Cape Hatteras

National Park Service
U.S. Department of the Interior

Cape Hatteras National Seashore

Junior Seashore Ranger Program

For ages 5 to 13

This book belongs to _____

Welcome to Cape Hatteras National Seashore

Today you will begin your Junior Ranger Training.
You will:

Explore the seashore

Learn about history and nature

Do your part to *protect* the park.

Read This First - Know Your Crabs

As you work on your Junior Ranger booklet, you will notice pictures of different species of crabs next to activity titles. These represent what age group an activity is designed for. To earn credit for completing an activity, it must match your age group.

Blue Crab: Any age
The "beautiful swimmer" is most at home in sheltered coastal waters like the Pamlico Sound.

Ghost Crab: Ages 5-7
These stealthy animals are one of the only species tough enough to survive the ocean beach.

Horseshoe Crab: Ages 8-13
These are hard core survivors but not true crabs. This living fossil species has been around for over 300 million years and is more closely related to spiders!

Getting Started

Junior Ranger Checklist

- ☐ Complete Activity #1 and #2. Everyone must complete these activities.
- ☐ Complete 5 or more additional activities. Look for your age group's crab logo next to activity titles.
- ☐ Attend one ranger-led program (spring, summer, and fall)

  Topic of Program _____

  Park Ranger Signature _____

  What did you learn on the program?

  _____

  _____
- ☐ If you are here in winter months, write about your favorite visitor center exhibit.

  _____

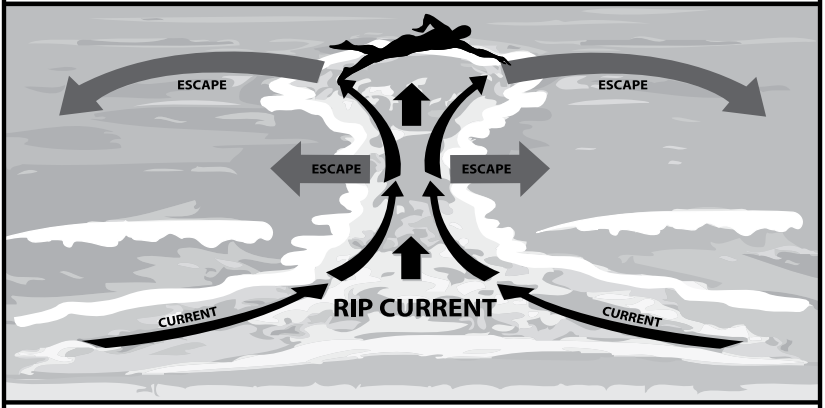
  _____

  _____
- ☐ After you have completed the booklet you must take it to the National Park Service visitor center at **Bodie Island**, **Hatteras Island**, or **Ocracoke** so that a park ranger can issue a Junior Ranger badge and sign your certificate.

Beware the Power of the Sea

The ocean is an incredible way to enjoy nature—but be safe! Watch out for dangerous currents and know how to escape them. The following information may save your life!

RIP CURRENTS
Break the Grip of the Rip!®



Rip currents are powerful currents of water moving away from shore. They can sweep even the strongest swimmer out to sea.

www.ripcurrents.noaa.gov

IF CAUGHT IN A RIP CURRENT

- Don't fight the current
- Swim out of the current, then to shore
- If you can't escape, float or tread water
- If you need help, call or wave for assistance

SAFETY

- Know how to swim
- Never swim alone
- If in doubt, don't go out

More information about rip currents can be found at the following web sites:

www.ripcurrents.noaa.gov
www.usla.org

Courtesy of the National Oceanic and Atmospheric Administration and the United States Lifesaving Association.

Activity 1 - Escape!

Rip currents commonly form near low points in off-shore sandbars and near jetties and groins. They can appear suddenly and without warning. They can be narrow or hundreds of yards wide. They are very strong and can pull you out to sea. In the summer, swim at a lifeguarded beach. Ask a park ranger for hours and locations.

Signs of rip currents include:
- Channels of choppy water
- Sudden changes in the color of the water
- Streams of foam, seaweed, or debris moving steadily out towards the ocean
- Breaks in the wave pattern.

If you do get caught in a rip current, know how to escape. Knowing how to escape a rip current can be the difference between life and death.

Draw a safe route out of the rip current to the shore in the picture below.

Original photo courtesy of U.S. Army Corps of Engineers Field Research Facility at Duck, N.C.

Activity 2 - The National Park Service

The National Park Service was founded in 1916 with the purpose of conserving the United States' natural and historic places for all of us to enjoy. Today there are nearly 400 sites across the nation that are part of the National Park Service.

Find your home on the map below. Mark it with a ⌂.
Draw the route you took to get to Cape Hatteras National Seashore. If you are visiting from outside the United States, begin your route where you first entered the country.

Have you been to any other national parks? Mark them with an ✕.

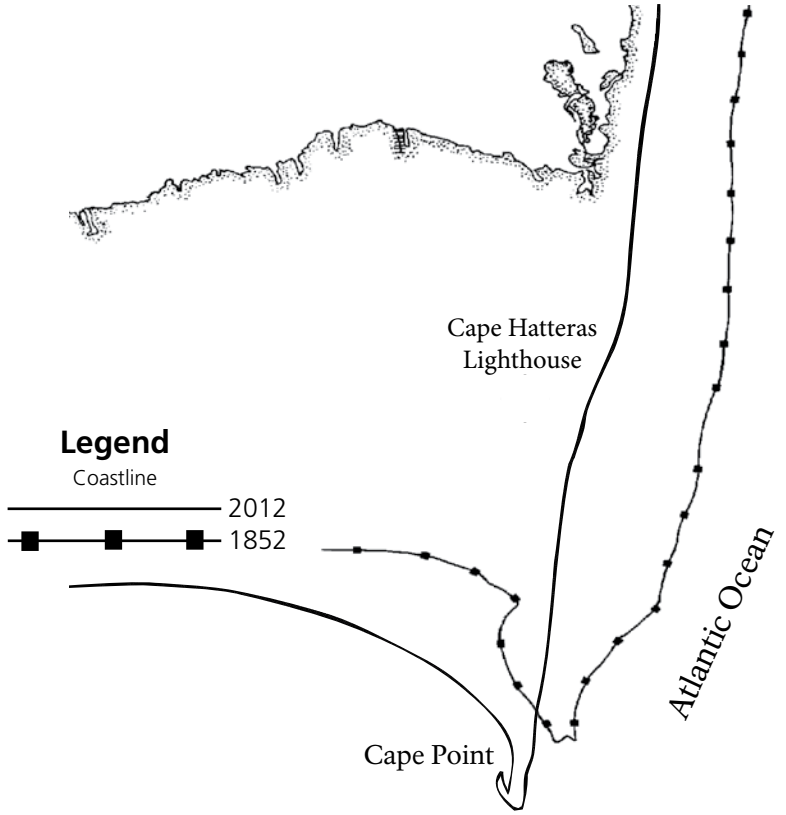
Did you become a Junior Ranger at any of these parks? Mark them with a ✳.

Did you know that Cape Hatteras National Seashore was established in 1953? It is our nation's first national seashore.

Activity 3 - The Changing Islands

The barrier islands of Cape Hatteras National Seashore are constantly changing. In fact, only glaciers and volcanoes change the landscape faster than migrating barrier islands. The islands here have a tendency to slowly shift to the south and west. Most island migration here is caused by *overwash*. Overwash is material that builds up when a storm washes sand over the islands from one side to the other. In general, while the island erodes on one side, it builds up on the other.

This map shows the changes in the shoreline at Cape Hatteras since 1852. Where do you think the shoreline will be in 100 years? Draw it on the map.



Be sure to come back in 100 years to check your prediction!

Protect the Resources

Never feed the wildlife!

Animals can become sick from eating unnatural food.

Animals might bite if you get too close. They can spread disease to humans.

Laughing Gull

If you offer food to an animal today it may decide to steal food tomorrow.

Trash

Some trash is washed onto the beach by ocean currents. Sometimes careless visitors will leave trash behind.

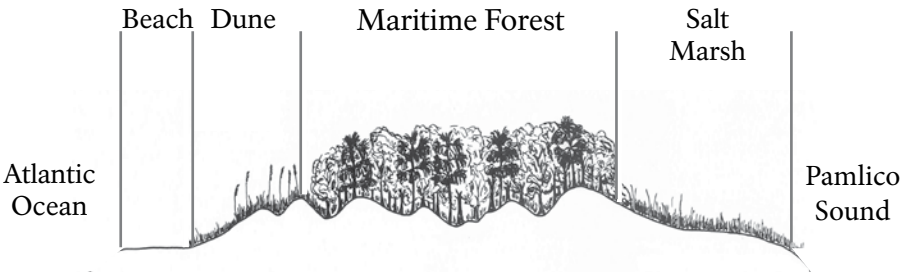
Trash can be very dangerous to animals. Sea turtles often mistake plastic bags for jelly fish, one of their favorite foods.

A beach full of trash is not a fun place to visit.

Never leave trash behind on the beach. This includes cigarette butts, leftover food, and fishing bait. If you find trash, you can help out by picking it up and putting it in a trash can. Be careful not to pick up any sharp objects such as broken glass. Have your parents help to make sure that you do not pick up anything dangerous!

Island Habitats

Every plant and animal has a specific place where it can live. This place is called a *habitat*. Barrier islands are composed of several different habitats: beach, dune, maritime forest, and salt marsh.



Habitat: Beach

Life on the ocean beach thrives, despite the harsh environment. Only the toughest are able to survive the strong winds, extreme temperatures, battering waves, and the shifting, nutrient-poor sands of the ocean beach. For the plants and animals that can handle these conditions, the beach is the perfect home. They would not have it any other way!

Activity 4 - Beachcombing

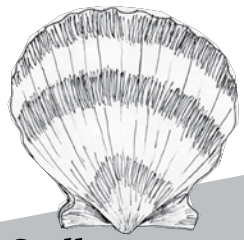
On the beaches of Cape Hatteras National Seashore you can find much more than just seashells. For example, you can find egg cases, coral, and pieces of driftwood!

Take a walk along the beach and circle all of the things that you find.

While there have been many shipwrecks along the Outer Banks, you may not collect artifacts that wash ashore. They are protected by federal law. If you find one, leave it alone and let a ranger know where you found it.

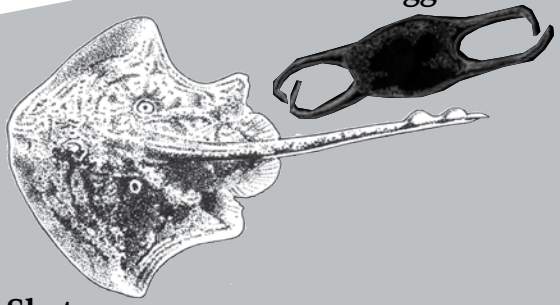
Make sure to check shells for wildlife! Don't take someone's home away while they are still in it!

Quahog Clam
Native Americans made beads out of Quahog shells to use as money.

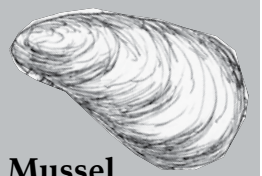


Scallop
Scallops have over 60 simple eyes.

Skate Egg Case



Skate
Skates' eggs are laid on the ocean floor where they rest until they are ready to hatch. After the skates hatch, the light cases are tossed around in the surf and are often washed ashore.



Mussel
Mussels feed on microscopic plants and animals called plankton.

Coquina Clam

Coquina clams are smaller than a quarter. They are very skilled at digging into damp sand on the beach. This allows them to survive right in the middle of the surf!

Surf Clam

A surf clam can live to be 35 years old.

Lightning Whelk

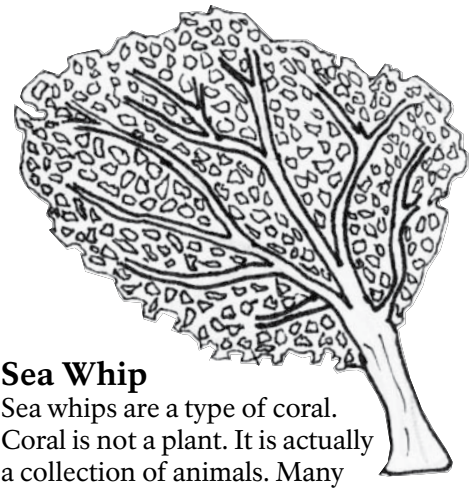
Lightning whelks can grow to be over a foot in length! They are the largest saltwater snail species found on the seashore.

Welk Egg Cases

Each disk of an egg case can hold up to 100 baby whelks!

Oyster

Groups of oysters provide shelter for sea life. Some animals anchor onto the hard surface provided by oyster shells while others take shelter in the nooks and crannies between them.



Sea Whip

Sea whips are a type of coral. Coral is not a plant. It is actually a collection of animals. Many individual polyps will live together in a colony.

Find something you can't identify? Ask a park ranger for help.

Habitat: Dunes

Dunes are mounds of sand covered by sparse vegetation. Grasses like sea oats, seaside panicum, and American beach grass all have deep roots which help hold the sand in place. These grasses are flexible so that they can bend, not break, in the wind. Dune vegetation provides food for all kinds of animals such as sparrows, rabbits, and deer.

Sea oats are the heart of the dunes. Their roots can reach over 30 feet in length, which allows them to reach fresh water sources deep underground. The long roots also help stabilize the dunes and hold them in place. Sea oats have long narrow leaves that curl so that they do not lose water. By reducing the leaf surface area exposed to the sun, sea oats save lots of water.

Sea oat

Habitat: Maritime Forest

The maritime forest provides shelter for many plants and animals. Trees along the edge of the forest are stunted by salt spray. Further inside the forest, trees grow tall and provide shade. Common trees in the maritime forest are live oak and loblolly pine. Common shrubs include wax myrtle and yaupon holly.

Live oak

Habitat: Salt Marsh

The salt marsh of the protected sound side of the island is teaming with life. These quiet waters are a nursery to all kinds of fish. Fiddler crabs sift through the soil of the marsh for food. Plants thrive in the salt marsh as long they have special adaptations for fresh water. For example, the sea pickle plant stores fresh water like a cactus, saltmarsh cord grass removes salt through its stem, and sea oxeye daisy prevents water loss with a thick, waxy leaf coating.

Activity 5 - Habitat Match

Draw a line connecting the plants t
You can find the answers in the
previous habitat descriptions.

Sea Oxeye Daisy

Sea Oats

Live Oak

Yaupon Holly

Seaside Panicum

Saltmarsh Cord Grass

American Beach Grass

Sea Pickle

Loblolly Pine

Dune

Maritime Forest

Salt Marsh

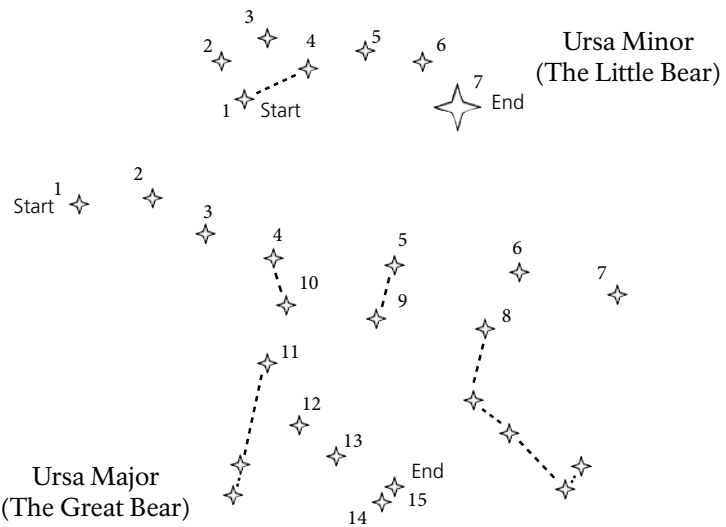
Activity 6 - Astronomy

To truly see the night sky you need darkness. This can be hard to find in the middle of a bright city. Fortunately, the night sky at Cape Hatteras National Seashore is one of the darkest skies on the east coast of the United States. On a moonless night, you can see thousands of stars!

Night sky over Cape Hatteras Lighthouse

Humans have looked up and seen patterns in these stars for thousands of years. These patterns are called *constellations*.

Ursa Major and Ursa Minor are two of the oldest and best known patterns in the night sky. Find them below by connecting the stars of the two different constellations!



Did you know that you can easily help the stars shine brightly? Simply turn off lights that you aren't using! Even light from your bedroom window can reduce visibility of the night sky.

Activity 7 - Night Lights

Night

The beach never sleeps. Many animals avoid predators and the heat of the sun by coming out at night. Animals that are active at night are called *nocturnal*.

Hatching Sea Turtles

Many of these nocturnal species face an unusual threat. Artificial lights from man-made sources, such as street lamps, flashlights, car lights, and camp fires affect wildlife behavior. Ghost crabs hide from predators in the cover of darkness. Sea turtle hatchlings instinctively know to look for the reflection of moonlight on the water to find their way to the sea. If there is too much light, they can become exposed to predators or disoriented.

Imagine that you are a newly-hatched sea turtle on a quest to find the ocean. You have just hatched on a beach near a town. In the boxes below, draw 3 different light sources that may distract you from finding the ocean.

? **Did you know** that lighthouses lamps sometimes effect wildlife too? One night in 1872, a flock of geese collided with the Bodie Island Lighthouse lantern room and shattered several windows.

Activity 8 - Disguises

Many animals at Cape Hatteras National Seashore use camouflage to hide from predators.

Can you find the animals hiding in this word search? They may be across, down, diagonal, or backwards.

BLUE CRAB	MUSSEL	SEA TURTLE
DEER	NUTRIA	SKATE
GREAT EGRET	OYSTER	SNAKE
HERON	PIPING PLOVER	SKINK
HORSESHOE CRAB	RABBIT	STINGRAY
LAUGHING GULL	RACOON	

Q H W R K H H J Q N X V B K G
P L Y N A E X G J M A A E N R
H I B A R B J X S Q R I W I E
L U P O R H B E Y C Q B V K A
E E N I L G A I E T A K S S T
S A K S N T N O T Z A L B G E
S K L A U G H I N G G U L L G
U Y W R N S P A T W R O O S R
M S T R E S R L A S D V H G E
J L M S L R A U O Y S T E R T
E K R L Q I M C J V C K E A N
U O B A R C E U L B E E U C P
H G S T C Z P Q P W D R F O H
O I U T B C I C D A M I P O I
R N N Y Y I I R N O C K O N X

Piping Plover

Sea Turtle

Activity 9 - Adaptations

How is it that the plants and animals of Cape Hattearas National Seashore are able to thrive in such different habitats? They have the proper tools! Crabs have claws for catching food. Gulls have webbed feet for swimming. Fish have gills for breathing underwater. Plants like sea oats have deep roots and specialized leaves to survive the dry, windswept dunes. These tools are called *adaptations*.

Design your own seashore animal! Use the space below to draw a picture of it. When you are finished, answer the following questions about what your animal is and how it survives.

What is the name of your animal? _____

What habitat does your animal live in? _____

What does your animal eat? _____

What special adaptations does your animal have to survive in its habitat? _____

_____

_____

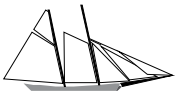
_____

Activity 10 - Navigate the Shoals

Sailing the busy ocean shipping lanes along the Outer Banks was once very risky. The dreaded Diamond Shoals and severe storms have sent over a thousand ships and their crews to the bottom of the sea.

The Diamond Shoals are a series of ever-changing sandbars. Ships became trapped on the sandbars and broke apart from the pounding of the waves.

Can you navigate your ship through the dangerous sandbars of the Diamond Shoals?



START

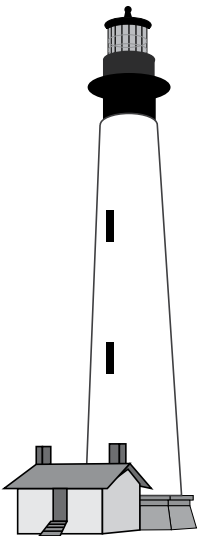
Cape
Hatteras

END

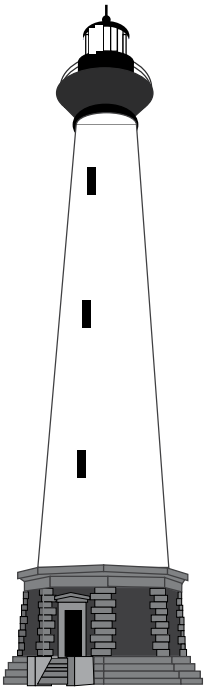
Activity 11 - Dress a Lighthouse

Each lighthouse has a unique pattern, called a *daymark*, painted on the outside. They also have unique flash patterns for their lamps. These markers tell sailors where they are and what dangers to expect nearby.

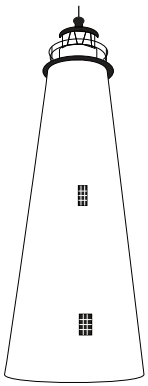
Draw the correct daymark on each lighthouse. If you need help, you can find images of the daymarks in the park brochure.



Bodie Island
Height: 156 feet
Steps: 214
Year Built: 1872
Light pattern:
2.5 seconds on
2.5 seconds off
2.5 seconds on
22.5 seconds off



Cape Hatteras
Height: 198 feet
Steps: 257
Year Built: 1870
Light pattern:
Flash every 7 ½ seconds



Ocracoke
Height: 77 feet
Steps: 86
Year Built: 1823
Light pattern:
Constant white light

Activity 12 - The Keepers

The lighthouse keeper's job was much harder than turning the light on at night and off in the morning. It took a lot of work to keep the light burning brightly through the night. Fortunately, they often had help from their family!

Put a check next to the duties the keeper performed.

____ Clean each prism of the Fresnel lens

____ Patrol the beach for shipwrecks

____ Build the keeper quarters

____ Monitor the light all night long

Cape Hatteras Lighthouse Keeper Unaka Jennette (1933)

____ Paint the lighthouse

____ Clean windows

____ Carry fuel up to the lantern room

____ Write reports, keep records, and order supplies

____ Give tours to visitors

____ Watch for shipwrecks.

The Jennette children clockwise from top Rany, Dorcas, Cousin Earl, Myrtle, and Ramona (c. 1928)

Activity 13 - Lighthouse Crossword

Across

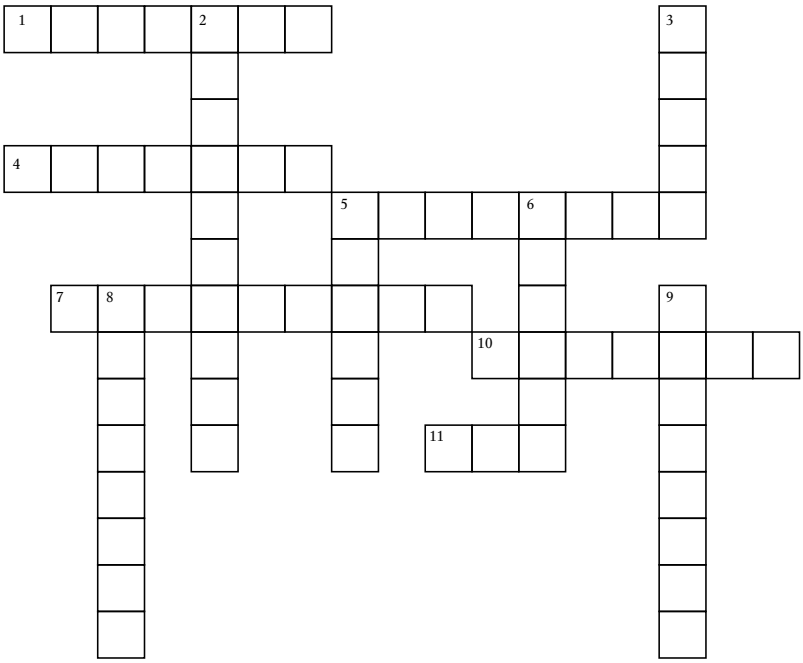
1. This type of lens uses glass prisms to focus light.
4. Because of beach _____ the Cape Hatteras Lighthouse had to be moved.
5. This type of fuel was once used in the lighthouses.
7. The Cape Hatteras Lighthouse was moved 2900 feet in this direction.
10. This is the pattern painted on a lighthouse so it can be identified during the day.
11. Today, instead of using lighthouses, many ships rely on ___.

Down

2. Lighthouses are important tools to help in _____.
3. The _____ Island Lighthouse flashes 2.5 seconds on, 2.5 seconds off, 2.5 seconds on, and 22.5 seconds off.
5. This person was in charge of the lighthouse.
6. The Diamond _____ made traveling by sea in this area very dangerous.
8. This lighthouse shows a continuous beam of light.
9. The Cape _____ Lighthouse is the tallest in North America.

Answer Key

BODIE DAYMARK EROSION FRESNEL HATTERAS GPS KEEPER
KEROSENE NAVIGATION OCRACOKE SHOALS SOUTHWEST



Activity 14 - Quite the Reputation

Many pirates sailed the waters of the Outer Banks between 1690 and 1730. They hid near places like Ocracoke Inlet to ambush passing cargo ships.

Pirates crafted fierce images for themselves and even fiercer reputations. Blackbeard tied lit fuses to his beard. Women pirates like Anne Bonnie often dressed like men to hide amongst the crew.

Help this pirate build a reputation by giving them a distinctive look.

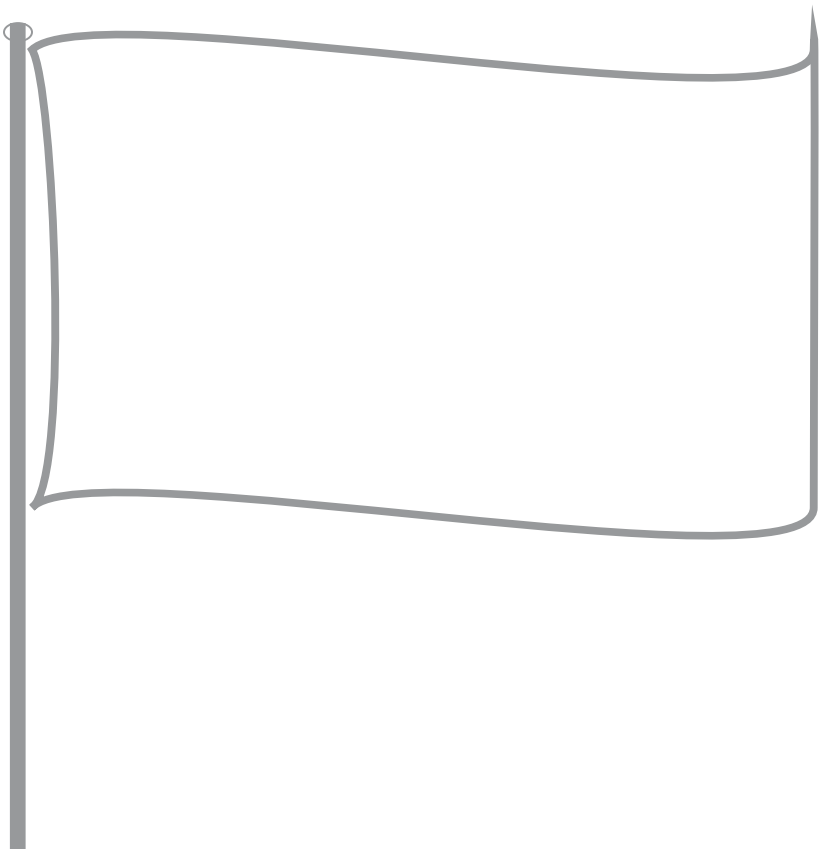
Suggestions:

- Eyepatch
- Sword
- Gun
- Smoke
- Fire
- Colorful clothes

Symbolism

A pirate's flag was not only stylish, but it was functional too! A good pirate flag was designed to send a very specific message about the fierceness of the pirates. Symbols were an important part of pirate flags because they showed other ships the consequences of resistance. This kind of flag was often referred to as the "Jolly Roger." If you had a fearsome reputation and everyone knew your distinctive flag, you may have been able to take ships without a fight!

Draw a flag using symbols that represent you and your family or you and your friends.



Activity 15 - Sites to See

Below are a few sites in Cape Hatteras National Seashore that are off the beaten path.

Visit at least one of the sites pictured below. To find their location, look on the park map, in the park newspaper, or ask a park ranger for help. Circle the pictures of the sites that you visited.

Bodie Island Pond Boardwalk

Ocracoke Pony Pens

Buxton British Cemetery

What was your favorite site in the park? Draw it here.

Hatteras Weather Bureau Station

Old Cape Hatteras Lighthouse Site

Activity 16 - Extra, Extra!

Pretend you are a writer for the park's newspaper. Write an article and draw an illustration about your trip to Cape Hatteras National Seashore.

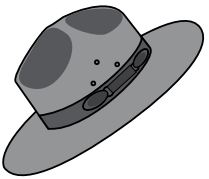
National Park Service
U.S. Department of the Interior

FREE

In The Park

Activity 17 - Park Ranger Practice

Imagine that you are a park ranger. Respond to the following visitor questions. If you need help, you may find answers in the park newspaper or you can ask a park ranger!



Do I have to stay on a leash?

_____ , because _____

_____

_____.

If I promise to be careful can I go in the bird or sea turtle enclosure?

_____ , because _____

_____

_____

_____.

The seagulls seem hungry. Should I feed them?

_____ , because _____

_____

_____

_____.

I swim in the pool all the time. Do I have to be careful when I swim in the ocean?

_____ , because _____

_____

_____

_____.

Junior Seashore Ranger Pledge

As a Junior Seashore Ranger I pledge to:

- Keep the seashore litter free
- Never feed wild animals
- Stay out of protected nesting areas
- Be safe when swimming
- Become a Junior Ranger at other national parks
- Tell everyone what a great time I had at Cape Hatteras National Seashore!

_____

Your Signature

Explore from Home

www.webrangers.us

Cape Hatteras National Seashore

_____

has succesfully completed the Junior Seashore Ranger program.

_____

Park Ranger Signature Date