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# SPECIES OF *CERAMIUM* (CERAMIALES-RHODOPHYTA) FROM KERALA

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## ABSTRACT

Five species of the genus *Ceramium* Roth. (*C. caudatum* Setch & Gard, *C. californicum* J. Ag, *C. equisetoides* Daws, *C. flaccidum* (Kutz.) Ardissone and *C. suhrianum* Silva) are described from Kerala. Of these *C. equisetoides* and, *C. californicum* are the first report from Indian Ocean and one species (*C. caudatum*) is new to Indian shores.

## INTRODUCTION

The genus *Ceramium* is one of the cosmopolitan red alga originally described by Rothplez. Twelve species of *Ceramium* have been reported so far from the Indian region (Krishnamurthy and Joshi, 1970; Subramanian, 1885; Sundaralingam, 1990). The present paper deals with five taxa of *Ceramium* collected from the intertidal regions of different areas of Kerala coast. (8° 18′ and 12° 48′ north latitude and 74° 52′ and 77° 21 east longitude). Two species marked with astricks are first reports from the Indian Ocean region and *C. caudatum* is a new addition to the Indian species of *Ceramium*.

## MATERIALS AND METHODS

Species of *Ceramium* were collected from the intertidal regions of Thirumullavaram (TV), Thevally (TH), Thikkody (TK) and Dharmodom (DH) coasts of Kerela state. After collection the algae were immediately preserved in 5% formalin. Diagrams were drawn with the help of camera lucida. The identification of different taxa is based on relevant monographs and research papers.

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## SYSTEMATIC ACCOUNT

**Ceramium flaccidum** (Kutz.) Ardissone **(Figs.-1-5)**

Kutzing, p. 21. Pl.69, 1862. Srinivasan in Kundu, Proc. Symp. Algology, p. 219. 1959. var. *byssoideum* (Harvey) Mazoyer: Umamaheswara Rao & Sreeramulu, Bot. J. Linn. Soc. 63 : 23-46. 1970.

Thalli 5-11 mm high, partially creeping or forming entangled masses, 70-77μm in diam., above, 90-120 μm diam. below; corticated only at nodes; attached by rhizoides, branching apparently alternate, the apices nonforcipate; internodes long below to 5 times the nodal diameter; tetrasporangia solitary to whorled; 47-60 μm in diam., cystocarp subterminal, 164-253 μm diam., carpospores with about 30 μm diam., surrounded by 4-7 involucral branches; spermatangia in whorled tufts at the nodes, spermatium about 3 μm in diam.

*Collection* : TV - 51. December 15, 2000, attached to rock surfaces at Thirumullavaram coast (Dt. Quilon.)

***Ceramium equisetoides** Dawson **(Figs. 6-7)**

Dawson, A Hancock Pacific Exped. 3. 189-464. 1944.

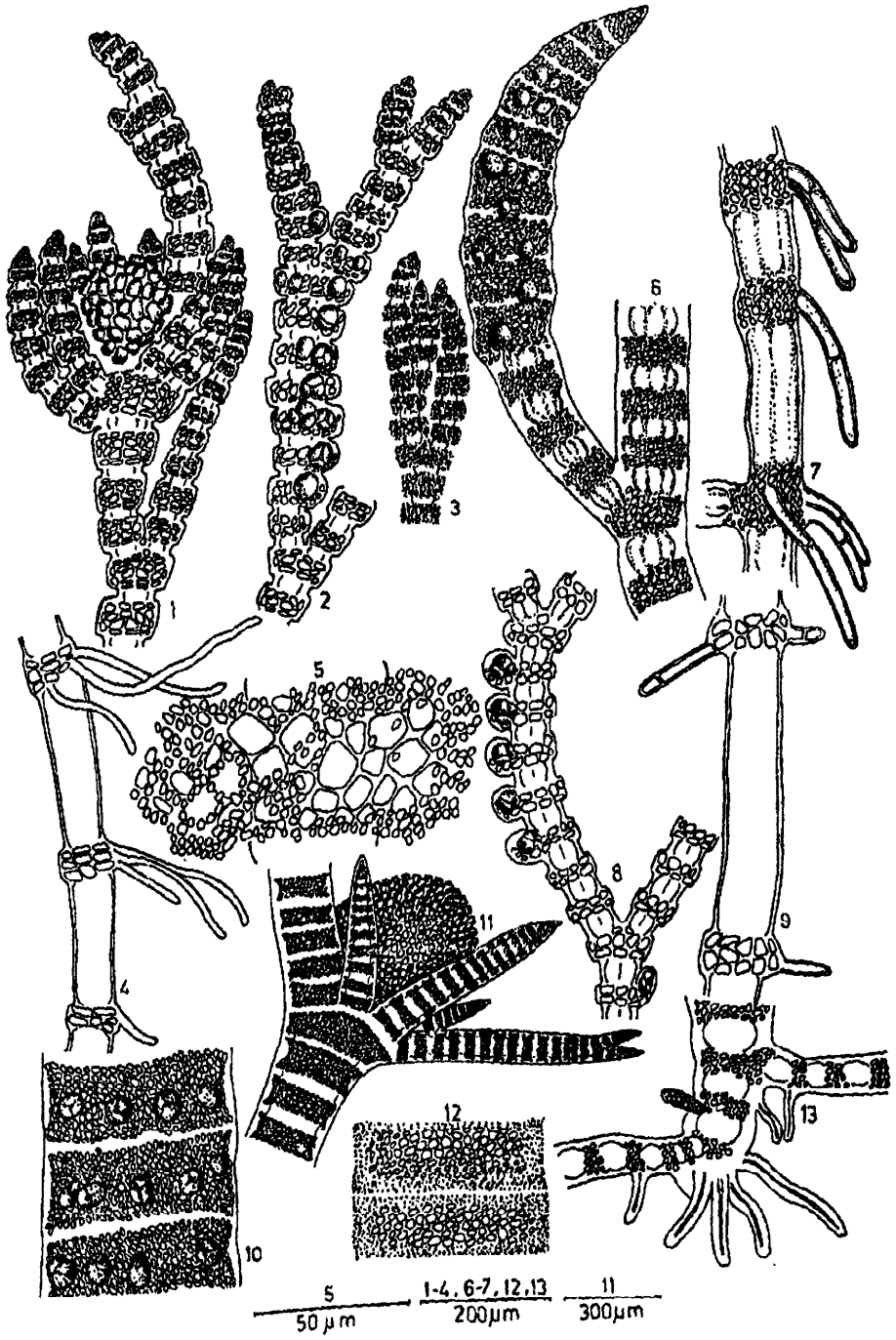
Thalli 10-12 mm high, prostrate and erect branches, 104-143 μm in diam., below, 75-90 μm in diam., above, branching monopodial, corticated only at the nodes, cortical bands 0.5-0.75 times as long as wide, internodes short above, reaching 200 μm in the lowermost parts, tetrasporangia immersed in swollen terminal portions of the main or lateral branches, tetraspores 36-45 μm in diam., shorter lateral tetrasporangial branches resembling the strobili of *Equisetum*.

Collection : DH9. December 29, 2000 attached to rock surface at Dharmadom cast (Dt. Kannur).

***Ceramium californicum** Dawson. **(Figs. 10-13)**

Dawson, Farlowia 4 (1), 113-138. 1950.

Thalli up to 45 mm high, erect epiphytic on *Gracilaria verrucosa*, 230-380 μm in diam., branching dichotomous, apices forcipate, corticated only at nodes above, the cortical brnads 0.3-0.5 times as long as wide, the cortical bands extending themselves by acropetal




Figs. 1-5, 8-9. *Ceramium flaccidium* Dawson

1. Cystocarpic plant, 2, 8. Tetrasporic plant, 3. Male plant, 4, 9. Rhizoidal branch & 5. Spermatia enlarged.

Figs. 6-7. *Ceramium equisetoides* Dawson 6. Tetrasporic plant; 7. Rhizoidal branch.

Figs. 10-13. *Ceramium californicum* Dawson

10. Thallus with tetraspores, 11. Thallus with cystocarp, 12. Thallus with spermatia; 13. Rhizoidal branch.

and basipetal secondary growth, tetrasporangia emergent; cystocarp lateral, 300-450 μm in diam., surrounded by 4 involucral branches, carpospores 24-30 μm in diam. spermetium 3-4.5 μm in diameter.

*Collection* : TH-6. February 3,2000 attached as epiphyte on *Gracilaria verrucosa* at Thirumullavaram coast (Dt. Quilon.)

**Ceramium suhrianum** Silva. **(Figs. 14-18)**

*C. miniatum* Suhrr ex J. Agardh, p. 135-136, 1858; Boergesen, Bull. of Misc. Inf. (Royal Botanic Gardens, Kew.) 1-30. 1934.

Thalli 4-11 mm high, epiphytic, 150-180 μm in diam., above, 238-268 μm diam., below, corticated only at nodes; branching regularly dichotomous, internodes as long as broad, gradually becoming shorter upwards, tetrasporangia emergent, 2-4 at each node, 30-41 μm diam., borne within the costical bands, cystocarp lateral, 178-195 μm in diam., carpospore 30 μm in diam., surrounded by three involucral branches; spermatangia surrounding the nodes, 3-4.5 μm diam.

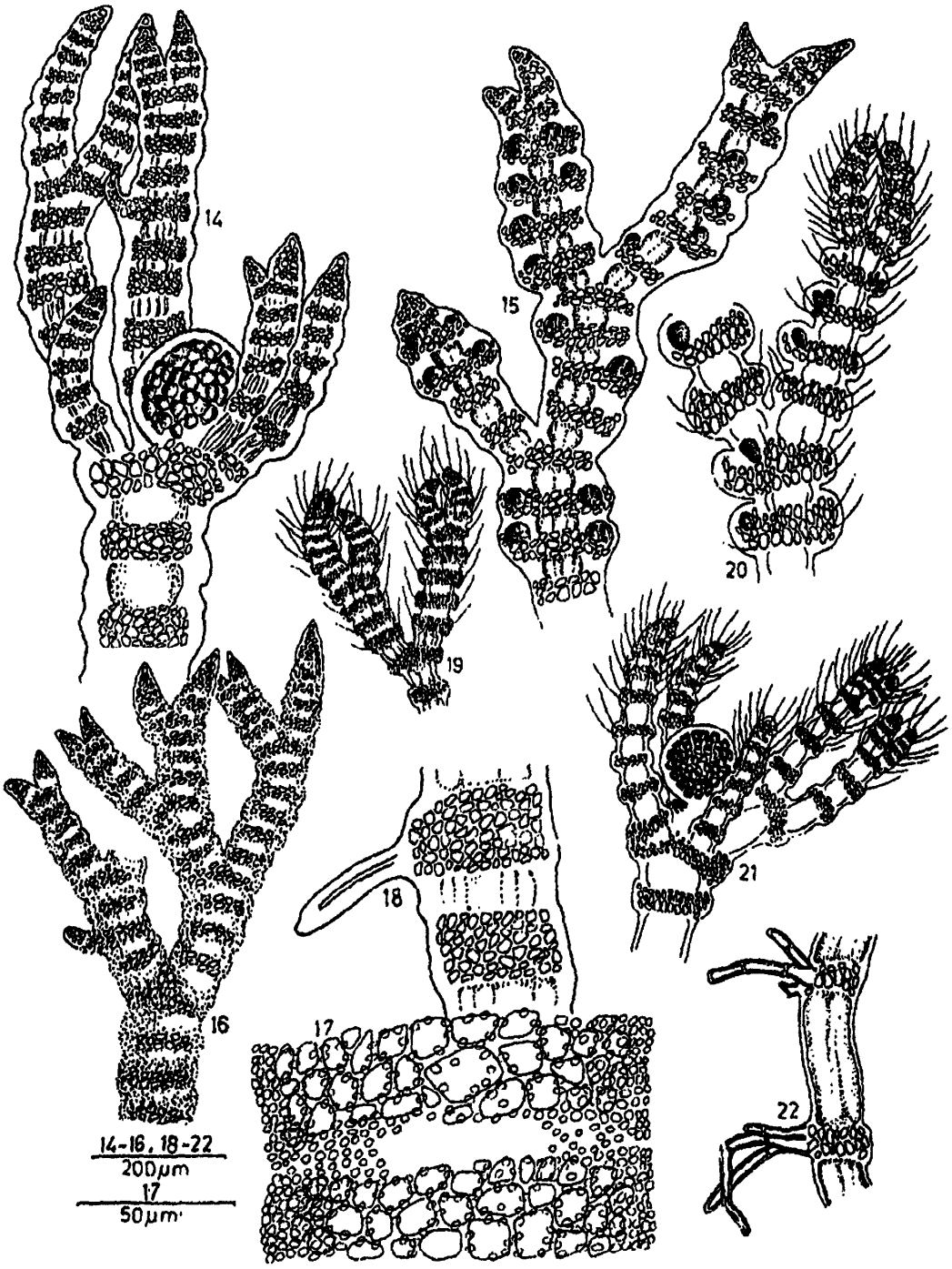
*Collection* : TK-12, December 12, 2000, attached to the rocky substratum at Thikkody (Dt. Calicut).

**Ceramium caudatum** Setchel. & Gardner. **(Figs.19-22)**

Setchel & Gardner, p.776. pl.27, Figs. 50-57, 1924; Dawson, A Hancock Pacific Exped. 3. 189-464. 1944; Boergesen. Kongelige Danske Videnskabernes Selskab, Biologiske Meddelelser 19(10) 68 pp., 35 figs. 1945.

Thalli 5-7 mm high, epiphytic on *Gelidium* sp., 104-120 μm diam. above, 149-164 μm diam., below, corticated only at nodes; branching dichotomous, apices slightly incurved, internodes long below to 4 times the nodal diameter, cortical bands provided with semi-permanent hairs of 120-150 μm long; tetrasporangia solitary or whorled 30-40 μm diam., cystocarp subterminal, 105-120 μm diam., surrounded by three involucral branches, spermatium 3-4.5 μm diam.

*Collection* : TV-33, August 28,2000 attached epiphytically on *Gelidium* sp. At Thirumullavaram (Dt.Quilon).




Figs. 14-18. *Ceramium suhrianum* Silva.
14. Cystocarpic plant, 15. Tetraporic plant, 16. Male plant with spermatia,
17. Spermatia enlarged; Rhizoidal branch.

Figs. 19-22. *Ceramium caudatum* Setch Et. Gardner.
19. Male plant with spermatia, 20. Tetrasporic plant, 21. Cystocarpic plant; 22. Rhizoidal branch.

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