

***Amphiroa foliacea* J.V. Lamouroux** in Quoy et Gaimard

1824: 628, pl. 93: figs 2, 3

Figs 22A; 141

REFERENCES: Tseng (1984: 86, pl. 46, fig. 1), Lewmanomont & Ogawa (1995: 93, + fig.), Abbott (1999: 178, figs 44C, 45B), Littler & Littler (2003: 26, top fig. p. 27), Ohba *et al.* (2007: 104, + figs), Skelton & South (2007: 40, figs 47-51, 796).

TYPE LOCALITY: Mariana Islands.

**Description** - Plants gregarious, horizontally spread from a central point from which different specimens spread out; heavily calcified and brittle, pink; individual plants up to 5 cm long, branching irregular, some segments not branching, others di- or trichotomous; a single basal, cylindrical segment (intergeniculum); other segments markedly compressed, 3-4 mm long, 2-3 mm wide, and all in the same (or parallel) plane(s); in some specimens the proximal segments with raised central rib; segments extremely variable in morphology, mostly bi- or trifurcate, frequently with a (sub-)apical lateral lobe; the supple joints (genicula) are very obvious dark brown and surrounded on both sides by auricular outgrowths of the supporting and/or the upper segment; fertile specimens with very numerous, contiguous conceptacles on both faces of the intergenicula, but more numerous on the upper surface, not strongly elevated, with a single ostiolum each.

**Ecology** - Epilithic, from just under low water mark down to 2 m depth, locally abundant in continuously wave-swept gulleys parallel with the sea and in direct contact with the open sea.

**Distribution** - Tropical Pacific and Indian Ocean.

**Note** - Abbott (1999: 178) states that the taxonomy and nomenclature of *A. foliacea* need study. Moreover it may be that *A. foliacea*, *A. tribulus* (Ellis et Solander) J.V. Lamouroux and *A. misakiensis* Yendo represent a single polymorphic species.

**Fig. 141.** *Amphiroa foliacea*. A. Specimen from just under low water mark; B. Specimen from a lagoon, 2 m depth; C, D. Details.

***Amphiroa fragilissima* (Linnaeus) J.V. Lamouroux**

1816: 298

Fig. 142

REFERENCES: Magruder & Hunt (1979: 59, middle fig. p. 58), Lewmanomont & Ogawa (1995: 92, + fig.), Payri *et al.* (2000: 182, top fig. p. 183), Littler & Littler (2003: 26, middle fig. p. 27), Ohba *et al.* (2007: 105, + figs).

TYPE LOCALITY: Jamaica.

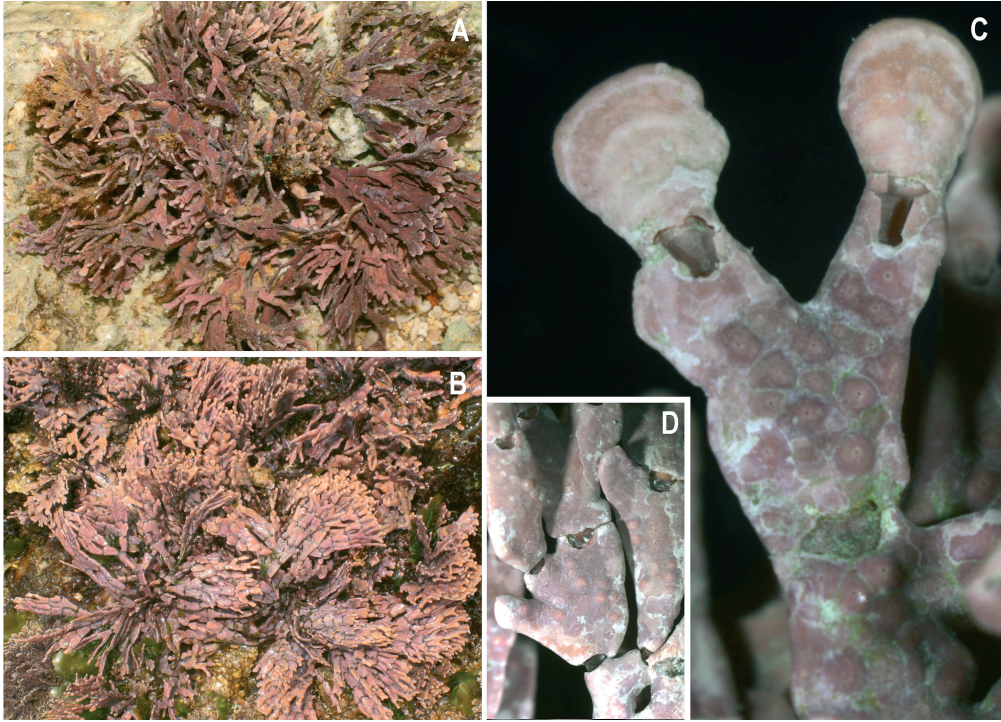
**Description** - Plants forming hemispherical tufts to more elongated cushions, composed of radially arranged, calcified and brittle branches, pinkish grey to yellowish white; all branches cylindrical, intergenicula extremely thin (100-500 µm), up to 1 cm long, branching divaricately dichotomous (Y-shaped, rarely trichotomous) at the genicula, more lax in sheltered, subtidal habitats, more dense in pools in the intertidal. Conceptacles small but conspicuous, as raised hemispherical projections, lateral on the intergenicula.

**Ecology** - Best developed in the subtidal of lagoons, frequent between seagrasses; somewhat coarser, more dense specimens in intertidal pools.

**Distribution** - Pantropical and Mediterranean Sea.

**Fig. 142.** *Amphiroa fragilissima*.





***Amphiroa* sp.**

Fig. 143

**Description** - Plants forming hemispherical, stiff and brittle tufts, 3-5 cm in diameter, pinkish red, composed of radially placed intergenicula, dichotomous in various planes, straight, calcified; attachment by a stoloniferous holdfast; branching angles small, resulting in closely packed branches, (almost) contiguous at the basis of the thallus; intergenicula cylindrical, smooth, diameter uniform throughout, 250-750  $\mu$ m in diameter, 5-10 mm long; genicula uncalcified, small and not obvious. No reproductive structures observed.

**Ecology** - On horizontal, slightly sand-covered rock substrate close to low water mark along rather sheltered coasts; tufts frequently containing small shell fragments.

**Fig. 143.** *Amphiroa* sp. A. Surface view; B. Longitudinal section of a hemispherical tuft.

***Jania adhaerens* J.V. Lamouroux**  
 1816: 270

Figs 14C; 144

**REFERENCES:** Tseng (1984: 90, pl. 48, fig. 2), Cribb (1996: 97, bottom fig. p. 96), Calumpong & Meñez (1997: 149, + fig.), Abbott (1999: 187, fig. 48A), Littler & Littler (2003: 32, bottom fig. p. 33), De Clerck *et al.* (2005b: 176, figs 147, 148), Oliveira *et al.* (2005: 79, + figs), Skelton & South (2007: 45, figs 66-69).

**TYPE LOCALITY:** Mediterranean Sea.

**Description** - Plants forming lax, delicate, irregularly lobed (sub)spherical tufts; individual plants 2-4 cm in diameter, greyish pink with more whitish tips, attached by basal discs; all branches very thin (90-120  $\mu$ m, somewhat thicker at the basis), branching divaricate ( $>45^\circ$ ), dichotomous to irregular in various planes, resulting in a very intricate aspect; some intergenicula not branching (number of unbranched ones larger in the basal parts, but also variable among specimens); intergenicula cylindrical, 300-700  $\mu$ m long; secondary adhesion discs present. Conceptacles in amphora-shaped intergenicula which are markedly broader than vegetative intergenicula and mostly bearing two short branchlets at the upper angles; pore in the middle of the upper margin of the conceptacle.

**Ecology** - Mostly epiphytic on other seaweeds (as *Sargassum*), or on stolons of seagrasses, in deep intertidal pools and the subtidal; locally in large quantities on submerged boat ropes in lagoons.

**Distribution** - Pantropical and warm temperate; widespread.

**Note** - Skelton & South (2007: 46) state that specimens from Pacific Islands, previously identified as *J. capillacea* Harvey and *J. micrarthrodia* are indistinguishable from *J. adhaerens*, and therefore most probably are referable to that taxon.

**Fig. 144.** *Jania adhaerens*. A. *In situ* habit; B. Detail of a secondary attachment pad.





***Jania cultrata* (Harvey) J.H. Kim, Guiry et H.-G. Choi**  
2007: 1317

Fig. 145

REFERENCES: Trono (1997: 191, fig. 122, as *Cheilosporum cultratum*), De Clerck *et al.* (2005b: 170, figs 138, 139, as *Cheilosporum cultratum*).

LECTOTYPE LOCALITY: Durban, South Africa.

**Description** - Plants decumbant, up to 2 cm tall, usually densely branched and caespitose, rarely sparsely branched, chalky pink to greenish- or brownish-pink; holdfast composed of entangled stolons with cylindrical to compressed, unlobed intergenicula 200-500 µm in diameter; axes complanate, dichotomously branched every few segments, in a single plane, articulated with calcified intergenicula; adventitious branching from intergeniculum surface rare; branch apices rounded, bleached; intergenicula near the base cylindrical, 0.3-0.8 mm long, 0.3-0.5 mm in diameter; intergenicula in the upper parts compressed, bilobed to winged, 0.6-1 mm long, 1.5-2(-3.5) mm wide between lobe apices; lobes strongly developed with acute apices, lobe angle ca 30-40(-50)°, upper margin up to 1.5 mm long; genicula appearing as hairline cracks, composed of a single tier of medullary cells up to 240 µm long. Reproductive conceptacles swollen, borne adaxially on lobes with pore opening on the upper edge of intergenicula.

**Ecology** - Epilithic at about low tide level, on rocks exposed to strong surf.

**Distribution** - Reported from several localities in the Indian Ocean and western Pacific Ocean.

**Note** - Kim *et al.* (2007) studied the phylogenetic relationships within the tribe Janieae based on molecular and morphological data and came to a reappraisal of the genus *Jania*. They conclude that the genus *Cheilosporum* should be included in the genus *Jania*.

Fig. 145. *Jania cultrata*.

***Jania intermedia* (Kützting) P. Silva**  
in Silva *et al.* 1996: 242

Figs 17D; 146

REFERENCE: De Clerck *et al.* (2005b: 176, fig. 149).

TYPE LOCALITY: 'Cape of Good Hope', South Africa.

**Description** - Plants growing in extensive populations, but as isolated tufts, 2-3 cm long, hanging down along the sloping rocks; attachment by a basal disc, all intergenicula cylindrical, about 100-150 µm in diameter and 200-400 µm long, dichotomous but unbranched segments are present; branching angle small, resulting in a global fasciate aspect with rounded periphery, all axes being parallel to each other. Greyish pink in the wet season, becoming bleached whitish in the beginning of the dry season and largely dying off when the sea is becoming smooth.

**Ecology** - Growing in large, rather dense, (almost) monospecific populations (several m<sup>2</sup>) on vertical and sloping surfaces in the mid to low intertidal, exposed to extreme surf.

**Distribution** - South Africa, Mozambique.

**Note** - This is the most abundant intertidal *Jania* species along the coast of Sri Lanka. In the absence of reproductive structures and awaiting the results of ongoing molecular study of the genus, we tentatively identify this taxon as *J. intermedia*, as the material from Sri Lanka very well corresponds to that from Kwazulu-Natal. *Jania natalensis* var. *tenuior* was distributed by Harvey in his *Ceylon exsiccata* (1857: n° 25). According to Silva *et al.* (1996: 245) this name was used, without a description. They also state that this taxon apparently lies within the circumscription of *Jania verrucosa*, but it might even be that *J. intermedia* and *J. natalensis* var. *tenuior* have to be reduced to synonymy. Durairatnam (1961: 51) very briefly describes it (without giving any dimensions of the intergenicula), adding that he did not find any reproductive structures 'in spite of careful examination'.

Fig. 146. *Jania intermedia*. A. Population; B. Detail.





**Jania unguolata** (Yendo) Yendo

1905: 38

Fig. 147

REFERENCES: Littler & Littler (2003: 36, top fig. p. 37), Oliveira *et al.* (2005: 80, + fig.).

SYNTYPE LOCALITIES: Japan: Wakasa Province (Fukui Prefecture) and Misaki, Kanagawa Prefecture.

**Description** - Plants forming small, spherical tufts, 1 cm in diameter, whitish pink; branching divaricately dichotomous, some intergenicula not branching; branches composed of an alternation of calcified, cylindrical intergenicula, 80-120µm in diameter, and uncalcified genicula. The most typical character of this species is the presence of compressed, wedge- to hoof-shaped terminal intergenicula.

**Ecology** - Epiphytic on submerged seaweeds and on submerged ropes.

**Distribution** - Tropical and subtropical Indian and Pacific Ocean.

Fig. 147. *Jania unguolata*.

**Hypnea charoides** J.V. Lamouroux

1813: 132, pl. 10, figs 1-3

Fig. 148

REFERENCES: Abbott (1999: 119, fig. 25F, as *H. valentiae*), Littler & Littler (2000: 78, middle fig. p. 79, as *H. valentiae*), Yamagishi & Masuda (2000: 31, figs 10-15).

TYPE LOCALITY: "Novae Hollandiae".

**Description** - Plants gregarious, growing as isolated tufts, 4-7 cm high, subcartilaginous, cylindrical all over, greenish- to brownish red; original discoid holdfast mostly unclear because of the presence of numerous, entangled, creeping branches forming secondary discoid holdfasts; erect branches with marked percurrent, straight axes being longer than any lateral branches which are also straight, upwardly directed and up to 3-4 orders; main axes and side branches of lower order very densely set with very short, acute, adventitious branchlets (1-2 mm long); these are unbranched or branched one time, upwardly directed, abruptly curved in the adaxial direction to become parallel to the bearing branch. No lenticular wall thickenings visible on transverse sections.

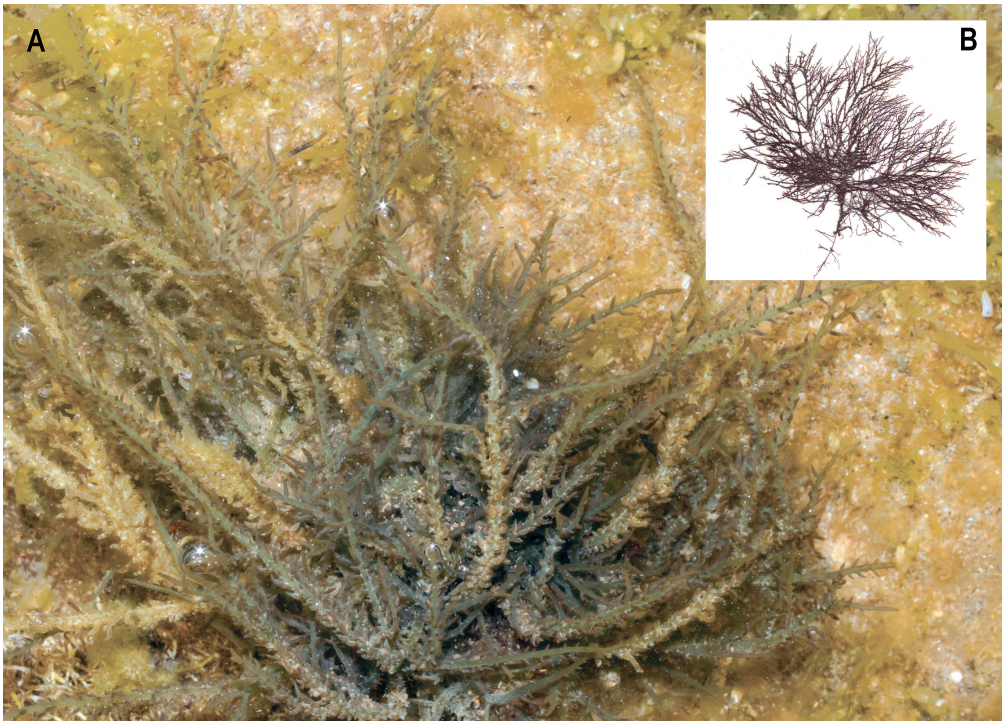
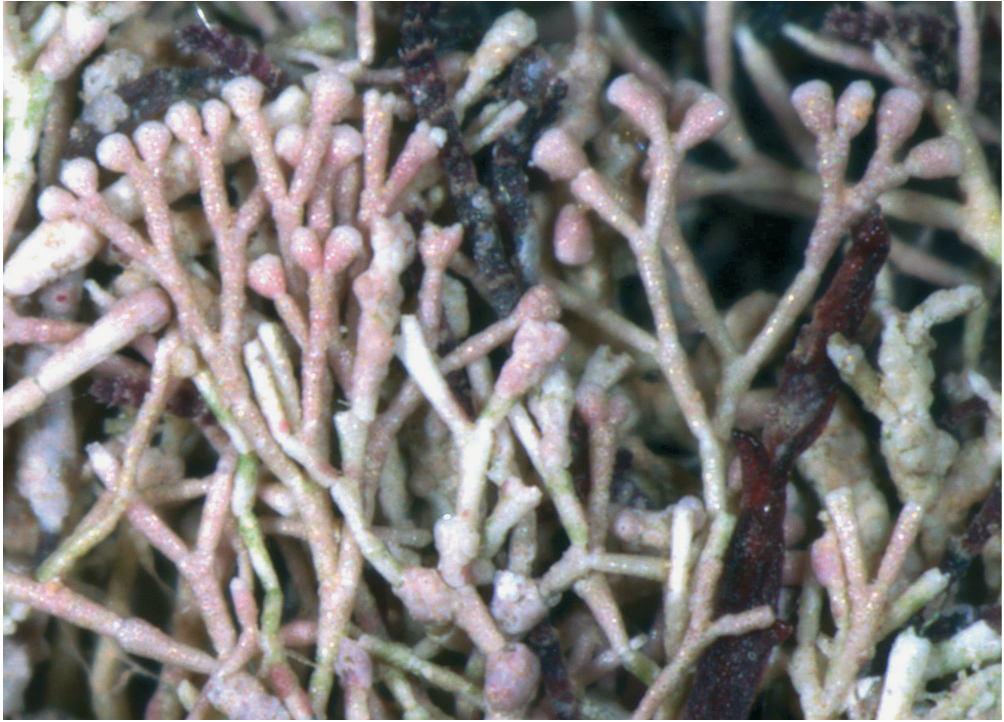
**Ecology** - Epilithic in mid- to low intertidal, shallow rock pools, continuously wave-swept.

**Distribution** - Tropical Indian and Pacific Ocean.

**Notes** - Durairatnam (1961: 56) includes this taxon in *H. valentiae*, but mentions that 'I have some specimens which agree with *H. charoides* ... but I have placed them under *H. valentiae*'. Yamagishi & Masuda (2000) studied the *H. charoides-valentiae* complex in Japan, concluding that *H. charoides* have tufted thalli with an entangled base, whereas this is not the case in *C. valentiae*. The absence of lenticular cell wall thickenings on transverse sections of medullary cells in the basal portion of the thallus distinguishes *H. charoides* from *H. boergeresii* that has a similar gross morphology.

Fig. 148. *Hypnea charoides*. A. Habit *in situ*; B. Herbarium specimen.





**Hypnea pannosa** J. Agardh

1847: 14

Figs 10C; 20A; 32F; 149

**REFERENCES:** Tseng (1984: 100, pl. 53, fig. 1), Lewmanomont & Ogawa (1995: 125, + fig.), Cribb (1996: 95, middle fig. p. 94), Trono (1997: 238, fig. 150), Abbott (1999: 117, fig. 25A), Huisman (2000: 78, + fig.), Payri *et al.* (2000: 222, bottom fig. p. 223), Littler & Littler (2003: 76, top fig. p. 77), Oliveira *et al.* (2005: 90, + figs p. 91), Skelton & South (2007: 57, figs 100-102, 769, 770).

**TYPE LOCALITY:** San Agustín, Oaxaca, Mexico.

**Description** - Plants forming stiff-brittle prostrate clumps, 5-10 cm in diameter, 2-3 cm thick, composed of densely entangled and frequently anastomosing branches, greenish to purplish red, but mostly with a pronounced bluish iridescence; all axes subcylindrical to compressed, up to 1.5 mm wide at their basal part, gradually tapering to acute tips; branching irregular; presence of numerous short side branchlets, resulting in a spiny aspect. Anatomy parenchymatous, with prominent axial cells, 12-30 µm in diameter, surrounded by medullary cells, 40-70 µm in diameter and cortical cells, 15-25 µm in diameter; no lenticular cell wall thickenings. Tetrasporangial sori in mid to lower parts of fertile branchlets, initially on the abaxial side, later sometimes encircling the branchlet; tetrasporangia zonate, 10-20 µm in diameter, 25-40 µm long.

**Ecology** - Locally extremely abundant on horizontal beachrock, in the low intertidal, continuously wave-swept and attached in crevices; in the shallow subtidal, frequent between coral (*Acropora*) branches. Some specimens have been heavily grazed on.

**Distribution** - Indian Ocean and tropical Pacific Ocean.

**Note** - Molecular research indicates that different entities are comprised in *H. pannosa* s.l. In Sri Lanka two morphologically different entities can be easily distinguished: one with the typical acute apices (Figs 10C; 20A; 32F; 149) and one with rounded apices (Fig. 32G).

**Fig. 149.** *Hypnea pannosa*.

**Hypnea spinella** (C. Agardh) Kützting

1847: 23

Fig. 150

**REFERENCES:** Magruder & Hunt (1979: 79, top fig. p. 78, as *H. cervicornis*), Tseng (1984: 98, pl. 52, fig. 2), Cribb (1996: 97, top fig. p. 96), Abbott (1999: 117, figs 25B-E, 113, fig. 24A, as *H. cervicornis*), Huisman (2000: 79, + figs), Payri *et al.* (2000: 224, bottom fig. p. 225), Littler & Littler (2003: 76, middle fig. p. 77), Huisman *et al.* (2007: 86, + fig., as *H. cervicornis*).

**SYNTYPE LOCALITIES:** Brazil, Mauritius, Mexico, West Indies.

**Description** - Plants growing just above low water level and being continuously wave-swept form rather stiff, red to yellowish green cushion-like clumps of intricate branches, up to 3 cm high from where a few erect branches are poking out; specimens from deeper intertidal pools and lagoons form laxly branched, supple, yellowish, entangled erect plants, up to 20 cm long. In both growth forms secondary attachments points are possible, all axes are cylindrical, branching (sub)dichotomous, without main axes, widely divaricate, the two divergent branches sometimes horizontally spread before bending upward or curling downward, resulting in the characteristic entangled plants; in the *spinella* ecomorph, the diameter at the basis is markedly larger than in the upper parts whereas in the *cervicornis* ecomorph the diameter is more homogeneous in a single plant, but can be rather different between populations, from 0.5 mm in slender specimens up to 1.5 mm in coarser ones; mostly presence of numerous short (1-2 mm) branchlets, perpendicularly placed, mostly simple, bifurcate or more rarely branched 2 to 3 times; branchlets more frequent in the basal parts of the plants.

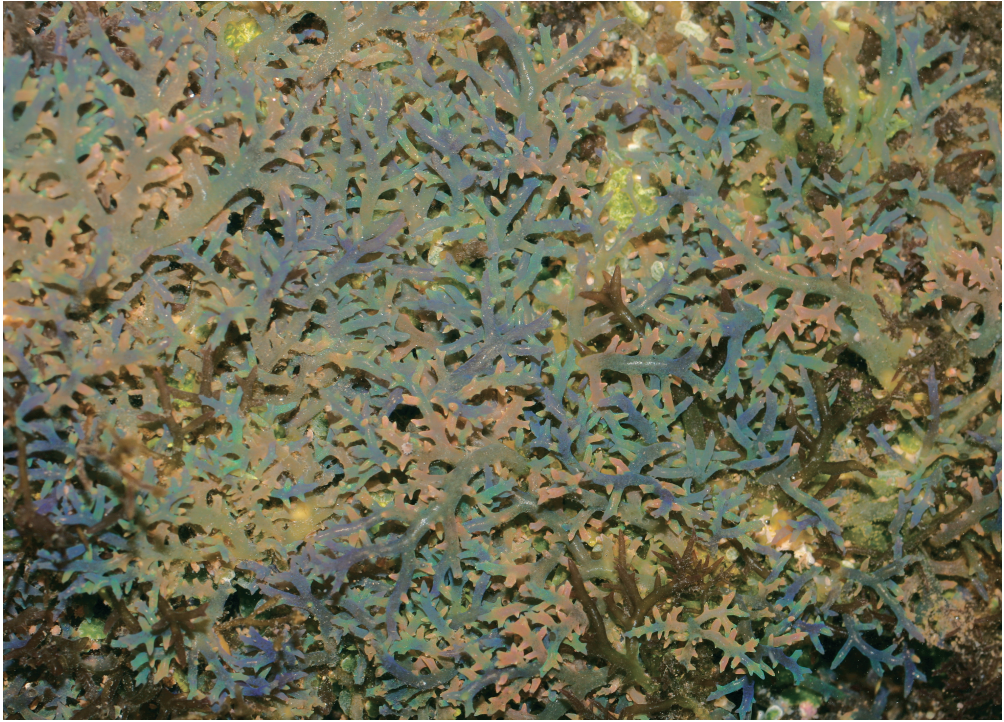
**Ecology** - The *spinella* ecomorph close to low water level and continuously wave-swept; the *cervicornis* ecomorph in deeper intertidal pools and lagoons.

**Distribution** - Pantropical.

**Notes** - This species is edible, boiled in coconut milk, being eaten in several parts of the Pacific Ocean. Although Haroun & Prud'homme van Reine (1993) synonymized *H. cervicornis* J. Agardh with *H. spinella* because of the existence of numerous intermediates, some authors prefer to keep both entities separate (Abbott, 1999).

**Fig. 150.** *Hypnea spinella*. A. Habit *in situ*; B. Detail of some branches.





***Chondracanthus acicularis* (Roth) Fredericq**  
in Hommersand *et al.* 1993: 117

Figs 33E; 151

REFERENCES: Abbott (1999: 131, figs 31A-D), Oliveira *et al.* (2005: 87, + fig. p. 86).

LECTOTYPE LOCALITY: Adriatic Sea.

**Description** - Plants growing in loosely intricated, prostrate tufts up to 10 cm in diameter, with typical rubbery texture; dark brownish red, but some collections with a very marked transversely striped creamy iridescence; attachment by a discoid holdfast from which several axes start; all branches decumbent, with secondary attachment points, cylindrical, 0.5-1 mm in diameter, with irregular branching in different planes, but side branchlets mostly perpendicular on the main branches and with acute apices; branches sometimes anastomosing. Medulla composed of delicate, often cobwebby anastomosing filaments; cortex formed by anticlinal rows of small, oval to spherical cells.

**Ecology** - Epilithic on horizontal substratum in the low intertidal; locally in quite large populations.

**Distribution** - Pantropical and temperate regions.

**Note** - Abbott (1999: 131) mentions that the report of this temperate species in the tropics is questionable. Skelton & South (2007: 56) state that *C. tenellus* (Harvey) Hommersand and *C. acicularis* appear to be at opposite ends of a fairly broad morphological spectrum. The branches of *C. tenellus* are markedly compressed, of a smaller diameter (0.35-0.5 mm) and present opposite laterals.

Fig. 151. *Chondracanthus acicularis*.***Peyssonnelia* sp.**

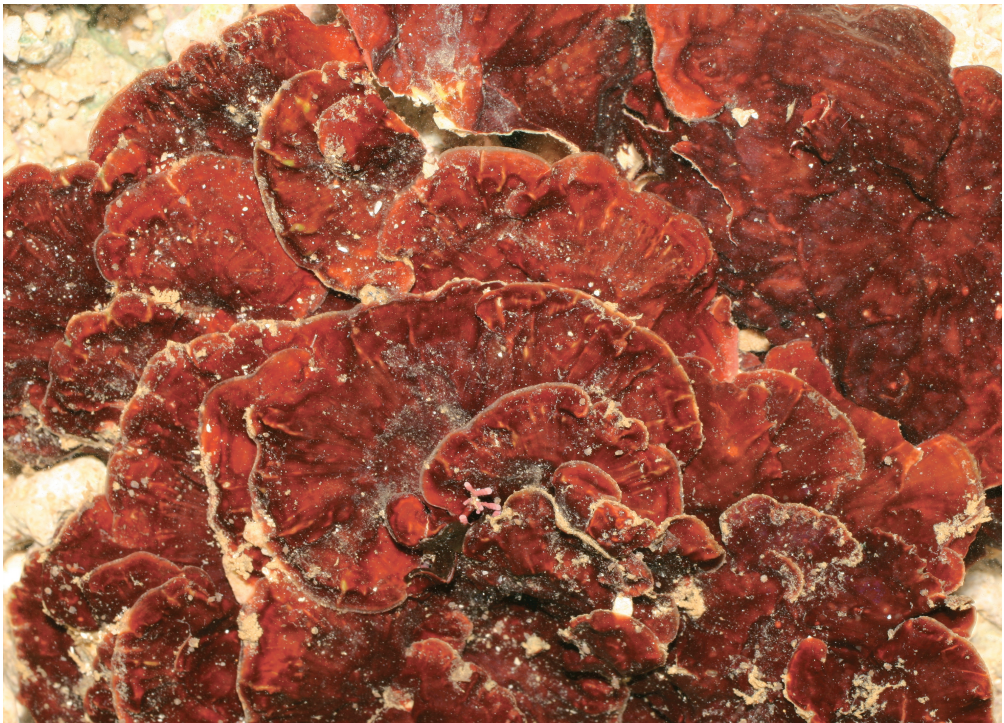
Figs 37G; 152

Most species of *Peyssonnelia* are prostrate or resupinate, composed of tightly adherent to loosely attached, horizontally spread (rarely erect) lobes, either with concentric zones or with radially arranged stripes on the upper surface, calcified on the lower surface between the rhizoids. Basal layer of the thallus (hypothallus) composed of radially aligned, contiguous filaments, producing uni- or multicellular rhizoids downwardly and upcurved, contiguous, branching filaments (the perithallus) becoming vertical towards the upper surface. In some species calcified cells (cystoliths) can be present in these filaments. Tetrasporangia in sori; sexual reproductive structures rare.

Worldwide, over 60 species have been reported but many of them have to be critically studied to determine the variability of characters. According to Silva *et al.* (1996: 209-214), only *P. rubra* (Greville) J. Agardh has been mentioned from Sri Lanka so far, but in our collections we definitely have several entities. Awaiting more detailed studies of the material we refrain from identifying the illustrated one to species level.

Fig. 152. *Peyssonnelia* sp.





***Ahnfeltiopsis pygmaea* (J. Agardh) P.C. Silva et DeCew**  
1992: 578

Fig. 153

REFERENCES: Abbott (1999: 162, fig. 39H).

TYPE LOCALITY: India.

**Description** - Plants gregarious, growing in isolated bushy clusters; well developed specimens in hemispherical tufts in which the individuals are densely intricated; very well attached by means of discoid holdfasts; thalli erect, 2-2.5 cm high, of rubbery texture, cylindrical at the basis, slightly compressed higher up, 0.5 mm in diameter, repeatedly dichotomously branched in a single plane with wide axils; marginal proliferations absent; dark red. Medulla pseudoparenchymatous, with all cells approximately of the same size and shape; cortex thick and composed of radially arranged filaments of small cells. Cystocarps intercalary on slightly widened parts of branches, often situated proximal to a dichotomy, deeply embedded in branches, with multiple carpostomes.

**Ecology** - Sloping rock surfaces along surf-exposed coasts, at about mid intertidal; continuously wave-swept.

**Distribution** - Scattered localities in the Indo-Pacific.

**Note** - *Ahnfeltiopsis vermicularis* (C. Agardh) P.C. Silva et DeCew, also present in Sri Lanka, is markedly thicker (Fig. 154).

**Fig. 153 (left).** *Ahnfeltiopsis pygmaea*.  
**Fig. 154 (right).** *Ahnfeltiopsis vermicularis*.

***Portieria hornemannii* (Lyngbye) P.C. Silva**  
in Silva *et al.* 1987: 39, 129

Fig. 155

REFERENCES: Tseng (1984: 70, pl. 38, fig. 2), Cribb (1996: 113, middle fig. p. 112), Calumpong & Meñez (1997: 181, + fig.), Trono (1997: 201, fig. 129), Huisman (2000: 92, + figs), Littler & Littler (2003: 84, top fig. p. 85), De Clerck *et al.* (2005b: 190, fig. 164), Oliveira *et al.* (2005: 72, + fig.), Huisman *et al.* (2007: 95, + figs).

TYPE LOCALITY: Probably Red Sea.

**Description** - Plants erect, up to 3-5 cm high, growing in isolated tufts composed of complanate, flat fronds, as broad as long, arising from a discoid holdfast, bright red to somewhat orangy; axes compressed to flattened, 1-2 mm wide; branching alternate-distichous to subdichotomous in a single plane, with one or several percurrent axes and wide branching angles; indeterminate branches irregularly formed; ultimate pinnae usually less than 1 mm long, appearing like distichous denticulations near the frond apices; margins smooth; apices inrolled. Internal structure uniaxial; in transverse section axial cell ovoid, thick-walled, conspicuous, up to 170 µm in diameter; each axial cell producing a lateral branch; medullary cells globose, decreasing in diameter toward the periphery, quickly grading into a pigmented cortex; cortical cells rounded, often elongate, small, arranged in anticlinal filaments. Tetrasporangia grouped in nemathecium, irregularly cruciately to irregularly zonately divided; cystocarps wart-like, borne on the surface of terminal branchlets.

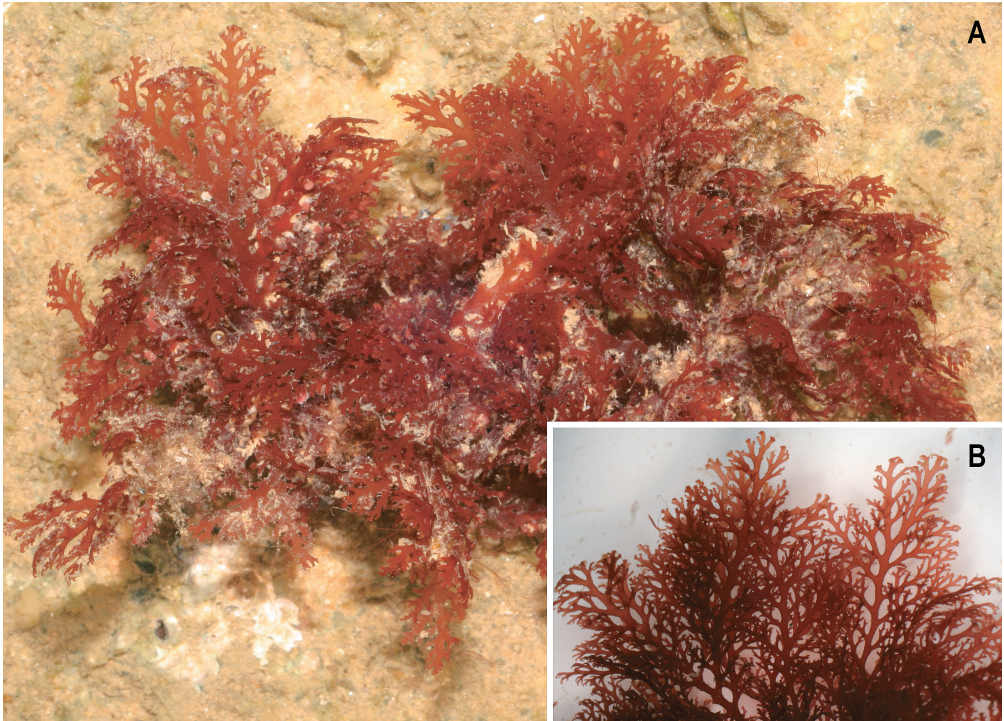
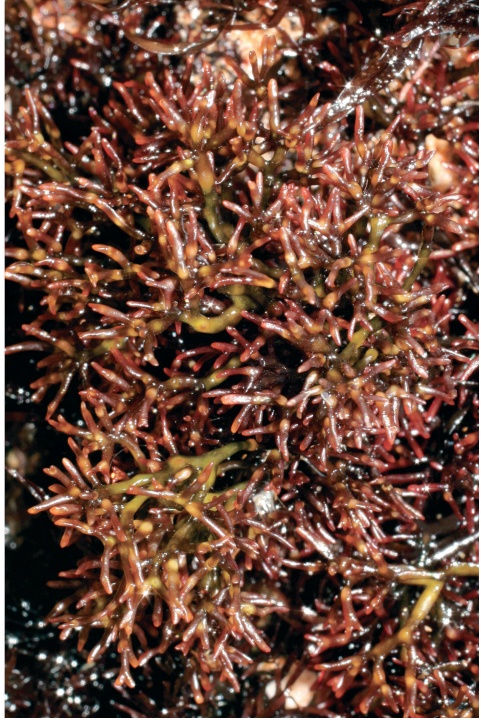
**Ecology** - Epilithic in the subtidal, from just under low water mark down to 2-5 m; locally abundant or even dominant; also collected at 25 m depth.

**Distribution** - Widespread in the Indo-Pacific and tropical eastern Atlantic.

**Note** - *Portieria* fundamentally differs from *Plocamium* by the absence of pectinate branching, the inrolled apices and the tetrasporangia being formed in nemathecium (in stichidia in the latter).

**Fig. 155.** *Portieria hornemannii*. A. Habit *in situ*; B. Detail.





**Portieria tripinnata** (Hering) De Clerck  
in De Clerck *et al.* 2005: 192, figs 165, 166

Fig. 156

TYPE LOCALITY: Durban, South Africa.

**Description** - Plants erect, 2-3 cm high, forming dense little tufts of markedly incurved thalli, composed of complanate fronds, markedly narrower than long, arising from a discoid, brick- to orangy-red; axes compressed to flattened; branching distichous alternate to subopposite, with one or a few percurrent axes and small branching angles; indeterminate branches irregularly placed; axes broadest in the mid thallus, generally 0.5-1 mm; ultimate pinnae usually less than 0.5 mm long, appearing like denticulations near the frond apices; margins smooth; apices inrolled. Internal structure uniaxial; in transverse section axial cell ovoid, thick-walled, conspicuous, up to 120 µm in diameter; each axial cell producing a lateral branch; medullary cells globose, decreasing in diameter toward the periphery, quickly grading into a pigmented cortex usually 2-3 cells thick; cortical cells rounded, sometimes anticlinally elongate, small. Reproductive structures as in *P. hornemannii*.

**Ecology** - Epilithic on surf-exposed, continuously wave-swept rock walls in the mid intertidal.

**Distribution** - Mauritius, South Africa, Sri Lanka.

**Note** - A new record for Sri Lanka.

Fig. 156. *Portieria tripinnata*.

**Euryomma platycarpa** Schmitz  
in Schmitz & Hauptfleisch 1897: 374

Figs 37F; 157

REFERENCE: Kylin (1932: 30-31, pl. 13, figs 30-31).

TYPE LOCALITY: Sri Lanka.

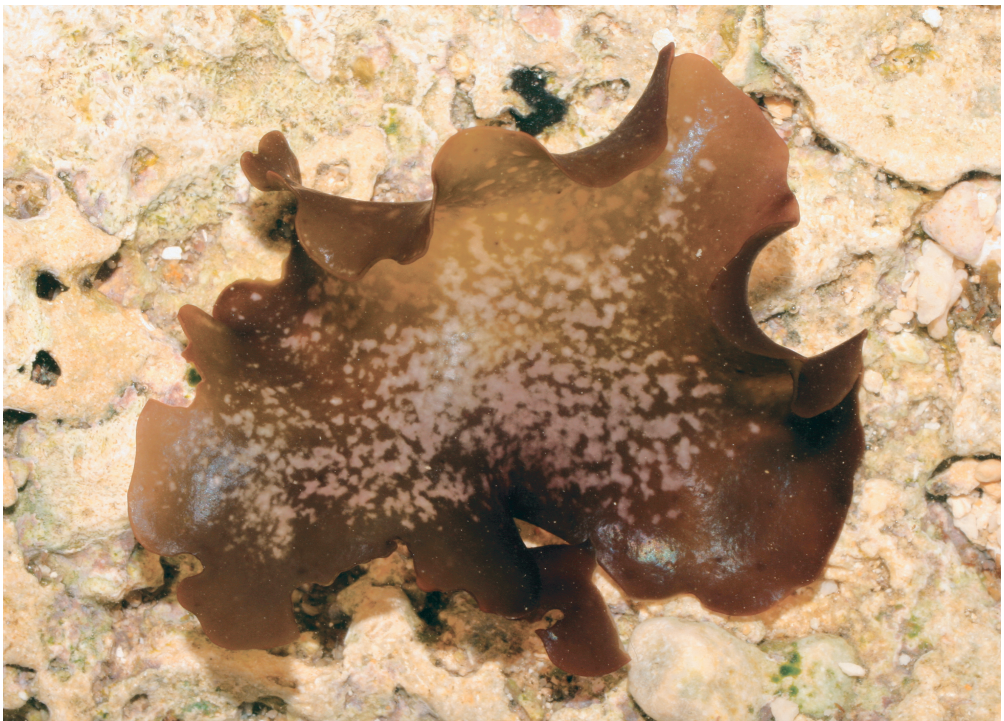
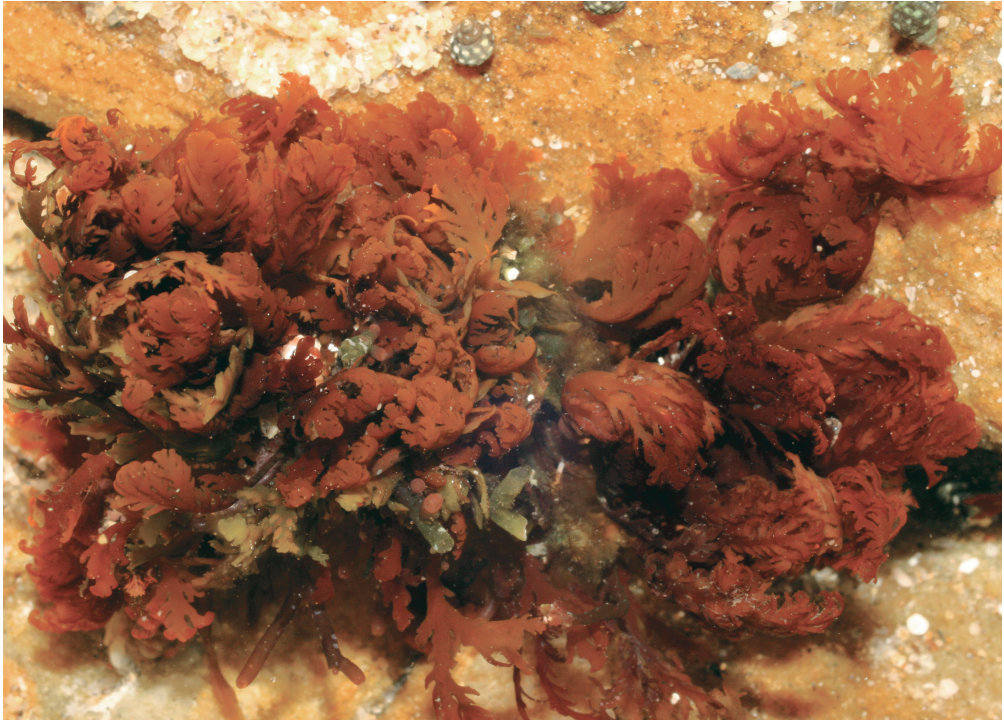
**Description** - Plants composed of a single blade or gregarious, 3-4 cm in diameter; relatively stiff and slippery, flexible cartilaginous, irregularly lobed and markedly undulated; very well attached by a discoid holdfast; dark purple to brownish, sometimes maculate, with creamy dots; cross section about 450 µm thick, composed of a filamentous medulla, 180-200 µm thick, surrounded by a cortex, 90-120 µm thick, composed of 5-6 cell layers, the outermost ones 9 µm long and 5 µm broad; cystocarps numerous and marginal.

**Ecology** - Epilithic, under rocky overhangs at about low water level. Rather rare.

**Distribution** - Sri Lanka.

Fig. 157. *Euryomma platycarpa*.





**Sarcodia montagneana** (J.D. Hooker et Harvey) J. Agardh  
1852: 623-624

Figs 21G; 158

REFERENCES: Moorjani & Simpson (1988: 31, pl. 66), Oliveira *et al.* (2005: 92, + figs p. 93).

TYPE LOCALITY: Bay of Islands, New Zealand.

**Description** - Thalli generally clustered in small groups, arising from a crustose base, with a very short cylindrical stipe bearing 5-10 cm long, fleshy-cartilaginous straps, 1-3 cm broad; these more or less dichotomously branched in a single plane, with rounded axils and apices, irregularly undulated, with greater or lesser numbers of marginal wart-like to papulose proliferations; dark red to purplish. Medulla filamentous with a combination of thin-walled primary and thick-walled rhizoidal filaments; cortex composed of 2-3 layers of isodiametric unpigmented subcortical cells and a single layer of very small pigmented cells. Cystocarps markedly protruding, scattered across the blades (but mostly grouped) or confined to the margins.

**Ecology** - Epilithic, mostly on vertical substratum, but also collected from horizontal walls of the low intertidal, exposed to surf.

**Distribution** - Scattered localities in the Indian and tropical Pacific Oceans, but also mentioned from Antarctic regions.

**Note** - *Sarcodia ceylanica* Harvey ex Kützinger has been synonymized with *S. montagneana* by Yendo (1917: 82-83).

**Fig. 158.** *Sarcodia montagneana*. A. *In situ*, between *Gracilaria corticata*; B. Male plant.

**Carpopeltis maillardii** (Montagne et Millardet) Chiang  
1970: 68-69, pl. XXIV

Fig. 159

REFERENCES: Desikachary *et al.* (1990: 264, pl. 39), Littler & Littler (2003: 92, middle fig. p. 93), De Clerck *et al.* (2005b: 200, fig. 174), Oliveira *et al.* (2005: 66, fig. p. 67).

TYPE LOCALITY: Réunion.

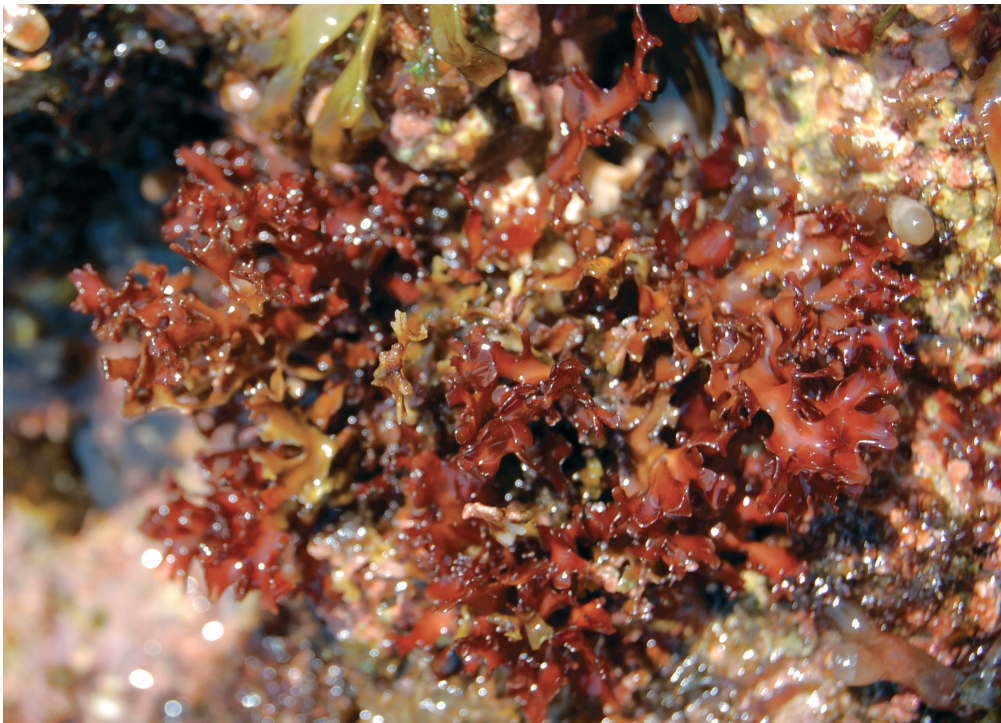
**Description** - Plants creeping with erect portions, 4-9 (up to 11) cm high, composed of complanate fronds, cartilaginous, stiff and tough but flexible, very well attached by a discoid holdfast, dark bordeaux-red; a short stipe present, especially in older specimens; upper parts strap-like, 0.5-4 mm wide, with a faint proximal midrib, thin but crisp, undulated, with rounded to curled apices and rounded axils; branching dichotomous to irregular. Internal structure composed of a narrow medulla consisting of densely packed filaments, lacking ganglionic cells; cortex 4-8 cells thick, composed of anticlinally directed filaments; inner cortical cells roughly isodiametric; outer cortical cells slightly elongate.

**Ecology** - Epilithic, mostly on shaded, extremely surf-exposed sites between rock boulders or in surf gulleys at about low tide level and shallow subtidal. Locally forming a well-marked, narrow belt.

**Distribution** - Indian Ocean and tropical Pacific Ocean.

**Fig. 159.** *Carpopeltis maillardii*.





**Grateloupia lithophila** Børgesen

1938b: 215-216, pl. VII

Figs 23F; 32A; 160

REFERENCE: Desikachary *et al.* (1990: 238, pl. XXXI C, XXXIV A, fig. 46).

TYPE LOCALITY: Madras, India.

**Description** - Plants gregarious, specimens in the higher intertidal zone rather stiff and erect, 3-6 cm high, those from close to low water mark extremely supple and slippery, laying down on the substrate, 5-10 (-22) cm long; morphologically extremely variable within a single population, from yellowish green to purplish or bordeaux red; attachment by a small basal disc; basal part cylindrical, flattening upwardly; frond linear-lanceolate to curved or even sinuous, composed of a narrow strap, 2-5 (-8) mm wide at its widest (middle) part, tapering proximally as well as distally, 200-250 µm thick, flat to undulated, with straight to sinuous margins, unbranched or di (tri-) chotomous once or twice near the basis; margins bare or with marginal, upwardly curved proliferations which can be small and unilateral to large and pinnately placed; the large proliferations can again be provided with proliferations, finally resulting in a bushy aspect, but still branched in a single plane; apices originally acute, sometimes becoming truncate and bearing several apical proliferations of the same size. Medulla composed of intertwined filaments and stellate cells; inner cortical cells loosely arranged, outer cortex more compact and composed of smaller cells (5-8 x 3-4 µm).

**Ecology** - Epilithic, mainly on horizontal (sometimes sand-covered) rock substratum but also on vertical walls, along surf-exposed coasts, from high (extremely surf-exposed) to low (more sheltered) intertidal. Locally forming a well-defined belt.

**Distribution** - India, Sri Lanka, Yemen.

**Note** - Molecular research (De Clerck *et al.* 2005: 396) shows that the specimens of *Grateloupia* from Sri Lanka and Madagascar form a separate clade within the *G. 'filicina'* group worldwide.

Fig. 160. *Grateloupia lithophila*.**Halymenia durvillei** Bory de Saint-Vincent

1828: 180-181, pl. 15

Figs 38C; 39D; 41D; 161

REFERENCES: Lewmanomont & Ogawa (1995: 121, + fig.), Calumpong & Meñez (1997: 169, + fig. p. 170), Trono (1997: 185, fig. 118), Littler & Littler (2003: 94, bottom fig. p. 95), De Clerck *et al.* (2005b: 204, fig. 178), Oliveira *et al.* (2005: 68, + fig. p. 69), Ohba *et al.* (2007: 99, + figs).

TYPE LOCALITY: New Ireland, Papua New Guinea.

**Description** - Plants erect, up to 30 cm high, lubricous and slippery to the touch, composed of a supple foliose frond arising from a discoid holdfast, medium red; stipe short, less than 1 cm long, expanding abruptly in a flattened blade; blade irregularly cleft up to 5 orders, resulting in straps 4-20 mm in width and ca 600 µm thick; apices acute and the surface covered with acute proliferations, which may develop into new axes. Internal structure composed of a pseudoparenchymatous cortex and a filamentous medulla; cortex 60-80 µm thick, 6-8 cells thick, arranged in anticlinal rows; medullary filaments 8-12 µm in diameter, with relatively abundant inner-cortical refractive ganglionic cells. Tetrasporangia scattered over the thallus surface, cruciately or decussately divided, 14-20 µm long and 12-15 µm wide.

**Ecology** - Epilithic in the subtidal, between 1 and 4 m depth, mostly in lagoons.

**Distribution** - Indian Ocean and tropical Pacific Ocean.

Fig. 161. *Halymenia durvillei*. A. Habit; B. Detail of a blade.