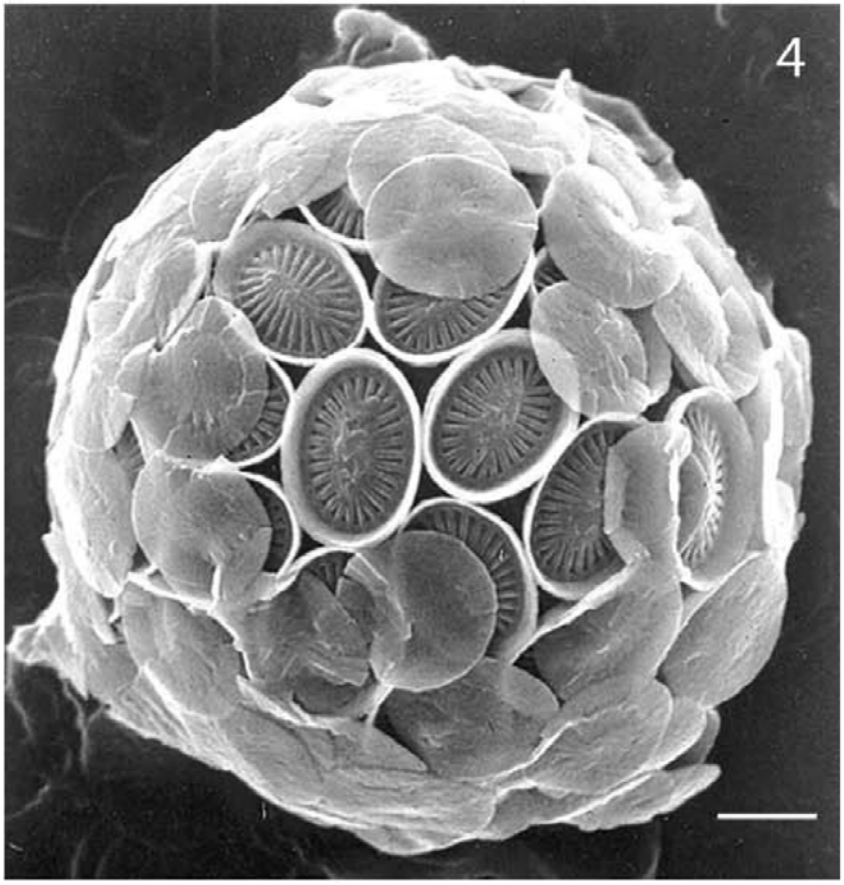
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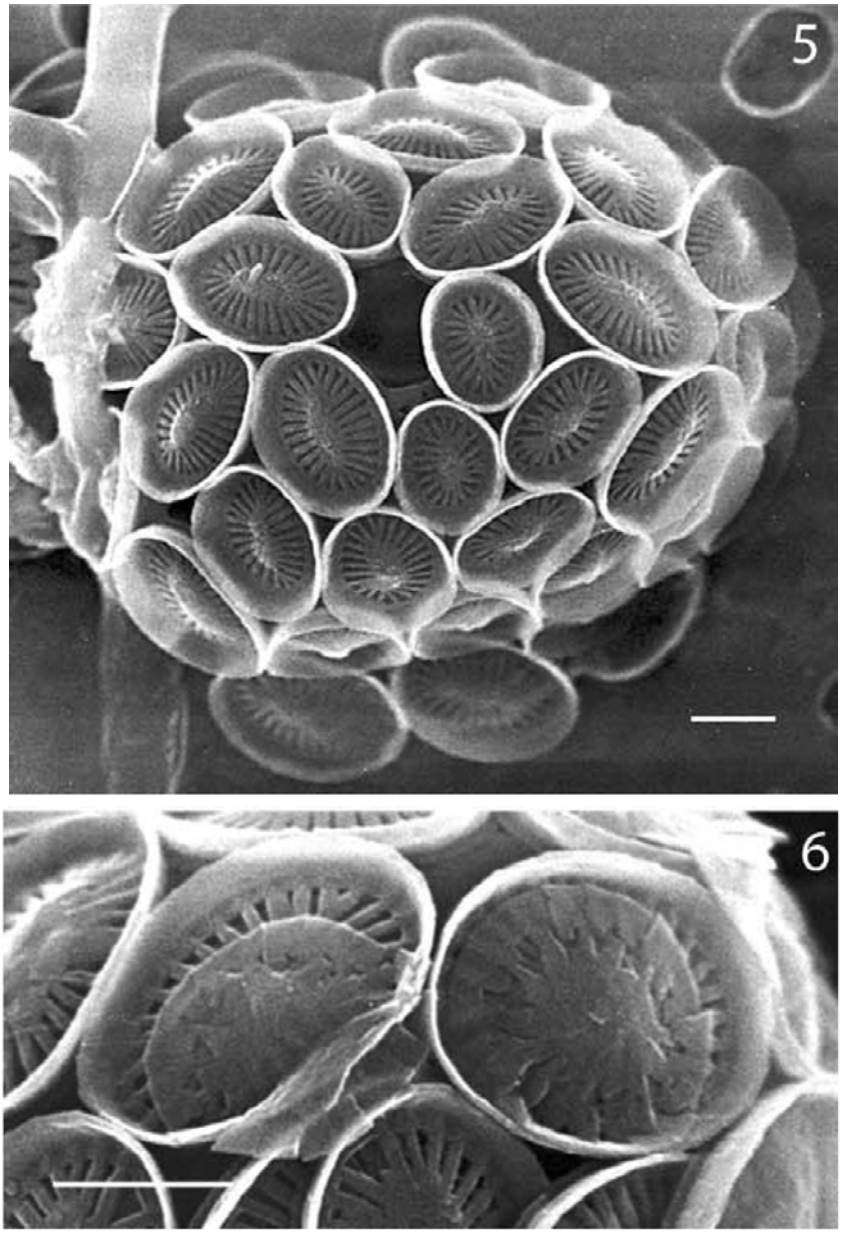

Pl. 6, figs 1-6

Pl. 6. *Syracosphaera leptolepis* Kleijne et Cros sp. nov. Scale bars = 1μm. Figure 1 was published previously in Kleijne (1993), and fig. 4 in Cros (2002) and Cros and Fortuño (2002), as *Syracosphaera* sp. type L.

Fig. 1. Holotype; coccosphere showing complete endotheca of monomorphic coccoliths, with three exothecal planoliths; APNAP-I/T86-19C/0-5m.

Fig. 2. Exothecal planoliths in proximal view, showing sinistrally oblique elements of centre; same specimen as fig. 6.

Fig. 3. Detailed view of fig. 4; body coccoliths showing inner-proximal flange around central area.

Fig. 4. Dithecate coccosphere showing exotheca of delicate planoliths; MESO-95/023/0-5m.

Fig. 5. Coccosphere showing variation in body coccolith size; Snellius-II/Gx-209/0-5m (eastern North Atlantic).

Fig. 6. Size comparison of body coccoliths and planoliths; planolith centre with dextrally oblique elements; APNAP-I/T86-19B/0-5m.

?Syracolithus variabilis (Halldal et Markali 1955). – BORSETTI and CATI 1972, pl. 43, fig. 2.

Syracosphaera nodosa Kamptner. – Okada and MCINTYRE 1977 partim, p. 25, pl. 9, figs. 1, 3, non fig. 2.

?Syracosphaera variabilis (Halldal et Markali) Borsetti et Cati. – Winter et al. 1979 partim, pl. 4, fig. 7, non fig. 8.

Syracosphaera sp. type L, KLEIJNE 1993, p. 245, pl. 5, figs. 1-2.

Syracosphaera nana auct. non Kamptner 1941. – WINTER and SIESSER 1994, fig. 116.

Syracosphaera sp. type L of Kleijne 1993. – Cros 2000, p. 42, pl. 2, figs. 5, 7. – CROS 2002, p. 55-56, pl. 29, figs. 5-6. – CROS and FORTUÑO 2002, p. 38, figs. 43C, D. – YOUNG et al. 2003, p. 36, pl. 15, figs. 7-9.

Diagnosis: Coccosphaera de globosa ad subglobosam, dithecata, cum murolithis endothecalibus monomorphis. Coccolithi exothecales sunt planolithi circulares plani, minores quam coccolithi endothecales. Eorum pars centralis constat ex elementis obliquis dextorsum et circumdatur margine elementorum lamellarum. Coccolithi comunes sunt murolithi late ellipsoidales quorum magnitudo varia est. Habent murum tenuem distaliter latum et aream centralem leviter convexam cum structura centrali humili. Extensiones centripetae ex muri elementis efficiunt clipeum proximale interiore circum aream centralem.

Coccosphere spherical to subspherical, dithecate, with monomorphic endothecal muroliths. Exothecal coccoliths are delicate, flat, circular planoliths, that are smaller than the endothecal coccoliths. Their central part consisting of dextrally oblique elements and is surrounded by a rim of plate-like elements. Body coccoliths are broadly-elliptical muroliths of variable size. They have a distally flaring, thin wall and a slightly vaulted central area with a low central structure. Centripetal extensions from the wall elements form an inner-proximal flange around the central area.

Holotype: Negative A77/3 (pl. 6, fig. 1) deposited at the Nationaal Herbarium Nederland, Universiteit Leiden branch (L).

Type locality: North Atlantic (50°19'3"N 27°03'6"W), depth 0-5m, 21 Aug. 1986 (Cruise APNAP-I, Station T86-19C).

Etymology: Greek *lepto-,* thin, slender; Greek *lepido-,* scaly; Greek *leptolepis,* with fine scales; referring to the thin exothecal coccoliths.

Number of specimens studied: 8.

Distribution: Pacific; Northeastern Indian Ocean, 0-5m; eastern Arabian Sea, 0-5m; (?Gulf of Elat, northern Red Sea); Mediterranean Sea, 0-30m, including Alboran Sea (10 coccospheres; M. Geisen and J. Young, pers. comm.); North Atlantic, 0-5m.

Description: The dithecate coccosphere consists of 42-68 delicate disc-like exothecal planoliths and ± 35-68 monomorphic endothecal muroliths (pl. 6, figs. 1, 4). Differentiated circumflagellar coccoliths do not occur.

The exothecal planoliths are delicate, circular discs that are very loosely attached to the coccospheres and, thus, easily lost. They are smaller than the endothecal muroliths (pl. 6, figs. 1, 4, 6). Their centre consists of elongate elements with dextral obliquity (pl. 6, fig. 6; Young et al. pl. 15, fig. 9); it is surrounded by a narrow medial cycle of squarish elements - equivalent to radial laths - and a rim of wider elements (pl. 6, figs. 2, 6). The individual parts may be difficult to distinguish (pl. 6, fig. 4).

The broadly-elliptical muroliths have a thin, slightly flaring but straight wall, with a smooth outer surface and upper margin (pl. 6, figs. 2, 6). They are highly variable in size (pl. 6, fig. 5). The central area consists of 19-31 laths with narrow openings in between, and a broad central structure of overlapping elements, in the form of a low mound (pl. 6, fig. 3). Centripetal extensions from the wall elements alternate with the outer ends of the radial laths and form a flat, smooth inner-proximal flange around the central area (pl. 6, fig. 3; see also Young et al. 2003, pl. 15, fig. 8). The radial laths are of irregular width, see pl. 6, fig. 3 and Young et al. (2003, pl. 15, fig. 8). In fact these spokes consist of two elements, comparable to the bipartite radial laths in Syracosphaera anthos, as described and shown by Young et al. (2003, pl. 16, fig. 4).

Dimensions: coccosphere, ± 6-9 μm along the long axis; exothecal coccoliths, diameter 1.5-2.0 μm; body coccoliths, length 1.3-2.5 μm, width 1.1-1.5 μm.

Taxonomic notes: *Syracosphaera leptolepis* sp. nov. belongs to the *S. nodosa* group of Young et al. (2003), having exothecal planoliths and endothecal muroliths with only a proximal flange. The species is placed in the new leptolepis-subgroup, because of its monomorphic endotheca and its planoliths with a central part that consists of dextrally oblique elements. A similar planolith type is found in *Syracosphaera nana*, another species of the *S. nodosa* group and placed in a separate subgroup because of its dimorphic endotheca.

Endothecal muroliths of *S. leptolepis* sp. nov. have been shown previously as *S. nodosa* by Okada and McIntyre (1977, pl. 9, figs. 1, 3; the planoliths in their fig. 2 do represent exothecal coccoliths of S. nodosa). The new species differs from *S. nodosa* in having muroliths with a smooth wall, instead of a wall with prominent vertical ribs, while its central structure is broadly-, instead of narrowly-elliptical. Both species have circular planoliths, but these are differently constructed: the larger and thicker planoliths of *S. nodosa* have two large, plate-like elements in the centre, separated from the rim by a cycle of sinistrally oblique laths. Moreover, *S. nodosa* bears well differentiated

circum-flagellar coccoliths with a prominent spine, while the endotheca of *S. leptolepis* sp. nov. is monomorphic.

Within *S. leptolepis* sp. nov. we can distinguish a somewhat deviating form with larger, more solid, exothecal coccoliths, and muroliths with a higher wall, fewer radial elements and a somewhat wider inner-proximal flange around the central area. Examples are the monothecate, monomorphic specimens shown by Borsetti and Cati (1972, pl. 43, fig. 2) as *Syracolithus variabilis* and Winter et al. (1979, pl. 4, fig. 7) as *Syracosphaera variabilis;* both names are junior synonyms of *Syracosphaera nodosa* (Kleijne 1993). Since the two very closely related forms within *S. leptolepis* sp. nov. are difficult to separate, we prefer to include them in the same species until more specimens have been recorded.

Kleijne, A. & Cros, L., 2009. Ten new extant species of the coccolithophore *Syracosphaera* and a revised classification scheme for the genus. *Micropaleontology,* **55(5):** 425-462.