



Geological History

Tracing the origin of Spring Island begins with a trip 249 million years into the past and 200 miles to the west where the North American and African tectonic plates collided, creating huge domes of granite. As the upthrust continued, this granite was exposed through erosion, and became the Appalachian Mountains.

Granite is composed of quartz, mica and feldspar. When it is broken down through erosion, the quartz becomes sand, while the mica and feldspar become clay. These minerals were washed into Appalachian Mountain streams, slowly moving toward the Atlantic Ocean where the forces of waves, wind and shoreline currents shaped the sand into what would become barrier islands and the clay into salt marshes.

Rivers continued to bring sand and clay to the eastwardly-moving coast, creating successive lines of barrier islands and salt marshes. During times when the sea level rose, the coastline moved westward toward the mountains. The rivers continued to add layers of sediment, and the continued repetition of this process through many cycles of sea level rising (as much as 100') and falling (as much as 300') created the sandy "skirt" that is two miles deep and flanks the southeastern coast of North America. We now call this area the Coastal Plain.

One hundred thousand years ago, when the formation of polar ice caps caused the sea level to fall and the ocean to recede eastward, Spring Island took shape as a barrier island with high sandy dunes. Twelve thousand years ago, a warming global climate caused sea levels to rise. The shoreline moved westward, reaching its present location approximately 4,000 years ago and Spring Island's coastal location was established.

Spring Island had a very different appearance 10,000 years ago. Sea level was 300' lower than it is today and the coast was located 50 miles to the east.

The vegetated ancient dune system was located in the middle of the Coastal Plain. The climate was cooler and similar to that of New England. Open oak-hickory savannas dominated the high sandy ridges. In low-lying areas that flooded seasonally, moist soils supported species found in southeastern hardwood bottomland swamp forests such as tulip poplar, red maple, American holly and a variety of oaks, hickories and ash. In the frequently flooded sections nearest the river, a cypress-tupelo swamp forest grew up. Giant sloths, up to 9' tall, American mastodons, mammoths, large tapirs, horses and American lions roamed the landscape.

At the end of the ice age *Homo sapiens* became a dominant part of the landscape. The warmer climate also brought periodic fires, caused by summer lightning strikes. An assemblage of plants adapted to coexist with these periodic fires spread northward out of Florida as the climate warmed.

The dominant plant of this landscape was the longleaf pine. Its long, water-filled needles

protected the vulnerable buds of the small saplings and its thick bark insulated the trunks of adult trees. Grasses and small woody plants recovered quickly from passing fires because their buds were below ground. The abundance of long needles

from the pines and the dry grasses promoted the quick passage of fires. This killed saplings of other species and the net result was that longleaf forests had a savanna-like appearance. Open landscapes dominated by grasses and low-growing forbs (non-woody, broad-leaved plants) surrounded widely spaced large pines.

Remnants of these ancient forests remain on Spring Island today. A long, thin ribbon of hardwood bottomland swamp forest survives along the slope separating the high sandy areas from the nearby maritime forest. Tulip poplars, swamp chestnut oaks, swamp tupelos and cherrybark oaks dominate the canopy. Fire resistant longleaf pines remain in a north-south strip that runs down the center of the southern section of the Island.

The ocean marched westward as sea level continued to rise, eventually flooding low-lying areas of the present coastline. The Broad River and the tributaries surrounding Spring Island became brackish as fresh water from upstream mixed with the high salinity waters brought inland by the ocean's tidal pulses. Eventually, the rising sea level inundated the headwaters of the Broad River, transforming this small river basin into a saltwater embayment dominated by rising and falling tides.

This is the area we now know as Port Royal Sound.
