

THE VEGETATION
AND WILDLIFE RESOURCES
OF DATHA ISLAND
BEAUFORT COUNTY, S.C.

By

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INTRODUCTION

Datha Island is one of approximately seventy islands of varying size which lie seaward from Beaufort, South Carolina and comprise the Sea Islands region of Beaufort County. Beaufort County lies in the lower Atlantic Coastal Plain of South Carolina and is bounded on the east and south by approximately 36 miles of irregular Atlantic Ocean Shoreline. This shoreline is comprised of a series of marsh, barrier and erosion-remnant sea islands which are separated from each other and the mainland by tidal creeks and inlets which drain an extensive system of marsh-filled river valleys and lagoons. This drainage system has many broad, low-gradient interior drains which are extensions of these tidal creeks into emergent wetlands. These wetlands comprise approximately 37% of the land surface in Beaufort County. Less than 10% of the county is urban or industrial and the majority is either agricultural or forested. This is especially true in the sea islands region except on Lady's Island where suburban encroachment has spread eastward from Beaufort and on Hilton Head Island and several smaller islands where resort development has created a more suburban land use pattern.

Datha Island, like St. Helena, its largest near neighbor and a number of smaller erosion-remnant islands, lies between St. Helena Sound to the northeast and Port Royal Sound to the south. Many tidal creeks and marsh islands separate these islands from each other and a series of barrier islands protects them from the Atlantic Ocean. Datha Island consists of approximately 865 acres of high ground characterized by coastal pine-mixed hardwood forests

in various stages of succession. The island is bordered on the north by the Morgan River, on the east by Jenkins Creek, on the south by Bobb Island and on the west by Jenkins Creek, Warsaw Flats, Oak Island and the Pine Islands. On the east, south and west lie extensive tidal flats and marshlands dominated by smooth cordgrass. Like a typical erosion-remnant island, Datha has no beachfront. As a result, erosion is relatively minor, although some localized erosion is occurring along creekbanks, especially on the northeast and southwest corners of the island.

The entire Sea Island Coastal Region is characterized by low, sandy islands which are covered with maritime forests and surrounded by marshlands. These broad, expansive marshlands are largely salt water marshes which are punctuated by estuaries with varying degrees of freshwater discharge. The coastal islands as a group consist of erosion-remnant sea islands with an oceanward fringe of marsh or beach dune ridges, sandy barrier islands with extensive dune ridges and marsh islands with widely spaced dune ridges surrounded by marsh. Barrier and marsh islands are geologically young (less than 10,000 years), while erosion-remnant islands range from 10,000 to 180,000 years in age. Physiographically, both islands and marshlands are unstable, being subject to migration due to a number of natural and man-caused influences. The greater period of exposure to erosional forces has eliminated much of the rolling dune/swale physiography of erosion-remnant islands compared to the geologically younger, barrier and marsh islands.

Erosion-remnant islands are the remains of coastal sand bodies and are crudely elongated, rectangular in outline and parallel to the present day shoreline. Their topography is characterized by gentle slopes organized into wide, poorly defined ridges and troughs. Maximum elevations range from 5 to 35 feet and soils are typically sandy.

Barrier islands, like erosion-remnant islands, are crudely rectangular in outline, elongated and parallel to the present day shoreline. The primary geological distinction is that beach dune ridges on barrier islands are organized into discrete geographic sets with a ridge and swale topography. Typical elevation ranges for barrier islands is 10 to 25 feet and soils are characteristically sandy.

Marsh islands are characteristically marshlands separated by tidal creeks with highly variable outlines. The sloping nature of the tidal marsh surface obscures the isolated and wide sand ridges. Soils are typically clay or silt.

Erosion-remnant islands may have their origin traced to the last interglacial period when these sandy ridges formed the division between the watersheds of coastal rivers. As the shoreline migrated eastward these islands were subject to continuous erosion while younger barrier and marsh islands were just being formed. As a result the topography of erosion-remnant islands in no way resembles beach-ridge topography. Even though the surface cover of these islands is sand, ancient dune topography is absent. The surficial appearance is like that of the mainland, although some marine features have been left behind, superimposed on more ancient landforms.

The soils of sea islands are less diverse and horizon development is less distinct than in mainland soils. Relief is slight and soils are level to mildly depressed with sandy surface layers over loamy or sandy subsoils. Soils are characteristically acid and the accumulation of organic materials is slight except in wet depressions. Soils on erosion-remnant islands were laid down from 25,000 to 35,000 years ago, while marsh soils and barrier island soils are considerably more recent.

The climate of the sea island region is generally pleasant with short, mild winters and warm, humid summers. The latitude, proximity to the ocean and elevation are the primary determining factors influencing climate. The mountains to the west and the Bermuda high pressure system retard cold fronts across the region producing the mild, temperate winters. Summer, though warm and humid, is relatively moderate in contrast to more inland areas, outside the influence of the ocean. Rainfall is abundant, averaging 49 inches per year, and is distributed throughout the year with the greatest concentrations in the summer. Prevailing winds are southwesterly at approximately 8 miles per hour, and coastal areas experience a frost-free growing season of 280 - 290 days per year. All in all, the climate is well suited to the development of temperate, sub-tropical vegetation.

VEGETATION

The casual visitor to the Sea Island Coastal Region of Beaufort County typically thinks of the region as a combination of broad, open marshlands and forests of live oak or pine. The predominance of live oak is a characteristic of true maritime vegetation and forests dominated by this evergreen hardwood species are primarily found to occupy sites on barrier islands. Erosion-remnant islands, which lie outside of the salt-spray influence of the Atlantic Ocean, are characterized by pine dominated woodlands. The original upland forests in this region were probably mixed hardwoods and fire-maintained pine forests. Logging and agriculture throughout the region have resulted in the creation and maintenance of pine-dominated upland forests, although live oak and palmetto may be found as co-dominants on selected sites.

The woodlands of Datha Island vary greatly in composition and structure according to location. Here varying degrees of disturbance have created a mosaic of community types, ranging from almost pure pine stands to relatively old mixed-hardwoods forest. The entire island is surrounded by well developed marshlands, tidal flats and creeks. Here, where the influence of tides is most felt, one finds extensive salt marshes with scattered patches of brackish marsh and a transitional shrub thicket zone which separates the marsh from the adjacent forest.

Marsh Vegetation: The marshes of Datha Island are predominantly salt marsh and brackish marsh with fresh water marshlands being absent from the site. The salt marsh, that area of marshlands surrounding the upland portion of the island and occupying the adjacent tidal flats, is the better developed of the marsh habitats. The frequency and intensity of tidal flooding is the major determining factor for salt marsh vegetation and both low marsh and high marsh may be found around Datha Island. The high marsh is typically flooded less than one hour per day and is characterized by a lower salt concentration than the low marsh. Here marsh elder, silverling or groundsel, and saltmeadow cordgrass dominate with glasswort, smooth cordgrass and sea oxeye as co-dominants and sea lavender and salt grass as associates. The high marsh has a relatively diverse composition and appearance when compared to low marsh and often shares species with the transitional community between marshlands and the adjacent upland habitat.

The low marsh is characteristically flooded twice daily and has a relatively high salinity. The low marsh is dominated by almost pure stands of smooth cordgrass. Some authors separate the low marsh into an upper and lower portion based on the dwarf or tall growth of the cordgrass although the genetic relationships between the two have not been established. It may be assumed that available water and local salt concentrations may account for the relative growth of smooth cordgrass. The majority of marshlands in the area of Datha Island are low marsh with relatively uniform growth of the single dominant species.

Where salinity drops substantially due to the introduction of fresh water or infrequent tidal flooding brackish marshes occur. On Datha, these communities are restricted largely to the central western edge of the island, and small patches around Oak Island and the Pine Islands. Here the dominant

vegetation is blackrush with occasional occurrences of glasswort, saltgrass and sea oxeye.

The marshlands of Datha show little sign of disturbance by man. The dikes constructed more than 100 years ago in the region of Oak Island and the Pine Islands have eroded to the point that they now constitute little more than salt flats. These flats have a very high salinity and support a sparse plant community. Other evidence of human influence may be seen along the causeways and at several points on the perimeter of the island where devices to control erosion have been constructed.

Shrub Thicket Vegetation: Lying in a narrow band around the island and occupying all the ground above the normal high tide but within the region flooded by spring and storm tides, one may find a relatively dense shrub thicket community. This community possesses characteristic vegetation from the adjacent salt marsh and the upland forest and forms a transitional zone between them. Dominated by species from typical high marsh communities these thickets also contain groundsel, yaupon and related species. These thickets are extremely important in stabilizing erosion and in protecting the interior of the island from harsh climatic conditions. Shrub thicket vegetation is best developed where the land surface slopes gradually away from the upland and is poorly developed, if at all, where erosion has cut steep banks. The almost uniform occurrence of this community and its nearly impenetrable nature make it a conspicuous part of the total environmental complex of Datha Island.

Forest Resources: Datha Island has a significant history of agricultural utilization beginning around the end of the eighteenth century and continuing to recent years. Most, if not all, of the island has undergone some degree of manipulation and the present forest composition reflects this alteration.

An overall view of the forest resources of Datha Island shows a forest of pine, palmetto and oaks predominating throughout, with variations in community composition, site dominance and age of stand typically indicating the previous land use of a particular site. A number of distinct forest communities may be recognized from the site.

Oak-pine forests; typically dominated by live oak, laurel oak, slash pine and loblolly pine; may be found in scattered localities and appear to be best developed on Polawanna and Bobb Islands. Here palmetto occurs as an associate, never reaching dominance in the canopy. Other understory species include sweetgum, black cherry, persimmon, southern red cedar, water oak and tallowtree. A relatively dense shrub layer of poison ivy, wax myrtle, Virginia creeper, cow itch, greenbrier, groundsel, dwarf palmetto, yaupon, American beauty berry, sumac and honeysuckle occurs throughout the community. There the canopy has been disturbed and along the openings in the area, a lush ground cover of butterfly pea, resurrection fern, bracken, ragweed, fog fruit, lizzard's tail, and nightshade may be found.

Oak-pine-palmetto forests; dominated by live oak, loblolly pine, slash pine and palmetto; reach their best development along the eastern and northern margins of Datha Island proper. These forests give the appearance of being relatively undisturbed, possibly having been maintained as buffers around more inland agricultural sites. Typical of maritime forest habitats, the oak-pine-palmetto forest has its distribution regulated to some degree by wind and salt spray. These factors, being most influential on the eastern and northern boundaries of the island account for the distribution of this community. A sparse understory and poorly developed shrub layer characterize the oak-pine-palmetto forest giving it a somewhat open appearance. The shrub layer is comprised largely of young oaks, yaupon, dwarf palmetto, wax myrtle, greenbrier and yellow jessamine. Lianas of summer grape and muscadine are common throughout

the community.

Slash pine-palmetto forests are restricted largely to the southwestern edge of Datha Island, Oak Island and the Pine Islands and reach their best development on Oak Island. The community is dominated by slash pine and palmetto with loblolly pine and Southern red cedar appearing as associates. The community is apparently a fire-maintained subclimax type with clear evidence of infrequent fire found throughout the forest. A shrub layer of dwarf palmetto, saw palmetto, inkberry, yucca, buckeye, bracken and poison ivy occurs throughout much of the community on Oak Island and the Pine Islands, although the shrub layer is poorly developed in this habitat on Datha Island proper.

The northern central region of Datha Island is characterized by a mixture of pine-mixed hardwoods and mixed hardwoods forest with mixed hardwoods occupying only the central interior of the island. The pine-mixed hardwoods forest reaches its best development in the northwestern edge of the island, west of the north fields and pecan orchards. Here a canopy of laurel oak, water oak, loblolly pine, slash pine, pignut hickory and black cherry dominates with a shrub layer of tallow tree, Southern red cedar, yaupon, and sparkleberry. The ground cover consists largely of elephant's foot, a mixture of grasses and young individuals of the typical shrub species.

The most impressive forests on the island are the mixed hardwoods found in the northern central region, north from the house ruins to the southern edge of the north fields. This area shows the least evidence of disturbance although the forest does not appear virginal. Apparently subjected to selective cutting, the forest has developed a canopy of pignut hickory, red maple, water oak, myrtle oak, blackgum, sweetgum, magnolia, mockernut hickory and scattered individuals of spruce pine. An open shrub layer of horsesugar,

sparkleberry and dogwood may be found with a sparse groundcover consisting largely of mixed grasses. This area has a generally open character not evidenced in the remainder of the island's forests. Spared from any extensive alteration, this community reflects most nearly the probable climax vegetation of Datha Island outside the areas of salt-spray and fire influence.

The most disturbed sites on Datha Island are the areas of intensive agriculture on both the northern and southern ends of the island. Here various successional stages of forest development may be observed. The southern fields, which have been abandoned for a considerable length of time, are currently forested in a dense stand of 15-20 year old slash pine with an almost impenetrable understory of wax myrtle, Virginia creeper, muscadine, summer grape, blackberry, cow itch, greenbrier, sumac, yaupon and black cherry. The density of the slash pine and associated species prevents the development of any ground cover except around the margins of the abandoned fields. Here a lush ground cover of grasses and forbs may be found.

The northern fields have been cultivated until recent years and consequently have developed a very young successional plant community. Here a mixture of grasses, especially Bohia grass and several species of panic grasses, may be found with an abundance of dog fennel, dandelion, wooly mullein, Carolina dandelion, sandspur, sorrel, tread-softly, lespedeza, nightshade, beggar lice, fog fruit, aster, blackberry, evening primrose and associated species. Along drainage ditches in the northern fields region one finds dense shrub thickets dominated by wax myrtle. Along these water courses several species, especially fog fruit, pennywort and numerous grasses and rushes may be found in abundance.

WILDLIFE RESOURCES

Datha Island offers a tremendous diversity of vegetational types suitable for the development of relatively diverse animal populations. The abundance of marshlands and tidal flats provide excellent wetlands while the forest resources which range from recently abandoned fields to shrub thicket to mature mixed hardwoods forest offer almost unlimited variety in upland habitat. The relative sparcity of freshwater habitat on the island may be the most significant limiting factor in the development of Datha's characteristic fauna. Populations of mammals and birds on the island appear to be consistent with similar sea islands, but the absence of significant seasonal or year-round fresh water impoundments does appear to have an impact on the development of reptile and amphibian populations.

Mammal populations on Datha Island are characterized by a number of relatively significant species. The largest mammal known from the site, and in fact the only "large" mammal found there is the white-tailed deer. The abundance of mast in the hardwoods region coupled with the large browsing area created by the previous clearing for agriculture supports a fairly significant deer population. Held in check by hunting, the population does not appear to be too large for the available habitat. Other significant mammals on the island include raccoon, cotton rat, gray squirrel, long-tailed weasel, mink, old field mouse, opossum, and river otter; although none of these are known from the site in any particular abundance. The weasel, mink and otter are known from the creeks surrounding Datha and may never have been permanent

residents of Datha's upland forests. The populations of raccoon and squirrel are well represented although their numbers may not be significantly large. Cotton rats and old field mice, as well as several other species of rodents, may be found associated with the agricultural areas of the island. While evidence does exist for the presence of rabbits on the island, they appear to be represented by marsh rabbits with the Eastern cottontail being conspicuous by his absence.

Bird populations on Datha Island are represented by a significant number of songbirds during the breeding season. Cardinal, common grackle and Carolina wren appear to be the most common species although orchard oriole and indigo bunting are well represented. Seasonally large numbers of warblers are also reported from the island. A number of birds of prey; most notably the osprey, barred owl and red-shouldered hawk; may be found on the site. The marshlands surrounding the island provide an abundance of suitable habitat for marsh wrens and clapper rails as well as a number of migratory waterfowl species common to the site in winter. In addition these marshlands provide suitable feeding areas for a relatively large number of wading birds including great egret, great blue heron, little blue heron and snowy egret.

Reptiles and amphibians are represented on the island by moderate, but not significant, populations due largely to the absence of any significant freshwater impoundments. Amphibians, who are directly dependent on freshwater for all or part of their life cycles, are restricted to those capable of reproductive success in temporary pools and the few depressions and channels which retain water year-round, while reptiles, many of who depend on water dwelling species for food, are likewise restricted. Several frogs, notably the northern leopard frog and northern spring peeper and the southern toad are found in some abundance with only the southern toad being of wide distribution

over the entire island. The slimy salamander is the only salamander confirmed from the site. Reptiles are represented by a few species of turtles, snakes, skinks and lizards. The American alligator is reported historically from the site although no evidence of a resident population was found during the field work for this study. The southeastern five-lined skink and green anole are the most conspicuous of the reptilian species and snake populations are noticeably small. The corn snake, rat snake and southern hognose snake are the only species found in any abundance and this was only moderate. No poisonous species are confirmed from the site although suitable habitat for several species does exist there.

Invertebrates on Datha are most conspicuously evidenced by the insects, spiders and their relatives which are nuisances to man. More significant perhaps are the many marsh-related invertebrates found around the island. Crabs, oysters and clams create a substantial food source for terrestrial species on the island. The armies of fiddle crabs found abundantly around the island are a major source of food for raccoons and many species of wading birds.