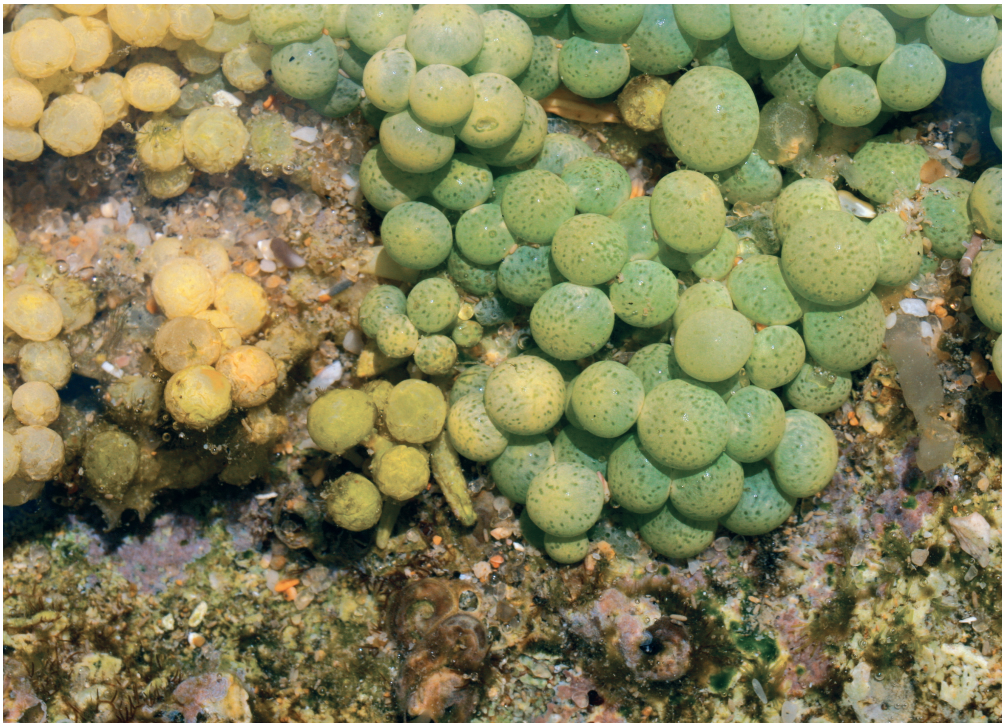


Caulerpa racemosa var. ***racemosa*** f. ***remota*** (Svedelius) Coppejans comb. nov. Fig. 89

BASIONYM: *Caulerpa clavifera* (Turner) C. Agardh f. *remota* Svedelius 1906a: 120-121, fig. 14.

TYPE LOCALITY: Galle, Sri Lanka.

Description - Very similar to var. *racemosa*, but the upright branches are separated by long intervals on the stolons, the rachis are longer (3-4 cm or even longer in deeper populations), the inflated branchlets are more separated (not completely hiding the rachis) and the stalks of the spherical branchlets are also longer (as long as or longer than the diameter of the spheres), resulting in a less dense, more slender aspect than the typical var. *racemosa*.

Ecology - Epilithic in the subtidal (deeper/more sheltered than the typical variety).

Distribution - Sri Lanka.

Note - In some way this taxon is similar to what some authors are calling *C. racemosa* var. *occidentalis* (J. Agardh) Børgesen (Børgesen (1907: 379, figs 28-29), Coppejans & Meinesz (1988: fig 23), Coppejans & Beeckman (1989: p. 384, pl. 2, figs 5-6), Coppejans (1992: 399, fig. 4B), Skelton & South (2007: 267, figs 694, 696, 790).

Fig. 89. *Caulerpa racemosa* var. *racemosa* f. *remota* (herbarium specimen).

Caulerpa racemosa var. ***cylindracea*** (Sonder) Verlaque, Huisman & Boudouresque f. ***laxa*** (Greville) Weber-van Bosse 1898: 367, pl. XXXIII, fig. 22 Fig. 90

REFERENCES: Svedelius (1906: 124-127, fig. 19, as *C. laetevirens* f. *laxa*), Cribb (1958: 218, pl. 3, fig. 4, as *C. racemosa* var. *laetevirens* f. *cylindracea* (Sonder) Weber-van Bosse), Coppejans & Beeckman (1989: p. 386, pl. 4, fig. 23, as *C. racemosa* var. *laetevirens* f. *cylindracea*).

TYPE LOCALITY: Eastern India.

Description - Plants growing in open populations, sand submerged parts whitish, light exposed parts bright to dark green; stolons thin (1 mm in diameter), rather scarcely branched, extremely well attached to the rock substratum by numerous tufs of rhizoids; assimilators placed at relatively large intervals (1-2.5 cm), 1-3 (-5) cm high, extremely supple and swinging around by the wave action; rachis cylindrical and thin, sometimes branched (especially the taller ones); branchlets radially placed around the rachis, morphologically variable: mostly cylindrical, sometimes clavate (especially the upper ones), or even somewhat laterally compressed and incurved (bean-shaped); some intercalary parts of the rachis can be naked (devoid of branchlets), but otherwise it can also produce new stolons higher up (after that the basal part becomes sand-covered?) which in their turn can form new assimilators.

Ecology - On sand-covered, horizontal rock substratum, -0,5/-1 m under low water mark, exposed to strong underwater wave action and sand scourching.

Distribution - India, Sri Lanka; Mediterranean Sea (introduced?).

Note - According to Silva *et al.* (1996: 830) this taxon lies within the circumscription of *Caulerpa peltata*, but has not yet been transferred or reduced to synonymy. We prefer to wait for the results of molecular analysis before suggesting taxonomic transfers.

Fig. 90. *Caulerpa racemosa* var. *cylindracea* f. *laxa* (herbarium specimens).

Caulerpa serrulata (Forsskål) J. Agardh
1837: 174 Fig. 91

REFERENCES: Jaasund (1976: 23, fig. 48), Magruder & Hunt (1979: 19, fig. 2, p. 18), Tseng (1984: 284, pl. 141, fig. 1), Coppejans & Beeckman (1989: 120; figs 24-25), Coppejans & Meinesz (1988: 191, figs 25-26), Moorjani & Simpson (1988: 13, pl. 16), Coppejans & Prud'homme van Reine (1992: 701, fig. 20B), Lewmanomont & Ogawa (1995: 37, + fig.), Cribb (1996: 19, bottom fig. p. 18), Calumpong & Meñez (1997: 116, + fig.), Trono (1997: 39, fig. 23), Huisman (2000: 257, + fig.), Littler & Littler (2000: 372, figs p. 373), Payri *et al*. (2000: 94, bottom fig. p. 95), Littler & Littler (2003: 230, figs p. 231), Abbott & Huisman (2004: 123, fig. 45A), Coppejans *et al*. (2005: 70, fig. 41), Oliveira *et al*. (2005: 214, figs p. 215), Huisman *et al*. (2007: 182, + fig.), Kraft (2007: 177, pl. 6F, figs 65E-G), Ohba *et al*. (2007: 38, + figs), Skelton & South (2007: 268, figs 697-698, 776, 788).

TYPE LOCALITY: Mokha (Yemen).

Description - Stolons 1.5-2 mm thick, from sparsely to richly branched, with numerous well developed rhizoid-bearing branchlets. Assimilators, (1-) 2-3 (-4) cm high, shortly stipitate (2-5 mm), stipe terete; blade narrow straplike, dichotomous, only slightly (HEC 11850) or even not (HEC 12554) spirally twisted, stiff, with markedly serrate margins, dark green.

Ecology - Epilithic, from just under low water mark, down to -25 m.

Distribution - Tropical Indo-Pacific.

Note - The smaller, not spirally twisted form, with thinner stolons is sometimes considered as a separate variety, *C. serrulata* var. *hummii* (Diaz-Piferrer) Farghaly, but intermediates exist, casting doubt on the value of this variety.

Fig. 91. *Caulerpa serrulata* together with *Halimeda* sp.

Caulerpa sertularioides (S.G. Gmelin) M.A. Howe
1905: 576 Figs 17H; 41B; 92

REFERENCES: Jaasund (1976: 23, fig. 47), Magruder & Hunt (1979: 19, fig. 3, p. 18), Tseng (1984: 284, pl. 141, fig. 2), Lawson & John (1987: 90, pl. 8, fig. 2), Moorjani & Simpson (1988: 13, pl. 17), Coppejans & Beeckman (1990: 120; figs 26-27), Coppejans & Meinesz (1988: 192, fig. 29), Coppejans & Prud'homme van Reine (1992: 704, fig. 21A), Lewmanomont & Ogawa (1993: 38, + fig.), Cribb (1996: 21, top fig. p. 20), Huisman (2000: 258, + fig.), Littler & Littler (2000: 374, figs p. 375), Payri *et al*. (2000: 96, top fig. p. 97), Littler & Littler (2003: 232, middle fig. p. 233), Abbott & Huisman (2004: 124, figs 45B-C), Oliveira *et al*. (2005: 214, + fig.), Huisman *et al*. (2007: 182, + figs), Kraft (2007: 175, pl. 6G, figs 64F-G), Ohba *et al*. (2007: 39, + figs).

TYPE LOCALITY: "in coralliis americanis".

Description - Uprights feather-like with cylindrical ramuli, light to dark green. Two extreme growth forms occur along the Sri Lankan coast: a small, very intricate one (form 1), and a larger, more elegant and less dense one (form 2), but intermediates have also been collected.

Form 1 (forma *brevipes* (J. Agardh) Svedelius). Stolons thin (0.25-0.5 mm), richly branched, forming rather dense, intricate, rather stiff tufts; upright branches 1-2 cm high, 3-5 mm wide, main axis mostly unbranched, naked at the base (2-3 mm), provided with pinnately disposed branchlets; pinnae cylindrical, not contracted at the base, elegantly upcurved, with mucronate tips.

Form 2 (forma *longiseta* (Bory de Saint-Vincent) Svedelius). General aspect less dense and markedly more supple and elegant than form 1; stolons 1-1.5 mm thick, sparsely branched; upright branches up to 10 cm high and 10 mm wide, rachis simple or irregularly to subdichotomously branched once or twice. Pinnae as in form 1 but longer.

Some specimens, mainly of form 2 show repeated regrowth (longer pinnae being formed after gradually shorter ones), resulting in a Christmas-tree-like aspect (forma *umbellata* (Weber-van Bosse) Svedelius).

Ecology - Form 1: Growing in surf-exposed intertidal areas or in the small cascades between intertidal pools. Form 2: Subtidal in sheltered lagoons or harbours.

Distribution - Tropical Indo-Pacific and tropical eastern Atlantic Ocean.

Note - Several forms have been described in literature but as intermediates are frequently observed we prefer to consider them merely as growth forms (ecads).

Fig. 92. *Caulerpa sertularioides*.

Caulerpa taxifolia (Vahl) C. Agardh
1817: XXII — Figs 22E; 93

REFERENCES: Jaasund (1976: 23, fig. 46), Magruder & Hunt (1979: 21, fig. 1, p. 20), Tseng (1984: 284, pl. 141, fig. 3), Coppejans & Beeckman (1990: 122; figs 36-39), Lawson & John (1987: 90, pl. 8, fig. 3), Coppejans & Prud'homme van Reine (1992: 706, figs 6B, 22B), Coppejans (1992: 406, figs 8A-B), Lewmanomont & Ogawa (1993: 39, + fig.), Cribb (1996: 21, middle fig. p. 20), Huisman (2000: 258, + fig. p. 259), Littler & Littler (2000: 376, top fig. p. 377), Payri *et al*. (2000: 98, top fig. p. 99), Littler & Littler (2003: 234, top fig. p. 235), Abbott & Huisman (2004: 124, figs 46A-B), Huisman *et al*. (2007: 183, + figs), Kraft (2007: 177, pls 6D, 7C-D, figs 66A-C), Ohba *et al*. (2007: 41, + figs).

TYPE LOCALITY: St. Croix, Virgin Islands.

Description - Uprights feather-like with markedly compressed ramuli, dark green. Stolons densely branched, bearing numerous downward growing branchlets with terminal groups of rhizoids and mostly closely packed, pinnate erect fronds, varying from 10-20 (-25) cm high, (5-) 7-10 mm wide; rachis slightly compressed, 0,5-1 mm wide, only exceptionally and irregularly branched up to two orders, naked at the base (3-10 mm) resulting in a stipitate aspect; pinnae 2-5 mm long, closely placed on 2 opposite rows in a single plane, almost perpendicular on the rachis, dorso-ventrally compressed, upwardly curved in their upper part, slightly constricted at the base, with parallel sides and gradually tapering to the acuminate apex; pinnae very densely set, but not overlapping.

Ecology - The typical (tall) growth form locally develops in large, almost monospecific vegetations between rock boulders, in the lagoon, from just under low water mark down to 1 m depth; the small growth form (f. *asplenioides*) somewhat deeper (-3 m).

Distribution - Pantropical (and Mediterranean Sea, introduced).

Note - Some collections are composed of plants with less branched stolons, short (1-2 cm high), horizontally curved uprights which are placed on two upwardly directed oblique rows and short ramelli; this form has been described as *C. taxifolia* f. *asplenioides* (Greville) Weber-van Bosse. Some specimens of this form show the same repeated regrowth as described in *C. sertularioides*, which Svedelius (1906a: 113, fig. 6) called *C. taxifolia* f. *interrupta*.

Fig. 93. *Caulerpa taxifolia*.

Caulerpa verticillata J. Agardh
1847: 6 — Figs 22D; 36H; 94

REFERENCES: Tseng (1984: 284, pl. 141, fig. 4), Coppejans & Beeckman (1990: 124; figs 28-32), Coppejans & Prud'homme van Reine (1992: 708, fig. 21B), Lewmanomont & Ogawa (1995: 40, + fig.), Trono (1997: 44, fig. 27), Littler & Littler (2000: 376, middle figure p. 377), Littler & Littler (2003: 234, bottom fig. p. 235), Abbott & Huisman (2004: 125, fig. 46C), Oliveira *et al*. (2005: 214, + fig), Ohba *et al*. (2007: 43, + figs).

TYPE LOCALITY: Not specified (West Indies).

Description - Growing in dense, extremely soft and slender, very dark green tufts. Stolons thin (up to 250 µm in diameter), very densely branched, well fixed by very numerous groups of rhizoids; upright branches densely set, 1-2 (-3) cm high, with a naked base and conspicuous whorls of determinate branchlets higher up; (1-2) 3-5 (-10) superposed whorls, 2-3 (-4) mm in diameter, 2-3 mm apart; ramelli tubular, branching dichotomously 4-6 times, not constricted at the dichotomies, approximately 80 µm in diameter at the base, tapering to 25 µm at the rounded apices.

Ecology - Either on sand-covered rock substratum in shallow lagoons, or on the vertical, lagoon side of the beachrock platform; at about or just under low water level.

Distribution - Indian Ocean, tropical Pacific Ocean and Caribbean Sea.

Fig. 94. *Caulerpa verticillata*.

Halimeda discoidea Decaisne
1842: 102 Figs 22B; 24C; 95

REFERENCES: Jaasund (1976: 31, fig. 62), Magruder & Hunt (1979: 29, fig. 1 p. 28), Hillis-Colinvaux (1980: 136-139, fig. 41), Tseng (1984: 288, pl. 143, fig. 2), Cribb (1996: 31, middle fig. p. 30), Calumpong & Meñez (1997: 105, fig. p. 106), Littler & Littler (2000: 400, bottom fig. p. 401), Payri *et al.* (2000: 108, top fig. p. 109), Littler & Littler (2003: 244, middle fig. p. 245), Oliveira *et al*. (2005: 219, fig. p. 219), Huisman *et al*. (2007: 190, + fig.), Kraft (2007: 202, figs 72E-L), Ohba *et al*. (2007: 45, + figs).

TYPE LOCALITY: Stated as Kamchatka, but highly improbable; true provenance not known.

Description - Plants mostly growing in isolated, limited populations, only locally forming huge, monospecific vegetations. Thallus erect, generally bushy, mostly 5-10 cm high, but up to 18 cm, attached by a generally well-developed felty structure; branching mainly di- trichotomous mostly in a single plane but also polychotomous from large segments and then in several planes, resulting in a dense habit; segments only slightly calcified, mostly thick and fleshy, without ribs or inflated upper rim, morphologically variable (even within a single specimen): the basal one(s) (sub)terete, resulting in a stipitate aspect, the upper ones most typically rounded, but frequently reniform or cuneate, flat, 15-22 mm broad, 10-15 (-20) mm long; bright green.

Ecology - Epilithic, mostly in lagoons from low water mark down to 1 m depth. Around Kalpityia, huge (several hundreds of square meters), monospecific populations are present with erect, contiguous plants, all directed in the same direction, all moving together with the waves.

Distribution - Indian Ocean, tropical Pacific Ocean, eastern Atlantic Ocean.

Note - *Halimeda* is characterized by thalli composed of calcified green segments and occurs throughout the tropics and subtropics. Important taxonomic studies include the monographs of Barton (1901), Hillis (1959) and Hillis-Colinvaux (1980). Phylogenetic relationships and species boundaries within the genus have been studied in detail by Kooistra *et al*. (2002) and Verbruggen (2005). For correct identification on species level, anatomical analysis is needed.

Fig. 95. *Halimeda discoidea*.

Halimeda gracilis Harvey ex J. Agardh
1887: 82 Figs 12C; 24A, B; 42C; 96

REFERENCES: Hillis-Colinvaux (1980: 144; figs 44a-b), Littler & Littler (2000: 402, middle fig. p. 403), Littler & Littler (2003: 246, middle fig. p. 247), Coppejans *et al*. (2005: 84, figs 57-58), Kraft (2007: 204, figs 73A, B, D, I), Ohba *et al*. (2007: 47, + figs).

TYPE LOCALITY: Sri Lanka.

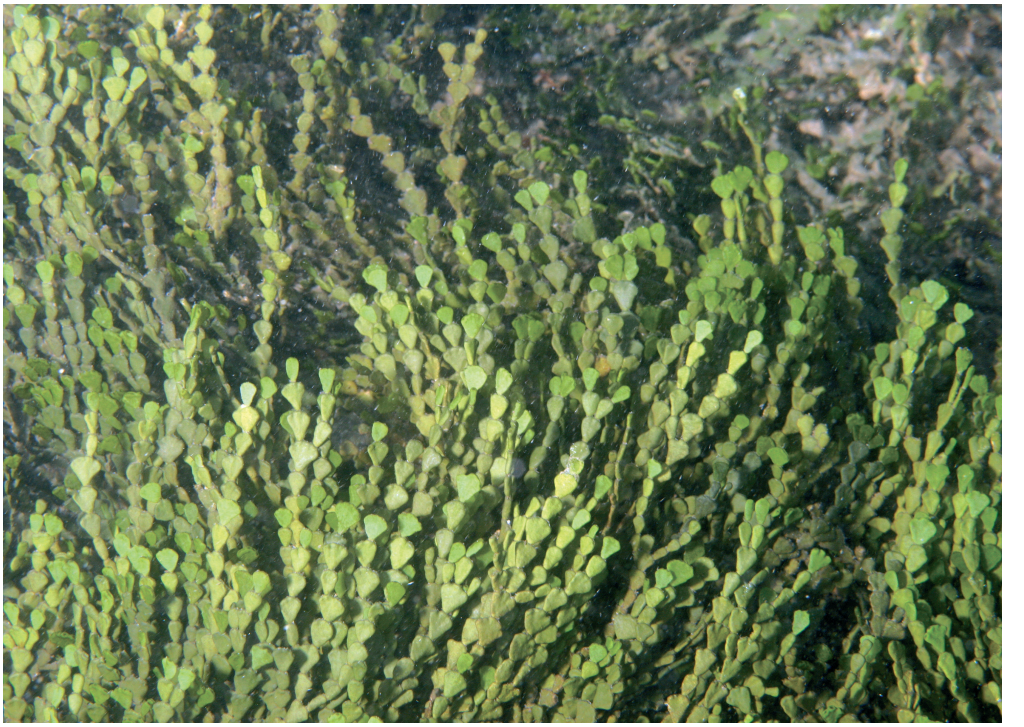
Description - Plants mostly in large, densely intricated populations forming thick cushions on the substratum. Thallus ascendant, 20 (-25) cm long, lax; the basal parts rather stiff, the upper parts being supple and moving along with the waves, white (in the basal parts) to bluish green; branching sparse but some segments supporting 4 to 5 branches; attachment by groups of rhizoids at several places where the sprawling thallus contacts the substratum; segments strongly calcified and brittle, in most populations small, cuneate, flabellate, diamond-shaped to somewhat rounded or subterete, smooth, 2-3 (-5) mm long and 2-3 mm wide. Other populations (f. *triloba*) have wider (up to 5 mm broad) trilobed segments with radial ribs

Ecology - Epipsammic, extremely abundant on the sandy substratum of sheltered lagoons or sheltered depressions in submerged reefs (Bar Reef), from 1 to 4 m depth; frequently growing mixed to seagrasses (Fig. 12C). As a result of sand fixation between the sprawling branches, bumps develop on the lagoon bottom with the more supple branch tips being radially arranged and swaying around with the waves.

Distribution - Indian Ocean, tropical Pacific Ocean, Caribbean Sea.

Note - This *Halimeda* species is the most abundant one along Sri Lankan coasts, especially in lagoons. Along some Sri Lankan shores the substratum is mainly composed of loose segments of decayed specimens of *H. gracilis* (Figs 2D, E).

Fig. 96. *Halimeda gracilis*.



Halimeda opuntia (Linnaeus) J.V. Lamouroux
1816: 308 Figs 22F; 97

REFERENCES: Jaasund (1976: 33, fig. 65), Magruder & Hunt (1979: 29, fig. 2, p. 28), Hillis-Colinvaux (1980: 110-112, figs 19, 51, 92), Tseng (1984: 290, pl. 144, fig. 2), Moorjani & Simpson (1988: 15, pl. 26, right), Lewmanomont & Ogawa (1993: 52, + fig.), Cribb (1996: 33, top fig. p. 32), Calumpong & Meñez (1997: 103, fig. p. 104), Payri *et al*. (2000: 114, bottom fig. p. 115), Oliveira *et al*. (2005: 220, fig. p. 221), Huisman *et al*. (2007: 190, + fig.), Kraft (2007: 220, pl. 8G, figs 77H-L), Ohba *et al*. (2007: 54, + figs).

LECTOTYPE LOCALITY: Jamaica.

Description - Plants forming very dense, stiff-brittle, hemispherical clumps, 10-15 cm in diameter, or more extensive mounds, exceeding 20 cm in diameter, with numerous points of attachment, whitish in the clump, light to dark green at the periphery. Branches radially arranged, segments reniform (sometimes even auriculate) to trilobate, 3-4 mm long, 5-7 mm broad, sometimes ribbed, old ones strongly calcified and brittle, successive segments not in a single plane, sometimes even at right angles with each other; branching extremely dense, in all directions, resulting in a radial growth of the extremely intricate clumps.

Ecology - From shallow rock pools of the lower intertidal to the shallow subtidal of sheltered lagoons and bays.

Distribution - Pantropical.

Note - The absence of a well defined, single attachment point, the dense, cushion-like growth form and the strongly calcified segments distinguish this species from the others in Sri Lanka.

Fig. 97. *Halimeda opuntia*.

Avrainvillea amadelpha (Montagne) A. Gepp et E. Gepp
1908: 178-179, pl.23: fig. 20, pl. 24: figs 21, 22 Figs 25B; 41C; 98

REFERENCES: Olson-Stojkovich (1985: 36-38, fig. 19), Coppejans & Prud'homme van Reine (1989: 121, pl. 1, figs 1-17), Littler & Littler (2003: 236, bottom fig. p. 237), Abbott & Huisman (2004: 137, fig. 51A), Huisman *et al*. (2007: 192, + fig.), Ohba *et al*. (2007: 57, + figs).

TYPE LOCALITY: Agalega Islands.

Description - Plants gregarious, in dense clusters, arising from an extensive felted holdfast; stipes cylindrical in the basal part, becoming compressed towards the blades; in most collections stipes 0.5 to 1 cm long, more rarely up to 2 cm widening up to the fan- to wedge-shaped blades, 2-3 (-4) cm long and wide, soft and spongy, with a smoothly rounded margin, more rarely ragged or composed of loose filaments, dark green; intertwined filaments of the blades dichotomous, markedly constricted at the dichotomies, 18-25 µm in diameter. In some specimens the blade filaments are really loosely entangled, resulting in spongy, obconical structures.

Ecology - In rock crevices just under low water mark; locally abundant.

Distribution - Indian and tropical Pacific Ocean.

Note - *Avrainvillea* includes about 25 species, which are distributed in tropical waters. The genus has been monographed by Littler & Littler (1992) (tropical western Atlantic) and Olson-Stojkovich (1985).

Fig. 98. *Avrainvillea amadelpha*.

Avrainvillea erecta (Berkeley) A. Gepp et E. Gepp 1911: 29-32, pl. X: fig. 89 Fig. 99

REFERENCES: Tseng (1984: 286, pl. 142, fig. 1), Coppejans & Prud'homme van Reine (1989: 123, pl. 2, figs 18-37, as *A. erecta-A. obscura*), Trono (1997: 66, fig. 43), Payri *et al*. (2000: 118, top fig. p. 119), Littler & Littler (2003: 238, top fig. p. 239), Oliveira *et al*. (2005: 222, figs p. 222), Ohba *et al*. (2007: 58, + figs).

TYPE LOCALITY: Philippines.

Description - Plants generally solitary, but mostly growing in open populations; in some cases a few, closely gathered specimens anastomose laterally; fully grown thalli consisting of a flabellate (more rarely reniform), spongy-felted blade that can be longitudinally undulated, up to 3 cm high and 4.5 cm wide, dirty dark green, supported by a very short, stout, unbranched stalk (5-10 mm long, 5-8 mm in diameter); plants attached by a well-developed more or less cylindrical, bulbous holdfast, up to 9 cm long and 15 mm in diameter; blade siphons loosely intricated, from greenish orange to yellowish brown (under microscope), 30-50 µm in diameter, cylindrical with deeply constricted equal dichotomies and rounded apices. Juvenile specimens only forming a small, hemispherical tuft of radially arranged loose filaments on top of a very short stipe; young plants forming a more or less cylindrical flabellum; only fully developed specimens are 'typically' flabellate.

Ecology - Close to the beach in a sheltered lagoon; in the seagrass vegetation and the beach-side channel (20 cm deep); continuously submerged plants flabellate; air-exposed specimens at low tide very small and like shaving brushes.

Distribution - Indian and tropical Pacific Ocean.

Fig. 99. *Avrainvillea erecta* partly sticking out of the water at extreme low tide.

Boodleopsis pusilla (Collins) W.R. Taylor, Joly et Bernatowicz 1953: 105-106 Fig. 100

REFERENCES: Leliaert *et al*. (2001: 455, figs 17-21); Oliveira *et al*. (2005: 222, + fig.).

TYPE LOCALITY: West Indies.

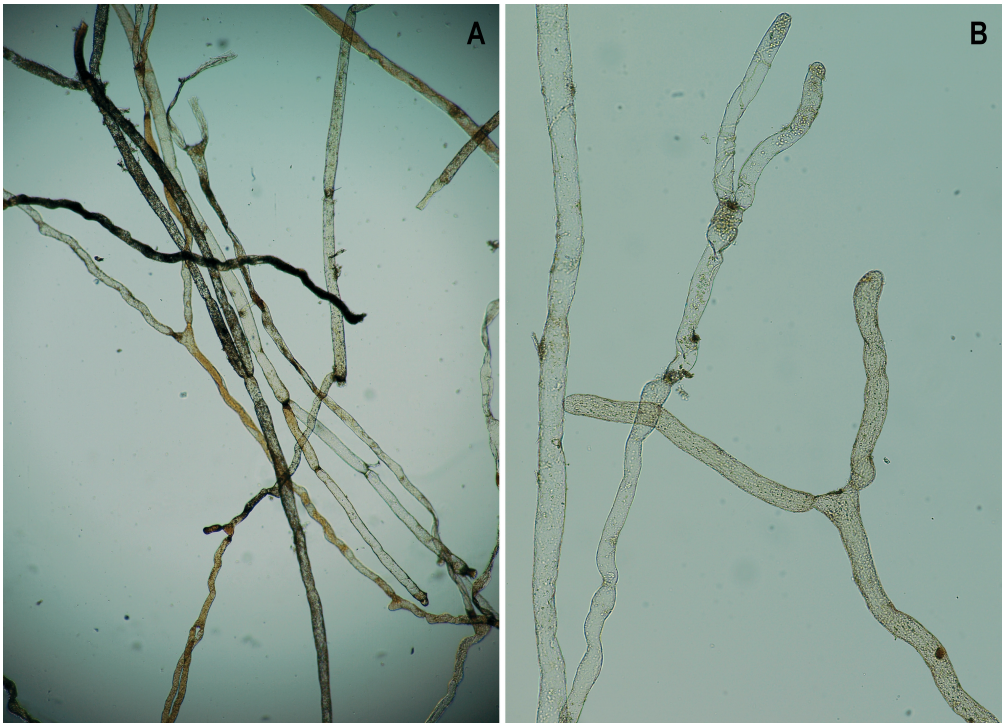
Description - Plants forming silty bumps from where the dark green tips of the filaments radially stick out; basal part composed of loosely interwoven siphonous filaments, 75-105 µm in diameter in the middle parts, 75-90 µm in the apical parts, repeatedly branching (sub-)dichotomously with a wide angle; branching angle rounded to flat; constrictions present just above the dichotomies but also between succeeding dichotomies; some filaments markedly sinuous; basal filaments almost colourless, filament tips very dark green; attachment by thinner, more densely and pseudodichotomously to irregularly branched, colourless rhizoids developing throughout the plant; rhizoids with a marked smaller diameter (10-30 µm) than the siphons.

Ecology - On horizontal rock substratum in a shaded crevice at about low tide level, continuously submerged.

Distribution - Pantropical.

Note - *Boodleopsis* species are separated mainly on filament diameter, but as West (1991) stated, this a variable character highly influenced by environmental factors.

Fig. 100. *Boodleopsis pusilla***,** microscopic details.


A
B

Chlorodesmis caespitosa J. Agardh
1887: 49-50 Fig. 101

REFERENCES: Ducker (1967: 157; pls 3, 12-14, 19), Coppejans *et al.* (2001: 420, figs 11-14).

TYPE LOCALITY: Colombo, Sri Lanka.

Description - Thallus composed of erect, gregarious, bright green filaments 2-6,5 cm long, (125-) 270 (-585) µm diameter; branching dichotomous, mainly apical, resulting in a fastigiate appearance; segment supporting the dichotomy truncate and sometimes even slightly swollen at the distal end; both filaments arising from a dichotomy constricted at the same level; intercalary constrictions possible but not frequent. Needle-shaped crystals always present in the photosynthetic filaments and locally abundant. Rhizoids hyaline, with dense dichotomous branching.

Ecology - On horizontal, sand-covered rocks just above low water mark, continuously wave-swept.

Distribution - Indian Ocean, tropical Pacific Ocean.

Note - *Chlorodesmis*, including about 11 species, is widely distributed in tropical marine waters. The genus has been monographed by Ducker (1967). Several species occur along Sri Lankan coasts.

Fig. 101. *Chlorodesmis caespitosa*: A. *In situ* view; B. Supradichotomic constrictions; C, D. Crystals in the siphons.

Rhipidosiphon javensis Montagne
1842a: 15 Fig. 102

REFERENCES: Jaasund (1976: 29, fig. 60, as *Udotea javensis*), Tseng (1984: 294, pl. 146, fig. 2, as *Udotea*), Coppejans & Prud'homme van Reine (1989: 139, pl. 10, figs 3-9, as *Udotea*), Trono (1997: 77, fig. 52, as *Udotea*), Payri *et al*. (2000: 120, bottom fig. p. 121), Littler & Littler (2003: 254, middle fig. p. 255), Oliveira *et al.* (2005: 224, fig. p. 224), Huisman *et al*. (2007: 191, + figs), Kraft (2007: 233, fig. 83), Skelton & South (2007: 289, figs 739-740, 795).

TYPE LOCALITY: Leiden Island (Nyamuk besar), Java, Indonesia.

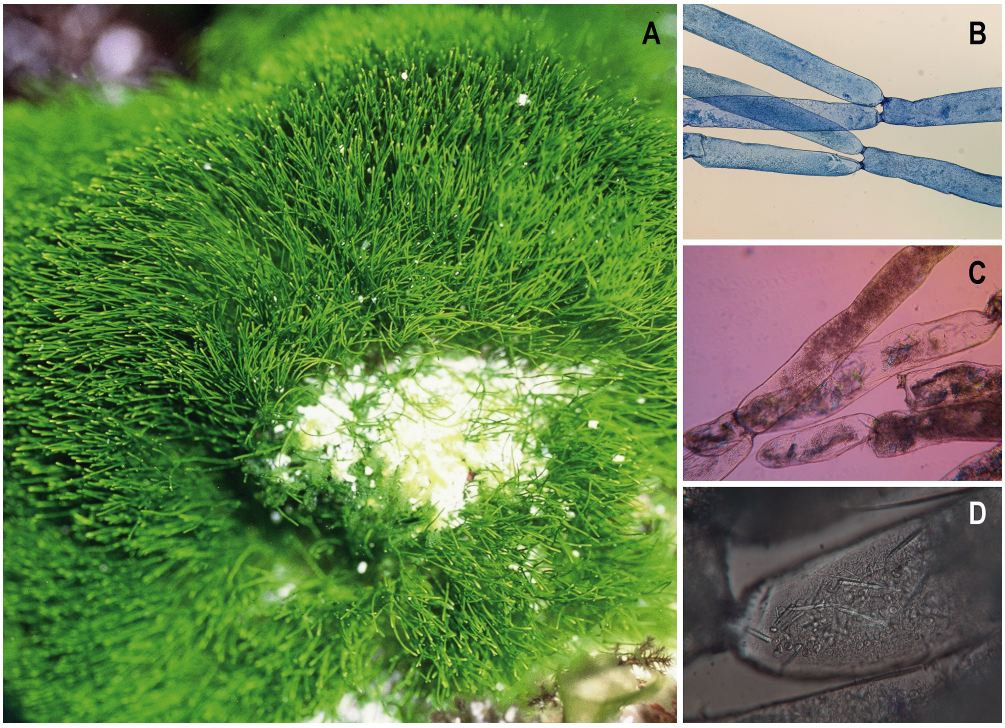
Description - Thalli erect, 5-10 mm high, isolated, but more frequently growing in open populations, composed of hyaline rhizoids, and a slightly calcified stipe and flabellum; green to greyish green (depending on the degree of calcification). Stipe monosiphonous, unbranched, smooth, 1-4 mm long, 100 µm diameter; flabellum cuneate to flabellate, 2-6 mm wide, 4-6 mm long, unistratose, composed of parallel, contiguous, dichotomous (rarely trichotomous) filaments, radiating from the stipe to the margin, 45-60 µm diameter, with unequal constrictions above the dichotomies, without lateral appendages, kept together by the calcification; crystals sometimes present in the blade siphons.

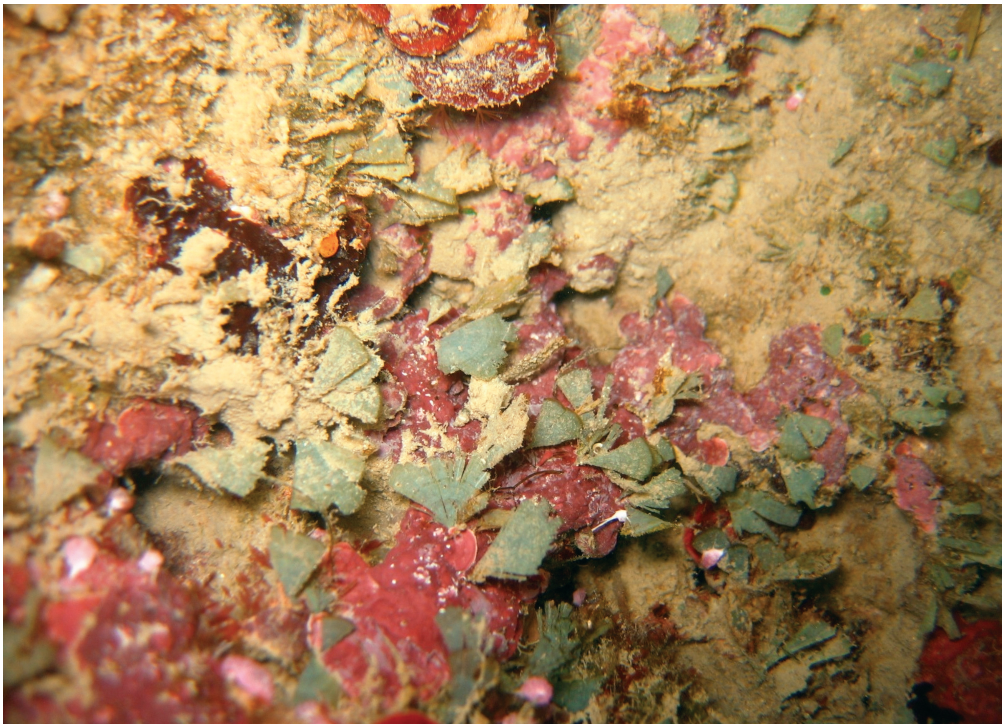
Ecology - On vertical rock wall, -20 m.

Distribution - Indian Ocean, tropical Pacific Ocean.

Note - *Rhipidosiphon* is a small tropical genus, including only two species: *R. javensis*, occurring in the Indo-Pacific and *R. floridensis* Gepp et Gepp, which is only known from the Caribbean Sea. The genus has been studied by Gepp & Gepp (1904), Littler & Littler (1990) and Vroom *et al.* (2001).

Fig. 102. *Rhipidosiphon javensis*.


A
B
C
D



10.2. Phaeophyceae - Brown algae

Taxonomic overview of the species included in this guide. Taxa indicated with an asterisk have their type locality in Sri Lanka.

RALFSIALES
Ralfsiaceae
**Ralfsia ceylanica* Harvey ex Barton 130

SPHACELARIALES
Sphacelariaceae
Sphacelaria novae-hollandiae Sonder 130

DICTYOTALES
Dictyotaceae
Canistrocarpus crispatus (J.V. Lamouroux) De Paula et De Clerck 132
Canistrocarpus magneanus (De Clerck et Coppejans) De Paula et De Clerck 132
Dictyopteris delicatula J.V. Lamouroux 134
**Dictyota ceylanica* Kützing 134
Dictyota ciliolata Sonder ex Kützing 136
Dictyota friabilis Setchell 136
Lobophora variegata (J.V. Lamouroux) Womersley ex Oliveira 138
Padina antillarum (Kützing) Piccone 138
Padina boergesenii Allender et Kraft 140
Padina minor Yamada 140
Stoechospermum polypodioides (J.V. Lamouroux) J. Agardh 142

SCYTOSIPHONALES
Chnoosporaceae
Chnoospora minima (Hering) Papenfuss 142
Scytosiphonaceae
Colpomenia sinuosa (Mertens ex Roth) Derbès et Solier 144

FUCALES
Sargassaceae
Sargassum crassifolium J. Agardh 144
Sargassum polycystum C. Agardh 146
Sargassum turbinatifolium Tseng et Lu 146
Sargassum sp. 148
Turbinaria ornata (Turner) J. Agardh 148
Turbinaria ornata f. *evesiculosa* (Barton) W.R. Taylor 150
Turbinaria sp. 150

SCYTOTHAMNALES
Scytothamnaceae
Asteronema breviarticulata (J. Agardh) Ouriques et Bouzon 152

Ralfsia ceylanica Harvey ex Barton
1903: 477-478, pl. 13: figs 1-4 Figs 16C; 40D; 103

TYPE LOCALITY: Sri Lanka.

Description - Young specimens form well-attached, circular crusts, a few cm in diameter, on the rocky substratum; older ones become contiguous, confluent, resulting in irregularly lobed crusts, medium brown when wet, becoming darker upon drying; slippery surface when wet; the radially arranged, creeping filaments adjacent, about 15 µm in diameter, upwardly curving, still adjacent and becoming vertical and 10 µm in diameter.

Ecology - Epilithic on surf-exposed rocks in the upper intertidal zone and supralittoral fringe, mostly among *Chnoospora minima* and *Dermonema virens*.

Distribution - India, Laccadive Islands, Pakistan, Sri Lanka.

Note - Further studies should determine if this species is really different from other *Ralfsia* species.

Fig. 103. *Ralfsia ceylanica*.

Sphacelaria novae-hollandiae Sonder
1845: 50 Fig. 104

REFERENCES: Tseng (1984: 202, pl. 102, fig. 4), Keum *et al.*, (2003: 113-124), Abbott & Huisman (2004: 189, figs 72A-B), Oliveira *et al*. (2005: 155 + figs), Huisman *et al.* (2007: 211, + fig.), Skelton & South (2007: 204, figs 562-565), Littler *et al.* (2008: 143 + figs).

TYPE LOCALITY: Western Australia (probably Fremantle).

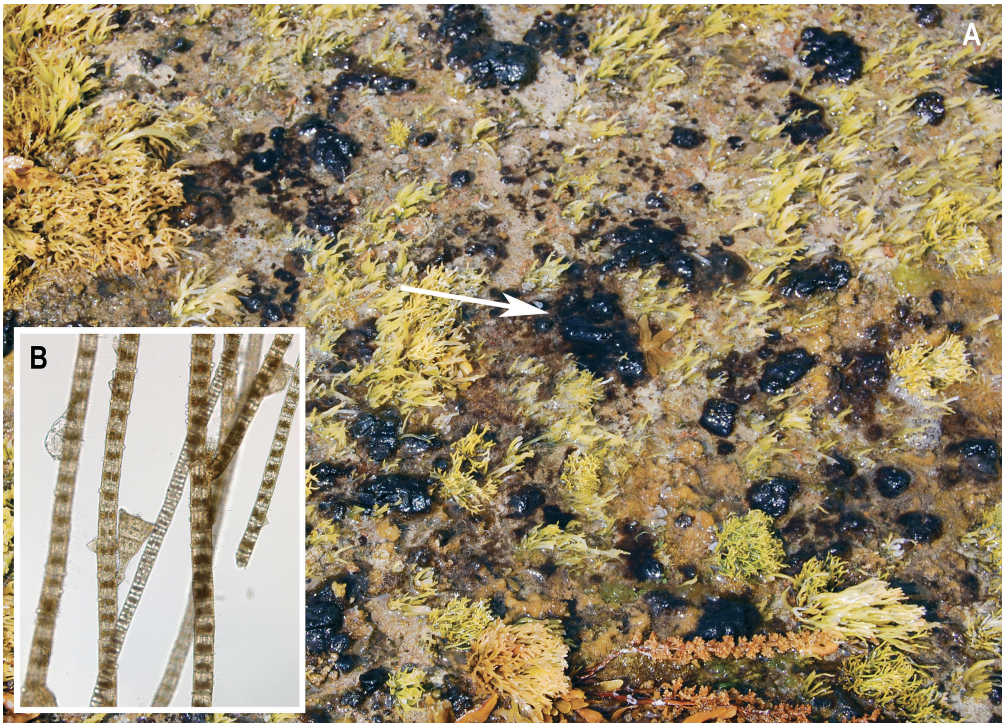
Description - Plants gregarious, in discrete hemispherical stiff tufts, with radially placed rather straight branchlets, 1-2.5 cm long, 35-60 µm in diameter near the base, dark brown; attachment by stoloniferous filaments; branching of erect, straight filaments relatively sparse with laterals similar to or somewhat thinner than the parent filaments, all filaments growing to an equal height; segments L/W 0.75-1 and showing 2-4 longitudinal walls; secondary transverse walls absent; phaeophycean hairs common but soon breaking off. Propagules tribuliform with obscure horns, 120-140 µm long and 110-120 µm at the distal end, borne on a 1-3 celled pedicel; the apical cells of the horns cut off by a straight cross wall; presence of a small lenticular cell midway between the horns. Uni- or plurilocular sporangia not observed.

Ecology - Epilithic on the bottom of a very shallow intertidal rock pool on the beachrock platform.

Distribution - Tropical and warm temperate waters.

Notes - According to Keum *et al*. (2006: 122) the closest allie of *S. novae-hollandiae* is *S. novae-caledoniae* Sauvageau. The latter, that has only been reported from New Caledonia and southern Australia, has more slender filaments (21-34 µm) and the propagules are composed of smaller rectangular cells. In *S. californica* Sauvageau ex Setchell et Garner, the propagules are considerably larger in almost all measurements than in S. *novae-hollandiae*. The other *Sphacelaria*-species with tribuliform propagules (*S. brachygona* Montagne, *S. plumula* Zanardini and *S. tribuloides* Meneghini) are characterized by propagules with more pronounced horns.
A new species for Sri Lanka.

Fig. 104. *Sphacelaria novae-hollandiae*. A. Tufts *in situ* (the dark brown tufts, arrow); B. Microscopic details with propagules.


A
B

Canistrocarpus crispatus (J.V. Lamouroux) De Paula et De Clerck *in* De Clerck *et al*. 2006: 1285 Fig. 105

REFERENCES: Jaasund (1976: 39, fig. 78, as *Dictyota bartayresii* J.V. Lamouroux sensu Vickers; 39, fig. 79 as *D. friabilis* Setchell), Lewmanomont & Ogawa (1993: 69, + fig., as *D. bartayresiana*), De Clerck (2003: 66-75, figs 20-22, as *Dictyota crispata* J.V. Lamouroux), Littler & Littler (2000: 262, bottom fig. p. 263, as *D. crispata*), Oliveira *et al*. (2005: 160, fig. p. 159, as *D. bartayresiana*, fig. p. 161), Tronchin & De Clerck (2005: 102, fig. 73, as *Dictyota*).

TYPE LOCALITY: Caribbean Sea, Antilles.

Description - Thallus ascending with a small prostrate base giving rise to several stiff and crisp, erect straps which are somewhat harsh to the touch, 9-20 cm long; rhizoids limited to the lower part of the thallus; pale to dark brown, not iridescent; width of the straps constant over a single plant, or slightly widening towards the apices; average width: 5-10 mm; apices typically apiculate to rounded; the apical segments often with strongly rounded axils; branching anisotomous dichotomous, especially in the upper part of the thallus where the central straps are longer than the peripheral ones, possibly resulting in an alternate branching; branching angle broader towards the base (50-70°), than near the apical parts (30-50°). Margins smooth, sometimes appearing dentate but this because of submarginal surface proliferations; surface proliferations abundant, evenly distributed over both surfaces. Cortex and medulla unilayered (occasionally a duplication of a medullary cell at the base of a surface proliferation). Sporangia scattered on both surfaces of the straps, single or grouped in small longitudinal sori (up to 6 sporangia), surrounded by an involucrum, supported by a single stalk cell Gametangia not observed.

Ecology - On coral fragments on the bottom of a lagoon, 3 to 4 m deep. Abundant where collected, not observed since then, not even at the same locality in the same season.

Distribution - Pantropical.

Fig. 105. *Canistrocarpus crispatus* (herbarium specimen).

Canistrocarpus magneanus (De Clerck et Coppejans) De Paula et De Clerck *in* De Clerck *et al*. 2006: 1285 Figs 32C; 106

REFERENCES: Coppejans *et al*. (2001: 23-25, pl. I, as *Dictyota magneana*), Littler & Littler (2003: 170, middle fig. p. 171, as *Dictyota magneana*).

TYPE LOCALITY: Lion Island, Port Moresby, Papua New Guinea.

Description - Plants forming prostrate mats, about 20 cm in diameter, composed of interwoven, brittle straps, exhibiting a bluish iridescence in situ; straps 3-4 mm wide, attached by means of patches of marginal rhizoids present from the basal to the apical parts, lacking a conspicuous base; straps frequently attached to neighbouring ones by marginal patches of rhizoids; branching dichotomous, branching angle 50-70°; the apical segments often with one branch more developed than the other; margins smooth, possibly appearing dentate due to submarginal surface proliferations; surface proliferations, tooth-like, restricted to the margins of the upper surface of the thallus and perpendicular on the strap surface. Whole plant tristromatic, cortex and medulla unilayered. Reproductive structures not observed.

Ecology - Epilithic on horizontal dead coral, 2-3 m depth.

Distribution - Papua New Guinea, Sri Lanka.

Fig. 106. *Canistrocarpus magneanus*.