www.sandyhookherbarium.com

Sandy Hook Herbarium

Discovering Life on Sandy Hook

(Sarah Watson)

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What is Sandy Hook?

Sandy Hook is a sand spit that divides Sandy Hook Bay from the Atlantic Ocean. Sand spits are formed when longshore currents carry sediment along the coast and build up on beaches where currents are blocked and can no longer move the sand. Over time, smaller sediment builds up on top of that, eventually causing this sandbar-like formation to rise out of the water and form land. Sediment will continue being deposited by longshore currents and accumulating, thus extending the spit even more. Occasionally the currents will change direction over time, due to wind reversing directions, causing sand to build up going in opposite directions, a process which gave Sandy Hook its namesake “hook” shape. Barrier spits will eventually stop growing because they reach a point where wind and water erode the land faster than the new sediment can be deposited. It is a common feature of sand spits for marshes to form on the protected side, mostly in salty bodies of water. Sand spits often change shape over time due to many of these factors, much in the same way that is visible on Sandy Hook (NPS).

(Copertino)

Plant Life on Sandy Hook:

Sandy Hook has many varieties of plant life. Looking around, there is almost any type of plant you can imagine: trees, grass, flowers, cacti, and ivy just to name a few. The reason all of these plants live together, and why there is such a large diversity of plants is due to the different environments that exist on Sandy Hook. These different environments (dunes, salt marshes, freshwater ponds, and the holly forest) can be discovered on page seven, but before you read about it and look at the picture, look around you! You can see places with more bushes and trees, and some that only have cacti. Plants grow in different places due to the differing soil. Sandy Hook does not just have sand, there is soil, too! The different plants grow in these different ecosystems. You will learn later why plants are so important on Sandy Hook.

Walk along the trails to discover all the different kinds of plants that live on Sandy Hook. In only one area there can be over ten different species of plants! Be careful to not leave the path when you are exploring. There is poison ivy as well as animal life. Also, it is important that you do not walk on the sand dunes. It is also important that you leave the plants alone. Not only could you get hurt, but your footsteps could tear the roots of the plant life and the dunes could be ruined.

Why are Plants so Important on Sandy Hook:

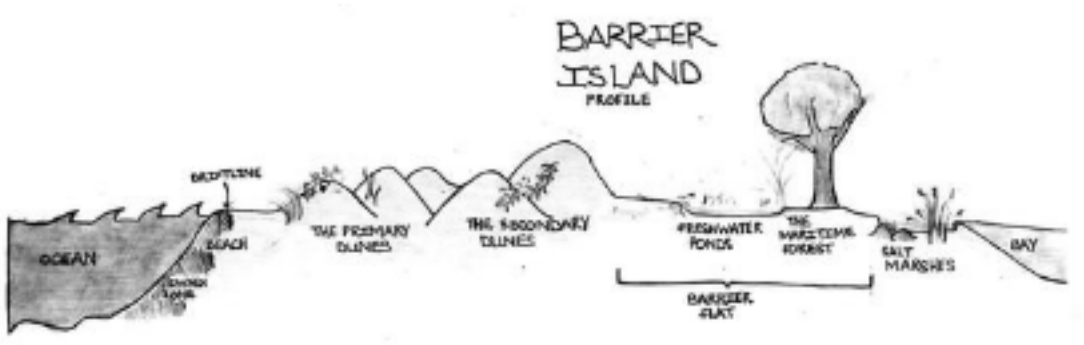
Now that you have seen and read about some of the many plants on Sandy Hook, you need to learn why they are so important. Without these plants, Sandy Hook would not exist. The roots of all of the plants keep the soil, sand, and other sediment in place. They keep it all together. They prevent storms and waves from taking all the sand away- otherwise called erosion. You would not be able to walk around Sandy Hook without all of the plants that live there.

Other than keeping Sandy Hook together, plants are important for other things as well. They provide food and shelter for many of the animals and insects that call Sandy Hook home. The many birds, deer, and other animals need them to survive. The plants also support other plant life. This is called primary and secondary succession. Smaller plants, like mosses and grasses, later support bigger plants, like bushes and trees. Without the smaller plants “fixing” the soil, the bigger plants could not be supported. Look around and see if you can tell whether certain places are in the primary or secondary stage (NPS).

(Sandy Hook Herbarium)

Where are you on Sandy Hook?

The morphology of Sandy Hook, like all barrier islands, follows a natural progression. The first thing to see is the ocean and the sand right next to it (the beach). This is followed by primary dunes, the first line of defense against the ocean. These dunes are formed by a slow buildup of sand around obstacles on the beach, like grass, driftwood or shells. Hardy, salt-spray-tolerant plants, like beach grass, short dune grass, poison ivy, and Virginia creeper, stabilize the dunes with massive root systems which send out sprouts from their joints. Secondary dunes form when heavy storm waves crash over the primary dunes, depositing sand further inland. Secondary dunes contain a wider variety of plant life than primary dunes. Following the secondary dunes is a flat, forested area, creatively known as "the barrier flat." Finally, after the barrier flat, including the ponds and American Holly Maritime Forest, comes the salt marshes and the bay.



(Sandy Hook Herbarium)

Coloring Page:

The art department of the Sandy Hook Interactive Herbarium draws botanical illustrations of native plants, like this one of beach pea!

(Sandy Hook Herbarium)

Plant Life Checklist:

These are not all of the plants on Sandy Hook, but plants that you should see before you leave! The following pages break down plant life by habitat. Try and see as many as you can! Remember to stay on the paths and don't disrupt the habitats!

Name:	Description:	Visited!
Dunes	A dune is a hill of loose sand built by either wind or water. They can be found in a variety of sizes. (National Geographic)	
Maritime Forest	A maritime forest is an ocean coastal wooded habitat found on higher ground than the dunes, but still in a place where salt spray can be sprayed. (NOAA)	
Thicket	A thicket is a very dense stand of trees or tall shrubs, often dominated by only one or a few species, to the exclusion of all others. (Concord)	
Salt Marshes	Salt marshes are coastal wetlands that are flooded and drained by tides. The mud created from the water makes them "marshy." (NOAA)	
Freshwater Ponds	Ponds are formed from leftover pieces of glaciers or blocked up rivers. They contain a variety of plant and animal life. (Concord)	

Plant Life Checklist (Continued)

Now, we will have individual checklists for the unique habitats that you just read about. Use the images and descriptions to try and find them!

Dunes

Name:	Description:	Image:	Seen:
Canada Goldenrod *Solidago canadensis*	A Tall, leafy, plant with a hairy stem has tiny yellow flower heads; can grow up to 5 ft		
Sand Burr *Cenchrus spinifex*	Yellowish-white flowers that will look fluffy from a distance; Green leaves; Grows to a height of 8-24 inches		
Prickly Pear Cactus *Opuntia Polyacantha*	Most have red, yellow, or purple flowers; Grow from less than a foot to 6-7 feet		
Beach Rose *Rosa Rugosa*	Stems are covered in short prickles; leaves have a corrugated surface; with dark pink to white flowers; can grow to 3-6 feet		

Thicket

Name:	Description:	Image:	Seen:
Yarrow *Achillea Millefolium*	Help fight soil erosion; produces a small fruit; flowers are white to pink; leaves are evenly distributed around the plant		
Atlantic White Cedar *Chamaecyparis thyoides*	An evergreen coniferous tree with somewhat flattened leaves; leaves are 2-4mm; have seed and pollen cones		
Beach Pea *Lathyrus japonicus*	A native species on Sandy Hook; Has a long green stem with five to twelve purple and blue flowers.		
American Pokeweed *Phytolacca americana*	Leaves are alternate with coarse texture and moderate sized pores; Flowers are elongated clusters; four to five sepals that are white or green; no petals		

Maritime Forest

Name:	Description:	Image:	Seen:
American Holly *Ilex opaca*	Grows best on sandy soils; never grow larger than shrub height in coastal areas; 2 to 4 inch long toothed leaves, alternately arranged with leathery texture; Greenish-white flowers bloom from April to June		
Juniper *Juniperus virgina*	Scale-like leaves; Pungent, light blue berry-like cones; Could be as high as 60 ft with spire-like canopy; Plant emits fragrance		
Beach Plum *Prunus maritima*	can grow up to 13 feet in height; fruit that grows on the plant ranges in color from purplish-black to red; flowers are white in color; egg shaped leaves are dull green in color		

Freshwater Pond

Name:	Description:	Image:	Seen:
Juneberry *Amelanchier candensus*	Shrub or small tree; Grows 0.5–8 m tall; flowers have five white petals; dark green leaves with a gray striped bark		
Lance Leaved Violet *Viola Lanceolata*	10-15cm tall; lance-shaped leaves; 5 white petals- middle bottom petal has purple veins		

Saltwater Marsh

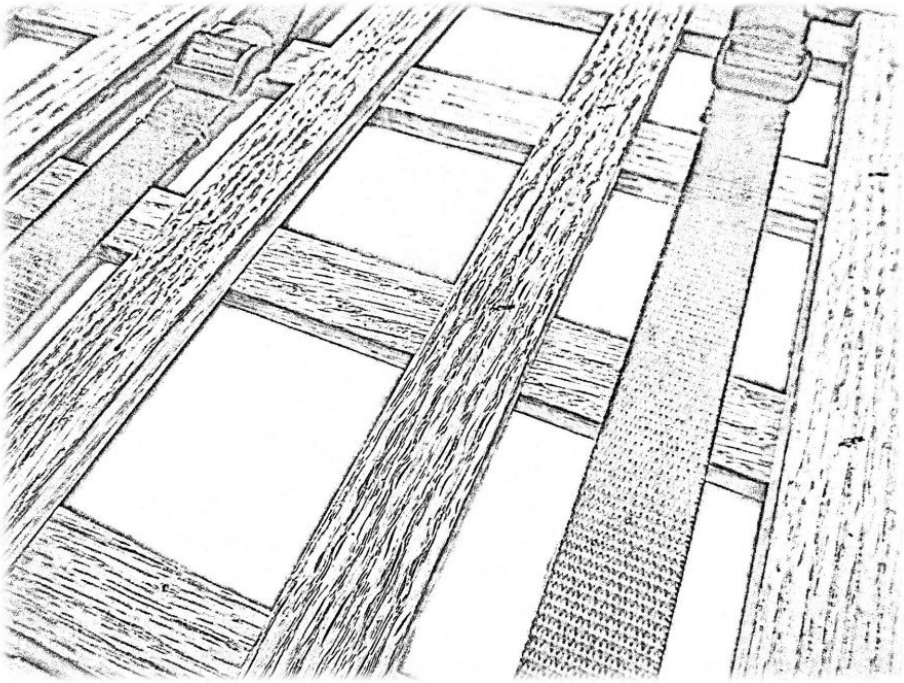
Name:	Description:	Image:	Seen:
Saltmarsh Cordgrass *Spaitina Alterniflora*	Pound plentifully in salt marshes; found in tall or short varieties; 4-6 ft high with flowers		
Seaside Lavender *Limonium carolinianum*	Grows 1 to 3 feet in height; Has blue to purple, and white petals.		
Yellow-Eyed Grass *Xyris Torta*	10-30 in tall; leafless stem with a small yellow flower forming from a brown bulb		

All images and text are from the Sandy Hook Herbarium website

How to Press a Plant:

What you need: a plant, newspaper/paper, a heavy book

1. Find your plant that you would like to press.
2. Place the plant on the paper the way you want.
3. Layer another piece of paper on top.
4. Place the “plant sandwich” under the heavy book.
5. Leave the book alone for a week.
6. Open the “plant sandwich” and see your pressed plant!



A plant press is made using latticed pieces of wood. The two sides of a plant press are strapped together with the plants, along with other materials, in between.

(Sandy Hook Herbarium)

Word Search

Now that you learned all about Sand Hook, have fun using the new vocabulary you know!

Y B P T B P G S Y V N W K A S

Q G W I L L D W Y N E G K I O

M G O A O N Z G B H Q D L P I

W A N L O H N A R S S F J W L

W T R P O I Y B T D T A D L S

S L T S S H E R O S I O N E E

R S F S H K P G N K C U O D N

I H E P I E D R C M S A O R U

X R M N C Q S V O K T N E J D

P S T O C E A N F M N I G O A

H U O E Q P X D V Y E M K E L

D D O A O N M E O Q R A K Y X

T S E R O F Q I N G R L P R B

F L D U Z J W N H D U S Y G G

A F Z X U Z X S V L C U K Y A

Animals	Bay	Erosion	Forest	Ocean
Dunes	Roots	Morphology	Currents	Pressing
Marshes	Plants	Ponds	Sand	Soil

Sandy Hook Herbarium

What is a Herbarium?

An herbarium is, in essence, a collection of preserved plants. Plants are collected in the wild, then dried, pressed, and thusly preserved, predominantly for scientific use, including studying taxonomy, plant identification, and studying an area's vegetation over time. These specimens are generally not viewable to the public, though our herbarium is.

Why a Sandy Hook Herbarium?

Because most of coastal New Jersey has been developed, there are few areas left with relatively pristine coastal ecosystems. By collecting such plants in the field, researching them, then posting them online, we can ensure that some sort of documentation for posterity will be extant.

On the Sandy Hook Herbarium site, you will find a comprehensive encyclopedia of plants found in the coastal ecosystems of Sandy Hook, New Jersey. This is a Directed Field Research Project of the Marine Academy of Science and Technology which is part of the Monmouth County Vocational School District. The original instructors and directors of this course are Ms. Cheryl McDonald and Mr. David Alfonse.

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