Grateloupia C. Agardh, 1822

HALYMENIALES, HALYMENIACEAE

Thallus strap shaped, linear to lanceolate, usually branched to one or more orders, in one or more planes. Holdfast a basal disc, the fronds arising from a cylindrical stalk (stipitate). Slippery to leathery. Medulla filamentous, with rhizoids. Inner cortex of anastomosing stellate cells, outer cortex of anticlinal files of more or less isodiametric cells, progressively smaller toward cuticle.

Distributed in warm temperate to tropical waters throughout the world.

Type species is *Grateloupia filicina* (J. V. Lamouroux) C. Agardh.

- M.D. Guiry in Guiry, M.D. & Guiry, G.M. 2021. ***AlgaeBase***. World-wide electronic publication, National University of Ireland, Galway. http://www.algaebase.org; searched on 02 March 2021.

Species reported from Sri Lanka

Grateloupia filicina (Lamouroux) C. Agardh, 1822 [Harvey 1857: no. 40; GM 1887:24; Dur 1961a: 52]
filicina (Lamouroux) C. Agardh [forma *filicina*] forma *pectinata* Børgesen, 1935
lithophila Børgesen, 1938 [Desikachary, V. Krishnamurthy & M. Balakrishnan, 1990: 238-]
- Silva et al, 1996

Grateloupia filicina
- Mallikarachchi, 2004:31.

Grateloupia lithophila Børgesen, 1938
- Coppejans et al, 2009:192; Mallikarachchi, 2004:31; Mallikarachchi, 2013:27.

Description of species

Grateloupia lithophila Børgesen, 1938

Type locality: Madras, India (Silva et al. 1996: 195).

Morphology Thalli tufted from a discoid holdfast. Fronds strap shaped wide and lanceolate, branching or not, tapering basally and apically. Apex pointed or truncate with filiform proliferous branches. Other thalli with short, narrow, filiform much branched fronds. Colour ranging from dark green through brown to red.

Anatomy Cortex pigmented, cells small, rounded and compacted, the outermost layer of oval cells aligned radially with a deep layer of stellate cells. Medulla filamentous, with an outer layer of densely packed longitudinal filaments and an inner layer of loosely packed filaments passing in all directions.

Ecology Common on the rocky shore at Colombo, on vertical and inclined surfaces, exposed to surf as well as air exposed but wetted by waves. Other workers have collected this species from high to low intertidal, surf exposed rocky habitats (Coppejans, 2009, Mallikarachchi, 2013).

Discussion This species was at first assigned to *Grateloupia filicina* on account of the narrow proliferous fronds. Subsequent collections showed that the thalli were quite variable, and the name was changed to *G. lithophila*.

Distribution This species has been collected on both the west and east coasts.

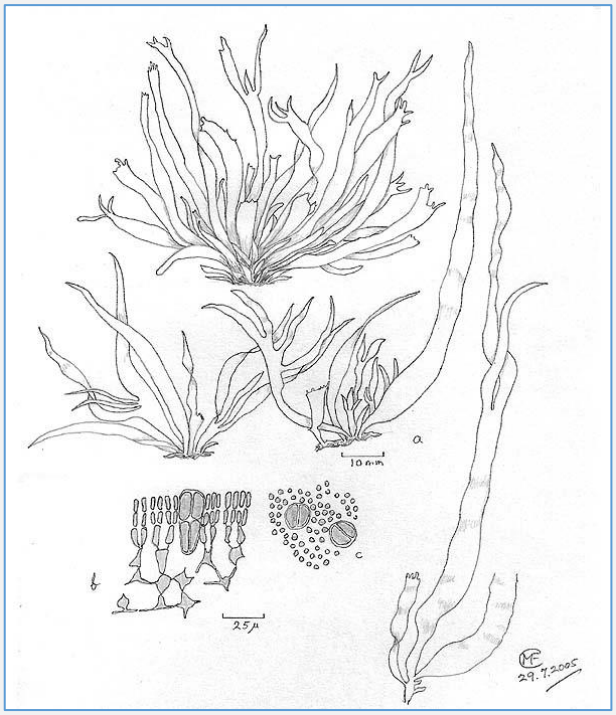
Material examined

MBIOD 014, 24.9.1995, Mount Lavinia - Lover's rocks, on rock and buried polythene sheets at low tide level, small, crimson-coloured tufts. MBIOD 015 20.8.1995, Mount Lavinia - Pavilion rocks. MBIOD 039, 25.8.1996, Mount Lavinia - Dig gala Rock, intertidal, dark green, branching dependent tufts on the exposed seaward side of the rock. MBIOD 057, 24.9.1995, Mount Lavinia - Lover's rocks, on intertidal, partially buried upper beach garbage. Young reddish-brown thalli growing on pieces of polythene buried in the sand. Area constantly washed by waves. MBIOD 081, 21.2.1997, Wellawatte, Fernando Road, intertidal beach rock shelf, scattered clumps of dark greenish-brown fronds up to 220 mm. HMF 044, 5.12.1996, Wellawatte - Fernando rd. intertidal beach rock shelf, numerous clumps of tall, dark green fronds on shelving rock at edge of beach, constantly exposed to wave action. HMF 172, 24.10.1999, Mount Lavinia, Ora gala group, intertidal rocky shore, dark green-brown thalli on a small rock splashed by waves. HMF 479, 24.7.2005, Wellawatte, Fernando Road, epilithic on beach rock shelf near low water mark, dark green, erect to prostrate in direction of water flow, tufts 7-8 cm high, occasional fronds to 15 cm.

References

Coppejans et al, 2009:192, Fig. 160.
Mallikarachchi, U., 2013:27, Fig. 12D, p. 46.
Silva et al, 1996.
G. Murray, 1887:24

Grateloupia lithophila Børgesen, 1938



Drawing from HMF 479, Wellawatte

a) Habit of a complete tuft, and below, various shapes of fronds.

b) Transverse section through the cortex, showing a tetrasporangium buried among the chains of the outer cortical cells, the deep cortex consisting of stellate cells. The cortical cells coloured green, the tetrasporangia pink.

c) Surface view showing cortical cells and two tetrasporangia.

Grateloupia lithophila Børgesen, 1938

28.2.2021, Mount Lavinia rocky shore. Left: at low tide, *Grateloupia lithophila* forming a dark band above the water level. Right: Close-up of tufts of the same species on a rock on the beach.

Ex situ images of freshly collected thalli: HMF 497, 24.7.2005 from Mount Lavinia.

Herbarium images of thalli from one intertidal location at Mount Lavinia showing different forms of growth.

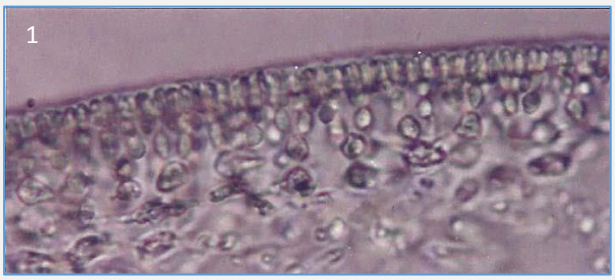
1 & 3: The commonest forms with wide lanceolate fronds.

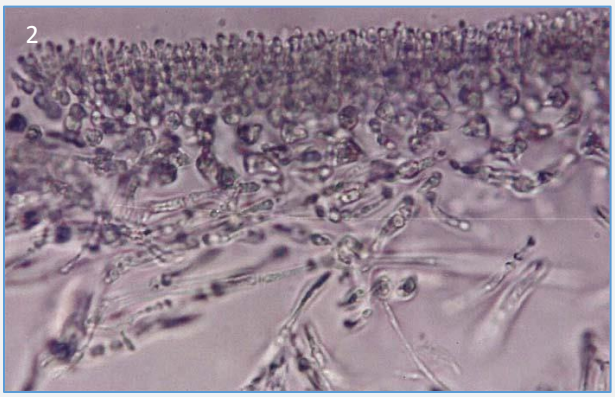
2 & 4: Uncommon forms consisting entirely of narrow fronds, resembling *G. filicina* images.

5: Thallus with mixed wide-lanceolate and narrow filiform fronds.

Photomicrographs of HMF 272

1. Chains of cortical cells vertical to the surface, stellate cells below.
2. Medullary filaments with compact outer layer and loose deep layer.
3. Low power view of a thick transverse section showing the loosely arranged central cortex.





BIBLIOGRAPHY

Guiry, M.D. in Guiry, M.D. & Guiry, G.M. 2021. AlgaeBase. World-wide electronic publication, National University of Ireland, Galway. http://www.algaebase.org; searched on 02 March 2021.

Coppejans, E., Leliaert, F., Dargent, O., Gunasekara, R. and De Clerck, O. 2009. *Sri Lankan Seaweeds, Methodologies and field guide to the dominant species*, ABC Taxa, Vol. 9, Belgian Development Corporation.

Mallikarachchi, U., 2004. *A study of the taxonomy and distribution pattern of algae on the southwest coast of Sri Lanka with special reference to anthropogenic effects*. Thesis, Master of Philosophy, University of Ruhuna, unpublished.

Mallikarachchi, U., 2013. *Taxonomic survey of seaweeds along the coastal belt of Sri Lanka* (*Part I - Eastern Coastal Segment*). Report to Biodiversity Secretariat, Ministry of Environment, Sri Lanka. Marine & Coastal Resources Conservation Foundation.

Murray, G. 1887. Catalogue of Ceylon algae in the Herbarium of the British Museum. *Annals and Magazine of Natural History*, ser. 5, 20: 21-44.

Silva, P.C., Basson, P.W. and Moe, R.L., 1996. *Catalogue of the Benthic Marine Algae of the Indian Ocean*. University of California Publications in Botany, Vol. 79. University of California Press.

MF 16.6.2021.