CHECKLIST OF MARINE ALGAE AND SEAGRASSES FROM THE PONDS
OF THE PELICAN CAYS, BELIZE

BY

DIANE S. LITTLE, MARK M. LITTLE, AND BARRETT L. BROOKS
Figure 1. Location of the atoll-like Pelican Cays group on the Central Province of the Belize Barrier Reef, Central America. Enlarged view of the major islands and habitats surveyed during the present study shown in inset (adapted from drawing by M.K. Ryan).
CHECKLIST OF MARINE ALGAE AND SEAGRASSES FROM THE PONDS OF THE PELICAN CAYS, BELIZE

BY

DIANE S. LITTLER,1,2 MARK M. LITTLER,1 and BARRETT L. BROOKS1

ABSTRACT

One hundred and fifty two species of marine macrophytes (148 algae and 4 vascular plants) were recorded from ponds (embayments, bays, coves, and lagoons) within the Pelican Cays, a recently recognized atoll-like system of the Rhomboid Cays in the Central Province of the Belize Barrier Reef. Of the algae, 64 were Rhodophyta, 59 Chlorophyta, 16 Phaeophyta, and 9 Cyanophyta; 4 Magnoliophyta also were present. This unusually high marine plant biodiversity (for such a small geographic area) can be traced to the unique commingling of four major biomes—mangrove, coral, seagrass, and algal—under stable oligotrophic conditions (as indicated, for example, by the area’s consistently “gin-clear” waters).

The cays also have three distinct habitat types: hanging roots, peat banks, and pond floors. The pond floors (bases) contain abundant psammophytic seagrasses and Chlorophyta (rhizophytes), anchored on the shallow horizontal margins. The suspended mangrove roots support combinations of delicate plant and animal taxa not found on the embedded roots, peat banks, or pond bases. The adjacent peat banks support more herbivore-resistant (calcified, tough, and chemically defended) taxa, indicative of a relatively grazer-accessible habitat. Between-pond floristic differences appear to be minor, but populational abundances vary greatly, probably because of the circulation and size of the ponds. One algal species, the giant-cell Caulerpa nummalaria, has not been found elsewhere in the Western Atlantic. Commercially valuable red algal agar-producers (Gracilaria, Hydropuntia) and carrageenan-producers (Meristiella) abound near the openings to several of the ponds. An unusual number of macroalgal species have attained record large sizes in these ponds. We fully documented all taxa to provide an initial checklist, with collection data for the major ponds of the Pelican Cays, as well as overall ranges for the Caribbean and adjacent seas.

INTRODUCTION

The Belize Barrier Reef (10 to 32 km wide and about 250 km long; Rützler and Macintyre, 1982) contains hundreds of mangrove islands, diverse intertidal and subtidal barrier- and patch-reef zones, two large atolls, and vast lagoonal seagrass beds. The benthic plant communities of these and mainland habitats have received inadequate attention, however,

1Department of Botany, National Museum of Natural History, Smithsonian Institution, Washington, D.C. 20560-0166, USA.
2Division of Marine Science, Harbor Branch Oceanographic Institution, 5600 U.S. 1 North, Fort Pierce, FL 34946, USA.
especially in light of Belize's increasing development and its growing popularity with the diving and scientific communities. Only five algal floristic accounts have been published thus far: the earliest, by Taylor (1935), documents 84 marine algae; Tsuda and Dawes (1974) list 104 marine plants collected at Golvers Reef; Norris and Bucher (1982) treat 165 taxa of benthic marine algae from the vicinity of Carrie Bow Cay, Southwater Cay, and Twin Cays; Littler et al. (1995) document 63 marine macrophytes from Tobacco Range; and Littler and Littler (1997) illustrate 190 species as an initial field guide to encourage conservation efforts in the Pelican Cays. In addition, specialized generic treatments have identified a number of taxa new to Belize: 7 Polysiphonia (Kapran and Norris, 1982), 7 Udotea (Littler and Littler, 1990), 1 Anadyomene (Littler and Littler, 1991), and 8 Averrainvillea (Littler and Littler, 1992). To our knowledge, no other floristic studies of such high-diversity, interspersed, mangrove/coral/seagrass habitats have been carried out.

**STUDY AREA**

The atoll-like Pelican Cays, located in the Central Province of the Belize Barrier Reef (Fig. 1), comprise a pristine, low-energy, mangrove-island ecosystem dominated by sessile photosynthetic and filter-feeding populations. Most are morphologically delicate and vulnerable to damage from boat wakes, physical disturbance, and sedimentation, as well as natural (Lapointe et al., 1993) and anthropogenic (Littler et al., 1993) eutrophication. Almost all of the intertidal habitats contain the upper band of *Bostrychia/Catenella* ubiquitous in the Caribbean. The predominant algal groups (67%) are coarsely branched thick-leathery or calcareous forms (Littler and Littler 1997), which are indicative of constant, low-nutrient conditions. There is a paucity of the filamentous and sheet-like green algal forms that characterize bird islands (Lapointe et al., 1993) such as nearby eutrophic mangrove cays (e.g., Man-of-War Cay, Channel Cay, Douglas Cay).

The macrophyte biodiversity of the Pelican Cays area (190 taxa) is greater than that of any comparable system studied in the Caribbean (Littler and Littler, 1997). By comparison, only 209 taxa have been reported from the Caribbean and adjacent seas as a whole (Littler et al., 1989). In the past, we have recorded rich floras of undocumented macrophytes in Belizean mangrove systems such as Twin Cays (Littler et al., 1985) and Tobacco Range (Littler et al., 1995). However, the macrophyte diversity of the Pelican Cays far exceeds that of Twin Cays and Tobacco Range combined (cf. Littler et al., 1985, 1995; Littler and Littler, 1997). This unusually high marine plant diversity in such a small geographic area is thought to be due to the stable oligotrophic history, the commingling of various habitat types, and the close juxtaposition of complex coral, seagrass, macroalgal, and mangrove biomes.

**METHODS**

This study was restricted to selected ponds (embayments, coves, bays, and lagoons) and primarily to the large macrophytic forms that are not ubiquitously dispersed by birds, wind-aerosols, and ships. We covered the three major phyla of marine algae, Rhodophyta (red algae, 64 taxa), Chlorophyta (green algae, 59 taxa), and Phaeophyta (brown algae, 16 taxa). Also included were Cyanophyta (blue-green algae, 9 taxa), which represent an important macrophyte
component in some habitats, and the flowering plant phylum Magnoliophyta (seagrasses, 4 taxa). Though generally omitted from algal floras and texts, the seagrasses play a major role in the ecology and population dynamics of nearly all Pelican Cays' ecosystems.

The algal diversity of the Pelican Cays' pond systems was documented as a further step toward establishing a baseline of systematic information of use to governmental agencies. Collections from the mangrove hanging (suspended) roots, seagrass floors, and shallow peat banks (including embedded roots) within ponds were made from February 1992 to May 1995 by snorkeling. During February 1992, we began recording observations of populations and island systems in the Pelican Cays group using names of locations from charts and some of our own site designations (Littler and Littler, 1997, Fig. 1). The present treatment also uses the letter designations for "ponds" (A-J) employed in this volume. Our research team has now made multiple seasonal marine plant collections at 43 sites from the 11 major islands of the Pelican Cays: 11 sites at Manatee Cay, 6 at Bird Cays, 5 at Fisherma'n's Cay, and 3 at each of the remaining cays. For consistency, however, this report is restricted to the ponds lettered A-G and J in Fig. 1. Specimens for pressing were combined in large mesh bags, while separate plants were placed in individual plastic bags at the time of collection, later transferred to polycarbonate vials, fixed in 5% Formalin, and finally preserved in 70% ethyl alcohol. In the laboratory, portions of each species' collection were retained in vials with liquid preservative, while the remainder of thalli and bulk materials were dried and pressed as herbarium specimens. Dried herbarium collections, wet preserved materials, and, when at the Carrie Bow Cay (CBC) field station, living specimens were examined macroscopically and microscopically, after portions were prepared on glass slides for anatomical study. Thallus sections were made by hand (in the field) or by freezing microtome, stained with 1% aniline blue, and mounted using a 20% glucose syrup (Karo Syrup, Corn Products, Inc.) solution in distilled water containing a trace of phenol.

Predominant taxa were listed in phylogenetic order for higher taxa following Wynne (1998), with the species appearing alphabetically. Identifications were checked against type specimens or the original published descriptions. Species names are followed by a citation of the original publication, and the basionym with its reference given below if the species is based on an earlier name. Specimens cited (Table 1) are only those collected during this specific study and are deposited in the Algal Collection, U.S. National Herbarium, Department of Botany, National Museum of Natural History, Smithsonian Institution (US).

**DOMINANT MACROPHYTES OF THE PELICAN CAYS' PONDS**

Pond A (= Cat Cay Bay), is a southwestward-facing pond (Fig. 1). The western margin of this bay (from the ribbon reef to the northernmost limit) is one of the richest (greatest biodiversity) sites in the Pelican Cays. As mentioned above, the reason is the unusual combination of coral, mangrove, algal, and seagrass systems related to the stable seawater quality in this compact pond. The eastern margin of Pond A is richer in algal populations than the invertebrate-dominated western margin. Particularly striking dominants of the hanging root communities in the southern portion of Pond A (= Cat Cay Bay) are colorful red algae *Coelothrix irregularis*, *Acanthophora spicifera*, *Spyridia filamentos*osa, the brown algae *Lobophora variegata*, *Dictyota* spp., Padina sanctae-crucis, and the green algae *Caulerpa racemosa* var. *occidentalis*, *C. sertularioides*, *C. mexicana*, *C. verticillata*, *Halimeda opuntia*, and *Dictyospher*ia cavernosa (selected examples in Figs. 2-9). Such epiphyte-free macroalgal populations are indicative of
Table 1. Location of voucher specimens preserved in the algal collection of the U.S. National Herbarium. See Figure 1 for pond names.

<table>
<thead>
<tr>
<th>Taxa</th>
<th>Ponds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Acanthophora spicifera</td>
<td>X</td>
</tr>
<tr>
<td>Acetabularia sp.</td>
<td></td>
</tr>
<tr>
<td>Amphiroa fragilissima</td>
<td></td>
</tr>
<tr>
<td>Amphiroa rigida</td>
<td></td>
</tr>
<tr>
<td>Amphiroa sp.</td>
<td>X</td>
</tr>
<tr>
<td>Anadyomene sp.</td>
<td></td>
</tr>
<tr>
<td>Anadyomene saldanhae</td>
<td>X</td>
</tr>
<tr>
<td>Anotrichium barbatum</td>
<td>X</td>
</tr>
<tr>
<td>Antithamnion sp.</td>
<td></td>
</tr>
<tr>
<td>Avrainvillea asarifolia</td>
<td></td>
</tr>
<tr>
<td>Avrainvillea digitata</td>
<td>X</td>
</tr>
<tr>
<td>Avrainvillea longicaulis</td>
<td>X</td>
</tr>
<tr>
<td>Avrainvillea sp.</td>
<td></td>
</tr>
<tr>
<td>Bostrychia sp.</td>
<td></td>
</tr>
<tr>
<td>Bostrychia tenella</td>
<td>X</td>
</tr>
<tr>
<td>Botryocladia cf. shanksii</td>
<td>X</td>
</tr>
<tr>
<td>Botryocladia spinulifera</td>
<td>X</td>
</tr>
<tr>
<td>Brachytrichia quoyi</td>
<td></td>
</tr>
<tr>
<td>Bryopsis hypnoides</td>
<td>X</td>
</tr>
<tr>
<td>Bryopsis pinnata</td>
<td></td>
</tr>
<tr>
<td>Bryopsis plumosa</td>
<td>X</td>
</tr>
<tr>
<td>Bryopsis ramulosa</td>
<td>X</td>
</tr>
<tr>
<td>Bryopsis sp.</td>
<td>X</td>
</tr>
<tr>
<td>Callithamnion sp.</td>
<td></td>
</tr>
<tr>
<td>Caloglossum leprieurii</td>
<td>X</td>
</tr>
<tr>
<td>Catenella sp.</td>
<td></td>
</tr>
<tr>
<td>Catenella caespitosa</td>
<td>X</td>
</tr>
<tr>
<td>Caulerpa cupressoides var. flabellata</td>
<td></td>
</tr>
<tr>
<td>Caulerpa cupressoides</td>
<td></td>
</tr>
<tr>
<td>Caulerpa macrophysa</td>
<td>X</td>
</tr>
<tr>
<td>Caulerpa mexicana</td>
<td></td>
</tr>
<tr>
<td>Caulerpa mammilaria</td>
<td>X</td>
</tr>
<tr>
<td>Caulerpa pusilla</td>
<td></td>
</tr>
<tr>
<td>Caulerpa racemosa var. lamourouxii</td>
<td></td>
</tr>
<tr>
<td>Caulerpa racemosa var. occidentalis</td>
<td></td>
</tr>
<tr>
<td>Caulerpa racemosa var. peltata</td>
<td>X</td>
</tr>
<tr>
<td>Caulerpa racemosa</td>
<td>X</td>
</tr>
<tr>
<td>Caulerpa sertularioides</td>
<td>X</td>
</tr>
</tbody>
</table>
Table 1.--continued

<table>
<thead>
<tr>
<th>Taxa</th>
<th>Ponds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Caulerpa sp.</td>
<td></td>
</tr>
<tr>
<td>Caulerpa taxifolia</td>
<td></td>
</tr>
<tr>
<td>Caulerpa verticillata</td>
<td></td>
</tr>
<tr>
<td>Centroceras clavulatum</td>
<td></td>
</tr>
<tr>
<td>Centroceras sp.</td>
<td></td>
</tr>
<tr>
<td>Ceramium brevizonatum</td>
<td></td>
</tr>
<tr>
<td>Ceramium byssoides</td>
<td></td>
</tr>
<tr>
<td>Ceramium nitens</td>
<td></td>
</tr>
<tr>
<td>Ceramium sp.</td>
<td></td>
</tr>
<tr>
<td>Chaetomorpha sp.</td>
<td></td>
</tr>
<tr>
<td>Champia parvula var. prostrata</td>
<td></td>
</tr>
<tr>
<td>Cladophora sp.</td>
<td></td>
</tr>
<tr>
<td>Cladophoropsis macromeres</td>
<td></td>
</tr>
<tr>
<td>Cladophoropsis sp.</td>
<td></td>
</tr>
<tr>
<td>Codium decorticatum</td>
<td></td>
</tr>
<tr>
<td>Codium intertextum</td>
<td></td>
</tr>
<tr>
<td>Codium sp.</td>
<td></td>
</tr>
<tr>
<td>Codium taylorii</td>
<td></td>
</tr>
<tr>
<td>Coelothrix irregularis</td>
<td></td>
</tr>
<tr>
<td>Dasya sp.</td>
<td></td>
</tr>
<tr>
<td>Dasya spinulegra</td>
<td></td>
</tr>
<tr>
<td>Derbesia fastigiata</td>
<td></td>
</tr>
<tr>
<td>Derbesia osterhoutii</td>
<td></td>
</tr>
<tr>
<td>Dictyota cervicornis</td>
<td></td>
</tr>
<tr>
<td>Dictyota indica</td>
<td></td>
</tr>
<tr>
<td>Dictyota mensuralis</td>
<td></td>
</tr>
<tr>
<td>Dictyota pulchella</td>
<td></td>
</tr>
<tr>
<td>Dictyota sp.</td>
<td></td>
</tr>
<tr>
<td>Dictyosphaeria cavernosa</td>
<td></td>
</tr>
<tr>
<td>Digenea simplex</td>
<td></td>
</tr>
<tr>
<td>Fosliella farinosa var. callithamnoides</td>
<td></td>
</tr>
<tr>
<td>Galaxaura lapidescens</td>
<td></td>
</tr>
<tr>
<td>Galaxaura marginata</td>
<td></td>
</tr>
<tr>
<td>Galaxaura rugosa</td>
<td></td>
</tr>
<tr>
<td>Galaxaura sp.</td>
<td></td>
</tr>
<tr>
<td>Galaxaura subverticillata</td>
<td></td>
</tr>
<tr>
<td>Gelidiopsis intricata</td>
<td></td>
</tr>
<tr>
<td>Gelidiopsis planiculis</td>
<td></td>
</tr>
<tr>
<td>Gracilaria mammillaris</td>
<td></td>
</tr>
<tr>
<td>Gracilaria sp.</td>
<td></td>
</tr>
<tr>
<td>Halimeda discoidea</td>
<td></td>
</tr>
</tbody>
</table>
Table 1.--continued

<table>
<thead>
<tr>
<th>Taxa</th>
<th>A</th>
<th>B</th>
<th>BB</th>
<th>C</th>
<th>E &amp; F</th>
<th>G</th>
<th>J</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Halimeda incrassata</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Halimeda monile</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Halimeda opuntia</em></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Halimeda simulans</em></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Halimeda sp.</em></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Halodule wrightii</em></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Halophila decipiens</em></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Herposiphonia pecten-veneris</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Heterosiphonia sp.</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Hinckesia michelliana</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Hydropuntia cornea</em></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Hydroplume sp.</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Hypnea sp.</em></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Hypoglossum temnifolium</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Jania adhaerens</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Laurencia gemmifera</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Laurencia intricata</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Laurencia obtusa</em></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Laurencia papillosa</em></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Laurencia poiteana</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Laurencia scoparia</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Laurencia sp.</em></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Lejolista exposita</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Lobophora variegata</em></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Lomentaria baileyana</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Lynghia majuscula</em></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Lynghia aestuarii</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Lynghia cladophorae</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Lynghia confervoides</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Lynghia polychroa</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Meristella echinocarpum</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Mesophyllum mesomorphum</em></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Murayella periclados</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Neomeris annulata</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Neomeris sp.</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Ochotodes secundiramea</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Oscillatoria acuminata</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Padina pavonica</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Padina sanctae-cruis</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Padina sp.</em></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Penicillus capitatus</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 1.--continued

<table>
<thead>
<tr>
<th>Taxa</th>
<th>A</th>
<th>B</th>
<th>BB</th>
<th>C</th>
<th>E &amp; F</th>
<th>G</th>
<th>J</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Penicillus dumetosus</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Penicillus lanourouxii</em></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Penicillus pyriformis</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Penicillus sp.</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Peyssonella boergesenii</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Phormidium croshyamum</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Phormidium laysanense</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Polysiphonia atlantica</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Polysiphonia havanensis</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Polysiphonia scopularum</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Polysiphonia sp.</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Rhiopcephalus phoenix f. brevifolia</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Rhizoclonia riparium</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Sargassum fluitans</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Sargassum polyceratium var. ovatum</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Sargassum ramifolium</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Sargassum sp.</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Schizothrix calcicola</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Spyridia sp.</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Spyridia aculeata</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Spyridia hypnoides ssp. complanata</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Spyridia filamentos</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Spyridia sp.</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Syringodium filiforme</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Thalassia testudinum</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Trichogloeoopsis pedicellata</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Tricleocarpa oblongata</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Turbinaria tricostata</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Turbinaria turbinata</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Udotea cyathiformis</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Udotea flabellum</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Udotea occidentalis</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Udotea wilsontii</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Ulva rigida</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Ulvena lens</em></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>
Figure 2. The red alga *Coelothrix irregularis* epiphytic on sponge on mangrove hanging root.

Figure 3. The red alga *Acanthophora spicifera* at Pond A (= Cat Cay Bay).
Figure 4. The decumbent form of the brown alga *Lobophora variegata* characteristic of the peat bank habitat.

Figure 5. The green alga *Caulerpa racemosa var. occidentalis* on suspended mangrove root.
Figure 6. The green alga *Caulerpa sertularioides* on suspended mangrove root.

Figure 7. The segmented calcareous green alga *Halimeda* on mangrove peat bank.
Figure 8. The green alga *Caulerpa verticillata* on peat bank.

Figure 9. The green alga *Dictyosphaeris cavernosa* on hanging mangrove root.
Figure 10. The agarophyte red alga *Gracilaria mammillaris* on seagrass bed.

Figure 11. The red foliose *Meristiella echinocarpum* growing on seagrass bed.
Figure 12. Typical giant specimen of the calcareous green alga *Udotea occidentalis* characteristic of rhizophytic seagrass beds in Pelican Cays' ponds.

Figure 13. The green alga *Codium intertextum* on embedded mangrove root.
Figure 14. The red alga *Hydropuntia cornea* (purported to be an aphrodisiac) lying on seagrass bed.

Figure 15. Seamoss drinks (from *Hydropuntia cornea*) bottled commercially in the Lesser Antilles.
Figure 16. The manatee grass *Syringodium filiforme* in Pond B (= Cassiopea Cove).

Figure 17. Population of giant *Avrainvillea asarifolia* in Pond BB (= Small Pond).
Figure 18. Giant fronds of the alga *Bryopsis plumosa* on hanging roots in Pond BB (= Small Pond).

Figure 19. Giant finger-like thalli of the green alga *Avrainvillea digitata* at the north peat bank of Pond C (= Tony's Lagoon).
Figure 20. The giant cell *Caulerpa nummalaria* on hanging root of Pond BB (= Small Pond).

Figure 21. Giant thalli of the brush-like green alga *Penicillus pyriformis* on grass bed at north side of Pond C (= Tony's Lagoon).
Figure 22. The calcareous red alga *Galaxaura subverticillata* (and *Padina* sp.) on suspended root.

Figure 23. The calcareous green alga *Acetabularia* sp. characteristic of hard substrates scattered on seagrass beds.
constant, stable, unpolluted conditions (Littler et al., 1993). Unusual species include foliose fleshy red forms *Gracilaria* and *Meristiella* (Figs. 10 and 11), epiphytic crustose corallines, and the large sand-dwelling green alga *Udotea cf. Occidentalis* (Fig. 12). Three markedly different growth forms of the green algal genus *Codium* spp. (Fig. 13) are also present. Several of the extended flats contain large populations of the commercially valuable red alga *Hydropuntia cornea* (Fig. 14), locally considered an aphrodisiac when prepared in porridge and commercially produced as "Double Trouble Sea Moss" in the Lesser Antilles (Fig. 15).

Pond B (= Cassiopea Cove; Fig. 1) has a shallow *Thalassia testudinum* flat containing a row of *Rhizophora mangle* islets that demarcate and obscure the eastern-facing entrance. The outer, northern margins of these have several large populations of the agar-producers *Gracilaria* sp., *G. mammillaris*, and *Hydropuntia cornea* (Figs. 10, 11, and 14). This elongated south-to-north lagoon is characterized by exceptionally long blades of the seagrasses *Syringodium filiforme* (Fig. 16) and *T. testudinum (>1.0 m).* Ulvalean algal indicators of eutrophication were only observed along the eastern margin, which is otherwise unremarkable. The hanging root populations along the west side, while diverse, contain no unusual algae and are not as impressive as those of Ponds A and C (= Cat Cay Bay, Tony’s Lagoon) or Pond G (= Great Bay).

A small but noteworthy pond (Pond BB = Small Pond, Fig. 1) to the south of Pond C, with a shallow entrance from the west, contains several unique features. Foremost is a spectacular population of giant *Avrainvillea asarifolia* (blades measure 30 cm x 20 cm; Fig. 17) at the south entrance. The feathery green *Bryopsis plumosa* also is exceptionally robust (Fig. 18), reaching 15 cm long here. The hanging roots contain an interesting form of the siphonaceous green *Caulerpa nummularia* (Fig. 20) with convex lower surfaces of the rami, a species that has not been found elsewhere in the Western Atlantic.

Manatee Cay (Fig. 1), at the westward-facing lagoon (Pond C = Tony’s Lagoon), was surveyed in considerable detail. This is by far the most spectacular large habitat in the Pelican Cays. At the north and south of the entrance (cut off by a shallow ribbon reef of the leaf coral *Agaricia tenuifolia*) are uniquely large populations of the red agarophyte *Gracilaria mammillaris* (Fig. 10); several other commercially valuable *Gracilaria* spp. are present as well. A remarkable hanging population of extraordinarily large finger-like *Avrainvillea digitata* (Fig. 19) occurs beginning at the intertidal level of the north side of Pond C. Nearby, to the east, are gigantic brush-like *Penicillus pyriformis* (up to 20 cm in diameter; Fig. 21) among the *Thalassia testudinum* blades. The entire margin of the pond was surveyed, and all indications are of a delicate long-lived community that has undergone little human disturbance, most likely because of the shallow ribbon reef barrier across the mouth (restricting boat access) and the large volume of the pond. Interestingly, large patches of grazed *T. testudinum* during February 1994 and May 1995 indicated the presence of manatees.

Ponds E & F (= Frenchy’s Ponds), on the southwestern region of Fisherman’s Cay (Fig. 1) are rich in sessile invertebrates but tend toward algal domination. Noteworthy algal populations are draped masses of the calcareous green alga *Halimeda opuntia* suspended from mangrove prop roots and mound-like colonies of the paddle-shaped green alga *Avrainvillea asarifolia*. Many of the latter are overgrown by epiphytic *Caulerpa racemosa var. occidentalis* (Fig. 5). Communities on mangrove prop roots indicate little physical disturbance; however, they are not as spectacular as those of Ponds A, C, and G (= Cat Cay Bay, Tony’s Lagoon, or Great Bay).

Pond G (= Great Bay, Fig. 1), at the north of Fisherman’s Cay, has a north-facing entrance and is entered over a broad *Thalassia testudinum* flat containing isolated coral heads with scattered islets of *Rhizophora mangle* along the western sill. Noteworthy features are abundant
standing crops of commercial agarophytes, such as *Gracilaria* sp., *G. mammillaris* (Fig. 10) and the carrageenan-producer *Meristella* echinocarpum (Fig. 11) along the northwestern (outer) border of the lagoon among isolated colonies of the fire coral *Millepora complanata*. Sheet-like *Ulva rigida* blades are prevalent on a nearby islet's roots beneath a bird roosting site. *Avrainvillea* sp. forms a sparse aggregation on the shallow peat bank at the southern margin, beneath which are gigantic specimens of the calcareous rhizophyte *Udotea cf. occidentalis* (Fig. 12) extending in a strip measuring 10 m x 1.0 m. Further back among the shallow roots is an extensive patch of *A. digitata*. Dominant macroalgae on the roots are *Acanthophora spicifera* (Fig. 3), *Galaxaura subverticillata* (Fig. 22), and various forms of *Caulerpa racemosa*. *Coelothrix irregularis* (Fig. 2) forms dramatic neon-blue patches on submerged fallen logs. The benthic community just beneath the mangrove roots lies on a bivalve/*Halimeda*-hash substrate and is dominated by rhizophytic plants (*Thalassia testudinum* and *Caulerpa racemosa* covered by large mats of *Ceranum* sp., *Caulerpa mexicana*, *Caulerpa sertularioides*, and *Acetabularia* sp.; Fig. 23). Dominants on the peat bank among shallow prop roots are the blade-like *Padina gymnospora* (Fig. 22) and the filamentous green *Caulerpa verticillata* (Fig. 8).

In contrast to our observations in 1992-1993, we recently found *GG Ponds* (B2 Ponds), the triple-pond system of the northeast area of Fisherman's Cay (Fig. 1), to be considerably degraded, possibly by sedimentation and boat damage (physical). Colorful sponges and algae cover the mangrove prop roots of both ponds. The western margin is healthy and contains a mangrove root community dominated by algae such as shelf-like *Lobophora variegata* (Fig. 4). Adjacent is a seagrass bed with Bryopsidales, red and green forms of *Laurencia*, *Coelothrix irregularis*, and *Ceranum* sp. grading into a ribbon reef before dropping sharply to lagoon depths (24 m).

Pond J (= Little Cat Bay) contains several unusually large forms of seaweeds, particularly *Udotea cf. Occidentalis* (Fig. 12), and has a shallow seagrass ribbon flat across its mouth. The southern portion outside of the mouth is especially rich in seaweeds that exhibit "gigantism." The mangrove prop roots on the western tip of Little Cat Cay are heavily epiphytized by the weedy red alga *Acanthophora spicifera* (Fig. 3).

In summary, the ponds of the Pelican Cays represent spectacular, high-biodiversity, low-energy environments dominated by photosynthetic and filter-feeding populations. Most are physically delicate and highly susceptible to damage from boat wakes, physical contact (e.g., trampling), sedimentation, and nutrient enrichment. As at Twin Cays (see Taylor et al., 1986), the most delicate and palatable macroalgal forms occur on the suspended mangrove roots, a habitat that is relatively inaccessible to invertebrate grazers. Few of the ephemeral sheet-like and filamentous green algae indicative of eutrophic bird islands or anthropogenically polluted systems are present. This survey and inventory of the remarkable Pelican Cays marine plant life, where coral reef, mangrove, seagrass, and macroalgal ecosystems merge, contributes toward a baseline for conservation and management of this resource.

**ACKNOWLEDGMENTS**

We gratefully acknowledge support and funding from Harbor Branch Oceanographic Institution (HBOI Contribution No. 1332) and the Smithsonian Marine Station at Fort Pierce, Florida (SMSFP Contribution No. 489). Both organizations facilitated the laboratory aspects of this work. Funding for fieldwork was provided by NSF Grant DEBB9400534 and the Caribbean Coral Reef Ecosystem Program of the National Museum of Natural History (CCRE Contribution No. 584).
PHYLUM RHODOPHYTA
RED ALGAE

ORDER: CORALLINALES
FAMILY: CORALLINACEAE

Amphiroa fragilissima (Linnaeus) J.V. Lamouroux 1816: 298.
Basionym: Corallina fragilissima Linnaeus 1758: 806.
Common: lightly attached on hard substrates, often intermixed with other species among seagrasses or in rock crevices; to 60 m deep.
Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

Amphiroa rigida J.V. Lamouroux 1816: 297, pl. 11, fig. 1.
Common: loosely attached to rock or dead coral fragments, often in seagrass beds; to 1 m deep.
Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

Amphiroa sp.

Hydrolithon farinosa f. callithamioides (Foslie) Chamberlain 1983: 351, fig. 20b.
Basionym: Melobesia farinosa f. callithamioides Foslie 1905: 96.
Common: inconspicuous; epiphytic on larger marine plants; to 15 m deep.
Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

Jania adhaerens J.V. Lamouroux 1816: 270.
Common: typically on hard surfaces or epiphytic on other marine plants; to 18(-35) m deep.
Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

Basionym: Lithothamnion mesomorphum Foslie 1901: 5.
Common: typically in shady cracks and crevices or epiphytic on other algae; to 35 m deep.
ORDER: GELIDIALES
FAMILY: GELIDIACEAE

Basionym: Liagora pedicellata M. Howe 1920: 556.
Common: typically on rocks or coral fragments, in spur-and-groove areas seaward of reef crests; to 12 m deep.
Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Western Caribbean, Gulf of Mexico.

ORDER: GELIDIALES
FAMILY: GALAXAURACEAE

Galaxaura marginata (J. Ellis & Solander) J.V. Lamouroux 1816: 264.
Basionym: Corallina marginata J. Ellis & Solander 1786: 115, pl. 22, fig. 6.
Common: in tide pools, on shallow reef flats, or mangrove prop roots, in protected locations; to 10 m deep.
Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

Galaxaura rugosa (J. Ellis & Solander) J.V. Lamouroux 1816: 263.
Gametophytic Stage
Basionym: Corallina rugosa J. Ellis & Solander 1786: 115, pl. 22, fig. 3.
Common: on coral fragments, rocks, or mangrove prop roots, in protected areas; to 1 m deep.
Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

Tetrasporic Stage
Basionym: Galaxaura lapidescens (J. Ellis & Solander) J.V. Lamouroux 1816: 264.
Common: on coral fragments, mangrove prop roots, or rocks, in protected sandy areas; to 12 m deep.
Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

Galaxaura sp.

Galaxaura subverticillata Kjellman 1900: 48, pl. 3, figs. 12–14; pl. 20, fig. 17.
Common: typically on coral fragments or rocks, often in areas of moderate wave surge; to 10 m deep.
Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

*Common*: typically on coral fragments or rocks, in protected sandy areas; to 30 m deep.
*Distribution*: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.


**ORDER: GIGARTINALES**

**FAMILY: CAULACANTHACEAE**

Basionym: *Ulva caespitosa* Withering 1776: 735. [*Catenella repens* (Lightfoot) Batters 1902: 69 (see Parke & Dixon, 1976)]

*Common*: on mangrove prop roots, rocks, or coral fragments; extreme high intertidal.
*Distribution*: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.


**Catenella sp.**


**FAMILY: HYPNEACEAE**

**Hypnea sp.**


**FAMILY: PEYSSONNELIACEAE**


*Common*: on hard substrates, often clinging to mangrove prop roots; intertidal to 40 m deep.
*Distribution*: Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.


**FAMILY: RHIZOPHYLLIDACEAE**

*Ochtodes secundiramea* (Montagne) M. Howe 1920: 583.

*Hypnea secundiramea* Montagne 1842a: 255.

*Common*: typically on hard substrates, in turbulent to moderately turbulent areas; to 15 m deep.
*Distribution*: Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

**FAMILY: SOLIERIACEAE**


*Uncommon*: typically on reef flats tightly adhering to substrate or as mounds in protected pristine waters; to 20 m deep.

*Distribution*: Florida, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean.


**ORDER: GRACILARIALES**

**FAMILY: GRACILARIACEAE**

*Gracilaria marnillaris* (Montagne) M. Howe 1918: 515.


*Uncommon*: on rocks, mangrove prop roots, or other hard surfaces, in protected areas or exposed to moderate wave action; to 18–60 m deep.

*Distribution*: Florida, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean.


*Gracilaria sp.*


*Common*: attached to rubble fragments on protected sand-covered reef flats and turtle-grass beds; to 10 m deep.

*Distribution*: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.


*Hydropuntia sp.*


**ORDER: RHODYMENIALES**

**FAMILY: CHAMPICACEAE**

*Champia parvula var. prostrata* L.G. Williams 1951: 155.

*Uncommon*: typically as inconspicuous epiphyte on other marine plants; to 15 m deep.

*Distribution*: Western Caribbean, Gulf of Mexico.

**FAMILY: LOMENTARIACEAE**

*Lomentaria baileyana* (Harvey) Farlow 1876: 698.
Basionym: *Chylocladia baileyana* Harvey 1853: 185, pl. 20, fig. C.
*Uncommon*: epiphytic on other plants; to 33 m deep.
*Distribution*: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

**FAMILY: RHODYMENIACEAE**

*Botryocladia shanksii* E.Y. Dawson 1962: 385, pl. 1, fig. a; pl. 2, figs. a, b; pl. 5, fig. b.
*Uncommon*: on rock or other hard surfaces in shaded habitats; intertidal to 55 m deep.
*Distribution*: Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean.

*Locally abundant*: inconspicuous; typically mixed in turf communities just behind reef crest on carbonate substrates; intertidal to 49 m deep.
*Distribution*: Florida, Greater Antilles, Lesser Antilles, Western Caribbean.

*Coeothrix irregularis* (Harvey) Bergesen 1920: 389, figs. 373, 374.
Basionym: *Cordylecladia irregularis* Harvey 1853: 156.
*Common*: forming sparse to dense mats in shaded cracks or crevices or under ledges, often on mangrove prop roots; intertidal to 10 m deep.
*Distribution*: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

Basionym: *Sphaerococcus intricata* C. Agardh 1822 [1822–1823]: 333.
*Uncommon*: forming large mats on mangrove prop roots or other hard surfaces; intertidal to 10 m deep.
*Distribution*: Florida, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

*Common*: inconspicuous; on hard surfaces, often as tufts on mangrove prop roots; to 1 m deep.
*Distribution*: Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean.
ORDER: CERAMIALES
FAMILY: CERAMIACEAE

Anotrichium barbatum (J.E. Smith) Nägeli 1862: 398.

Rare: inconspicuous; occurring on stones or other hard objects, often epiphytic on calcareous algae or as translucent tufts on mangrove prop roots; to 30 m deep.

Distribution: Florida, Lesser Antilles, Western Caribbean.


Antithamnion sp.


Centroceras clavulatum (C. Agardh) Montagne 1846: 140. [var. clavulatum]
Basionym: Ceramium clavulatum C. Agardh 1822: 2.

Common: as mats, drooping clusters, or bushy tufts on rocks, ropes, or mangrove prop roots; intertidal zone to 5 m deep.

Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.


Centroceras sp.


Ceramium brevizonatum var. caraibicum H.E. Petersen & Börgesen in Börgesen 1924: 29, fig. 11.

Common: on dead corals or epiphytic on other algae; to 1 m deep.

Distribution: Florida, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.


Ceramium flaccidum (Kützing) Ardisson 1871: 40.
Basionym: Hormoceras flaccidum Kützing 1862: 21, pl. 69, figs. a–d. — Synonyms: Ceramium byssoidenum Harvey 1853: 218, nom. illeg.; C. transversale Collins & Harvey 1917: 145, pl. 5, figs. 29–31 (see Womersley 1978).

Common: epiphytic on seagrasses or coarser algae; to 22 m deep.

Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.


Ceramium nitens (C. Agardh) J. Agardh 1851 [1851–1863]: 130.
Basionym: Ceramium rubrum var. nitens C. Agardh 1824: 136.

Common: on dead corals or epiphytic on other algae; to 10 m deep.

Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles.

*Ceramium* sp.

Uncommon: inconspicuous; epiphytic or growing as fine low turf on mangrove prop roots; lower intertidal to 32 m deep.
Distribution: Western Caribbean.

*Spyridia filamentosa* (Wulfen) Harvey in W. Hooker 1833: 337.
Basionym: *Fucus filamentosus* Wulfen 1803: 64.
Common: on solid substrates in calm protected areas; to 8 m deep.
Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

*Spyridia hypnoides* (Bory de Saint-Vincent) Papenfuss 1968: 281. [subsp. hypnoides]
Basionym: *Thamnophora hypnoides* Bory de Saint-Vincent 1834: 175.
Uncommon: in calm protected areas; to 8 m deep.
Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

Common: in calm protected areas, on mangrove roots, docks, and other solid structures; intertidal to 3 m deep.
Distribution: Lesser Antilles, Southern Caribbean, Western Caribbean.

*Spyridia* sp.

**FAMILY: DASYACEAE**

*Dasya spinuligera* Collins & Hervey 1917: 130, pl. 4, figs. 24, 25.
Uncommon: on sponges or mangrove peat in protected areas; to 40 m deep.
Distribution: Bahamas, Greater Antilles, Lesser Antilles, Western Caribbean.
Dasyn spp.


FAMILY: DELESSERIACEAE

Caloglossa leprieurii (Montagne) G. Martens 1869: 234, 237.
Basionym: Delesseria leprieurii Montagne 1840: 196, pl. 5, fig. 1.
Common: inconspicuous; on mangrove prop roots, rocks, or other hard substrates, in protected areas; upper intertidal.
Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

Hyphoglossum tenuifolium (Harvey) J. Agardh 1898: 186.
Basionym: Delesseria tenuifolia Harvey 1853: 97, pl. 22.
Locally common: typically epiphytic or on rocks and coral fragments of deep sand plains; 45–60 m deep.
Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean.

FAMILY: RHODOMELACEAE

Acanthophora spicifera (Vahl) Börjesen 1910: 201, figs. 18, 19.
Basionym: Fucus spicifera Vahl 1802: 44.
Common: early colonizer on dead coral fragments, wood substrates, pebbles, or other organisms in calm waters; intertidal to 8 m deep.
Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

Bostrychia tenella (J.V. Lamouroux) J. Agardh 1863 [1851–1863]: 869.
Common: forming tightly adhering mats on rocks, seawalls, or mangrove prop roots; upper intertidal.
Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.
**Bostrychia sp.**


**Digenea simplex** (Wulfen) C. Agardh 1822 [1822–1823]: 389.


Common: typically on hard surfaces, often overgrown by filamentous epiphytes, abundant in heavy-surf conditions, dwarfed and denuded when buried by sand; lower intertidal to 20 m deep.

Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.


**Herposiphonia pecten-veneris** (Harvey) Falkenberg 1901: 315.

Basionym: *Polysiphonia pecten-veneris* Harvey 1853: 46, pl. 16.

Common: on hard surfaces or epiphytic on larger plants and animals; to 2 m deep.

Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.


**Herposiphonia sp.**


**Laurencia gemmifera** Harvey 1853: 73, pl. 18.b.

Uncommon: typically on hard surfaces of shallow reef flats or attached to dead coral rubble on shallow sand plains; to 20 m deep.

Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.


**Laurencia intricata** J.V. Lamouroux 1813: 131, pl. 9, figs. 8, 9.

Common: typically on rocks, shells, or coral fragments in protected sandy areas; to 3 m deep.

Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.


**Laurencia obtusa** (Hudson) J.V. Lamouroux 1813: 130.


Common: typically in shallow wave-dashed habitats or areas of strong currents; to 8 m deep.

Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.


**Laurencia papillosa** (C. Agardh) Greville 1830: 52.

Basionym: *Chondria papillosa* C. Agardh 1822 [1851–1863]: 344.

Common: typically on hard surfaces exposed to moderate wave action; intertidal to 7 m deep.
Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.


**Laurencia poiteaudi** (J.V. Lamouroux) M. Howe 1918: 518.

**Basionym:** *Fucus poiteaudi* J.V. Lamouroux 1805: 63, pl. 31, figs. 2, 3.

**Common:** typically abundant in wave-surge areas attached to rocks near base of gorgonian corals; often found in deep spur-and-groove areas on reefs; to 40 m deep.

**Distribution:** Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.


**Laurencia filiformis** (C. Agardh) Montagne 1845: 125.

**Basionym:** *Chondria filiformis* C. Agardh 1822 [1822-1823]: 358. — **Synonym:** *Laurencia scoparia* J. Agardh 1852 [1851-1863]: 746 (see Rodríguez de Rios & Saito 1982).

**Common:** on hard substrates or mangrove prop roots; to 2 m deep.

**Distribution:** Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.


**Laurencia sp.**


**Murrayella periclados** (C. Agardh) F. Schmitz 1893: 227, footnote.

**Basionym:** *Hutchinsia periclados* C. Agardh 1828: 101.

**Common:** on mangrove prop roots, rocks, pier pilings, or seawalls in protected locations; upper intertidal.

**Distribution:** Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.


**Common:** typically on bedrock or other hard surfaces; lower intertidal to 1 m deep.

**Distribution:** Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.


**Polysiphonia havanensis** Montagne 1837: 352.

**Common:** typically on hard surfaces or epiphytic on larger algae; to 1 m deep.

**Distribution:** Florida, Bahamas, Greater Antilles, Lesser Antilles, Western Caribbean, Gulf of Mexico.

**Pelican Cays Ponds:** J [Little Cat Cay, Little Cat Bay] D.&M. Littler 30213 (US).
Polysiphonia scopulorum Harvey 1855: 540. [var. scopulorum]

Uncommon: inconspicuous; epiphytic on larger algae or seagrasses, in shallow calm waters; to 3 m deep.

Distribution: Western Caribbean.

Polysiphonia sp.

---

**Phylum Phaeophyta**

**Brown Algae**

**Order: Ectocarales**

**Family: Ectocarpaceae**

Hincksia mitchelliae (Harvey) P.C. Silva in Silva et al. 1987: 73.

Basionym: Ectocarpus mitchelliae Harvey 1852: 142, pl. 12, G.

Common: inconspicuous; on rocks or epiphytic on other algae, often found as brown fuzz on mangrove prop roots; less than 1 m deep.

Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

**Order: Dictyotales**

**Family: Dictyotaceae**

Dictyota cervicornis Kützing 1859: 11, pl. 24, fig. 2.

Common: attached to rocks, shell fragments, or large plants in sandy shallow areas; to 3 m deep.

Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.


Synonym: Dictyota indica Kützing 1859: 8, pl. 17, fig. 1, sensu Vickers 1908 (see Höning et al. 1992).

Note: according to Höning et al. (1992: 58) this entity previously was identified as Dictyota indica Kützing 1859: 8, pl. 17, fig. 1, sensu Vickers 1908: 39, pl. 18. However, because the type of D. indica is synonymous with D. cervicornis, a new name was assigned.

Common: on rocks, other hard substrates, or mangrove peat; most commonly found in shallows around mangrove islands; to 3 m deep.
Distribution: Florida, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.


Basionym: *Dictyota dichotoma* var. *menstrualis* Hoyt 1927: 616.

**Common:** typically on small rocks, sponges, or coral fragments in sandy areas; to 30 m deep.

**Distribution:** Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.


*Dictyota pulchella* Hömig & Schnetter 1988: 285, fig. 7.

**Common:** on dead coral, mangrove peat, shell fragments, wood, or epiphytic on seagrasses and coarse algae in shallow areas; to 70 m deep.

**Distribution:** Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.


*Dictyota sp.*


Basionym: *Dictyota variegata* J. V. Lamouroux 1809a: 40.

**LOBOPHORA VARIEGATA HAS THREE DISTINCT FORMS DEPENDING ON DEPTH AND HABITAT CONDITIONS.**

**DECUMBENT FORM**

**Common:** in Pelican Cays on both Peat Banks and mangrove roots, in shaded shallow areas or in deep water habitats with moderate herbivory; often dominant plant at 100 m deep; to 120 m deep.

**CRUST FORM**

**Common:** in Pelican Cays on mangrove roots, tightly adherent on dead coral, mangrove prop roots, or sunken logs in shallow subtidal areas where grazing is intense; to 30 m deep.

**RUFFLED FORM**

**Common:** in Pelican Cays lying free in *Thalassia* beds, in calm, shallow waters with low fish grazing; to 8 m deep.

**Distribution:** Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

*Common*: on rocks, corals, or mangrove prop roots; found in sheltered or moderately wave-exposed areas; lower intertidal to 20 m deep.
*Distribution*: Florida, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

**Padina sanctae-crucis** Børgeesen 1914a: 45, figs. 27, 28 [continuous pagination: 201, figs. 153, 154].
*Common*: typically on rocks, shells, or dead coral on shallow reef flats; to 5 m deep.
*Distribution*: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

**Padina sp.**

**Sargassum fluitans** (Børgeesen) Børgeesen 1914a: 66 (footnote) [continuous pagination: 222].
Basionym: *Sargassum hystrix var. fluitans* Børgeesen 1914b: 11, fig. 8.
*Common*: typically pelagic, floating in large clumps or rafts; major component of beach drift; one of two species characteristic of the Sargasso Sea.
*Distribution*: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

**Sargassum polyceratium var. ovatum** (Collins) W.R. Taylor 1928: 129, pl. 18, figs. 7, 10; pl. 19, fig. 16. Basionym: *Sargassum vulgare f. ovatum* Collins 1901: 248.
*Common*: typically on rocks in moderately turbulent habitats, often behind reef crest in rubble-pavement zone; lower intertidal to 14 m deep.
*Distribution*: Florida, Bahamas, Greater Antilles, Western Caribbean.

**Sargassum ramifolium** Kützing 1861: 10, pl. 32, fig. 1a, 1b.
*Uncommon*: on rocks or coral fragments, often around mangrove islands; 1–3 m deep.
*Distribution*: Florida, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

**Sargassum sp.**

**Turbinaria tricostata** E.S. Barton 1891: 218, pl. 54, figs. 3–4.
*Common*: typically on rocks or dead coral fragments; in shallow areas on reef crest in strong currents or heavy wave action; lower intertidal to 1 m deep.
Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.


**Turbinaria turbinata** (Linnaeus) Kuntze 1898: 434.

*Common:* typically adhering tightly to hard substrates immediately behind reef crest in areas of strong turbulence; to 5 m deep.

*Distribution:* Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.


---

**PHYLUM CHLOROPHYTA**

**GREEN ALGAE**

**ORDER: ULVALES**

**FAMILY: ULVACEAE**

*Ulva rigida* C. Agardh 1823 [1822–1823]: 410.

*Uncommon:* near bird roosting sites, typically on hard surfaces, in areas of active water motion; intertidal to 2 m deep.

*Distribution:* Florida, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean.


**FAMILY: ULVELLACEAE**

*Ulvella lens* P Crouan & H. Crouan 1859: 288, pl. 22, fig. E.

*Common:* inconspicuous; on shells, hydroids, or epiphytic on other marine plants, commonly occurring on *Ventricaria ventricosa*; intertidal to 2 m deep.

*Distribution:* Florida, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.


---

**ORDER: CLADOPOPHORALES**

**FAMILY: ANADYOMENACEAE**


*Common:* on hard substrates, sponges, or mangrove prop roots; lower intertidal to 30 (–79) m deep.

*Distribution:* Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean.

**Anadyomene sp.**


**Chaetomorpha sp.**


**Cladophora spp.**


**Rhizoclonium riparium** (Roth) Kützing *ex* Harvey 1849 [1846–1851]: pl. 238.

Basionym: *Conferva riparia* Roth 1806: 216.

*Common*: typically on rocks, pebbles, or other hard substrates; often tangled among other species; intertidal to 1 m deep.

*Distribution*: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.


**FAMILY: SIPHONOCLADACEAE**

**Cladophoropsis macromeres** W.R. Taylor 1928: 64, pl. 4, figs. 15, 16.

*Common*: forming cushion-like clumps in calm shallow habitats or tangled with other algae; to 5 m deep.

*Distribution*: Florida, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean.


**Cladophoropsis sp.**


**Dictyosphaeria cavernosa** (Forsskål) Borgesen 1932: 2, pl. 1, fig. 1.


*Common*: typically lightly attached to rocks or dead coral heads; often forming extensive mats; to 40 m deep.

*Distribution*: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.


Basionym: *Valonia ventricosa* J. Agardh 1837: 96.

*Common*: in cracks and crevices on hard substrates or scattered among other algae on mangrove prop roots; to 80 m deep.

*Distribution*: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

ORDER: BRYOPSIDALES
FAMILY: BRYOPSIDACEAE

*Bryopsis hypnoides* J.V. Lamouroux 1809b: 135, pl. 1, figs. 2a, 2b [also 1809a: 333].
*Common:* on mangrove prop roots or other hard substrates; lower intertidal to 1 m deep.
*Distribution:* Florida, Bahamas, Greater Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

*Bryopsis pennata* J.V. Lamouroux 1809a: 333. [var. *pennata*]
*Common:* on mangrove prop roots or other solid substrates in calm shallow waters; lower intertidal to 5 m deep.
*Distribution:* Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

*Bryopsis plumosa* (Hudson) C. Agardh 1823 [1822–1823]: 448.
*Basionym:* *Ulva plumosa* Hudson 1778: 571.
*Common:* typically on hard substrates, in tidepools, protected habitats, or in moderate surf behind reef crest; intertidal to 1 m deep.
*Distribution:* Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

*Bryopsis ramulosa* Montagne 1842b: 16, pl. 3III, fig. 2.
*Uncommon:* inconspicuous; on mangrove prop roots or other hard surfaces; intertidal to 1 m deep.
*Distribution:* Florida, Bahamas, Greater Antilles, Lesser Antilles, Western Caribbean.

*Bryopsis* sp.

*Uncommon:* inconspicuous, typically epiphytic on other marine plants; intertidal to 1 m deep.
*Distribution:* Florida, Greater Antilles, Western Caribbean.

*Derbesia osterhoutii* (L. Blinks & A. Blinks) Page 1970: 375, figs. 1–6. [Halicystis stage]
*Basionym:* *Halicystis osterhoutii* L. Blinks & A. Blinks 1931: 389, pls. 22, 23, figs. 1–12, text fig. 18.
*Common:* typically growing on crustose coralline algae such as *Sporolithon* or *Hydrolithon*, in shaded cracks and crevices; to 18 m deep.
Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

**FAMILY: CODIACEAE**

*Codium decorticatum* (Woodward) M. Howe 1911: 494.


Common: on rock or other firm objects in protected areas; lower intertidal to 15 m deep.

Distribution: Florida, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.
Pelican Cays Ponds: A [Cat Cay, Cat Cay Bay] D.&M. Littler 30094 (US);

*Codium sp.*

Rare: typically adhering to rock or other hard surfaces, seasonally (summer) occurring off the east coast of Florida; to 20 m deep.

Distribution: Florida.

*Codium intertextum* Collins & Hervey 1917: 54.

Common: typically tightly adhering to rock or other solid surfaces; often forming distinct zone near low-tide mark; to 20 m deep.

Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.
Pelican Cays Ponds: A [Cat Cay, Cat Cay Bay] D.&M. Littler 30073 (US);

*Codium taylorii* P.C. Silva 1960: 510, pl. 112, 118b, 119, 120a, 120b.

Common: on mangrove prop roots, reef rubble, or other hard surfaces; to 10(-60) m deep.

Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

**FAMILY: CAULERPACEAE**

*Caulerpa cupressoides* (Vahl) C. Agardh 1817: 23. [var. cupressoides]

Basionym: *Fucus cupressoides* Vahl 1802: 38.

Common: on sandy bottoms or in mangrove muds; to 3 m deep.

Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

*Caulerpa cupressoides* var. *flabellata* Børjesen 1907: 368, figs. 18, 19.

Uncommon: on sedimentary bottoms, anchored in fine silty sediments of mangrove lakes; to 3 m deep.

Distribution: Florida, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.
Caulerpa macrophysa (Sonder ex Kützing) G. Murray 1887: 38.
Basionym: Chauvinia macrophysa Sonder ex Kützing 1857: 6, pl. 15.

Common: typically forming intertwined mats tightly attached to rock or other solid substrates, often in areas of moderate surf; intertidal to 20 m deep.
Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

Caulerpa mexicana Sonder ex Kützing 1849: 496.

Common: attached to small coral fragments or pebbles on sand or mud bottoms, in lagoons, mangroves, or seagrass beds; to 15 m deep.
Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

Caulerpa nummularia Harvey ex J. Agardh 1873: 38.

Uncommon: in low-light habitats such as shaded mangrove prop roots or under ledges in reef habitats; to 84 m deep.
Distribution: Western Caribbean (Pelican Cays).

Caulerpa pusilla (Kützing) J. Agardh 1873: 6.
Basionym: Chauvinia pusilla Kützing 1849: 500.

Rare: inconspicuous; typically forming mats or small aggregations on deep sand plains; to 40 m deep.
Distribution: Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean.

Caulerpa racemosa (Forsskål) J. Agardh 1873: 35. [var. racemosa]

Common: forming intertwined mats tightly adhering to rocks, in moderately heavy surf areas or in calm lagoons and bays, often present in seagrass beds; intertidal to 2 (~50) m deep.
Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

Caulerpa racemosa var. lamourouxii (Turner) Weber-van Bosse 1898: 369, pl. 32, figs. 1–4.

Uncommon: on silty substrates, generally in shallow shaded habitats such as mangrove lakes; to 30 m deep.
Distribution: Bahamas, Greater Antilles, Lesser Antilles, Western Caribbean.
Caulerpa racemosa var. occidentalis (J. Agardh) Børgesen 1907: 379, figs. 28, 29.
Basionym: Caulerpa chemnitzia var. occidentalis J. Agardh 1873: 37.

*Common:* adhering to mangrove prop roots or other hard surfaces in calm waters; to 3 m deep.

Caulerpa racemosa var. peltata (J.V. Lamouroux) Eubank in Stephenson 1944: 349.
Basionym: Caulerpa peltata J.V. Lamouroux 1809a: 332.

*Common:* on shaded mangrove prop roots, in dark crevices, or under ledges; to 5 m deep.

Caulerpa sertularioides (S. Gmelin) M. Howe 1905: 576. [f. sertularioides]
Basionym: Fucus sertularioides S. Gmelin 1768: 151, pl. 15, fig. 4.

*Common:* forming large stands in shallow sandy areas or on mangrove prop roots, often present in seagrass beds; to 10 m deep.

Caulerpa taxifolia (H. West) C. Agardh 1817: 22.
Basionym: Fucus taxifolia H. West in Vahl 1802: 36.

*Uncommon:* growing in sand on reef flats or in fine sediments adjacent to mangrove islands in protected or moderately wave-exposed areas; to 15 m deep.

Caulerpa verticillata J. Agardh 1847: 6. [as “verticillatam”]

*Common:* as large aggregations on stable substrates, mangrove prop roots, or peat; often present as an understory in seagrass beds; to 30 m deep.

Caulerpa sp.
**FAMILY: UDOTEACEAE**

*Avrainvillea asarifolia* Börgesen 1909: 34, fig. 4 in text, pl. 3. [f. asarifolia]

*Common:* typically in lagoons or sand pockets between coral heads on fore-reef slopes; to 20 m deep.

*Distribution:* Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.


*Avrainvillea digitata* D.S. Littler & M.M. Littler 1992: 379, fig. 3.

*Common:* on carbonate sediments or mangrove peat, growing as large mats in shallow waters (<1 m), often interspersed among *Thalassia testudinum* or at the edges of mangrove islands; deeper forms (>3 m) have narrow uprights with bluntly pointed apices; Puerto Rican specimens have more club-shaped uprights; to 5 m deep.

*Distribution:* Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean.


*Common:* on nutrient-rich organic substrates, in interior lagoons of mangrove islands; to 2 m deep.

*Distribution:* Florida, Bahamas, Greater Antilles, Lesser Antilles, Western Caribbean, Gulf of Mexico.


*Avrainvillea sp.*


*Halimeda discoidea* Decaisne 1842: 102.

*Common:* on carbonate or mangrove peat, as large mats in shallow waters (<1 m), often interspersed among *Thalassia testudinum* or at the edges of mangrove islands, deeper forms (>3 m) have narrow uprights with bluntly pointed apices; Puerto Rican specimens have more club-shaped uprights; to 5 m deep.

*Distribution:* Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.


*Basionym:* *Corallina incrassata* J. Ellis 1768: 408, pl. 17, figs. 20–27.

*Common:* associated with seagrasses or on shallow sand flats; to 12 (–65) m deep.

*Distribution:* Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.


*Halimeda monile* (J. Ellis & Solander) J.V. Lamouroux 1816: 306.

*Basionym:* *Corallina monile* J. Ellis & Solander 1786: 110, pl. 20, fig. c.

*Common:* on sand flats and among seagrasses; to 30 m deep.

*Distribution:* Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

**Halimeda opuntia** (Linnaeus) J.V. Lamouroux 1816: 308. [f. opuntia]
Basionym: *Corallina opuntia* Linnaeus 1758: 805.

*Common*: tightly adhering to, and forming patches on, shallow reef crests, as mounds in sand or *Thalassia* beds; to 25 m deep.
*Distribution*: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

*Halimeda simulans* M. Howe 1907: 503, pl. 29.

*Common*: often associated with mangrove peat communities or other nutrient-rich substrates; to 8 m deep.
*Distribution*: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

*Halimeda sp.*


*Penicillus capitatus* Lamarck 1813: 299.

*Common*: in calm lagoons and bays on mud or sand bottoms; often intermixed with seagrasses or among mangrove prop roots; to 12 m deep.
*Distribution*: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

*Penicillus dumetosus* (J.V. Lamouroux) Blainville 1834: 553.
Basionym: *Nesaea dumetosa* J.V. Lamouroux 1816: 259, pl. 8, fig. 3a, 3b.

*Common*: in sandy protected areas, often intermixed with seagrasses; to 15 m deep.
*Distribution*: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

*Penicillus lamourouxii* Decaisne 1842: 97.

*Common*: individuals widely scattered, often intermixed with seagrasses, in calm lagoons and bays on mud or sand bottoms; to 12 m deep.
*Distribution*: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.
Penicillus pyriformis A. Gepp & E. Gepp 1905: 1, pl. 468, fig. 1. [f. pyriformis]

Common: on sandy bottoms in calm lagoons and bays; to 30 m deep.
Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

Penicillus sp.


Rhipocephalus phoenix f. brevifolius A. Gepp & E. Gepp 1911: 95, pl. 31, figs. 184–186.

Common: in sandy or silty areas, most commonly occurring in shallow back-reef habitats; to 20 m deep.
Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

Udotea cyathiformis Decaisne 1842: 106. [f. cyathiformis]

Common: in many environments from shallow mangrove peat to deep sand plains; to 30 m deep.
Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

Udotea flabellum (J. Ellis & Solander) M. Howe 1904: 94.

Common: widespread; occurring in sandy areas or seagrass beds; to 10 m deep.
Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

Udotea occidentalis A. Gepp & E. Gepp 1911: 127, pl. 2, figs. 18, 22a, 22b; pl. 7, figs. 63–65.

Rare: in shallow sandy areas; to 10 m deep.
Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

Udotea wilsonii A. Gepp, E. Gepp & M. Howe in Gepp & Gepp 1911: 130, 144, pl. 7, fig. 66; pl. 3, figs. 67, 68. [as ‘wilsoni’]

Locally abundant: in organically rich silt or on sand plains, often growing with many thalli in close proximity due to stolonous clonal reproduction; to 18 m deep.
Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.
ORDER: DASYCLADALES
FAMILY: DASYCLADACEAE

Neomeris annulata Dickie 1874: 198.
Common: abundant on mangrove prop roots, coral fragments, or rocks in shallow sandy areas; intertidal to 30 m deep.
Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean.

Neomeris sp.

FAMILY: POLYPHYSEACEAE

Acetabularia sp.

PHYLUM: CYANOPHYTA
BLUE-GREEN ALGAE

ORDER: OSCILLATORIALES
FAMILY: OSCILLATORIACEAE

Lyngbya cf. aestuarii (Martens) Liebm 1839: 492.
Common: as spreading mats or clumps in calm waters, appearing as wooly tufts; intertidal to 2 m deep.
Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

Lyngbya cf. cladophorae Tilden 1910: 116, pl. 5, fig. 34.
Uncommon: on mangrove roots or other firm objects in calm waters; intertidal to 1 m deep.
Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

Lyngbya confervoides C. Agardh 1824: 73.
Common: on stone or other hard surfaces, mangrove prop roots, or epiphytic on seagrasses or larger seaweeds; to 2 m deep.
Distribution: Florida, Lesser Antilles, Western Caribbean, Gulf of Mexico.
**Lyngbya polychroa** (Meneghini) Rabenhorst 1847: 83.

*Common:* epiphytic on other marine plants, often as long dark undulating masses in mangrove lagoons; intertidal to 2 m deep.

*Distribution:* Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.


**Oscillatoria acuminata** Gomont 1893: 247, pl. 7, fig. 12.

*Common:* inconspicuous, binding surface layer of fine sediments in mangrove lakes or calm bays; to 3 m deep.

*Distribution:* Western Caribbean.


**Phormidium laysanense** Lemmerman 1905: 619, pl. 7, figs. 4, 5.

*Uncommon:* growing over other algal species or as finger-like projections from sand with basal filaments clinging to sand grains; to 2 m deep.

*Distribution:* Greater Antilles, Lesser Antilles, Western Caribbean, Southern Caribbean.


*Common:* forming hard button-like mounds on firm surfaces such as rocks, mangrove prop roots, or dead coral; to 2 m deep.

*Distribution:* Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean.


**Schizothrix calcicola** (C. Agardh) Gomont 1890: 352.

*Basionym:* *Oscillatoria calcicola* C. Agardh 1812 [1810–1812]: 37.

*Common:* typically on rocks or other hard surfaces on shallow reef flats; to 2 m deep.

*Distribution:* Florida, Lesser Antilles, Southern Caribbean, Western Caribbean.


**ORDER: STIGONEMATALES**

**FAMILY: MASTIGOCLADACEAE**

**Brachytrichia quoyi** (C. Agardh) Bornet & Flahault 1886: 373.

*Basionym:* *Nostoc quoyi* C. Agardh 1824: 22.

*Uncommon:* epiphytic on other marine plants or on mangrove prop roots, common on pilings and breakwaters, found on rock, wood, or other firm substrates; intertidal.

*Distribution:* Gulf of Mexico, Florida, Greater Antilles, Lesser Antilles.

PHYLUM MAGNOLIOPHYTA
FLOWERING PLANTS (SEAGRASSES)

ORDER: HYDROCHARITALES
FAMILY: HYDROCHARITACEAE

Halophila decipiens Ostenfeld 1902: 260, with fig.
Common: in calm waters on soft sand or fine sedimentary bottoms; to 30 m deep.
Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

Thalassia testudinum Banks ex König 1805: 96.
Common: abundant, conspicuous; forming extensive meadows on shallow sandy or muddy bottoms; lower intertidal to 20 m deep.
Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

FAMILY: CYMODOCEACEAE

Halodule wrightii Ascherson 1868: 19.
Common: on sandy, soft, muddy bottoms; lower intertidal to 5 m deep.
Distribution: Florida, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.

Common: widely distributed, forming dense stands in sand or fine mud sediments; to 25 m deep.
Distribution: Florida, Bahamas, Greater Antilles, Lesser Antilles, Southern Caribbean, Western Caribbean, Gulf of Mexico.
REFERENCES

Abbott, I. A., and M. S. Doty

Adey, W. H.

Agardh, C. A.

Agardh, J. G.

Ardissone, F.

Areschoug, J. E.

Ascherson, P.

Baldock, R. N.

Barton, E. S.
Batters, E. A. L.  

Blainville, H. M. D. de  

Blinks, C.  

Blinks, L. R., and A. H. Blinks  

Børgesen, F.  

1909. The species of *Avrainvillea* hitherto found on the shores of the Danish West Indies. *Videnskabelige Meddelelser fra Dansk naturhistorisk Forening i Kjøbenhavn* 1908: 27–44.

1910. Some new or little known West Indian Florideae. II. *Botanisk Tidskrift* 30: 177–207.


1914b. The species of *Sargassum* found along the coasts of the Danish West Indies with remarks upon the floating forms of the Sargasso Sea. Pages 1–20. In: H. F. E. Jungersen and E. Warming (eds.), *Mindeskrift i Anledning af Hundredeaarret for Japetus Steenstrup Fødsel*. Art. 32.


Bornet, É., and C. Flahault  

Bory de Saint-Vincent, J. B. G. M.  

Chamberlain, Y. M.  

Collins, F. S.  
Collins, F. S., and A. B. Hervey

Crouan, P. L., and H. M. Crouan

Decaisne, J.

Dickie, G.

Ellis, J.

Falkenberg, P.

Farlow, W. G.

Foslie, M.

Fredericq, S., and J. N. Norris

Gabrielson, P. W., and D. P. Cheney

Gepp, A., and E. A. Gepp

Gomont, M.

Greville, R. K.

Grunow, A.
Harvey, W. H.


1855. Some account of the marine botany of the colony of Western Australia. *Transactions of the Royal Irish Academy* 22(Science): 525–566.

Hohenacker, R. F.

Hooker, W. J.

Hörnig, I., and R. Schnetter

Hörnig, I., R. Schnetter, W. F. Prud'homme van Reine, et al.

Howe, M. A.


Hoyt, W. D.

Hudson, W.

Huisman, J. M., and R. A. Townsend

Joly, A. B., and E. C. de Oliveira
Jürgens, G. H. B.  

Kapraun, D. F., and J. N. Norris  

King, R. J., C. F. Puttock, and R. S. Vickery  

Kjellman, F. R.  

König, C. K. D. E.  

Kuntze, O.  

Kützing, F. T.  


Lamarré, L. B. de  

Lamouroux, J. V. F.  
1805. *Dissertations sur plusieurs espèces de Fucus* ... Agen. xxiv + 83 [85 errata] pp., XXXVI pls.


Lapointe, B. E., M. M. Littler, and D. S. Littler  

Lemmermann, E.  

Linnaeus, C.  

Littler, D. S., and M. M. Littler


Littler, D. S., M. M. Littler, and B. L. Brooks

Littler, D. S., M. M. Littler, K. E. Bucher, and J. N. Norris

Littler, M. M., D. S. Littler, and B. E. Lapointe

Littler, M. M., P. R. Taylor, D. S. Littler, R. H. Sims, and J. N. Norris

Littler, M. M., P. R. Taylor, D. S. Littler, R. H. Sims, and J. N. Norris

Martens, G. von

Meneghini, G.

Montagne, C.


Murray G.
Nägeli, C.

Norris, J. N., and K. E. Bucher

Oliveira, E. C. de

Olsen, J. L., and J. A. West

Ostenfeld, C. H.

Page, J. Z.

Papenfuss, G. F.

Parke, M. W., and P. S. Dixon

Rabenhorst, L.

Reinke, J.

Rodriguez de Rios, N., and Y. Saito

Roth, A. W.

Rützler, K., and I. G. Macintyre (eds.)

Schmitz, F.

Schnetter, R., I. Hörnig, and G. Weber-Peukert

Searles, R. B., and C. W. Schneider
Silva, P. C.


Silva, P. C., E. G. Meñez, and R. L. Moe

Smith, J. E.

Stephenson, T. A.

Taylor, P. R., M. M. Littler, and D. S. Littler

Taylor, W. R.

Taylor, W. R., and I. A. Abbott

Tilden, J. E.

Tsuda, R. T., and C. J. Dawes

Turner, D.

Vahl, M.

Williams, L. G.

Withering, W.
1776. A botanical arrangement of all the vegetables naturally growing in Great Britain ... M. Swinney: Birmingham. [i]–xviii, xvii–xcvi + 838 pp., XII pls.

Womersley, H. B. S.

Woodward, T. J.
Wulfen, F. X.

Wynne, M. J.