A Guide to Common Florida Salt Marsh
and Mangrove Vegetation

JEDFREY M. CARLTON

Florida Department of Natural Resources
Marine Research Laboratory

Number 6 March 1975
The Florida Department of Natural Resources Marine Research Laboratory publishes two series, *Memoirs of the Hourglass Cruises* and *Florida Marine Research Publications*. The latter, published at irregular intervals and numbered consecutively, supersedes the following Marine Research Laboratory publications:

- *Professional Papers Series*
- *Technical Series*
- *Special Scientific Reports*
- *Educational Series*
- *Leaflet Series*
- *Salt Water Fisheries Leaflet Series*

The *Publications* include articles, monographs, bibliographies, synopses, and educational summaries dealing with the marine resources of Florida and nearby areas. Copies are distributed to libraries, laboratories, and research institutions throughout the world. Communications concerning receipt or exchange of publications should be directed to the Librarian of the Marine Research Laboratory.

Edwin A. Joyce, Jr.
Editor
A Guide to Common Florida Salt Marsh and Mangrove Vegetation

JEDFREY M. CARLTON

1975

Florida Department of Natural Resources
Marine Research Laboratory

100 Eighth Avenue SE    St. Petersburg, Florida  33701
ABSTRACT

Carlton J. M. 1975. A Guide to Common Florida Salt Marsh and Mangrove Vegetation. Fla. Mar. Res. Publ. No. 6. 30 p. Eighteen families and thirty-six species of ferns and flowering plants found in salt marshes and mangrove swamps of Florida's coasts are described and illustrated. Taxonomic descriptions, with glossary to terms used, covers those species most likely to be found in the state but which may range from Maine to Texas. An index to common and scientific names is included, as is a brief discussion of halophytes and the adaptations which allow them to survive in the saline environment.

Contribution No. 244, Florida Department of Natural Resources Marine Research Laboratory

This public document was promulgated at an annual cost of $1920 or $0.96 per copy to make research results and marine resources information available to scientists and the public.
CONTENTS

INTRODUCTION .................................................. 1
GLOSSARY ..................................................... 2

PLANT FAMILIES .............................................. 6
Aizoaceae ...................................................... 6
Amaranthaceae ............................................... 6
Asteraceae ..................................................... 6
Avicenniaceae ............................................... 9
Bataceae ...................................................... 10
Boraginaceae ............................................... 11
Chenopodiaceae ............................................. 12
Combretaceae ............................................... 11
Fabaceae ...................................................... 13
Gentianaceae ............................................... 16
Juncaceae ..................................................... 16
Plumbaginaceae .............................................. 17
Poaceae ....................................................... 18
Primulaceae ............................................... 21
Pteridaceae ................................................... 21
Rhizophoraceae ............................................. 22
Solanaceae ................................................... 23
Verbenaceae ................................................ 24

ACKNOWLEDGMENTS ........................................... 25
SELECTED REFERENCES ...................................... 25
INDEX TO COMMON AND SCIENTIFIC NAMES .............. 29

FIGURES
1. *Sesuvium portulacastrum*. Sea Purslane .................. 6
2. *Philoxerus vermicularis*. Marsh Samphire ............... 6
3. *Aster tenuifolius* var. *aphyllus*. Saltmarsh Aster ...... 7
4. *Baccharis halimifolia* var. *angustior*.
   Sea Myrtle, Groundsel .................................... 7
5. *Borrichia frutescens*. Sea Oxeye Daisy ................. 8
6. *Iva frutescens*. Marsh Elder ............................ 8
7. *Melanthera aspera* var. *aspera* ....................... 9
8. *Solidago sempervirens* var. *mexicana*.
   Seaside Goldenrod ....................................... 9
9. *Avicennia germinans*. Black Mangrove .................. 10
10. Flowers of *Avicennia germinans* ........................ 10
11. *Batis maritima*. Saltwort ............................. 10
12. *Heliotropium curassavicum*. Seaside Heliotrope ....... 11
13. *Conocarpus erecta*. Buttonwood, Buttonwood Mangrove .. 11
15. Flowers of *Laguncularia racemosa* ..................... 12
17. *Suadaea linearis*. Sea Blite .......................... 13
18. *Caesalpinia cristata*. Gray Nickerbean ................ 14
19. *Dalbergia eschatophyllum*. Coin Vine,
   Fish Poison Vine ......................................... 14
20. *Erythrina herbacea*. Coral Bean ....................... 15
<table>
<thead>
<tr>
<th></th>
<th>Scientific Name</th>
<th>Common Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td><em>Sophora tomentosa</em></td>
<td>Necklace Pod</td>
<td>15</td>
</tr>
<tr>
<td>22</td>
<td><em>Eustoma exaltatum</em></td>
<td></td>
<td>16</td>
</tr>
<tr>
<td>23</td>
<td><em>Juncus roemerianus</em></td>
<td>Black Rush, Needle Rush</td>
<td>17</td>
</tr>
<tr>
<td>24</td>
<td><em>Limonium carolinianum</em> var. carolinianum</td>
<td>Sea Lavender</td>
<td>17</td>
</tr>
<tr>
<td>25</td>
<td><em>Distichlis spicata</em></td>
<td>Seashore Saltgrass</td>
<td>18</td>
</tr>
<tr>
<td>26</td>
<td><em>Monanthochloë littoralis</em></td>
<td>Key Grass</td>
<td>18</td>
</tr>
<tr>
<td>27</td>
<td><em>Paspalum vaginatum</em></td>
<td>Salt Jointgrass</td>
<td>19</td>
</tr>
<tr>
<td>28</td>
<td><em>Spartina alterniflora</em></td>
<td>Smooth Cordgrass</td>
<td>20</td>
</tr>
<tr>
<td>29</td>
<td><em>Spartina patens</em></td>
<td>Saltmeadow Cordgrass</td>
<td>20</td>
</tr>
<tr>
<td>30</td>
<td><em>Sporobolus virginicus</em></td>
<td>Virginia Dropseed</td>
<td>20</td>
</tr>
<tr>
<td>31</td>
<td><em>Samolus ebracteatus</em></td>
<td>Water Pimpernel</td>
<td>21</td>
</tr>
<tr>
<td>32</td>
<td>Flowers of <em>Samolus ebracteatus</em></td>
<td></td>
<td>21</td>
</tr>
<tr>
<td>33</td>
<td><em>Acrostichum aureum</em></td>
<td>Mangrove Fern, Leather Fern</td>
<td>22</td>
</tr>
<tr>
<td>34</td>
<td><em>Rhizophora mangle</em></td>
<td>Red Mangrove</td>
<td>22</td>
</tr>
<tr>
<td>35</td>
<td>Seedling of <em>Rhizophora mangle</em></td>
<td></td>
<td>23</td>
</tr>
<tr>
<td>36</td>
<td>Flowers of <em>Rhizophora mangle</em></td>
<td></td>
<td>23</td>
</tr>
<tr>
<td>37</td>
<td><em>Lycium carolinianum</em></td>
<td>Christmas Berry</td>
<td>24</td>
</tr>
<tr>
<td>38</td>
<td><em>Physalis viscosa</em></td>
<td>Ground Cherry</td>
<td>24</td>
</tr>
<tr>
<td>39</td>
<td><em>Lantana involucrata</em></td>
<td>Lantana</td>
<td>25</td>
</tr>
</tbody>
</table>
INTRODUCTION

The term "halophyte" is commonly used to describe plants inhabiting saline shorelines. This word is derived from the Greek "hal" or "halo," meaning "of or relating to a salt" and "phyte" from the Greek "phyton," meaning a plant having a specified characteristic or habitat. Saline areas can occur inland with salt concentrations equal to or greater than those in seawater. Thus plants adapting to these harsh environments have developed modifications in the plant body, fruits, and seeds.

All plants require fresh water to perform necessary physiological processes. When examined for salt content, halophytes have salt levels equal to or less than salt concentrations of the surrounding environment. Thus, plants in these saline areas have developed methods of extracting fresh water from salt water. Two common methods are secretion by salt glands and/or a highly efficient osmotic filtration system in the roots. In roots, Casparian strips, composed of lignin and suberin, surround the walls of certain cells and act as a barrier to salt intrusion. These strips selectively absorb only certain substances, acting as efficient filters to many salts present in seawater.

Salt glands, consisting of glandular hairs found on the surfaces of leaves or stems, are covered by hairs or sunken into pits. Each gland is composed of a short stalk-cell and a disk-shaped head with numerous granular contents. Through evaporation, dissolved salts are carried out of the leaves onto the surface and are no longer harmful to the plant.

Plant body modifications have occurred in the leaves to prevent water loss. Since water loss is largely a function of leaf surface area, halophytes have adapted by decreasing intercellular spaces and increasing mesophyll cell size, thereby resulting in increased succulence. A thick, waxy cuticle further prevents water loss. Stomata are frequently sunken into the epidermis, and are usually fewer in number than those in nonhalophytic species. Often, epidermal hairs are present on the leaf surface, covering the stomata and aiding in water retention.

Modifications of fruits and seeds include large intercellular air spaces, extensive flotation tissue, and in some cases, vivipary, or germination of the seed while attached to the parent plant. These adaptations allow for long-term flotation and dispersal by sea.

The role of salt marshes and mangroves in coastal ecosystems has been reported by numerous authors (see reference list). Published data indicate that salt marshes and mangrove detritus support a far more infinite and complex food web than any ecosystem except a living coral reef. In terms of productivity, marshes may produce as much as 10 tons of dry organic matter per year, compared to the world's average wheat production of about 1½ tons per acre per year (Odum, 1961). Marshes which are flooded regularly act as nursery grounds for many species of commercially important finfish and shellfish. Marshes help in the land-building process by slowing up tidal waters so they drop their loads of sediment, thereby increasing the elevations of the marsh over long periods of time.

This paper is not an attempt to summarize or review the voluminous literature dealing with halophytes or coastal vegetation, but rather an identification guide to those species most likely to be found by a visitor to Florida tidelands. A number of species may exist in the marsh areas due to local conditions being appropriate for their growth and development. In a paper such as this, these invaders cannot be covered; the reader is referred to his local library, college biology department, or extension agent for additional information. For detailed information on halophytes, the reader is referred to the recent publication of Waisel (1972), particularly his extensive bibliography.

Uphof (1941) and Chapman (1942) summarized the existing literature on halophytes and J.K. Small (1913, 1933), Radford, Ahles, and Bell (1968), and Long and Lakela (1971) provided taxonomic information on the coastal plants of Florida. Kurz and Wagner (1957) is the only major work dealing with the marsh plants of northern Florida. They emphasized salt marshes and their relation to a number of ecological factors, such as elevation, salinity and the rise in sea level. Jackson (1952) discussed several factors affecting plant distribution in a Florida salt marsh community. Penfound (1952) defined the salt marsh as being the sedge-grass-cush communities found in brackish habitats. True marshes consisted of Spartina, Distichlis, Juncus and Sporobolus species, although other plants such as Baccharis, Iva, Hibiscus and Panicum could be found there as well. His paper is important for its descriptions of the various marsh types throughout the southeast.

Various other papers describe the marshes and species that might be encountered in Florida.
Teal and Teal (1969) provided a scientific account as well as a readable work on the salt marshes of the east coast of the United States. The guide book by Ursin (1972) contains drawings and range maps of a number of east coast marsh and shore species, plant as well as animal.

In this paper, plant families and genera are arranged alphabetically. Nomenclature follows that of Long and Lakela (1971) with revision where applicable. Below the species descriptions are notes on species ecology, distribution and flowering periods.

GLOSSARY

Abaxial—the side of an organ away from the axis or center of axis; dorsal.
Achene—a dry, indehiscent, one-seeded fruit, the seed connected to the pericarp at only one point (e.g., sunflower).
Acrostichoid—having sporangia merging on the fertile surface of the frond.
Actinomorphic—regularly symmetric, arranged as to be vertically divisible into equal halves by two or more planes.
Acute—tapering to an apex with the sides straight or nearly so.
Adnate—the union of unlike parts.
Aerenchyma—a tissue characterized by thin-walled cells and large air spaces.
Alternate—appearing on one side of the axis, then on the other; especially pertaining to leaves.
Annual—completing the life cycle in only one growing season.
Annulus—thick-walled cells around the fern sporangium.
Anther—pollen-bearing structure in the flower.
Anthesis—flowering.
Apetalous—lacking petals.
Appressed—lying nearby or close against something.
Arborescent—nearing the size or habit of a tree.
Awns—slender, bristle-like appendages found at the apex of various structures.
Axil—refers to the angle the petiole or peduncle makes with the stem that bears it.
Axillary—located in the axil.
Berry—the pulpy fruit resulting from a single pistil, containing one or more seeds but no true stone (e.g., tomato, grape).
Bilateral symmetry—capable of division on only one plane to give two mirror images.
Bipinnate—term applied when the divisions of a pinnate leaf are again divided.
Bracts—much-reduced leaves, especially the small scale-like leaves below the flower cluster, or associated with the stem.
Caducous—soon falling off.
Calyx—collective term for the outer whorl of floral envelopes, the sepals.
Canescent—gray-pubescent, or covered with fine gray or white hairs.
Capitate—in heads; aggregated into dense or compact clusters.
Capsule—a dry dehiscent fruit made up of more than one carpel.
Carpel—one of the foliar units of the pistil, may be composed of one carpel (simple) or more (compound).
Caryopsis—a dry, indehiscent, one-seeded fruit, the seed connected to the pericarp at all points; a grain (e.g., corn).
Casparian strips—band-like structures on the walls of certain plant cells which regulate passage of salts and ions into the cells.
Chaff—one of the bracts between individual flowers in flowers of the Asteraceae; a thin, dry scale or bract.
Chloroplast—thin-walled, chlorophyll-containing structures in plant cells.
Ciliolate—with a marginal fringe of minute hairs.
Claw—in some flowers, the long, narrow base of the petals or sepals.
Coherent—descriptive term for parts touching one another, but not fused.
Compound—having certain parts, especially leaves, divided into two or more leaflets on the same petiole.
Connate—united or fused; joined.
Connivent—coming in contact with; converging.
Convolute—overlapping or being overlapped by another part; rolled, the margins overlapping.
Coriaceous—leather-like.
Corolla—collective term for the inner whorl of floral envelopes, the petals.
Cortex—the tissue region between the vascular cylinder and epidermis.
Corymb—a flat-topped or convex, open inflorescence, the outer flowers opening first.
Corymbose—borne in a corymb.
Crenate—toothed, the teeth rounded at apex.
Culm—the hollow stem of grasses and bamboos.
Cuneate—wedge-shaped; narrowly triangular, the acute angle downward.
Cuticle—the covering of cutin present over the surface of the aerial parts of vascular plants.
Cutin—waxy substance impermeable to water and most gases.
Cyme—convex or flat-topped clusters in which the central or terminal flowers bloom first.
Cymose—cyme-like or bearing cymes.
Deciduous—falling away; not evergreen.
Decompound—more than once compound; the primary divisions again separated.
Decumbent—leaning or reclining on the ground, with ascending tips.
Dehiscent—opening by definite pores or slits to discharge the contents.
Deltoid—triangular.
Diadelphous—in two sets, usually applied to stamens when composed of two unequal bundles or clusters.
 Dioecious—flowers imperfect, staminate flowers on one plant, pistillate flowers on another; unsexual.
Discoid—disk-shaped; in Asteraceae, descriptive term for inflorescences having only disk flowers.
Distichous—in two vertical ranks on opposite sides of a stem and in the same plane.
Drupe—fleshy, indehiscent, one-seeded fruit, with the seed enclosed in a stony endocarp (e.g., peach).
Eciliate—without cilia.
Elliptic—shaped like an ellipse, widest at the center and the two ends nearly equal.
Endocarp—the inner layer of the pericarp.
Endosperm—the starch and oil-containing tissues of many seeds.
Entire—not divided or otherwise indented.
Epidermis—term for the outer layers of cells of an organism.
Epipetalous—borne on or arising from the petals or corolla.
Estipulate—without stipules.
Exserted—projecting beyond a surrounding organ or part.
Filiform—thread-like; long and very slender.
Fleshy—succulent, with a high percentage of fluids in the tissues.
Floret—term for the individual flower of grasses, with the lemma and palea included; in Asteraceae, term for individual flowers arranged in heads.
Foliar unit—all of the parts of the flower.
Fusiform—spindle-shaped, broadest at the middle and tapering at both ends.
Glabrous—smooth; without hair or bristles present.
Glaucous—a frosty, waxy or whitish appearance.
Globose—nearly spherical in shape or outline.
Glomerules—clustered parts, usually of flowers.
Habit—the general appearance of the plant.
Halophyte—plants tolerant of various salts in the soil solution, most frequently sodium chloride.
Herb—plants without persistent woody stems above ground.
Heterogamous—with two or more kinds or forms of flowers.
Hirsute—with moderately coarse and stiff hairs.
Hispid—with stiff or bristly hairs.
Imbricate—partially overlapping, either vertically or laterally.
Included—not protruding or projecting beyond any surrounding part.
Indehiscent—remaining permanently closed; not opening by definite pores or lines.
Indeterminate—type of inflorescence whose terminal flowers open last.
Indusium—the epidermal covering over fern sporangia when they are in sori.
Inferior ovary—an ovary adnate to the floral tube, the flower parts appearing to come off above the ovary.
Inflorescence—the variously arranged flower parts.
Internode—the space between nodes on an axis.
Introrse—turned inward, toward the axis.
Involute—a whorl of distinct or united leaves or bracts subtending a flower or inflorescence.
Involute—with both edges rolled inward toward the upper side.
Keel—the two front, united petals of a Fabaceous (legume) flower; in grasses, a sharp ridge or fold, especially of the leaves.
Lanceolate—lance-shaped, much longer than broad; widening above the base and tapering to the apex.
Legume—usually a dehiscent fruit formed from one carpel with two lines of dehiscence; typical of Fabaceae.
Lemma—in grasses, the lower of the two bracts immediately enclosing the flower.
Lenticle—groups of corky cells formed below the epidermis which rupture and admit gases to and from interior tissues.
Lignin—one of the waxy compounds associated with cellulose in walls of many plants.
Ligule—the flattened, usually strap-shaped corolla in the ray flowers of the Asteraceae; a projection from the top of the sheaths in grasses and similar plants.
Linear—long and narrow, the sides nearly parallel.
Littoral—the zone along the coast between the tides.

Lobes—a part of a petal, calyx or leaf that represents a division to about the middle or halfway between the margin and the midrib or base.

Locule—the compartment or cell of an ovary, anther or fruit; a descriptive term only, not morphological.

Loculicidal capsule—a capsule opening along the middle of the locule.

Mesophyll—the photosynthetic tissue of leaves, located between epidermal layers.

Monadelphous—with stamens united into one group by connation of their filaments.

Monoeious—having staminate and pistillate flowers on the same plant; perfect; bisexual.

Nectary—a nectar-secreting gland or tissue, often located in highly specialized structures.

Node—the joint where a leaf is borne or may be borne.

Nut—a dry, indehiscent, one-seeded fruit with a hard coat (e.g., walnut).

Oblanceolate—inversely lanceolate, attached at the tapered end.

Obovate—inversely egg-shaped in outline.

Obtuse—blunt or rounded at the tip.

Odd-pinnate—the leaf divided into an odd number of leaflets or divisions.

Opposite—where two parts, especially leaves, are present at a node, on opposing sides of an axis.

Ovary—the part of the pistil containing the ovules.

Ovate—egg-shaped, attached at the wide end.

Ovule—the structure which, after fertilization, becomes the seed.

Palaean—in grass flowers, the upper of the two enclosing bracts.

Palisade—cells in the leaf characterized by their elongated form and arrangement perpendicular to the surface of the leaf.

Palmately compound—lobed, divided or ribbed in a palm-like or hand-like fashion.

Panicle—an indeterminate type of inflorescence with two or more flowers on each branch, these on pedicles.

Pappus—the modified calyx in the Asteraceae, forming a crown of hairs, bristles or scales at the top of the achene; the calyx.

Paraphysate—bearing or marked by paraphyses.

Paraphyses—slender, sterile filaments commonly borne among the spore-bearing organs in many ferns.

Peduncle—stalk of a flower cluster, or of a solitary flower when that flower is the remaining member of an inflorescence.

Pentamerous—the parts divided into five's or multiples of five.

Perennial—plants lasting for three or more years, the stems not dying back over winter.

Perianth—the collective term for the corolla and calyx, however incomplete or modified.

Pericarp—the wall of the ripened ovary, thus the wall of the ripened fruit, this often divided into three layers.

Perigynous—borne on or arising from around the ovary, but not beneath it.

Persistent—not falling off, remaining attached.

Petal—one of the parts of the inner floral envelope or corolla of a flower, usually colored and showy.

Petiole—the stalk of a leaf blade or compound leaf.

Phyllaries—term for an involucral bract in flowers of the Asteraceae.

Pilose—with long, soft straight hairs.

Pinna—one of the divisions or leaflets of a pinnate leaf.

Pinnate—having leaflets on two opposite sides of an elongated axis.

Pistil—one unit of the reproductive structure of a plant, composed of the ovary, style, and stigma.

Pistillate—having pistils and no functional stamens; female.

Plumose—feathery.

Procumbent—trailing or lying flat, but not rooted.

Prostrate—general term for lying flat on the ground.

Puberulence—minutely pubescent, the hairs soft, erect and scarcely visible.

Pubescent—term used to describe hairiness of an object or surface.

Raceme—an indeterminate type of inflorescence with the flowers singly on pedicles arranged along an elongated axis.

Racilla—in grasses and sedges, the axis that bears florets; a smaller or secondary axis.

Rachis—the petiole of a fern frond.

Radial symmetry—capable of equal division in more than one plane through the center.

Radicle—the embryonic root of a germinating seed.

Reflexed—recurved or bent downward or backward.

Resinous—having bud scales coated with a sticky exudate of resin.

Retuse—having a slightly notched, rounded apex.
Revolute—having margins, especially in leaves, rolled toward the abaxial side.
Rhizome—an underground stem, distinguished from a root by presence of nodes, buds or scale-like leaves.
Scabrous—with rough, short hairs or short, sharp projections.
Scale—term for any number of small, mostly dry, appressed leaves or bracts, often only vestigial.
Scapose—having a flowering stem arising from the ground, without proper leaves.
Scarios—plant parts which are not green, but thin and dry, membranaceous, more or less translucent.
Schizocarp—a dry fruit of two or more carpels, splitting up at maturity into two or more, one-seeded, indehiscent segments (e.g., carrot).
Scorpioid—coiled at the apex, like the tail of a scorpion.
Serrate—having saw-toothed margins, the teeth pointing forward.
Sepal—one of the parts of the calyx, usually green and leaf-like.
Sessile—not stalked.
Setaceous—bristle-like.
Sheath—any long or more or less tubular structure surrounding another structure; in grasses, the lower part of the leaf.
Simple—entire, not divided, especially of leaves.
Sorus—the dot or clump of sporangia on the dorsal side of fern fronds; plural sori.
Spatulate—broad and rounded at apex, tapering to base.
Spike—an indeterminate type of inflorescence with the flowers sessile along the rachis.
Spikelets—the floral unit, or ultimate cluster, of a grass inflorescence, composed of the flowers and their subtending bracts.
Sporangia—the spore-bearing case in ferns.
Stamen—the pollen-bearing organ in vascular plants, typically composed of anther and filament.
Staminate—having stamens and no functioning pistils; male.
Standard—the upper, broad, erect petal of pea-like (Fabaceae) flowers.
Stellate—star-like, or with pointed, radiating branches.
Sterile—lacking functioning reproductive organs.
Stigma—the part of the pistil that receives the pollen.
Stipe—the stalk of a pistil or other small plant organ when axile in origin.
Stipules—the basal appendages of a petiole, possibly modified in a number of ways.
Stolon—a shoot bending to the ground and taking root; a horizontal shoot giving rise to a new plant at its tip.
Stomata—pores of leaves, usually on the lower surface, surrounded by two guard cells, controlling the amount of gas and water vapor entering and leaving the leaves.
Striate—marked with fine, longitudinal lines, grooves, furrows or streaks.
Style—the section of the pistil between the stigma and ovary.
Suberin—a waxy compound often found in association with plant cell walls.
Suborbicular—somewhat disk-shaped.
Subulate—tapering from the base to apex.
Succulent—juicy, thick and soft in texture.
Sulcate—grooved or furrowed lengthwise.
Superior ovary—an ovary with the perianth below it.
Terete—circular in cross-section and more or less elongate and tapered.
Tetrahedral—pyramidal.
Tomentose—covered with short, dense hairs.
Trifoliate—three-leaved.
Trimerous—the parts divided into three’s or multiples of three.
Umbel—a flat-topped inflorescence, the flowers all arising from one point, the youngest at the center.
Utricle—a small, thin-walled, one-seeded fruit (e.g., Philoxerus).
Vascular cylinder—the arrangement of food and water tubes in plants into a more or less cylindrical structure within the plant body.
Veins—water and food tubes in the plant body.
Viscid—sticky.
Vivipary—germination of the seedling within the fruit, whether the fruit is attached to the parent plant or not.
Whorled—having three or more leaves or flowers at one node.
Wing—a dry, flat, thin extension or appendage present on a structure, usually seed or fruit, as an aid to dispersal.
Zygomorphic—type of corolla divisible into equal halves in one plane only; bilaterally symmetric.
PLANT FAMILIES

AIZOACEAE (CARPETWEED FAMILY)

Low shrubs, herbs, or partially woody plants with opposite or alternate, minute or fleshy leaves. Flowers monoecious or dioecious, bilaterally symmetrical; calyx 4- to 5-parted; petals numerous or absent. Stamens 5 to many; ovary superior to inferior, consisting of one to several locules. Fruit a capsule, drupelike or nutlike. Over 22 genera with 1,100 or more species, chiefly of temperate and tropical distribution.

Sesuvium portulacastrum (L.) L. Common name: Sea Purslane (Figure 1). Perennial, prostrate plants, usually sparingly branched, these branches to 2 m. Leaves opposite, 1-5 cm, linear to narrowly obovate, fleshy. Flowers monoecious, on small (approx. 3 mm) peduncles), to 1 cm wide, solitary, pink; sepals with hornlike appendages, 8-10 mm long; stamens 5 or more in number; ovary superior, 3- to 4-locular, styles 3-5. Fruit a capsule, about 8 mm, ovoid.

A common seaside plant of tropical and subtropical shores, forming thick, fleshy mats over surfaces. The small, delicate, pink flowers produced all year long add a bit of color to the often monotonous browns and greens of marshes. Distribution: North Carolina to Central and South America, and West Indies.

AMARANTHACEAE (AMARANTH FAMILY)

Annual or perennial shrubs or herbs with opposite or alternate, entire leaves. Flowers radially symmetrical, small, monoecious or dioecious, in spikes or panicles, often with persistent bracts; sepals 3-5, dry or membranous; petals absent, stamens mostly 5, opposite the sepals. Ovary superior, unilocular. Fruit a utricle. About 40 genera with 500 species.

Phloxerous vermicularis (L.) R. Brown Common name: Marsh Samphire (Figure 2). Prostrate, creeping perennial with opposite, narrow, entire leaves. Stems somewhat succulent, much-branched, to 2 m. Leaves 2-6 cm, linear to oblanceolate. Inflorescence a spike, to 3 cm, globose; flowers silvery-white. Sepals 3-5 mm, the outer oblong, the inner lanceolate; stamens 5, fused at the base. Seeds round, dark brown, to 1 mm in diameter.

Commonly found along sandy shores and marsh edges. In the vegetative state resembles Sesuvium in appearance. Distribution: coastal plain from Virginia to Texas, Central and South America, and western coast of Africa. Flowers year round.

ASTERACEAE (ASTER FAMILY)

Annual or perennial herbs, rarely shrubs or trees, with alternate or opposite, simple or compound leaves, without stipules. Flowers small, monoecious or dioecious, aggregated in heads and surrounded by one to several series of phyllaries composing the involucre; actinomorphic or zygomorphic, sometimes both in the

Figure 2. Phloxerous vermicularis. Marsh Samphire.
same head. Heads may be composed of disk flowers (discoid), ligulate flowers (ligulate), or both (radiate). If radiate, then disk flowers are found in the center with ligulate flowers marginal, often referred to as the rays. Calyx represented as a pappus of bristles, awns or scales, or absent. Corolla tubular, fused, 5-parted; disk florets usually radially symmetrical. Stamens 5, united by their anthers forming a tube around the style. Ovary inferior, unilocular; style often 2-branched. Fruit an achene, often crowned by the pappus. Nearly 1,200 genera and 20,000 species, of worldwide distribution. Synonym: Compositae.

*Aster tenuifolius* L. var *aphyllus* R. W. Long Common name: Saltmarsh Aster (Figure 3). Slender, glabrous, somewhat wiry perennial, with erect or sprawling stems 0.5-1.2 m tall, loosely branched. Leaves linear-subulate to linear-lanceolate below, absent, or mere scales on the branches, sessile or slightly clasping at base. Inflorescence corymbose, few to several-headed, 12-25 mm broad, at the tips of the branches. Phyllaries elongate-subulate; bracts whitish with green on backs or tips, tapered. Rays 15-25, lavender to white; pappus tawny. Achene glabrous, brown, 3-4 mm long.

A delicate member of the marsh plant community, *A. tenuifolius* is often overlooked when not in flower. Distribution: North Carolina to Louisiana. Flowers from summer through fall.

*Baccharis halimifolia* L. Common name: Sea Myrtle, Groundsel Tree, Cotton Tree, Saltbush (Figure 4). Glabrous shrubs, rarely small trees, 1-4 m tall, with angled branches glabrous but somewhat resinous. Leaves 4-7 cm, 1-4 cm wide, alternate, thick, elliptic to ovate, coarsely or distantly serrate; rarely entire. Flowers dioecious; pistillate involucres 3-6 mm wide in pedunculate glo- mérules, phyllaries strongly imbricate, inner phyllaries linear. Achene tan, cylindrical, 1.2-1.5 mm, glabrous; pappus 7-10 mm.

Commonly found along the highest part of the marsh, rarely flooded by tides, and extending into sandy soil and disturbed sites. In late fall, mature seeds with their downy-white crown of hairs are a characteristic sight. Distribution: Virginia to Texas, West Indies, Mexico, and Central America. Flowers in late summer and fall.

*Borrichia frutescens* (L.) DC. Common name: Sea Oxeye (Figure 5). Low fleshy shrubs of the coastal zone, forming extensive colonies from rhizomes. Stems erect, to 1 m tall, strict or freely branched. Leaves opposite, obovate or oblanceolate, aromatic, to 7 cm, sometimes finely serrate. Heads mostly solitary, hemispheric or flat; disk about 1.5 cm wide or less; phyllaries in 2 or 3 series, canescent, becoming spine-tipped. Ray flowers few, pistillate, 1.0-1.5 cm; disk corollas monoecious; lobes eciliate;
style with hairy appendages. Achenes quadrangular, 3-4 mm, smooth; pappus a short 4-toothed crown.

*Borrichia arborescens* (L.) DC. Common name: Sea Oxeye. Stems to 1.3 m with short rhizomes. Leaves oblanceolate, 3-6 cm, gray-green, fleshy. Outer phyllaries acute, not spine-tipped; inner phyllaries rounded. Ray florets yellow, 1 cm or less; chaff rigid, pointed.

Both species are found in the salt marshes and along mangrove borders, *B. arborescens* occurring chiefly in southern end of Florida. Both often form dense clusters and are easily recognized by leaf shape and bright yellow heads. *B. frutescens* distribution: Virginia to Texas, Mexico and West Indies. *B. arborescens* distribution: Florida and the Keys, through the West Indies to Central and South America. Both species flower in spring through late fall, although in more southern areas they bloom all year long.

*Iva frutescens* L. Common name: Marsh Elder (Figure 6). Erect shrub, 1-3 m tall, freely branching with a woody base; stems often pubescent, at least above. Leaves opposite, except above, lanceolate to elliptic, 3-10 cm, 0.4-2.0 cm wide, coarsely serrate, pubescent, on both sides. Heads borne in axils of leafy bracts, discoid and heterogamous, involucre imbricate or hemispheric, 4-5 mm wide, with 4-6 phyllaries in one series. Flowers dioecious, tubular, in mixed heads; staminate flowers with undivided style, corollas distinctly 5-lobed. Pistillate flowers few, corollas barely lobed, pappus lacking. Achenes slightly flattened, 2-3 mm, dark brown. Usually found above the highest tideline, *I. frutescens* may be mistaken for *B. halimifolia*, with which it is often found. Both may become somewhat woody and reach 3 m or more in height, thus adding to the confusion. Distribution: Virginia to Louisiana and into the West Indies. Flowers in summer and fall.

*Melanthera aspera* (Jacq.) Small var. *aspera* Common name: None (Figure 7). Erect perennial herbs with stout, hisrate-scabrous stems, to 1.5 m tall, much-branched, often bushy in appearance. Leaves variable, ovate to deltoid, 5-15 cm, crenate or serrate, the petioles rather long. Heads several or numerous, mostly short peduncled; phyllaries ovate, in 2-3 rows, mostly 0.5 mm wide. Corolla whitish, anthers dark. Pappus of 2-3 bristles with short, fringed crown at the base; chaff acute. Achenes tetrahedral, compressed.

Found along south Florida and the Keys, extending inland into the shore hammocks. Easily identified by the lack of ray flowers. Distribution: Florida and the West Indies. Flowers all year.
Solidago sempervirens L. var mexicana (L.) Fern. Common name: Seaside Goldenrod (Figure 8). Perennial, somewhat succulent herb up to 2 m or more tall; stems pubescent or smooth on upper parts. Basal leaves to 40 cm, 1-3 cm wide, oblanceolate and persistent, entire; upper leaves numerous, sessile. Inflorescence dense, 50-90 cm high, in an elongate narrow panicle, the branches short; involucre hemispherical, about 3-5 mm; phyllaries imbricate, acute. Ray florets 7-10, yellow; ligules 7-11, 2.5 mm, oblong-oval in shape. Achene 2.5 mm, pubescent, 2/3 the length of pappus.

Characteristic of salt marshes and mangrove borders, adding a bright bit of color to dull browns and greens of the marsh. Distribution: Canada to Texas, Mexico, West Indies, Central and South America. Flowers all year in the more southern areas of its range, late summer elsewhere.

AVICENNIAEACEAE (BLACK MANGROVE FAMILY)

Trees or shrubs of maritime regions having terete stems and opposite, thick, persistent, entire and estipulate leaves. Inflorescences axillary or terminal, flowers monoeocious, actinomorphic, small; sepals 5, ovate, corolla 4-parted; stamens 4, epipetalous. Ovary superior, unilocular, ovules 4. Fruit a compressed capsule, somewhat fleshy, 1-seeded. A single genus of 16 living species and varieties found in coastal mangrove belts throughout the world. This genus was formerly classed under the Verbenaceae.

Avicennia germinans (L.) L. Common name: Black Mangrove (Figures 9, 10). Tree to 20 m with dark, scaly bark, young stems finely pubescent. Leaves 5-10 cm, narrowly elliptic or oblong, shiny-green above, tomentose below, slightly revolute, often with salt crystals on the surface. Flowers clustered in short spikes, calyx deeply 5-lobed, 3-4 mm wide, pubescent outside, glabrous within. Corolla white, yellowish at base, 4-lobed, 1.2-2.0 cm, stamens 4, inserted near base of corolla tube. Ovary small, 1-celled; stigma 2-lobed. Fruit ovate, asymmetric to 4 cm, viviparous.

One of the three woody species comprising Florida's mangrove swamps, A. germinans is often characterized by long horizontal roots with their short vertical aerating branches (pneumatophores) which abound in the substrate below the trees. Fruits are characteristically lima-bean shaped, dark-green. Distribution: Florida, from St. Augustine to Cedar Key, Mississippi, Louisiana, Texas, the Bahamas, West Indies, both coasts of Mexico to Brazil and Peru, and the west coast of Africa. Flowers in spring and early summer. Synonyms: Avicennia nitida Jacq., A. germinans (L.) Stearn.
BATAEAE (SALTWORT FAMILY)

Littoral, succulent shrubs with opposite, fleshy, entire leaves. Flowers minute, dioecious, in axillary conelike spikes. Staminate flowers with scales subtending each flower; stamens 4, alternating with the petals, not fused. Pistillate flowers peduncled, 4-12 flowered; perianth absent, joined in a conelike spike. Ovaries 8-12, coherent, 4-locular; stigma sessile. One genus and one species. Synonym: Batidaceae.

*Batis maritima* L. Common name: Saltwort (Figure 11). A smooth, pale green annual shrub, strong-scented, with spreading, often prostrate creeping stems to 1 m. Leaves 4-6 cm, entire, curved. Cones 5-10 mm, ovoid; pistillate cones on peduncles 2.5 mm. Bracts suborbicular, often with pointed tips. Fruit a berry, oblong, obovoid, 1-2 cm, on short stalks, drooping.

Usually the pioneer plant on salt marshes and salt flats, apparently able to survive very saline conditions. Covers large areas wherever it exists, and with its ability to take root at branch tips, *Batis* may occupy the ground almost exclusively. Distribution: the coastal plain from North Carolina to Texas, into Mexico and the West Indies, South America and along the west coast from California to Central America and the Galapagos Islands. Flowers from spring through late fall.
BORAGINACEAE (BORAGE FAMILY)

Herbaceous or shrubby plants with alternate or rarely opposite, simple leaves, glabrous or often scabrous or hispid. Flowers monoecious, radially to occasionally bilaterally symmetrical, cymes often scorioid; sepals 4-5, free or slightly united. Corolla tubular, funnel-shaped, 5-parted; stamens 5, alternate with petals, partially adnate to corolla. Ovary superior, 2-4 locular, entire or 4-lobed. Fruit a drupe or consisting of 4 or fewer nutlets. About 100 genera and 2,000 species of wide distribution.

*Heliotropium curassavicum* L. Common name: Seaside Heliotrope (Figure 12). Plants mostly perennial, with stems 10-40 cm tall, ascending or somewhat prostrate, forming mats.

![Figure 12. Heliotropium curassavicum. Seaside Heliotrope.](image)

Leaves lanceolate-linear, spatulate or ovate, 3-6 cm, undersurface glabrous or nearly so. Inflorescence a pair of scorioid spikes. Flowers small; calyx lobes subequal, lanceolate to elliptic-lanceolate, 1.5-2.0 mm, corolla white or tinted blue, stamens adnate to lower part of the corolla tube, tubes about 2.0 mm. Ovary unlobed; stigma capitate. Fruit oval, about 2 mm wide, an aggregate of 4 nutlets.

Very common in Florida, extending from sandy shores throughout the marsh and into coastal hammocks. The inflorescence, forming a structure similar in appearance to the tail of a scorpion, is an important aid in identification. Distribution: Delaware to Mexico, into Central and South America. Flowers all year.

COMBRETACEAE (WHITE MANGROVE FAMILY)

Trees, shrubs or woody vines, all with simple alternate or opposite, leathery leaves. Flowers small, often apetalous, dioecious or rarely monoecious, in spikes, panicles, or racemes; calyx tube fused to ovary, lobes 4- to 6-parted, sometimes scarcely developed. Petals 5 or none, greenish-white, shorter than calyx lobes; stamens 5-10, in 2 whors, filaments distinct. Ovary inferior, unilocular; stigma entire; style filiform, free or adnate to floral tube, usually with nectary at base. Fruit berrylike, indehiscent, usually winged; seed 1, the other ovules abortive. Pantropical family of about 18 genera with 450 species. Synonym: Terminaliaceae.

*Conocarpus erecta* L. Common name: Buttonwood, Button Mangrove (Figure 13). Shrubs or trees to 20 m tall, with smooth or silky evergreen, alternate leaves, leaves 2-10 cm, oblong or elliptic, entire, obtuse or acute at tip, with two salt glands at base. Flowers small in dense, conelike heads grouped in terminal panicles; heads 1 cm wide or less, greenish. Petals

![Figure 13. Conocarpus erecta. Buttonwood, Button Mangrove.](image)
none; stamens 5-8 (10), anthers heart-shaped. Ovary unilocular; style covered with hairs, surrounded at base by a fleshy disk. Fruits purplish, leathery, densely clustered; pericarp of layers with spongy aerenchyma between; seed coat thin.

Usually found in association with other mangroves, but at the highest elevations of the marsh or swamp. Found in tropical hammocks and along the shore, indicating ability to adapt to various areas. Distribution: tropical areas of America and Africa. Flowers all year. Fruit abundant, but only an estimated 3-10% capable of germination (Guppy, 1917). In south Florida, this species was often cut and burned for charcoal. In northern ranges, a densely pubescent form has been noted, and named *C. erectus* var. *sericeus* DC. However, Semple (1970) considers this variety unwarranted.

*Laguncularia racemosa* (L.) Gaertn. f. Common name: White Mangrove (Figures 14, 15). Shrubs or trees to 15 m or more tall, with simple, coriaceous, slightly fleshy, oblong to oval leaves, these to 7 cm, rounded at both ends, with two salt glands at apex of petioles. Flowers small, bell-shaped, petals white, 2-3 mm, stamens 10, ovary 1-celled, inferior. Fruit 1.0-1.5 cm, slightly fleshy, broadest at apex, sepals persistent. Seed 1, may enlarge and begin to germinate while on the parent or floating in the water.

The white mangrove often occupies the higher land behind the red or black mangroves, although all three may be found intermixed. The broad, flattened leaves and characteristic fruit make for easy identification of this species. Distribution: Florida, from Daytona Beach to Cedar Key, the Bahamas, West Indies, both coasts of Mexico to Peru and Brazil, and the west coast of Africa. Flowers in spring and early summer.

![Figure 15. Flowers of *Laguncularia racemosa*.](image)

CHENOPODIACEAE (GOOSEFOOT FAMILY)

Annual or perennial herbs or shrubs, often weedy, nearly all halophytic, with stems sometimes jointed. Leaves alternate, opposite or apparently leafless; blades simple. Flowers small, inconspicuous, monoecious or dioecious, often green, produced in spikes, most actinomorphic. Calyx of 1-5 persistent sepals; petals lacking; stamens equal in number to sepals. Ovary superior to partially inferior, 2 or more carpelate, unilocular. Fruit a utricle, or nut, surrounded by persistent perianth. About 75 genera with 500 or more species.

*Salicornia virginica* L. Common name: Perennial Glasswort (Figure 16). Succulent, perennial herb with decumbent or prostrate stems and branches, greenish, often forming mats over the substrate. Leaves opposite, reduced to minute scales, stems appearing leafless. Flowers produced on ascending stems, internodes of inflorescence 3-4 mm thick and about as long;
flowers in depressions along axis of spike, spike 1-4 cm. Stamens 1-2, styles 2. Fruit a utricle enclosed by fleshy calyx; seeds about 1 mm, pubescent, with slender curved hairs.

A common species on salt marshes and salt flats of Florida. Named “glasswort” due to sound made by the succulent plants when stepped on. Early settlers used these plants in cooking and pickling because of the high salt content. Distribution: Massachusetts to Texas, Central and South America, and the coasts of Europe and Africa. Flowers all year.

_Suëda linearis_ (Ell.) Moq. Common name: Sea Blite (Figure 17). Fleshy, annual herbs with alternate, linear leaves 1.5-4.0 cm. Stems erect, much-branched, glabrous, becoming somewhat woody, to 1 m tall. Inflorescence a spike, flowers minute, monoecious; calyx 5-lobed, sepals keeled, about 2 mm wide. Stamens 5; styles 2-4. Fruit a utricle, enclosed by the calyx; seeds 1.0-1.5 mm wide, smooth and shiny. Synonym: _Dondia linearis_ (Ell.) Millsp.

A rather weedy-looking plant, found along the upper edges of the marsh in the drier sites. Distribution: Coastal plain from Maine to Texas, and West Indies. Flowers continuously from spring through fall.

_Suëda maritima_ (L.) Dum. Common name: Sea Blite. Glabrous, erect or ascending plants to 40 cm, usually much-branched. Leaves glaucous, linear or almost cylindric, to 5 cm. Inflorescence a spike, flowers minute, sepals pale green, rounded; seeds to 2 mm wide.

Similar in appearance to _S. linearis_, _S. maritima_, naturalized from Europe, ranges from Quebec to Florida. Flowers in summer.

**FABACEAE (PEA FAMILY)**

Herbs, shrubs, vines, or trees with alternate, often stipulate, compound leaves. Flowers mostly monoecious, sepals more or less united; petals free or sometimes united, with radial or bilateral symmetry. Petals mostly 5, rarely 1, comprising 2 keel-petals, 2 wings and 1 standard. Stamens usually about 10, monadelphous, diadelphous or rarely free. Pistil 1, free; ovary superior. Fruit a legume, 1 to many-seeded, dehiscent or indehiscent. About 15,000 species throughout the world, especially in warm and temperate regions. Synonym: Leguminosae.

_Caesalpinia crista_ L. Common name: Gray Nickerbean (Figure 18). Reclining, straggly shrub, pubescence with prickles of curved spines over entire plant. Leaves evenly bipinnate, to 40 cm or more, with 4 or more pairs of pinnae;
blades ovate, elliptic-ovate or nearly elliptic, 2.5-5.0 cm, 2.5 cm wide. Flowers in terminal racemes or panicles, sepals nearly as long as petals; petals dull yellow color, spatulate, to 13 mm. Legume oval-elliptic, 5-7 cm, nearly as wide as long, covered with bristles. Seeds gray, 1.5-2.5 cm.

Ranges all along the south Florida coast, spreading over adjacent vegetation and even growing over tops of some mangroves. The bright, shiny green leaves and spiny fruits make this an easily identified species. Distribution: Florida, West Indies, and into Central America. Flowering may occur all year. Synonym: Guian- dia crista (L.) Small.

Figure 18. Caesalpinia crista. Gray Nickerbean.

Dalbergia ecastophyllum (L.) Benth. Common name: Coin Vine, Fish Poison Vine (Figure 19). Shrubs often wide-spreading, reclining or trailing over associated vegetation. Stems to 3 m or longer, twigs stiff, with prominent lenticles. Leaflets solitary, ovate or elliptic, coriaceous, 5-15 cm, on short, 8-10 mm petioles; stipules 1-15 mm, linear-lanceolate, setaceous. Flowers in short, axillary clusters; calyx 3-4 mm; corolla white or pinkish, standard to 8 mm, clawed; filaments 9-10, united below. Pistil stipulate; ovule 1. Legume flat, suborbicular, mostly 1-seeded, 2-3 cm in diameter, brown.

Named “coin vine” because of the flattened, rounded legume often found by the thousands along many beaches and mangrove shores of south Florida. When fully developed, branches often form an almost impenetrable jungle. This species is found along the west coast of Africa as well as in Florida, the West Indies and South America. Flowers are produced in the spring, but may be produced all year in the warmer regions. Synonym: Ecastophyllum ecastophyllum (L.), Britt.

Figure 19. Dalbergia ecastophyllum Coin Vine, Fish Poison Vine.

Erythrina herbacea L. Common name: Coral Bean (Figure 20). Shrubs, becoming arborescent, 3-8 m tall, with trifoliolate leaves to 7 cm; stipules with spines, petiole 8-15 cm. Racemes 10-35 cm; flowers many, corolla red or scarlet; standard conspicuous, erect, narrowed, wing and keel petals reduced, barely protruding beyond calyx. Filaments in 2 unequal groups, united to more than half their lengths. Ovary fusiform, with 10 ovules; legume to 10 cm, black, seeds bright red-crimson.

Once seen, this plant cannot be forgotten, with its characteristic trifoliolate leaves, spiny stipules and bright red flowers and seeds. Small (1933) stated that this plant was used by the Seminoles to treat canine diseases. Seeds were
and still are gathered and used in beadmaking. Distribution: coastal plain from North Carolina to Texas. Flowers in spring and summer.

Legume 5-12 cm, indehiscent, seeds 6-9, yellow, pealike in shape, 5-8 mm in diameter.

Found in the more southerly parts of Florida, this plant extends from upper marsh and mangrove areas into coastal hammocks. A recent review of the American species of *Sophora* (Rudd, 1972) indicates that this is *S. tomentosa* var. *bahamensis*, and that its range is Florida and the Keys. Flowers all year. A protected species in the state.

*Figure 20. Erythrina herbacea* Coral Bean.

*Sophora tomentosa* L. Common name: Necklace Pod (Figures 21, 22). Shrubs or trees to 4 m tall, with numerous erect, ascending branches. Leaves odd-pinnate, to 20 cm; leaflets 13-21, nearly all opposite, pubescent when newly developed, oval or ob lanceolate, estipulate, 2.5-6.0 cm. Inflorescence a terminal raceme, 10-20 cm, flowers to 2 cm, bright yellow; filaments distinct; petal clawed; pedicels short, 5-10 mm.

*Figure 21. Flowers of Sophora tomentosa. Necklace Pod.*
calyx lobes 5-6, 10-12 mm long; corolla pink or purple (albino forms known), funnel-shaped, 5-6 lobed, elliptic to ovate, 17-20 mm. Ovary terminating in a filiform style; stigma rounded. Capsule 2.0-2.5 cm.

Commonly found along southern Florida and in the Keys, the purple flowers and fleshy, cabbage-green leaves make for easy identification. Distribution: Florida and the West Indies. Flowers all year.

GENTIANACEAE (GENTIAN FAMILY)

Annual or perennial, terrestrial or aquatic herbs or rarely shrubs, with entire, opposite, whorled, or alternate leaves, often fused at base. Inflorescence terminal, cymose or solitary. Flowers monoecious, conspicuous; calyx tubular, 4-13 parted; corolla actinomorphic, 4-13 parted; stamens epipetalous, of the same number as corolla parts and alternate with them. Ovary superior; pistil 1, stigmas 2. Fruit a capsule, seeds numerous. A group of approximately 70 genera with 800 species, worldwide, but mostly temperate.

_Eustoma exaltatum_ (L.) Griseb. Common name: None (Figure 23). Relatively large annual herbs with stems to 1 m tall. Leaves 2-7 cm, those near the top elliptic to elliptic-lanceolate. Flowers solitary or in open panicles or racemes;
loculicidal capsule, with 3 valves. Seeds often appended. A family of 8 genera and nearly 325 species, mostly of southern hemisphere temperate zones.

*Juncus roemerianus* Scheele Common name: Black Rush, Needle Rush (Figure 24). Plants stiff, rigid, to 1.5 m tall, in large tufts; leaves 3-5 mm thick, on scaly rhizomes. Lowermost short sheaths bladeless, followed by 2 or 3 sheaths with blades. Inflorescence compound, subtended by pungent involucral bracts. Flowers dioecious; sepals linear-lanceolate, 3-4 mm, centers green, margins scarious; petals shorter, linear-elliptic; anthers longer than filaments, absent in pistillate flowers; style shorter than its branches. Ovary with 3 locules. Fruit a capsule, longer than the sepals, brown, 2.5-3.0 mm; seeds numerous, 0.3-0.7 mm, wedge-shaped, with obtuse ends.

Most abundant in extensive colonies on marshes of northern Florida, giving a brown-black appearance to the flats and marshes. Often, in association with the two *Spartina* species, covers thousands of acres. Leaf tips narrowly pointed, easily passing through most clothing, giving the observer a number of sharp jabs. Distribution: all along the Atlantic and Gulf coasts of the United States, but limited in southern Florida due to competition from the mangroves. Flowers mostly in early spring and fall.

**PLUMBAGINACEAE (LEADWORT FAMILY)**

Perennial, rarely annual herbs, shrubs or climbing plants, often partly woody. Leaves alternate, entire. Flowers monoecious, actinomorphic in heads, spikes, umbel-like structures or in one-sided inflorescences. Calyx of 5, fused sepals; petals 5, mostly fused into a tube; stamens 5, distinct, opposite the petals. Ovary superior; styles 5, free or variously fused. Fruit a nut, achene or utricle. About 10 genera with 350 species of wide distribution.

*Limonium carolinianum* (Walt.) Britt. Common name: Sea Lavender (Figures 25, 26). Perennial, scapose herbs from woody roots, stems erect, often branched, to 60 cm tall. Basal leaves narrow, spatulate to elliptic or obovate, 5.0-17.5 cm.; upper leaves reduced to scales or absent. Flowers in large, open panicles, freely branching, clustered in sessile umbels along the

---

Figure 24. *Juncus roemerianus*. Black Rush, Needle Rush.

Figure 25. *Limonium carolinianum* var. *carolinianum*. Sea Lavender.
inflorescence; bractlets 1-2 mm; calyx 5-6 mm, tubular, pentamerous, glabrous or hirsute, acute or obtuse; corolla lavender, petals nearly free, long-clawed; stamens 5, epipetalous. Fruit a capsule, mostly 5-6 mm.

Two varieties are reported for Florida: L. carolinianum var. carolinianum having chiefly lanceolate-spatulate, obtuse or retuse leaves, and dense flowers, and L. carolinianum var. angustatum, with mostly linear-lanceolate leaves, loose flowers, and often dwarfish size. When not in flower may be mistaken for the seaside goldenrod due to similarity of leaves. Possesses salt glands on leaves and stems. Aerenchymatous tissue in the roots and petioles allows the plants to withstand submersion in seawater. Distribution: Canada to Mexico, and Caribbean Islands. Flowers all year, but chiefly in late summer and fall in the Tampa Bay area.

![Figure 26. Flowers of Limonium carolinianum.](image)

**POACEAE (GRASS FAMILY)**

Annual or perennial herbs of varying habit, or rarely treelike woody plants (bamboos). Culms with hollow internodes and solid nodes. Roots fibrous, stolons often present. Leaves alternate, distichous, with parallel veination, consisting of a sheath enveloping the culm, and a flattened, linear to lanceolate-confluent blade, the two divided by the ligule; ligule entire, fringed with hairs or absent. Spikelets mostly monoeocious, small, perianth indistinct, usually represented by two clear scales (lodicules) at the base of the flower arranged in panicles, racemes or spikes. Spikelets consisting of a rachilla with one to several distichous florets. At the base of the rachilla, subtending the floret, are two alternate bracts, termed first and second glume; the one or more succeeding lemmas bear in their axils a single flower, with a second, two-nerved palea separating the flower and rachilla. Stamens 1-6, usually 3, with 2-celled anthers; pistil 1, with a single-celled, 1-ovuled ovary; styles usually 2, often with plumose stigmas. Fruit usually a Caryopsis, embraced by the lemma, or a naked achene, utricule or berry. Endosperm typically starchy, large. A family of 500 genera and over 10,000 species of worldwide distribution. Synonym: Graminae.

**Distichlis spicata** (L.) Greene Common name: Seashore Saltgrass (Figure 27). Plants with erect culms 10-40 cm tall, sometimes taller, forming extensive mats on salt flats and wet prairies; dioecious, perennial, mostly glabrous. Leaves distichous with overlapping sheaths, rigidly ascending, flat to involute, sharp-pointed, mostly less than 15 cm; ligule short, membranous. Inflorescence a panicule, 1-6 cm, conspicuously stalked, usually pale or greenish; spikelets mostly 6-10 mm, compressed, sessile, lemmas 3-6 mm; paleae winged on keels in stamine florets; anthers 2 mm. Aerial stems produced by underground rhizomes form extensive mats over salt

![Figure 27. Distichlis spicata. Seashore Saltgrass.](image)
flats and coastal prairies. Distribution: Canada to Texas and Mexico, the West Indies, Central and South America. On the west coast found from British Columbia to Pacific slopes of Chile. Flowers in summer.

*Monanthochloë littoralis* Engelm. Common name: Key Grass (Figure 28). Creeping, wiry-stemmed perennial grass with short, clustered subulate leaves mostly less than 1 cm, gray-green, with overlapping sheaths, conspicuously distichous; ligules about 0.5 cm, ciliate. Plants dioecious, spikelets 1 to a few, nearly concealed in the leaves. Flowers 3-5; glumes absent, lemmas convolute, uppermost often rudimentary, enclosed between keels of the floret next below. Staminate florets with long filaments and white anthers 3-4 mm; pistillate spikelets having lemmas with texture similar to the leaves. Fruiting lemmas to 6 mm, caryopsis 2-3 mm, beaked, reddish-brown.

A genus with one species found along both coasts of North America forming dense mats on rocky and muddy flats. Clustered blue-green leaves and concealed spikelets are good identification characters. Distribution: South Florida and the Keys, southern Texas, California, Mexico, the West Indies, and South America. Flowers in spring and fall.

*Paspalum vaginatum* Swartz Common name: Salt Jointgrass (Figure 29). Widely creeping, stoloniferous perennial, with culms 8-60 cm tall. Blades flat, 3-8 mm wide, 2.5-15 cm long; leaf sheaths inflated, usually overlapping, loose; ligule pilose. Two racemes, rarely another below, on short peduncles; at first erect, usually spreading or reflexed at maturity, 2-5 cm long. Spikelets solitary, 3-4 mm, compressed, ovate-lanceolate; outer glume 5-veined and sterile; lemma 4-veined, mid-veins reduced.

Another of the mat-forming grasses of Florida. Noted for its sand-binding properties along shorelines. Distribution: North Carolina to Texas, Mexico, South America, and Africa. Flowers in fall.

*Figure 29. Paspalum vaginatum. Salt Jointgrass.*

*Spartina alterniflora* Loisel. Common name: Smooth Cordgrass (Figure 30). Culms 0.5-2.5 m tall, usually soft or spongy at the base, often 1 cm or more thick. Leaves smooth throughout or margins of blades minutely scabrous; leaf blades flat, 1.0-1.5 cm wide, involute at the tips. Spikes appressed, 5-15 cm; spikelets 10-13 cm, glabrous; glumes glabrous or hispid on the keel, alternate on rachis, the first acute, narrow, shorter than the lemma, second obtuse, slightly longer than lemma. Anthers and stigmas white in anthesis.

*Figure 28. Monanthochloë littoralis. Key Grass.*
Probably the best known coastal marsh plant, *S. alterniflora* is found from Newfoundland to Texas and on the Atlantic coast of Europe, where it crossed with the native species, *S. maritima*, producing the fertile hybrid species *S. townsendii*. Much information on growth, physiology, and relation to tide levels is available on this species. Flowers in summer and early fall.

![Image of Spartina alterniflora](Figure 30. Spartina alterniflora. Smooth Cordgrass.)

*Spartina patens* (Ait.) Muhl. Common name: Saltmeadow Cordgrass (Figure 31). Culms slender, usually less than 1 m tall, in dense colonies produced by long slender rhizomes. Leaf blades mostly involute, rigid, less than 3 mm wide. Spikes 4-6, spreading ascending, 2-5 cm, rather remote on the axis; spikelets 7-12 mm, second glume acute, exceeding the lemma, scabrous on keel; first glume less than 1/2 the length of lemma.

Usually found in zones above *S. alterniflora* in saline marshes and sandy meadows. Previously mowed from the “high meadows” of New England and other North Atlantic states for cattle fodder. Distribution: Quebec to Texas. Flowers in summer.

*Sporobolus virginicus* (L.) Kunth Common name: Virginia Dropseed (Figure 32). Perennial grass with numerous creeping, slender rhizomes, often rooting at the nodes; culms erect, 10-50 cm tall, sheaths overlapping. Blades flattened at base, or becoming involute, 3-5 cm, predominately distichous; ligule thin, membranous, fringed with hairs. Panicle pale, dense, spikes 3-10 cm; spikelets 2.0-2.5 mm, glumes and lemmas about equal, acute.

![Image of Sporobolus virginicus](Figure 32. Sporobolus virginicus. Virginia Dropseed.)
Widely distributed throughout coastal areas, forming extensive colonies. In the vegetative state \textit{S. virginicus} may be easily confused with \textit{Distichlis spicata}, thus inflorescences are necessary for identification. Distribution: Virginia to Texas, the West Indies and South America. Flowers in late summer and fall.

**PRIMULACEAE (PRIMROSE FAMILY)**

Annual or perennial herbs with generally simple alternate, opposite, or whorled basal leaves. Flowers dioecious, actinomorphic, calyx 4-9 partially united, generally persistent sepals; corolla 4-9 fused petals, or rarely absent. Stamens as many as the corolla lobes and opposite them, epipetalous, in a single whorl. Ovary superior or half-inferior (\textit{Samolus}), unilocular, typically with 5 carpels; style 1, stigma simple. Fruit a 1-celled, 2-5 valved capsule. Seeds numerous, firm. A family of about 28 genera and nearly 500 species of worldwide distribution, but mostly of north temperate regions.

\textit{Samolus ebracteatus} HBK. Common name: Water Pimpernel (Figures 33, 34). Short, erect herbs to 40 cm tall, usually less, with rather thick, spatulate or obovate leaves 3-12 cm. Flowers small, in simple or branched, long-peduncled racemes or panicles; calyx perigynous, ovate, 5-lobed; corolla white or pink, 6-7 mm wide, 5-lobed; stamens 5, adnate to above the middle of corolla tube. Capsule 5-valved, 3-4 mm wide.

Often overlooked in the marshes, this plant is easily recognized by the rather thick leaves, single whorl of stamens opposite the corolla lobes, numerous seeds and the white or pink petals. Distribution: coastal plain from Florida to Texas, and West Indies. Flowers all year.

![Figure 33. \textit{Samolus ebracteatus}. Water Pimpernel.](image)

![Figure 34. Flowers of \textit{Samolus ebracteatus}.](image)

**PTERIDACEAE (BRACKEN FERN FAMILY)**

Terrestrial ferns with creeping, erect rootstocks. Leaves pinnate, simple or decompound, continuous with rachis. Sporangia in marginal, usually indusiate sori, or nonsoral, acrostichoid on the network of veins over the entire abaxial surface, sometimes intermixed with waxy puberulence, or paraphysate. Annulus of thickened cells, sporangia transversely dehiscent; spores mostly tetrahedral. About 500 species, including some of the largest ferns.
Acrostichum aureum L. Common name: Mangrove Fern, Leather Fern (Figure 35). Ferns with erect, stout rhizomes with roots containing an aerenchymatous cortex. Leaves to 2 m, simple pinnate, tufted; stipes stout, compressed at base, sulcate, 5-10 mm thick at base, mostly glabrous above. Pinnae 10-20 cm, stiff, midvein conspicuous. Sporangia-bearing pinnae disposed toward apex, distal to sterile pinnae on the same rachis. Sporangia usually smaller and dark brown on the abaxial surface, intermixed with capitate paraphyses. Sporangia found all year.

Ferns found in tidal marshes and brackish areas belong to this genus. Their extremely long leaves are conspicuous. An additional species, Acrostichum danaefolium Langsd. & Fisch., also found in Florida, differs by having lanceolate pinnae, acute at the apex. Distribution: Florida, the West Indies, Mexico, and South America.

RHIZOPHORACEAE (RED MANGROVE FAMILY)

Trees or rarely shrubs with opposite, mostly entire, coriaceous, stipulate leaves, stipules conspicuous, caducous, interpetiolar. Flowers monoecious, actinomorphic, solitary in the axils, or cymose; sepals 3-14, basally connate, calyx tube short, persistent. Petals same number as sepals, smaller, fleshy or coriaceous; stamens 2-4 times as many as sepals, inserted on petals. Anthers on short filaments, introrse, 4-celled at anthesis. Pistil 1, ovary variable in position, locules 2-4. Fruit usually a berry, rarely dehiscent, the seed in some genera germinating while fruit still attached to parent plant. A family of 17 genera and 70 or more species comprising most of the “mangrove” vegetation throughout the tropics.

Rhizophora mangle L. Common name: Red Mangrove (Figures 36, 37, 38). Trees to 25 m tall, evergreen with thin gray bark and dark red wood. Leaves 2-12 cm, broad, blunt-pointed at apex, entire, deep green above, paler below; stipules 2-4 cm, covering buds, buds 1.5-2.5 cm. Flowers 2- to 3-clustered, sepals 4, pale yellow, 1.0-1.5 cm, coriaceous; petals also yellow, 7-8 mm, curved downward, pubescent; stamens 8.
Fruit 2.5-3.0 cm, the single seed germinating within to produce a radicle 25-30 cm in length.

A characteristic plant of the mangrove swamps of Florida, the red mangrove is easily identified by its characteristic "prop roots" arising from the trunk and branches, and by young seedlings attached to the parent plant. These viviparous seedlings are carried by the tide to new locations where they send out roots and begin formation of new mangrove colonies. Distribution: Florida, from Daytona Beach to Cedar Key, the West Indies, central Mexico to Ecuador and Brazil, Galapagos Islands and Polynesia. Flowers all year in tropical American shores.

Figure 37. Seedling of Rhizophora mangle.

Figure 38. Flowers of Rhizophora mangle.

SOLANACEAE (NIGHTSHADE FAMILY)

Annual or perennial herbs or shrubs, vines or small trees, all with alternate leaves, these pinnately or bipinnately divided, or simple. Flowers monoecious, radially or occasionally bilaterally symmetrical, terminal or axillary, solitary or cymose. Calyx 4-6 lobed; corolla mostly 5-lobed, lobes folded; stamens 5, epipetalous, anthers often connate or connivent. Ovary superior, ovules numerous. Fruit a 2-chambered, many-seeded capsule or berry, often poisonous. About 85 genera with 2300 species, chiefly of New World tropical distribution.

Lycium carolinianum Walt. Common name: Christmas Berry (Figure 39). Small shrub or tree, to 3 m, usually weakly spined. Leaves small, deciduous, entire, somewhat thick, about 0.5-2.0 cm long, 1.5-5.0 mm wide, smooth, on very short spur shoots each of which may also
bear flowers or thorns. Flowers mostly solitary, calyx tubes 2.5-3.5 mm; corolla blue or lavender, lobes 3-6 mm, spreading; stamens 5, filaments slender. Ovary 2-locular; stigma 2-lobed. Fruit a small globose or oblong berry, bright red, about 1 cm.

Found along the highest areas of the salt marsh and strand, the bright red fruit and bluish petals aid in easy identification of this species. Distribution: South Carolina to Texas and the West Indies. Flowers all year in the southern extent.

Physalis viscose L., Common name: Ground Cherry (Figure 40). Plants with slender, creeping stems covered with a dense stellate pubescence or becoming glabrate at maturity. Leaves 4-10 cm, elliptic, oval or ovate, obtuse, thin, entire. Flowers mostly solitary, in leaf axils; calyx 5-parted, membranous, becoming bladderlike at maturity and enclosing the berry; corolla yellow-green, with dark center, 1.5-2.0 cm wide. Fruiting calyx 2.5-3.0 cm, rounded-ovoid, somewhat sunken at base.

“Ground cherry” aptly describes the appearance of the calyx which develops and surrounds the mature berry. The stellate pubescence gives a slightly gray-green cast to the leaves, another characteristic for easy identification. Two varieties are reported for Florida: *P. viscose* var. *maritima* (M. A. Curtiss) Waterfall, having ovate to spatulate leaves 2-5 cm wide, and *P. viscose* var. *elliottii* (Kunze) Waterfall, with lanceolate, tapered leaves, blades two to ten times longer than wide. Distribution: coastal plain from Virginia to Texas and into Central America. *P. viscose* var. *elliottii* is considered as endemic to Florida. Flowers all year.

**VERBENACEAE (VERBENA FAMILY)**

Herbs, shrubs, or trees with quadrangular or terete stems. Leaves simple or palmately compound, opposite or whorled. Flowers monocious, usually in terminal heads or spikes, or in axillary cymes. Calyx mostly 4-5 parted, tubular; corolla 4-5 lobed, generally 2-lipped or zygomorphic. Stamens 4, rarely 5-6, adnate to corolla tube. Stigma 2-lobed, included or exserted. Ovary superior, 2-5 locular. Fruit a schizocarp, a 1-4 seeded drupe, or a utricle. About 100 genera with 2,500 species of wide distribution, but primarily of tropical and warm temperate regions.

*Lantana involucrata* L. Common name: Lantana (Figure 41). A much-branched shrub up to 1 m or more in height, stems with or without
acknowledgments

I wish to extend my sincere appreciation to the many persons around the state who so willingly cooperated during the gathering of information for this paper. Their interest, patience, and cooperation made this publication possible.

I am deeply indebted to the staff of the Marine Research Laboratory for many suggestions throughout the research phase and preparation of the manuscript. Especially, I acknowledge Messrs. Edwin A. Joyce, Chief, Bureau of Marine Science and Technology, Dale S. Beaumariage, Laboratory Supervisor, Charles R. Futch, and Ms. Karen A. Steidinger and Ms. Beverly S. Roberts for their guidance and editorial assistance throughout this study.

Finally, I would like to thank Dr. Robert W. Long, Jr., Department of Biology, University of South Florida, Tampa, for his critical comments and review of the final manuscript.

selected references

Adams, D. A.

Blum, J. L.


Chapman, V. J.

Cooley, G. R.

Correll, D. S., and H. B. Correll.

Davis, J. H.

Dickson, J. D., R. O. Woodbury, and T. R. Alexander.

Duncan, W. H.
EGLER, F. E.

ELEUTERIUS, L. N.

ELEUTERIUS, L. N., and S. MCDANIEL.

GILLIS, W. T.

GRAHAM, S. A.

GUPPY, H. B.

HARPER, R. L.

HARRINGTON, H. D., and L. W. DURRELL.

HARRIS, D. R.

HITCHCOCK, A. S.

HOTCHKISS, N.

HOWARD, R. A.

JACKSON, C. R.

KEEFE, C. W.

KURZ, H., and K. WAGNER.

LAKELA, O., and R. W. LONG.

LAWRENCE, G. H. M.

LEDIN, R. B.

LEWIS, W. H.

LITTLE, E. L., JR., and F. H. WADSWORTH.

LONG, R. W.

LONG, R. W., and O. LAKELA.

MILLSPAUGH, C. F.

MOLDENKE, H. N.

MORTON, J. F.

MOUL, E. T.
MUENSCHER, W. C.

ODUM, E. P.

ODUM, W. E.

OOSTING, H. J.

PARKS, J. C.

PENFOUND, W. T.

PENFOUND, W. T., and E. S. HATHAWAY.

PURER, E. A.

RADFORD, A. E., H. E. AHLES, and C. R. BELL.

RICHMOND, E. A.

ROBERTSON, E. T., and G. B. GOODING.

RUDD, V. E.

SAUER, J.

SAVAGE, T.

SEMPLE, J. C.

SMALL, J. K.

STEARN, W. T.

TEAL, J. and M. TEAL.

THORNE, R. F.

UPHOF, J. C.

URSIN, M. J.

WAISEL, Y.

WARD, D. B.

WEST, E., and L. E. ARNOLD.

WILCOX, M. S., F. FORBES, S. SHURE, and L. V. WILCOX, JR.
WUNDERLIN, R. P.

YARLETT, L. L.
INDEX

Acrostichum aureum, 22
AIZOACEAE, 6
Amaranth family, 6
AMARANTHACEAE, 6
Aster family, 6
Aster tenuifolius var. aphyllus, 7
ASTERACEAE, 6
AVICENNIAEAE, 9
Avicennia germinans, 9
niitida, 9

Baccharis halimifolia, 7
BATAEAE, 10
BATIDACEAE, 10
Batis maritima, 10
Black mangrove, 9
Black rush, 17
Borage family, 11
BORAGINACEAE, 11
Borreria arborescens, 8
frutescens, 7
Button mangrove, 11
Buttonwood, 11

Caesalpinia crista, 13
Carpetweed family, 6
CHENOPODIACEAE, 12
Christmas berry, 23
Coin vine, 14
COMBRETACEAE, 11
COMPOSITAE, 7
Conocarpus erecta, 11
erecta var. sericeus, 12
Coral bean, 14

Dalbergia ecastophyllum, 14
Distichlis spicata, 18
Dondia linearis, 13

Ecastophyllum ecastophyllum, 14
Erythrina herbacea, 14
Eustoma extallatum, 16

FABACEAE, 13
Fish poison vine, 14

Gentian family, 16
GENTINACEAE, 16
Goosefoot family, 12
GRAMINAE, 18
Grass family, 18
Gray nickerbean, 13
Ground cherry, 24
Groundsel tree, 7
Guillardia crista, 14

Heliotropium curassavicum, 11

Iva frutescens, 8

JUNCACEAE, 16
Juncus roemerianus, 17

Key grass, 19

Laguncularia racemosa, 12
Lantana involucrata, 24
Leadwort family, 17
Leather fern, 22
Legume family, 13
LEGUMINOSAE, 13
Limonium carolinianum var. angustatum, 18
. carolinianum var. carolinianum, 18
Lycium carolinianum, 23

Mangrove fern, 22
Marsh elder, 8
Marsh samphire, 6
Melanthera aspera, 8
Monanthochloa littoralis, 19

Necklace pod, 15
Needle rush, 17
Nightshade family, 23

Paspalum vaginatum, 19
Pea family, 13
Perennial glasswort, 12
Philoxerous vermicularis, 6
Physalis viscosa var. elliottii, 24
viscosa var. maritima, 24
PLUMBAGINACEAE, 17
POACEAE, 18
Primrose family, 21
PRIMULACEAE, 21
PTERIDACEAE, 21

Red mangrove, 22
RHIZOPHORACEAE, 22
Rhizophora mangle, 22
Rush family, 16

Salicornia virginica, 12
Salt jointgrass, 19
Saltbush, 7
Saltmarsh aster, 7
Saltmeadow cordgrass, 20
Saltwort, 10
Saltwort family, 10
Samolus ebracteatus, 21
Sea blite, 13
Sea lavender, 17
Sea oats, 8
Sea purslane, 6
Seashore saltgrass, 18
Seaside goldenrod, 9
Seaside heliotrope, 11
Sesuvium portulacastrum, 6
Smooth cordgrass, 19
SOLANACEAE, 23
Solidago sempervirens var. mexicana, 9
Sophora tomentosa, 15
\[\text{tomentosa var. bahamensis, 15}\]
Spartina alterniflora, 19
\[\text{patens, 20}\]
\[\text{townsendii, 20}\]
Sporobolus virginicus, 20
Suaeda linearis, 13
\[\text{maritima, 13}\]

TERMINALIACEAE, 11

Verbena family, 24
VERBENACEAE, 9, 24
Virginia dropseed, 20

Water pippermel, 21
White mangrove, 11
White mangrove family, 11