

Ulva taeniata (Setchell) Setchell *et* Gardner: A taxon new to Indian seaweed flora

The genus *Ulva*, commonly known as sea lettuce, is one of the economically important seaweeds originally described by Linnaeus (1753), with widespread distribution in tropical waters¹. Besides its popular use in food preparations recently, it has been reported to have therapeutic potentials for combating neurodegenerative diseases associated with neuroin-

flammation². The genus *Ulva* has been well studied in the Indian subcontinent³⁻⁶ and there are reports of the occurrence of sixteen species from Indian waters alone^{7,8}. Among these, *Ulva beytensis*, *U. cove-longensis* and *U. quilonensis* are endemic⁹. During our recent visit to Malvan (73.27°E and 16.03°N), central-west coast of India in August 2006 for seaweed

collection, we came across a new species of *Ulva*. Critical observations on morphology and anatomy of the plants were similar to those described for *U. taeniata* (Setchell) Setchell *et* Gardner – a seaweed taxon rather common in America and hitherto unreported from Indian waters.

This species has shown a history of taxonomic ambiguity. In 1909 Setchell

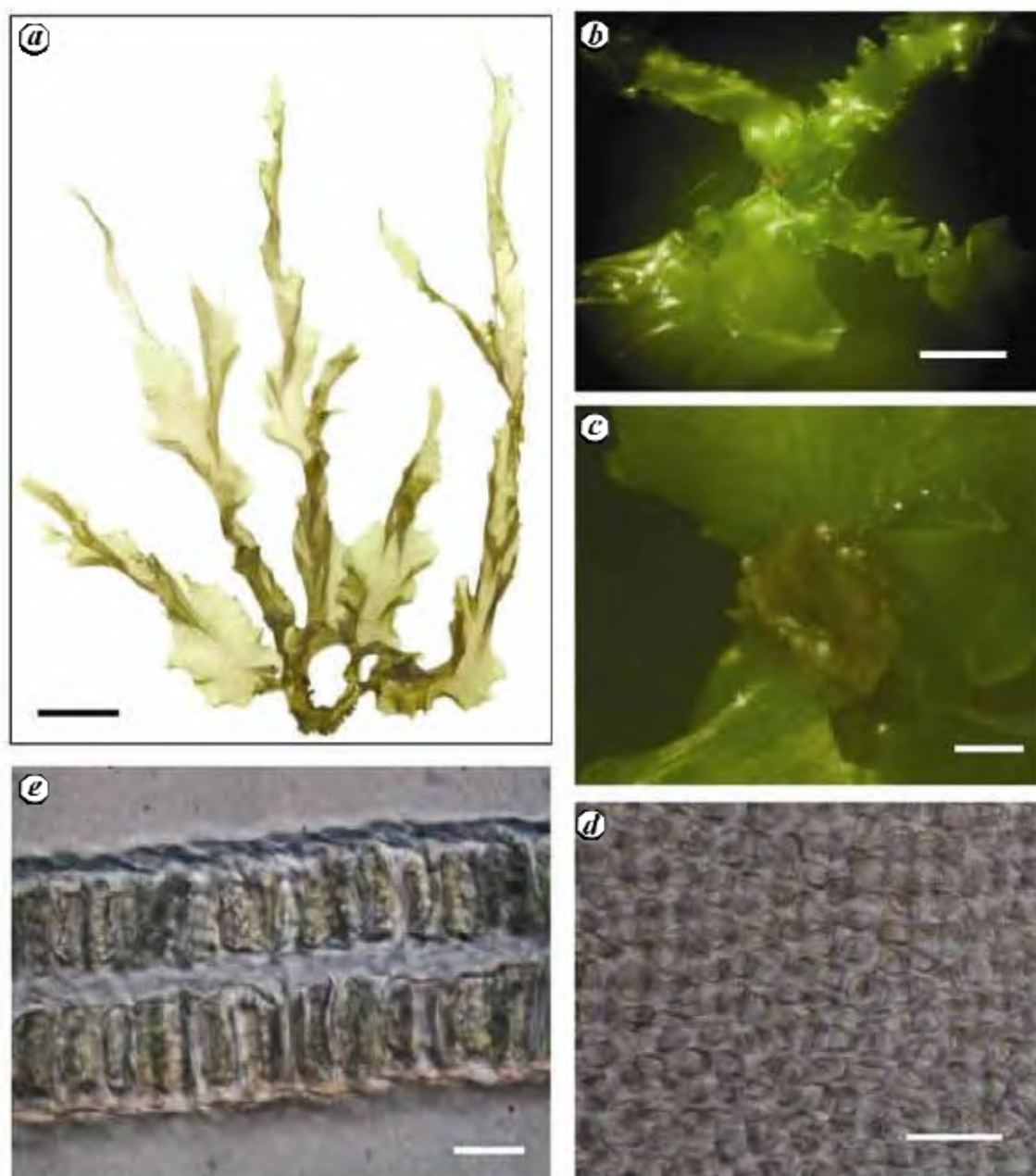


Figure 1. *Ulva taeniata* (Setchell) Setchell *et* Gardner. *a*, Habit of the seaweed; *b*, Dentate or wavy margin at the bottom; *c*, Attaching disc; *d*, Cells in a surface view and *e*, Cross-section. Scale bar: (*a*) = 3 cm; (*b*) = 1 cm; (*c*) = 1.5 m; (*d*) = 65 μ m; (*e*) = 20 μ m.

SCIENTIFIC CORRESPONDENCE

Table 1. Comparison of *Ulva taeniata* from India and Pakistan

| Character | Indian specimen | Pakistan specimen* |
|----------------------------------|---|---|
| Habitat | Upper intertidal region | Upper and middle intertidal regions |
| Association | Species of <i>Porphyra</i> and <i>Enteromorpha</i> | Not described |
| Thallus colour | Pale green | Not described |
| Thallus dimensions | Up to 12 cm long and 0.5–3.5 cm broad | Up to 24 cm long (based on picture and sketch) |
| Thallus margin | Ruffled appearance, with distinctly dentate or wavy broader at the base | Ruffled appearance, with distinctly dentate or wavy broader at the base |
| Cells in surface view | Compactly arranged polygonal cells, 14–32 µm in diameter | Compactly arranged polygonal cells, 25–20 µm in diameter |
| Frond thickness | 72–80 µm | 75–130 µm |
| Cell dimensions in cross-section | 30–34 µm long and 12–14 µm broad | 50 µm long and 18 µm broad |
| Place of occurrence | Sunset Point, Malvan | Paradise Point and Kaka Pir, Karachi |

*Source: Saifullah and Nizamuddin⁴.

had identified this taxon as *U. fasciata* forma *taeniata* based on collections from Tomales Bay, Central California¹⁰. Later, Setchell and Gardner raised its status to an independent species as *U. taeniata* because of crisply ruffled morphology and dentate or wavy margin at the base, allowing it to be separated from *U. fasciata* where fronds are completely plane¹¹. Anand¹², and Saifullah and Nizamuddin⁴, while describing the Ulvaceae of Pakistan used the trinomial *U. fasciata* var. *taeniata* for plants collected from Karachi. Nevertheless, Amjad and Shameel¹³ adopted the original binomial *U. taeniata*. All this taxonomic confusion was resolved by Silva *et al.*¹⁴, who synonymized *U. fasciata* forma *taeniata* Setchell to *U. taeniata* Setchell *et* Gardner, and stated that the taxon described under the name *U. fasciata* var. *taeniata* Setchell is invalid.

Fronds of *U. taeniata* were found growing in association with species of *Porphyra* and *Enteromorpha* over the exposed rocks of the upper intertidal area during the lowest low tide of the *chart datum* at the Rock Garden, Malvan. Voucher specimens have been deposited at Marine Algae Herbarium, Central Salt and Marine Chemicals Research Institute, Bhavnagar for reference. Thallus is rigid, pale green in colour (Figure 1 a), up to 12 cm tall, irregularly lobed; lobes 0.5–3.5 cm broad with ruffled appearance. The basal portion of the frond is divided, long and slender with distinctly dentate or wavy boarder (Figure 1 b). Fronds are attached with round to oval-shaped disc, greenish-brown in colour, which is about 3–4 mm in diameter (Figure 1 c). In surface view the polygonal vegetative cells are compactly arranged without any intercellular space, 14–32 µm in diameter (Figure 1 d). In cross-section, fronds are 72–80 µm thick

and the cells are arranged in two rows leaving a small distance of about 5 µm in between. The cells of the middle region are much longer than those of the margins, 30–34 µm tall and 12–14 µm broad (Figure 1 c). A comparative study of morphological variations among the plants from India and Pakistan (Table 1) has revealed that the Indian specimens are smaller in dimension, but the basic form and structure remain the same.

Except for the earlier record from Karachi^{4,12,13}, *U. taeniata* has not been recorded from the Indian Ocean region. Thus, the present collection made from Malvan coast has further extended its geographical range of distribution to the Indian waters also. Conservation of biological diversity has been an important issue in the environmental strategy of any country. However, measuring biological diversity often concerns enumerating species, and actual ground verification followed by periodic reassessment of resources is often ignored. Resurvey of the Indian coast for seaweeds may result in finding new species, revealing rich seaweed biodiversity of our coast.

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VAIBHAV A. MANTRI*
MUKUND C. THAKUR
C. R. K. REDDY
B. JHA

*Discipline of Marine Biotechnology and Ecology,
Central Salt and Marine Chemicals
Research Institute (CSIR),
Gijubhai Badheka Marg,
Bhavnagar 364 002, India
*For correspondence.
e-mail: vaibhav@csmcri.org*