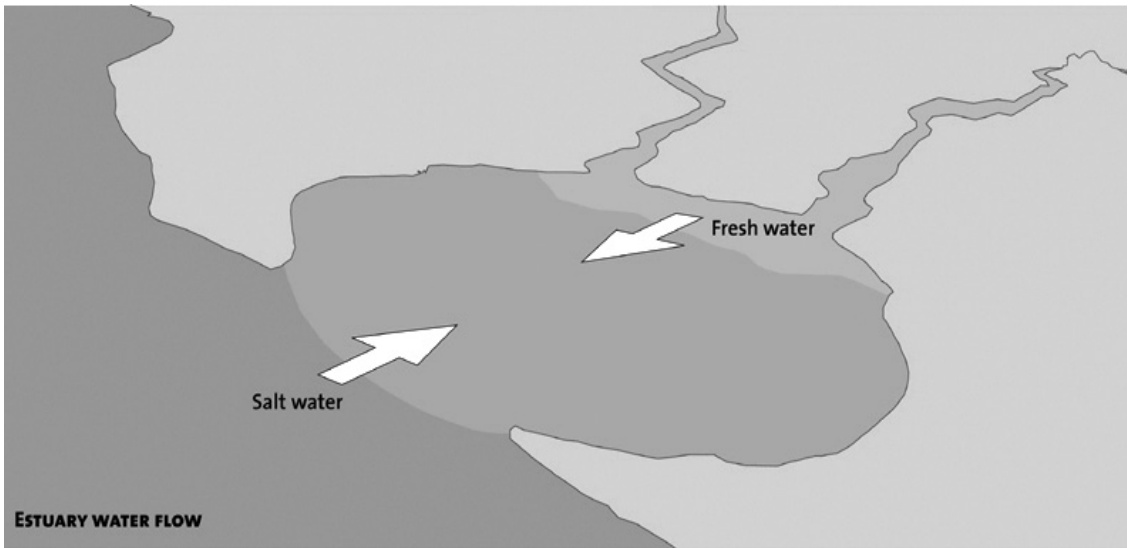


Habitats

Rookery Bay Reserve has twelve main sub-categories of habitat. This classification represents an aggregation of habitat types similar in both obvious characteristics (vegetation, soil and hydrology) and management strategies related to fire regimes, exotic control and restoration specific to the Reserve. The habitats in the Reserve and adjacent lands are as follows: Cabbage Palm/Oak Hammock; Pine Flatwoods; Coastal Xeric Scrub; Cypress Slough/Prairies, Freshwater Marshes; Tropical Hardwood Hammock; Saltwater Marshes; Mangrove Forests and Islands; Coastal Strand; Submerged Vegetated Bottom; Submerged Nonvegetated Bottom and Open Water.



Estuary

Estuaries are places where fresh water from rivers mixes with salt water from the sea. An estuary can be a bay, lagoon, or slough. These important coastal habitats are used as spawning grounds and nurseries for at least two-thirds of the nation's commercial fish and shellfish. The wetlands associated with estuaries buffer upland communities from flooding. In order to effectively protect an estuary, the entire watershed must be monitored and managed.

(3) Coastal Xeric Scrub: Scrub oak species occur on Reserve lands where the elevation exceeds five feet. This habitat is dominated by oak and saw palmetto. Many shrubs and weeds here are extremely drought tolerant, adapted to grow in continuously dry, sandy, nutrient-poor soil. Although these areas receive similar rainfall amounts as other areas in the Reserve, the permeable sand precludes significant water absorption or storage. The vegetation thus assumes a brushy and shrublike appearance.

(4) Cabbage Palm/Oak Hammock : This habitat consists of a series of scattered mixed hardwoods including live oaks and myrtle oaks, red maple, red bay, cabbage palm, and a variably dense understory of shrubs. This variety of hardwoods and lack of understory grasses distinguishes this habitat from pine flatwoods. This habitat may have standing water during any part of the year, although this is more common in the wet season. This habitat intergrades into the pine flatwoods habitat in some areas.

Both pine flatwoods and cabbage palm/oak habitats are fire dependant systems, surviving or benefiting from periodic fires. During the dry season these habitats may be subject to natural or man-induced fires. Fire is beneficial in removing dry understory, recycling nutrients to the soils, inducing seed dispersal and germination in many of the plants, and halting successional changes which would result in the development of a different association of plants and animals.

(5) Tropical Hardwood Hammock: Examples of this habitat occur on the coastal barrier islands in the Reserve and are scattered among the shell mounds of the mangrove forest. The plants here include oaks, cabbage palms, stopper, gumbo limbo and sea grape. The understory contains a variety of lesser hardwood species, ferns, and orchids.

(6) Open Water: Rookery Bay, Henderson Creek, Johnson Bay and Gullivan Bay are the dominant water bodies in the Reserve. Resident and migratory birds, particularly coastal waterbirds, make extensive use of the open waters for feeding and resting.

(7) Nonvegetated Bottom: This habitat, also associated with the open water region, is comprised primarily of soft mud (i.e. very fine sand and silt/clay) that is not stabilized by vegetation. Nonvegetated bottom is more extensive in Rookery Bay than the vegetated bottom, and creates a habitat for various benthic invertebrates. Oyster beds, limited to the mid-intertidal zone, support a variety of organisms. Oyster reefs are found in hard and soft bottoms consisting of sand or firm mud. Reef structures formed by the

Estuarine Habitats

As the rivers meet and mix with the sea, a variety of habitats are created that can be most easily identified by their characteristic plant assemblages. These habitats are home to plants that have adapted to the brackish waters of the estuary, including near shore macro algae, seagrasses, and the plants of the salt marsh and mangrove forest. Plants that tolerate the salty environment of the beach and shore environment have also developed specific adaptations to this harsh habitat. They are the pioneering plants that first colonize the beaches and the shorelines of the bays. Their leaves tend to be succulent with a waxy outer cuticle, helping them retain available moisture. Vines are especially successful pioneer plants on the beach. Their low, sprawling runners grow out on the sand dunes, stabilizing the sand and shore.

Upland Habitats

Only a small percentage of Rookery Bay Reserve is considered upland. The pine flatwoods and scrub areas can most easily be observed by exploring along Shell Island Road, but may also be seen from the trails on the north end of Key Island. Tropical hardwood hammock habitat can be seen along Cat Claw Trail on Shell Island Road, around Reserve headquarters and ELC campus. Nearly pristine tropical hardwood hammocks are located on both Cannon and Key Island, both of which are only accessible by boat. The plant assemblage of the uplands is very diverse.

Habitat Types

(1) Pine Flatwoods: This habitat is dominated by slash pine and saw palmetto, with cabbage palm islands and areas of grasses and sedges interspersed. Even though this habitat is indicative of higher, drier land, standing water may cover certain areas in the slash pine habitat for several weeks or months in the rainy season.

(2) Coastal Strand: Coastal strand communities are highly adapted to a harsh environment of temperature extremes, porous sandy soils, salt spray, and abrasive sand. Pioneer plants are found on the beaches and foredunes, many species of shorebirds feed and rest along the beaches, and other forms of marine life rely on this habitat for survival.

vermetid gastropod *Petaloconchus* spp. are found in the Ten Thousand Islands. No living vermetids have been observed recently, but the reefs support a diverse live bottom community.

(8) Mangrove Forests: Three species of mangroves occur in the Reserve: red, black and white. Conditions that limit the distribution of mangroves and determine the extent of the mangrove ecosystem include climate, salinity, tidal fluctuation, substrate, and available nutrients. In the Reserve, distinct zones occur with red mangrove living farther out into the water and extensive black mangrove forest occurring immediately behind.

The mangrove forests of the Reserve are of critical value to the estuarine ecosystem. The complex branching prop roots of the red mangrove support a large number of plants and animals. Numerous invertebrates and fishes seek shelter and food in the maze of trunks and roots. Other species utilize the mangrove canopy. A variety of birds are associated with the mangrove forest, using islands as night roosts and rookeries. The constantly shedding leaves the mangrove trees rapidly decay to form small particulate material called detritus. Detritus is the major food source for many of the small estuarine invertebrates that inhabit the soft bottom sediments among the mangrove roots. Scientists have estimated that detritus generated from the mangroves surrounding Rookery Bay provided 32% of the energy base for the organisms in this community.

(9) Vegetated Bottom: Seagrasses, associated with the open water habitat, are not extensive in Rookery Bay but are considered seasonally abundant in adjacent waters. Seagrass communities are more extensive in the shallow waters south of Cape Romano. Seagrass beds were apparently more abundant and widely distributed in Rookery Bay years ago, but have declined in the bay due to environmental and/or human factors. This important habitat plays a vital role as a nursery area and feeding ground for many of the fishes and invertebrates inhabiting Rookery Bay and adjacent waters.

(10) Saltwater Marsh: The saltwater marsh habitat is found landward or interspersed among the inland side of the mangrove fringing forests. Although it does not usually have a direct tidal connection, it invariably contains brackish water and is periodically inundated at the higher spring tides and during storm events. Salt marshes are among the most productive systems for organic matter in any estuary and support large numbers of vertebrate and invertebrate species. In the Reserve, they are prime feeding sites for many resident wading or migratory game birds, raptors and several species of mammals. They

provide a transition between saline and freshwater areas in the Reserve.

(11) Freshwater Marsh: The freshwater marsh habitat typically borders pine flatwoods and cypress assemblages. Although a distinct ecotone may exist between freshwater marshes and upland habitats such as pine flatwoods, freshwater marshes often intergrade into salt marshes with little noticeable ecotonal transition. The dominant plants are bulrushes, assorted grasses and sedges, ferns and cattails.

(12) Cypress Slough/Cypress Prairie: This habitat is dominated by pond or bald cypress with a mixed understory throughout. The cypress habitat is restricted to areas subjected to flowing fresh water (i.e. sheetflow). It is intermittently exposed to surface waters flowing through Reserve uplands, and therefore the quality and quantity of water is important to the system. The invasion of nonindigenous plant species, in combination with human alterations, causes an interruption in the natural hydroperiod. This interruption may also be caused by water table lowering.

