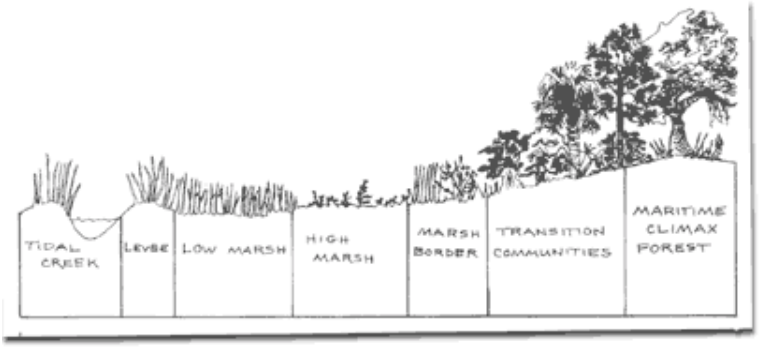
SALT MARSHES

Salt marshes of the southeastern coast occur in shallow areas between the barrier islands and the mainland and are flooded by tides twice daily. The large tidal range, coupled with the gentle slope of the land, contribute to the extensiveness of the marsh system. With the marshes ranging from 4 to 8 miles wide, the 100 miles of Georgia's coast contain approximately one-half million acres of marsh land about one-third of all the salt marshes on the eastern coast of the United States.

The marsh is a harsh environment for resident life. Major factors limiting life are intermittent exposure to air and salt water and the rapid change of temperature and changing tides. The saturated muddy soils are anaerobic (low in oxygen content) and tend to concentrate salt through evaporation of sea water. Typical of the intertidal condition, relatively few species inhabit the marsh full-time, but many land and aquatic species visit the marsh to feed and seek shelter.

The marsh can be divided into several ecological zones, according to the relative time and depth of tidal inundation (Figure 1). The levee marsh describes the habitat on the banks of tidal creeks. Here the soil is washed regularly with sea water, which keeps changes in salinity and temperature to a minimum and continually supplies nutrients to the plants on the creek banks. The smooth cordgrass on the levees usually grows to its full height of 6 feet.



Behind the levees is the low marsh which makes up most of the southern marshlands. Incoming tidal water overflows the banks of the numerous small creeks and floods the low marsh for several hours a day. The relatively shallow water moves slowly over the black mud, exposing the water to the sun's radiant energy. The increased temperature that results and the great quantity of organic matter (detritus) suspended in the water and mud greatly reduce the amount of oxygen available to living organisms. Increased evaporation accompanies the elevated temperatures, causing a rise in salt concentration. These conditions, coupled with the intermittent exposure to air and water, make the low marsh a less optimal living environment than the levee marsh. Here the cordgrass grows I to 3 feet high.

With a slight rise in elevation, the low marsh gradually changes into high marsh with sandier soil which, during high tide, is flooded by barely enough water to cover the surface for an hour or less each day. Because the surface of the soil is exposed to air for long periods of time, much of the surface water evaporates, causing subsurface water to be drawn upward by capillary action (the same way water is drawn up a paper towel). Continued evaporation of the soil water makes the salt left behind a severe limiting factor for the plants living in this area. The cordgrass is either dwarfed (3 to 12 inches in height) or nonexistent, and more salt-resistant species like glasswort, saltwort, and salt grass populate the area. Often bare sandy areas, "salt pans," occur where the salt concentration has become great enough to prohibit all plant life.

The levee and low marshes are well populated with mud fiddler crabs, purple marsh crabs (squarebacked crabs), oysters, ribbed mussels, polychaete worms, periwinkle snails, and two kinds of black marsh snails (the mud snail and the smaller coffee bean snail). Toward the higher sandier marsh, mud fiddlers and purple marsh crabs give way to sand fiddlers and wharf crabs (smaller, brown, square-backed crabs).

A slight elevation above the high marsh prevents tidal inundation except during spring and storm tides. Without the daily wash of sea water, rains and freshwater run-off from nearby

uplands markedly lowers salinity. Here a sharp demarcation in plant communities occurs with the presence of needle rush and yellow-flowered sea oxeye, making this zone the true marsh border. As seen in many inner-island salt marshes with a freshwater influence, the entire marsh may be populated with needle rush. In autumn, the light purple blossoms of the marsh lavender and marsh aster add a delicate hue to the marsh border.

At a slightly higher elevation, other marginal plants such as marsh elder, broad-leaf and narrow-leaf groundsel-trees, and salt meadow cordgrass are seen. Salt meadow cordgrass is the predominant plant in the marshes of the New England and Middle Atlantic states, while the smooth cordgrass dominates the southern marshes. Among watery depressions in this less saline area the largest of the fiddler crabs, the brackish-water fiddler, can be found. Occasionally brackish-water fiddlers are seen among foraging groups of sand fiddlers in the high dry marsh.

Cabbage palms, often seen fringing the marshes, are a part of a transition community of woody plants leading toward the maritime forest. Plants such as red cedar, wax myrtle, yaupon holly, red bay, and the introduced salt cedar are also a part of this community. The same border communities are seen surrounding the marsh islands or hammocks. Similar to the shrub zone of the beach, the marsh border and transition communities are common feeding grounds for many mammals, birds, and reptiles.

Where the uplands rise more steeply from the marsh, the climax forest often extends to the edge of the marsh, with no transition community at all. The languid limbs of the great oaks, laden with Spanish moss shading the edge of the marsh, create the serene setting unique to the southern salt marshes.

The shallow tidal waters of the marsh are a nursery where the young of many marine species feed and grow before returning to the sea. Not only are many of these commercial species such as shrimp, crabs, flounder, sea trout, and menhaden, but also they provide food for large offshore marine animals: swordfish, snapper, grouper, porgy, bluefish, tuna, and other commercially valuable fish.

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