

FIRE ISLAND
NATIONAL SEASHORE

DEC 20 1977

EXPLORING WATCH HILL



SUNY - STONY BROOK

ENVIRONMENT

ENVIRONMENTAL INFORMATION SERVICE

REFERENCE DEPARTMENT
VERTICAL FILE
SUNY - STONY BROOK

TRAIL INFORMATION

The trail described in this booklet is approximately a mile in length and you should plan on taking an hour to explore it leisurely. In order to have a safe and pleasant time please remember the following points.

1. We recommend wearing shoes at all times on the boardwalk. Splinters are our most common first aid problem.
2. Portions of the trail pass near open water. Please hold on to small children to prevent their falling in.
3. Berries and edible plants do grow along the trail, but please leave them intact for others to enjoy visually.
4. Watch for the familiar three-leaved shape of poison ivy and be careful not to touch it.
5. Please stay on the boardwalk at all times. This will protect both you and the fragile plant life of the area.

Thank you for your cooperation. Now then. . .have a pleasant time!

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INTRODUCTION

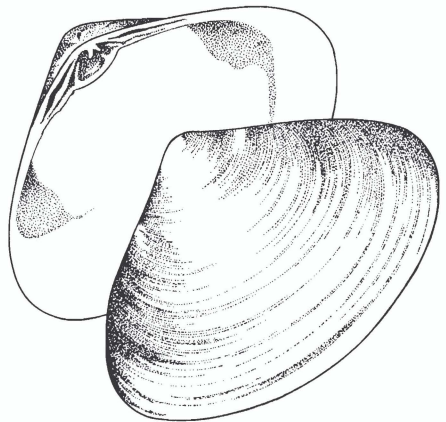
The barrier beach is an environment of constant change. Everywhere, from the smell of the air to the sound of the surf, the proximity of the sea is apparent. Unfortunately, the remaining areas of undeveloped barrier beach are few and far between. At Watch Hill, Fire Island National Seashore offers visitors the opportunity to observe the natural processes that govern this unique and fascinating environment.

To truly understand a barrier island you must think of it as an entire unit. Studying isolated communities will not reveal its complexity. This booklet attempts to explain the island as a whole. For convenience the area is divided into zones with their approximate location indicated on the map. Study each in succession, but remember they are part of a total picture and the transition between zones is gradual.

The entire walk is about one mile. Begin on the ocean beach and follow the booklet through each of the zones. Remember that importance is not measured by size; that patience and silence are virtues of the naturalist. Enjoy your experience.

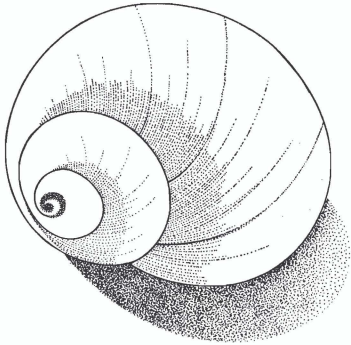
THE SURF ZONE

Begin on the shore where the constant pounding of breakers shapes and reshapes the beach. Each crashing wave originates miles off-shore beginning as a small ripple created by the wind blowing over the ocean surface. With a steady wind, the small waves grow larger in their journey over the water.



Surf Clam

Waves travel great distances in deep water with little loss of energy. When a wave encounters the shallow water near shore, the frictional drag along the bottom causes it to peak, become unstable and break. The breaking of a wave signals its death as all its stored energy is spent in one crashing blow upon the beach.



Moon Snail

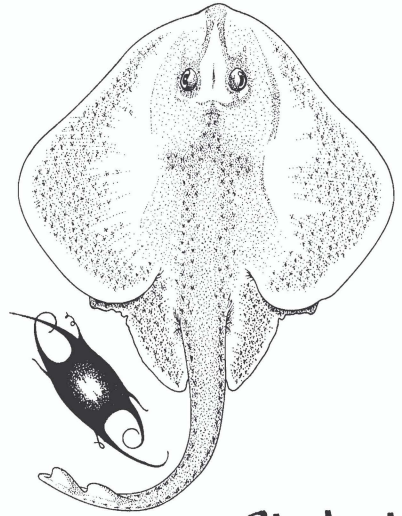
Waves also carry sand in the current running parallel to the shoreline. Again the direction of wave approach determines the direction of current flow. If waves come in from the east this longshore current runs from east to west carrying sand with it. The swimmer who finds himself carried a distance downstream from where he began experiences this longshore current.

Although the current does flow in either direction, larger waves of winter storms come from the east, transporting most of the sand from east to west. Sands eroded from the headlands at Montauk and carried in this current have created the barrier beaches along the south shore of Long Island. The process of beach formation still continues and the western portion of Fire Island constantly grows. Fire Island Light, constructed at the western tip of the island in 1858, is today five miles from the inlet.

The ever-shifting sand of the surf zone is hostile to most marine life. Many of the animals here are rapid burrowers, an adaptation to avoid being smothered or carried away in the strong currents. Seaweeds have no firm substrate on which to secure themselves. Inhabitants of this zone such as the surf clam, calico crab and moon snail often suffer large casualties during storms after which their empty shells lie piled in the wrack line.

Watch as each wave rushes up the beach pushing sand forward and carrying it back in the receding water. The waves usually approach the shoreline at an angle, moving the sand along the beach in the swash and backwash of each wave.

Sand sharks, skates and sea robins are also common denizens of the surf. These remain near the bottom where there is less turbulence. The seasonal runs of strong-swimming striped bass and bluefish near the shore make Fire Island a haven for sport fishermen.



Skate &
Egg Case

THE OCEAN BEACH

Like the surf zone, the ocean beach is a dynamic environment changing daily as well as seasonally. Rough surf removes sand from the beach and deposits it off-shore, building a sand bar parallel to the shore line. After a storm the sharp cliff (escarpment) along the water's edge and the breaking waves in the shallow water over the sand bar are dramatic evidence of this movement.

In the winter, when the surf is most turbulent, the beach is steep and narrow and the bar prominent. Before the advent of modern navigation, this sand bar was the bane of many a ship traversing the Atlantic.

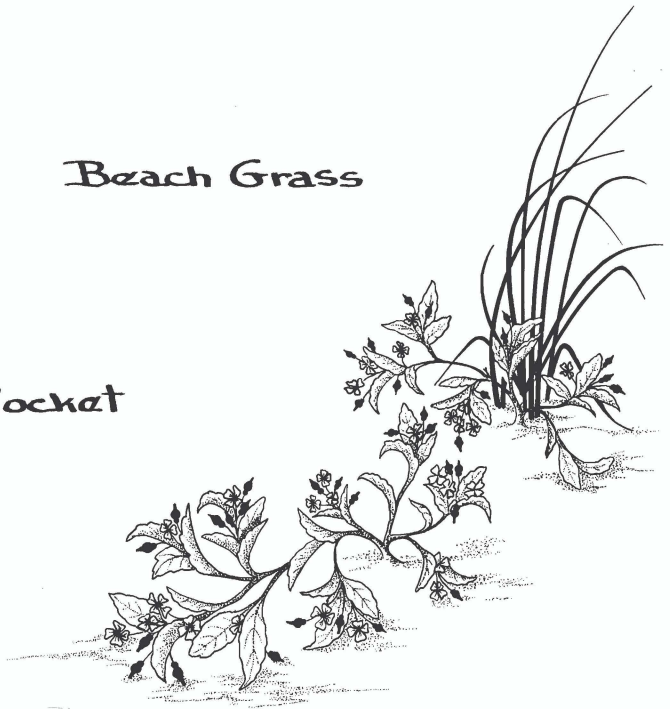
The calmer water of mild weather returns the sand to the shore, forming the wide flat beach typical of the summer months.

Scoop up and inspect this shifting substance called sand. It consists of minute particles of white quartz, red garnet and black magnetite. Compare the weight of a handful of white sand to that of the darker sand. The dark sand is heavier. On a windy day you can watch as the wind sorts these sand grains by their weight. The heavier garnet and magnetite collect at the base of the primary dune while the wind drives the lighter quartz over the top of the dune.

Consider the conditions of life on the ocean beach. The porous sand holds little moisture. The dryness, extreme temperatures, salt-laden air and sandblasting are inhospitable to plants and animals alike. The few plants found on the seaward side of the dune are adapted to these desert-like conditions. Woolly hairs protect the grey-green leaves of dusty miller. The blades of beach grass can roll up to prevent water loss. Sea rocket has thick leaves that store water. Others such as seaside spurge grow prostrate upon the surface where the wind is less intense.

Beach Grass

Sea Rocket



THE PRIMARY DUNE

Ascend the stairway to the windy platform atop the dune. With the long narrow beach stretching for miles in distance, and both bay and ocean visible in one glance, the idea of a "barrier island" becomes more understandable.

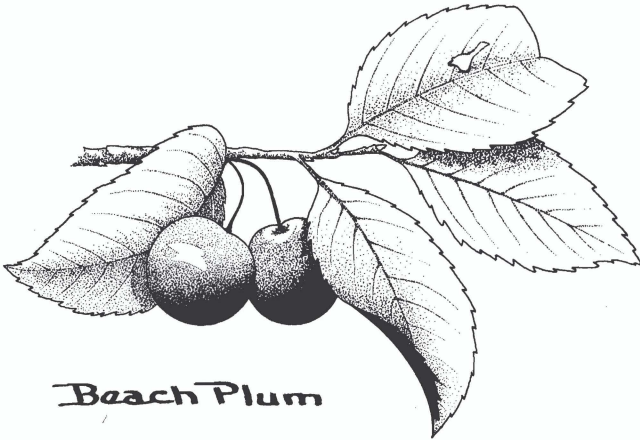


The row of dunes extending the length of the island is the primary dune line, the backbone of the barrier beach. Its formation, like the ocean waves, is a result of wind energy.

Imagine a flat island. Off-shore winds pick up and carry sand grains inland. The driven sand collects around obstacles such as driftwood or a clump of beach grass. A mound forms and the grass with its extensive network of roots helps to hold the sand in place. Gradually the height of the dune increases until, like a wave, it is too steep to remain stable. The highest dunes on Fire Island reach about 50 feet.

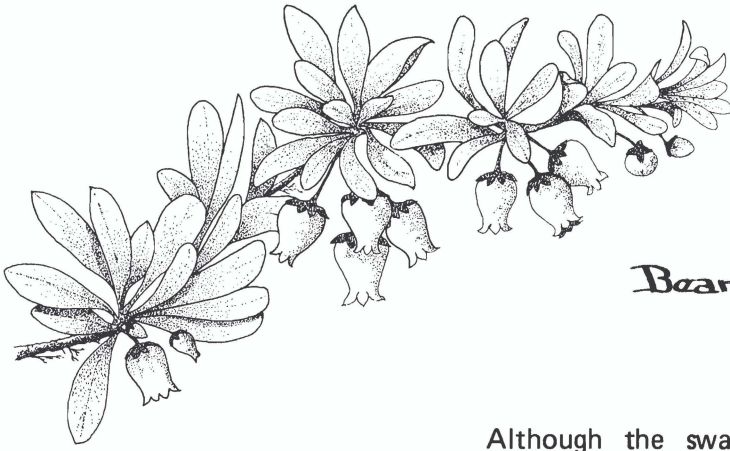
When left alone the dunes are best able to weather the forces of nature. Although the dunes constantly change shape, the primary dune line remains fairly intact. Walking, even once, over the dune destroys some vegetation and opens a chink through which the wind funnels, leaving bowl shaped blowouts of bare sand. Building on the primary dune guarantees its loss. The process of dune formation may require 100 years; destruction can occur within a season.

Loss of the primary dune endangers the life behind it. The contrast between the barren ocean beach and the diverse plant community on the leeward side of the dune is striking. Protected from the wind and salt spray, the May blossoms of beach plum blanket the dunes like snow. Later the ripe plums of September make one of the finest wild jams. Salt spray rose adds both color and a sweet aroma. Its red hips ripen and swell to the size of cherry tomatoes. These too are ingredients for a jelly or even a tea, and they have a Vitamin C content that surpasses that of orange juice.



THE SWALE

Notice the change as you walk down the boardwalk into a new habitat — the swale zone. In this low region the wind dies and the temperature rises. The vegetation is low, parched and scrubby. Hardy evergreen plants such as false heather and bearberry are the pioneer plants of this zone. Along with the crunchy reindeer moss lichen they are the first to colonize the bare sand. Huckleberry, bayberry, beach plum and poison ivy form the low scrub growth kept pruned by the salt spray.

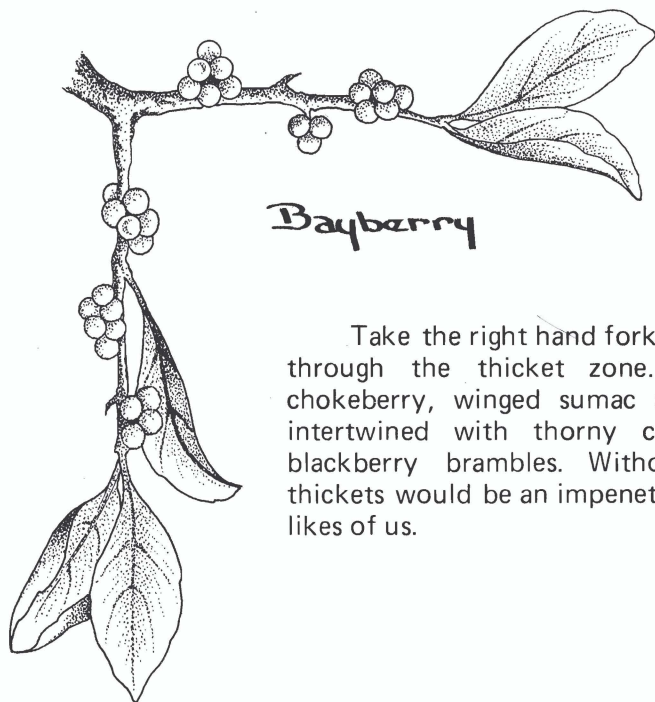


Bearberry

Although the swale may at first seem unappealing, it too has its own qualities. In early June the beach heather blossoms into a myriad of tiny yellow flowers. Pasture rose and goldenrod in turn contribute their splash of color. The scent of the grey bayberries kindles a memory of ancestral settlers and handmade candles. Fowlers toads make the swale their home. The birds and the deer rely upon the various berries for food.



Poison Ivy



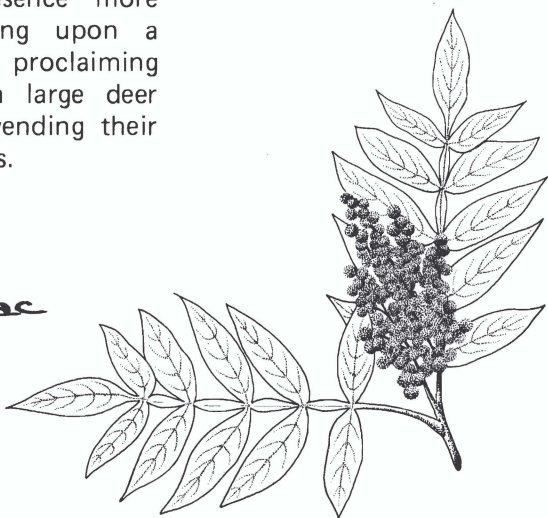
Bayberry

THE THICKETS

Take the right hand fork on the nature trail through the thicket zone. Shrubs such as chokeberry, winged sumac and blueberry are intertwined with thorny catbrier vines and blackberry brambles. Without the trail the thickets would be an impenetrable barrier to the likes of us.

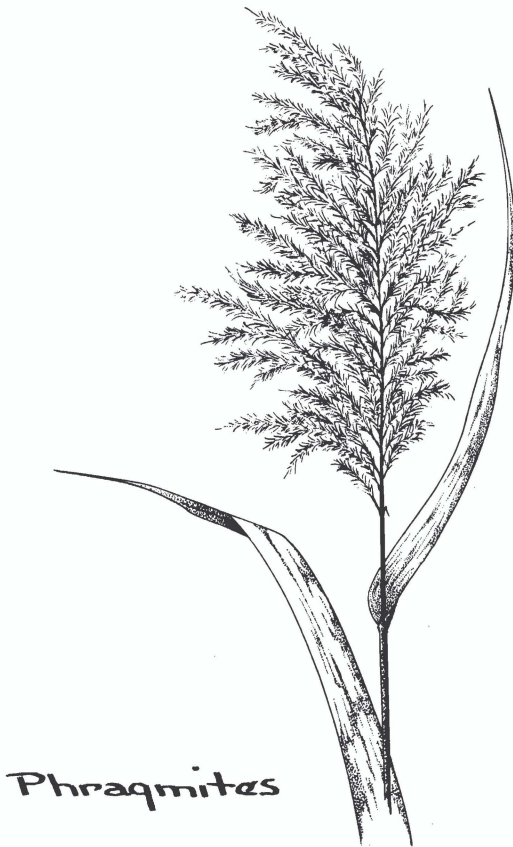
To rabbits, rodents and birds, the entangled growth provides excellent cover. Catbirds and thrashers nest here. The often heard scratching on the ground is probably a towhee searching the leaf litter for his supper. At times this bird will announce his presence more vociferously by perching upon a branch and repeatedly proclaiming "Drink you tea!" Even large deer frequent the thickets, wending their way through narrow paths.

Winged Sumac



Approaching the bayside there is a transition to more salt-tolerant plants. Here the feather-topped Phragmites and marsh elder begin to dominate.

The small pool off the trail is called a salt panne. With high tides brackish bay water floods this slight depression. As the water evaporates, the salt concentration increases. Glasswort is one of the few plants adapted to survive in such a salty environment. Its small size and branched appearance make it easy to recognize.

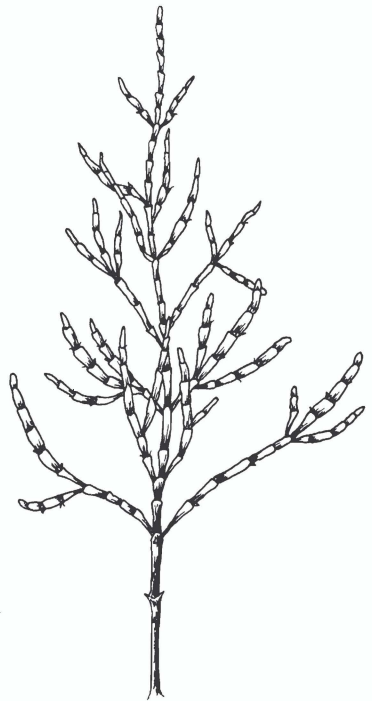


THE SALT MARSH

The thicket growth opens to a flat grassy meadow — the salt marsh. Here, where land and sea meet, is one of Nature's most productive communities.

Salt marshes form in sheltered tidal waters where there is an accumulation of sediments. On Fire Island salt marshes fringe the bayside of the barrier beach usually corresponding to areas where an inlet once existed. Inlets trap sand being carried in the long-shore current, forming flats in the bay. As the land rises above sea level, plants colonize these flats. With the accumulation of decaying plants, the elevation of the land rises at an accelerated rate. What once was bay is now a productive salt marsh.

You need not be a botanist to learn the salt marsh plant life, as only a few species can survive the alternating submergence in salt water and exposure to the direct sunlight.

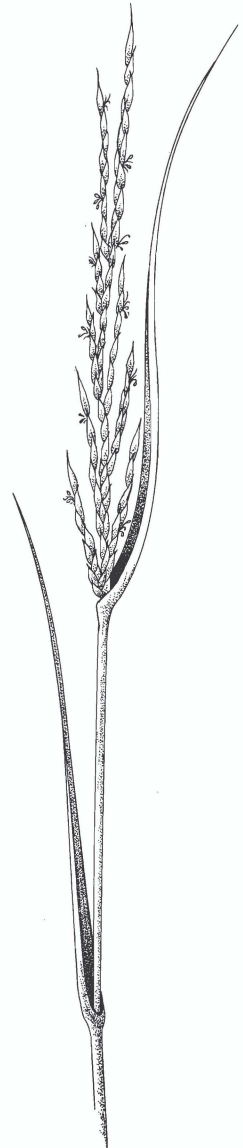


Glasswort

Nearest the bay, where flooding is most frequent, is the low marsh. One plant, the tall yellowish-green salt marsh cordgrass dominates. This grass survives in this zone because its coarse blades are able to secrete salt crystals. Try a quick taste along the blade to make this apparent.

Further inland where the elevation is only a few inches higher, the vegetation changes. Only storm tides and bimonthly spring tides (occurring when the moon is either full or new) flood this high marsh zone. In these windswept acres salt meadow hay forms a luxuriant carpet of matted grass. Spike grass and black grass also grow in this high marsh zone.

Besides plants the salt marsh harbors an abundance of animals all living in harmony with the ebb and flow of the tide. Colonies of industrious and pugnacious fiddler crabs bustle at low tide. These crabs burrow in the marsh peat, feeding at low tide and retreating into their homes which they plug with mud when the tide floods. Clumps of ribbed mussels fortify the creek banks. Meadow voles (field mice) scurry through their labyrinth of runways cut

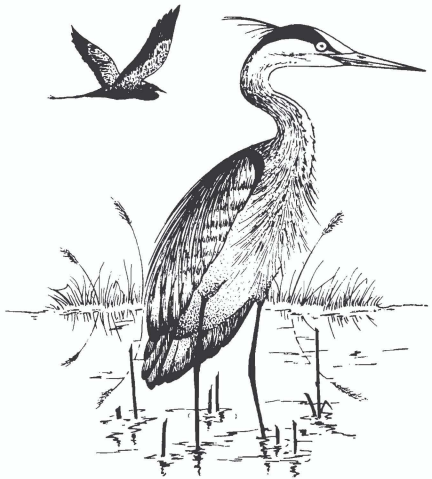


Salt Marsh Cordgrass

under the grass. Salt marsh mosquitoes breed in profusion in the high marsh and these too must be considered a productive link in the web of life.

The bird boxes scattered over the marsh provide housing for tree swallows. Tree swallows originally nested in cavities of decaying trees but the shortage of remaining woodlands has reduced their numbers. These acrobatic fliers catch insects as they dart about and help to control the mosquito population. The old adage "as thin as a rail" refers to another marsh bird, the clapper rail. This shy bird can move through the marsh without disturbing a blade of grass. Egrets, herons, marsh hawks and marsh wrens depend directly on the marsh for food and shelter.

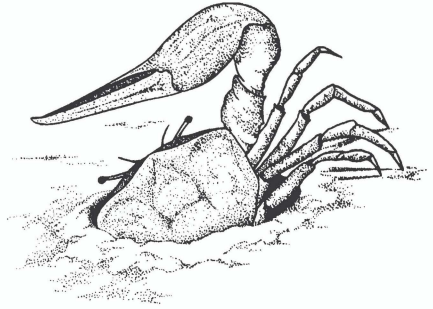
More important is the unseen dependence on the marsh. The death and decay of marsh grasses fertilizes the bay. This is the very base of the food web. Microscopic plants called phytoplankton use these nutrients, and small animals graze upon the phytoplankton. These are, in turn, eaten by small fish which later are food for larger fish. You are what you eat, and the flounder you have consumed is in part salt marsh.



Great Blue Heron

Colonial Americans recognized the value of the salt marsh. They used the cordgrass as thatch for their roofs. The second Tuesday of September, known as Marsh Day, signaled the harvesting of the salt meadow hay. They shod their horses with special wooden shoes to prevent them from sinking in the salt marsh peat as they gathered the hay. Even the succulent glasswort of the salt pannes was pickled as a condiment.

Unfortunately, we do not rely on the salt marsh as our forefathers did. Forgetting its value, we have drained, dredged and "developed" over half of our wetland heritage.



fiddler Crab

THE MARSH BRIDGE

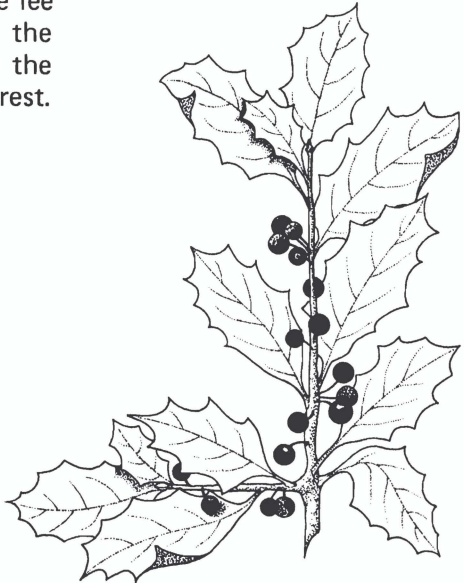
Stop for a moment on the bridge across the creek. You are now standing astride what some 500 years ago was an inlet to the ocean. On either side of this former inlet are ridges of secondary dunes running diagonally toward the ocean. The Watch Hill salt marsh formed from the shoaling of this inlet.

All that remains of it today is this small creek and even this is gradually filling in. Take a deep breath! The pungent odor of decaying eelgrass tells of the biological activity in progress. Salt marsh cordgrass will someday cover this organic ooze. At low tide shore birds congregate on the exposed flats to reap the rich harvest of food.

THE FOREST

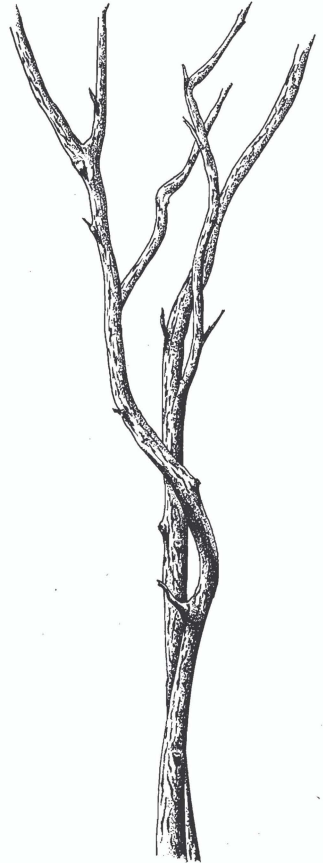
Returning through the thicket zone you will become aware of the transition occurring. An occasional black oak or red maple appears. The familiar American holly makes its debut. Ahead lies the secondary dune seen from the marsh bridge and nestled in the lee of this protective barrier is the climax of plant succession on the barrier beach – the maritime forest.

Holly



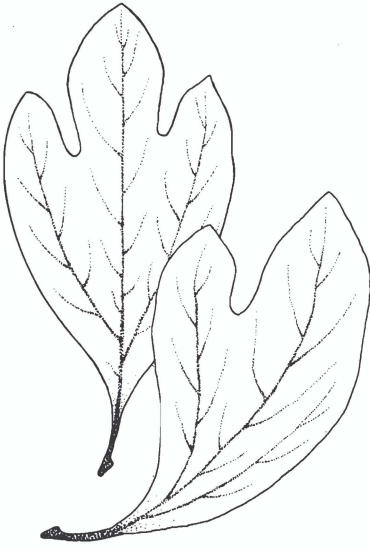
Pause under the canopy of shadblow trees. Although the top branches may rustle in the breeze, the air below is still. Sun filters through the narrow striped trunks of this tree dubbed shadblow because its white blossoms of spring once marked the run of shad up the rivers. Sassafras with its varied leaf shapes — whole, three-lobed and mitten-shaped — grows in the forest. Its aromatic roots were once commercially harvested for use as a medicinal herb.

Pick up a bit of the forest soil. It is black humus rather than pure sand. The decaying leaf litter has produced a thin veneer of rich soil. This provides nutrients necessary for the lush growth of trees.



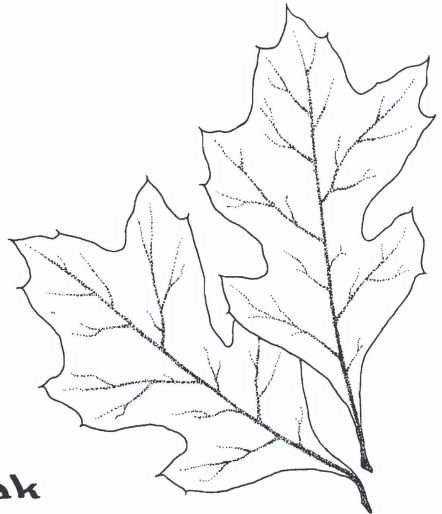
Shadblow

Sassafras



In the low area ahead lives a completely new community of plants and animals. Although salt water surrounds Fire Island, the lighter fresh water from the rain floats upon the salt water. Where the topography is below this ground water level, a fresh water habitat prevails. Cattails usually grow in these fresh marshes. Muskrat and snapping turtles make their home here. In the forest, black gum occupies the wet spots. Its gnarled growth and lichen-covered bark distinguish this tree.

Climb the stairs to the top of Watch Hill platform. From this spot land pirates lit signal fires to lure in unsuspecting ships. It is said that treasure lies buried under a clump of bayberries on Watch Hill but is guarded by a large black snake.



Oak

From the level of the tree tops you can scan the entire island — the protective primary dune — the low swale — the dense thicket — and, stretching out into the bay, the productive salt marsh. Although each zone is a distinct unit, together they form the barrier island and the whole is greater than the sum of its component parts.

We hope you have gained from this brief excursion. Should you have any questions or comments, the Park Rangers will be happy to assist you.

Cattail

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