

## *Coeloseira compressa* Hollenb. (Champiaceae, Rhodophyta)—A New Marine Algal Species from Goa, India

G V DESHMUKHE & A G UNTAWALE

National Institute of Oceanography Dona Paula Goa, 403 004

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Occurrence of a red algal species *Coeloseira* is recorded from Bambolim coast, Goa along the central west coast of India. The genus is characterised by the presence of polysporangia, stoloniferous pattern branching, septate secondary branches and a group of apical cells. Habitat characteristics are also reported.

Family Champiaceae (Rhodymeniales) is represented by 5 genera<sup>1</sup> which occur mainly in the temperate marine waters. Of these, genus *Coeloseira*, first described by Hollenberg<sup>2</sup>, has so far been reported from only subtropical waters, mostly from California (USA) and also from Mexico<sup>3</sup>. Recently a specimen of *Coeloseira* has been collected from Bambolim shore (15°26'N lat., 74°51'E long.) and described in this communication.

### Observations

The new alga was found growing in the rock pools of the intertidal zone and in the midlittoral zone. It was found under the rocks. The lateritic rocks as well as the alga were covered with silt. The growth of the alga was observed for the last 2 y. The vegetative as well as reproductive thalli were found during September-October. The atmospheric temperature throughout the year in this area varied from 24° to 32°C and the water temperature from 26°C (June) to 34°C (May). Physico-chemical parameters estimated during July-October 1984 are given in Fig. 1. Low temperature, less rainfall and moderate nutrients aid *Coeloseira* growth.

**Habit**—The alga forms a patch of about 6 to 8 cm on the rocky substratum. Plant is saxicolous, tubular, septate, irregularly branched. The branches are stoloniferous with a peg-like holdfast (Fig. 2A and B) while a few branches were found to be erect occasionally.

**Thallus**—The thallus is caespitose, irregularly branched, mostly 2-3 cm long and light red in colour. Branches 1-2 mm wide, prominently constricted at the septa and mostly compressed thallus which becomes oval during reproduction.

Apical cells with dense cytoplasm are present at the apex of tubular branches. The tubular branch is hollow, 1-cell thick and continuous, while it is solid and pseudoparenchymatous in the rhizoidal and nodal region. The peripheral layer of the hollow internodal portion consists of thick (50-60 µm) primary cells with dense chromatophores. The medullary filaments are developed from the primary cells by periclinal divisions. These primary cells also give rise to gland cells. The primary cell undergoes periclinal division resulting into the outer cell which forms the peripheral cell and the inner cell which gives rise to either medullary filament or gland cell (Fig. 3A to C).

**Reproductive organs**—The genus differs from other Champiaceae members by the presence of polysporangia. These are scattered mostly in subterminal segments of branches and are 100 to 160 µm diam. with 8 to 12 spores in each polysporangium (Fig. 2C and D). The polysporangia are developed from the peripheral primary cells by an oblique division. When mature the sporangia bulge into the central cavity. The peripheral cells do not completely cover mature sporangium. Cystocarpic and antheridial material was not observed (Fig. 3D-F).

### Discussion

On the basis of present observations, it is evident that the specimen, collected is neither *Champia* nor *Gastroclonium* (Table 1). The external morphology of *Coeloseira* is much similar to *Gastroclonium* in the presence of solid stalk and stoloniferous branches. However, the reproductive characters differ.

Hollenberg<sup>2</sup> described 2 species of *Coeloseira* (*C. compressa* and *C. parva*). The former shows distinctly

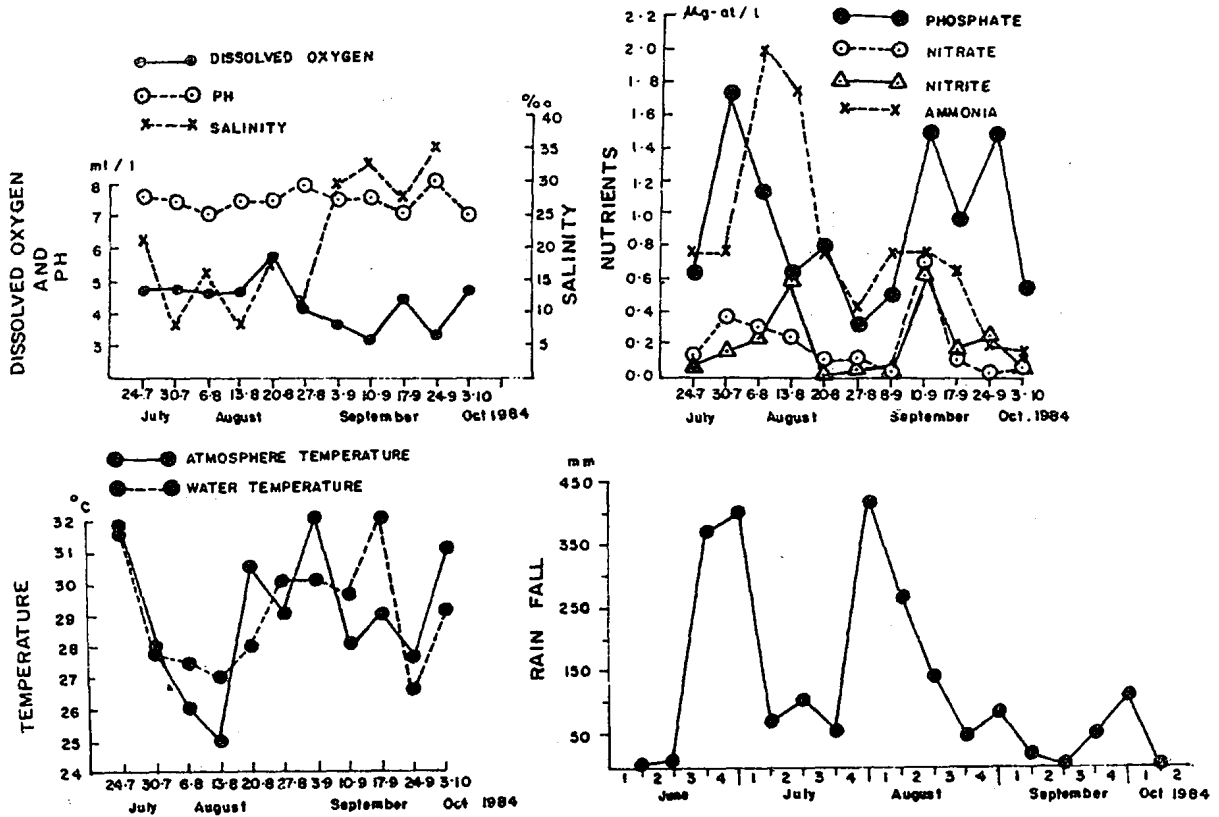


Fig. 1—Physico-chemical parameters during July-Oct. 1985 along the Bambolim coast

Table 1—Major Differences in genera *Coeloseira*, *Champia* and *Gastroclonium*

Characters	<i>Coeloseira</i>	<i>Champia</i>	<i>Gastroclonium</i>
Morphology of thallus	Tubular branches, hollow; main branches aseptate	Tubular branches, hollow; main branches septate	Primary branches solid; main branches aseptate
Branching	Stoloniferous with peglike holdfast	Erect branching	Erect branching sometimes stoloniferous
Apical cell Sporangia	In group Polysporangia	In group Tetrasporangia	In group Tetrasporangia

Table 2—Major Difference in the Species of *Coeloseira*

	<i>Coeloseira</i> sp. (present)	<i>C. compressa</i>	<i>C. parva</i>
Locality	India	USA	USA
Thallus morphology	Stoloniferous	Stoloniferous	Erect
Anatomy of the branches	Continuous single layered cell walls	Continuous single layered cell wall with discontinuous inner layer (one cell thick)	2 to 3 layered cell wall
No. of spores in a sporangium	8 to 12	12 to 16	12 to 16
Spores diam.	100 to 160 $\mu\text{m}$	70-100 $\mu\text{m}$	80-120 $\mu\text{m}$
Cystocarp	Not observed	Grouped near apical cell; 300-350 $\mu\text{m}$	Grouped near apices; 280-300 $\mu\text{m}$

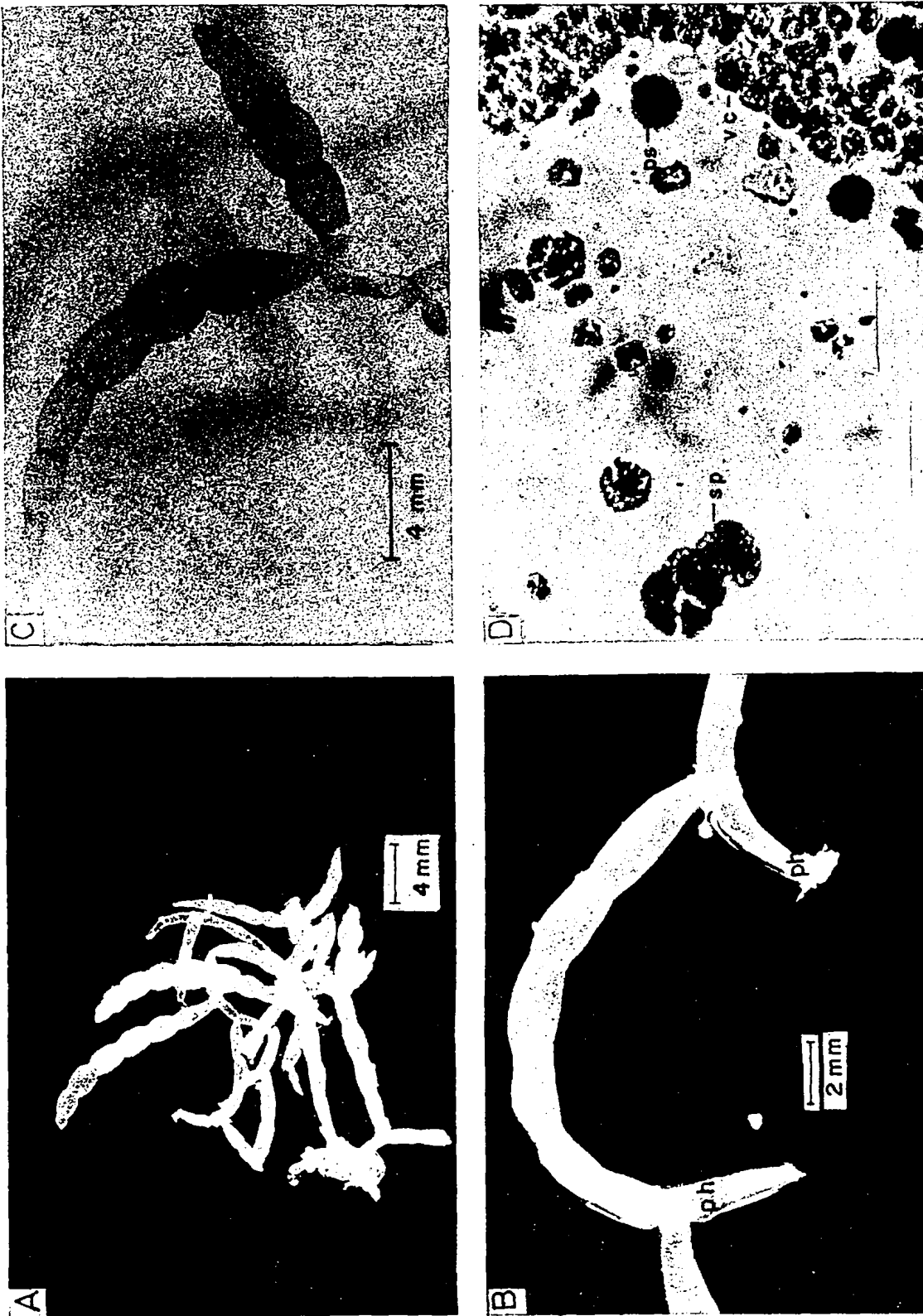


Fig. 2 (A) Habit of *Coeloxeira* plant; (B) Stolomiferous growth with peglike holdfast; (C) Tubular branches showing polysporangia; (D) Mature polysporangia of *Coeloxeira* (40 x). (ph - peglike holdfast; ps - polysporangia; sp - spore; vc - vegetative cell)

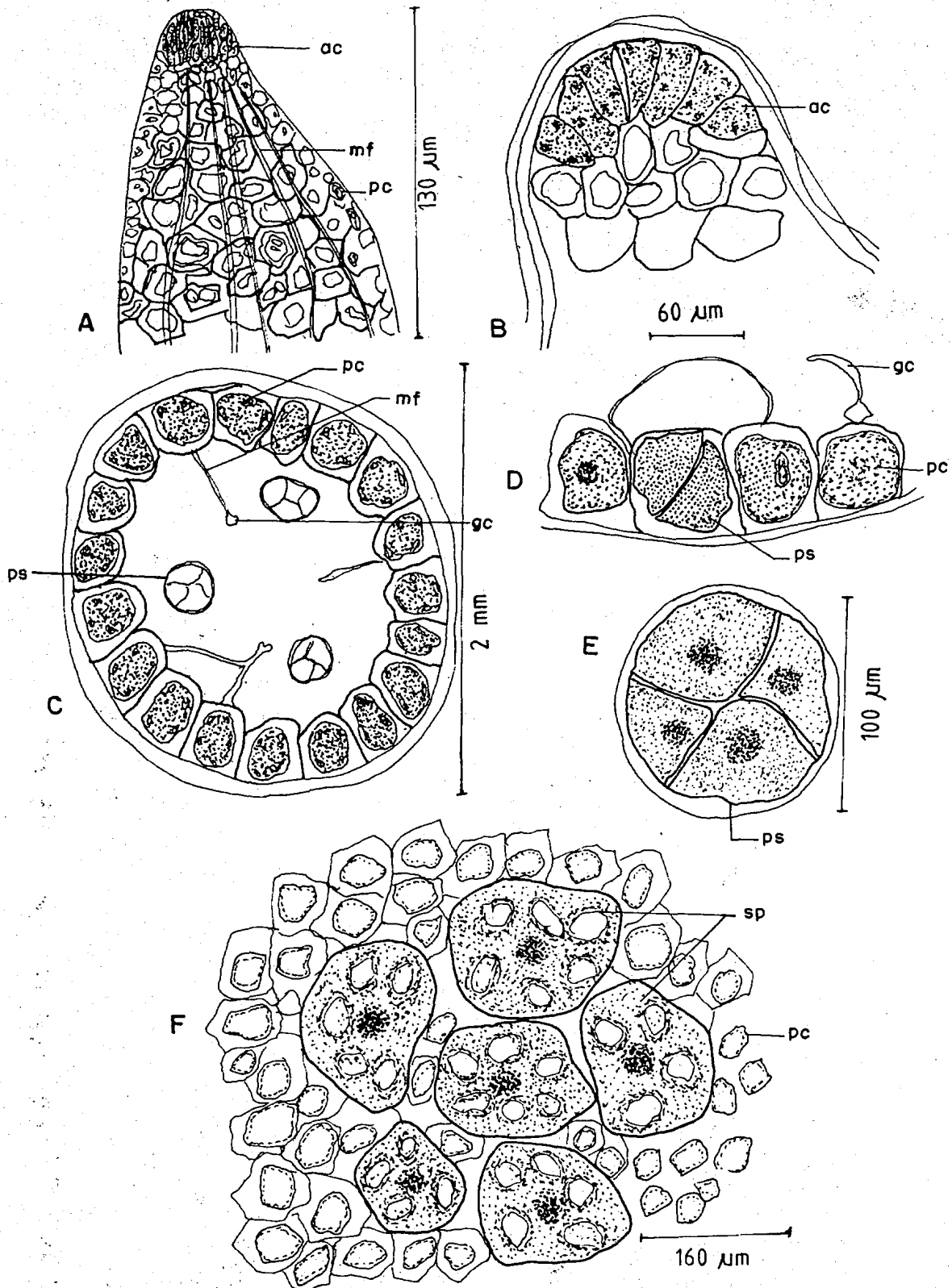


Fig. 3—(A) Part of thallus showing a group of apical cells; (B) magnified apical cells; (C) transverse section of tubular branch; and (D, E & F) development of polysporangia (D—first oblique division; E—formation of four spores; F—mature polysporangium) [ac—apical cells; pc—peripheral cells; gc—gland cell; mf—medullary filaments; sp—spores]

compressed branches commonly with downward curving apices, frequently becoming stoloniferous branches with peglike holdfast and a few erect tubular branches. Some other features of differences between these species are shown in Table 2.

The presence of cystocarp in *C. compressa* has been reported<sup>3</sup>. Hollenberg<sup>2</sup> described the cystocarp of *C. parva* with 250-300  $\mu\text{m}$  diam. and grouped near the apices. In the present material the cystocarps were not observed.

In view of the above observations it can be stated that the present species resembles *C. compressa* more than *C. parva*.

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#### References

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