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Seaweeds from Gray's Reef, Georgia

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Short Papers and Notes:

SEAWEEDS FROM GRAY'S REEF, GEORGIA

The southeastern Atlantic coast of the United States is a generally inhospitable environment for seaweeds because of unstable, sandy or muddy substrates. However, discovery and study of extensive outcrops of sedimentary rock on the offshore continental shelf in North Carolina led to the recognition of a large (190 species), essentially tropical flora in those waters (Schneider, 1976; Searles and Schneider, 1980). Offshore waters between North Carolina and Florida are less well known. Wiseman and Schneider (1976) reported 31 new records of Rhodophyta from South Carolina offshore waters together with a total of seven taxa reported earlier (Schneider, 1975; Schneider and Searles, 1976). Blair and Hall (1981) reported 21 seaweed taxa in dredged samples off South Carolina, ten of which were new records, but only one species, *Peyssonnelia rubra* (Grev.) J. Ag., from Georgia waters. Chapman (1971, 1973) reported a total of 63 taxa from nearshore waters in Georgia. The offshore waters of the Georgia coast are, therefore, unexplored by phycologists. An opportunity to dive in 1980 on Gray's Reef, Georgia provided the algal records recorded here and suggests that additional study of this area may be rewarding.

METHODS

Samples were collected by hand using SCUBA and were preserved in formalin seawater (1:20). Microscopic samples were stained with aqueous aniline blue and permanent vouchers were retained as either dried herbarium mounts or as corn syrup slides and deposited in the Duke University Algal

Herbarium.

Collections were made on July 26, 1980 at Gray's Reef, Georgia, lat. 31° 23'59"N long. 80° 52'96"W in a depth of 21 m (70 ft.); surface water temperature was 28.5° C.

LIST OF SPECIES

New records for Georgia are indicated with an asterisk.

Chlorophyta

Cladophorales

**Cladophora pseudopellucida* van den Hoek. Figure 1.

Specimens collected agree in most respects with van den Hoek's (1963) description of this taxon from European waters. Plants are 3-7 cm tall. Di-trichotomous branching is acropetal. Attachment is by a cluster of rhizoids initiated at the bottom of the basal cell. Cells of the basal segment and first internodes are (160) 192-288 (384) μm diameter with a ratio of l/w of (3) 12-21 (38). The stalk below the first branch point was incomplete in most specimens, but up to 14 mm long in intact specimens; internodes in the lower half of the plant are 3-13 mm long. Apical cell diameters are (56) 64-104 (128) μm with l/w of (7) 10-17 (25). Intercalary divisions in the lower part of the plant are common so that the basal segment and oldest internodes are usually 2-4 cells long. The apical cells may exceed the upper diameter limits of 110 μm described by van den Hoek. The lower l/w ratio he lists (4) is well below the lowest ratio noted in Georgia plants (7), whereas Georgia plants have a higher (25) maximum apical cell l/w ratio than that listed for European collections (18). However over 85% of all measurements of apical cells lie within the ranges noted by van den Hoek.

Derbesia sp.

Plants were sterile and could not be identified to species.

Figure 1. *Cladophora pseudopellucida* van den Hoek. A. Semidiagrammatic representation of a whole plant. B. Branch apices.

Rhodophyta

Nemaliales

**Scinaia complanata* (Collins)

Cotton

One male plant collected.

Cryptonemiales

**Dudresnaya* sp. nov.

Two fertile, female plants of an undescribed species were collected. This new species will be described separately.

**Halymenia floridana* J. Agardh

**Halymenia agardhii* De Toni

Gigartinales

**Sebdenia polydactyla* (Boergesen)

Balakrishnan

Rhodymeniales

Botryocladia occidentalis

(Boergesen) Kylin

**Chrysymenia enteromorpha* Harvey

Rhodymenia pseudopalmata

(Lamouroux) Silva

Champia parvula var. *prostrata* L.

Williams

Lomentaria baileyana (Harvey)

Farlow

Ceramiales

**Callithamnion halliae* Collins

Male plants growing on *Rhodymenia pseudopalmata*.

**Branchioglossum minutum*

Schneider. Figure 2.

Two species of *Branchioglossum* have been reported from the western Atlantic, *B. prostratum* Schneider (1974) and *B. minutum* Schneider (Schneider and Searles, 1975) both from North Carolina. Although differing in some respects from *B. minutum* as described by Schneider, the Gray's Reef plants appear to belong to that taxon. The plants are erect and some are 1-2 mm in excess of 2 cm. They are therefore more than double the size of Schneider's North Carolina plants. In contrast to the sparse branching of a single order previously described, female plants have 2-3 orders of branching and it may be profuse (Fig. 2A). In a few cases branches originate from the midrib rather than the blade margin. Branching in tetrasporangial plants is more limited

Figure 2. *Branchioglossum minutum* Schneider. A. Cystocarpic plant with tetrasporangial blades (t') emerging from a cystocarp and a blade originating from the midrib of a branch (t'') which also has produced small tetrasporangial sori. B. Tetrasporangial blades proliferating from surface of a tetrasporangial blade.

(Fig. 2B). Midribs are like those previously described, but in female plants most of the midrib becomes covered by cells derived from the carpogonial system so that the basic, vegetative cortication is obscured. Dimensions and organization of the tetrasporangial and cystocarpic structures are as described by Schneider. In some predominantly female plants small tetrasporangial sori may occur. Tetrasporangial blades were also noted emerging from old cystocarps (Fig. 2A), presumably a result of *in situ* germination of carpospores and (Fig. 2B) from the surface of old tetrasporangial blades.

Although much more robust and, in the case of female plants, more richly branched than Schneider's plants, the differences in the Gray's Reef plants do not appear to warrant their separation from *B. minutum*.

Grinnellia americana (C. Agardh)

Harvey

Hypoglossum tenuifolium (Harvey)

J. Agardh

These are the large plants characteristic of the species in the Caribbean,

not the small plants of variety *carolinianum* which occur to the north.

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