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Welcome to the Rachel Carson Reserve, a component of the North Carolina National Estuarine Research Reserve. This interpretive brochure will introduce you to some of the common habitats, plants and animals that are found here.

### **Namesake**

The site is named after Rachel Carson, a well-known scientist and the author of *Silent Spring*. She conducted studies during the 1940s at what is now the Reserve named in her honor.

### **Setting and Habitats**

The Rachel Carson Reserve is located in an estuary, a biologically unique place where fresh river and salty ocean waters mix. The reserve is located between the mouths of the North and Newport Rivers and just across from Beaufort Inlet.

The site is a complex of islands where a diverse array of habitats are found, including salt marshes, maritime shrub, tidal mud and sand flats, eelgrass beds and upland islands created by dredge material deposits.

### **Purpose of the Reserve**

This natural area is one of ten sites that make up the North Carolina Coastal Reserve and National Estuarine Research Reserve. Preservation of the Rachel Carson Reserve allows this coastal ecosystem to be available as a natural outdoor laboratory where scientists, students, and the public can learn about coastal processes, functions, and influences that shape and sustain coastal areas.

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The Rachel Carson Reserve is managed through a federal-state partnership between the North Carolina Division of Coastal Management and NOAA.



*For more information about the Rachel Carson Reserve and other components of the North Carolina Coastal Reserve and National Estuarine Research Reserve, contact:*

North Carolina Coastal Reserve and  
National Estuarine Research Reserve  
101 Pivers Island Rd.  
Beaufort, NC 28516  
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# Rachel Carson Reserve Interpretive Trail Guide



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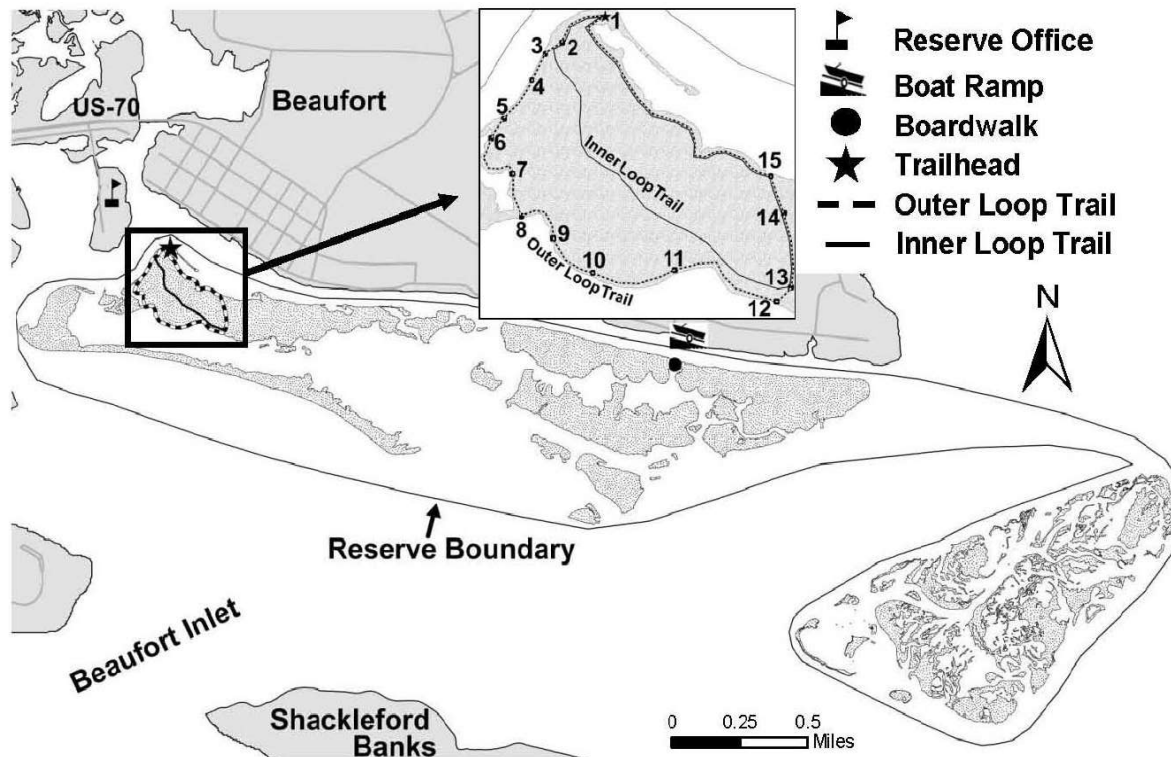
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North Carolina Coastal  
Reserve and  
National Estuarine  
Research Reserve

[www.nccoastalreserve.net](http://www.nccoastalreserve.net)

## Important Trail Tips

- Nature trails are primitive. No facilities are provided.
- Marker posts on the outer loop trail have blue tops; green tops are found on the inner loop.
- Where trails overlap, markers have blue and green tops.
- Fifteen trail posts are numbered (see map below), with interpretive descriptions found in this brochure.
- The outer loop trail is best enjoyed at lower tides.
- Areas of standing water and slippery mud are found on the outer loop trail; use caution.
- Wear shoes that protect your feet from hot sand and sharp objects such as oyster shells.
- Keep tidal changes in mind when securing your boat.
- Both trails are approximately 1 mile in length; be prepared with water to drink and other necessary safety items.
- Keep your distance from wild or “feral” horses. Do not approach closer than 50 feet (the size of a large bus).
- Please consider recycling this brochure for reuse; a container is provided at the trailhead.

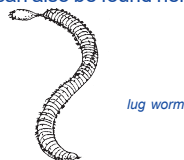


**1** You are standing on a beach directly across Taylor’s Creek from the Beaufort Waterfront. The sand ridge was created and is constantly modified by wind and wave action. The sand is high enough to allow dune plants such as sea oats to grow. Follow the trail through the shrub habitat and look for marker #2.

**2** This is where the inner loop (green) and outer loop (blue) trails diverge. Enjoy exploring upland habitats on the inner loop while keeping your feet relatively dry. For the full estuary experience, take the outer loop trail where you’ll enjoy exploring wetter habitats such as salt marsh and mud flats. This is best done on lower tides. Which path will you choose?

**3** Looking towards the land, you will notice an escarpment – or steep slope – in the sand, with plant roots poking through. This is due to erosion along this stretch of the island. Beach erosion is caused by many things, including storm surges, boat wakes, and sea-level rise. You may also notice the rusting metal pipes. The waterway around the island is regularly dredged to allow deep draft boats to navigate through. At times, the sediment dredged is placed on the reserve. These pipes are remnants from past dredging, and were placed here to allow the water to drain out of the dredged material.

4 Walk to the edge of the water at low tide and you may see some short tubes encrusted with shell fragments and seaweed scattered on the wet sand. Plumed worms build these tubes and feed on plankton (tiny microscopic, free-floating plants and animals) when submerged underwater. Other worms found in this area include lugworms and parchment tube worms. In addition to worms, moon jellies, comb jellies and brittle stars can also be found here.



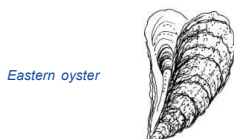
lug worm

5 If the tide is low, you will notice numerous small holes or "burrows" in the wet sand. These are the homes of fiddler crabs. If you remain still the crabs will start edging sideways out of their burrows. Note that both front claws of some crabs are small (females); other crabs have one large claw and one small claw (males). The males use their large claw to attract females or to threaten other males.



male fiddler crab

6 Looking ahead, you will notice oysters clumped together in the sediment. Microscopic oyster larvae float freely in the estuary. Eventually they settle on a hard surface, preferably another oyster shell. At this settled stage, the oysters are called "spat" and begin to grow a shell. Groups of oysters, known as oyster reefs, are an important habitat for many estuarine plants and animals such as small crabs and fish. Oysters are filter feeders, meaning they suck water through their bodies and consume plankton. They also absorb pollutants, including bacteria and viruses, through this process. This is why you should only eat oysters grown in clean waters.



Eastern oyster

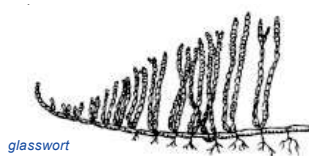
7 Alongside the tidal creek you will notice lush stands of salt marsh cordgrass or *Spartina alterniflora*. Unlike the shorter cordgrass you have been walking through thus far, this is ungrazed by the horses. The mud in this area is too soft for the horses to easily cross, so the cordgrass grows in its natural form. Notice the white snails on the cordgrass. These marsh periwinkle snails are going up and down the stalks of grass eating algae.



marsh periwinkle

8 Notice the shape of the shrub thicket to the north. It almost appears to have been cut at an angle. This shape is due to the salt-laden winds and is called "salt spray canopy." The thicket is composed of a variety of trees and shrubs which are adapted to the salt spray. Common species in the thicket include wax myrtle and red cedar. There are also many types of vines such as greenbrier and poison ivy. The shrub thicket provides refuge for mammals, such as raccoons, gray foxes, and many types of birds.

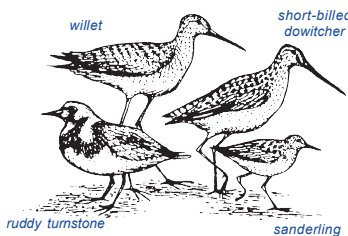
9 Observe the variety of plants around you. See the tall patches (3-5 feet high) of dark brown/green blades. Feel the needle-like tips – this is black needlerush. Observe the low plants that are segmented succulents (3-4 inches high), usually bright green in color although they can be red in the cooler months. This is pickleweed or glasswort. The presence of these species of plants indicate that you are in a coastal wetland! Coastal wetlands are important habitats that filter out pollutants to improve water quality, diminish flooding through water storage, and protect the shoreline from erosion through trapping sediment and diminishing wave energy.



glasswort

10 Protected shallow waters provide good feeding areas for wading birds such as Blue herons, White ibises and Great egrets. The birds feast on small fish, fiddler crabs, and snails found in this area.

A wide variety of shorebirds often can be seen probing the mud. Ruddy turnstone, Willet, Short-billed dowitcher and Sanderling are a few of the common species. The bill of each species is specially adapted to feed on worms and other invertebrates found hidden in the mud.



ruddy turnstone

sanderling

11 Looking out over the water, you have a good view of Beaufort Inlet with Fort Macon on Bogue Banks to the right (west) and Shackleford Banks to the left (east). Beaufort Inlet is an important feature of the estuary. It is through this opening that ocean water flows twice daily, causing tidal and salinity changes to occur. The inlet is an important source of renewal – the tides move nutrients around in the estuary and flush pollutants out to sea.

12 Looking out across the expansive mud flat, you may see birds foraging and the ground littered with tiny black shells – these are mud snails. Pick up a mud snail, place it opening-side down in your palm, place your palm near your mouth, and hum! Yes, hum! The vibration will coax the snail out of its shell. Explore the mud flat as you walk across to Bird Shoal, the sandy area across from the inlet. Be careful of the soft slippery mud and watch for tidal changes. Notice the thousands of bird tracks. When you are finished exploring Bird Shoals, return here to pick up the trail.



mud snail

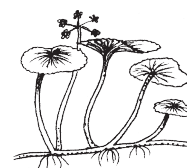
13 Just behind you, you will see vines growing along the ground and into the bushes. One type of vine, Virginia creeper, has five leaves and is naturally found here. The other vine is Japanese honeysuckle. Although it is beautiful and extremely fragrant when in bloom, it is considered to be invasive. Invasive plants can crowd out native plants and reduce habitat quality for the animals that live there.



Virginia creeper

You are standing at the southeast intersection of the inner loop (green) trail and outer loop (blue) trail. To continue on the outer loop trail, go right and head up the sandy hill until you see the next blue and green marker. To continue on the inner loop trail, go left and climb the sandy hill. Look for the next green marker.

14 This elevated area was created when sediment was dredged from Taylor's Creek and deposited on the island. Over the years, vegetation has taken hold on the once bare sediment. This habitat supports many plant species including pennywort, beach pea, prickly pear, and various species of shrubs and trees. Animals such as raccoons, possums, and rabbits call this habitat home.



pennywort

15 As you descended the dredge "dune," did you notice how the types of plants changed? Even a small difference in elevation and distance from the water makes for a change in the habitat and the plants and animals that live there. Walk to the west for .25 miles and arrive back at the trailhead.