A catalogue of the marine plants of Rottnest Island, Western Australia, with notes on their distribution and biogeography

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Abstract

J.M. Huisman and D.I. Walker (1990). A catalogue of the marine plants of Rottnest Island, Western Australia, with notes on their distribution and biogeography. Kingia 1(4): 349-459 (1990). The limestone reefs of Rottnest Island, Western Australia, provide extensive and diverse habitats for marine plants. This paper catalogues the records of marine algae and seagrasses from Rottnest Island, including those already in a diverse literature as well as from unpublished herbarium records. A total of 355 species (8 species of seagrass, 54 species of green algae, 71 species of brown algae and 222 species of red algae) is reported. Keys are provided for all genera and species, and a recent reference is given to aid in identification. The marine flora of Rottnest Island has a close affinity with that of southern Australia, but includes a tropical element probably due to the input of the southerly-flowing Leeuwin current.

Introduction

The south-west corner of Western Australia, in particular the Perth region, hosted many early visits by overseas botanists who collected plant specimens, most of which are now housed in European herbaria. Seaweed collecting was particularly popular (see Smith 1983), and the description of the marine flora of the area reached an early peak with the publication of William Henry Harvey's five volume "Phycologia australica" (1858-1863). While Harvey's work did not deal exclusively with Western Australia, many of the species included were described from material collected from the south-west corner.

Interest in the marine plants of the area declined after Harvey, and despite his enormous contribution the flora is still poorly known. Recent works on the algal flora of southern Australia (Womersley 1984, 1987) and several Australia-wide monographs (e.g. Kraft 1984a, 1986; Robins & Kraft 1985; Huisman 1986; Huisman & Borowitzka 1990) have included Western Australian species. A number of new taxa have also been described from the area (e.g. Kraft 1988; Huisman 1988). As yet, however, there has been no synthesis of the many published works, and the budding phycologist is faced with a daunting task to become familiar with the flora.

As a contribution to synthesising information about the south-western flora, this paper addresses the marine plants of Rottnest Island. Rottnest Island was chosen for a number of reasons, not the least its historical importance (Harvey's collection included some 290 species from Rottnest) and its enduring popularity as a collection site for marine algae. The Island also provides a discrete study area that remains a (relatively) pristine example of the adjacent limestone mainland coast. The present work includes all published records of benthic marine plants from Rottnest Island (updated to include recent taxonomic changes), as well as many unpublished herbarium records. This catalogue should

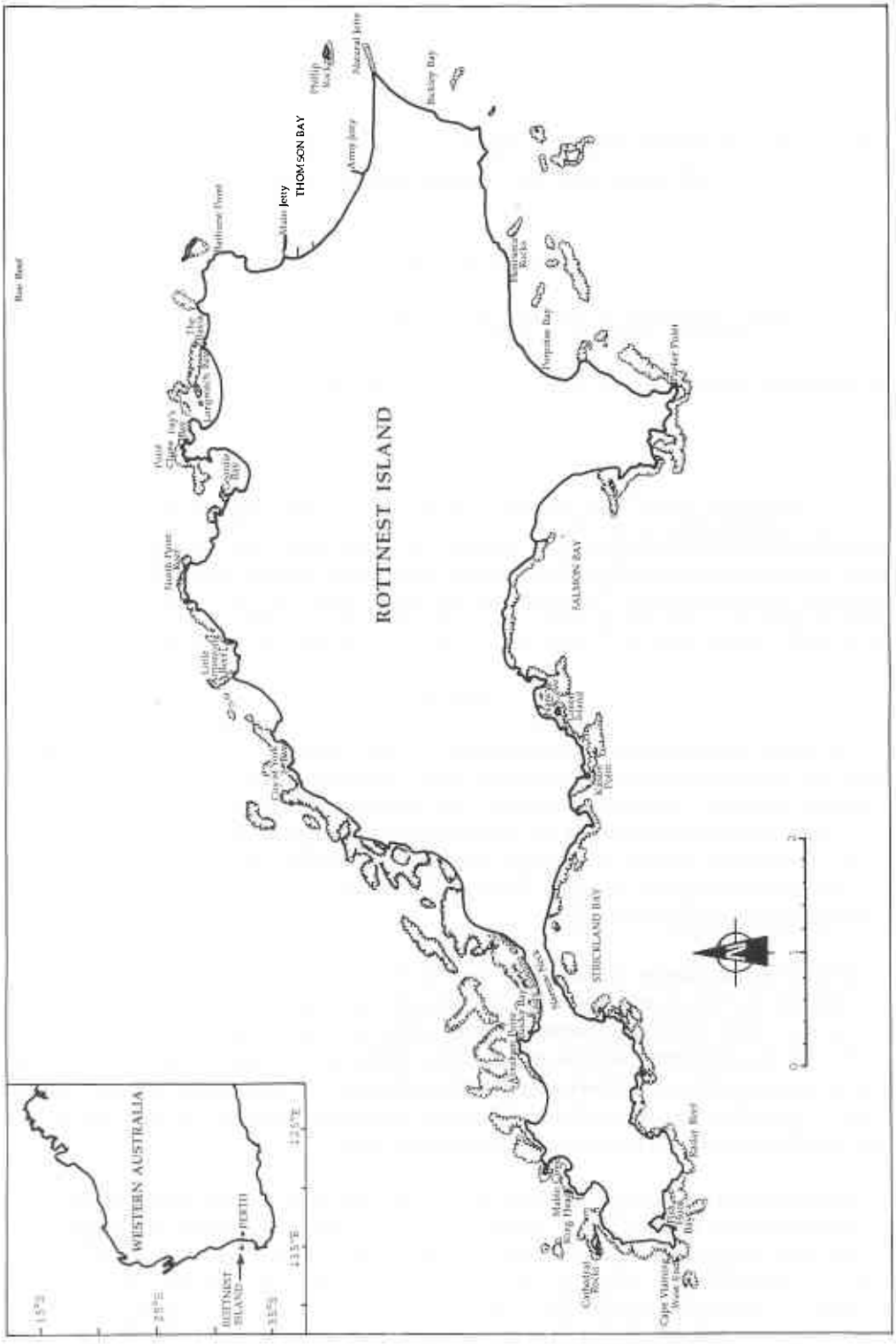

Figure 1. Map of Rottnest Island with collecting localities

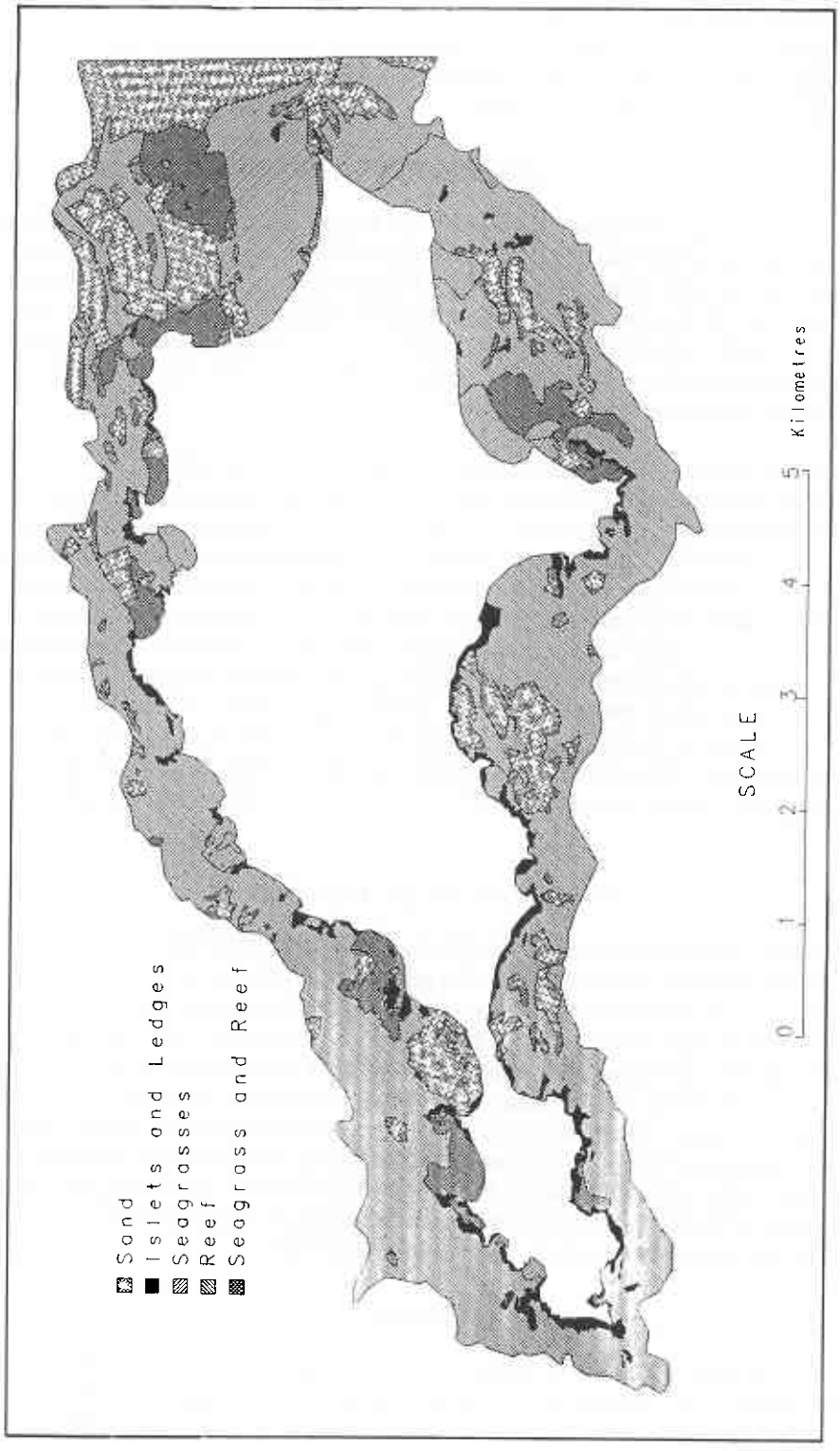

Figure 2. Habitat map of Rottnest Island

not be considered comprehensive, however, since there is no doubt that many species are yet to be recorded. Recent collections by parties from the University of Melbourne, Adelaide University, and the present authors have greatly increased the number of recognized species, and it is hoped this process of collection and revision will continue.

Rottnest Island

The western coastline of Western Australia (from Geographe Bay to Kalbarri), is relatively straight and uniform as it has been eroded by the action of winds and currents which have built up sand-dunes and bars parallel to the coast. There is a fringe of limestone reefs running parallel to the coast which are relic Pleistocene dune systems composed of aeolianite (Seddon 1972); these break the Indian Ocean swells, forming relatively calm, shallow (4-10 m deep) lagoons up to 10 km wide, in which the tidal range is small (<1 m), and the waters generally clear. These limestone reefs provide a complex habitat for macroalgae.

Rottnest Island (Figure 1), 18 km from the mainland, is part of this chain of reefs. It is 10.5 km long, up to 4.5 km wide and has an area of 1850 ha, and is the largest and northernmost island near Perth. It has diurnal microtides (mean = 0.38 m; max. = 0.9 m; min. = 0.1 m) but some semidiurnal constituents during neap tides. The reef formations are complex with limestone notches, intertidal platforms, subtidal reefs, caves and overhangs. The island is subject to winter warming by the Leeuwin Current, but is also influenced by cooler currents. Rottnest Island possesses limestone reef habitats typical of the mainland coast, from Cape Naturaliste to Dongara. The marine habitats of Rottnest Island have been mapped, using aerial photography and extensive ground-truthing (Figure 2). Limestone reef areas are the most common habitat, occupying 1095 hectares (45%). These are covered with approximately 30% each of *Ecklonia* and *Sargassum*, the remainder being algal turfs and foliose and filamentous macroalgae. Although there are obvious seasonal changes in biomass, particularly in *Sargassum*, the relative composition of the cover of the substratum is essentially the same throughout the year.

Arrangement of the Catalogue

All published records and many unpublished herbarium records of the benthic marine plants from Rottnest Island are included. Artificial keys to the genera and keys to the species are provided to aid identification. In most cases the latter has been modified from an existing key to include only the species from Rottnest Island. References are given to the original source. For some genera a recent revision is not available and the species are poorly defined (e.g. *Callithamnion*, *Dasya*, *Jania*), in such cases keys are not provided. Listed under each species is a recent reference which includes a description and illustration. These references should be consulted for positive identification, as it is likely that some additional (unrecorded) species will be found. The authors would appreciate any information concerning unrecorded species. Herbarium abbreviations follow Holmgren *et al.* (1981), with the exception of MURU, which is the herbarium of the School of Biological and Environmental Sciences, Murdoch University, Murdoch, Western Australia 6150.

Discussion

The present account includes 355 species of marine plants recorded from Rottnest Island, including 8 seagrasses, 54 Chlorophyta, 71 Phaeophyta and 222 Rhodophyta. While many records date back to Harvey (1855b), the majority have been substantiated by later collections and/or revisions. There is no doubt that further species will be recorded, but the present state of knowledge does allow some analysis concerning the biogeographical affinities of the marine flora of Rottnest Island. The relative absence of intensive collections and taxonomic studies of the algae north of Perth

does present some difficulties, but recent works by Kendrick *et al.* (1988, 1990) for Shark Bay, and Borowitzka & Huisman (ms) for the Dampier Archipelago provide some additional records for comparison. The first author's collections from the Abrolhos Islands (off Geraldton) have also provided distribution records. In contrast the southern Australian flora is well known, and, as can be seen from Table 1, many southern species can be found at Rottnest Island. It is obvious that, while the Leeuwin Current (Pearce & Cresswell 1985) may introduce the occasional tropical taxon to the flora, the floristic affinities of Rottnest Island lie clearly with the temperate southern coastline. The majority of "tropical" species reported from Rottnest Island are of sporadic occurrence. An interesting example is provided by Harvey (1855b, p. 564), who recorded *Penicillus nodulosus* (as *P. arbuscula*) as being "abundant, on shallow, sand-covered reefs at Rottnest". This species has only been recorded once from the island in recent times and only occurs in abundance much further north (e.g. at the Abrolhos, (Hatcher, pers. comm. 1989)). Harvey's observation was made during the austral winter, which is when the Leeuwin Current flows most strongly (Pearce & Cresswell 1985), but *Penicillus* is no longer an abundant constituent of the marine flora.

The marine flora of Rottnest Island (and of the south-west of Australia in general) is similar to the terrestrial flora in displaying a high degree of endemism. Almost 20% of the species recorded from Rottnest Island are endemic to Western Australia, and further studies will, no doubt, add to that total. Hopefully the present account will promote those studies, as it is designed to be a base that can be added to, not a total floristic account.

Acknowledgements

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Table 1. Biogeographic affinities of algal species recorded from Rottnest Island

Distribution	Number of species			
	Rhodophyta	Phaeophyta	Chlorophyta	Total
Cosmopolitan	8	5	3	16
Indo-West Pacific	7	41	1	2
Tropical-Warm Temperate	18	10	12	40
Temperate	9	10	3	22
Southern Temperate	18	5	5	28
Southern Australian	114	31	25	170
West Australian endemic	40	5	3	48
Rottnest Island endemic	8	1	2	11
Total	**222**	**71**	**54**	**347**

CATALOGUE OF ROTTNEST ISLAND MARINE PLANTS

DIVISION CHLOROPHYTA

KEY TO THE GENERA OF GREEN ALGAE FROM ROTTNEST ISLAND

1. Thallus calcified ..... 2.
1. Thallus not calcified ..... 4.
2. Thallus divided into flattened segments ..... *Halimeda*
2. Thallus not segmented ..... 3.
3. Thallus lightly calcified, radially symmetrical with an thin axis bearing whorls of gametangial rays ..... 19.
3. Thallus heavily calcified, with a thick stipe topped by a tuft of branched filaments .... *Penicillus*
4. Thallus membranous, 1-2 cells thick, broadly flattened or tubular ..... 5.
4. Thallus of other form ..... 7.
5. Thallus tubular ..... *Enteromorpha*
5. Thallus broadly flattened ..... 6.
6. Thallus composed of two layers of cells ..... *Ulva*
6. Thallus composed of a close network of anastomosing filaments ..... *Microdictyon*
7. Thallus obviously filamentous ..... 8.
7. Thallus of other form, if filamentous, not obviously so ..... 16.
8. Filaments unbranched ..... 9.
8. Filaments branched ..... 10.
9. Filaments composed of small, uninucleate cells, < 10 µm diam. ..... *Uronema*
9. Filaments composed of large multinucleate cells, > 100 µm diam. ..... *Chaetomorpha*
10. Filaments anastomosing ..... 11.
10. Filaments free or entangling to form mats ..... 12.
11. Filaments forming a paddle shaped frond with a stipe ..... *Struvea*
11. Filaments forming a foliose blade without a stipe ..... *Microdictyon*
12. Filaments with complete cellular cross walls ..... 13.
12. Filaments without complete cellular cross walls ..... 15.
13. Thallus with filaments arising as cellular projections from a central axis composed of aggregated, irregularly shaped, cells ..... *Siphonocladus*
13. Thallus of other form ..... 14.
14. Thallus with grouped branches arising from large (> 1 mm diam.) clavate segments; with annular constrictions on the lower parts of each segment ..... *Apjohnia*
14. Thallus not as above ..... *Cladophora*
15. Lower axes covered with short, branched chains of moniliform cells (cross-walls incomplete) which develop into a thick layer near the base ..... *Callipsygma*
15. Lower axes without such short branches ..... *Bryopsis*
16. Thallus with upright axes arising from a prostrate axis of different morphology ..... 17.
16. Thallus not so ..... 18.
17. Upright portions fan-to cup-shaped, with a spongy texture ..... *Rhipiliopsis*
17. Upright portions variously shaped (depending on species), not spongy ..... *Caulerpa*
18. Thallus radially symmetrical, with an axis bearing whorls of branched, colourless hairs and a summit whorl of gametangial rays ..... 19.
18. Thallus not so ..... 20.
19. Gametangial rays united laterally ..... *Acetabularia*
19. Gametangial rays free ..... *Polyphysa*
20. Plants composed entirely of large, vesicular branches ..... 21.
20. Plants not as above ..... 22.

21. Vesicles clavate-elongate ..... *Pedobesia*
21. Vesicles irregularly spherical ..... *Valonia*
22. Thallus firm, shallowly cupulate to irregularly lobed, one cell thick, composed of discrete cells ..... *Dictyosphaeria*
22. Thallus not as above ..... 23.
23. Plants dark green, either creeping or upright, composed of densely entwined filaments with a cortex of elongate utricles (swollen ends of filaments) ..... *Codium*
23. Plants fan-shaped, composed of anastomosing or entwined filaments without utricles ..... 24.
24. Filaments attached laterally by circular areas ..... *Rhipiliopsis*
24. Filaments entwined but not laterally attached ..... *Avrainvillea*

ORDER ULOTRICHALES

Genus: **Uronema**

Uronema marina Womersley 1984: 131, figs 41D, E.
Type Locality: Kellidie Bay, Coffin Bay, South Australia.
Distribution: Known only from the type locality and Strickland Bay, Rottnest I., Western Australia.
Record: Womersley 1984: 131.
Specimens: Strickland Bay, on *Pterocladia lucida*, 5.ix.1979, *S.M. Clarke & R. Engler* (AD A51119).

ORDER ULVALES

Genus: **Ulva**

Ulva rigida C. Agardh 1823: 410-411.

References: Phillips 1988: 445-450, figs 24-26; Womersley 1984: 141, figs 44B, 45D-F (as *Ulva australis*).
Type Locality: Cadiz, Spain.
Distribution: Cosmopolitan in tropical and temperate seas.
Specimens: Parker Point, 15.ii.1987, *J.M. Huisman* (UWA A1608).

Genus: **Enteromorpha**

Key to the species of *Enteromorpha* from Rottnest I.
from Womersley (1984)

1. Thallus branched from close to the base or above, either remaining terete or becoming compressed; cells unordered in lower thallus and stipe, often in rows (in patches) in upper thallus; chloroplasts with a single pyrenoid ..... *E. compressa*
1. Thallus usually much branched; cells usually arranged in distinct longitudinal and often in transverse rows in younger parts; chloroplasts with (2-)3-5 pyrenoids ..... *E. clathrata*

Enteromorpha clathrata (Roth) Greville 1830: lxxvi, 181.

Reference: Womersley 1984: 157, figs 50A, 51B, C.
Type Locality: Baltic Sea, Germany.
Distribution: Cosmopolitan.
Specimens: Horse Shoe Reef, 15.iv.1989, *J.M. Huisman & T.H. Rose* (MURU JH 164 S).

Enteromorpha compressa (Linnaeus) Nees 1820: Index (2).

Reference: Womersley 1984: 158, figs 50B, C, 51D-F.
Type Locality: Europe.
Distribution: Cosmopolitan.
Record: Harvey 1855b: 566
Specimens: Mable Cove, intertidal, 8.ii.1989, *J.M. Huisman & D.I. Walker* (MURU JH 135).

ORDER CLADOPHORALES

Genus: **Apjohnia**

Apjohnia laetivirens Harvey 1855a: 335.
References: Womersley 1984: 182, figs 58A, 59A, B; Fuhrer *et al.* 1981: 93, pl. 156.
Type Locality: Phillip I., Victoria.
Distribution: Southern Australia.
Specimens: West End, 25.ii.1989, *J.M. Huisman & T.H. Rose* (MURU JH 015).

Genus: **Chaetomorpha**

Chaetomorpha aerea (Dillwyn) Kützing 1849: 379.
Reference: Womersley 1984: 172, figs 54B, 55H-J.
Type Locality: Cromer, England.
Distribution: Cosmopolitan.
Specimens: Thomson Bay, -.xi.1945, *G.G. Smith* (UWA A1488).

Genus: **Cladophora**

Key to the species of *Cladophora* from Rottnest I.
from van den Hoek & Womersley (1984)

1. Thalli occurring as entangled masses forming cushions or turfs, or vaguely tufted, without distinct basal and upper parts; branches arising laterally and often slightly subterminally from the upper cell-poles, with steeply inclined cross walls cutting them off from the axial cells. ..... 2.
1. Thalli occurring as distinct, erect plants, basally attached and with distinct upper parts with irregular, or feeble to strong, acropetal growth; branches arising terminally from the upper cell-poles, cross walls between older branches and axial cells usually becoming almost horizontal but sometimes remaining oblique ..... 3.
2. Thalli occurring as indefinite hair-like entangled masses composed of long, unbranched or little branched, more or less curved, and intertwined filaments, bearing widely scattered branchlets ..... *C. rhizoclonioidea*
2. Thalli occurring as cushions or turfs, filaments at least basally much branched .... *C. subsimplex*
3. Thallus erect, basal and lower cells many times longer than apical cells and often slightly clavate; no or few intercalary divisions in lower cells ..... *C. prolifera*
3. Thallus erect, usually densely tufted, basal and lower cells not markedly longer than upper cells; intercalary divisions present in lower cells, often also in upper cells ..... 4.
4. Thallus with pseudo-dichotomous main axes but with intercalary growth very frequent to dominant and the axes bearing rows of laterals of different ages, younger (shorter) ones intercalated between older (longer) ones; acropetal organisation feeble to moderate ..... *C. albida*

4. Thallus with pseudo-dichotomous main axes ending in acropetal, often falcate or refracto-falcate branch systems with dominant apical growth; intercalary divisions relatively few, increasing basipetally, without frequent intercalations of branches of different ages ..... 5.
5. Apical cells 170-300 µm in diameter, lower cells up to 350 µm in diameter ..... *C. valonioides*
5. Apical cells mostly less than 150 µm in diameter, lower cells less than 250 µm in diameter ..... 6.
6. Apical cells (80-)100-120(160) µm in diameter, lower thallus cells (140)180-220(-50) µm in maximum diameter ..... *C. lehmanniana*
6. Apical cells mostly less than 90 µm in diameter, lower thallus cells usually less than 200 µm in maximum diameter ..... 7.
7. Apical cells 40-70(-80) µm in diameter; maximum number of branches per node 2(-3); thallus usually tufted; lower filaments (100)135-160(-180) µm in maximum diameter and usually 2-3 times the diameter of apical cells ..... *C. laetivirens*
7. Apical cell mostly under 50 µm in diameter (but varying between 15-75 µm); maximum number of branches per node 3-4(-5); diameter of lower filaments usually 3-6 times that of apical cells ..... *C. dalmatica*

Cladophora albida (Nees) Kützing 1843: 267.

Reference: van den Hoek & Womersley 1984: 206, figs 66C, 68A-D.
Type Locality: Island of Selsey, England.
Distribution: Widely distributed in temperate waters.
Specimens: Green I., 24.i.1985, *M.L. Cambridge* (UWA A1498).

Cladophora dalmatica Kützing 1843: 268.

Reference: van den Hoek & Womersley 1984: 202, figs 64D, 65F.
Type Locality: Port of Spalato (Split), Yugoslavia.
Distribution: Southern Australia; widely distributed along tropical to warm temperate Atlantic coasts of America, Europe and West Africa.
Specimens: Green I., 24.i.1985, *M.L. Cambridge* (UWA A1497, A1499, A1500).

Cladophora laetivirens (Dillwyn) Kützing 1843: 267.

Reference: van den Hoek & Womersley 1984: 200, figs 64C, 65F.
Type Locality: Swansea, Wales.
Distribution: Southern Australia; widely distributed along tropical to warm-temperate Atlantic coasts of Europe, West Africa and America.
Specimens: Fay's Bay, 24.i.1985, *M.L. Cambridge* (UWA A 1495).

Cladophora lehmanniana (Lindenburg) Kützing 1843: 268.

Reference: van den Hoek & Womersley 1984:198, figs 64B, 65C, D.
Type Locality: Helgoland.
Distribution: Southern Australia; warm temperate Atlantic and Mediterranean coasts of Europe.
Specimens: Green I., 23.i.1985, *M.L. Cambridge* (UWA A1494). Parker Point, 18.ix.1988, *J.M. Huisman* (MURUJH027).

Cladophora prolifera (Roth) Kützing 1843: 271.

References: van den Hoek & Womersley 1984:193, figs 62A, 63A, B; Fuhrer *et al.* 1981: 92, pls 153, 154 (as *Cladophora rugulosa*)
Type Locality: "in mare Corsicam".
Distribution: Southern Australia; warm temperate Europe, Mediterranean, African and American tropics; Solomon Is.; New Zealand.

Record: Womersley 1984: 193.
Specimens: Cathedral Rocks, 3.i.1985, *M.L. Cambridge* (UWA A1490).

Cladophora rhizonoclonioidea van den Hoek & Womersley 1984: 188, figs 59E-G, 60A.

Type Locality: Nora Creina, South Australia.
Distribution: Type locality; Georgetown, Tasmania; Rottnest I., Western Australia.
Specimens: Green I., 24.i.1985, *M.L. Cambridge* (UWA A1491).

Cladophora subsimplex Kützing 1849: 411.

Reference: van den Hoek & Womersley 1984: 192, figs 60D, 61E-I.
Type Locality: Hermite I., Cape Horn, Fuegia.
Distribution: Southern Australia; Cape Horn; Falkland Is.; New Zealand.
Specimens: Green I., 23.i.1985, *M.L. Cambridge* (UWA A1492).

Cladophora valonioides Sonder 1845: 49.

Reference: van den Hoek & Womersley 1984: 196, figs 64A, 65A, B.
Type Locality: Western Australia.
Distribution: Western Australia and South Australia.
Record: Harvey 1855b: 565
Specimens: Rottnest I., 30.iii.1932, *A.M. Baird* (UWA A1502A-D); 9.viii.1950, *R.D. Royce* (PERTH 1198).

Genus: **Microdictyon**

Microdictyon umbilicatum (Velley) Zanardini

Reference: Womersley 1984: 217, fig. 72.
Type Locality: New South Wales.
Distribution: Southern Australia; New Zealand.
Specimens: Cape Vlamingh, 20.xi.1951, *G.G. Smith* (UWA A310A-D, AD A50594); Green I., 7.xii.1984, *D.I. Walker* (UWA A1489); Parker Point, 8.ix.1988, *J.M. Huisman* (MURU JH 114).

Genus: **Struvea**

Struvea plumosa Sonder 1845: 50.

Reference: Womersley: 1984: 218, fig. 73B,C.
Type Locality: Western Australia.
Distribution: Port Denison, Western Australia; around southern Australia to Encounter Bay, South Australia.
Record: Harvey 1858: pl. 32.
Specimens: Radar Reef, 15.xii.1962, *G.G. Smith* (UWA A1499); Rottnest I., 12.i.1972, *M.L. Cambridge* (UWA A1450); Basin, -.i.1970, *M.L. Cambridge* (UWA A1451, A1453); Green I., 7.xii.1984, *D.I. Walker* (UWA A1452).

ORDER SIPHONOCLADALES

Genus: **Dictyosphaeria**

Dictyosphaeria sericea Harvey 1855b: 565.

References: Womersley 1984: 223, pl. 13, fig. 3, fig. 74G-J; Fuhrer *et al.* 1981: 106, pl. 181.
Type Locality: Western Australia.
Distribution: Southern and south-west Australia.

Record: Harvey 1855b: 565.
Specimens: City of York Bay, 6.ix.1979, *R. Engler & S.M. Clarke* (AD A51137); Natural Jetty reef, 10.xi.1968, *Wm.J. Woelkerling* (AD A33333); Rottnest I., -.xi.1945, *G.G. Smith* (UWA A8); Basin, -.i.1966, *G.G. Smith* (UWA A1607); West End, 2.v.1965, *G.G. Smith* (UWA A446); Point Clune, 8.x.1988, *J.M. Huisman* (MURU JH 100).

Genus: **Siphonocladus**

Siphonocladus tropicus (Crouan) J. Agardh 1887: 105.

Reference: Egerod 1952: 356-358, pl. 30, fig 1, g; fig 2, l-q.
Type Locality: Guadeloupe, West Indies.
Distribution: Western Australia; Tropical Americas; Hawaiian Isles.
Specimens: Parker Point, 18.ix.1988, *J.M. Huisman* (MURU JH043).

Genus: **Valonia**

Valonia macrophysa Kützing 1843: 307.

Type Locality: Hvar I., Yugoslavia.
Distribution: Yugoslavia; Indo-Pacific.
Specimens: Radar Reef, 25.vi.1969, *S. Slack-Smith* (UWA A1448); Fish Hook Bay, 29.iv.1966, *Phillips* (UWA A555); 25.x.1964, *Phillips* (UWA A 486).

ORDER DERBESIALES

Genus: **Bryopsis**

Key to the species of *Bryopsis* from Rottnest I.
from Womersley (1984)

1. Thallus essentially radially branched ..... 2.
1. Thallus distichously branched, or bilaterally (occasionally unilaterally) branched in double rows, at least in some parts of the thallus ..... 3.
2. Thallus delicate, with slender, usually simple, axes (2-)3-6(-8) cm high, bearing ramuli (which become laterals) separated by two to several times their basal width ..... *B. macraildii*
2. Thallus robust, densely branched, axes often over 8 cm high, strongly developed or with irregular long laterals, with ramuli on upper parts usually separated by less than twice their basal width ..... *B. foliosa*
3. Thallus distichously branched, with ramuli mostly lying in single rows on each side, often more irregular lower on axes ..... *B. plumosa*
3. Thallus mostly bilaterally branched (or radially near apices), with ramuli or laterals on each side mainly in two slightly displaced rows, occasionally mostly unilateral .... *B. australis*

Bryopsis australis Sonder 1846: 152.

Reference: Womersley 1984: 284, figs 96D, E, 97B.
Type Locality: Western Australia.
Distribution: Southern Western Australia, Kangaroo I., South Australia.
Specimens: King Head, 6.ix.1979, *H.B.S. Womersley* (AD A50705); Radar Reef, 11.xi.1968, *Wm.J. Woelkerling* (AD A34391).

Bryopsis foliosa Sonder 1845: 49.

Reference: Womersley 1984: 278, figs 94E, 95A, B.
Type Locality: Western Australia.
Distribution: Whitfords Beach to Hamelin Bay, Western Australia.
Specimens: Rottnest I., -.vi.1949, *G.G. Smith* (UWA A937,938).

Bryopsis macraildii Womersley 1984: 276, figs 93C-E, 94C, D.

Type Locality: King Head, Rottnest I., Western Australia
Distribution: Known only from the type locality.
Specimens: King Head, 6.ix. 1979, *H.B.S. Womersley* (AD A50706); Rottnest I., *W.H. Harvey* (Alg. Aust. Exsicc. 572A).

Bryopsis plumosa (Hudson) C. Agardh 1823: 448.

References: Womersley 1984: 282, figs 96C, 97A; Fuhrer *et al.* 1981: 94, pl. 158.
Type Locality: Exmouth, Devonshire, England.
Distribution: Widespread in temperate waters.
Specimens: Rottnest I., x.1934, *Philson* (AD A50051 - Tilden, South Pacific Plants no. 35).

Genus: **Pedobesia**

Pedobesia clavaeformis (J. Agardh) Macraild & Womersley 1974: 92.

References: Womersley 1984: 292, figs 99C-E.
Type Locality: Western Port, Victoria.
Distribution: Southern Australia; northern New Zealand.
Specimens: Point Clune, 2.xii.1980, *P.W. Gabrielson* (AD A51956).

ORDER DASYCLADALES

Genus: **Acetabularia**

Acetabularia calyculus Lamouroux 1824: 621, pl. 90, figs 6, 7.

Reference: Womersley 1984: 295, figs 101B, 102B-D.
Type Locality: Shark Bay, Western Australia.
Distribution: Widely distributed in tropical and subtropical seas and extending into warm temperate regions.
Specimens: Natural Jetty, -.xi.1952, *G.G. Smith* (UWA A1447); Green I., 21.ix.1988, *J.M. Huisman* (MURU JH 008).

Genus: **Polyphysa**

Polyphysa peniculus (R. Brown ex Turner) C. Agardh 1823: 473.

References: Womersley 1984: 296, figs 101C-E, 102E-G; Fuhrer *et al.* 1981: 107, pl. 184.
Type Locality: "Nouvelle-Hollande, sur une Venus".
Distribution: Southern Australia, Lord Howe I., New South Wales; New Caledonia.
Specimens: Point Clune, 5.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU A 035326).

ORDER CODIALES

Genus: **Codium**

Key to the species of *Codium* from Rottnest I.
modified from Womersley (1984)

1. Thallus flattened or subglobose ..... 2.
1. Thallus erect or decumbent, simple or dichotomously branched ..... 5.
2. Thallus flattened or hemispherical, often lobed ..... 3.
2. Thallus subglobose ..... *C. pomoides*
3. Utricles mostly less than 100 µm in diameter ..... *C. lucasii*
3. Utricles mostly greater than 100 µm in diameter ..... 4.
4. Utricles in small clusters, apical wall thickened into a galeate cap to 54 µm thick .... *C. perriniae*
4. Utricles in large clusters, apical wall thin or moderately thickened (-32 µm) ..... *C. spongiosum*
5. Thallus simple or once divided, broad and flat, felt-like. ..... *C. laminarioides*
5. Thallus dichotomously to laterally branched, branches terete or slightly compressed near branchings ..... 6.
6. Thallus forming imbricating "hummocks"; branches with several secondary holdfasts and lateral connections ..... *C. bulbopilum*
6. Thallus totally upright, not imbricating; branches without secondary connections ..... 7.
7. Utricles mucronate (with a spine) ..... *C. spinescens*
7. Utricles not mucronate ..... 8.
8. Utricles always shorter than 1 mm ..... *C. muelleri*
8. Utricles often longer than 1 mm ..... 9.
9. Utricles with galeate thickening at apex. ..... *C. galeatum*
9. Utricles with thin or slightly thickened apical wall, not galeate ..... *C. duthieae*

Codium bulbopilum Setchell 1924: 173.

Reference: Jones & Kraft 1984: 261, figs 4, 5B-F.
Type Locality: Aua, Western Samoa.
Distribution: Rottnest I., Western Australia; Lord Howe I., New South Wales; Samoa; Tahiti; New Caledonia; Fiji.
Specimens: Parker Point, 18.ix.1988, *J.M. Huisman* (MURU JH 040).

Codium duthieae Silva in Silva & Womersley 1956: 275.

References: Womersley 1984: 235, figs 77F, 78G; Fuhrer *et al.* 1981: 102, pl. 173.
Type Locality: Strandfontein, South Africa.
Distribution: Southern Australia; South Africa.
Specimens: Rottnest I., -.v.1965, *G.G. Smith* (UWA A1464); 17.v.1965, *G.G. Smith* (UWA A1465); 1.v.1965, *G.G. Smith* (UWA A1466); Parker Point, 18.ix.1988, *J.M. Huisman* (MURU JH 023, 033).

Codium galeatum J. Agardh 1887: 42.

Reference: Womersley 1984: 235, figs 77E, 78F.
Type Locality: Port Phillip Bay, Victoria.
Distribution: Southern Australia.
Specimens: Rottnest I., 17.v.1965, *G.G. Smith* (UWA A462); 5.ix.1979, *S.M. Clarke & R. Engler* (PERTH 1653).

Codium laminarioides Harvey 1855b: 565.

Reference: Womersley 1984: 232, figs 77C, 78C.
Type Locality: Rottnest I., Western Australia.
Distribution: South-western Australia.
Record: Harvey 1855b: 565.
Specimens: Green I., 6.ix.1979, *S.M. Clarke & R. Engler* (AD A50719); 9.x.1988, *J.M. Huisman* (MURU JH 062); Kitson Point, 6.ix.1979, *S.M. Clarke & R. Engler* (AD A51146); Fish Hook Bay, 19.ix.1988, *J.M. Huisman* (MURU JH 052).

Codium lucasii Setchell in Lucas 1935: 200.

References: Womersley 1984: 227, figs 75C, 76C, D; Fuhrer *et al.* 1981: 104, pl. 177.
Type Locality: Bondi, New South Wales.
Distribution: Southern Australia.
Specimens: Roe Reef, 25.iii.1989, *J.M. Huisman* (MURU JH076).

Codium muelleri Kützing 1856: pl. 95, fig 2.

Reference: Womersley 1984: 236, figs 79B, 80B.
Type Locality: Lefevre Peninsula, South Australia.
Distribution: Southern Australia.
Specimens: Rottnest I., May.1965, *G.G. Smith* (UWA A460); 17.v.1965, *G.G. Smith* (UWA A1462); 1.v.1965, *G.G. Smith* (UWA A1463); 31.i.1957, *E. Wollaston* (AD A21059).

Codium perriniae Lucas 1935: 203.

Reference: Womersley 1984: 228, figs 75D, 76E.
Type Locality: Low Head, Tasmania.
Distribution: Southern Australia.
Specimens: Strickland Bay, 5.ix.1979, *R. Engler & S.M. Clarke* (AD A51104).

Codium pomoides J. Agardh 1894a: 100.

Reference: Womersley 1984: 232, figs 77B, 78B.
Type Locality: Probably Port Phillip Heads, Victoria.
Distribution: Rottnest I., Western Australia, to Walkerville, Victoria.
Specimens: Point Clune, 8.ii.1989, *J.M. Huisman & G.A. Kendrick* (MURU JH 037).

Codium spinescens Silva & Womersley 1956: 285.

Reference: Womersley 1984: 240, figs 79E, 80F.
Type Locality: 16 km E of Eucla, Western Australia.
Distribution: South-western Australia.
Specimens: Natural Jetty, -.x.1945, *G.G. Smith* (UWA A75); Point Clune, 8.ii.1989, *J.M. Huisman & G.A. Kendrick* (MURU JH 136).

Codium spongiosum Harvey 1855b: 565.

References: Womersley 1984: 228, figs 75E, 76F; Fuhrer *et al.* 1981: 105, pl. 180.
Type Locality: King George's Sound, Western Australia.
Distribution: Point Cloates, Western Australia, to Apollo Bay, Victoria; Lord Howe I., New South Wales; Queensland; Tasmania; South Africa; Mauritius; New Caledonia; Hawaiian Is.; Brazil.
Record: Harvey 1858: pl. 55.
Specimens: Parker Point, 18.ix.1988, *J.M. Huisman* (MURU JH 024, 039).

ORDER CAULERPALES

Genus: **Avrainvillea**

Avrainvillea clavatiramea Gepp & Gepp 1911: 33.

Reference: Womersley 1984: 253, figs 83E, 85I-K.
Type Locality: Corio Bay, Port Phillip Bay, Victoria.
Distribution: Rottnest I., Western Australia, to Port Phillip Bay, Victoria.
Specimens: Point Clune, 5.xii.1980, *R.W. Ricker & G.T. Kraft* (AD A52187, MELU 2252).

Genus: **Callipsygma**

Callipsygma wilsonis J. Agardh 1887: 65.

Reference: Womersley 1984: 247, figs 83A, 84B-F.
Type Locality: Sorrento, Port Phillip Heads, Victoria.
Distribution: Rottnest I., Western Australia, to Sorrento, Victoria; Bass Strait; Musselroe Bay, Tasmania.
Specimens: Strickland Bay, 1973, *M.L. Cambridge* (UWA A1466); Point Clune, 8.x.1988, *J.M. Huisman & G.A. Kendrick* (MURU JH 056, 057).

Genus: **Caulerpa**

Key to the species of *Caulerpa* from Rottnest I.
modified from Womersley (1984)

1. Erect fronds unbranched, paddle-shaped ..... *C. brachypus* var. *parvifolia*
1. Erect fronds with determinate side branches (ramuli) ..... 2.
2. Ramuli compressed or terete (simple or branched), not vesiculate . ..... 3.
2. Ramuli vesiculate, unbranched ..... 10.
3. Erect axes bearing (directly) distichous, simple, terete or compressed ramuli ..... 4.
3. Erect axes and/or second-order laterals bearing ramuli usually in more than two rows or on all sides; ramuli terete, usually filiform, simple or branched ..... 6.
4. Axes of erect fronds slightly compressed, 0.5-1 mm broad, ramuli opposite and only slightly compressed, 1-2(-3) mm long ..... *C. distichophylla*
4. Axes of erect fronds compressed, 2-8(-10) mm broad, ramuli alternate, compressed, 3-10 mm long ..... 5.
5. Ramuli convex on lower side, straighter on upper side, usually broadest (1.5-4 mm) at base, 3-10 mm long ..... *C. scalpelliformis*
5. Ramuli convex on upper side, straighter on lower side, basally constricted 4-8 mm long, 0.7-1.5 mm broad ..... *C. ellistoniae*
6. Erect axes without second-order laterals but bearing simple or 1-4 times branched ramuli in rows or on all sides ..... 7.
6. Erect axes bearing numerous distichously or radially arranged second order laterals, each of which bears numerous simple or furcate ramuli ..... 8.
7. Ramuli in distinct longitudinal rows, relatively straight ..... *C. cupressoides*
7. Ramuli usually not in distinct longitudinal rows, soft and incurved, 0.5 -1.5 cm long ..... *C. longifolia* f. *crispata*
8. Second-order laterals irregularly radially arranged around erect axes, 1-3(-4) cm long, bearing usually simple ramuli 2-7(-10) mm long, subdistichously to irregularly arranged; stolon covered with spinous ramuli ..... *C. obscura*

8. Second order laterals distichously arranged on erect axes; ramuli one to several times furcate, less than 3 mm long; stolon covered with minute, branched ramuli ..... 9.
9. Ramuli once furcate usually near their base, 1-3 mm long, with a single or twinned spinous apex ..... *C. flexilis*
9. Ramuli minute (0.2-0.5 mm long), much-branched and spinous, covering the thallus .. *C. hedleyi*
10. Ramuli distichously arranged on axes ..... 11.
10. Ramuli on all sides of axes ..... 12.
11. Ramuli ovoid to elongate-ovoid, 3-7 mm long, usually L/B less than 2 ..... *C. geminata*
11. Ramuli elongate, clavate, usually over 6 mm long, L/B usually greater than 2 ..... *C. cactoides*
12. Ramuli elongate clavate, (1.5-)2-5(-7) mm long, (0.5-)1-1.5(-2) mm broad near apex ..... *C. racemosa* var. *laetivirens* f. *cylindracea*
12. Ramuli sub-spherical to ovoid, elongate-ovoid or pyriform, usually less than 4 mm long, in some species constricted below the spherical-ovoid terminal part ..... 13.
13. Ramuli densely arranged on the axes, touching, (6-)8-14 around the axes, 0.7-1.5 mm long and 300-700(-850) µm in diameter ..... *C. simpliciuscula*
13. Ramuli usually loosely and irregularly arranged, 2-6 around the axes (subdistichous to radial), ovoid, L/B 1.5-2, (1.5-)2-4(-7) mm long, 1-3 mm broad ..... *C. geminata*

Caulerpa brachypus Harvey var. **parvifolia** (Harvey) Cribb 1958: 209-210, pl. 1, figs 1-7.

Reference: Harvey 1860: pl. 172.
Type Locality: Kiama, New South Wales.
Distribution: Warmer waters of the Indo-Pacific; Japan; Malayan Archipelago.
Specimens: Main Jetty, 13.xii.1961, *McMillan* (UWA A350); Point Clune, 2.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU A O35400-42).

Caulerpa cactoides (Turner) C. Agardh 1823: 439.

References: Womersley 1984: 269, figs 91A, 92C; Fuhrer *et al.* 1981: 96, pls 161, 162.
Type Locality: Southern coast of Australia.
Distribution: From Dampier, Western Australia, to the Richmond River mouth, New South Wales.
Specimens: Thomson Bay, 15.viii.1955, *G.G. Smith* (UWA 3279); 15.viii.1950, *G.G. Smith* (UWA A1485); Narrow Neck, 10.i.1970, *M.L. Cambridge* (UWA A1486); Henrietta Rocks, 25.ix.1982, *D.I. Walker & G.A. Kendrick* (UWA A1487); West End, 25.ii.1989, *J.M. Huisman & T.H. Rose* (MURU JH 019).

Caulerpa cupressoides (Vahl) C. Agardh 1817: XXIII.

Reference: Weber-van Bosse 1898: 323, pls 27, 28.
Type Locality: St Croix, Virgin Islands.
Distribution: Widely distributed in tropical seas.
Specimen: Longreach Bay, 1.xii.1969, *M.L. Cambridge* (UWA 3282).
Remarks: *C. cupressoides* is normally restricted to warmer waters and is quite common in tropical Western Australia. Only a single specimen has been collected from Rottnest I.

Caulerpa distichophylla Sonder 1845: 50.

Reference: Womersley 1984: 258, figs 86C, 87C.
Type Locality: Western Australia.
Distribution: From Dongara to King George's Sound, Western Australia.
Record: Harvey 1855b: 564 (as *C. tenella*) 1860: pl. 161.

Caulerpa ellistoniae Womersley 1955: 387, fig. 2.

Reference: Womersley 1984: 260, figs 86F, 87F.
Type Locality: Elliston, S.A.
Distribution: Rottnest I., Western Australia, to Kangaroo I., South Australia.
Specimens: West End, -.ii.1960, *Wilson* (UWA A330, AD A24584).

Caulerpa flexilis Lamouroux 1813: 283, pl. 13, fig. 3.

References: Womersley 1984: 266, figs 89G, 90A; Fuhrer *et al.* 1981: 95, pl. 159.
Type Locality: Esperance, Western Australia.
Distribution: From Geraldton, Western Australia, to Collaroy, New South Wales.
Record: Harvey 1855b: 564 (as *C. hypnoides*).
Specimens: Green I., 6.ix.1979, *S.M. Clarke & R. Engler* (AD A51062); Thomson Bay, 14.viii.1950, *G.G. Smith* (UWA A1479); viii.1952, *G.G. Smith* (UWA A1480); Little Armstrong Reef, 27.ix.1982, *D.I. Walker* (UWA A1482).

Caulerpa flexilis var. **muelleri** (Sonder) Womersley 1956: 367.

Reference: Womersley 1984: 266, fig. 90B.
Type Locality: Rivoli Bay, South Australia.
Distribution: Southern Australia.
Record: Harvey 1858: pl. 2 (as *C. muelleri*).
Specimens: Basin, -.xi.1957, *Kott* (UWA A314); Natural Jetty, -.xi.1945, *G.G. Smith* (UWA, A1481); Abraham Point, 9.iv.1982, *Chiffings* (UWA A1483); Henrietta Rocks, 25.ix.1982, *D.I. Walker & G.A. Kendrick* (UWA A1484).
Remarks. More robust than the type and with strictly distichous second order laterals.

Caulerpa geminata Harvey 1855b: 564.

References: Womersley 1984: 268, figs 90C, 92A; Fuhrer *et al.* 1981: 97, pl. 164.
Type Locality: Rottnest I., Western Australia.
Distribution: Southern Australia; New Zealand.
Specimens: King Head, 6.ix.1979, *H.B.S. Womersley* (AD A50849); Strickland Bay, 5.ix.1979, *R. Engler & S.M. Clarke* (AD A51105); City of York Bay, 6.ix.1979, *S.M. Clarke & R. Engler* (AD A51136); Natural Jetty Reef, -.xi.1945, *G.G. Smith* (UWA A14); Green I., 7.xii.1984, *D.I. Walker* (UWA A1473); Henrietta Rocks, 25.ix.1982, *D.I. Walker & G.A. Kendrick* (UWA A1474); Parker Point, 18.ix.1988, *J.M. Huisman* (MURU JH 012).

Caulerpa hedleyi Weber-van Bosse 1910:1, pl. 1, figs 1-4.

Reference: Womersley 1984: 268, figs 88H, 89H.
Type Locality: "Off Kangaroo I.", South Australia.
Distribution: Rottnest I., Western Australia; Isles of St. Francis, Pearson I. and Investigator Strait, South Australia.
Specimens: Basin, -.i.1966, *G.G. Smith* (UWA 2584A-B, AD A50545); Point Clune, 8.x.1988, *J.M. Huisman & G.A. Kendrick* (MURU JH 055).

Caulerpa longifolia C. Agardh f. **crispata** (Harvey) Womersley 1950: 147.

Reference: Womersley 1984: 262, figs 88B, 89B.
Type Locality: Port Phillip Heads, Victoria.
Distribution: Whitfords Beach, Western Australia, to Waratah Bay, Victoria.
Specimens: West End, 25.ii.1989, *J.M. Huisman & T.H. Rose* (MURU JH 089).

Caulerpa obscura Sonder 1845: 50.

References: Womersley 1984: 265, figs 88F, 89F; Fuhrer *et al.* 1981: 99, pl. 167.
Type Locality: Western Australia.
Distribution: Yanchep, Western Australia, to Walkerville, Victoria.
Record: Harvey 1860: pl. 167.
Specimens: Green I., 6.ix.1979, *S.M. Clarke & R. Engler* (AD A51063); Natural Jetty, -.xi.1945, *G.G. Smith* (UWA A20); Point John, 6.iv.1971, *Chaney* (UWA A1475); Bathurst Point, -.xi.1945, *G.G. Smith* (UWA A20A); Point Clune, 26.xi.1945, *A.M. Baird* (UWA A20B,C); Henrietta Rocks, 25.ix.1982, *D.I. Walker & G.A. Kendrick* (UWA A1476); Abraham Point, 9.iv.1977, *A.W. Chiffings* (UWA A1477); on jetty piles, 12.viii.1950, *G.G. Smith* (UWA A1478). Parker Point, 18.ix.1988, *J.M. Huisman* (MURU JH 034-037).

Caulerpa racemosa (Forsskal) J. Agardh var. **laetivirens** (Montagne) Weber-van Bosse f. **cylindracea** (Sonder) Weber-van Bosse 1898: 366, pl. 33, figs 17, 19, 20.

Reference: Womersley 1984: 270, figs 91B, 92D.
Type Locality: Western Australia.
Distribution: Tropical Western Australia, to King George's Sound, Western Australia.
Record: Harvey 1858: pl. 30 (as *C. cylindracea*).
Specimens: Salmon Bay, 14.viii.1950, *G.G. Smith* (UWA A1471).

Caulerpa scalpelliformis (R. Brown ex Turner) C. Agardh 1823: 437.

Reference: Womersley 1984: 258, figs 86D,E, 87D,E.
Type Locality: Southern coast of Australia.
Distribution: Southern Australia.
Record: Harvey 1858: pl. 17.
Specimens: Natural Jetty, -.xi.1945, *G.G. Smith* (UWA A16); Narrow Neck, 25.xi.1969, *M.L. Cambridge* (UWA A1468); Basin, -.ii.1972, *M.L. Cambridge* (UWA A1469); Henrietta Rocks, 24.ix.1982, *D.I. Walker & G.A. Kendrick* (UWA A1470).

Caulerpa simpliciuscula (Turner) C. Agardh 1823: 439.

Reference: Womersley 1984: 272, figs 91E, 92G.
Type Locality: Kent I., Bass Strait.
Distribution: Port Denison, Western Australia, to Walkerville, Victoria.
Record: Harvey 1859a: pl. 65. 1855b: 563.
Specimens: Henrietta Rocks, -.x.1982, *D.I. Walker & G.A. Kendrick* (UWA A1467).

Genus: **Halimeda**

Halimeda cuneata Hering ex Krauss 1846: 214.

References: Womersley 1984: 244, figs 81C, 82E-G; Hillis-Colinvaux 1980: 124-126, figs 36, 61.
Type Locality: Durban, South Africa.
Distribution: Indian Ocean; south-western Pacific Ocean.
Record: Harvey 1863: pl. 267 (as *H. macroloba*).
Specimens: King Head, 6.ix.1979, *H.B.S. Womersley* (AD A50581); Strickland Bay, 5.ix.1979, *R. Engler & S.M. Clarke* (AD A51101); City of York Bay, 6.ix.1979, *S.M. Clarke & R. Engler* (AD A51138); Basin, -.i.1966, *G.G. Smith* (UWA A1454); -.xi.1945, *G.G. Smith* (UWA A1460); Rottnest I., 2.v.1965, *G.G. Smith* (UWA A1455); Narrow Neck, 12.xii.1969, *M.L. Cambridge* (UWA A1456); Salmon Bay, 23.ii.1967, *G.G. Smith* (UWA A1457); Thomson Bay, 16.viii.1950, *G.G. Smith* (UWA A1458); 26.xi.1945, *G.G. Smith* (UWA A1459); Abraham Point, 9.iv.1977, *A.W. Chiffings* (UWA A1461).

Genus: **Penicillus**

Penicillus nodulosus Blainville 1834: 553.

Reference: Harvey 1858: pl. 22 (as *P. arbuscula*).
Type Locality: Shark Bay, Western Australia.
Distribution: Western Australia.
Record: Harvey 1855: 564; 1858: pl. 22 (as *P. arbuscula*).
Specimens: Rottnest I., 11.iv.1979, *M.A. Borowitzka* (PERTH 2425).
Remarks: Harvey (1855b) recorded *P. nodulosus* as being common on the reef flats. It apparently no longer occurs in high densities at Rottnest Island, as it has only been collected once in recent times.

Genus: **Rhipiliopsis**

Rhipiliopsis multiplex Kraft 1986: 62, figs 34-40.

Type Locality: Fish Hook Bay, Rottnest I., Western Australia.
Distribution: Known only from Rottnest I.
Specimens: Fish Hook Bay, 1.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU K7384); 11.xii.1984, *A.J.K. Millar & A. Siotas* (MELU K7617); 19.ix.1988, *J.M. Huisman* (MURU JH 046); Green I., 9.x.1988, *J.M. Huisman* (MURU JH 112).

DIVISION PHAEOPHYTA

KEY TO THE GENERA OF BROWN ALGAE FROM ROTTNEST ISLAND

1. Thallus obviously filamentous or with emergent filamentous portions ..... 2.
1. Thallus without obvious filamentous portions ..... 12.
2. Thallus with clearly defined filamentous tufts or borders ..... 3.
2. Thallus entirely filamentous or gradually becoming corticated (without a clear distinction between filamentous and other portions) ..... 6.
3. Thallus flattened, fan-shaped or branched, with a fringed border ..... *Cutleria*
3. Thallus with terete, cartilaginous branches, filamentous tufts either scattered or terminal ..... 4.
4. Filamentous tufts scattered ..... *Austronereia*
4. Filamentous tufts terminal ..... 5.
5. Sporangial sori immediately below the apical filamentous tufts on determinate lateral branches; thallus with percurrent main axis and long lateral branches ..... *Sporochnus*
5. Sporangial sori well below the apical filamentous tufts, on indeterminate lateral branches and main axes; thallus with percurrent axis and short, determinate branches ..... *Encyothalia*
6. Thallus totally monosiphonous ..... 7.
6. Thallus with some parenchymatous portions ..... 10.
7. Thallus minute, tufted, with a basal portion embedded in host tissue (usually *Ecklonia radiata*) and an upper portion of extended filaments; plants with an heteromorphic life history ..... *Elachista*
7. Thallus not so; plants with an isomorphic life history ..... 8.
8. Plastids ribbon-shaped ..... *Ectocarpus*
8. Plastids discoid ..... 9.
9. Meristematic zones at the base of long, unbranched filaments, sporangia mostly pedicellate ..... *Feldmannia*
9. Meristems scattered, sporangia mostly sessile ..... *Hincksia*
10. Thallus with basal uniseriate filaments, becoming multiseriate distally; growth by means of a basal meristem ..... *Giraudia*
10. Thallus without basal uniseriate filaments; growth by means of a large apical cell ..... 11.
11. Frond with branches densely covered with short ramuli more or less regularly whorled (plants very common) ..... *Cladostephus*
11. Frond without a dense covering of short ramuli, multicellular propagules often present ..... *Sphacelaria*
12. Thallus irregularly globose ..... 13.
12. Thallus not so ..... 15.
13. Thallus solid ..... *Corynophlaea*
13. Thallus hollow ..... 14.
14. Thallus perforated ..... *Hydroclathrus*
14. Thallus not perforated ..... *Colpomenia*
15. Thallus tubular ..... *Asperococcus*
15. Thallus not tubular ..... 16.
16. Thallus irregularly branched, terete; with a soft or mucoid consistency ..... 17.
16. Thallus flattened or terete, with a tough consistency ..... 19.
17. Branch apices with a single apical cell; branches with a single axial filament throughout the thallus ..... *Nemacystis*
17. Branches multiaxial ..... 18.

18. Cortical filaments > 11 cells long, distally curved, with terminal cells of a similar size to subterminal cells ..... *Cladosiphon*
18. Cortical filaments 6-10 cells long, straight or only slightly curved, with an obviously larger terminal cells ..... *Polycerea*
19. Plants large, leathery, very common; thallus differentiated into a stipitate holdfast, unbranched terete stipe and pinnately branched broad blade; plant surface generally rugose (although often smooth in plants growing in high energy areas); sporangia in sori on the blade surface, gametophytes microscopic . ..... *Ecklonia*
19. Plants not so ..... 20.
20. Plants with branches densely covered with short ramuli that are more or less regularly whorled (common) ..... *Cladostephus*
20. Plants not so ..... 21.
21. Plants flattened (generally less than 12 cells thick, except at the midrib of *Dictyopteris*), either fan-shaped, regularly to irregularly dichotomously branched or an irregularly branched thin blade; vesicles absent; reproductive structures borne on the surface of the plant ..... 22.
21. Plants terete to partly flattened (generally over 12 cells thick); vesicles present or absent; reproductive structures in conceptacles ..... 35.
22. Thallus with a fringed margin ..... *Cutleria*
22. Thallus without a fringed margin ..... 23.
23. Thallus with a midrib ..... *Dictyopteris*
23. Thallus without a midrib ..... 24.
24. Thallus with diffuse growth; plants generally intertidal ..... *Petalonia*
24. Thallus with an apical meristem (either a single cell, localised clusters of cells, or lining the entire leading edge of the frond) ..... 25.
25. Growth by a single apical cell ..... 26.
25. Growth by localised clusters of apical cells or with a meristem lining the entire leading edge of the frond ..... 30.
26. Apical cell in a depression, orientated longitudinally to branch apex ..... *Scoresbyella*
26. Apical cell usually protruding, orientated transversely to the branch apex ..... 27.
27. Thallus throughout with a single layered medulla and a cortex of a single layer of small cuboidal cells ..... 28.
27. Thallus with a medulla or cortex of more than one layer of cells ..... 29.
28. Thallus without surface proliferations near the base of the plant, regularly dichotomously branched ..... *Dictyota*
28. Thallus usually densely covered with surface proliferations, subdichotomously branched ..... *Glossophora*
29. Thallus with a single layered medulla and a cortex of more than one layer of small cuboidal cells ..... *Pachydictyon*
29. Thallus with a cortex of a single layer of small cuboidal cells and a medulla generally of more than one layer of large cells ..... *Dilophus*
30. Marginal meristem a line or cluster of apical initials ..... *Lobospira*
30. Marginal meristem lining the entire leading edge of the frond ..... 31.
31. Thallus lightly calcified, margin inrolled ..... *Padina*
31. Thallus not calcified, margins not inrolled ..... 32.
32. Thallus with a distinct row of medullary cells at least twice as high as the cortical cells ..... *Lobophora*
32. Thallus not so ..... 33.
33. Thallus distromatic throughout ..... *Distromium*

33. Thallus polystromatic ..... 34.
34. Cross-section showing uniformly rectangular medullary cells in regularly arranged tiers; sporangia in scattered sori surrounded by the remains of an indusium ..... *Zonaria*
34. Cross-section showing medullary cells not uniformly rectangular, not rigidly arranged in stacks or tiers; sporangia scattered over broad patches of frond with no indusium, not in sori ..... *Stypopodium*
35. Thallus with reduced, closely-set, side branches, giving the plant a warty appearance ..... *Scaberia*
35. Thallus not so 36
36. Receptacles developed in separate axillary or lateral clusters ..... 37.
36. Receptacles developed from vegetative branches 39
37. Receptacles in series on the plant margin; plants strongly flattened throughout ..... *Scytothalia*
37. Receptacles not in series on the plant margin; plants not strongly flattened throughout ..... 38.
38. Leaves turbinate, confluent with the vesicle ..... *Turbinaria*
38. Leaves flat ..... *Sargassum*
39. Branching radial ..... 40.
39. Branching bilateral 42
40. Receptacles flattened, forming separate small laterals or wings on the axes; branches with triquetrous wings ..... *Hormophysa*
40. Receptacles usually terete, transformed from the ends of ramuli; branches terete ..... 41.
41. Thallus usually with short primary axes and long secondary axes, usually with many short branches on the primary axis; vesicles within the axes or laterals ..... *Cystoseira*
41. Thallus with long primary axes, simple or branched; vesicles borne directly on axes, replacing laterals ..... *Caulocystis*
42. Holdfast rhizomatous or proliferous-rhizomatous from the original holdfast ..... *Platythalia*
42. Holdfast discoid-conical ..... 43.
43. Thallus with flexuous axes producing laterals of limited growth; lesser axes developing in axils of laterals; conceptacles usually arranged in rows, on margins if receptacles flattened; vesicles present or absent ..... *Cystophora*
43. Thallus with a dichotomous, subterete, perennial base; annular fronds developing from ends of dichotomies, relatively thin, dichotomous to alternately distichous, with serrrated margins; conceptacles scattered over most of the frond; vesicles absent . *Myriodesma*

ORDER ECTOCARPALES

Genus: **Ectocarpus**

Ectocarpus siliculosus (Dillwyn) Lyngbye 1819: 131, pl. 43B, C.

Reference: Womersley 1987: 33, figs 2D, 5A-E.
Type Locality: Europe.
Distribution: Cosmopolitan in temperate and cold seas.
Record: Harvey 1855b: 536. Womersley 1987: 33.

Genus: **Feldmannia**

Feldmannia irregularis (Kützing) Hamel 1939b: xvii, fig. 61F.

References: Clayton 1974: 777, figs 19, 20 (as *Giffordia irregularis*); Womersley 1987: 42, figs 6D, 8A-C.

Type Locality: Adriatic Sea.
Distribution: Widely distributed in temperate northern hemisphere seas; southern Australia.
Specimen: Point Clune, 6.xii.1984, *D.I. Walker* (AD A56634).

Genus: **Hincksia**

Hincksia mitchelliae (Harvey) P.C. Silva in Silva *et al.* 1987: 73.

Reference: Womersley 1987: 52, figs 10D, 12E-G (as *Giffordia mitchelliae*).
Type Locality: Nantucket, Mass., U.S.A.
Distribution: Widely distributed in temperate seas.
Specimens: King Head, 6.xii.1984, *H.B.S. Womersley* (AD A50850, AD A50804); Strickland Bay, 5.ix.1979, *S. Clarke & R. Engler* (AD A51123).

ORDER CHORDARIALES

Genus: **Cladosiphon**

Cladosiphon vermicularis (J. Agardh) Kylin 1940: 30, pl. 5, fig. 12.

Reference: Womersley & Bailey 1987: 122, figs 35C, 37B-E.
Type Locality: Port Fairy, Victoria.
Distribution: Rottnest I., Western Australia, to Sydney, New South Wales; Tasmania.
Specimens: Little Armstrong Bay, 7.ii.1989, *J.M. Huisman & G. Kendrick* (MURU JH131).

Genus: **Corynophlaea**

Corynophlaea cystophorae J. Agardh 1882: pl. 1, fig. 1.

Reference: Womersley & Skinner 1987: 95, figs 27B, 28A-D.
Type Locality: Port Phillip Heads, Victoria.
Distribution: Rottnest I., Western Australia, to Crookhaven Heads, New South Wales; Tasmania; New Zealand.
Specimen: Natural Jetty Reef, upper sublittoral on *Cystophora brownii*, 10.xi.1968, *E.M. Gordon* (AD A33330).

Genus: **Elachista**

Elaschista orbicularis (Ohta) Skinner 1983: 98, figs 1-3.

Reference: Womersley 1987: 78, fig. 21A-C.
Type Locality: Tappi, Aomori Pref., Japan.
Distribution: Rottnest I., Western Australia; Port Noarlunga to Port Eliot, South Australia; Garie Beach, New South Wales; Japan.
Specimens: Strickland Bay, 5.ix.1979, *S. Clarke & R. Engler* (AD A51112). King Head, 6.ix.1979, *R. Engler & S. Clarke* (AD A50841).

Genus: **Polycerea**

Key to the species of *Polycerea* from Rottnest I.
from Womersley & Bailey (1987)

1. Cortical filaments 6-9(-10) cells long, with the mature terminal cell 30-60 µm in diameter and (2-)2.5-5 times the daimeter of the subterminal cell ..... *P. nigrescens*
1. Cortical filaments 8-13 cells long, with the mature terminal cell 22-32 µm in diameter and 1.5-2 times the diameter of the subterminal cell ..... *P. zostericola*

Polycerea nigrescens (Harvey ex Kützing) Kylin 1940: 36, fig. 20A,B, pl. 7, fig. 16.

Reference: Womersley & Bailey 1987: 124, figs 35D, 38A-D.
Type Locality: Western Port, Victoria.
Distribution: Rottnest I., Western Australia, to Eden, New South Wales.
Specimens: Near Army Jetty, Thomson Bay, 7.ix.1979, *R. Engler* (AD A51128); Thomson Bay, -xi. 1945, *G.G. Smith* (UWA A1538).

Polycerea zostericola (Harvey ex Kützing) Kylin 1940: 37, pl. 7, fig. 17.

Reference: Womersley & Bailey 1987: 126, figs 35E, 38E, F.
Type Locality: King George's Sound, Western Australia.
Distribution: Rottnest I. to Point Peron & King Georges Sound, Western Australia.
Specimens: Fish Hook Bay, on *Posidonia australis*, 6.xii.1984, *E.M. Gordon-Mills* (AD A56712); Nancy Cove, on *Amphibolis antarctica*, *Posidonia sinuosa* & *P. australis*, 26.xi.1985, *D.I. Walker* (AD A56954).

Genus: **Nemacystis**

Nemacystis novae-zelandiae Kylin 1940: 48, fig. 26c, d, pl. 8, fig. 20.

Reference: Womersley 1987: 130, figs 39B, 40F-H.
Type Locality: Waiheke I., Auckland, New Zealand.
Distribution: Rottnest I., Western Australia, to Crawfish Rock, Victoria; New Zealand.
Specimens: Nancy Cove, 26.x.1985, *D.I. Walker* (AD A56854); 26.xi.1985, *D.I. Walker* (AD A56957).

ORDER SPACELARIALES

Genus: **Cladostephus**

Cladostephus spongiosus (Hudson) C. Agardh 1817: xxvi.

Reference: Womersley 1987: 185, figs 60D, 62E-G.
Type Locality: England.
Distribution: Cosmopolitan.
Specimens: Thomson Bay, xi.1945, *G.G. Smith* (UWA A1547); Natural Jetty, 17.x.1985, *D.I. Walker* (UWA A1596-7).

Genus: **Sphacelaria**

Key to the species of *Sphacelaria* from Rottnest I.
from Womersley (1987)

1. Thallus 1-4 (-7) mm high, epiphytic on Fucales; filaments less than 25 µm diameter; propagula not present ..... *S. chorizocarpa*

1. Thallus commonly 4-12 mm high, on rock or epiphytic; axes or lower filaments over 25 µm in diameter; propagula usually present ..... 2.
2. Propagula tribuliform or ellipsoid, with short arms ..... 3.
2. Propagula with long, slender, cylindrical or basally constricted arms ..... 4.
3. Older filaments (40-)50-70(-85) µm in diameter, segments L/B 0.6-1 with (2-)3-5(-6) longitudinal walls in side view ..... *S. novae-hollandiae*
3. Older filaments 30-45(-50) µm in diameter, segments L/B 1-1.5(-2) with 1-2(-3) longitudinal walls in side view ..... *S. tribuloides*
4. Axes bearing more or less determinate laterals, usually at fairly broad angles; propagula with basally constricted arms and the apical cell normally developing into a terminal hair between the arms ..... *S. biradiata*
4. Axes bearing indeterminate (or largely so) laterals, usually of similar form to the axes and at fairly narrow angles; propagula with cylindrical arms, not basally constricted, and with the apical cell not developing into a hair ..... *S. rigidula*

Sphacelaria biradiata Askenasy 1894: 15, pl. 2, fig. 12.

Reference: Womersley 1987: 162, figs 51B, 53A-G
Type Locality: "Adelaide", South Australia.
Distribution: Rottnest I. Western Australia, to Walkerville, Victoria; Tasmania.
Specimen: Green I., on *Posidonia sinuosa*, 24.ix.1985, *D.I. Walker* (AD A56783).

Sphacelaria chorizocarpa Savageau 1900: 312 (R42), fig. 11.

Reference: Womersley 1987: 158, fig. 49G-K.
Type Locality: Busselton, Geographe Bay, Western Australia.
Distribution: Type locality and Rottnest I., Western Australia.
Specimen: Salmon Bay, 12.xii.1945, *G.G. Smith* (AD A2099).

Sphacelaria novae-hollandiae Sonder 1845: 50.

References: Womersley 1987: 158, figs 45E, 50A-H; Sauvageau 1901: 137, fig. 33.
Type Locality: Western Australia (probably near Fremantle).
Distribution: Rottnest I., Western Australia, to Port Stanvac, South Australia; Mauritius; tropical Pacific; western tropical Atlantic.
Specimens: Strickland Bay, 5.ix.1979, *S. Clarke & R. Engler* (AD A51122); King Head, 6.ix.1979, *H.B.S. Womersley* (AD A50792).

Sphacelaria rigidula Kützing 1843: 292.

References: Womersley 1987: 166, figs 51D, 54A-G; Prud'homme van Reine 1982: 203, figs 508-554.
Type Locality: Red Sea.
Distribution: Cosmopolitan.
Specimens: Strickland Bay, 5.ix.1979, *S. Clarke & R. Engler* (AD A51121); Rottnest I., 1.v.1965, *G.G. Smith* (UWA A557).

Sphacelaria tribuloides Meneghini 1840: 50.

References: Womersley 1987: 160, figs 45G, 52A-C; Prud'homme van Reine 1982: 179, figs 422-454.
Type Locality: Italy (Gulf of Spezia).
Distribution: Cosmopolitan in tropical and temperate seas.
Record: Womersley 1967: 201.
Specimens: Radar Reef, 2.v.1965, *G.G. Smith* (UWA A445).

ORDER DICTYOTALES

Genus: **Dictyota**

Key to the species of *Dictyota* from Rottnest I.
modified from Womersley (1987)

1. Thallus segments undulate, plants attached by thread-like fibres ..... *D. prolifera*
1. Thallus segments not undulate, not attached by thread-like fibres ..... 2.
2. Branches usually less than 1 mm wide ..... *D. furcellata*
2. Branches 3-10 mm wide ..... 3.
3. Thallus regularly dichotomous ..... 4.
3. Thallus not regularly dichotomous ..... *D. naevosa*
4. Branches with marginal "teeth" ..... *D. ciliolata*
4. Branches without marginal "teeth" ..... *D. dichotoma*

Dictyota ciliolata Kützing 1859: 12, pl. 27.

Type Locality: La Guayra, Venezuela.
Distribution: Widely distributed in tropical and subtropical waters.
Record: Harvey 1855b: 536 (as *D. ciliata*).
Specimens: Rottnest I., 28.iii.1932, *Baird* (UWA A1546).

Dictyota dichotoma (Hudson) Lamouroux 1809: 42.

Reference: Womersley 1987: 194, figs 64H-M, 65A, B.
Type Locality: England.
Distribution: Almost cosmopolitan
Record: Harvey 1855b: 536.

Dictyota furcellata (C. Agardh) J. Agardh 1848: 90.

Reference: Womersley 1987: 194, figs 65C, 66A-C
Type Locality: Shark Bay, Western Australia.
Distribution: Shark Bay, Western Australia, to Western Port, Victoria.
Record: Harvey 1855b: 536.

Dictyota naevosa (Suhr) J. Agardh 1848: 95.

Reference: Womersley 1987: 190, figs 63B, 64E.
Type Locality: Algoa Bay, South Africa.
Distribution: Port Denison, Western Australia, to Port Willunga, South Australia; South Africa.
Specimens: Armstrong Reef, 27.ix.1982, *D.I. Walker & G. Kendrick* (UWA A1605); Green I., 9.x.1988, *J.M. Huisman* (MURU JH 158-059).

Dictyota prolifera Lamouroux 1809: 42.

Reference: Womersley 1987: 190, figs 63A, 64A-D.
Type Locality: "Nov. Holl."
Distribution: Rottnest I., Western Australia, to Walkerville, Victoria.
Record: Harvey 1855b: 536 (as *D. radicans*).

Genus: **Dictyopteris**

Key to the species of *Dictyopteris* from Rottnest I.

1. Thallus with lateral veins running from the midrib to the margin ..... 2.
1. Thallus without lateral veins ..... *D. muelleri*
2. Sporangia in recurved lines ..... *D. australis*
2. Sporangia not in recurved lines ..... *D. plagiogramma*

Dictyopteris australis (Sonder) Askenasy 1888: 30.

References: Womersley 1987: 222, figs 76A, 77A-G; Allender & Kraft 1983: 107, figs 17C, D, 18C, D.
Type Locality: Lefevre Peninsula, South Australia.
Distribution: Probably Australia-wide; India; Hawaiian Is.
Specimens: Near Army Jetty, Thomson Bay, 7.ix.1979, *R. Engler* (AD A51133); Rottnest I., 2.v.1965, *G.G. Smith* (UWA A1540).

Dictyopteris muelleri (Sonder) Reinbold 1899: 43.

References: Womersley 1987: 227, pl. 1, fig. 2, figs 78B, 79E-J; Fuhrer *et al.* 1981: 71, pls 112, 113; Harvey 1860: pl. 180.
Type Locality: Lefevre Peninsula, South Australia.
Distribution: North of Geraldton, Western Australia, to Port Jackson, New South Wales; Tasmania.
Specimens: Rottnest I., 16.xii.1945, *G.G. Smith* (UWA A1539); Bickley Bay, 12.xii.1945, *G.G. Smith* (UWA A85); Rottnest I., 17.iii.1980, *M.A. Borowitzka* (PERTH 2321)

Dictyopteris plagiogramma (Montagne) Vickers 1905: 58.

Reference: Allender & Kraft 1983: 103, figs 17A, B, 18A, B.
Type Locality: Havana, Cuba.
Distribution: Widespread in tropical seas
Specimens: Armstrong Reef, 27.ix.1982, *D.I. Walker & G. Kendrick* (UWA A1606); Roe Reef, 25.iii.1989, *J.M. Huisman* (MURU JH 081).

Genus: **Distromium**

Distromium flabellatum Womersley 1967: 218, fig. 3.

Reference: Womersley 1987: 230, figs 80B, 81E-I.
Type Locality: Port Willunga, South Australia.
Distribution: North of Dongara, Western Australia, to Port Phillip, Victoria.
Specimens: King Head, 6.ix.1979, *H.B.S. Womersley* (AD A50799); Near Army Jetty, Thomson Bay, 7.ix.1979, *R. Engler* (AD A51130); Parker Point, 24.ix.1982, *D.I. Walker & G. Kendrick* (UWA A1602); North of Point Clune, 6.xii.1984, *G.T. Kraft & A.J.K. Millar* (AD A57062).

Genus: **Dilophus**

Key to the species of *Dilophus* from Rottnest I.
from Womersley (1987)

1. Branches 2-4 mm wide; medullary layer 1(-2) cells thick in central region of branches, with margins 2-4 cells thick ..... *D. crinitus*
1. Branches 3-7 mm wide; medullary layer 2-4 cells thick in central region of branches, with margins 4-6 cells thick ..... *D. fastigiatus*

Dilophus crinitus J. Agardh 1897: 99.

Reference: Womersley 1987: 206, figs 69B, 70A-C
Type Locality: Rottnest I., Western Australia.
Distribution: Only known from the type locality.

Dilophus fastigiatus (Sonder) J. Agardh 1882: 107.

Reference: Womersley 1987: 206, figs 69C, 70D-I; Harvey 1859a: pl. 82 (as *Dictyota fastigiata*?).
Type Locality: Western Australia.
Distribution: Champion Bay, Western Australia, to Walkerville, Victoria.
Record: Harvey 1859a: pl. 82.
Specimens: Point Clune, 8.ii.1989, *J.M. Huisman & G. Kendrick* (MURU JH 124).

Genus: **Glossophora**

Glossophora nigricans (J. Agardh) Womersley 1967: 214.

Reference: Womersley 1987: 199, figs 66H-K, 67A.
Type Locality: Orford, Tasmania
Distribution: Dongara, Western Australia, to Walkerville, Victoria; Tasmania.
Specimens: Rottnest I., -.xi.1945, *G.G. Smith* (UWA A1545); Bickley Bay, -.xi.1945, *A.M. Baird* (AD A2090); Green I., 9.x.1988, *J.M. Huisman* (MURU JH 107).

Genus: **Lobophora**

Lobophora variegata (Lamouroux) Womersley 1967: 221.

References: Womersley 1987: 255, figs 91F, G, 92A; Allender & Kraft 1983: 81, figs 4G-H, 5A-B.
Type Locality: Antilles.
Distribution: Tropical to warm temperate coasts in most seas.
Specimens: Point Clune, -.xi.1945, *A.M. Baird* (UWA A1543); Parker Point, 24.ix.1982, *D.I. Walker & G. Kendrick* (UWA A1603); Nancy Cove, 16.v.1986, *D.I. Walker* (AD A57111).

Genus: **Lobospira**

Lobospira bicuspidata Areschoug 1854: 364.

Reference: Womersley 1987: 214, figs 72K, L, 73A, B; Fuhrer *et al.* 1981: 69, pl. 109; Harvey 1858: pl. 34.
Type Locality: Port Adelaide, South Australia.
Distribution: Nickol Bay, Western Australia, to Eden, New South Wales; Tasmania.
Specimens: Natural Jetty, -.xi.1945, *A.M. Baird* (UWA A29); -.v.1965, *G.G. Smith* (UWA A1599, A1541); 25.xi.1945, *G.G. Smith* (AD A2097); Nancy Cove, 16.x.1985, *D.I. Walker* (UWA A1598).

Genus: **Pachydictyon**

Key to the species of *Pachydictyon* from Rottnest I.
from Womersley (1987)

1. Upper branches fastigiate, subdichotomous to lateral, (300-)400-1200(-1500) µm broad, lower parts 1-3 mm broad; sporangia clustered on the upper branches. Plants usually epilithic or epiphytic on larger algae ..... *P. paniculatum*

1. Upper branches divaricate, dichotomous, less than 300 µm broad, lower parts 0.5-1 mm broad, sporangia borne singly on the upper branches. Plants usually epiphytic on seagrasses ..... *P. polycladum*

Pachydictyon paniculatum (J. Agardh) J. Agardh 1894a: 84.

References: Womersley 1987: 211, figs 71D, 72F-J; Fuhrer *et al.* 1981: 70, pl. 110.
Type Locality: Picton, Western Australia (Bunbury).
Distribution: Geraldton and Abrolhos Islands, Western Australia, to Sydney, New South Wales; Tasmania.
Specimens: Point Clune, 26.xi.1945, *A.M. Baird* (UWA A79); Bathurst Point, -.xi.1945, *G.G. Smith* (UWA A1542); Rocky Bay, 6.xii.1984, *E.M. Gordon-Mills* (AD A56666).

Pachydictyon polycladum (Kützing) Womersley 1967: 216.

References: Womersley 1987: 211, figs 71C, 72A-E; Harvey 1858: pl. 38 (as *Dictyota furcellata*).
Type Locality: Western Australia.
Distribution: Rottnest I., Western Australia, to Port Phillip Bay, Victoria.
Specimens: Natural Jetty, -.v.1965, *G.G. Smith* (UWA A455); Rottnest I., 13.vii.1982, *D.I. Walker* (UWA A1601).

Genus: **Padina**

Key to the species of *Padina* from Rottnest I.
modified from Womersley (1987) and Allender & Kraft (1983)

1. Thallus 4 cells thick above, becoming 6-8(-9) cells thick in mid and lower parts .... *P. gymnospora*
1. Thallus 2 cells thick throughout ..... 2.
2. With non-indusiate sori of sporangia ..... *P. tenuis*
2. With indusiate sori of sporangia ..... 3.
3. Thallus with indusiate sori of sporangia on lower surface only ..... *P. sanctae-crucis*
3. Thallus with indusiate sori of sporangia on upper surface only ..... *P. elegans*

Padina elegans Koh ex Womersley 1987: 220, figs 74B, C, 75K-M.

Type Locality: Mudurup Reef, Cottesloe, Western Australia.
Distribution: Port Denison, Western Australia, to Pearson I., South Australia.
Specimens: Natural Jetty Reef, 10.xi.1968, *Wm.J. Woelkerling* (AD A33329); Nancy Cove, 16.v.1986, *D.I. Walker* (AD A57113).

Padina gymnospora (Kützing) Sonder 1871: 47.

Reference: Womersley 1987: 217, figs 73C, 75A-C.
Type Locality: St. Thomas, Caribbean Sea.
Distribution: Widespread in tropics and subtropics.
Specimen: Point Clune, 6.xii.1984, *D.I. Walker* (AD A56635).

Padina sanctae-crucis Boergesen 1914: 201, figs 153, 154.

Reference: Womersley 1987: 219, figs 74A, 75H-J.
Type Locality: St Croix, West Indies.
Distribution: West coast of Western Australia; one specimen from Point Sinclair, South Australia; Tropics and subtropics of eastern Atlantic; Japan.
Specimens: Point Clune, 8.ii.1989, *J.M. Huisman & G. Kendrick* (MURU JH 126).

Padina tenuis Bory 1827: 590.

Reference: Allender & Kraft 1983: 83, figs 5D, E, 6A.
Type Locality: Mauritius
Distribution: Indo-Pacific.
Record: Womersley 1987: 216.

Genus: **Scoresbyella**

Scoresbyella profunda Womersley 1987: 257, pl. 2, fig. 2, figs 92B, 93.

Type Locality: Egg I., Isles of St Francis, South Australia.
Distribution: Previously known only from the type locality, Investigator Strait, Yorke Peninsula, South Australia; newly recorded from Rottnest I., Western Australia.
Specimens: Roe Reef, 25.iii.1989, *J.M. Huisman* (MURU JH072).

Genus: **Stypopodium**

Stypopodium flabelliforme Weber-van Bosse 1913: 176.

Reference: Allender & Kraft 1983: 96, figs 11D-F, 12.
Type Locality: Indonesia
Distribution: Indo-Pacific
Specimens: Armstrong Reef, 7.ii.1989, *J.M. Huisman* (MURU JH 174); Parker Point, 24.ix.1982 *D.I. Walker & G. Kendrick* (UWA A1604).

Genus: **Zonaria**

Key to the species of *Zonaria* from Rottnest I.
from Womersley (1987)

1. Thallus branches regularly spirally twisted, 1-2(-3) mm broad ..... *Z. spiralis*
1. Thallus branches complanate, not regularly twisted, 2-4 mm broad ..... *Z. turneriana*

Zonaria spiralis (J. Agardh) Papenfuss 1944: 341.

References: Womersley 1987: 250, figs 90A, 91A-C; Fuhrer *et al.* 1981: 72, pl. 115.
Type Locality: Eucla, Western Australia.
Distribution: Rottnest I., Western Australia, to Flinders, Victoria.
Record: Harvey 1855b: 535 (as *Z. interrupta* var. *spiralis*).
Specimens: Rottnest I., 17.iii.1980, *M.A. Borowitzka* (PERTH 2368)

Zonaria turneriana J. Agardh 1871: 438.

Reference: Womersley 1987: 252, figs 90B, 91D, E.
Type Locality: Warrington, Otago, New Zealand.
Distribution: Geraldton, Western Australia, to Port Phillip Heads, Victoria; New Zealand.
Specimens: Radar Reef, 15.ii.1962, *G.G. Smith* (UWA A382); Basin, 24.ix.1982, *D.I. Walker & G. Kendrick* (UWA A1600).

ORDER CUTLERIALES

Genus: **Cutleria**

Cutleria multifida (Smith) Greville 1830: 60, pl. 10.

Reference: Womersley 1987: 260, figs 94A, 95.
Type Locality: Yarmouth, England.
Distribution: Widely distributed in temperate waters.
Specimens: Parker Point, 18.ix.1988, *J. Phillips* (MUCV).

ORDER SPOROCHNALES

Genus: **Austronereia**

Austronereia australis (Harvey) Womersley 1987: 273.

Reference: Womersley 1987: 273, figs 97D, 98F-H.
Type Locality. Georgetown, Tasmania.
Distribution: From Rottnest I., Western Australia, to the Snowy River mouth, Victoria; Tasmania.
Specimens: Point Clune, 5.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU GK 7120).

Genus: **Encyothalia**

Encyothalia cliftonii Harvey 1859a: pl. 62.

References: Womersley 1987: 289, figs 104C, 105G-I; Lucas 1936: 99, fig. 55.
Type Locality: Fremantle, Western Australia.
Distribution: Kalbarri, Western Australia, to Guichen Bay, South Australia; Walkerville, Victoria.
Specimens: Point Clune, 5.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU GK 7186).

Genus: **Sporochnus**

Sporochnus radiciformis (Turner) C. Agardh 1817: xii

Reference: Womersley 1987: 284, figs 102C, D, 103, D-I; Fuhrer *et al.* 1981: 66, pl. 103; Harvey 1862: pl. 226 (as *S. scoparius*).
Type Locality: "New Holl."
Distribution: Rottnest I., Western Australia, to Botany Bay, New South Wales; Japan.
Record: Harvey 1855b: 535 (as *S. scoparius*). Womersley 1987: 284.

ORDER SCYTOSIPHONALES

Genus: **Colpomenia**

Key to the species of *Colpomenia* from Rottnest I.
from Parsons (1982)

1. Thallus light brown, often turning green when dead, smooth and thin with 1-2 layers of small cortical cells and 2-3 layers of larger inner cells. Sori continuous over the lower thallus and the sporangia show two rows of loculi ..... *C. peregrina*

1. Thallus dark, yellowish brown, much convoluted with a thick wall of three layers of small cortical cells and five or more layers of large inner cells. Sori discontinuous, raised, with plurilocular sporangia showing a single row of loculi ..... *C. sinuosa*

Colpomenia peregrina (Sauvageau) Hamel 1937: 201.

References: Womersley 1987: 298, figs 107B, 108G, H; Parsons 1982: 295, figs 6, 7.
Type Locality: Brittany, France.
Distribution: Widespread in temperate regions. Probably throughout eastern, western and southern Australia.
Specimens: Rottnest I., -.x.1934, *Crosby* (PERTH)

Colpomenia sinuosa (Roth) Derbes & Solier in Castagne 1851: 95.

References: Womersley 1987: 297, figs 107A, 108E, F; Fuhrer *et al.* 1981: 64, pl. 99.
Type Locality: Cadiz, Spain.
Distribution: Almost cosmopolitan.
Record: Harvey 1855b: 536 (as *Asperococcus sinuosus*).
Specimens: Mable Cove, 8.ii.1989, *J.M. Huisman* (MURU JH 122).

Genus: **Hydroclathrus**

Hydroclathrus clathratus (C. Agardh) Howe 1920: 590.

References: Womersley 1987: 300, figs 109A, 110A, B; Fuhrer *et al.* 1981: pl. 100.
Type Locality: Uncertain.
Distribution: Cosmopolitan in tropical to warm temperate seas.
Record: Harvey 1855b: 536 (as *H. cancellatus*).
Specimens: Strickland Bay, 5.ix.1979, *S. Clarke & R. Engler* (AD A51103); Rottnest I., 5.iv.1931, *Rotenberg* (UWA A1533); West End, xi.1945, *G.G. Smith* (UWA A205); North Point Reef, -.xi.1966, *G.G. Smith* (UWA A1534); 23.ii.1967, *G.G. Smith* (UWA A1535); Radar Reef, 23.ii.1967, *G.G. Smith* (UWA A1536).

Genus: **Petalonia**

Petalonia fascia (O.F. Müller) Kuntze 1891-1898: 419

Reference: Womersley 1987: 292, figs 106A, 108A, B; Fletcher 1987: 230, figs 61A, 62, pl. 9.
Type Locality: Christiansund, Norway.
Distribution: Widely distributed in temperate waters.
Specimens: Parker Point, intertidal, 18.ix.1988, *M.D. Guiry* (MURU JH 025, 026).

ORDER DICTYOSIPHONALES

Genus: **Asperococcus**

Asperococcus bullosus Lamouroux 1813: 277, pl. 12, fig. 5.

References: Womersley 1987: 320, figs 114C, 116A, B, 117A; Lucas 1936: 104, fig. 56.
Type Locality: "Medit. Gall."
Distribution: Widely distributed in temperate seas.
Specimens: Thomson Bay, -.xi.1945, *G.G. Smith* (UWA A22A-C, UWA A232); -.v.1965, *G.G. Smith* (UWA A1537); Green I., on *Posidonia sinuosa*, 7.xii.1984, *M.J. Parsons* (AD A56299).

Genus: **Giraudia**

Key to the species of *Giraudia* from Rottnest I.
from Womersley (1987)

1. Erect axes with tiers of 5-7(-9) cells, becoming six-sided on mature parts in face view, tapering to an uniseriate apex bearing laterals with plurilocular sporangia, and with a terminal hair ..... *G. robusta*
1. Erect axes with tiers of 10-12(-15) cells, each oblong in face view, tapering to an apex bearing a cluster of 2-6 hairs ..... *G. sphacelarioides*

Giraudia robusta Skinner & Womersley 1984: 168, figs 11-21, 34, 35, 53.

Reference: Womersley 1987: 308, fig. 111.
Type Locality: Pennington Bay, Kangaroo I., South Australia.
Distribution: Rottnest I., Western Australia, to Robe, South Australia, and Bridport, north Tasmania.
Specimens: Near Army Jetty, Thomson Bay, 7.ix.1979, *R. Engler* (AD A51129); Nancy Cove, on *Posidonia sinuosa*, 7.xii.1984, *E.M. Gordon-Mills* (AD A56618).

Giraudia sphacelarioides Derbes & Solier 1851: 101.

Reference: Womersley 1987: 306, fig. 110D-H.
Type Locality: Mediterranean.
Distribution: Rottnest I., Western Australia, to Tasmania; Europe; Mediterranean; north-east North America.
Specimens: Fish Hook Bay, on *Posidonia australis*, 6.xii.1984, *E.M. Gordon-Mills* (AD A56662).

ORDER LAMINARIALES

Genus: **Ecklonia**

Ecklonia radiata (C. Agardh) J. Agardh 1848: 146.

References: Womersley 1987: 332, pl. 4, fig. 2, figs 120, 121I-K; Fuhrer *et al.* 1981: 74, pls 118, 119; Lucas 1936: 95, fig. 52.
Type Locality: "New Holland."
Distribution: From Kalbarri, Western Australia, to Caloundra, Queensland; Tasmania; Lord Howe I.; New Zealand; South Africa.
Specimens: Outer Reef, -.xi.1945, *G.G. Smith* (UWA A1530); Rottnest I., 2.viii.1974, *T. MacFarlane* (UWA A1531); Radar Reef, 15.ii.1967, *G.G. Smith* (UWA A1532).

ORDER FUCALES

Genus: **Caulocystis**

Caulocystis uvifera (C. Agardh) Areschoug 1854: 335.

References: Womersley 1987: 359, fig. 129A; Fuhrer *et al.* 1981: 81, pl. 133; Womersley 1964: 101, fig. 45, pl. 15, fig. 2.
Type Locality: Shark Bay, Western Australian.
Distribution: Shark Bay, Western Australia, to Coogee (Sydney), New South Wales; Norfolk I.
Specimens: Rottnest I., -.viii.1952, *G.G. Smith* (UWA A1521); 9.viii.1950, *A. Cribb* (AD A14003).

Genus: **Cystophora**

Key to the species of *Cystophora* from Rottnest I.
from Womersley (1964)

1. Laterals distinctly tristichous, bearing alternately distichous, slender ramuli 0.25-0.5 mm broad; receptacles terete-torulose to moniliform ..... *C. monilifera*
1. Laterals branched in one plane or irregular, ramuli usually over 0.5 mm broad, in most species normally transformed into receptacles; receptacles subterete, or compressed, or irregularly swollen by conceptacles ..... 2.
2. Receptacles terete-torulose (not or slightly compressed), usually distinctly less than 1 cm long and under 1 mm thick; vesicles absent ..... *C. brownii*
2. Receptacles terete, or compressed, or irregularly swollen, usually over 1 cm long and over 1 mm thick (at least at conceptacles); vesicles usually present ..... *C. grevillei*

Cystophora brownii (Turner) J. Agardh 1848: 241.

References: Womersley 1964: 78, fig. 18, pl. 6, fig. 1; 1987: 386, figs 142A, 145A.
Type Locality: King George's Sound, Western Australia.
Distribution: Port Denison, Western Australia, to Kangaroo I., Victor Harbour and Glenelg, South Australia; north-east Tasmania.
Specimens: Strickland Bay, 5.ix.1979, *S. Clarke & R. Engler* (AD A51087); on shallow reefs, xii.1945, *G.G. Smith* (UWA A77).

Cystophora grevillei (C. Agardh ex Sonder) J. Agardh 1848: 245.

References: Womersley 1964: 85, figs 26, 27, pl. 8, fig. 2; 1987: 374, figs 134B, 136E, F.
Type Locality: Western Australia (probably near Fremantle).
Distribution: Dongara, Western Australia, to Wilson's Promontory, Victoria; Tasmania.
Specimens: Salmon Point, 7.ix.1979, *S. Clarke & R. Engler* (AD A51125).

Cystophora monilifera J. Agardh 1848: 241.

References: Womersley 1964: 74, figs 12-14, pl. 5, fig. 1; 1987: 382, figs 138B, 141A-C.
Type Locality: Western Australia.
Distribution: Nickol Bay, Western Australia, to Long Bay, New South Wales; northern Tasmania.
Specimens: Rottnest I., 12.xii.1945, *G.G. Smith* (UWA A34); -.viii.1952, *G.G. Smith* (UWA A1518).

Genus: **Cystoseira**

Cystoseira trinodis (Forsskål) C. Agardh 1820: 67.

References: Womersley 1987: 357, figs 128B, 131E, F; Papenfuss & Jensen 1967: 17, figs 1, 2.
Type Locality: Red Sea
Distribution: Northern Australia around to Victor Harbour, South Australia; Red Sea; Indian Ocean; Indonesia.
Specimens: Mable Cove, 8.ii.1989, *J.M. Huisman* (MURU JH 132).

Genus: **Hormophysa**

Hormophysa cuneiformis (Gmelin) Silva in Silva *et al.* 1987: 81.

References: Womersley 1987: 356, figs 128A, 131C, D; Allender & Smith 1978: 61, fig. 1A-C. (as *H. triquetra*).
Type Locality: "In Mari Capensi."

Distribution: Tropical and subtropical parts of the Indian and western Pacific Ocean.
Specimens: King Head, 6.ix.1979, *H.B.S. Womersley* (AD A50848); North Point, -.xi.1945, *G.G. Smith* (UWA A1317); -.xi.1966, *G.G. Smith* (UWA A1289); 23.ii.1967, *G.G. Smith* (UWA A1520).

Genus: **Myriodesma**

Myriodesma integrifolium Harvey 1859b: 286, pl. 186.

References: Womersley 1987: 412, figs 152, 155E; Nizamuddin & Womersley 1967: 376, fig. 3, pl. 70a.
Type Locality: Georgetown, Tasmania.
Distribution: Cottesloe, Western Australia, to Western Port, Victoria; northern Tasmania.
Specimens: Rottnest I., 2.v.1965, *G.G. Smith* (UWA A528-9, A457A, B).

Genus **Platythalia**

Key to the species of *Platythalia* from Rottnest I.
from Womersley (1987)

1. Laterals (1-)2-3(-4) mm broad, linear, without marginal spines ..... *P. angustifolia*
1. Laterals 4-10 mm broad, with well developed coarse marginal spines ..... *P. quercifolia*

Platythalia angustifolia Sonder 1845: 51.

References: Womersley 1987: 404, figs 150A, 155B; Harvey 1860: pl. 128.
Type Locality: Western Australia (probably near Fremantle).
Distribution: From Flat Rocks (40 km south of Geraldton) to Cape Riche, Western Australia
Specimens: Rottnest I., 11.iv. 79, *M.A. Borowitzka* (PERTH 2380)

Platythalia quercifolia (R. Brown ex Turner) Sonder 1845: 51.

References: Womersley 1987: 404, figs 148B, 155A.
Type Locality: "South Coast, Aust."
Distribution: From Geraldton to the Recherche Archipelago, Western Australia.
Record: Harvey 1858: pl. 43 (as *Carpoglossum quercifolium*).
Specimens: Kitson Point, 6.ix.1979, *S. Clarke & R. Engler* (AD A51145); Strickland Bay, 5.ix.1979, *S. Clarke & R. Engler* (AD A51099); Rottnest I., 6.viii.1974, *G.G. Smith* (UWA A1522); 2.v.1965, *G.G. Smith* (UWA A1524); 1.v.1965, *G.G. Smith* (UWA A1525).

Genus: **Sargassum**

Key to the species of *Sargassum* from Rottnest I.
from Womersley (1987, 1954)

1. Lower laterals on primary branches usually pinnately branched, sometimes simple, with branchlets linear to tapering, usually not broad and leaf-like ..... 2.
1. Lower laterals on primary branches simple (rarely once branched), leaf-like, usually broadest centrally and tapering to base and apex ..... 4.
2. Mature primary branches distichous, branch axes flat and winged, 5-10 mm broad, tapering evenly to narrow apices ..... 3.
2. Mature primary branches basally distichous but not above, branch axes terete, lower parts of primary branches 5-10 mm broad, distinct from the upper narrow branchlets ..... *S. heteromorphum*
3. Laterals of main branches tapering fairly evenly from the axis to narrow acute apices, always branched ..... *S. decurrens*

3. Laterals of main branches more leaf-like, constricted at the base and mostly simple .. *S. peronii*
4. Lower laterals leaf-like, usually dark brown, markedly larger than upper laterals of fertile fronds; branch axes 3-sided ..... 5.
4. Lower laterals usually leaf-like but slender in some species (rarely linear with a single branch), usually light to medium brown, markedly to only slightly larger than upper laterals; branch axes angular to terete, not 3-sided ..... 6.
5. Receptacles terete, without spines ..... *S. fallax*
5. Receptacles 3-sided, with spines along the edges ..... *S. tristichum*
6. Lower laterals of main branches linear, simple or furcate, dark brown, usually entire; receptacles in dense, much branched, axillary clusters ..... *S. linearifolium*
6. Lower laterals of main branches simple, lanceolate, basally attenuate, light brown, with a serrate margin; receptacles simple or (usually) in branched clusters ..... 7.
7. Receptacles terete, verrucose, without spines ..... *S. spinuligerum*
7. Receptacles compressed, with a dentate wing around the central region ..... *S. distichum*

Sargassum decurrens (R. Brown ex Turner) C. Agardh 1820: 42.

References: Womersley 1954: 343, pl. 2, fig. 1; 1987: 421, figs 157A, 160A; Harvey 1860: pl. 145.
Type Locality: "North Shores of New Holland."
Distribution: Rottnest I., Western Australia, around northern Australia to Keppel Bay (Rockhampton) Queensland, with an isolated occurence at Wallaroo, South Australia; New Caledonia.
Record: Harvey 1860: pl. 145
Specimens: Strickland Bay, 5.ix.1979, *S. Clarke & R. Engler* (AD A51088); Thomson Bay, -.xii.1945, *G.G. Smith* (UWA A1515).

Sargassum distichum Sonder 1845: 51.

Reference: Womersley & Scott 1987: 444, figs 167, 168F.
Type Locality: Western Australia.
Distribution: Champion Bay, Western Australia, to Port Phillip, Victoria.
Specimens: Rottnest I., 5.xii.1945, *G.G. Smith* (UWA A1514).

Sargassum fallax Sonder 1845: 52.

References: Womersley 1987: 432, pl. 8, fig. 4, figs 161B, 162A, 164C-E; J. Agardh 1889: 68, pl. 20(I), figs 1-7.
Type Locality: Western Australia.
Distribution: Abrolhos Islands, Western Australia, to Ballina, New South Wales.
Specimens: Salmon Bay, 12.xii.1945, *G.G. Smith* (UWA A1507); Rottnest I., 5.xii.1945, *G.G. Smith* (UWA A1508); 12.viii.1950, *G.G. Smith* (UWA A1511); 12.xii.1945, *G.G. Smith* (UWA A1512).

Sargassum heteromorphum J. Agardh 1873: 60.

Reference: Womersley 1987: 421, figs 157B, 160B.
Type Locality: Georgetown, Tasmania.
Distribution: Rottnest I., Western Australia, to San Remo, Victoria; northern Tasmania.
Record: Womersley 1987.

Sargassum linearifolium (Turner) C. Agardh 1820: 24.

References: Womersley & Scott 1987: 440, figs 165, 168B; J. Agardh 1889: 45, pl. 14(III), figs 3-7; Kützing 1861: 11, pl. 18.
Type Locality: "Western coast of New Holland."
Distribution: Generally along southern Australia, Western Australia.
Specimens: Porpoise Bay, -xi.1945, *G.G. Smith* (UWA A1506).

Sargassum peronii (Mertens) C. Agardh 1820: 43.

Reference: Womersley 1954: 344, fig. 1A, B, pl. 1, figs 1, 2.
Type Locality: "Nov. Holl. littus occident."
Distribution: Rockingham, Western Australia; around northern Australia to Rockhampton, Queensland; Aru I.; New Caledonia.
Specimens: Rottnest I., -.viii.1952, *G.G. Smith* (UWA A1516).

Sargassum spinuligerum Sonder 1845: 51.

References: Womersley & Scott 1987: 442, figs 166A, 168D; J. Agardh 1889: 117, pl. 31, figs 1-7
Type Locality: Western Australia.
Distribution: Shark Bay, Western Australia, to Western Port, Victoria.
Specimens: Northside, -.xi.1945, *G.G. Smith* (UWA A1517).

Sargassum tristichum Greville & C. Agardh ex Sonder 1845: 51.

References: Womersley 1987: 436, figs 163A, 164H.
Type Locality: Western Australia.
Distribution: Rottnest I., Western Australia, to Port Noarlunga, South Australia.
Record: Womersley 1987.
Specimens: Rottnest I., 17.iii.1980, *M.A. Borowitzka* (PERTH 2376).

Genus: **Scaberia**

Scaberia agardhii Greville 1830, synop.: xxxvi.

References: Womersley 1987: 354, pl. 6, fig. 3, pl. 7, fig. 1, figs 131A, B; Fuhrer *et al.* 1981: 87, pl. 144; Lucas 1936: 76, fig. 44.
Type Locality: Swan River Settlement, Western Australia.
Distribution: Dongara, Western Australia, to Bondi, New South Wales; northern Tasmania.
Record: Harvey 1855b: 534.
Specimens: Green I., 9.x.1988, *J.M. Huisman* (MURU JH 063); Rottnest I., -.viii.1952, *G.G. Smith* (UWA A1504A, B).

Genus: **Scytothalia**

Scytothalia dorycarpa (Turner) Greville 1830, synop.: xxxiv.

References: Womersley 1987: 351, figs 126, 127I, J. Lucas 1936: 69, fig. 42.
Type Locality: King Georges Sound, Western Australia.
Distribution: Geraldton, Western Australia, to Point Lonsdale, Victoria; north coast of Tasmania.
Record: Harvey 1855b: 534.
Specimens: Rottnest I., 3.viii.1974, *T. MacFarlane* (UWA A1526); viii. 1952, *G.G. Smith* (UWA A1527); Point Clune, -.xi.1945, *A.M. Baird* (UWA A1528).

Genus: **Turbinaria**

Turbinaria gracilis Sonder 1845: 52.

Reference: Taylor 1963: 480, pl. 3, figs 13-21.
Type Locality: Western Australia.
Distribution: Only known reliably from Western Australia.
Specimens: Rottnest I., 3.viii.1974, *T. MacFarlane* (UWA A1505); -.viii. 1950, *G.G. Smith* (UWA A355).

DIVISION RHODOPHYTA

KEY TO THE GENERA OF RED ALGAE FROM ROTTNEST ISLAND

1. Plant calcified ..... 2.
1. Plant not calcified ..... 21.
2. Thallus encrusting ..... 3.
2. Thallus not encrusting ..... 4.
3. Thallus attached to the substratum by rhizoids, usually unattached at the margins, deep red in colour; conceptacles absent ..... *Peyssonnelia*
3. Thallus without rhizoids, usually attached to the substratum at the margins, light pink in colour; conceptacles present when fertile ..... encrusting corallines[1]
4. Thallus minute, semi-endophytic on the coralline algae *Jania*, *Haliptilon* or *Metagoniolithon* ..... 5.
4. Thallus large, attached to rock or epiphytic ..... 6.
5. Plants growing in the geniculae of *Metagoniolithon chara* ..... *Lesueuria*
5. Plants growing on *Haliptilon* or *Jania* ..... *Choreonema*
6. Thallus articulated or appearing articulated due to the breakage of the calcified layer at the dichotomies ..... 7.
6. Thallus without articulations ..... 16.
7. Thallus moniliform, composed of large segments, lightly calcified ..... *Galaxaura*
7. Thallus not moniliform, segments smaller, heavily calcified ..... 8.
8. Thallus brittle, the cortex disassociating into filaments upon decalcification and squashing; with sunken cystocarps ..... *Tricleocarpa*
8. Thallus hard, the cortex firmly coherent; conceptacles protruding ..... 9.
9. All branches flattened with opposite serrations ..... *Cheilosporum*
9. Branches not serrated ..... 10.
10. Branching in false whorls ..... *Metagoniolithon*
10. Branching dichotomous or pinnate ..... 11.
11. Branching dichotomous throughout ..... 12.
11. Branching both dichotomous and pinnate, or exclusively pinnate throughout ..... 14.
12. Branches terete ..... 13.
12. Branches flattened ..... 15.
13. Branch apices with mucilaginous caps ..... *Metagoniolithon*
13. Branch apices without mucilaginous caps ..... *Jania*
14. Fertile intergenicula with not more than two antennae each ..... *Corallina*
14. Fertile intergenicula with more than two antennae each ..... *Haliptilon*
15. Segments narrow, firm, mostly irregularly shaped; reproductive structures in conceptacles ..... *Amphiroa*
15. Segments wide, firm to lax, regularly shaped; reproductive structures in surface sori ..... *Rhodopeltis*
16. Plants with flattened branches ..... 17.
16. Plants with terete branches ..... 19.
17. Plants usually stipitate, upright, red to light pink in colour, with a firm or chalky texture; ..... 18.
17. Plants without stipes, partly encrusting, deep red in colour, cartilaginous ..... *Peyssonnelia*

[1] *Many genera of encrusting coralline algae occur at Rottnest Island. Unfortunately a taxonomic survey has not yet been undertaken, and as such they are not separated in this key.*

18. Plants firm, easily broken, branches flabellate; reproductive structures in protruding conceptacles ..... *Metamastophora*
18. Plants lax, generally pliable, branches of uniform width throughout; reproductive structures in sunken cystocarps ..... *Galaxaura*
19. Plants with a dense covering of pigmented monosiphonous filaments ..... *Galaxaura*
19. Plants naked ..... 20.
20. Plants lubricous, with calcification surrounding the medulla, some gonimoblast filaments intermingling with the cortical filaments, carpogonial branch straight, 10-19 cells long, borne on an outer medullary/inner cortical supporting cell ..... *Dotyophycus*
20. Plants soft to chalky, with calcification in the cortex; gonimoblast filaments not intermingling with the cortical filaments; carpogonial branch usually 4 (3-5) cells long, curving and borne laterally on a mid-cortical supporting cell ..... *Liagora*
21. Plants associated with a sponge ..... 22.
21. Plants not associated with a sponge ..... 23.
22. Emergent algal portions oppositely branched ..... *Ptilophora*
22. Emergent algal portions dichotomously branched, plants can have a hard, woody stalk ..... *Codiophyllum*
23. Plants uniaxial, filamentous, corticated or uncorticated, with visible pigmented monosiphonous filaments (at least in the young parts) ..... 24.
23. Plants multiaxial or uniaxial, if uniaxial, without visible pigmented monosiphonous filaments (may have colourless terminal trichoblasts) ..... 65.
24. Thallus a mesh of anastomosing filaments ..... 25.
24. Thallus not a mesh of anastomosing filaments ..... 26.
25. Mesh flabellate (fan-shaped), distinctly flattened; filaments tightly packed; cystocarps with a loose involucre of protective branches; tetrasporangia borne on the filaments; plants common ..... *Haloplegma*
25. Mesh somewhat tubular, filaments loosely arranged; cystocarp with a cellular pericarp; tetrasporangia borne in stichidia; plants rare ..... *Halodictyon*
26. Plants with terminal and lateral tufts on a solid axis; monosiphonous region short, becoming encircled by three irregularly-shaped periaxial cells; colour typically light pink to dirty red ..... *Asparagopsis*
26. Plants not as above ..... 27.
27. Main axes without pericentral cells (cells of equal length to the axial cells surrounding the axis in distinct tiers) ..... 28.
27. Main axes with pericentral cells ..... 60.
28. Filaments either ecorticate, with nodal cortication or with corticated older branches ..... 29.
28. Cortication complete ..... 59.
29. Plants with nodal cortication, at least in the side branches ..... 30.
29. Plants ecorticate or with corticated older branches ..... 31.
30. Branching dichotomous or sub-pinnate, cortication similar throughout the thallus .... *Ceramium*
30. Branching irregular, main axis entirely corticated, secondary branches only corticated at the nodes ..... *Spyridia*
31. Plants with never more than one lateral branch per axial cell ..... 32.
31. Plants with greater than one lateral branch (whorl branch) per axial cell ..... 44.
32. Undivided monosporangia or propagules present ..... 33.
32. Monosporangia or propagules not present ..... 34.
33. Plant microscopic, endo- to epiphytic, monospores (<25 µm in length) produced.. *Audouinella*
33. Plants few to many cms tall, large (>100 µm in length) propagules produced, epilithic or epiphytic ..... *Monosporus*
34. Plants small (<3cm), growing from a well-developed prostrate system ..... 35.

34. Plants larger, if a prostrate system is present it is not as well-developed as the upright axes ..... 36.
35. Apical cells with whorls of colourless hairs ..... *Anotrichium*
35. Apical cells naked ..... *Spermothamnion*
36. Plants uncorticated ..... 37.
36. Plants corticated ..... 40.
37. Plants mostly unilaterally branched ..... *Bornetia*
37. Plants alternately or subdichotomously branched ..... 38.
38. Plants subdichotomously branched, generally with large cells (visible to the naked eye). Tetrasporangia and spermatangial heads pedicillate, often in whorls; carposporophytes single and surrounded by single-celled (or with an inconspicuous basal cell) involucral branches 39
38. Plants alternately branched, generally with smaller cells. Tetrasporangia and spermatia sessile. Carposporophytes often in pairs and with multi-cellular involucral branches ..... *Callithamnion*
39. Mature vegetative cells usually large and globose or oblong, 1.0-4.7 mm long and 0.3-1.0 mm in diam. Involucral branches each comprising a small ovoid cell and an apical elongate cell. Spermatangia in minute fascicles which are whorled in the constrictions between vegetative cells or clustered in an apical cap on a vegetative cell. Tetrasporangia borne in groups of 2 to several, similarly to spermatangia ..... *Griffithsia*
39. Vegetative cells usually small and elongate, 0.5-1.5 (-2.3) mm long and 0.2-0.6 mm in diam. Involucral branches of single cells. Spermatangia clustered in heads on large clavate pedicels, in whorls or single and adaxial from the upper part of vegetative cells, or adaxial from each larger basal cell of a whorl of trichoblasts. Tetrasporangia in clusters of 1-12, each borne separately on a pedicel, whorled or adaxial from the upper part of vegetative cells, or adaxial from each larger basal cell of trichoblasts ..... *Anotrichium*
40. Branching subdichotomous ..... *Anotrichium*
40. Branching alternate ..... 41.
41. Thallus branching entirely in one plane, densely corticated; apical cell obliquely-dividing ..... *Euptilota*
41. Thallus not branching in one plane ..... 42.
42. Cystocarps terminal, spermatangia in compact heads ..... *Spongoclonium*
42. Cystocarps lateral, usually in pairs; spermatangia sessile on lateral branches ..... 43.
43. Cystocarps naked ..... *Thamnocarpus*
43. Cystocarps with protective involucral branches ..... *Callithamnion*
44. Plants with two branches per axial cell ..... 45.
44. Plants with greater than two branches per axial cell ..... 47.
45. Plants corticated; with spherical glandular cells borne on the basal cells of lateral branches and on the corticating filaments ..... *Balliella*
45. Plants uncorticated; if glandular cells present, then ovoid, sessile on special 2-4 celled branches ..... 46.
46. Glandular cells present ..... *Antithamnion*
46. Glandular cells absent ..... *Shepleya*
47. Plants with three whorl branches per axial cell ..... 48.
47. Plants with more than three whorl branches per axial cell ..... 50.
48. Plants gelatinous (whorl branches 3-5 per axial cell) ..... *Dudresnaya*
48. Plants not gelatinous ..... 49.
49. Plants with one long and two short whorl branches per axial cell, glandular cells present ..... *Trithamnion*

49. Plants with three equal whorl branches per axial cell, glandular cells absent ..... *Gattya*
50. Plants with four branches per axial cell ..... 51.
50. Plants with five branches per axial cells ..... 58.
51. Plants gelatinous ..... 52.
51. Plants not gelatinous ..... 53.
52. Plants occasionally appearing annulated. Main axes approximately 2 mm broad. Carpogonial branches bearing short lateral branches, with fusion between the fertilized carpogonium and cells of these laterals; auxiliary cells terminal on auxiliary cell branch ..... *Acrosymphyton*
52. Plants never annulated. Main axes up to 1 cm broad. Three to five branches per axial cell. Carpogonial branches generally without laterals, fertilized carpogonium fusing with cell(s) 3-5 of the carpogonial branch; auxiliary cell intercalary in auxiliary cell branch ..... *Dudresnaya*
53. Plants with glandular cells ..... 54.
53. Plants without glandular cells ..... 56.
54. Plants with two long and two short whorl branches per axial cell ..... 55.
54. Plants with four relatively equal whorl branches per axial cell ..... *Ptilocladia*
55. Glandular cells terminal on whorl branches ..... *Acrothamnion*
55. Glandular cells lateral on whorl branches ..... *Platythamnion*
56. Thallus with a distinct prostrate axis; 4-5 whorl branches per axial cell; lateral branches replacing whorl branches ..... 57.
56. Thallus without a distinct prostrate axis (if present, not as well developed as the upright axes); indeterminate lateral branches forming in addition to whorl branches (therefore up to eight branches per axial cell). Plants with the appearance of a series of tufts ..... *Wollastoniella*
57. Whorl branches with pointed apical cells ..... *Drewiana*
57. Whorl branches with obtuse apical cells ..... *Medeiothamnion*
58. Plants gelatinous ..... *Dudresnaya*
58. Plants not gelatinous ..... *Wrangelia*
59. Cortication very irregular ..... *Ceramium*
59. Cortication regular, cells subrectangular and in series, nodes with spines ..... *Centroceras*
60. Plants distichously branched, with the ultimate branches produced from the upper sides of the lateral branches (having the appearance of a series of "combs") ..... *Dasyclonium*
60. Plants not as above ..... 61.
61. Monosiphonous filaments simple ..... *Holotrichia*
61. Monosiphonous filaments branched ..... 62.
62. Thallus sympodial, monosiphonous filaments subdichotomously branched, the ends of the three cells at the dichotomy forming a "Y" (i.e. each cell touching the other two) ..... 63.
62. Thallus monopodial, the monosiphonous filaments not forming a "Y" at the dichotomies ..... 64.
63. Thallus dorsiventral, laterals borne alternately every 2 or more axial segments ..... *Heterosiphonia*
63. Thallus radial at apex, laterals borne on every segment ..... *Dasya*
64. Thallus with 7 pericentral cells; sporangia in upper thallus branches ..... *Brongniartella*
64. Thallus with 4 pericentral cells; sporangia in stichidia borne on monosiphonous stalks ..... *Lophocladia*
65. Thallus, or portions thereof, hollow and tubular, sometimes constricted at intervals, with or without diaphragms at the nodes; with glandular cells borne on the inner surface of the cortical cells or on internal longitudinal filaments ..... 66.

65. Thallus of various forms, if hollow and tubular, without glandular cells ..... 70.
66. Plants with a prominent solid axis bearing vesicles ..... *Botryocladia*
66. Plants generally entirely hollow, occasionally with a very short cartilaginous stipe, sometimes with constrictions or diaphragms ..... 67.
67. Plants sac-like, without constrictions or diaphragms ..... *Gloiosaccion*
67. Plants with constrictions or diaphragms, at least at the branch bases ..... 68.
68. Tetrasporangia in sori; diaphragms absent, constrictions present only at the base of branches ..... *Webervanbossea*
68. Tetrasporangia scattered; diaphragms or constrictions present at regular intervals ..... 69.
69. Tetrasporangia tetrahedrally divided, diaphragms not associated with prominent constrictions; glandular cells associated with inner longitudinal filaments ..... *Champia*
69. Tetrasporangia cruciately divided, diaphragms and constrictions present in cylindrical thallus which is di- or tri-chotomous; glandular cells on stellate cells which arise on inside of membrane walls ..... *Coelarthrum*
70. Thallus with terete branches, occasionally compressed or restricted at intervals, never membranous ..... 71.
70. Thallus distinctly flattened or membranous, with branches at least twice as broad as thick in cross section ..... 103.
71. Plants with obvious pericentral cells (visible at least in transverse section), with or without cortication ..... 72.
71. Plants without obvious pericentral cells ..... 81.
72. Branch apices sunk in obtuse branch tips, plants cartilaginous ..... *Laurencia*
72. Branch apices not sunk ..... 73.
73. Plants distichously branched, with the ultimate branches produced from the upper sides of the lateral branches (having the appearance of a series of "combs") .... *Dasyclonium*
73. Plants not as above ..... 74.
74. Axes slightly flattened ..... *Protokuetzingia*
74. Axes terete ..... 75.
75. Plants dorsiventral, with a prostrate axis ..... *Herposiphonia*
75. Plants not dorsiventral ..... 76.
76. Tetrasporangia borne longitudinally or spirally in the ramuli. Pericentral cells usually visible ..... 77.
76. Tetrasporangia scattered in the ramuli or in stichidia. Pericentral cells obscured by cortication ..... 79.
77. More than four pericentral cells ..... *Polysiphonia*
77. Four pericentral cells ..... 78.
78. Main axis bearing numerous short laterals in tufts ..... *Tolypiocladia*
78. Lateral branches of similar form to the main axis ..... *Polysiphonia*
79. Branches wholly verticillate or umbellate ..... *Coeloclonium*
79. Branches not as above ..... 80.
80. Ramuli fusiform or claviform, thinned at insertion ..... *Chondria*
80. Ramuli spine-like ..... *Acanthophora*
81. Plants uniaxial, with an obvious apical cell or main axis clearly visible in transverse sections for at least a short distance behind the apex ..... 82.
81. Plants multiaxial or uniaxial, if uniaxial, without an obvious apical cell or main axis ..... 88.
82. Branches constricted at intervals ..... *Erythroclonium*
82. Branches not constricted at intervals ..... 83.
83. Plants with terminal and lateral tufts on a solid axis; with a short monosiphonous region becoming encircled by three irregularly-shaped periaxial cells; colour typically light pink to dirty red ..... *Asparagopsis*

83. Plants not as above ..... 84.
84. Plants thinly corticated in obvious bands; cystocarps not surrounded by a solid pericarp ..... 85.
84. Plants thickly corticated, not in obvious bands; cystocarps surrounded by a solid pericarp ..... .86.
85. Branches with short spines at the nodes ..... *Centroceras*
85. Branches without short spines at the nodes ..... *Ceramium*
86. Main axis visible throughout the thallus, with a filamentous medulla .....*Areschougia*
86. Main axis eventually lost or appearing multiaxial due to the growth of secondary filaments, with large cells in the medulla ..... 87.
87. Transverse section of older tissue appearing totally parenchymatous ..... *Hypnea*
87. Transverse section of older tissue with a central core of filaments surrounded by large parenchymatous cells ..... *Mychodea*
88. Transverse section includes non-parenchymatous tissue ..... 89.
88. Transverse section shows all parenchymatous tissue ..... 101.
89. Plant gelatinous ..... 90.
89. Plant not gelatinous ..... 92.
90. Periphery of free filaments ..... *Helminthora*
90. Periphery of thallus a pseudo-cortex ..... 91.
91. Thallus slightly compressed, with a percurrent main axis and proliferous branches from the margins; cortex of corymbose branches united to form a pseudoparenchyma ..... *Grateloupia*
91. Thallus terete, dichotomously branched; cortex with inflated colourless cells ..... *Scinaia*
92. Thallus regularly dichotomous ..... 93.
92. Thallus not regularly dichotomous ..... 96.
93. Plants mostly filamentous in transverse section ..... 94.
93. Plants with a central core of longitudinal filaments surrounded by parenchymatous cells ..... 95.
94. Plants firm and cartilaginous, without an outer cortical layer of inflated colourless cells, with glandular cells ..... *Adelophyton*
94. Plants soft, with an outer cortical layer of inflated colourless cells, without glandular cells ..... *Scinaia*
95. Plants epiphytic, often with recurved apices ..... *Dicranema*
95. Plants epilithic, with straight and distinctly pointed apices ..... *Sarconema*
96. Transverse section shows parenchyma mixed with filaments in medulla ..... *Hymenocladia*
96. Transverse section shows only filaments in the centre of thallus ..... 97.
97. Plants irregularly branched, beset on all sides by simple to several-times-segmented clavate lateral determinate branchlets up to 1.5 cm in length ..... *Claviclonium*
97. Plants without segmented clavate lateral branches ..... 98.
98. Plants large and coarse, thallus surface irregular, with many short, spine-like branches ..... *Eucheuma*
98. Plants without short, spine-like branches ..... 99.
99. Cystocarps immersed ..... *Solieria*
99. Cystocarps external ..... 100.
100. Thallus firm, not saccate or tubular; tetrasporangia cruciately divided ..... *Gigartina*
100. Thallus soft, with saccate or tubular branches with broadly rounded apices and constricted bases; tetrasporangia zonately divided ..... *Amphiplexia*
101. Apices obtuse with apical cell sunk in tissue ..... *Laurencia*
101. Apices not as above, central cells much larger than peripheral cells ..... 102.
102. Plant coarse, uniaxial but the axis quickly lost ..... *Gracilaria*

102. Plant fine or small, often with many short branches and hooked branches, uniaxial, the axis remaining visible some distance from the apex, with an obvious apical cell ..... *Hypnea*
103. Cells without pit-connections, plants membranous ..... *Porphyra*
103. Cells with pit-connections, plants of various forms ..... 104.
104. Thallus with rhizines (thick-walled longitudinal rhizoids) ..... 105.
104. Thallus without rhizines ..... 107.
105. Cystocarps unilocular, i.e. with a single opening on one side of the plant ..... *Pterocladia*
105. Cystocarps bilocular, i.e. with two openings on opposite sides of the plant ..... 106.
106. Thallus with a distinct inner cortical zone of large parenchymatous cells; plants generally closely associated with a sponge, robust ..... *Ptilophora*
106. Thallus without this distinct zone; plants not closely associated with a sponge, delicate, with many small, pinnate branches ..... *Gelidium*
107. Plants uniaxial, with or without pericentral cells, with an obvious apical cell or main axis clearly visible in transverse sections for at least a short distance behind the apex ..... 108.
107. Plants multiaxial or uniaxial, if uniaxial, without an obvious apical cell and the axis quickly obscured ..... 132.
108. Axes without pericentral cells ..... 109.
108. Axes with pericentral cells ..... 116.
109. Lateral branches in regular, alternating, unilateral series of 2-4 branches ..... *Plocamium*
109. Lateral branches not in regular alternating series ..... 110.
110. Cortex in surface view with clearly defined rosettes of small cells surrounding larger cells ..... 111.
110. Cortex in surface view without rosettes of small cells ..... 112.
111. Apical cell in a distinct notch, cystocarps with a large central fusion cell ..... *Rhodophyllis*
111. Apical cell protruding, cystocarps without a large central fusion cell ..... *Craspedocarpus*
112. Plants with short, distichous, spinous lateral branches ..... 113.
112. Plants without such branches, lateral branches similar to the main axes, if somewhat reduced ..... 115.
113. Plants striated, with 6 periaxial cells cut off from each axial cell; cystocarps surrounded by loose involucral branches ..... *Psilothalia*
113. Plants not striated, with 4 periaxial cells cut off from each axial cells; cystocarps surrounded by a solid pericarp ..... 114.
114. Cystocarps small, borne in the axils of the short lateral branches; transverse section showing some filaments ..... *Phacelocarpus*
114. Cystocarps large, borne at the apices of main axes; transverse section generally entirely parenchymatous ..... *Delisea*
115. Axial cells bearing only one periaxial cell; cystocarps internal although causing a swelling of the branches, with a clearly defined ostiole ..... *Areschougia*
115. Axial cells bearing four periaxial cells; cystocarps external and marginal, without a clearly defined ostiole ..... *Stenocladia*
116. Thallus with some anastomosing filaments forming a meshwork ..... 117.
116. Thallus without anastomosing filaments forming a meshwork ..... 118.
117. Thallus thinly membranous, flabellate, bordered by the mesh ..... *Martensia*
117. Thallus with a distinct midrib, meshwork borne unilaterally, feather-like in appearance ..... *Cliftonaea*
118. Branch margins with numerous determinate (i.e. of limited growth) spinous branches visible without magnification ..... 119.

118. Branch margins smooth ..... 123.
119. Branches spirally twisted ..... *Vidalia*
119. Branches not spirally twisted ..... 120.
120. Plants with broad "leaves" (approx. 2 cm width) on a denuded cartilaginous stipe ..... *Neurymenia*
120. Plants without "leaves", branches generally less than 1 cm wide throughout ..... 121.
121. Apices inrolled, with five pericentral cells surrounding each axial cell ..... *Amansia*
121. Apices flat ..... 122.
122. Spinous branches terminating a visible lateral axis, branches greater than one cell thick; tetrasporangia borne in stichidia ..... *Dictymenia*
122. Spinous branches not terminating an obvious lateral axis; branches (other than the midrib) one-cell thick; tetrasporangia scattered on the plant surface ..... *Heterodoxia*
123. Plants minute, with two rows of alternately arranged triangular "leaves" (approx 1 mm in length) terminated by colourless filaments ..... *Leveillea*
123. Plants not as above ..... 124.
124. Plants robust and somewhat cartilaginous, generally dark red in colour; tetrasporangia borne in stichidia ..... 125.
124. Plants delicate and membranous, generally light pink in colour; tetrasporangia borne on the plant surface ..... 127.
125. With six pericentral cells surrounding each axial cell; branches of a relatively uniform width throughout ..... 126.
125. With five pericentral cells; branches broadly leaf-like ..... *Lenormandia*
126. Thallus without wings, slightly flattened; branches often with hook-like apices; plants common on *Amphibolis* ..... *Protokuetzingia*
126. Thallus forming one-cell thick wings by further development of the lateral pericentral cells; branches without hook-like apices ..... *Kuetzingia*
127. Lateral wings reduced to only a single cell arising from the lateral pericentral cell ..... *Platysiphonia*
127. Lateral blades well developed ..... 128.
128. Branches arising from the midrib ..... 129.
128. Branches arising only from margins ..... 131.
129. Thallus monostromatic throughout, at least when young ..... 130.
129. Thallus polystromatic throughout ..... *Chauviniella*
130. Microscopic veins present ..... *Apoglossum*
130. Microscopic veins absent ..... *Hypoglossum*
131. Lateral veins fade at branch junctions and at apices. Branching pinnate, cystocarps on midribs ..... *Hemineura*
131. Lateral veins do not fade at branch junctions and apices ..... *Heterodoxia*
132. Apical cell sunk in obtuse branch apex, branch apex somewhat terete; plants cartilaginous and regularly distichously branched ..... *Laurencia*
132. Plants without apical cell sunk in an obtuse branch apex ..... 133.
133. Thallus formed of a single mono- or polystromatic layer of cells without internal tissue differentiation. Branching from margins ..... 134.
133. Thallus with some internal tissue differentiation, either with a filamentous medulla or with a medulla composed of cells differing in size and shape from the limiting layers ..... 138.
134. Microscopic veins present ..... 135.
134. Microscopic veins absent ..... 136.
135. Plants large; tetrasporangia borne in stichidia ..... *Jeannerettia*

135. Plants smaller; tetrasporangia borne on the plant surface ..... *Acrosorium*
136. Plants minute, almost entirely prostrate, attached at several points by rhizoids ..... *Placophora*
136. Plants mostly upright ..... 137.
137. Plants with spinous margins; carpospores in chains ..... *Myriogramme*
137. Plants with smooth margins; carpospores single or paired ..... *Nitophyllum*
138. Thallus regularly perforated, membranous ..... *Kallymenia*
138. Thallus not regularly perforated ..... 139.
139. Thallus with a filamentous medulla, inner cortex of greatly enlarged cells, and outer cortex of smaller cells; plants subdichotomously branched ..... 140.
139. Section of thallus without an inner cortical layer of greatly enlarged cells; plants dichotomous to subdichotomous, opposite, or irregularly branched ..... 141.
140. Inner cortex of enlarged cells in a single layer, apex usually with a distinct "notch"; plants without marginal proliferations; multiaxial ..... *Hennedya*
140. Inner cortex of enlarged cells in several layers, apex without a distinct "notch"; plants often with marginal proliferations; uniaxial, but with an obscure apical cell ..... *Mychodea*
141. Medulla almost entirely filamentous, occasionally with stellate cells, sometimes grading into a parenchymatous cortex, without large parenchymatous cells ..... 142.
141. Medulla parenchymatous, sometimes traversed by or mixed with a few filamentous rows or cells ..... 154.
142. Thallus entire, sometimes lobed but unbranched, arising from a cartilaginous or woody stipe ..... 143.
142. Thallus branched ..... 144.
143. Thallus mottled red/yellow, with a smooth surface; outer cortical cells not pointed in cross-section; stipe hard and woody ..... *Cryptonemia*
143. Thallus uniformly coloured, with a rugulose surface; outer cortical cells pointed in cross-section; stipe cartilaginous ..... *Epiphloea*
144. Main axis of similar width throughout the plant (generally less than 5 mm), plants firm to cartilaginous, branching opposite to subdichotomous, clearly in the same plane ..... 145.
144. Main axis indistinct or not of similar width throughout the plant ..... 148.
145. Branching distichous and subopposite to proliferous ..... 146.
145. Branching alternate to subdichotomous ..... 147.
146. Main axis clearly flattened, occasionally with a distinct midrib, with rounded apices; branching subopposite; plants cartilaginous ..... *Callophycus*
146. Main axis not clearly flattened, without a distinct midrib, with pointed apices; branching proliferous from the margins; plants slippery ..... *Grateloupia*
147. Cortex with large, rounded, glandular cells, plants not distinctly flattened ..... *Adelophyton*
147. Cortex without glandular cells, plants distinctly flattened ..... *Carpopeltis*
148. Plants with a woody stipe or thickened midrib ..... *Cryptonemia*
148. Plants without a woody stipe or thickened midrib ..... 149.
149. Branching dichotomous to irregularly-dichotomous ..... 150.
149. Branching irregular ..... 151.
150. Plants thickly cartilaginous, with a mottled appearance when fresh, margins often with numerous short proliferous branches; tetrasporangia zonately-divided ..... *Meristotheca*
150. Plants generally with smooth margins, without a mottled appearance when fresh; tetrasporangia cruciately-divided ..... *Cirrulocarpus*
151. Thallus hirsute due to protruding cortical filaments ..... *Predaea*

151. Thallus with a smooth surface ..... 152.
152. Thallus a central lobe with irregular branches arising from the margins ..... *Nemastoma*
152. Thallus with a percurrent main axis, sometimes profusely branched ..... 153.
153. Transverse section shows filaments running from one cortical layer to the opposite; plants without a mottled appearance ..... *Halymenia*
153. Transerse section without filaments running from one cortical layer to the opposite; plants with a mottled appearance ..... *Gelinaria*
154. Thallus fringed with an open network ..... *Martensia*
154. Thallus not fringed with an open network ..... 155.
155. Transverse section shows a medulla of large central cells mixed with filaments or smaller cells ..... 156.
155. Transverse section with a medulla of large cells without filaments or smaller cells ..... 157.
156. Plants distichously branched, gelatinous; cortex filamentous; tetrasporangia cruciately-divided; cystocarp with horns ..... *Gloioderma*
156. Plants not distichously branched, cartilaginous; cortex parenchymatous; tetrasporangia tetrahedrally-divided; cystocarp without horns ..... *Hymenocladia*
157. Plants gelatinous, with a filamentous cortex and parenchymatous medulla; with horns on the cystocarps ..... *Gloioderma*
157. Plants not gelatinous; without horns on the cystocarps ..... 158.
158. Plants attached to the substratum by several stout haptera arising from the lower surface ..... *Tylotus*
158. Plants attached to the substratum by a single holdfast ..... 159.
159. Thallus regularly dichotomous, upper branches of similar width ..... *Rhodymenia*
159. Thallus not regularly dichotomous, upper branches of variable width ..... 160.
160. Tetrasporangia in sori or nemathecia; plants large and thickly cartilaginous ..... *Curdiea*
160. Tetrasporangia scattered ..... 161.
161. Tetrasporangia tetrahedrally divided ..... *Hymenocladia*
161. Tetrasporangia cruciately divided ..... *Gracilaria*

SUBCLASS FLORIDEOPHYCIDAE

ORDER NEMALIALES

Genus: **Audouinella**

Key to the species of *Audouinella* from Rottnest I.

1. With straight filaments ..... *A. daviesii*
1. With reflexed filaments ..... *A. microscopica*

Audouinella daviesii (Dillwyn) Woelkerling 1971: 28, figs 7, 22.

Type Locality: Bantry Bay, Ireland.
Distribution: Cosmopolitan.
Specimens: Cathedral Rocks, on *Glossophora nigricans*, 25.iii.1989, *J.M. Huisman* (MURU JH 168 S).

Audouinella microscopica (Nageli) Woelkerling 1971: 33, figs 10, 23A.

Type Locality: Bay of Naples, Italy.
Distribution: Cosmopolitan.
Specimens: Radar Reef, 11.xi.1968, *Wm J. Woelkerling* (AD A32931).

Genus: **Dotyophycus**

Dotyophycus abbottiae Kraft 1988: 131-141, figs 1-17.

Type Locality: Point Clune, Rottnest I., Western Australia.
Distribution: Point Clune and Thomson Bay, Rottnest I.
Specimens: Point Clune, 5.xii.1980, *G.T. Kraft, R.W. Ricker & P.W. Gabrielson* (MELU A35159); Thomson Bay, 3.xii.1980, *M. Hawkes & D. Bonin* (MELU A35161).

Genus: **Galaxaura**

Key to the species of *Galaxaura* from Rottnest I.

1. Thallus flattened, or with flattened branches arising from a terete, hirsute base .... *G. marginata*
1. Thallus terete throughout ..... 2.
2. Thallus segmented, generally glabrous ..... *G. obtusata*
2. Thallus not segmented, hirsute ..... *G. rugosa*

Galaxaura marginata (Ellis & Solander) Lamouroux 1816: 264.

References: Papenfuss *et al.* 1982: 411, figs 7-9, 24, 36, 37; Harvey 1860: pl. 136; Huisman & Borowitzka 1990: 157, figs 14-27.
Type Locality: Bahama Islands, West Indies.
Distribution: Warmer waters generally, but occasionally found in the temperate waters of southern Australia.
Specimens: Green I., 4.xii.1980, *R.W. Ricker & G.T. Kraft* (MELU K7619); Parker Bay, 4.v.1976, *M. Cambridge* (UWA A1581).

Galaxaura obtusata (Ellis & Solander) Lamouroux 1816: 262.

References: Papenfuss *et al.* 1982: 418, figs 14-16, 27, 39; Harvey 1862: pl. 228; Huisman & Borowitzka 1990: 161, figs 28-33, 35-38.
Type Locality: Bahama Is., West Indies.
Distribution: Probably widespread in tropical and subtropical waters.
Record: Levring 1953: 514.
Specimens: Strickland Bay, 5.ix.1979, *S.M. Clarke & R. Engler* (AD A51113); Thomson Bay, 6.x.1984, *G.G. Smith* (UWA A1576); Diving Pool, 14.i.1966, *G.G. Smith* (UWA A720B, C).

Galaxaura rugosa (Ellis & Solander) Lamouroux 1816: 263.

References: Kjellman 1900: 46, pl. 2, figs 19-24, pl. 3, fig. 1, pl. 20, fig. 15 (as *Galaxaura collabens*); Huisman & Borowitzka 1990: 153, figs 1-13.
Type Locality: Presumably West Indies.
Distribution: Widespread in warmer waters.
Record: Levring 1953: 513 (as *Galaxaura collabens*).
Specimens: North Point Reef, .xi.1945, *Lake* (UWA A223); Rottnest I., 1.v.1965, *G.G. Smith* (UWA A451); Radar Reef, 15.xii.1962, *G.G. Smith* (UWA A1580).
Remarks: Only the tetrasporophyte is known from Rottnest I. It has previously been known as *Galaxaura collabens* J. Agardh.

Genus: **Helminthora**

Helminthora australis J. Agardh in Levring 1953: 497, figs 27-30.

Reference: Womersley 1965: 461, figs 17-22, pl. 2, fig. 2, pl. 3, fig. 1.
Type Locality: Western Port, Victoria.
Distribution: Cottesloe, Western Australia, to Western Port, Victoria; northern Tasmania.
Record: Harvey 1855b: 552 (as *Helminthora divaricata*).

Genus: **Liagora**

Liagora australasica Sonder 1845: 50

Reference: Kützing 1858: 44, pl. 93.
Type Locality: Western Australia.
Distribution: Southwest Australia.
Specimens: Natural Jetty Reef, .xii.1945, *G.G. Smith* (UWA A194); Rottnest I., 10.xi.1968, *Wm.J. Woelkerling* (PERTH).

Genus: **Scinaia**

Key to the species of *Scinaia* from Rottnest I.
from Huisman (1986)

1. Branches 1.5-3(-4) mm in diameter, with a dichotomy every (6-)10-110 mm ..... *S. aborealis*
1. Branches to 2 mm in diameter, with a dichotomy every 2-15(-20) mm ..... *S. tsingalensis*

Scinaia aborealis Huisman 1986: 278, figs 23-35.

Type Locality: Sorrento, Western Australia.
Distribution: Geraldton, Western Australia, to Coffs Harbour, New South Wales; Norfolk I.
Specimens: Green I., 4.xii.1980, *J.M. Huisman* (MELU 24011); Point Clune, 5.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU 24308); Point Clune, 8.x.1988, *J.M. Huisman* (MURU JH 101, 102).

Scinaia tsingalensis Tseng 1941: 106.

Reference: Huisman 1986: 282, figs 36-47.
Type Locality: TsinglanKang, Wenchang, Hainan, China.
Distribution: Australia-wide; Hainan, China.
Specimens: Fish Hook Bay, 1.xii.1980, *G.T. Kraft & J.M. Huisman* (MELU 24297); Cathedral Rocks, 3.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU 24298); Point Clune, 6.xii.1984, *G.T. Kraft & A.J.K. Millar* (MELU A35420); 8.x.1988, *J.M. Huisman* (MURU JH 097).

Genus: **Tricleocarpa**

Tricleocarpa cylindrica (Ellis & Solander) Huisman & Borowitzka 1990: 164

References: Huisman & Borowitzka 1990: 164, figs 40-45, 50-52; Papenfuss *et al.* 1982: 415, figs 10-13, 25, 26, 38 (as *Galaxaura oblongata*).
Type Locality: West Indies.
Distribution: Warmer waters generally.
Specimens: Fish Hook Bay, 1.xii.1980, *G.T. Kraft & J.M. Huisman* (MELU K7400A).

ORDER BONNEMAISONIALES

Genus: **Asparagopsis**

Key to the species of *Asparagopsis* from Rottnest I.

1. Thallus with branches bearing alternate reflexed barbs, main axis with lateral branches almost to the base ..... *A. armata*
1. Thallus without branches bearing alternate reflexed barbs, lower portions of main axis without lateral branches ..... *A. taxiformis*

Asparagopsis armata Harvey 1855b: 544.

References: Lucas & Perrin 1947: 224, fig. 107; Levring 1953: 528; Harvey 1862: pl. 192.
Type Locality: Garden I. or King George's Sound, Western Australia.
Distribution: Australia; New Zealand; Mediterranean, western Europe.
Record: Levring 1953: 528.
Specimens: Fish Hook Bay, 1.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU K7391); Point Clune, 6.xii.1984, *G.T. Kraft & A.J.K. Millar* (MELU A35446).

Asparagopsis taxiformis (Delile) Collins & Hervey 1917: 117.

Reference: Cribb 1983: 28, pl. 4, figs 1-2.
Type Locality: Alexandria, Egypt.
Distribution: Cosmopolitan in warmer regions.
Records: Levring 1953: 528; Harvey 1858: pl. 6 (as *Asparagopsis sanfordiana*).
Specimens: King Head, 6.ix.1979, *H.B.S. Womersley* (AD A50796); Green I., 6.ix.1979, *S.M. Clarke & R. Engler* (AD A51044); Strickland Bay, 5.ix.1979, *S.M. Clarke & R. Engler* (AD A51089); Mabel Cove, 18.x.1934, *Jones* (Tilden, South Pacific Plants no. 76); Thomson Bay, 1.v.1965, *G.G. Smith* (UWA A452).

Genus: **Delisea**

Delisea pulchra (Greville) Montagne 1844: 158.

References: Fuhrer *et al.* 1981: 39, pls 51,52; Bonin & Hawkes 1988: 627, figs 29-31; Lucas & Perrin 1947: 241, figs 105, 106; Harvey 1847: 89, tab. 34, figs 18. 1858: pl. 16; Levring 1953: 521, figs 52-55B (as *Delisea fimbriata*).
Type Locality: "New Holland"
Distribution: Southern Australia; Kermadec I., New Zealand; Macquarie I.; Antarctic Peninsula; South Georgia; Kerguelen Is; Heard I.
Record: Levring 1953: 524 (as *Delisea fimbriata*); Harvey 1855b: 544.
Specimens: Cathedral Rocks, 25.iii.1989, *J.M Huisman* (MURU JH 085); Rottnest I., .viii.1928, *A.H. Lucas* (PERTH).

ORDER GIGARTINALES

Genus: **Acrosymphyton**

Acrosymphyton taylorii Abbott 1962: 845, figs 1-9.

Reference: Millar & Kraft 1984: 135, figs 2-10.
Type Locality: Hauula, Oahu, Hawaiian Is.
Distribution: Hawaiian Is. Rottnest I., Abrolhos Is., Western Australia; Egg I., South Australia; Lord Howe I., New South Wales; Great Barrier Reef, Queensland;
Specimens: Point Clune, 5.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU GK7228A); 2.xii.1980, *M. Hawkes* (Herb. Hawkes).

Genus: **Adelophyton**

Adelophyton corneum (J. Agardh) Kraft 1975: 279, figs 1-22.

Type Locality: Port Elliot, South Australia.
Distribution: Rottnest I., Western Australia, to Point Lonsdale, Victoria.
Specimens: Point Clune, 8.x.1988, *J.M. Huisman & G. Kendrick* (MURU JH 090).

Genus: **Amphiplexia**

Key to the species of *Amphiplexia* from Rottnest I.
from Kraft (1977a)

1. Main axis clavate, hollow; branches usually longer than main axis; rosettes of outer cortical cells distinct in surface view ..... *A. hymenocladioides*
1. Main axis terete, cartilaginous; main branches shorter than main axis; cortical cell rosettes indistinct ..... *A. racemosa*

Amphiplexia hymenocladioides J. Agardh 1892: 104, pl. 3, figs 2-11.

Reference: Kraft 1977a: 117, figs 7, 8, 15, 16.
Type Locality: Port Phillip Heads, Victoria.
Distribution: Abrolhos Islands., Western Australia, to Port Phillip Heads, Victoria.
Specimens: Point Clune, 6.xii.1984, *G.T. Kraft & A.J.K. Millar* (MELU A35479); Phillip Rock, 2.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU 7645); Green I., 4.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU 7621).

Amphiplexia racemosa (J. Agardh) Kraft 1977a: 122, fig. 17.

Type Locality: Israelite Bay, Western Australia.
Distribution: Rottnest I.,Western Australia to Elliston, South Australia.
Specimens: Point Clune, 5.xii.1980, *C & M. O'Brien* (MELU 7177).

Genus: **Areschougia**

Key to the species of *Areschougia* from Rottnest I.
from Min-Thein & Womersley (1976)

1. Branches terete, branching from all sides ..... *A. congesta*
1. Branches distinctly flattened, with a prominent midrib, branching distichous ..... *A. ligulata*

Areschougia congesta (Turner) J. Agardh 1872: 26.

Reference: Min-Thein & Womersley 1976: 55, figs 18, 19, 57.
Type Locality: Kents I., Bass Strait.
Distribution: Rottnest I., Western Australia, to Western Port, Victoria.
Record: Harvey 1855b: 554 (as *Areschougia laurencia*).

Areschougia ligulata Harvey ex J. Agardh 1872: 26.

Reference: Min-Thein & Womersley 1976: 61, figs 20-22, 58A.
Type Locality: Western Australia.
Distribution: Champion Bay, Western Australia, to Kangaroo I., South Australia.
Record: Harvey 1858: pl. 13 (as *Areschougia australis*).
Specimens: Rottnest I., .viii.1928, *A.H.S. Lucas* (PERTH).

Genus: **Callophycus**

Key to the species of *Callophycus* from Rottnest I.
from Min-Thein & Womersley (1976)

1. Margins of pinnae and pinnules with serrations (or short slender ramuli less than 3 mm long) ..... 2.
1. Margins of pinnae and pinnules without such serrations ..... 3.
2. Main branches often with a thick central region, irregularly pinnate and pinnae and pinnules without a midrib, branches 5-7 mm wide with lesser branches (pinnae and pinnules) gradually (sometimes fairly abruptly) narrower (1-2 mm wide), serrations varying from spiny outgrowths to short slender ramuli less than 0.5 mm broad; cystocarps developed at the terminal ends of pinnules ..... *C. dorsiferus*
2. Main branches and pinnae (or pinnules) with a distinct midrib, branches 3-5 mm wide, of similar width throughout and usually regularly pinnate, serrations spinous and generally pointed upward; cystocarps developed in small, branched, terminal proliferations ..... *C. costatus*
3. Pinnae and pinnules sub-terete to slightly compressed (1-2 mm wide) and distinctly slenderer than, and densely crowded along (less than 0.5 cm apart), the thickened main branches which are (2-)4-5 mm wide ..... *C. oppositifolius*
3. Pinnae and pinnules distinctly flattened and of similar or slightly less width to main branches (2-4 mm wide), usually more than 0.5 cm apart ..... *C. harveyanus*

Callophycus costatus (Harvey) Silva 1957: 143.

References: Min-Thein & Womersley 1976: 19, figs 5, 6, 51A; Kraft 1984b: fig. 54.
Type Locality: Rottnest I., Western Australia.
Distribution: Flat Rocks, 40 km south of Geraldton, to Safety Bay, Western Australia.
Record: Harvey 1855b: 550 (as *Thysanocladia costata*).
Specimens: Strickland Bay, 5.ix.1979, *S.M. Clarke & R. Engler* (AD A5117).

Callophycus dorsiferus (C. Agardh) Silva 1957: 143.

References: Min-Thein & Womersley 1976: 15, figs 3, 4, 50; Kraft 1984b: fig. 55.
Type Locality: "Nov. Holl."
Distribution: Port Denison to Point Peron, Western Australia.
Record: Harvey 1855b: 550 (as *Thysanocladia coriacea*).
Specimens: King Head, 6.ix.1979, *H.B.S. Womersley* (AD A50803); Phillip Rock, 2.xii.1980, *P.W. Gabrielson & G.T. Kraft* (MELU); Rottnest I., .iii.1932, *G.G. Smith* (UWA A1564).

Callophycus harveyanus (J. Agardh) Silva 1957: 143.

References: Min-Thein & Womersley 1976: 27, figs 9, 10, 52B; Kraft 1984b: fig. 53.
Type Locality: Fremantle, Western Australia.
Distribution: Abrolhos Islands to Eucla, Western Australia.
Record: Harvey 1855b: 550 (as *Thysanocladia laxa*).
Specimens Rottnest I., 1.v.1965, *G.G. Smith* (UWA A1565).

Callophycus oppositifolius (C. Agardh) Silva 1957: 143.

References: MinThein & Womersley 1976: 23, figs 7, 8, 51B, 52A; Kraft 1984b: fig. 51.
Type Locality: "Nov. Holl."
Distribution: Geraldton, Western Australia, to Kangaroo I. and Yorke Peninsula, South Australia; Tasmania? (May 1965); Lacepede & Guichen Bays, South Australia.
Record: Harvey 1855b: 550 (as *Thysanocladia oppositifolia*); 1862: pl. 187.
Specimens: Strickland Bay, 5.ix.1979, *S.M. Clarke & R. Engler* (AD A51116); Point Clune, 6.xii.1984, *G.T. Kraft & A.J.K. Millar* (MELU A35435).

Genus: **Carpopeltis**

Key to the species of *Carpopeltis* from Rottnest I.

1. Branching of main axes alternate, the side branches subdichotomous; branches narrow (1-1.5(-2) mm) ..... *C. elata*
1. Branching irregularly dichotomous, branches 2-5 mm wide ..... 2.
2. Branches 2-2.5 mm wide, with occasional constrictions ..... *C. decipiens*
2. Branches (3-)4-5(-11) mm wide, often with proliferations from the midrib ..... *C. phyllophora*

Carpopeltis decipiens (Harvey) Schmitz 1895: 168.

Reference: Harvey 1863: pl. 289 (as *Cryptonemia ? decipiens*).
Type Locality: Rottnest I., Western Australia.
Distribution: Western Australia.
Specimens: Cathedral Rock, 3.xii.1980, *R.W. Ricker & G.T. Kraft* (MELU K7521).

Carpopeltis elata (Harvey) Schmitz 1895: 168.

Reference: Harvey 1860: pl. 122 (as *Acropeltis elata*).
Type Locality: South coast of Rottnest I., Western Australia, near the lighthouse.

Distribution: Western Australia.
Record: Harvey 1860: pl. 122.
Specimens: King Head, 6.ix.1979, *H.B.S. Womersley* (AD A50795); Rottnest I., 1.v.1965, *G.G. Smith* (UWA A1572); Fish Hook Bay, 19.ix.1988, *J.M. Huisman* (MURU JH 051).

Carpopeltis phyllophora (Hooker & Harvey) Schmitz ex Schmitz & Hauptfleish 1897: 514.

References: Chiang 1970: 66, fig. 32, pl.9B; Harvey 1863: pl. 283 (as *Acropeltis phyllophora*).
Type Locality: Port Arthur, Tasmania.
Distribution: Western and southern Australia.
Specimens: Cathedral Rocks, 3.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU K7515).

Genus: **Cirrulicarpus**

Cirrulicarpus nana (J. Agardh) Womersley 1973: 256.

Reference: Womersley & Norris 1971: 19, figs 39-43, 90 (as *Cirrulicarpus australis*).
Type Locality: Port Phillip Bay, Victoria.
Distribution: Type locality and Rottnest I., Western Australia.
Specimens: Point Clune, 2.xii.1980, *C. & M. O'Brien* (MELU K7134).

Genus: **Claviclonium**

Claviclonium ovatum (Lamouroux) Kraft & Min-Thein 1983: 172, figs 1-15.

Type Locality: 'Nouv. Holl.'
Distribution: Geraldton to Eucla, Western Australia.
Record: Kraft & Min-Thein 1983:172.
Specimens: Point Clune, 2.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU K7117).

Genus: **Codiophyllum**

Key to the species of *Codiophyllum* from Rottnest I.

1. Thallus flabellate, with a firm, woody stalk; sponge layer thin ..... *C. flabelliforme*
1. Thallus without a firm woody stalk, sponge layer thick ..... *C. decipiens*

Codiophyllum decipiens (J. Agardh) Schmitz 1895: 145.

Reference: Scott *et al.* 1984: 293, figs 18-23.
Type Locality: Geographe Bay, Western Australia.
Distribution: Port Denison to D'Entrecasteaux Reef, Western Australia.
Specimens: Cathedral Rocks, 3.xii.1980, *F.J. Scott & J.M. Huisman* (MELU 24077); Point Clune, 5.xii.1980, *F.J. Scott* (MELU 24078); 2.xii.1980 *R.W. Ricker & G.T. Kraft* (MELU R3306, 3309); West End, 25.ii.1989, *J.M. Huisman & T.H. Rose* (MURU JH013).

Codiophyllum flabelliforme (Sonder) Schmitz 1895: 146.

References: Scott *et al.* 1984: 291, figs 10-17; Harvey 1859a: pl. 113 (as *Thamnoclonium flabelliforme*)
Type Locality: Western Australia.
Distribution: Western Australia between the latitudes of 28° S and 35° S.
Specimens: Phillip Rock, 7.viii.1979, *F.J. Scott & G. McFadden* (MELU 24073); 2.xii.1980 *F.J. Scott & P.W. Gabrielson* (MELU 24074); Cathedral Rocks, 3.xii.1980, *F.J. Scott & J.M. Huisman* (MELU

24075); Green I., 4.xii.1980, *F.J. Scott & A.J.K. Millar* (MELU 24076); Bickley Bay, .viii.1975, *G.G. Smith* (UWA A1573).

Genus: **Craspedocarpus**

Craspedocarpus blepharicarpus (Harvey) Min-Thein & Womersley 1976: 106, figs 39, 40, 63B.

Reference: Harvey 1863: pl. 254 (as *Rhodophyllis blepharicarpa*).
Type Locality: Garden or Rottnest Is., Western Australia.
Distribution: Geraldton, Western Australia, to Portland, Victoria.
Record: Harvey 1863: pl. 254 (as *Rhodophyllis blepharicarpa*).

Genus: **Cryptonemia**

Key to the species of *Cryptonemia* from Rottnest I.

1. Thallus with a hard, woody stipe ..... *C. kallymenioides*
1. Thallus with a cartilaginous, but not hard and woody, stipe ..... *C. undulata*

Cryptonemia kallymenioides (Harvey) Kraft in Scott *et al.* 1982: 246.

Reference: Scott *et al.* 1982: 246, figs 2-25.
Type Locality: Fremantle, Western Australia.
Distribution: Shark Bay to Hamelin Bay, Western Australia.
Specimens: Green I., 6.ix.1979, *S.M. Clarke & R. Engler* (AD A51043); Fish Hook Bay, 8.viii.1979, *F.J. Scott et al.* (MELU K6980); Point Clune, Cathedral Rocks, Green I., Phillip Rock, 1.xii.1980 5.xii.1980, *F.J. Scott et al.* (MELU 23959,23962).

Cryptonemia undulata Sonder 1853: 516

References: Scott *et al.* 1982: 249, figs 27-35. Lucas & Perrin 1947: 380, fig. 191.
Type Locality: Brighton Beach, Port Phillip Bay, Victoria.
Distribution: Port Denison, Western Australia, to Port Phillip Bay, Victoria; India?
Specimens: Fish Hook Bay, 1.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU K7382).

Genus: **Dicranema**

Dicranema revolutum (C. Agardh) J. Agardh 1852: 634.

Reference: Kraft 1977b: 223, figs 1-3, 12, 13.
Type Locality: Freycinet Harbour, Shark Bay, Western Australia.
Distribution: From Shark Bay, Western Australia, to Port Phillip Bay, Victoria, and Flinders I., Bass Strait.
Record: Harvey 1855b: 549 (as *Dicranema grevillii*).
Specimen: Salmon Bay, 15.xii.1962, *G.G. Smith* (UWA A1558).

Genus: **Dudresnaya**

Dudresnaya capricornica Robins & Kraft 1985: 23, figs 90-129.

Type Locality: One Tree I., Great Barrier Reef, Queensland.
Distribution: Great Barrier Reef, Queensland; Lord Howe I., New South Wales; Rottnest I., Western Australia.

Specimens: Point Clune, 5.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU 24098, 24103-4); Green I., 4.xii.1980, *A.J.K. Millar* (MELU 24099); 4.xii.1980, *P.W. Gabrielson* (MELU 24102).

Genus: **Epiphloea**

Epiphloea bullosa (Harvey) Schmitz 1894: 27.

Reference: Harvey 1863: pl. 277 (as *Schizymenia bullosa*).
Type Locality: Fremantle, Western Australia.
Distribution: Western and southern Australia.
Specimens: Point Clune, 5.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU K7172).

Genus: **Erythroclonium**

Key to the species of *Erythroclonium* from Rottnest I.
from Min-Thein & Womersley (1976)

1. Plants with terete, thick, main branches bearing short clavate laterals of one to a few segments, much branched above with segments mostly less than 0.5 cm long ..... 2.
1. Plants generally without thick main branches, distinctly segmented throughout, with segments often over 0.5 cm long ..... *E. sonderi*
2. Laterals of one to a few segments remaining on lower branches, but the latter often largely denuded ..... *E. muelleri*
2. Laterals of single segments present on lower branches, occurring in well-defined whorls at intervals ..... *E. sedoides*

Erythroclonium muelleri Sonder 1853: 692.

References: Min-Thein & Womersley 1976: 75, figs 27, 28, 59B; Fuhrer *et al.* 1981: 45, pl. 64; Lucas & Perrin 1947: 170, fig. 41.
Type Locality: Lefevre Peninsula, South Australia.
Distribution: Rottnest I, Western Australia, eastward to Port Phillip Bay, Victoria, & Georgetown, Tasmania.
Specimens: Point Clune, 2.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU K7125A).

Erythroclonium sedoides (Harvey) Kylin 1932: 36.

References: Min-Thein & Womersley 1976: 79, fig. 60A. Harvey 1859a: pl. 117 (as *Areschougia ? sedoides* Harvey).
Type Locality: Fremantle, Western Australia.
Distribution: Dongara to Augusta, Western Australia.
Specimens: Point Clune, 7.xii.1984, *G.T. Kraft & A.J.K. Millar* (MELU A35428).

Erythroclonium sonderi Harvey 1859a: pl. 86.

Reference: Min-Thein & Womersley 1976: 84, fig 61A.
Type Locality: Fremantle, Western Australia.
Distribution: From Abrolhos Islands, Western Australia, to Robe, South Australia, and mouth of Currie R., Tasmania.
Specimens: Rottnest I., .iii.1932, *G.G. Smith* (UWA A1563).

Genus: **Eucheuma**

Eucheuma speciosum (Sonder) J. Agardh 1851: 628.

Reference: Harvey 1859a: pl. 64.
Type Locality: Western Australia.
Distribution: Western Australia; Mauritius.
Record: Harvey 1859a: pl. 64.
Specimens: Strickland Bay, 5.ix.1979, *S.M. Clarke & R. Engler* (AD A51098); Rottnest I., 23.ii.1951, *G.G. Smith* (UWA A1269).

Genus: **Gelinaria**

Gelinaria ulvoidea Sonder 1845: 55.

References: Lucas & Perrin 1947: 163, fig. 36; Harvey 1859a: pl. 85.
Type Locality: Western Australia
Distribution: Western and south-western coasts of Australia.
Specimens: Fish Hook Bay, 19.ix.1988, *J.M. Huisman* (MURU JH045).

Genus: **Gigartina**

Gigartina disticha Sonder 1845: 55.

References: Lucas & Perrin 1947: 50, fig. 22; Harvey 1863: pl. 297.
Type Locality: "Swan River", Western Australia.
Distribution: South-west Western Australia.
Specimens: Porpoise Bay, .x.1945, *G.G. Smith* (UWA A1557).

Genus: **Grateloupia**

Grateloupia filicina (Wulfen) C. Agardh var. **luxurians** A. & E.S. Gepp 1906: 259.

Type Locality: Farm Cove, Sydney, New South Wales.
Distribution: Shark Bay, Western Australia, to Sydney, New South Wales.
Specimen: Green I., on sandy bottom at 4 m depth, 5.xi.1989, *J.M. Huisman & G.A. Kendrick* (MURU JH 186).

Genus: **Halymenia**

Halymenia harveyana J. Agardh 1892: 55.

References: Harvey 1862: pl. 214 (as *Halymenia floresia*); Lucas & Perrin 1947: 375, fig. 188.
Type Locality: Port Phillip Heads, Victoria.
Distribution: Southern and western Australia.
Specimens: Green I., 4.xii.1980, *M. Hawkes* (MELU 77622); Point Clune, 2.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU K7121); 5.xii.1980 (MELU K7170); Fish Hook Bay, 19.ix.1988, *J.M. Huisman* (MURU JH 044).

Genus: **Hennedya**

Hennedya crispa Harvey 1855b: 552

References: Kraft 1977a: 113, figs 5, 6, 14. Harvey 1859a: pl. 75.
Type Locality: Garden or Rottnest Is., Western Australia.
Distribution: From Geraldton, Western Australia, to Pearson I., South Australia.
Record: Harvey 1859a: pl. 75.

Specimens: Fish Hook Bay, 1.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU K7386); 19.ix.1988, *J.M. Huisman* (MURU JH); King Head, 6.ix.1979, *H.B.S. Womersley* (AD A50802, AD A50847); Strickland Bay, 5.ix.1979, *S.M. Clarke & R. Engler* (AD A51097).

Genus: **Hypnea**

Key to the species of *Hypnea* from Rottnest I.

1. Older branches constricted at the base; hooks usually present ..... 2.
1. Branches wider at the base, with a tapering point; hooks absent ..... *H. valentiae*
2. Stem and main branches bearing several long tendril-like branches which are naked above and thickened and hooked at the extremities ..... *H. episcopalis*
2. Stem and main branches without tendril-like branches, apices of normal branches may be hooked ..... *H. musciformis*

Hypnea episcopalis Hooker & Harvey 1847: 406.

References: Fuhrer *et al.* 1981: 43, pl. 60; Lucas & Perrin 1947: 191, fig. 58.
Type Locality: Tasmania.
Distribution: Southern Australia
Record: Harvey 1855b: 552.
Specimens: Bathurst Point, 15.xi.1945, *G.G. Smith* (UWA A44).

Hypnea musciformis (Wulfen) Lamouroux 1813: 131.

Reference: Lucas & Perrin 1947: 190, fig. 57.
Type Locality: Trieste, Italy.
Distribution: South-western Australia; South Africa; Philippines; Italy.
Record: Harvey 1855b: 552.
Specimens: Bathurst Point, .xi.1945, *G.G. Smith* (UWA A1559).

Hypnea valentiae (Turner) Montagne 1840: 161.

Reference: Dawson 1954: 436, figs 46L, 47.
Type Locality: Red Sea.
Distribution: Australia-wide; Indian Ocean; South Pacific; Japan; Red Sea.
Record: Harvey 1855b: 552. (as *Hypnea seticulosa*).
Specimens: Bickley Bay, 12.xii.1945, *G.G. Smith* (UWA A1561, 1562).

Genus **Kallymenia**

Kallymenia cribrosa Harvey 1855b: 555

References: Womersley & Norris 1971: 4, figs 1-5, 77; Lucas & Perrin 1947: 161, figs 33, 35.
Type Locality: Fremantle, Western Australia.
Distribution: Abrolhos Is., Western Australia, to Flinders, Victoria, Tasmania.
Specimens: Point Clune, 7.xii.1984, *G.T. Kraft & A.J.K. Millar* (MELU A35447).

Genus: **Meristotheca**

Meristotheca papulosa (Montagne) J. Agardh 1872: 36.

Reference: Gabrielson & Kraft 1984: 239, figs 12, 13.
Type Locality: Hodeida, Yemen.

Distribution: Red Sea; Pakistan; Timor; Japan; China; Philippines; Western Australia; Lord Howe I., New South Wales.
Specimens: Green I., 10.xii.1981, *P.W. Gabrielson* (MELU PG001).

Genus: **Mychodea**

Key to the species of *Mychodea* from Rottnest I.
from Kraft (1978)

1. Thallus with foliose or broadly flattened parts ..... *M. marginifera*
1. Thallus terete or subterete ..... 2.
2. Plants 2-3 mm wide and over 5 cm tall, growing singly or in lax clumps on *Amphibolis* or *Posidonia* ..... *M. gracilaria*
2. Plants less than 1 mm wide and 5 cm tall, growing as caespitose lumps on the stems of *Amphibolis* ..... *M. pusilla*

Mychodea gracilaria (Sonder) Kraft 1978: 528, figs 5, 6, 32.

Type Locality: Lefevre Peninsula, South Australia.
Distribution: Rottnest I., Western Australia, to Port Phillip Bay, Victoria.
Specimens: Thomson Bay, 17.viii.1966, *G.T. Kraft* (AD A44686).

Mychodea marginifera (Areschoug) Kraft 1978: 551, figs 16, 17, 38, 39.

Type Locality: Port Phillip Bay, Victoria.
Distribution: Port Denison, Western Australia, to Port Phillip Bay, Victoria.
Specimens: Point Clune, 5.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU GK 7122)

Mychodea pusilla (Harvey) J. Agardh 1872: 34.

Reference: Kraft 1978: 533, figs 7-9, 33, 34.
Type Locality: King George Sound, Western Australia.
Distribution: Shark Bay, Western Australia, to Port Phillip Bay, Victoria.
Specimens: Parker Point, 18.ix.1988, *J.M. Huisman* (MURU JH 030, 041).

Genus: **Nemastoma**

Nemastoma damaecornis Harvey 1855b: 557

Type Locality: Fremantle or Rottnest I., Western Australia.
Distribution: Rottnest I. north to Abrolhos Islands, Western Australia.
Record: Harvey 1855b: 557.
Specimens: Roe Reef, 25.iii.1989, *J.M. Huisman* (MURU JH074).

Genus: **Peyssonnelia**

Key to the species of *Peyssonnelia* from Rottnest I.

1. Plant fanshaped, attached by its undersurface to the substratum ..... *P. capensis*
1. Plant divided into linear segments, some branches upright ..... *P. novae-hollandiae*

Peyssonnelia capensis Montagne 1847: 177.

Reference: Denizot 1968: 123, figs 105, 107.
Type Locality: South Africa.

Distribution: Western, southern and eastern Australia; South Africa; Angola; Japan; Solomon Is.
Record: Harvey 1855b: 551 (as *Peyssonnelia rubra* Greville?).
Specimens: Roe Reef, 25.iii.1989, *J.M. Huisman* (MURU JH077).

Peyssonnelia novae-hollandiae (Kützing) Harvey. 1863: synop xxxvii (no. 470).

Reference: Denizot 1968: 107, fig. 92.
Type Locality: South Australia.
Distribution: Perth region, Western Australia, to northern New South Wales.
Specimens: Fish Hook Bay, 1.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU K3787); Point Clune, 5.xii.1980, *G.T. Kraft et al.* (MELU K7204); West End, 25.ii.1989, *J.M. Huisman & T.H. Rose* (MURU JH 014).

Genus: **Phacelocarpus**

Key to the species of *Phacelocarpus* from Rottnest I.

1. Teeth with a broad wing which margins the midrib of the axis; the length of the teeth approximately equal to the width of the axis ..... *P. alatus*
1. Teeth with a very narrow wing margining the midrib, the length of the teeth greater than the width of the axis ..... *P. labillardieri*

Phacelocarpus alatus Harvey 1855b: 549.

References: Fuhrer *et al.* 1981: 38, pl. 49; Lucas & Perrin 1947: 179, fig. 48; Searles 1968: 25, figs 10, 11, pl. 4b.
Type Locality: Rottnest I., Western Australia.
Distribution: Western Australia to Victoria.
Record: Harvey 1855b: 549.

Phacelocarpus labillardieri (Turner) J. Agardh 1852: 648.

References: Fuhrer *et al.* 1981: 38, pl. 50. Lucas & Perrin 1947: 181, fig. 49. Searles 1968: 15, fig. 5, pl. 2.
Type Locality: Tasmania
Distribution: Southern Australia; New Zealand.
Record: Harvey 1855b: 549.
Specimens: North Point, .xi.1966, *E. Hodgkin* (UWA A1567A-C); Green I., 9.x.1988, *J.M. Huisman* (MURU JH 150).

Genus **Plocamium**

Key to the species of *Plocamium* from Rottnest I.
from Womersley (1971)

1. Ramuli mostly in alternate pairs ..... 2.
1. Ramuli mostly in alternate series of 3-4 (or more) ..... 3.
2. Axes mostly under 1 mm broad; cystocarps sessile, spermatangia covering young ramuli ..... *P. angustum*
2. Axes mostly over 2 mm broad; cystocarps appearing pedicellate and axillary, spermatangia on terete, axillary branch clusters ..... *P. mertensii*
3. Ramuli mostly in series of 3; thallus robust, axes 1.5-2(-3) mm broad and becoming thickened below; stichidia normally in axillary clusters, basally branched only; cystocarps sessile and verrucose ..... *P. preissianum*

3. Ramuli in series of 3-4, rarely with some in pairs; axes 1-1.5 mm broad; stichidia axillary but on margins of ramulus and axis, becoming branched in their upper parts; cystocarps sessile but smooth ..... *P. cartilagineum*

Plocamium angustum (J. Agardh) Hooker & Harvey 1847: 404.

References: Womersley 1971: 11, figs 2-6; Fuhrer *et al.* 1981: 36, pl. 45;. Lucas & Perrin 1947: 211, fig. 76.
Type Locality: "Novae Hollandiae"
Distribution: Rottnest I., Western Australia, to Tuggerah Lakes, New South Wales.
Specimens: Point Clune, 8.ii.1989, *J.M. Huisman & G. Kendrick* (MURU JH 140).

Plocamium cartilagineum (Linnaeus) Dixon 1967: 58.

Reference: Womersley 1971: 22, figs 3639.
Type Locality: Northern Europe.
Distribution: Rottnest I., Western Australia, to Newcastle, New South Wales (probably to Caloundra, Queensland); Tasmania. Widespread in most temperate and cold waters in both hemispheres.
Record: Harvey 1855b: 553 (as *Plocamium coccineum*).
Specimens: Point Clune, 5.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU GK 7128a)

Plocamium mertensii (Greville) Harvey 1847: 122.

References: Womersley 1971: 15, figs 1723; Fuhrer *et al.* 1981: 37, pl. 48; Lucas & Perrin 1947: 215, fig. 80.
Type Locality: "Novae Hollandiae".
Distribution: Nichol Bay, Western Australia, to San Remo, Victoria; Tasmania.
Record: Harvey 1855b: 553.
Specimens: Bickley Bay, .xi 1945, *G.G. Smith* (UWA A1241); Rottnest I., -iv. 1931, *Henderson* (UWA A1239); 12.ii.1973, *M. Cambridge* (UWA A1568); 1.v.1965, *G.G. Smith* (UWA A1230).

Plocamium preissianum Sonder 1845: 54.

References: Womersley 1971: 20, figs 29-35; Lucas & Perrin 1947: 211, fig. 75.
Type Locality: "Austro-occidentale Novae Hollandiae".
Distribution: Abrolhos Is., Western Australia, to Wilsons Promontory, Victoria.
Record: Harvey 1859a: pl. 63.
Specimens: Fish Hook Bay, 1.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU K7381).

Genus: **Predaea**

Predaea huismanii Kraft 1984a: 7, figs 15-24.

Type Locality: Rottnest I., Western Australia.
Distribution: Known only fron the type collection.
Specimens: Point Clune, 5.xii.1980, *J.M. Huisman* (MELU K7163).

Genus: **Rhodopeltis**

Key to the species of *Rhodopeltis* from Rottnest I.

1. Segments large, to 35 mm x 8 mm, often with several segments arising from each node; all nodes clearly non-calcified ..... *R. australis*
1. Segments smaller, to 8 mm x 3 mm, strictly dichotomous; some nodes remaining calcified ..... *R. borealis*

Rhodopeltis australis Harvey 1863: pl. 264.

Type Locality: Rottnest I., Western Australia.
Distribution: Western and southern Australia, Queensland?
Specimens: Strickland Bay, 5.ix.1979, *S.M. Clarke & R. Engler* (AD A51115); 2.iv.1973, *M. Cambridge* (MELU 21799); West End, 25.ii.1989, *J.M. Huisman & T.H. Rose* (MURU JH020).

Rhodopeltis borealis Yamada 1931: 75-76, pl 19, fig. 1.

Reference: Nozawa 1970: 102-107, figs 1A-C, 2, 3.
Syntype Localities: Ryukyuretto, Japan; Ryusensui, Kotosho, Taiwan.
Distribution: Taiwan; southern Japan; Philippines; Rottnest I., Western Australia.
Specimens: Cathedral Rocks, 25.iii.1989, *J.M. Huisman* (MURU JH 185).

Genus: **Rhodophyllis**

Rhodophyllis volans Harvey 1855b: 553.

References: Min-Thein & Womersley 1976: 101, figs 36-38, 63A; Lucas & Perrin 1947: 165, fig. 37.
Type Locality: Rottnest I., Western Australia.
Distribution: Champion Bay, Western Australia, to Queenscliff, Victoria; northern Tasmania.
Record: Harvey 1855b: 553.

Genus: **Sarconema**

Sarconema filiforme (Sonder) Kylin 1932: 22.

Reference: Papenfuss & Edelstein 1974: 31-44, figs 1-3, 13, 20-25.
Type Locality: Western Australia.
Distribution: Indo-Pacific.
Specimens: Point Clune, 8.ii.1989, *J.M. Huisman & G. Kendrick* (MURU JH 151).

Genus: **Solieria**

Solieria robusta (Greville) Kylin 1932: 18.

References: Min-Thein & Womersley 1976: 7, figs 1, 2, 49; Fuhrer *et al.* 1981: 45, pl. 63.
Type Locality: "Nov. Holl." probably near Fremantle, Western Australia.
Distribution: Shark Bay, Western Australia, to Port Phillip Bay, Victoria; Tamar Estuary, Tasmania; Lord Howe I., New South Wales.
Specimens: Green I., 6.ii.1989, *J.M. Huisman* (MURU JH 147).

Genus: **Stenocladia**

Stenocladia australis (Sonder) Silva 1950

Reference: Searles 1968: 35, fig. 16, pl. 7.
Type Locality: Western Australia
Distribution: Southern Australia
Specimens: Horse Shoe Reef, 15.iv.1989, *J.M. Huisman & T.H. Rose* (MURU JH 161).

Genus: **Tylotus**

Tylotus obtusatus (Sonder) J. Agardh 1876: 428.

References: Kraft 1977b: 245, figs 10, 11, 19, 20; Harvey 1862: pl. 210 (as *Curdiea obtusata*)
Type Locality: Western Australia
Distribution: Champion Bay, Western Australia, to Western Port, Victoria; South Africa.
Record: Harvey 1862: pl. 210.
Specimens: Point Clune, 5.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU K7223).

ORDER CORALLINALES

Genus: **Amphiroa**

Key to the species of *Amphiroa* from Rottnest I.

1. Thallus flattened ..... *A. anceps*
1. Thallus cylindrical ..... *A. gracilis*

Amphiroa anceps (Lamarck) Decaisne 1842: 125.

Reference: Harvey 1847: 98, pl. 37.
Type Locality: Australia.
Distribution: Widespread in tropical, subtropical and warm temperate seas.
Record: Harvey 1855b: 547.
Specimens: Strickland Bay, 5.ix.1979, *S.M. Clarke & R. Engler* (AD A51114); Lady Edeline Beach, 9.viii.1973, *S.C. Ducker* (MELU 21791).

Amphiroa gracilis Harvey 1855b: 547.

Reference: Harvey 1862: pl. 231.
Type Locality: Fremantle, Western Australia.
Distribution: Australia and the Pacific.
Record: Harvey 1855b: 547; 1862: pl. 231.
Remarks: See discussion in Ducker (1979: 96).

Genus: **Cheilosporum**

Cheilosporum pulchellum Harvey 1855b: 547.

Type Locality: Rottnest I., Western Australia.
Distribution: South-western Australia.
Record: Harvey 1855b: 547.

Genus: **Choreonema**

Choreonema thuretii (Bornet) Schmitz 1889: 455.

Reference: Woelkerling 1987
Type Locality: Pointe de Querqueville, France.
Distribution: Southern Australia, north to Kalbarri, Western Australia; Europe; Asia; Africa; North and South America; New Zealand.
Specimen: Jeannie's Lookout (Parker Point), 11.ii.1978, *Wm J. Woelkerling* (LTB 10920).

Genus: **Haliptilon**

Haliptilon roseum (Lamarck) Garbary & Johansen 1982: 218.

Reference: Johansen & Womersley 1986: 551, figs 1-6.

Type Locality: "le mers Australs".
Distribution: Shark Bay, Western Australia, around southern Australia to Port Denison, Queensland; New Zealand.
Record: Harvey 1855b: 547 (as *Jania cuvieri*).
Specimens: Green I., 21.ix.1988, *J.M. Huisman* (MURU JH 108).

Genus: **Jania**

Jania affinis Harvey 1855b: 547.

Type Locality: Rottnest I., Western Australia.
Distribution: Western Australia.
Record: Harvey 1855b: 547.

Jania verrucosa Lamouroux 1816: 270, pl. 9, fig. 4A.

Reference: Harvey 1863: pl. 251 (as *Jania fastigiata*).
Type Locality: Algoa Bay, South Africa.
Distribution: Australia-wide; South Africa.
Specimens: Rottnest I., 16.x.1934, *Nash* (PERTH).

Jania micrarthrodia Lamouroux 1816: 271, pl. 9, fig. 5.

Type Locality: "Sur les Fucus de l'Australasie".
Distribution: Western, southern and eastern Australia.
Record: Harvey 1855b: 547.
Specimens: Rottnest I., 13.x.1934, *Earle* (PERTH).

Genus: **Lesueuria**

Lesueuria minderiana Woelkerling & Ducker 1987: 192-204, figs 1-24.

Type Locality: Mabel Cove, Rottnest I., Western Australia.
Distribution: Urquarts Bluff, Victoria, to Kalbarri, Western Australia.
Specimen: Mabel Cove, 9.ii.1978, *Wm J. Woelkerling* (LTB 10851).

Genus: **Metagoniolithon**

Key to the species of *Metagoniolithon* from Rottnest I.
from Ducker (1979)

1. Plants epilithic ..... *M. radiatum*
1. Plants epiphytic ..... 2.
2. Branching dichotomous ..... *M. chara* var. *dichotomum*
2. Branching in false whorls ..... 3.
3. Mature plants with genicula with a single false whorl of intergenicula of uniform length and width; hairs (if present) in bands on apical branches .. *M. chara* var. *chara*
3. Mature plants with several false whorls of intergenicula at geniculum; each bearing intergenicula of different length and width; hairs (if present) scattered on apical branches ..... *M. stelliferum*

Metagoniolithon chara (Lamarck) Ducker 1979: 88, figs 9-13, 15A.

Type Locality: "Habite les mers de la Nouvelle-Hollande"
Distribution: Port Denison, Western Australia, to Waratah Bay, Victoria, King I.

Record: Harvey 1855b: 547 (as *Amphiroa granifera* and *A. intermedia*).
Specimens: Strickland Bay, 21.iv.1977, *M. Cambridge* (MELU 21793); Lady Edeline Beach, 9.viii.1973, *S.C. Ducker* (MELU 22766); Strickland Bay, 5.ix.1979, *S.M. Clarke & R. Engler* (AD A51095).

Metagoniolithon chara var. **dichotomum** Ducker 1979: 96, fig. 14.

Type Locality: Rottnest I., Western Australia.
Distribution: Port Denison to Cape Leeuwin, Western Australia.
Specimens: Rottnest I., 9.viii.1973, *S.C. Ducker* (MELU 21850); 9.iii.1950, *A. Cribb* (AD 131996); Lady Edeline Beach, 9.viii.1973, *S.C. Ducker* (MELU 21853).

Metagoniolithon radiatum (Lamarck) Ducker 1979: 85, figs 4-8.

Type Locality: ''Habite les mers de la Nouvelle-Hollande''.
Distribution: Port Denison, Western Australia, to Cape Paterson, Victoria, King I. and northern Tasmania.
Specimens: Strickland Bay, 9.viii.1973, *S.C. Ducker* (MELU 21800, 21802); Roe Reef, 25.iii.1989, *J.M. Huisman* (MURU JH083).

Metagoniolithon stelliferum (Lamark) Weber-van Bosse 1904: 103, pl. 15, figs 9, 13.

Reference: Ducker 1979: 83, figs 1-3; Fuhrer *et al.* 1981: 19, pl.11.
Type Locality: ''Habite les mers australes ou de la Nouvelle-Hollande''
Distribution: Shark Bay, Western Australia to Refuge Cove, east of Wilsons Promontory, Victoria; King & Flinders Is., northern Tasmania.
Record: Harvey 1855b: 547 (as *Amphiroa stelligera*).
Specimens: Rottnest I., 9.viii.1950, *A. Cribb* (AD 13938); Strickland Bay, 9.viii.1973, *S.C. Ducker* (MELU 21801); Green I., 6.ix.1979, *S.M. Clarke & R. Engler* (AD A51066).

Genus: **Metamastophora**

Metamastophora flabellata (Sonder) Setchell 1943: 131.

Reference: Woelkerling 1980.
Type Locality: Western Australia.
Distribution: Western and southern Australia; southern Africa.
Record: Harvey: 1855b: 547 (as *Mastophora plana*).
Specimens: Green I., 6.ix.1979, *S.M. Clarke & R. Engler* (AD A51045); 21.ix.1988, *J.M. Huisman* (MURU JH 009); Point Clune, 6.xii.1984, *G.T. Kraft & A.J.K. Millar* (MELU A 35424, 5).

ORDER GELIDIALES

Genus: **Gelidium**

Gelidium australe J. Agardh 1876: 550.

References: Fuhrer *et al.* 1981: 40, pl. 54. Lucas & Perrin 1947: 143, fig. 17.
Type Locality: Australia.
Distribution: Australia-wide.
Specimens: Point Clune, 5.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU GK 7121); Fish Hook Bay, 10.xi.1988, *J.M. Huisman* (MURU JH141).

Genus: **Pterocladia**

Key to the species of *Pterocladia* from Rottnest I.

1. Branches narrow (1-2 mm) ..... *P. capillacea*
1. Branches broader (10-20 mm) ..... *P. lucida*

Pterocladia capillacea (Gmelin) Bornet in Bornet & Thuret 1876: 57, pl. 20, figs 1-7.

Reference: Fuhrer *et al.* 1981: 42, pl. 57 (as *Pterocladia pinnata*).
Type Locality: Mediterranean
Distribution: East, west and southern Australia; Norfolk I; Europe in the Mediterranean and Atlantic; Japan.
Specimens: Dyer I., 25.iii.1989, *J.M. Huisman* (MURU JH 088); Fish Hook Bay, 10.xi.1988, *J.M. Huisman* (MURU JH 142).

Pterocladia lucida (R. Brown) J. Agardh 1851: 483.

References: Lucas & Perrin 1947: 144, fig. 19; Fuhrer *et al.* 1981: 34, pl. 41; Harvey 1863: pl. 248.
Type Locality: Coast of New Holland.
Distribution: Western and southern Australia; New Zealand.
Specimens: Strickland Bay, 5.ix.1979, *S.M. Clarke & R. Engler* (AD A51118); Point Clune, xi.1945, *A.M. Baird* (UWA A1575); Radar Reef, 15.xii.1962, *G.G. Smith* (UWA A377).

Genus: **Ptilophora**

Ptilophora prolifera (Harvey) J. Agardh.

References: Fan 1961: pls 36a, 46; Harvey 1862: pl. 204 (as *Gelidium proliferum*).
Type Locality: Fremantle, Western Australia.
Distribution: Western Australia.
Specimens: Green I., 4.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU GK 7624); Roe Reef, 15.iv.1989, *J.M. Huisman & T.H. Rose* (MURU JH 158).

ORDER RHODYMENIALES

Genus: **Botryocladia**

Key to the species of *Botryocladia* from Rottnest I.

1. Transverse section of vesicles with an innermost layer of small cells, vesicles large, over 1 cm diam ..... *B. obovata*
1. Transverse section of vesicles without an innermost layer of small cells, vesicles small, less than 0.5 cm diam. ..... *B. leptopoda*

Botryocladia leptopoda (J. Agardh) Kylin 1931: 17, pl. 6, fig. 14.

Reference: Jaasund 1976: 103, fig. 209.
Type Locality: Moreton Bay, Queensland.
Distribution: Northern and western Australia; Red Sea; Indian Ocean.
Specimens: Green I., 4.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU K7634).

Botryocladia obovata (Sonder) Kylin 1931: 18.

References: Fuhrer *et al.* 1981: 46, pl. 66; Lucas & Perrin 1947: 203: fig. 67. (as *Chrysymenia obovata*).
Type Locality: "Swan River", Western Australia.
Distribution: Temperate Australia.
Specimens: Natural Jetty Reef, .xi.1945, *G.G. Smith* (UWA A1556); Green I., 21.ix.1988, *J.M. Huisman* (MURU JH011).

Genus: **Champia**

Key to the species of *Champia* from Rottnest I.
from Reedman & Womersley (1976)

1. Thallus with longitudinal filaments scattered through the diaphragms as well as peripheral filaments; branches linear, basally constricted or not, not or slightly constricted at the diaphragms, branching irregular ..... *C. viridis*
1. Thallus with peripheral longitudinal filaments only; branches usually tapering to base and apex, usually slightly to moderately constricted at the diaphragms; branching irregular or radial; ultimate branchlets often hooked ..... *C. zostericola*

Champia viridis C. Agardh 1828: 115.

Reference: Reedman & Womersley 1976: 77, figs 1, 2A-D, 10; Fuhrer *et al.* 1981: 46, pl. 65.
Type Locality: Western Australia.
Distribution: Rottnest I., Western Australia, to Gabo I., Victoria; Tasmania.
Record: Reedman & Womersley 1976: 77.

Champia zostericola (Harvey) Reedman & Womersley 1976: 87, figs 5, 6, 12C, 13.

Type Locality: Rottnest I., Western Australia.
Distribution: Abrolhos, Western Australia, to Kiama, New South Wales, Tasmania.
Record: Harvey 1855b: 545 (as *Lomentaria zostericola*).
Specimens: Rottnest I., *W.H. Harvey* (Trav. set 195)

Genus: **Coelarthrum**

Coelarthrum cliftonii (Harvey) Kylin 1931: 15.

References: Norris 1986: 537, figs 6-8; Harvey 1858: pl. 57 (as *Chylocladia cliftoni*).
Type Locality: Fremantle, Western Australia.
Distribution: The Abrolhos Is. to Fremantle, Western Australia; South Africa.
Specimens: Green I., 20 m deep, 4.x.1980, *P.W. Gabrielson* (MELU K7639).

Genus: **Gloioderma**

Gloioderma halymenioides (Harvey) J. Agardh 1872: 18.

References: Lucas & Perrin 1947: 194, fig. 61; Harvey 1859a: pl. 67 (as *Horea halymenioides*).
Type Locality: Fremantle, Western Australia.
Distribution: Western and south-western coast of Australia.
Specimens: Point Clune, 2.xii.1980, *C. & M. O'Brien & O'Brien* (MELU K7119); 6.xii.1984, *G.T. Kraft & A.J.K. Millar* (MELU A35429); Green I., 6.ii.1989, *J.M. Huisman* (MURU JH 155).

Genus: **Gloiosaccion**

Gloiosaccion brownii Harvey 1859a: pl. 83.

References: Fuhrer *et al.* 1981: 47, pl. 67 (as *Botryocladia brownii*); Lucas & Perrin 1947: 202, fig. 66
Type Locality: Australia.
Distribution: Southern Australia; New Zealand.
Specimens: Point Clune, 2.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU K7138b).

Genus: **Hymenocladia**

Key to the species of *Hymenocladia* from Rottnest I.

1. Plants subdichotomously branched; branches of similar width ..... *H. dactyloides*
1. Plants paddle-shaped, branching from the margins ..... *H. conspersa*

Hymenocladia conspersa (Harvey) J. Agardh 1871: 452.

Reference: Harvey 1855b: 550; Harvey 1862: pl. 237 (as *Calliblepharis conspersa*)
Type Locality: Garden I., Western Australia.
Distribution: South-west of Western Australia.
Specimens: Green I., 9.x.1988, *J.M. Huisman* (MURU JH 106); Point Clune, 9.x.1988, *J.M. Huisman* (MURU JH 098).

Hymenocladia dactyloides (Sonder) J. Agardh 1871: 454.

Reference: Harvey 1859a: pl. 80 (as *Gracilaria dactyloides*).
Type Locality: Western Australia.
Distribution: Western and southern Australia; Philippines.
Record: Harvey 1855b: 550 (as *Gracilaria dactyloides*).

Genus: **Rhodymenia**

Rhodymenia australis Sonder 1845: 56.

References: Fuhrer *et al.* 1981: 27, pl. 27; Lucas & Perrin 1947: 201, fig. 65; Harvey 1860: pl. 146; Harvey 1855b: 554 (as *Rhodymenia corallina*).
Type Locality: Western Australia.
Distribution: Southern, south eastern and south-western Australia; East Indies; New Zealand.
Record: Harvey 1860: pl. 146.
Specimens: King Head, 6.ix.1979, *H.B.S. Womersley* (AD A50806); Near Army Jetty, Thomson Bay, 7.ix.1979, *R. Engler* (AD A51132).

Genus: **Webervanbossea**

Webervanbossea kaliformis (J. Agardh) De Toni

References: Lucas & Perrin 1947: 204; Kylin 1931: 7, pl. 1, fig. 1. (as *Bindera kaliformis*).
Type Locality: Waterloo Bay, South Australia.
Distribution: Southern Australia.
Specimens: Thomson Bay, 3.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU GK 7643).

ORDER GRACILARIALES

Genus: **Curdiea**

Curdiea obesa (Harvey) Kylin 1932: 61.

Reference: Harvey 1862: pl. 217 (as *Sarcocladia obesa*).
Type Locality: King George's Sound or Rottnest I., Western Australia.
Distribution: Western and south-western coasts of Australia.
Record: Harvey 1862: pl. 217.
Specimens: Strickland Bay, 5.ix.1979, *S.M. Clarke & R. Engler* (AD A51110); Parker Bay, 4.v.1976, *M. Cambridge* (UWA A1569); North Point, .xi.1945, *A.M. Baird* (UWA A1571); Point Clune, 26.xi.1945, *G.G. Smith* (UWA A1571).

Genus: **Gracilaria**

Gracilaria preissiana (Sonder) Womersley in Min-Thein & Womersley 1976: 109.

References: May 1948: 44, pl. 10, fig. 1 (as *Gracilaria pannosa*); Harvey 1859a: pl. 106 (as *Calliblepharis preissiana* J. Agardh); Harvey 1855b: 550 (as *Calliblepharis pannosa*).
Type Locality: South-west Australia.
Distribution: South-west Australia.
Specimens: Point Clune, 2.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU 24337AB); Green I. 6.ix.1979, *S.M. Clarke & R. Engler* (AD A51067); Strickland Bay, 5.ix.1979, *S.M. Clarke & R. Engler* (AD A51093); Fish Hook Bay, 19.ix.1988, *J.M. Huisman* (MURU JH 064).

ORDER CERAMIALES

FAMILY CERAMIACEAE

Genus: **Acrothamnion**

Acrothamnion preissii (Sonder) Wollaston 1967: 323, fig. 24.

Type Locality: Rottnest I., Western Australia.
Distribution: Shark Bay, Western Australia, to Port Campbell, Victoria; South Africa; Japan; Mediterranean.
Record: Harvey 1855b: 561 (as *Callithamnion pulchellum*); Wollaston 1967: 323.
Specimens: Roe Reef, 25.iii.1989, *J.M. Huisman* (MURU JH079).

Genus: **Anotrichium**

Key to the species of *Anotrichium* from Rottnest I.
from Baldock (1976)

1. Branching of thallus sparse, subsecund, lateral branches produced from the lower ends of axial cells. Tetrasporangia 8-10, pedicellate, encircled by 12 trichoblasts, produced in whorls from the upper part of cells near the thallus apex ..... *A. tenue*
1. Branching of thallus prolific, lateral branches produced from the upper ends of axial cells. Tetrasporangia 1-4, pedicellate, produced adaxially from the upper end of cells near the thallus apex ..... *A. licmophorum*

Anotrichium licmophorum (Harvey) Baldock 1976: 549, figs 49-53, 87.

Type Locality: Western Port, Victoria.
Distribution: From Rottnest I., Western Australia, to Western Port, Victoria.
Record: Harvey 1855b: 562 (as *Callithamnion flabelligerum*).
Remarks: Baldock (1976) suggested that type material of *Callithamnion flabelligerum* Harvey (from Fremantle) resembled *Anotrichium licmophorum*. He also noted that the material was sterile, however, and expressed reservations about including it under *Anotrichium*.

Anotrichium tenue (C. Agardh) Nageli 1862: 399.

Reference: Baldock 1976: 556, figs 59-64, 90.
Type Locality: Venice, Adriatic Sea.
Distribution: Widely distributed in tropical, subtropical and temperate waters.
Record: Harvey 1855b: 559 (as *Callithamnion thyrsigerum*).
Specimens: Rottnest I., 1.v.1965, *G.G. Smith* (UWA A799).

Genus: **Antithamnion**

Key to the species of *Antithamnion* from Rottnest I.
from Wollaston (1967)

1. Pinnae decussate ..... *A. hanowioides*
1. Pinnae distichous or rotated slightly to accomodate overlap of pinnules ..... 2.
2. Lateral branches borne regularly on every 3rd-4th cell of axis in place of a pinna. Pinnae with pinnules opposite below (3-8 pairs) and alternate above ..... *A. gracilentum*
2. Lateral branches borne on the basal cells of pinnae at irregular intervals along axis or in place of a pinna and appearing dichotomous with the main axis. Pinnae with all pinnules alternate or unilateral ..... 3.
3. Pinnules unilateral on upper side of rachides of pinnae. Lateral branches borne in place of a pinna and appearing dichotomous with the main axis ..... *A. armatum*
3. Pinnules alternate or opposite. Lateral branches borne on basal cells of pinnae at irregular intervals along axis ..... 4.
4. Pinnules alternate from zig-zag rachides of pinnae. Gland cells borne on short branches on pinnules ..... *A. verticale*
4. Pinnules opposite from straight rachides of pinnae. Gland cells borne on short branches which replace pinnules, or occasionally on the 2nd-3rd cell of a fully developed pinnule ..... *A. pinnafolium*

Antithamnion armatum (J. Agardh) De Toni 1903: 1398.

Reference: Wollaston 1967: 290, fig. 18A-J.
Type Locality: "Novae Hollandiae"
Distribution: Shark Bay, Western Australia, to Robe and Stanley Beach, Kangaroo I., South Australia.
Specimens: Point Clune, 2.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU GK7129a).

Antithamnion gracilentum (Harvey) J. Agardh 1892: 21.

Reference: Wollaston 1967: 284, figs 16, 17A-G.
Type Locality: Rottnest I., Western Australia.
Distribution: Rottnest I., Western Australia, to Port Phillip Heads, Victoria; Rennie, Trial Harbour, West coast of Tasmania.
Record: Harvey 1855b: 560 (as *Callithamnion gracilentum*).

Antithamnion hanowioides (Sonder) De Toni 1903: 1398.

Reference: Wollaston 1967: 295, fig. 19.
Type Locality: St Vincent's Gulf, South Australia.
Distributon: Western Australia to Wilson's Promontory, Victoria, Tasmania.
Specimens: Armstrong Reef, 7.ii.1989, *J.M. Huisman & G. Kendrick* (MURU JH 143).

Antithamnion pinnafolium Wollaston 1968: 289, fig 17H-N.

Type Locality: Stanley Beach, Kangaroo I., South Australia.
Distribution: Known from the type locality, Elliston, Eyre Peninsula, South Australia, and Rottnest I., Western Australia.
Specimens: Point Clune, 8.ii.1989, *J.M. Huisman & G. Kendrick* (MURU JH 166 S).

Antithamnion verticale (Harvey) J. Agardh 1892: 20.

Reference: Wollaston 1967: 299.
Type Locality: Garden I., Western Australia.
Distribution: Rottnest I., Western Australia, to Robe, South Australia.
Record: Harvey 1855b: 560 (as *Callithamnion horizontale*). Wollaston 1967: 299.

Genus: **Bornetia**

Bornetia binderiana (Sonder) Zanardini 1865: 45.

References: Baldock & Womersley 1968: 201, figs 5-12, pl.1, fig. 2; Lucas & Perrin 1947: 327, fig. 158.
Type Locality: Western Australia (probably near Fremantle).
Distribution: Champion Bay, Western Australia, to Warrnambool, Victoria.
Record: Harvey 1855b: 559; Harvey 1858: pl. 52 (as *Griffithsia binderiana*).

Genus: **Balliella**

Balliella hirsuta Huisman 1988: 456-462, figs 1-10.

Type Locality: Green I., near Rottnest I., Western Australia.
Distribution: Known only from the type locality.
Specimens: Green I., 4.xii.1980, *R.W. Ricker & G.T. Kraft* (MELU 2439624405).

Genus: **Callithamnion**

Callithamnion crispulum Harvey 1855b: 561.

Type Locality: Rottnest I., Western Australia.
Distribution: Only recorded from the type locality.
Record: Harvey 1855b: 561.

Callithamnion debile Harvey 1855b: 561.

Type Locality: Rottnest I., Western Australia.
Distribution: Only recorded from the type locality.
Record: Harvey 1855b: 561.

Callithamnion larcinum Harvey 1855b: 562.

Reference: Harvey 1862: pl. 218.
Type Locality: Rottnest I., Western Australia.

Distribution: Western and southern coasts of Australia.
Remarks: The carposporophytes figured by Harvey (1862) appear closer to *Aglaothamnion*. The Australian species of *Callithamnion* are in need of revision.

Callithamnion multifidum Harvey 1855b: 562.

Type Locality: Rottnest I., Western Australia.
Distribution: Known from the type locality and South Australia.
Record: Harvey 1855b: 562.

Callithamnion pusillum Harvey 1855b: 562.

Type Locality: Rottnest I., Western Australia.
Distribution: Only known from the type locality.
Record: Harvey 1855b: 562.

Genus: **Centroceras**

Centroceras clavulatum (C. Agardh) Montagne 1846: 140.

Reference: Cribb 1983: 75, pl. 25, figs 2-3.
Type Locality: Callao, Peru.
Distribution: Cosmopolitan in tropical and temperate waters.
Record: Harvey 1855b: 557.
Specimens: Rottnest I., .x.1934, *Doore* (Tilden, South Pacific Plants no. 65); Dyer I., 25.iii.1989, *J.M. Huisman* (MURU JH084).

Genus: **Ceramium**

Key to the species of *Ceramium* from Rottnest I.
from Womersley (1978)

1. Cortical cells near the apices, and sometimes in older parts, bearing short, spinous or tapering filaments 1-7 cells long, with cells much narrower than the axial cells ..... 2.
1. Cortical cells not bearing spinous or tapering filaments (excluding slender, caducous hairs) ..... 3.
2. Spines single at each node, abaxial, 3-6 cells long, relatively course; internodal space present throughout thallus; tetrasporangia partly to largely involucrate; usually epiphytic on *Codium fragile* or *Corallina* ..... *C. monocanthum*
2. Spines one to several per node near apices, to 4 cells long, relatively slender; cortical cells on older branches with numerous 1-3 celled spines; internodal space present on young branches, closing on older parts; tetrasporangia mostly abaxial, largely enveloped by small cells; usually epiphytic on seagrasses (*Posidonia*, sometimes *Amphibolis*) ..... *C. puberulum*
3. Cortication complete except possibly within a few axial cells of the apices; outer cortex present; tetrasporangia enveloped (or almost so) within the cortex ..... 4.
3. Cortication bands short to relatively long, separated by a clear (though sometimes narrow) internodal space in at least the upper part of the thallus; outer cortex present or absent; tetrasporangia usually protruding, naked or involucrate ..... 5.
4. Branching usually subdichotomous, without alternate flabellate laterals; cortical cells becoming elongate and dovetailing to give complete cortication within 6-8 axial cells from apices; rosettes of outer cortical cells present around periaxial cells; older inner cortical cells usually L/B 3-5, usually without distinct rosettes of outer cells;

tetrasporangia formed first from periaxial cells, later formed from cortical cells near nodes and thus more irregularly scattered; usually occurring in sheltered water ..... *C. rubrum*

4. Main axes bearing alternate, flabellate, lateral branch systems; cortical cells isodiametric, remaining ovoid to spherical (L/B usually less than 2) often with well defined rosettes of outer cells; young inner cortical cells smaller acropetally than basipetally, with this distinction often visible for many segments from apices; tetrasporangia usually in a well-defined ring at each node, mostly cut off from periaxial cells; epiphytic and usually occurring under strong water movement ..... *C. pusillum*
5. Thallus over 200 µm thick below, usually strictly dichotomous, fastigiate; tetrasporangia naked ..... *C. isogonum*
5. Thallus rarely over 200 µm thick, irregularly subdichotomous to laterally branched; tetrasporangia with a slight to extensive involucre ..... 6.
6. Periaxial cells each cutting off two cells acropetally but only a single laterally elongate cell basipetally; the latter may cut off a further single cell, or two cells, and may itself divide laterally into 2-4 smaller cells; tetrasporangia whorled, largely involucrate; rhizoids unicellular ..... *C. flaccidum*
6. Periaxial cells each cutting off 2(-3) isodiametric cells acropetally and usually basipetally; tetrasporangia opposite and largely involucrate, or unilateral and partly involucrate; rhizoids uniseriate-celled with multicellular pads ..... 7.
7. Thallus epiphytic on larger brown algae, with prostrate filaments attached by clumps of rhizoids, and erect complanate branches; branching alternate, normally every 3 cells; internodal spaces about as long (to twice) as cortical bands; tetrasporangia essentially opposite in plane of branching, largely involucrate ..... *C. filiculum*
7. Thallus on rock, epiphytic or epizoic, irregularly branched, subcomplanate above, branched at intervals of 4 or more axial cells; internodal spaces usually becoming several times as long as cortical bands; tetrasporangia unilateral and abaxial, partly involucrate ..... *C. cliftonianum*

Ceramium cliftonianum J. Agardh 1876: 93.

Reference: Womersley 1978: 240, figs 4GH, 15F-J.
Type Locality: Western Australia.
Distribution: Rottnest I., Western Australia, to Botany Bay, New South Wales; Tasmania.
Record: Harvey 1855b: 557 (as *Ceramium fastigiatum*); Womersley 1978.

Ceramium filiculum Womersley 1978: 238, figs 4EF, 15A-E.

Reference: Harvey 1862: pl. 306-A. (as *Ceramium miniatum*).
Type Locality: Port Noarlunga, South Australia.
Distribution: Fremantle, Western Australia, to Port Phillip Heads, Victoria; Kiama to Terrigal, New South Wales
Record: Harvey 1855b: 557,1862: pl. 306-A (as *Ceramium miniatum*).
Specimens: King Head, 6.ix.1979, *H.B.S. Womersley* (AD A50851).

Ceramium flaccidum (Kützing) Ardissone 1871: 40.

Reference: Womersley 1978: 234, figs 4AD, 14E-H.
Type Locality: Kilkee, Co. Clare, Ireland.
Distribution: Probably cosmopolitan (Womersley 1978).
Specimens: Cathedral Rocks, on *Glossophora nigricans*, 25.iii.1989, *J.M. Huisman* (MURU JH 167 S).

Ceramium isogonum Harvey 1855b: 557.

Reference: Womersley 1978: 227, figs 3A, 12.
Type Locality: Garden I., Western Australia.
Distribution: Rottnest I., Western Australia, to Wilson's Promontory, Victoria. Probably also New South Wales and Tasmania.
Specimens: West End, 25.ii.1989, *J.M. Huisman & T.H. Rose* (MURU JH).

Ceramium monocanthum J. Agardh 1894b: 29.

Reference: Womersley 1978: 214, figs 1C,D, 5D-G.
Type Locality: Georgetown, Tasmania.
Distribution: Southern Australia.
Specimens: Mabel Cove, 18.x.1934, *Jones* (Tilden, South Pacific Plants no. 77).

Ceramium puberulum Sonder 1845: 52.

Reference: Womersley 1978: 216, figs 1E,F, 6.
Type Locality: Western Australia.
Distribution: Shark Bay, Western Australia, to Wilson's Promontory, Victoria; northern Tasmania.
Record: Harvey 1855b: 557.
Specimen: Rottnest I., 9.viii.1950, *R.D. Royce* (PERTH)

Ceramium pusillum Harvey 1863, synop.: 47.

Reference: Womersley 1978: 220, figs 2B, 8.
Type Locality: Port Fairy, Victoria.
Distribution: Cottesloe, Western Australia, to Gabo I., Victoria, Tasmania.
Specimens: Marjorie Bay, 18.x.1934, *Warnock* (Tilden, South Pacific Plants no. 74).

Ceramium rubrum (Hudson) C. Agardh 1811: 17.

Reference: Womersley 1978: 217, figs 2A, 7.
Type Locality: Britain.
Distribution: From Fremantle, Western Australia, to Wilson's Promontory, Victoria; Tasmania.
Record: Harvey 1855b: 557

Genus: **Drewiana**

Drewiana nitella (Harvey) Gordon 1972: 91, figs 30-33A & b, 59A.

Reference: Harvey 1859a: pl. 105 (as *Wrangelia nitella*).
Type Locality: Rottnest I., Western Australia.
Distribution: Port Denison, Western Australia, to Port Phillip Bay, Victoria; Tasmania.
Record: Harvey 1855b: 546 (as *Wrangelia nitella*).
Specimens: Green I., 6.ii.1989, *J.M. Huisman* (MURU JH 133).

Genus **Euptilota**

Key to the species of *Euptilota* from Rottnest I.

1. Upper parts of the branches uncorticated ..... *E. articulata*
1. Upper parts of the branches corticated almost to the apices ..... *E. coralloidea*

Euptilota articulata (J. Agardh) Schmitz 1896: 7.

References: Fuhrer *et al.* 1981: 54, pls 81,82; Lucas & Perrin 1947: 338, fig. 164.

Type Locality: "Ad oras Novae Hollandiae" (probably Fremantle, Western Australia)
Distribution: Western Australia to Queensland; Japan.
Specimens: Fish Hook Bay, 1.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU GK 73789); Green I., 9.x.1988, *J.M. Huisman* (MURU JH 149).

Euptilota coralloidea (J. Agardh) Kützing 1849: 672.

Type Locality: Southern Australia.
Distribution: Southern Australia.
Record: Harvey 1855b: 558 (as *Ptilota coralloidea*).
Remarks: This species is probably conspecific with *Euptilota articulata*.

Genus: **Gattya**

Gattya pinnella Harvey 1855b: 555

References: Wollaston 1967: 247, figs 6-8; Lucas & Perrin 1947: 359, fig. 179.
Type Locality: Rottnest I., Western Australia.
Distribution: Rottnest I., Western Australia, to Port Phillip Heads, Victoria.
Specimens: Point Clune, 8.x.1988, *J.M. Huisman* (MURU JH 092); Rottnest I. (TCD, Herb. Harvey no. 223).

Genus: **Griffithsia**

Key to the species of *Griffithsia* from Rottnest I.
from Baldock (1976)

1. Tetrasporangial (and spermatangial) fascicles without an involucre ..... *G. teges*
1. Tetrasprangial fascicles encircled by an involucre ..... 2.
2. Cells globose-ovoid, large 1.4-4.7 mm long and 1.0-2.3 mm in diameter. Filaments moniliform and ecorticate ..... *G. monilis*
2. Cells elongate to sublinear, 1.0-3.2 mm long and 0.3-0.5 mm in diameter, filaments rarely constricted between cells. Subhypogenous cell of the female fertile axis inflated ..... *G. elegans*

Griffithsia elegans Baldock 1976: 538, figs 38, 39, 82.

Type Locality: Robe, South Australia.
Distribution: Rottnest I., Western Australia, to Gabo I., Victoria.
Specimens: Point Clune, 5.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU GK 7134a).

Griffithsia monilis Harvey 1855b: 559.

Reference: Baldock 1976: 517, figs 1-7, 75.
Type Locality: Garden or Rottnest I., Western Australia.
Distribution: Fremantle, Western Australia, to Watson Bay, New South Wales; Redcliffe, Queensland; Rocky Cape, Tasmania.
Record: Harvey 1855b: 557.

Griffithsia teges Harvey 1855b: 559.

Reference: Baldock: 1976: 541, figs 40-43, 84, 85.
Type Locality: Fremantle, Western Australia.
Distribution: Fremantle, Western Australia, to Wilson's Promontory, Victoria.
Specimens: Near Army Jetty, Thomson Bay, 7.ix.1979, *R. Engler* (AD A51131).

Genus: **Haloplegma**

Haloplegma preissii Sonder 1846: 171

References: Fuhrer *et al.* 1981: 51, pl. 75; Lucas & Perrin 1947: 336, fig. 163; Harvey 1859a: pl. 79.
Type Locality: Western Australia.
Distribution: Western and southern coasts of Australia; Tasmania.
Record: Harvey 1855b: 558, 1859a: pl. 79.
Specimens: Armstrong Reef, 7.ii.1989, *J.M. Huisman* (MURU JH 146).

Genus: **Medeiothamnion**

Medeiothamnion halurum (Harvey) Gordon 1972: 57, figs 14, 15, 55B.

Type Locality: Fremantle, Western Australia.
Distribution: Rottnest I., Western Australia, to Western Port, Victoria; northern Tasmania.
Record: Harvey 1859a: pl. 70. (as *Wrangelia halurus*).

Genus: **Monosporus**

Monosporus australis (Harvey) J. Agardh 1876: 610.

References: Baldock 1976: 561, figs 65, 91; Huisman & Kraft 1982: fig. 39; Lucas & Perrin 1947: 328, fig. 159.
Type Locality: Rottnest I., Western Australia.
Distribution: Rottnest I., Western Australia, to Port Phillip Bay, Victoria.
Record: Harvey 1855b: 559 (as *Corynospora australis*).

Genus: **Platythamnion**

Platythamnion nodiferum (J. Agardh) Wollaston 1967: 303, fig. 20.

References: Harvey 1862: pl. 207.
Type Locality: Port Fairy, Victoria.
Distribution: Rottnest I., Western Australia, to Sealer's Cove, Victoria.
Record: Harvey 1855b: 561 (as *Callithamnion simile*).

Genus: **Psilothalia**

Key to the species of *Psilothalia* from Rottnest I.

1. Branching alternate ..... *P. striata*
1. Branching irregularly pinnate ..... *P. siliculosa*

Psilothalia siliculosa (Harvey) Schmitz 1896: 7.

Type Locality: Rottnest I., Western Australia.
Distribution: Dongara to Point Peron, Western Australia.
Record: Harvey 1855b: 559 (as *Ptilota siliculosa*).

Psilothalia striata (Harvey) Schmitz 1889: 451.

Reference: Harvey 1859a: pl. 71 (as *Ptilota striata*).
Type Locality: Rottnest I., Western Australia.
Distribution: South-western Australia.
Record: Harvey 1855b: 558, 1859a: pl. 71 (as *Ptilota striata*).

Genus: **Ptilocladia**

Ptilocladia vestita (Harvey) Wollaston 1967: 263, fig. 11.

Type Locality: Rottnest I., Western Australia.
Distribution: Rottnest I., Western Australia, to Robe, South Australia; Tasmania.
Record: Harvey 1860: pl. 140 (as *Crouania vestita*).

Genus: **Shepleya**

Shepleya australis (J. Agardh) Gordon 1972: 79, figs 26, 27.

Type Locality: Port Phillip Bay, Victoria.
Distribution: Rottnest I., Western Australia, to Point Lonsdale, Victoria.
Specimens: Cathedral Rocks, on *Pterocladia lucida*, 25.iii.1989, *J.M. Huisman* (MURU JH 170 S).

Genus: **Spermothamnion**

Key to the species of *Spermothamnion* from Rottnest I.

1. Female fertile axis with three short cells ..... *S. cymosum*
1. Female fertile axis with four short cells ..... *S. miniatum*

Spermothamnion cymosum (Harvey) De Toni 1903: 1226.

Reference: Gordon 1972: 117, figs 38E, 61B.
Type Locality: Middleton Bay, King George's Sound, Western Australia.
Distribution: Rottnest I. to King George's Sound, Western Australia.
Record: Harvey 1855b: 560 (as *Callithamnion cymosum*).

Spermothamnion miniatum Huisman 1985: 58, figs 16-26.

Type Locality: New Gulch, Lord Howe I., New South Wales.
Distribution: Known only from the type locality and Rottnest I.
Specimens: Horse Shoe Reef, off Abraham Point, on *Amphiroa anceps*, 15.iv.1989, *J.M. Huisman & T.H. Rose* (MURU JH 165 S).

Genus: **Spongoclonium**

Key to the species of *Spongoclonium* from Rottnest I.

1. Corticated spongiose region forming a large proportion of the plant, plants large (up to 30 cm) ..... *S. brounianum*
1. The greater part of the frond free and articulate, plants small (up to 3 cm) ..... *S. scopula*

Spongoclonium brounianum (Harvey) J. Agardh 1892: 41.

Type Locality: King George's Sound, Western Australia.
Distribution: Southern and western coasts of Australia.
Record: Harvey 1855b: 561 (as *Callithamnion brownianum*).

Spongoclonium scopula (Harvey) De Toni 1897: 1362.

Type Locality: Rottnest I., Western Australia.
Distribution: Western Australia.
Record: Harvey 1855b: 561 (as *Callithamnion scopula*).

Remarks: The Austalian species of *Spongoclonium* are currently being revised by Dr Elise Wollaston (Adelaide University).

Genus: **Spyridia**

Spyridia filamentosa (Wulfen) Harvey 1833: 336.

Reference: Womersley & Cartledge 1975: 222, figs 1, 3AB.
Type Locality: Adriatic Sea.
Distribution: Australia-wide; common in most seas.
Record: Harvey 1855b: 557.
Specimens: Armstrong Reef, 7.ii.1989, *J.M. Huisman & G. Kendrick* (MURU JH 145).

Genus: **Thamnocarpus**

Thamnocarpus gunnianus Harvey in Hooker

Type Locality: Tasmania.
Distribution: Southern Australia.
Record: Harvey 1855b: 559.

Genus: **Trithamnion**

Trithamnion tenella (Harvey) Wollaston 1968: 389.

Type Locality: Jetty Reef, Rottnest I., Western Australia.
Distribution: Only known from the type locality.
Record: Harvey 1855b: 546 (as *Wrangelia tenella*).

Genus: **Wollastoniella**

Wollastoniella myriophylloides (Harvey) Gordon 1972: 91, figs 30-33A,B, 59A.

Reference: Harvey 1862: pl. 224 (as *Wrangelia myriophylloides*).
Type Locality: Rottnest I, Western Australia.
Distribution: Port Denison, Western Australia, to Port Phillip Bay, Victoria.
Record: Harvey 1855b: 546 (as *Wrangelia myriophylloides*).

Genus: **Wrangelia**

Key to the species of *Wrangelia* from Rottnest I.
from Gordon (1972)

1. Terminal cells of whorl-branchlets not mucronate, usually more than 1-2 times as long as wide .. .. *W. plumosa*
1. Terminal cells of whorl-branchlets mucronate, 1-2 times as long as wide ..... *W. velutina*

Wrangelia plumosa Harvey 1844: 450.

Reference: Gordon 1972: 21, figs 4, 5, 10G,H & J, 51.
Type Locality: Georgetown, Tasmania.
Distribution: Shark Bay, Western Australia, to Port Stephens, New South Wales.
Record: Harvey 1855b: 545 (as *Wrangelia penicillata*).

Wrangelia velutina (Sonder) Harvey 1855b: 546.

Reference: Gordon 1972: 27, figs 6, 10i, 52.
Type Locality: South-west Australia.
Distribution: Rottnest I., Western Australia, to Flinders, Victoria; Tasmania.
Record: Gordon 1972: 27; Harvey 1858: pl. 46.

FAMILY DASYACEAE

Genus: **Dasya**

Dasya cliftonii Harvey 1855b: 542.

Reference: Harvey 1858, pl. 3. Lucas & Perrin 1947: 312, fig. 149.
Type Locality: Fremantle Harbour, Western Australia.
Distribution: Western and southern Australia.
Record: Harvey 1858, pl. 3.

Dasya elongata Sonder 1845: 53

References: Parsons 1975: 591; Harvey 1847: 63, pl. 23
Type Locality: Swan River Colony, Western Australia.
Distribution: Western and northern Australia; Port Phillip Bay, Victoria?
Record: Harvey 1855b: 542.
Specimens: Rottnest I., 1.v.1965, *G.G. Smith* (UWA A798, 801, 806).

Dasya extensa Sonder ex Kützing 1864: 21, pl. 58.

Reference: Parsons 1975: 569, figs 2-4, 39B.
Type Locality: Lefevre Peninsula, South Australia.
Distribution: Dongara, Western Australia, to Western Port., Victoria; River Tamar, Tasmania.
Remarks: Harvey's record of *Dasya villosa* from Rottnest I. (Harvey 1855: 542) probably refers to *D. extensa* (Parsons 1975).

Dasya frutescens Harvey 1855b: 542.

Type Locality: Rottnest I., Western Australia.
Distribution: Western Australia.
Record: Harvey 1855b: 542.

Genus: **Heterosiphonia**

Key to the species of *Heterosiphonia* from Rottnest I.

modified from Parsons (1975)

1. Thallus ecorticate throughout ..... 2.
1. Thallus corticated, at least in the basal portion ..... 3.
2. Plants minute, with four pericentral cells ..... *H. callithamnion*
2. Plants up to 12 cm in length, with 8-11 pericentral cells ..... *H. wrangelioides*
3. Internode of 2(-3) segments between laterals ..... 4.
3. Internode of (3-)4-7 segments between laterals ..... 5.
4. Plants large, robust, to 25 cm long; heavily corticated for most of its length ..... *H. muelleri*
4. Plants smaller, usually less than 12 cm long; only corticated near the base ..... *H. crassipes*
5. Plants to 30 cm long; main axis much branched; branches terminating in flabellate tufts ..... *H. gunniana*
5. Plants to 8 cm long; sparsely branched; branches not terminating in flabellate tufts ..... *H. multiceps*

Heterosiphonia callithamnion (Sonder) Falkenberg 1901: 647.

Type Locality: Western Australia.
Distribution: South-western Australia.
Record: Harvey 1855b: 543 (as *Dasya callithamnion*).
Specimens: Rottnest I., 2.v.1965, *G.G. Smith* (UWA A802); Parker Point, 18.ix.1988, *J.M. Huisman* (MURU JH 042).

Heterosiphonia crassipes (Harvey) Falkenberg 1901: 655.

Type Locality: Jetty Reef, Rottnest I., Western Australia.
Distribution: Indian Ocean; Coffs Harbour, Lord Howe I., New South Wales.
Specimens: Rottnest I., 1.v.1965, *G.G. Smith* (UWA A869); Point Clune, 7.xii.1984, *G.T. Kraft & A.J.K. Millar* (MELU A 354634, 354834).

Heterosiphonia gunniana (Harvey) Reinbold 1899: 49.

Reference: Parsons 1975: 618, figs 17-19, 42.
Type Locality: Georgetown, Tasmania.
Distribution: Fremantle, Western Australia, to Western Port, Victoria; northern Tasmania.
Record: Harvey 1855b: 542 (as *Dasya gunniana*).

Heterosiphonia muelleri (Sonder) De Toni 1903: 1237.

References: Parsons 1975: 626, figs 20-22, 44; Lucas & Perrin 1947: 319, fig. 154.
Type Locality: Port Phillip Bay, Victoria.
Distribution: Fremantle, Western Australia, to Western Port, Victoria, possibly to Sydney, New South Wales; northern Tasmania.
Specimens: Porpoise Bay, 14.xi.1945, *G.G. Smith* (UWA A7).

Heterosiphonia multiceps (Harvey) Falkenberg 1901: 654.

Type Locality: Natural Jetty, Rottnest I., Western Australia.
Distribution: South-western Australia.
Record: Harvey 1855b: 542. (as *Dasya multiceps*).

Heterosiphonia wrangelioides (Harvey) Reinbold 1899: 49.

Reference: Parsons 1975: 612, figs 15, 16, 49B.
Type Locality: Fremantle.
Distribution: From Fremantle, Western Australia, to Port Phillip Bay, Victoria; Low Head, north coast of Tasmania.
Specimens: Rottnest I., .x.1934, *Jones & Philson* (Tilden, South Pacific Plants no. 16).

FAMILY DELESSERIACEAE

Genus: **Acrosorium**

Acrosorium minus (Sonder) Kylin 1924: 78.

Reference: Lucas & Perrin 1947: 223 (as *Nitophyllum minus*).
Type Locality: Western Australia.
Distribution: Western and southern Australia.
Record: Harvey 1855b: 549 (as *Nitophyllum minus*).

Genus: **Apoglossum**

Apoglossum spathulatum (Sonder) Womersley & Shepley 1982: 329.

Reference: Kützing 1869: 5, pl 12c.
Type Locality: Western Australia
Distribution: Southern and Western Australia.
Record: Harvey 1855b: 548 (as *Delesseria spathulata*).

Genus: **Chauviniella**

Chauviniella coriifolia (Harvey) Papenfuss 1956: 159.

Reference: Harvey 1860: pl. 150. (as *Delesseria coriifolia*).
Type Locality: Garden or Rottnest I., Western Australia.
Distribution: Southern and south-western Australia.
Record: Harvey 1855b: 548 (as *Delesseria coriifolia*).

Genus: **Hemineura**

Hemineura frondosa Harvey 1847: 116, pl. 45.

References: Fuhrer *et al.* 1981: 29, pl. 32; Lucas & Perrin 1947: 232, fig. 95; Harvey 1860: pl. 179 (as *Delesseria frondosa*).
Type Locality: Tasmania.
Distribution: Western and southern coasts of Australia; Tasmania.
Specimens: Parker Point, on *Amphibolis*, 18.ix.1988, *J.M. Huisman* (MURU JH 031); Green I., 21.ix.1988, *J.M. Huisman* (MURU JH 002).

Genus: **Heterodoxia**

Heterodoxia denticulata J. Agardh 1898

References: Fuhrer *et al.* 1981: 29, pl. 31; Harvey 1863: pl. 244 (as *Delesseria denticulata*).
Type Locality: Rottnest I., Western Australia.
Distribution: Southern Australia.
Record: Harvey 1855b: 548 (as *Delesseria denticulata*).
Specimens: Roe Reef, 25.iii.1989, *J.M. Huisman* (MURU JH078).

Genus: **Hypoglossum**

Key to the species of *Hypoglossum* from Rottnest I.
modified from Womersley & Shepley (1982)

1. Branching of thallus regularly sympodial ..... *H. revolutum*
1. Branching of thallus monopodial ..... 2.
2. Mature blades with all second-order cells producing third-order cell rows. Tetrasporangia not formed by transverse pericentral cells ..... *H. heterocystideum*
2. Mature blades with only the inner second-order cells producing third order cell rows. Tetrasporangia commonly formed by transverse pericentral cells ..... *H. dendroides*

Hypoglossum dendroides (Harvey) J. Agardh 1898: 186.

Reference: Womersley & Shepley 1982: 341, figs 2CD, 9.
Type Locality: Fremantle, Western Australia.
Distribution: Rottnest I., Western Australia, to Point Avoid, Eyre Peninsula, South Australia.
Record: Harvey 1855b: 548.
Specimens: Point Clune, 2.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU K 7135).

Hypoglossum heterocystideum (J. Agardh) J. Agardh 1898: 187.

Reference: Womersley & Shepley 1982: 326, figs 1BC, 4 (as *Hypoglossum hypoglossoides*).
Type Locality: Port Phillip Bay, Victoria.
Distribution: Shark Bay, Western Australia, to Port Stephens, New South Wales; Tasmania.
Record: Harvey 1855b: 548, 1859: pl. 87 (as *Delesseria hypoglossoides*).
Specimens: Kitson Point, 6.ix.1979, *S.M. Clarke & R. Engler* (AD A51158); Salmon Bay, 12.xi.1968, *M. Parsons* (AD A32138).

Hypoglossum revolutum (Harvey) J. Agardh 1898: 188.

References: Womersley & Shepley 1982: 323, figs 1A, 3; Lucas & Perrin 1947: 228, fig. 91.
Type Locality: King George's Sound, Western Australia.
Distribution: Rottnest I., Western Australia, to Portland Bay, Victoria.
Record: Harvey 1860: pl. 170 (as *Delesseria revoluta*); Womersley & Shepley 1982.
Specimens: Parker Point, 18.ix.1988, *J.M. Huisman* (MURU JH001).

Genus: **Martensia**

Key to the species of *Martensia* from Rottnest I.

1. Thallus robust, to 10 cm tall ..... *M. australis*
1. Thallus smaller, fragile ..... 2.
2. Branching repeatedly dichotomous, upper margins toothed or lobed ..... *M. fragilis*
2. Branching not repeatedly dichotomous, upper margins smooth ..... *M. elegans*

Martensia australis Harvey 1855b: 537.

Type Locality: King George's Sound, Western Australia.
Distribution: Western, southern and eastern Australia.
Specimens: Basin, 28.xi.1975, *M. Cambridge* (UWA A1555).

Martensia fragilis Harvey 1854: 145.

Reference: Harvey 1860: pl. 127 (as *Martensia denticulata*).
Type Locality: Belligan Bay, Ceylon.
Distribution: Western, southern and eastern Australia; Indonesia; Marshall I.; Solomon I.
Record: Harvey 1860: pl. 127 (as *Martensia denticulata*).

Martensia elegans Hering 1841: 92.

Reference: Harvey 1847: 73, pl. 43.
Type Locality: Port Natal, South Africa.
Distribution: Australia-wide; South Africa.
Record: Harvey 1855b: 537.

Genus: **Myriogramme**

Myriogramme erosa (Harvey) Kylin 1924: 61.

References: Lucas & Perrin 1947: 221, fig. 85 (as *Nitophyllum erosum*); Harvey 1859a: pl. 94 (as *Nitophyllum erosum*).
Type Locality: Garden I., Western Australia.
Distribution: Western and southern coasts of Australia.
Specimens: Fish Hook Bay, 1.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU K7380); Green I., 9.x.1988, *J.M. Huisman* (MURU JH 109110).

Genus: **Nitophyllum**

Nitophyllum pulchellum Harvey 1855b: 549.

Type Locality: King George's Sound, Western Australia.
Distribution: Southwestern coasts of Australia.
Record: Harvey 1855b: 549.

Genus: **Platysiphonia**

Platysiphonia hypneoides (Harvey) Womersley & Shepley 1959: 209.

Reference: Womersley & Shepley 1959: 185, figs 51-54, pl. 3, fig. 1.
Type Locality: Fremantle & Garden I., Western Australia.
Distribution: Only known from the vicinity of the type locality.
Specimens: Roe Reef, 25.iii.1989, *J.M. Huisman* (MURU JH 160).

FAMILY RHODOMELACEAE

Genus: **Acanthophora**

Acanthophora dendroides Harvey 1855b: 538.

Reference: Kraft 1979: fig. 7.
Type Locality: Rottnest I., Western Australia.
Distribution: Western Australia, Queensland, New South Wales.
Specimens: Point Clune, 5.xii.1980, *C. & M. O'Brien* (MELU K7195); West End, 25.ii.1989, *J.M. Huisman & T.H. Rose* (MURU JH 016).

Genus: **Amansia**

Amansia kuetzingioides Harvey 1858: pl. 51

Reference: Lucas & Perrin 1947: 296, fig. 140.
Type Locality: Rottnest I., Western Australia.
Distribution: Western Australia.
Record: Harvey 1855b: 538 (as *Kuetzingia serrata*).
Specimens: West End, 25.ii.1989, *J.M. Huisman & T.H. Rose* (MURU JH 017).

Genus: **Brongniartella**

Brongniartella australis (C. Agardh) Schmitz 1893: 218.

References: Parsons 1980: 278, figs 1558, 61, table 1; Lucas & Perrin 1947: 283, fig. 130.
Type Locality: New Holland.
Distribution: Southern Australia; South Island, New Zealand.
Specimens: Point Clune, 2.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU K7132a); 6.xii.1984, *G.T. Kraft & A.J.K. Millar* (MELU A3543638).

Genus: **Chondria**

Key to the species of *Chondria* from Rottnest I.
from Gordon-Mills & Womersley (1987)

1. Thallus becoming compressed from median parts of axes to the base; apices attenuate; rhizoidal cortication and secondary thickening of lower axes absent .... *C. lanceolata*
1. Thallus terete throughout; apices rounded or depressed; rhizoidal cortication and secondary thickening of lower axes present ..... 2.
2. Cystocarps without a spur ..... *C. curdieana*
2. Cystocarp with a spur ..... *C. succulenta*

Chondria curdieana (Harvey ex J. Agardh) De Toni 1903: 844.

Reference: Gordon-Mills & Womersley 1987: 497, figs 1C,D, 5, 6, 7.
Type Locality: South Australia
Distribution: Isolated occurences in the south-west, common in the south-east.
Record: Gordon-Mills & Womersley 1987: 497.

Chondria lanceolata Harvey 1855b: 539.

References: Gordon-Mills & Womersley 1987: 544, figs 23F, 24A,B, 25; Harvey 1862: pl. 239.
Type Locality: Rottnest I., Western Australia.
Distribution: Rottnest and the adjacent mainland, Western Australia; Scott Bay, South Australia.
Record: Harvey 1855b: 539.

Chondria succulenta (J. Agardh) Falkenberg 1901: 205, pl. 22, figs 22-23.

Reference: Gordon-Mills & Womersley 1987: 534, figs 12I-O, 20A,B, 21.
Type Locality: "ad oras australes et occidentales Novae Hollandiae".
Distribution: South-west of Western Australia to northern New South Wales; Townsville, Queensland.
Record: Harvey 1855b: 539 (as *Chondria sedifolia*);. Gordon-Mills & Womersley 1987: 534.

Genus: **Cliftonaea**

Cliftonaea pectinata Harvey 1859a: pl. 100.

Reference: Lucas & Perrin 1947: 289, fig. 135.
Type Locality: Garden I., Western Australia.
Distribution: Western Australia.
Specimens: Point Clune, 5.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU GK7173); 6.xii.1984, *G.T. Kraft & A.J.K. Millar* (MELU A35460-62).

Genus: **Coeloclonium**

Key to the species of *Coeloclonium* from Rottnest I.
from May (1965)

1. Cystocarps sessile at the apices of the branches ..... *C. opuntioides*
1. Cystocarps sessile along the branches ..... 2.
2. Plants 7-13 cm long ..... *C. verticillatum*
2. Plants 2-7 cm long ..... *C. umbellulum*

Coeloclonium opuntioides (Harvey) J. Agardh 1876: 640.

Reference: Falkenberg 1901: 211, pl. 22, figs 32-34.
Type Locality: King George's Sound, Western Australia.
Distribution: South-western Australia.
Record: Harvey 1855b: 556 (as *Chylocladia opuntioides*).

Coeloclonium umbellulum (Harvey) Falkenberg 1901: 214.

Reference: Harvey 1860: pl. 147 (as *Chondria umbellula*).
Type Locality: Rottnest I., Western Australia.
Distribution: Western Australia.
Record: Harvey 1860: pl. 147 (as *Chondria umbellula*).

Coeloclonium verticillatum (Harvey) Falkenberg 1901: 214.

Reference: Harvey 1859a: pl. 102 (as *Chondria verticillata*).
Type Locality: Garden I., Western Australia.
Distribution: Western and southern Australia; Tasmania.
Record: Harvey 1859a: pl. 102.

Genus: **Dasyclonium**

Key to the species of *Dasyclonium* from Rottnest I.

1. Ultimate branches usually monosiphonous. Plant soft, slender, with numerous branches ..... *D. flaccidum*
1. Ultimate branches usually polysiphonous ..... *D. incisum*

Dasyclonium flaccidum (Harvey) Kylin 1956: 534.

References: Scagel 1962: 1024, figs 4, 32-34; Lucas & Perrin 1947: 288, fig. 134 (as *Euzoniella flaccida*).
Type Locality: King George's Sound.
Distribution: Western, southern and eastern Australia.
Record: Harvey 1855b: 539 (as *Polyzonia flaccida*).
Specimens: Point Clune, 5.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU GK 7136).

Dasyclonium incisum (J. Agardh) Kylin 1956: 534.

References: Fuhrer *et al.* 1981: 51, pl. 76; Scagel 1962: 1026, figs 5, 20-28; Lucas & Perrin 1947: 287, fig. 133 (as *Euzoniella incisa*); Harvey 1858: pl. 42-A (as *Polyzonia incisa*).
Type Locality: "New Holland".
Distribution: Western, southern and eastern Australia; New Zealand.
Specimens: Fish Hook Bay, 1.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU GK 7386b).

Genus: **Dictymenia**

Key to the species of *Dictymenia* from Rottnest I.

1. Stichidia developed from the marginal teeth, midrib not present throughout the plant ..... *D. tridens*
1. Stichidia developed from the lateral veins or midrib, midrib present throughout the plant ..... *D. sonderi*

Dictymenia sonderi Harvey 1858: pl. 21.

References: Lucas & Perrin 1947: 280, fig. 127; Falkenberg 1901: 285, pl. 19, figs 13-16.
Type Locality: Garden I., Western Australia.
Distribution: Western Australia.
Specimens: Point Clune, 2.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU K7118a).

Dictymenia tridens (Mertens ex Turner) Greville 1830: li (synop.).

References: Lucas & Perrin 1947: 281, fig. 128; Fuhrer *et al.* 1981: 30, pl. 34.
Type Locality: New Holland.
Distribution: Southern Australia.
Record: Harvey 1855b: 538.
Specimens: Point Clune, 5.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU K7190).

Genus: **Halodictyon**

Halodictyon robustum (Harvey) Harvey 1858: pl. 37.

Type Locality: Fremantle, Western Australia.
Distribution: South-western Australia.
Record: Harvey 1855b: 558 (as *Hanowia robusta*).
Specimens: Narrow Neck, 22.ii.1973, *M. Cambridge* (UWA A1548).

Genus: **Herposiphonia**

Key to the species of *Herposiphonia* from Rottnest I.

1. Thallus to 2-7 cm tall, with 12-16 pericentral cells ..... *H. rostrata*
1. Thallus minute, with approximately 8 pericentral cells ..... *H. pectinella*

Herposiphonia pectinella (Harvey) Falkenberg 1901: 315.

Reference: Kützing 1864: pl. 39a,b,c (as *Polysiphonia pectinata*)
Type Locality: Princess Royal Harbour, King George's Sound, Western Australia.
Record: Harvey 1855b: 541 (as *Polysiphonia pectinella*).

Herposiphonia rostrata (Sonder) Falkenberg 1901: 311, pl. 3, 19.

Reference: Harvey 1863: pl. 242 (as *Polysiphonia rostrata*).
Type Locality: "Swan River Colony", Western Australia.
Distribution: Western and southern Australia.
Record: Harvey 1855b: 541 (as *Polysiphonia rostrata*).

Genus: **Holotrichia**

Holotrichia comosa (Harvey) Schmitz 1897

References: Falkenberg 1901: 566, pl. 24, figs 3, 12; Harvey 1863: pl. 270 (as *Alsidium ? comosum*).
Type Locality: Vasse, Western Australia.
Distribution: Western Australia.
Specimens: Point Clune, 5.xii.1980, *G.T. Kraft & R.W. Ricker* (MELU GK7203a).

Genus: **Jeannerettia**

Jeannerettia pedicillata (Harvey) Papenfuss 1942: 448.

Reference: Fuhrer *et al.* 1981: 31, pl. 35.
Type Locality: Near Georgetown, Tasmania.
Distribution: Southern Australia.
Record: Harvey 1855b: 537 (as *Pollexfenia pedicillata*).
Specimens: Rottnest I., 8.viii.1950, *R.D. Royce* (PERTH)

Genus: **Kuetzingia**

Key to the species of *Kuetzingia* from Rottnest I.

1. Fronds narrow and perfectly flat ..... *K. angusta*
1. Fronds channelled ..... *K. canaliculata*

Kuetzingia angusta Harvey 1855b: 538.

Reference: Harvey 1860: pl. 177.
Type Locality: Rottnest I., Western Australia.
Distribution: Western Australia.
Record: Harvey 1855b: 538.

Kuetzingia canaliculata (Greville) Sonder 1845: 54.

Reference: Harvey 1847: 23, pl. 9, figs 15.
Type Locality: New Holland.
Distribution: Western Australia.
Record: Harvey 1855b: 538.
Specimens: Green I., 9.x.1988, *J.M. Huisman* (MURU JH 111).

Genus: **Laurencia**

Key to the species of *Laurencia* from Rottnest I.
from Saito & Womersley (1974)

1. Branches distinctly compressed in most parts ..... 2.
1. Branches terete ..... 3.
2. Branching irregularly alternate and distichous (rarely pinnate) with laterals usually relatively distant; branches slightly to moderately compressed, mostly over 0.75 mm thick ..... *L. elata*
2. Branching regularly alternate, distichous, and usually pinnate with closely arranged laterals; branches strongly compressed, mostly less than 0.75 mm thick ..... *L. brongniartii*

3. Laterals distinctly basally constricted, usually with a narrow attachment ..... *L. clavata*
3. Laterals not basally constricted ..... 4.
4. Secondary longitudinal pit-connections present between epidermal cells ..... 5.
4. Without secondary longitudinal pit-connections between epidermal cells ..... *L. cruciata*
5. Epidermal cells near branch apices with projecting, convex to hemispherical, outer walls; thallus usually densely branched with many short laterals ..... *L. majuscula*
5. Epidermal cells near branch apices without projecting outer walls; thallus loosely to densely branched ..... 6.
6. Thallus growing on *Posidonia*, with a single discoid holdfast and axis, usually less than 8 cm high; lenticular thickenings usually present throughout most of thallus ..... *L. forsteri*
6. Thallus rarely on *Posidonia*, with one to several axes, usually over 8 cm high; without or with occasional lenticular thickenings ..... 7.
7. Thallus robust, main axes often over 2 mm in diameter; branching often distant and without short laterals unless highly fertile ..... *L. filiformis*
7. Thalus relatively slender, main axes usually less than 2 mm in diameter; with abundant short lateral branches ..... *L. arbuscula*

Laurencia arbuscula Sonder 1845: 55.

Reference: Saito & Womersley 1974: 828, figs 3A, 11, 12.
Type Locality: Western Australia
Distributon: Rottnest I., Western Australia, to Western Port, Victoria; northern Tasmania.
Record: Saito & Womersley 1974: 828.

Laurencia brongniartii J. Agardh 1841: 20.

Reference: Saito & Womersley 1974: 839, figs 4C,D, 20, 1.
Type Locality: Martinique (West Indies).
Distribution: Point Peron, Western Australia, around northern Australia to Mossy Point and Lord Howe I., New South Wales; isolated records in South Australia; West Indies; Indonesia; Japan; New Caledonia; South Africa.
Record: Harvey 1858: pl. 15 (as *L. grevilleana*).
Specimens: North Point, .xi.1945, *G.G. Smith* (UWA A1406); Rottnest I., .iii.1932, *A.M. Baird* (UWA A1408); Point Clune, .xi.1945, *A.M. Baird* (UWA A1401); Rottnest I., 6.ix.1979, *S.M. Clarke & R. Engler* (PERTH 1895).

Laurencia clavata Sonder 1853: 694.

Reference: Saito & Womersley 1974: 825, figs 2A,B, 9.
Type Locality: Lefevre Peninsula, South Australia.
Distribution: Port Denison, Western Australia, to Phillip I., Victoria.
Specimens: Rottnest I., 1.v.1965, *G.G. Smith* (UWA A1392).

Laurencia cruciata Harvey 1855b: 544.

Reference: Saito & Womersley 1974: 843, figs 5C, 24.
Type Locality: Rottnest I., Western Australia.
Distribution: Geraldton, Western Australia, to Outer Harbour (Port Adelaide), South Australia; Coffs Harbour, New South Wales.
Record: Harvey 1855b: 544.
Specimens: Rottnest I., 9.viii.1950, *R.D. Royce* (PERTH)

Laurencia elata (C. Agardh) Hooker & Harvey 1847: 401.

References: Saito & Womersley 1974: 837, figs 3E, 18, 19; Fuhrer *et al.* 1981: 56, pl. 85; Lucas & Perrin 1947: 249, fig. 110.
Type Locality: King I., Bass Strait.
Distribution: Port Denison, Western Australia, to Mossy Point, New South Wales; Tasmania; New Zealand.
Specimens: King Head, 6.ix.1979, *H.B.S. Womersley* (AD A50801); Fish Hook Bay, 19.ix.1988, *J.M. Huisman* (MURU JH054).

Laurencia filiformis (C. Agardh) Montagne 1845: 125.

References: Saito & Womersley 1974: 832, figs 3CD, 1416; Fuhrer *et al.* 1981: 57, pl. 87.
Type Locality: Western Australia.
Distribution: Shark Bay, Western Australia, to Tilba, New South Wales; Tasmania; New Zealand.
Record: Harvey 1860: pl. 148 (as *L. heteroclada*).
Specimens: North Point, .xi.1945, *A.M. Baird* (UWA A1392).

Laurencia forsteri (Mertens ex Turner) Greville 1830: lii.

References: Saito & Womersley 1974: 823, figs 1E, 8.
Type Locality: Coast of Australia (probably King George's Sound, Western Australia).
Distribution: Abrolhos Is, Western Australia, to Wilson's Promontory, Victoria; Low Head, Tasmania.
Specimens: Rottnest I., 13.x.1934, *Earle* (PERTH).

Laurencia majuscula (Harvey) Lucas 1935: 223.

Reference: Saito & Womersley 1974: 819, figs 1A, 6.
Type Locality: Rottnest I., Western Australia.
Distribution: Australia-wide; widely distributed in tropical, subtropical and temperate Pacific and Indian Oceans.
Specimens: Strickland Bay, 5.ix.1979, *S.M. Clarke & R. Engler* (AD A51084); Natural Jetty, 13.x.1934, *Jones* (Tilden, South Pacific Plants no. 38); Point Clune, .xi.1945, *A.M. Baird* (UWA A1374); Thomson Bay, xi.1945, *A.M. Baird* (UWA A1436).

Genus: **Lenormandia**

Key to the species of *Lenormandia* from Rottnest I.

1. Proliferations arising only from the margin or the holdfast ..... *L. marginata*
1. Proliferations arising from the stem or midrib only ..... *L. spectabilis*

Lenormandia marginata Hooker & Harvey in Harvey 1847: 19, pl. 2.

References: Fuhrer *et al.* 1981: 32, pls 37, 38; Lucas & Perrin 1947: 304, fig. 144.
Type Locality: Mouth of the Tamar River, Tasmania.
Distribution: Temperate Australia.
Specimens: Point Clune, 6.xii.1984, *G.T. Kraft & A.J.K. Millar* (MELU A35480).

Lenormandia spectabilis Sonder 1845: 54.

Type Locality: "Swan River Colony", Western Australia.
Distribution: Western, southern and eastern Australia.
Record: Harvey 1855b: 537.
Specimens: Rottnest I., 1.v.1965, *G.G. Smith* (UWA A1553).

Genus: **Leveillea**

Leveillea jungermannioides (Hering & Martens) Harvey 1855b: 539

References: Cribb 1983: 127, pl. 32, fig. 4; Harvey 1860: pl. 171 (as *Leveillea schimperi*).
Type Locality: Tor, Sinai Peninsula, Egypt.
Distribution: Tropical, subtropical waters of the Indian and western Pacific Oceans.
Record: Harvey 1855b: 539.

Genus: **Lophocladia**

Lophocladia harveyi (Kützing) Schmitz

Reference: Kützing 1864: pl. 71ef.
Type Locality: Fremantle, Western Australia.
Record: Harvey 1855b: 534 (as *Dasya lallemandii*).
Specimens: Armstrong Reef, 7.ii.1989, *J.M. Huisman* (MURU JH 144).

Genus: **Neurymenia**

Neurymenia fraxinifolia (Mertens ex Turner) J. Agardh 1863: 1135.

References: Trono 1972: 139, fig. 20; Jaasund 1976: 133, fig. 271; Falkenberg 1901: 444, pl. 7, figs 2029.
Type Locality: "East Indies".
Distribution: Tropical & subtropical Indo-Pacific Ocean.
Record: Harvey 1855b: 538; 1860: pl. 124 (as *Dictymenia fraxinifolia*).
Specimens: Green I., 21.ix.1988, *J.M. Huisman* (MURU JH 003).

Genus: **Placophora**

Placophora binderi (J. Agardh) J. Agardh 1863: 1137.

Reference: Scagel 1953: 24, figs 1-4.
Type Locality: South Africa.
Distribution: Rottnest I., Western Australia; west coast of Eyre Peninsula, South Australia; South Africa; Peru; Timor Sea; Tristan da Cunha; Japan.
Specimens: Cathedral Rocks, on *Rhodopeltis borealis*, 25.iii.1989, *J.M. Huisman* (MURU JH 174S).

Genus: **Polysiphonia**

Key to the species of *Polysiphonia* from Rottnest I.
from Womersley (1979)

1. Pericentral cells 4 ..... 2.
1. Pericentral cells 5-12 ..... 7.
2. Thallus ecorticate throughout or with only slight cortication near the base of older axes ..... 3.
2. Thallus corticate at least over most of the main branches ..... *P. australiensis*
3. Rhizoids not cut off from (i.e. protoplast in open connection with) the parental pericentral cell ..... *P. scopulorum*
3. Rhizoids cut off by a pit connection from the parent pericentral cells ..... 4.

4. Branches originating from the basal cell of trichoblasts ..... 5.
4. Branches originating in place of trichoblasts ..... 6.
5. Thallus usually with a single, erect, basal axis, with slight basal cortication on older axes, 250-500 µm in diameter below, often epiphytic ..... *P. mollis*
5. Thallus with several to numerous axes from prostrate basal filaments, ecorticate, with slender axes 70-150 µm in diameter below; usually on rock ..... *P. sertularioides*
6. Lower branches usually under 300 µm in diameter, upper branchlets 50-80 µm in diameter, with numerous patent laterals often markedly slenderer than parent branches ..... *P. infestans*
6. Lower branches usually over 300 µm in diameter, upper branchlets over 100 µm in diameter, with few if any slender patent laterals ..... *P. blandii*
7. Pericentral cells usually 6 ..... *P. forfex*
7. Pericentral cells 7 (-8) ..... *P. decipiens*

Polysiphonia australiensis Womersley 1979: 491, fig. 9A-D.

Type Locality: Vivonne Bay, Kangaroo I., South Australia.
Distribution: Rottnest I., Western Australia, to Curtis I., Bass Strait; Three Hummock I., northwest Tasmania.
Specimens: King Head, 6.ix.1979, *H.B.S. Womersley* (AD A50853).

Polysiphonia blandii Harvey 1862: pl.184.

Reference: Womersley 1979: 486, fig. 7E-H.
Type Locality: Brighton, Port Phillip Bay, Victoria.
Distribution: From Geraldton, Western Australia, to Geographe Bay, Western Australia; Elliston, South Australia, to North Walkerville, Victoria; northern Tasmania and Freycinet Pen.; Kiama, New South Wales to Noosa and Low I., Queensland.
Record: Harvey 1855b: 539 (as *Polysiphonia breviarticulata*).

Polysiphonia decipiens Montagne 1842: 5.

Reference: Womersley 1979: 499, fig. 12.
Type Locality: Auckland I.
Distribution: Shark Bay, Western Australia, to Newcastle, New South Wales; Tasmania; South I., Stewart I., and Auckland I., New Zealand; Tierra del Fuego.
Record: Harvey 1855b: 541 (as *P. nigrita*).
Specimens: Cathedral Rocks, on *Glossophora nigricans*, 25.iii.1989, *J.M. Huisman* (MURU JH 171 S).

Polysiphonia forfex Harvey 1859a: pl. 96.

Reference: Womersley 1979: 495, fig. 10D-G.
Type Locality: Rottnest I., Western Australia.
Distribution: Fremantle to King George's Sound, Western Australia.
Record: Harvey 1855b: 541 (as *P. forcipata*).
Specimens: King Head, 6.ix.1979, *H.B.S. Womersley* (AD A50852); Green I., 6.ix.1979, *S.M. Clarke & R. Engler* (AD A51048).

Polysiphonia infestans Harvey 1855b: 539.

Reference: Womersley 1979: 481, fig. 6A-E.
Type Locality: Princess Royal Harbour, King George's Sound, Western Australia.
Distribution: Shark Bay, Western Australia, to Port Phillip Bay (and probably Lake King) Victoria; northern (and probably eastern) Tasmania; Botany Bay, New South Wales.
Specimens: Natural Jetty, 15.x.1934, *Nash* (Tilden, South Pacific Plants no. 59).

Polysiphonia mollis Hooker & Harvey in Harvey 1847: 43.

Reference: Womersley 1979: 476, fig 4D-G.
Type Locality: Tasmania.
Distribution: From Rottnest I., Western Australia, to Port Phillip Bay, Victoria; Tasmania.
Record: Womersley 1979.

Polysiphonia scopulorum Harvey 1855b: 540.

Reference: Womersley 1979: 467, fig. 2A-E.
Type Locality: Rottnest I., Western Australia.
Distribution: From Dampier Archipelago, Western Australia, to eastern Australia; Mediterranean; Mexico; New Zealand.
Record: Womersley 1979: 467.

Polysiphonia sertularioides (Grateloup) J. Agardh 1863: 969.

Reference: Womersley 1974: 478, fig. 5A-D.
Type Locality: Cette, Golfe du Lion, France.
Distribution: Dampier Archipelago, Western Australia; around southern Australia, probably to Queensland; Tasmania; Mediterranean.
Specimens: Green I., 6.ix.1979, *S.M. Clarke & R. Engler* (AD A51047); King Head, 6.ix.1979, *H.B.S. Womersley* (AD A50794).

Genus: **Protokeutzingia**

Protokeutzingia australasica (Montagne) Falkenberg 1901: 475, fig. 8B, pl. 9, fig. 6.

Reference: Harvey 1858: pl. 27 (as *Rytiphloea australasica*).
Type Locality: Tasmania
Distribution: Southern and western Australia.
Specimens: Point Clune, 6.xii.1984, *G.T. Kraft & A.J.K. Millar* (MELU A35416-7).

Genus: **Tolypiocladia**

Tolypiocladia glomerulata (C. Agardh) Schmitz in Schmitz & Hauptfleisch 1897: 441.

Reference: Cribb 1893: 135, pl. 68, fig. 4.
Type Locality: Shark Bay, Western Australia.
Distribution: Tropical Indo-Pacific; East Indies; Japan.
Specimens: Green I., 6.ix.1979, *S.M. Clarke & R. Engler* (AD A51049); Strickland Bay, 5.ix.1979, *S.M. Clarke & R. Engler* (AD A51092, A51111); Kitson Point, 6.ix.1979, *S.M. Clarke & R. Engler* (AD A 51140); Parker Point, 18.ix.1988, *J.M. Huisman* (MURU JH 028, 029).

Genus: **Vidalia**

Vidalia spiralis Lamouroux 1824: 387

Reference: Harvey 1847: 25, pl. 9, figs 1-6 (as *Epineuron spirale*).
Type Locality: "New Holland".
Distribution: Western Australia, Queensland?
Record: Harvey 1855b: 538 (as *Dictymenia spiralis*)
Specimens: Rottnest I., 2.v.1965, *G.G. Smith* (UWA A458); Roe Reef, 25.iii.1989, *J.M. Huisman* (MURU JH 082).

SUBCLASS BANGIOPHYCIDAE

Genus: **Porphyra**

Porphyra lucasii Levring 1953: 469, figs 6H-L, 7.

Reference: Womersley & Conway 1975: 63, figs 5, 6.
Type Locality: Bunbury, Western Australia.
Distribution: Cottesloe, Western Australia, to Western Port, Victoria; Tasmania.
Specimens: Rottnest I., 9.viii. 1950, *R.D. Royce* (Perth)

SEAGRASSES

Key to Rottnest Island Seagrasses

1. Plants with a woody stem 2
1. Plants without a woody stem 5
2. Erect stem thin (1 mm diam.), red, purplish, black in colour; leaves narrow (<3 mm), long (5-25 cm) ..... *Heterozostera tasmanica*
2. Erect stem >1 mm diam, pale in colour 3
3. Erect stem, 1-2 branches, roots black when dried, leaves 7-15cm long and 7-10 mm wide with 'teeth' on the margin ..... *Thalassodendron pachyrhizum*
3. Erect stem with many branches 4
4. Leaf sheath overlapping ..... *Amphibolis griffithii*
4. Leaf sheath not overlapping ..... *Amphibolis antarctica*
5. Plants small (<10 cm) with oval leaves on short starchy 'stems' ..... *Halophila ovalis*
5. Plants not of this form 6
6. Leaves circular in cross-section ..... *Syringodium isoetifolium*
6. Plants linear in cross-section with ribbon-like leaves 7
7. Plants with thin flexible leaves 8
7. Plants with thick stiff leaves, with large leaf bases ..... *Posidonia coriacea*
8. Leaves <3mm wide, 5-25 cm long, attached to straw coloured rhizome 1-2 mm diameter ..... *Heterozostera tasmanica*
8. Leaves carried on extensive under-ground parts ..... 9.
9. Plants with 'hairy' leaf bases disintegrating to fibres, leaves 10-18 mm wide ..... *Posidonia australis*
9. Plants with smooth dark brown leaf bases, leaves 7-9 mm wide ..... *Posidonia inuosa*

SEAGRASSES

Genus: **Amphibolis**

Amphibolis antarctica (Labillardiere) Sonder & Ascherson ex Ascherson 1867: 164.

Reference: Womersley 1984: 102. pl. 16 fig 1, figs 28B, 30, 31.
Type locality: Esperance, Western Australia.
Distribution: From Exmouth, Western Australia, to Wisons Promontory, Victoria; Bass Strait Islands and northern Tasmania.
Specimens: Parker Point, 12.iii.1985, *D.I. Walker* (UWA S1611).

Amphibolis griffithii (J.M. Black) den Hartog 1970: 208 figs 57a, b, 58-59.

Reference: Womersley 1984: 107, figs 28C, 32.
Type: Henley Beach, South Australia.
Distribution: From Champion Bay, Western Australia, to Victor Harbour, South Australia.
Specimens: Parker Point, 27.vi.1985, *D.J. Walker* (UWA S1612); Green Island, 27.vi.1985, *D.J. Walker* (UWA S1613).

Genus: **Posidonia**

Posidonia australis Hooker 1858: 43.

Reference: Womersley 1984: 94, pl. 8, fig 2, pl. 15, fig 4, pl. 16, figs 2, 3, figs 24B, 26C, D, 27A-M.
Type locality: (lectotype) Georgetown, Tasmania.
Distribution: From Shark Bay, Western Australia, to Lake Macquarie, New South Wales.
Specimens: Green Island, 24.ix.1985, *D.J. Walker* (UWA S1614); Parker Point, 27.vi.1985, *D.J. Walker* (UWA S1615); Natural Jetty, 17.x.1985, *D.J. Walker* (UWA S1616).

Posidonia sinuosa Cambridge & Kuo 1979: 309, figs 2, 5, 8, 11, 13, 14, 16, 18, 20a.

Reference: Womersley 1984: 92, figs 24A, 25, 26 A, B.
Type locality: Garden Island, Western Australia.
Distribution: From Geraldton, Western Australia, to Kingston, South Australia.
Specimens: Natural Jetty, 17.x.1985, *D.J. Walker* (UWA S1617; Thomson Bay, 23.xi.1976, *M.L. Cambridge* (UWA S1618).

Genus: **Heterozostera**

Heterozostera tasmanica (Martens ex Ascherson) den Hartog 1970: 116, figs 36-38.

Reference: Womersley, 1984:109, pl. 16, fig 4, figs 33, 34.
Type locality: Port Phillip Bay, Victoria.
Distribution: Dongara, Western Australia, to Jervis Bay, New South Wales.
Specimens: Natural Jetty, 17.x.1985, *D.J. Walker* (UWA S1619).

Genus: **Syringodium**

Syringodium isoetifolium (Ascherson) Dandy 1939: 116.

Reference: Lanyon 1986: 35, fig 12.
Type locality: unknown.
Distribution: Tropical Indo-West Pacific, extending down the Western Australian coastline as far as Garden Island.
Specimens: Green Island, 7.xii.1984, *D.J. Walker* (UWA S1620); Strickland Bay, 21.iv.1973, *M.L. Cambridge* (UWA S1621); Parker Point, 4.v.1976, *M.L. Cambridge* (UWA S1622).

Genus: **Thalassodendron**

Thalassodendron pachyrhizum den Hartog 1970: 194, fig 53.

Reference: Womersley 1984: 99, fig 28A, 29 F-J.
Type locality: Leighton, Western Australia.
Distribution: Restricted to the temperate Western Australian coast, from Geraldton to Cape Leeuwin and east to Bremer Bay.

Specimens: Strickland Bay, xii.1971, *M.L. Cambridge* (UWA 2679); Thomson Bay, 23.xi.1976, *M.L. Cambridge* (UWA 2681).

Genus: **Halophila**

Halophila ovalis (R. Brown) Hooker 1858: 45.

References: Womersley 1984: 64, figs 10 B,C, 11 D-G; Lanyon 1986: 27, fig 8.
Type Locality: Queensland (exact locality unknown).
Distribution: Tropical and warm temperate, down both east and west coasts of Australia, as far as Cowaramup Bay in Western Australia.
Specimens: Green Island, 24.ix.1985, *D.I. Walker* (UWA S 1610).

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Synonyms and misidentifications are in roman type