

NOTES ON MARINE ALGAE FROM TASMANIA

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(WITH THREE PLATES)

ABSTRACT

Notes are given on ten species of marine algae from Tasmania, seven of them being new records for the State.

INTRODUCTION

Since the time of Harvey there has been, with the exception of the work of Lucas, very little attention paid to the rich marine algal flora of Tasmania. The list of Tasmanian marine algae published by Lucas (1928) has recently been brought up to date by Guiler (1952) with a check list in which the synonymy of the earlier list is revised and new records added to make a total of approximately 546 species. Levring (1953) has added several species to the list, but it seems certain that a considerable number of species occurring in the area, particularly the smaller forms, are yet to be recorded.

Species marked * are recorded for the first time from Tasmania.

Division CYANOPHYTA

HORMOGONALES—Rivulariaceae

- * *Rivularia firma* Womersley 1946, Stud. mar. alg. southern Aust.
Introd. and No. 1, p. 130, fig. 2 *a-b*.

This species is characterised by its very firm solid thallus and abundant intercalary heterocysts.

Hab.: A single drift specimen, mouth of Currie River, north coast of Tasmania, 17. ix. 1950—Cribb.

Extra-Tasmanian distrib.: Kangaroo Is., South Australia.

Division CHLOROPHYTA

CHAETOPHORALES

- * *Sporocladopsis novae-zelandiae* Chapman 1949. Some new Species and Forms of Mar. Alg. N.Z. p. 496, fig. 4. *Pl. 1, fig. 1-6; pl. 2, fig. 3.*

Forming green or yellow-green colonies up to 10 mm. diam., round, irregular or ring-shaped, sometimes of up to 3 concentric rings; basally of a single layer of densely placed prostrate filaments of cylindrical or irregular cells, 5-18 μ \times 5-10 μ ; almost every cell of the prostrate

system bearing an erect branch which may be many-celled, or short and capped with a terminal sporangium; erect filaments unbranched, often approx. 600 μ long, sometimes up to 1,050 μ , 7-11 μ diam. in lower and mid parts, sometimes tapering to 5-6 μ near apex; cells cylindrical or slightly barrel-shaped, usually 1-3 diam. long, sometimes up to 5-6 diam. long near apex; chloroplast single, parietal, encircling the protoplast; sporangia borne on erect filaments, alternate or somewhat second, generally 1 to a cell or exceptionally 2 from the same cell, ellipsoid or ellipsoid-pyriform, often narrowed unevenly at the base, 11-14 μ broad, 17-21 μ long, dehiscing by a terminal pore; a new sporangium sometimes proliferating within the wall of a discharged sporangium; occasionally a cell of an erect filament enlarging to form an intercalary sporangium; sporangia also sessile on the prostrate filament or terminal on a 1-celled stalk, sometimes with a second sporangium born to one side of the upper end of the supporting cell.

There is no penetration of the host tissue by the epiphyte, but beneath each colony the host frequently develops a thickened laminated cuticle appearing somewhat cork-like, often 10-14 μ thick, but occasionally up to 35 μ thick.

Hab.: On *Sarcophycus potatorum* (Labill.) Kuetz., Port Arthur, 8. ii. 1951, 31. iii. 1951, 7. ii. 1952.

Extra-Tasmanian distr.: New Zealand, epiphytic on *Pachymenia* and *Carpophyllum*.

SIPHONALES—Codiaceae

* *Rhipiliopsis peltata* (J. Ag.) A. & E. S. Gepp 1911, Codiaceae Siboga Exped. p. 45, figs. 118-122; Womersley 1950, Mar. Alg. Kangaroo Is. III, p. 146. *Pl. 2, fig. 4.*

The green peltate frond up to 3 cm. diam. is borne on a very short and frequently excentric stipe.

This appears to be a rare species and apart from the type collection of J. B. Wilson from Port Phillip Heads, Victoria, the only collections recorded are those of Womersley (1950) from shaded rear littoral pool and deeper pools of the sub-littoral fringe at Kangaroo Island.

Hab.: Dredged at 22 fathoms, five miles south of Goose Island, 5. xi. 1951—A. M. Olsen.

Extra-Tasmanian distr.: Victoria, Kangaroo Is.

Division PHAEOPHYTA

ECTOCARPALES—Ectocarpaceae

* *Ectocarpus mitchellae* Harvey 1852, Nereis Boreali—Americana Pt. 1. p. 142, pl. 12, fig. G; Boergesen 1941, Some Mar. Alg. from Mauritius Pt. 2, p. 7, fig. 1-5. *Pl. 2, fig. 1.*

Occurring in dense tufts up to 8 cm. tall; chromatophores disc-shaped; plurilocular sporangia up to 105 μ long, obtuse, ellipsoid to cylindrical or sometimes ovoid-ellipsoid.

Hab.: On *Hormosira banksii* (Turn.) Dcne., Port Arthur, 16. x. 1951—Cribb.

Extra-Tasmanian distr.: Very widely distributed.

* *Ectocarpus globifera* Kuetzing 1843, Phyc. gen., p. 289; Boergesen 1926, Mar. Alg. Canary Is. II, p. 48, fig. 25-26. *Pl. 3, fig. 3.*

Filaments up to 52 μ diam.; chromatophores disc-shaped; sporangia ovoid or ovoid-ellipsoid, up to 80 μ broad and 105 μ long, on a pedicel of a single cell, borne singly or in opposite pairs on main axis and its branches.

Hab.: On *Ecklonia radiata* (Ag.) J. Ag., Port Arthur, 31. iii. 1950—Cribb.

Extra-Tasmanian distr.: Europe, Canary Is.

* *Ectocarpus granulosus* (Smith) C. Agardh 1828, Sp. Alg. 2 (1), p. 45; Taylor 1937, Mar. Alg. N.E. coast N. Amer. p. 113, pl. 7, fig. 7-9; Smith 1944, Mar. Alg. Monterey Pen., p. 81, pl. 11, fig. 1-2. *Pl. 3, figs. 1-2.*

Main filaments up to 70 μ diam.; cells in the larger branches $\frac{1}{2}$ – $1\frac{1}{4}$ diam. long, often somewhat barrel-shaped; branching of main filaments opposite or alternate, in the lateral branches usually secund; chromatophores discoid; plurilocular sporangia ovoid and asymmetrical, up to 52 μ broad and 70 μ long, sessile and borne secondly on lateral branches.

Hab.: On *Ecklonia radiata* (Ag.) J. Ag., Port Arthur, 31. iii. 1950—Cribb.

Extra-Tasmanian distr.: Europe, Atlantic and Pacific North America.

SPOROCHNALES—Sporochnaceae

Sporochnus apodus Harvey 1860, "Algae" in Hooker—Flora Tasmanica, p. 287; 1859, Phycol. Aust. 2, pl. 92. *Pl. 2, fig. 2.*

The sessile nature of the receptacle distinguishes this species from all others of the genus. The larger of the specimens here recorded was approximately 18 inches long but lacked its base.

This species was described by Harvey on a single drift specimen from Georgetown, Tasmania, and there appears to be no record of the species having been found again until the collections here recorded were made.

Hab.: Dredged at Pittwater, 15. xi. 1950, 12. xii. 1951—A. M. Olsen.

Division RHODOPHYTA

NEMALIONALES—Acrochaetiaceae

Acrochaetium polyrhizum (Harv.) J. Agardh 1892, Anal. alg., p. 48; Levring 1953, Mar. Alg. Aust. I, p. 481, fig. 14-15 A-C; *Callithamnion polyrhizum* Harvey 1863, Phyc. Aust. 5, p. lvi.

Forming a dense red fringe 3-8 mm. long over host; sinuate endophytic filaments 15-20 μ diam. penetrating between utricles of host; erect

filaments densely branched, irregularly alternate or sometimes somewhat secund in the upper parts; cells of erect filaments 15-24 μ diam., 1-3 or more rarely 4 diam. long; branches tapering gradually or sometimes hardly at all to obtuse apices; chromatophore a parietal lobed plate with 1-2 pyrenoids; monosporangia 14-21 μ diam., 20-35 μ long, obovoid, ellipsoid-obovoid or ellipsoid, borne secundly on the inner sides of lateral branches near their base, occasionally sessile but usually on a short unicellular pedicel, sometimes one at the apex and another at the side, or more rarely the pedicel 2-celled with the lower cell also bearing a sporangium.

A. polyrhizum (Harv.) J. Ag., *A. grande* (Levring) J. de Toni and *A. codicola* Boergesen are all large species which have been described as epiphytes on *Codium*. Levring (1953), in recording both *A. grande* and *A. polyrhizum* from the southern part of Australia, remarks on the similarity between these two species, but apart from slight differences in size the only essential distinction which he makes is that in *A. grande* the cells are 3-5 diam. long and contain 1-2 (—4) pyrenoids while in *A. polyrhizum* they are 1.5-2.5 diam. long and contain one or occasionally more pyrenoids. Material from Port Arthur on which the present record is based has cells typically 1.5-3 diam. long but sometimes up to 4 diam., and with 1-2 pyrenoids. In the type description of *A. polyrhizum* Harvey gives the cell length as 2-4 diam.

A. codicola Boergesen (1927) is described from the Canary Islands and appears to agree very closely with the above species, and particularly with *A. grande* in having cells apparently 2-5 diam. long and with 1-5 or more pyrenoids. The chromatophore in young cells is a parietal lobed plate as in the other two species, but in older cells may become divided into 2 or more ribbon-like lobed discs.

There appears to be no essential difference in the branching or in the shape, size and distribution of sporangia in the three species.

In view of the small and somewhat inconstant nature of the differences between the three species, it seems doubtful whether they can be kept separate, though, as no material of *A. grande* and *A. codicola* is available to the author, no definite opinion can be expressed.

Hab.: On *Codium fragile* (Sur.) Heriot, lower littoral and sublittoral fringe, Port Arthur, 23. ix. 1950—Cribb.
Extra-Tasmanian distrib.: Victoria.

CHAETANGIACEAE

Chaetangium fastigiatum (Bory) J. Agardh 1852, Sp., gen. et ord. alg. 2 (2), p. 460; Levring 1953, Mar. alg. Aust., p. 512; *Chaetangium lingula* Harvey 1860, in Hooker, Flora Tas. II, p. 316.

Plants from Port Arthur are typically more or less lanceolate, up to 2.5 cm. high, simple or exceptionally once forked. They correspond well with the description of *C. lingula* but Levring (1953) is of the opinion that this species cannot be separated from *C. fastigiata* which has previously been known as a repeatedly forked species.

Hab.: Mid littoral, Port Arthur, 7. ii. 1952—Cribb.

Extra-Tasmanian distrib.: Fuegia, Falkland Is., Crozet, Kerguelen, Auckland Is., Campbell Is., New Zealand, W. Aust.

CERAMIALES—Delesseriaceae

- * *Platysiphonia miniata* (Ag.) Boergesen 1931B, Sur *Platysiphonia* nov. gen. . . . pp. 1-9, fig. 1-5; 1931A, Some Ind. Rhodoph. p. 20, fig. 13 (as *Sarcomenia miniata* (Ag.) J. Ag.). Pl. 2, fig. 5.

Tufts up to 4 cm. high; basal rounded filaments up to 225 μ diam.; flattened erect filaments up to 135 μ broad; cystocarps and stichidia both common.

Hab.: Shallow lower littoral pools, Hawley near Devonport, 5. ii. 1952—Cribb.

Extra-Tasmanian distr.: Queensland, India, S. Africa, Atlantic Ocean.

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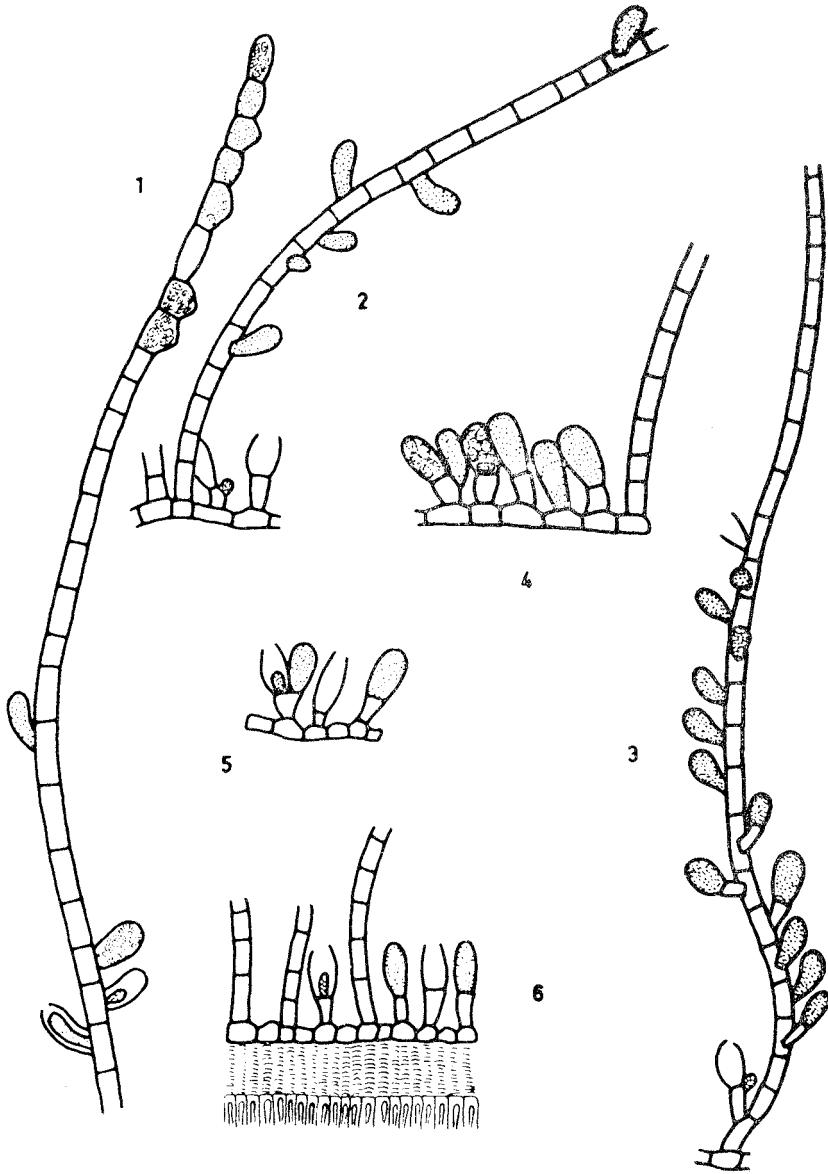


PLATE 1

FIG. 1-6.—*Sporocladopsis novae-zelandiae* Chapman.—1, erect branch with lateral and intercalary sporangia; 2, basal filament with long erect sporangia-bearing branch and short 1-celled branches with terminal discharged sporangia; 3, erect long branch with lateral sessile and pedicellate sporangia; 4, basal filament with an erect long branch and with pedicellate and sessile sporangia; 5, basal filament with pedicellate sporangia; 6, thickened cuticle of *Sarcophycus potatorum* beneath basal filament of *Sporocladopsis*. All x 375.

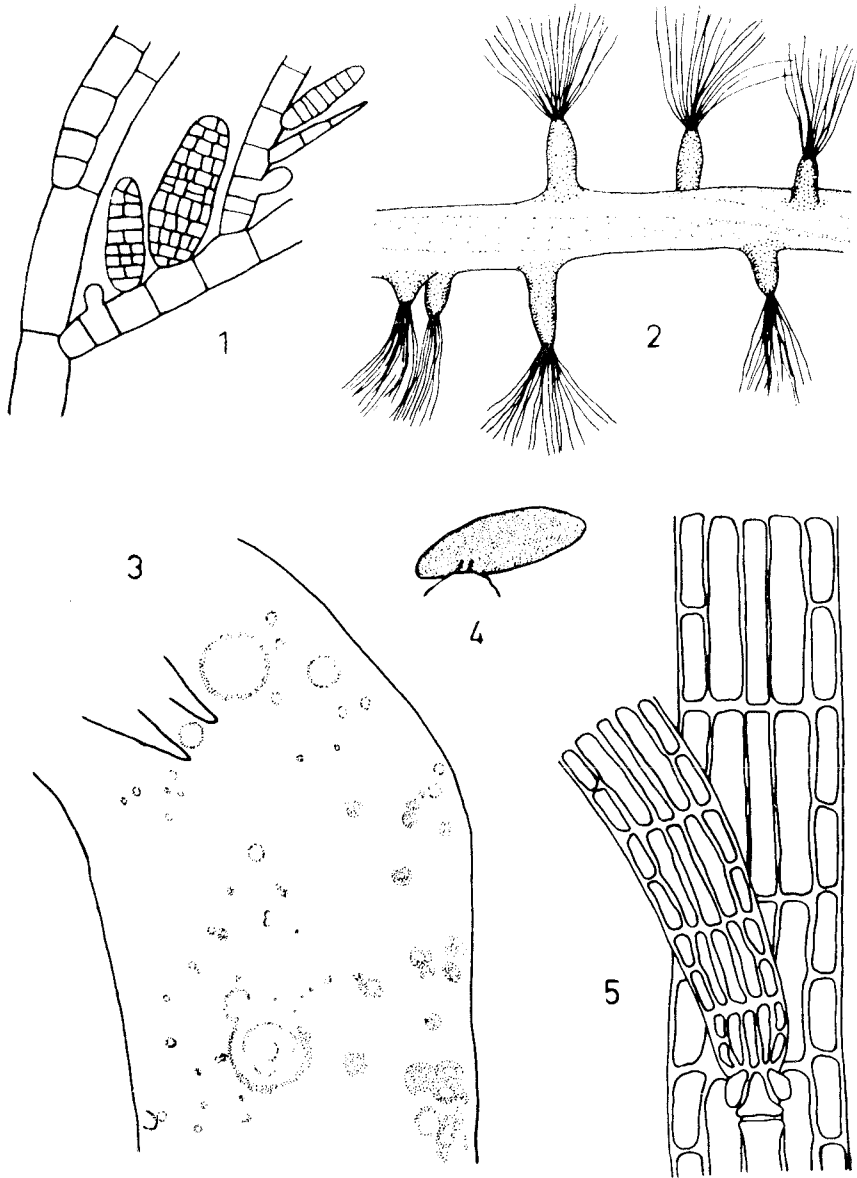


PLATE 2

- FIG. 1.—*Ectocarpus mitchellae* Harvey.—branch with plurilocular sporangia. x 250.
 FIG. 2.—*Sporocnusus apodus* Harvey.—portion of branch with receptacles. x 11.
 FIG. 3.—*Sporocladopsis novae-zelandiae* Chapman.—colonies on thallus of *Sarcophycus potatorum*. x 1.
 FIG. 4.—*Rhipiliopsis peltata* (J. Ag.) A. & E. S. Gepp.—whole plant. x 1·7.
 FIG. 5.—*Platysiphonia miniata* (Ag.) Boergs.—portion of a branch. x 250.

PLATE 3

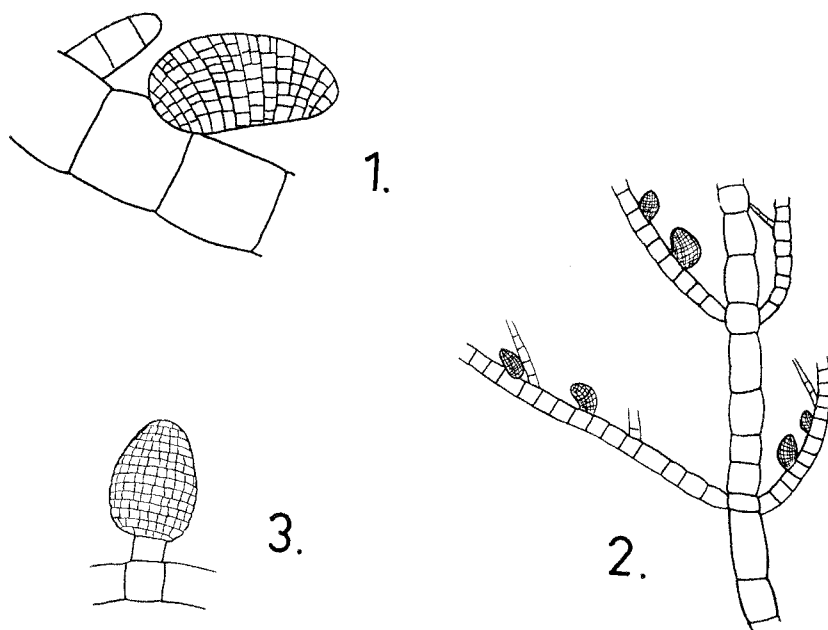


FIG. 1-2.—*Ectocarpus granulosus* (Smith) C. Ag.—5, plurilocular sporangium. x 235. 6, main axis with branches bearing plurilocular sporangia. x 43.

FIG. 3.—*Ectocarpus globifera* Kuetz.—plurilocular sporangium on main axis. x 106.

