



***Martensia fragilis* Harv. (Delesseriaceae): A New record to seaweed flora of Karnataka Coast, India.**

S.K. Yadav and M Palanisamy*

Botanical Survey of India, Southern Regional Centre, Coimbatore - 641 003, Tamil Nadu, India.* *Corresponding author:* samy_bsi@yahoo.co.in

Abstract

Comprehensive marine macro algal explorations conducted in Karnataka coast during the years 2014-2017 revealed new distributional record of a red algae *Martensia fragilis* Harv. (Delesseriaceae). A complete description, nomenclatural citations and notes on its occurrence have been provided.

Keywords: New Record, *Martensia fragilis* Harv., Karnataka coast, Seaweeds, Rhodophyceae.

Introduction

The marine macro algae, also known as seaweeds, are the important component of the marine floral diversity. The red seaweed genus *Martensia* K. Hering belongs to the family Delesseriaceae under the order Ceramiales of class Rhodophyceae. Presently, this genus is represented with 18 taxa in the world (Guiry & Guiry, 2018), and 2 taxa in India (Rao & Gupta, 2015). It is mostly distributed in the tropical to subtropical regions of the world and is characterised by membranous thallus with flabellate lobes.

Martensia fragilis Harv. was first described by Harvey in 1854 from the Belligam Bay, Ceylon (now Weligama, Sri Lanka). Silva & al. (1996) reported this species from the Maldives. Later, it was reported by various workers from other parts of the world like Australia (Huisman, 1997), Africa (Ateweberhan & Prud'homme 2005), South Korea (Lee, 2006), Pacific islands (Skelton & South, 2007), China (Zheng & al., 2008), New Zealand (Nelson, 2012), Vietnam (Nguyen & al., 2013), Taiwan (Lin, 2013), Philippines (Kraft & al. 1999; Ang & al., 2014) and South China Sea (Phang & al., 2016). In India, *Martensia fragilis* Harv. was first reported by Boergesen (1937) from Shingle Island, Pamban based on M.O.P. Iyengar's collection in October 1924. Subsequently, Krishnamurthy & Thomas (1977) reported the occurrence of this species from Mandapam, Agadi & Utawale (1978) from Goa and Sasidharan & Krishnamurthy (1998) from Rameshwaram coast, Piwalatkar (2010) from Dapoli coast, Maharashtra and Pereira & Almeida (2014) from Betul and Palolem coasts of Goa. However, these all reports are either in the form of checklist or briefly described. In the present study, extended distribution of this species is reported from Karnataka coast.

Materials and methods

During 2014-2017, the authors undertook several field explorations to Karnataka coastal regions in all the seasons. While surveying, we came across an interesting species of seaweed at Vannalli coast, in the Uttara Kannada district of Karnataka (Latitude: 14°15'63.8" N, Longitude: 74°25'95.2" E). The coastline of Vannalli is predominantly rocky and supports the growth of a large number of seaweeds.

This species was found growing in association with the species of *Gracilaria* and *Grateloupia* in the intertidal regions. All the collected specimens were washed properly and dipped into a solution of 4% formalin solution. After poisoning, the specimens were preserved in the forms of both, dry (herbarium specimens) and wet (liquid preserved specimens) and deposited at Madras Herbarium (MH), Botanical Survey of India, Southern Regional Centre, Coimbatore. The collected fresh specimens were thoroughly examined in field and also under microscope (NIKON SMZ 1500). Description of the species was written based on morphological and anatomical studies and the identity of the species was confirmed as *Martensia fragilis* Harv.

Martensia fragilis Harv. in Hook. J. Bot. 6; 145. 1854; P.C. Silva & al., Cat. Benth. Mar. Alg. Ind. Ocean: 460. 1996; Desikachary & al., Rhodophyta 2 (2B): 272, figs. 76 a-d. 1998; Oza & Zaidi, Rev. Checkl. Ind. Mar. Alg.: 80. 2001; ; P.S.N. Rao & Gupta, Algae India 3: 58. 2015. *Martensia pavonica* (J. Agardh) J. Agardh in Spec Gen. Ord. Alg.. 80. 2001.

Thallus dark to pinkish red in colour, foliose, flattened, 4-10 cm long and 3-6 cm wide, membranous, thin, epilithic. Holdfast minute, attached with rhizoidal haptera. Stipe small, up to 1.6 cm long, slightly flattened upwards. Fronds thin, foliaceous, flattened, reticulately oriented and forming lattice work 4–8 × 6–10 mm across, lobed or irregularly divided; surface rough, margins entire to undulate. *Microscopic*: Cells in surface view compactly arranged, polygonal, 20–50 µm across, shows alternate belts of coherent and reticulate tissues; reticulate tissues consists of parallel arranged lamellae; lamellae interconnected with cross connection and forming net like appearance.

Occurrence: Usually post monsoon season. Rare.

Distribution: Karnataka (Uttara Kannda distr.(Vannali). India: Goa, Maharashtra and Tamil Nadu. World: Africa (Eritrea), Asia (Maldives, Sri Lanka, China, Korea, Taiwan, Indonesia, Philippines, Vietnam), Australia, New Zealand, Pacific islands, Caribbean islands.

Specimen examined: Karnataka: Uttara Kannda distr. - Vannali coast, 24 February 2016, *Palanisamy* 135043 (MH).

(Fig. 1; Plate 1)

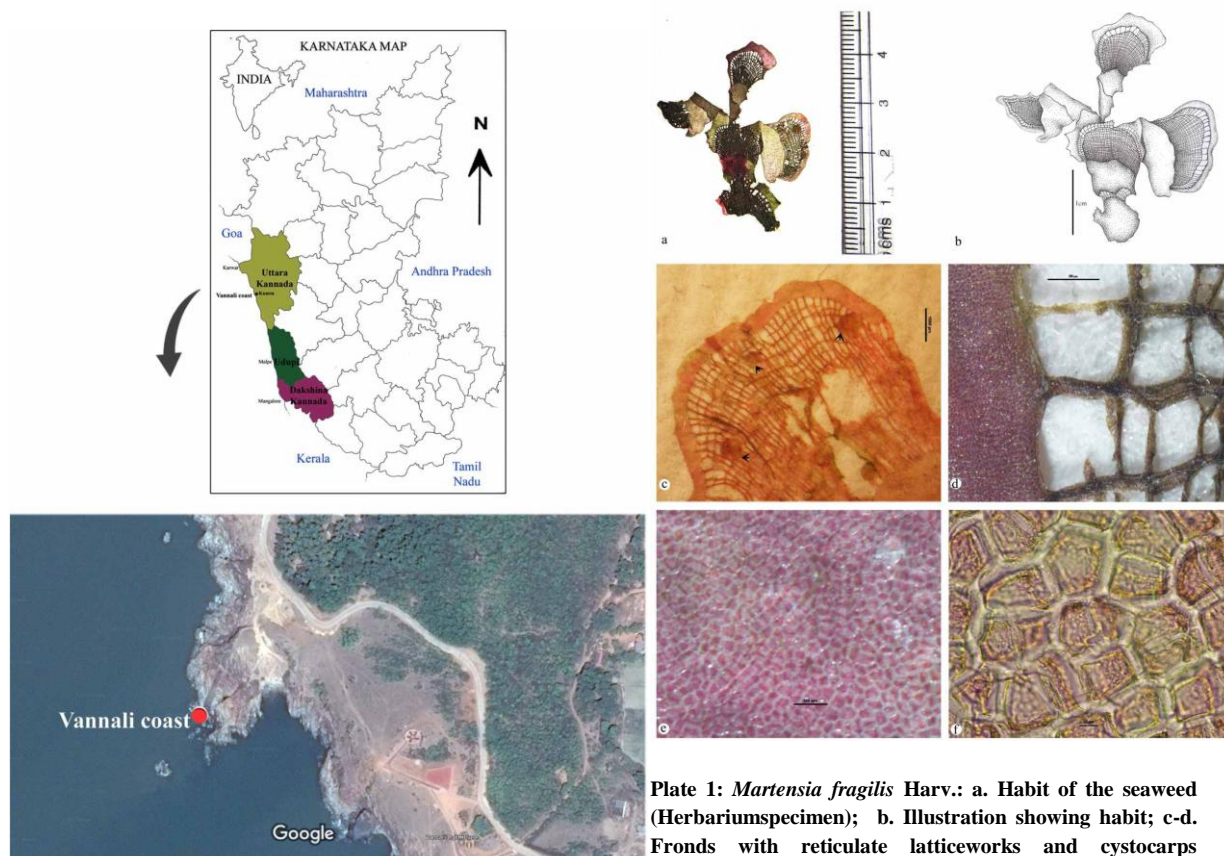


Figure 1: Map showing the collection location of Vannali coast in Karnataka.

Plate 1: *Martensia fragilis* Harv.: a. Habit of the seaweed (Herbariumspecimen); b. Illustration showing habit; c-d. Fronds with reticulate latticeworks and cystocarps (arrowhead); e-f. Surface cells of the thallus. [scale bars: (c) = 1000 µm; (d) = 500 µm; (f) = 10 µm]

Results and Discussion

Krishnamurthy & Thomas (1977) reported another allied species *Martensia indica* V. Krishnam. & Thomas from Mandapam coast, Tamil Nadu. Chaugule and Goswamy (1988) reported another species *Martensia pavonia* (J. Agardh) J. Agardh from the Guhagar coast, Maharashtra, which is now reduced as a synonym of *Martensia fragilis* Harv. A comparative analysis of both the species has been provided in table 1. The occurrence of *Martensia fragilis* Harv. in Karnataka coast shows the extended distributional adaptation.

Table 1. Comparative analysis of 2 species of *Martensia* from India

Characters	<i>Martensia fragilis</i> Harv.	<i>Martensia indica</i> V. Krishnam. & Thomas
Thallus	2 – 6 cm long	3 – 8 cm long
Colour	Pale red	Dark grey green
Holdfast	Rhizoidal	Stalked
Fronds	Very thin, fluffy, flabellate	Thin, fluffy, flabellate
Lamellae	Interconnected by transversely extended laterals	Interconnected by tangential filaments of cells
Lamellar cells	25-50 µm across	30-70 µm across
Tetrasporangia	Develop on the lamellae in the net region.	Develop on the lamellae and on the tangential cross connection.
Distribution	Tropical and subtropical coasts.	Tropical coasts

Acknowledgements

The authors are thankful to Dr. Paramjit Singh, Director, Botanical Survey of India, Kolkata, Dr. G.V.S. Murthy, Former Scientist 'G' & Head of Office, and Dr. C. Murugan, Scientist 'D' & Head of Office, Botanical Survey of India, Southern Regional Centre, Coimbatore for the facilities and encouragements.

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