

**MARINE ALGAE OF THE ST. MARTIN'S ISLAND, BANGLADESH.
VI. NEW RECORDS OF SPECIES OF THE GENUS *KALLYMENIA* J. AG.
(RHODOPHYTA)**

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Abstract

Four species of the genus *Kallymenia* J. Ag. such as *K. cribrosa* Harvey, *K. rosea* Womersley & Norris, *K. rubra* Womersley & Norris *K. tasmanica* Harvey have been reported for the first time from St. Martin's Island, Bangladesh.

Introduction

After the publication of marine algae of Bangladesh by Islam (1976), about 35 taxa of marine red algae have so far been reported (Islam and Aziz 1982, Islam and Aziz 1987, Aziz 1997, Islam *et al.* 2002, Aziz *et al.* 2002a, Aziz *et al.* 2002b, Aziz 2008). Many collected specimens are yet to be worked on. During the survey of collections made from the St. Martin's Island in 1997, the authors came across some species of the genus *Kallymenia* J. Ag., hitherto not reported from Bangladesh. On examination, four species have been identified and these are illustrated in the present account.

Materials and Methods

Four red macro-algae collected as drifted and or live, two from south-east and two from north-west during fourth week of March 1997 have been studied. The samples were preserved in 5% formalin in the sea water. Harberia were prepared within a few days of collections and photographs were taken.

Results and Discussion

Red macro-algal genus *Kallymenia* J. Ag. collected from the St. Martin's Is., Bangladesh, on examination was found to be composed of four species. The genus *Kallymenia* and the four species are described and illustrated below.

Order: Cryptonemiales; Family: Kallymeniaceae

Genus: *Kallymenia* J. Ag.

Thallus expanded, sub-simple or divided in to broad lobes, without mid-rib or veins, beautifully-membranous, formed internally of three layers: an inner layer of elongated, branched, anastomosing filaments called medulla which is bounded on both sides by a layer of large triangular to polygonal cells called sub-cortex, followed by a dense layer of smaller, rounded to short cylinder chromatophore bearing assimilatory cells to the surface called outer-cortex; sporangia scattered in the cortical layer, tetrapartite, on separate thalli; cystocarps wart-like, sunk in the thallus or projecting as swollen spots, surrounded by rhizoidal outgrowths from the neighbouring cells.

1. *Kallymenia cribrosa* Harvey

(Fig. 1a-c)

(Womersley and Norris 1971, 4, Fig. 77)

Thallus sessile, about 30 cm high, probably as broad as high, expanded into a nearly single foliose body (margins torn off); perforations numerous and scattered mostly on the peripheral part of the thallus; light blood red in colour, gelatinous but fairly firm when fresh; cortex consists of 3 layers of cells, outermost layer of cells elongated followed by rounded cells; outer cortical cells 7-10 μm in length, inner cortical cells 12-20 μm broad; innermost cortical cells large and triangular; medulla with elongated loosely arranged cells. Cystocarps massive, 170-300 μm broad, immersed.

It also resembles *K. perforata* J. Ag., a species from Ceylon having less number of perforations (Womersley et Norris 1971, 5)

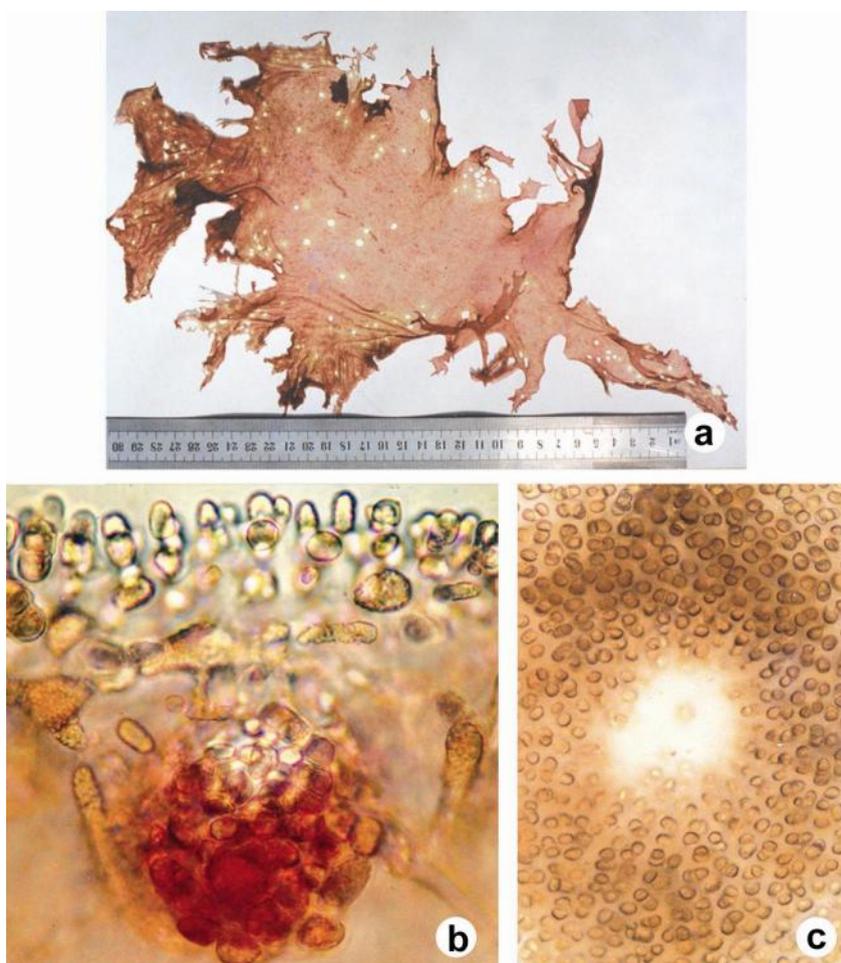


Fig. 1a-c. *Kallymenia cribrosa*. (a) Herbarium of whole thallus, partially disintegrated. (b) Section of the thallus showing a cystocarp. (c) Surface view of the thallus with a perforation.

Distribution: Collected from North-west coast of St. Martin's Is., Bangladesh, on 22 March 1997, as drifted form, abundant; South Australia to Flinders, Victoria and around Tasmania., Type locality: Fremantle, West Australia. Rapidly disintegrate as drift.

2. ***Kallymenia rosea*** Womersley *et* Norris 1971

(Fig. 2a-c)

(Womersley and Norris 1971, 9, Figs., 19, 82)

Thallus foliose, 30 cm or more high, 50-60 cm wide, pink-red in colour, stipe short which produces as many as five short stalked wide leafy branches; branches delicate and mucilaginous, lobed with uneven and undulate margins; tongue-like propagules arise from the margins of leafy branches; herbarium materials corrugated; thallus 50 - 113 μm thick, cortex 2 layered, compact with spheroidal epidermal or outer cortical cells, 7-17 μm in diam., inner cortical cells spheroidal to triangular; medulla with loosely arranged hyphae-like cells. Cystocarps wart-like, 250 - 300 μm broad, numerous and scattered on both sides of the thallus just below the cortex. Tetraspores not found.

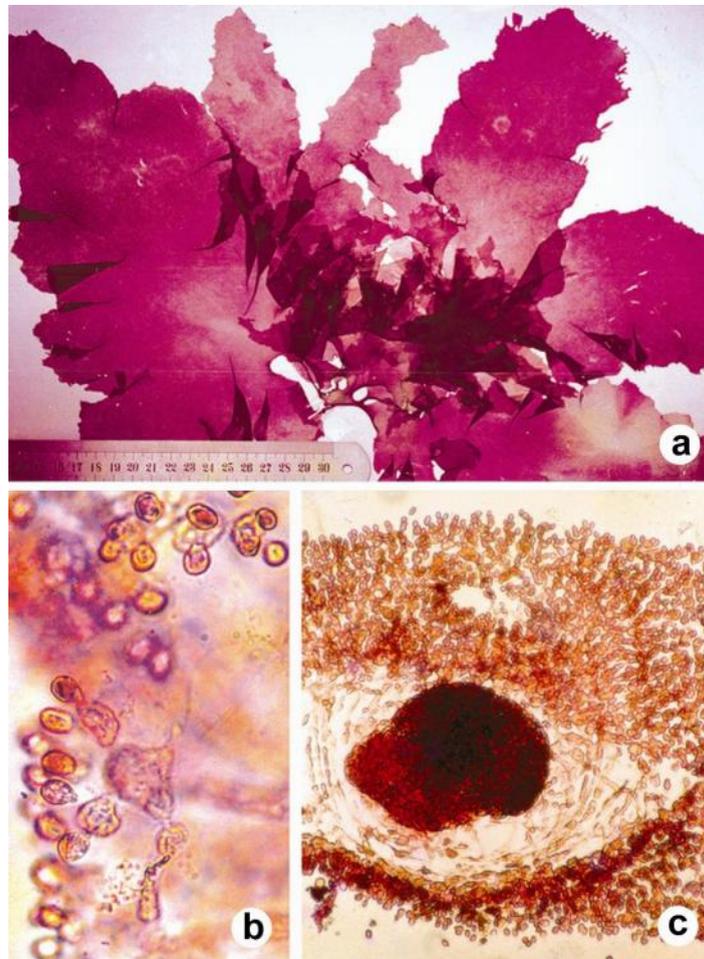


Fig. 2a-c. *Kallymenia rosea*. (a) Herbarium of whole thallus. (b) Section of the thallus showing cortical cells. (c) Section of the thallus showing a cystocarp.

Distribution: Collected from North-west coast of St. Martin's Is., Bangladesh, on 22 March 1997, as drifted form, abundant; Botany Bay and Port Stephens, N.S.W. Type locality: Botany Bay, N.S.W.

3. *Kallymenia rubra* Womersley *et* Norris 1971
(Womersley and Norris 1971, 13, Fig. 86)

(Fig. 3a-c)

Thallus about 30 cm high, as broad as high, expanded into fan-shaped blades, margins moderately wavy; perforations few and scattered; blood-red in colour, gelatinous but fairly firm when fresh; cortex consists of 3 - 4 layers of cells, outer two layer of cells ovoid to rounded, 5 - 7 μ m in diam., followed by also ovoid to rounded larger cells; inner cortical cells triangular to polygonal, 10 - 20 μ m broad which perhaps act as the tetrasporangial mother cells, medulla loosely arranged; tetrasporangia scattered among the cortical cells, cruciately divided; tetraspores 15 - 18 μ m long, 7.5 - 10 μ m broad.

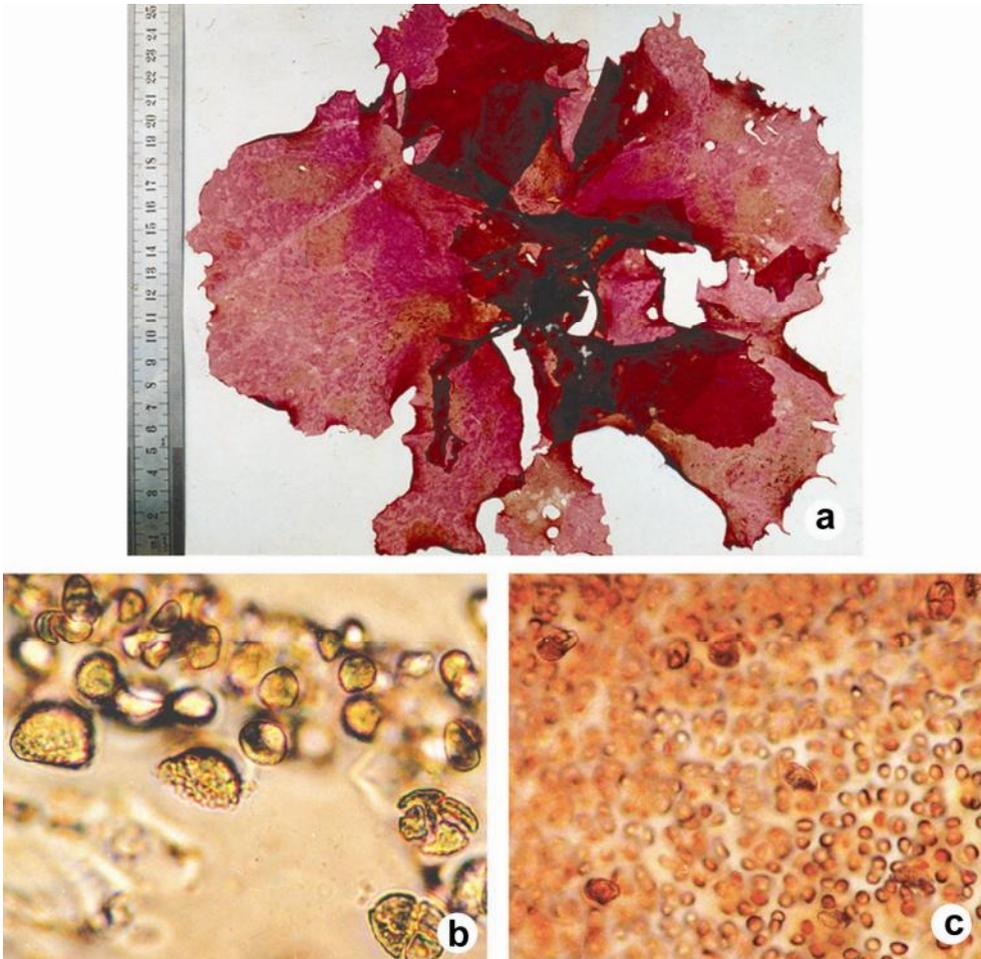


Fig. 3a-c. *Kallymenia rubra*. (a) Herbarium of whole thallus. (b) Section of the thallus showing cruciate tetraspores (lower right). (c) Surface view of the thallus with tetrasporangia.

Distribution: Collected from South-East coast of St. Martin's Is., Bangladesh, on 24 March 1997, both drifted and living forms, abundant; Elliston, South Australia & Waldegrave I, near Elliston. Type locality: Elliston, South Australia, drifted.

4. *Kallymenia tasmanica* Harvey**(Fig. 4a-c)**

(Womersley and Norris 1971, 12, Figs. 21, 84)

Thallus about 35 cm high and wider than the height, large expanded into several broad blades with short stipe, margins moderately wavy, perforations large and few (many for small ones); short adventitious marginal branches common; rosy-red in colour, gelatinous but fairly firm when fresh; cortex consists of 3 - 4 layers of cells, outer two layer of cells cylindrical to conical, 10 - 14 μm long, 5 - 7 μm in diam., followed by triangular to polygonal inner cortical cells, 8 - 18 μm broad which perhaps act as the tetrasporangial mother cells, medulla loosely arranged; tetrasporangia scattered among the cortical cells, cruciately divided; tetraspores 13 - 15 μm long.

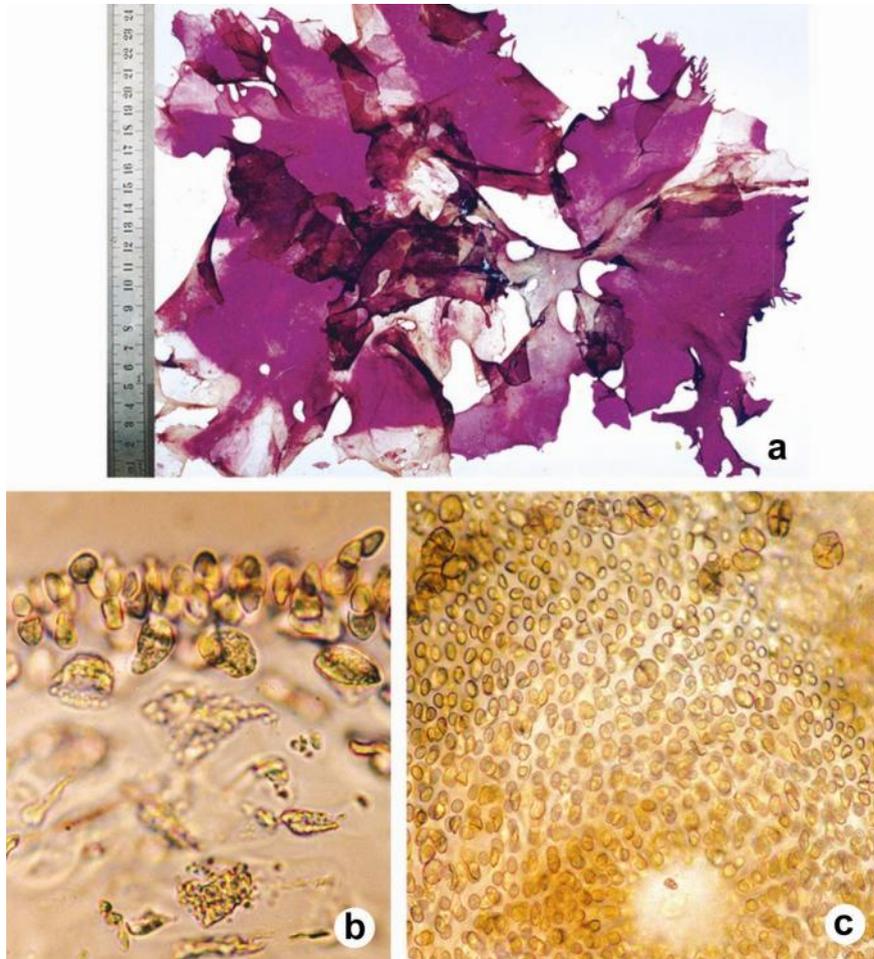


Fig. 4a-c. *Kallymenia tasmanica*. (a) Herbarium of whole plant. (b) Section of the thallus showing sub cortical tetrasporangia. (c) Surface view of the thallus showing tetrasporangia and tetraspores, and a small perforation in the foreground.

Distribution: Collected from South-East coast of St. Martin's Is., Bangladesh, on 24 March 1997, as drifted and living forms, abundant from St. Vincent Gulf, South Australia to Western Port, Victoria. Type locality: Georgetown, Tasmania.

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