THE SAND TRACKS IN

An Environmental Learning Experience
Jockey's Ridge State Park
Designed for Grades 4-6
O

nowhere of the sky
as sudden into the tracksless
of an aerial wing, and vanish
sometimes with the faint impression
they begin nowhere,
these tracks in the paws of the dunes;
and mysterious to me about
feet of visiting birds.
I find patterns made by the
in the shores of sand, ... slopes.
Other Contributors

Park volunteers;

The N.C. Department of Public Instruction;

The N.C. Department of Environment, Health, and Natural Resources;

and the many individuals and agencies who assisted in the review of this publication.
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North Carolina Division of Parks and Recreation

An important component of our natural heritage, stewardship of the earth, which cultures/responsibility, awareness in all individuals.

In the Division of Parks and Recreation, our lands and much more than the scenic and recreational opportunities. But in the world and offers endless of the most beautiful scenic network of land bases some areas, trails, and, lakes are built.

First State Park.
The Moravian heritage is a part of our natural heritage.

The Division of Parks and Recreation offers several educational programs which are held in our parks. These programs include educational services, nature centers, and parks. Through nature centers, education is available at these parks.

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Jockey's Ridge is the tallest active sand dune system along the Atlantic coast of the United States. Its height varies from 110 feet to 140 feet, depending on weather conditions. Shifting winds blow billions of grains of sand in varying directions, constantly changing the shape and size of the dune.

Jockey's Ridge is an excellent example of a medano - a large, isolated hill of sand, asymmetrical in profile and lacking vegetation. In the areas around the dunes, dense thickets have formed providing habitats for a variety of wildlife. The park provides an outdoor classroom for students to study and learn about a harsh coastal environment.

Jockey's Ridge State Park is located in the town of Nags Head, on the Outer Banks of North Carolina.

Many stories surround the origin of the name of Jockey's Ridge. The most popular stems from the early inhabitants' practice of capturing wild ponies and racing them on the flat surface at the base of the dune. The steep sides of the dune were used as a grandstand for spectators.

In the early 1970s, when development threatened the dunes, many local citizens and visitors took steps to help preserve and protect the dunes. "People to Preserve Jockey's Ridge" was formed and the campaign to "Save Our Sand Dune" was on. Appeals were made to local and state governments and a petition was presented to government officials. In 1975 Jockey's Ridge was established as a North Carolina State Park with the purchase of 152 acres. Additional purchases have brought the park to today's size of 385 acres.

Kids, both large and small, enjoy playing on this huge pile of sand. Excellent views of coastal Carolina and spectacular sunsets are just a few of the rewards of a hike to the top.

For more information, contact:
Jockey's Ridge State Park
P.O. Box 592
Nags Head, NC 27959
(919) 441-7132
Introduction to the Activity Packet

For Jockey's Ridge State Park

Note: The on-site activity was designed for the class-conducted at the park, while the curriculum study areas which are used in that activity include: however, a listening of literature. Each activity does not include, therefore, those areas. The curriculum for all subjects in the process of revising is the North Carolina Department of Public Instruction...
Introduction to Taxonomy

As many as 10 million known living organisms share planet Earth as home. Each of these living things has been classified by similar characteristics into large groups known as kingdoms. There are five major kingdoms:

1) Animalia (mammals, insects, birds, reptiles, etc.);
2) Plantae (plants);
3) Fungi (mushrooms, molds, yeasts, etc.);
4) Protista (unicellular algae, protozoans); and
5) Monera (bacteria and blue-green algae).

These kingdoms are systematically divided several times, into more closely related groups known as taxonomic divisions. Individual organisms within a taxonomic division share similar characteristics with other individuals within the group. The principle taxonomic divisions are kingdom, phylum, class, order, family, genus and species. Types of individual animals or plants are species or specific organisms. Species in Latin means “kind”. So in simple terms, species are different kinds of organisms. Often species are named for the scientist who classified them or for a unique characteristic of the species. The table on page 1.5 represents the taxonomic divisions for a gray fox.
Taxonomy of a Gray Fox

Kingdom ANIMALIA
Multicellular organisms requiring organic plant and/or animal substances for food

Phylum CHORDATA
Animals with notochord, dorsal hollow nerve cord

Subphylum VERTEBRATA
Spinal cord enclosed in a vertebral column, body basically segmented, skull enclosing brain

Superclass TETRAPODA
Land vertebrates, four limbs

Class MAMMALIA
Young nourished by milk glands, breathing by lungs, skin with hair, constant body temperature

Order CARNIVORA
Predaceous, remarkable sense of smell, jaws equipped with large canine teeth

Family CANIDAE
Broadly adapted carnivores, large nasal chamber associated with sense of smell, generally long and strongly built, shearing teeth, non-retractable claws, mostly cursorial (adapted to running)

Genus UROCYON
“Uro” - Greek for tail, “cyon” - Greek for dog, elongated muzzles, long legs, prominent busy tails

Species Urocyon cinereoargenteus
Black-tipped tail, “salt and pepper” coats, agile, rapid runners
I. PRE-VISIT ACTIVITY

The following outline provides a brief summary of each activity, the major concepts into which the objectives are linked, and the specific animal behavior and adaptations observed by the students during the activity.

Activity Summary
III. Post-Visit Activity

Animal Match-up
Through a matching game, students will match animals of the dune environment with their adaptation.

Major concepts:
• Animal adaptations
• Animal behavior

Objective:
• Describe six animals and two of their adaptations to the harsh dune environment.
in a particular environment. They must be able to survive in a particular environment. Many of the animals of the Shrek have adapted to their environment. Some of the animals from the Shrek are examples of how animals can be adapted. Animals that use camouflage to hide in the environment are a good example of how animals can be adapted. Animals that use camouflage to hide in the environment are a good example of how animals can be adapted.
**Instructions:**

1. Make a “surprise” terrarium for your class. The terrarium should contain vegetation, an animal that is difficult for the students to see and an animal that is easily seen. The vegetation should be of similar color to the camouflaged animal.

2. Have students observe the terrarium and ask the group to describe what they see. After everyone has seen the animals, discuss how animals are camouflaged and how this adaptation is important. Also, discuss the other adaptations the animals in the terrarium have.

3. Show pictures of other animals. Discuss each animal’s adaptations (physical and/or behavioral), and how the adaptations help them to survive.

4. Show the class a picture of Jockey’s Ridge. Ask them to list the animals they think might live there and the adaptations those animals might therefore have. Write the comments on the board.

5. If the animals for the terrarium were brought into the classroom from the wild, the students should participate in releasing them. Remind the students that all things have a home and a territory. We’ve briefly taken these wild animals from their homes, so it’s important to return them there. But remember, some animals should never be taken from their environment if it jeopardizes their lives. Remind them that we should always return an animal to the place where we picked it up, so it will be in its own territory and not some other animal’s. Discuss human responsibilities for taking care of animals and their environment.
Instructions:

1. Introduce the activity: We are going on a hike to see animal signs left by animals that live here at Jockey’s Ridge. We will be looking for tracks, paths, broken twigs, scat, nests, burrows, food, litter, etc. We will keep a running log of how many things we find and what they are. When we find a good track, we will circle it in the sand and use the “Tracking” worksheet to try to identify the animal. If we find a really clear track, we will try to make a plaster cast of it.

Read the Student’s Information out loud, followed by some quick rules: Always stay behind the leader during the hike. Watch where you step, so you won’t step on a good track. Be especially careful around the “circled” tracks.

2. Separate the children into groups of five to six each with one adult leader per group, if possible. Have them write their group number on the top of their worksheet.

3. Start the hike and when the first set of tracks is found, circle them in the sand and go through the worksheet as a complete group to try to identify the track. Make sure everyone understands how to fill in the worksheet.

4. When the next set of tracks is found, have Group 1 try to identify it while the rest of the class observes. Have them explain their identification process using the worksheet. At each new set of tracks, have a new group try to identify them. Remind each group to circle their tracks so no one will step on them.

5. Make a plaster cast of any of these tracks, if it is appropriate. The procedure for making plaster castings from animal tracks:

   a. Select a clear track. Remember, moist sand will usually show tracks best.

   b. In a large cup mix plaster of Paris, adding water slowly until it is as thick as pancake batter.

   c. Stir continuously.

   d. Carefully pour the mixture onto the track until it is completely covered.

   e. Let the plaster harden 15-30 minutes.

   f. Carefully lift and remove the casting from the ground.

   g. Brush away loose sand.

6. Continue the hike with all students keeping a log of what they see, not only of tracks, but other animal signs as well. Discuss all the animal tracks pictured on the “Track Identification” fact sheet.

7. At the end of the hike, discuss:

   a. the number and diversity of animals and animal signs found,

   b. the importance of this habitat to the animals, and

   c. the importance of Jockey’s Ridge State Park in protecting this habitat.
Student Information:

If you observe a group of rams or ewes, one ram will lead the others. The ram will be the one that is the largest and strongest. The other rams will follow him. This is called dominance. The ram that leads the group is called the 

leader. The other rams will follow him because they are afraid of being attacked by the leader. The leader will usually be the one that eats first and has优先

right to the best places to sleep and to drink water.

In the wild, rams and ewes will be found in herds. These herds are usually made up of several females and their young. The females will be led by the leader. The young rams will be led by the leader and will

grow up to be rams themselves. The leader will be the one that is the largest and strongest. The other rams will follow him. This is called dominance. The ram that leads the group is called the leader. The other rams will follow him because they are afraid of being attacked by the leader. The leader will usually be the one that eats first and has priority

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<table>
<thead>
<tr>
<th>Characteristics</th>
<th>TRACK</th>
<th>TRACK</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Habitat: thicket, sound, pond, dune, grass, etc.</td>
<td>Likely Animal</td>
<td>Likely Animal</td>
<td>Likely Animal</td>
</tr>
<tr>
<td>Track Size: large, small, overlapping each other, etc.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Print: hoof, webbed foot, pad, claws, tail, etc.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Track Pattern: waddling, walking/trotting, running/galloping, bounding/hopping, changing between these, etc.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Track Route: where headed, fairly straight, meandering, under branches, to pond, to tree, etc.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Signs: food litter, scat, feathers, fur, burrow, digging, nest, etc.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Likely Animal-Type: bird, mammal, reptile, insect, etc.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td></td>
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</tbody>
</table>
Animal Match-Up

Post-Visit Activity #1

**Materials:**
- Animal cards
- Animal facts
- Animal pictures

**Group Size:** 10 students

**Estimated Time:** 30 minutes

**Location:** Classroom

**Appropriate Grade:**
- Animals: Kindergarten
- Environment: Grade 1
- Soil: Grade 2

**Curriculum Objectives:**
- Social Studies: Animals and their habitats
- Science: Plant and animal science
- Language Arts: Writing and reading comprehension

**Preparation:**
1. Divide the class into groups.
2. Give each group a set of the animal cards.
3. Explain that the goal is to create a match-up game using the animal cards.

**Activity:**
- Each group is responsible for creating a match-up game using the animal cards.
- The game should include animal names, pictures, and facts.

**Assessment:**
- Evaluate the students' understanding of animal adaptations and their ability to create a match-up game.

**Extensions:**
- Discuss the importance of protecting animal habitats.
- Encourage students to find out more about the animal adaptations they learned about.

**References:**
- Animal Adaptations
- Earth Science
- Science: Life Sciences
- Language Arts: Creative Writing

**Credits:**
- Developed by Ranger Rick's Nature and Wildlife
- Written by Ranger Rick's Nature and Wildlife

**Debrief:**
- Reflect on the activity and discuss the importance of protecting animal habitats.
- Encourage students to share what they learned about animal adaptations.

**References:**
- Animal Adaptations
- Earth Science
- Science: Life Sciences
- Language Arts: Creative Writing
Animal Pictures Worksheet

On each of the small sheets of paper is a clue which describes an adaptation of one of the animals below. Match three clues to each animal and lightly tape them in place. Write the correct animal name above the clues.
Answers: Animal Adaptation Clues

Spadefoot Toad
1. A sharp ridge or spade on each of my hind feet helps me dig in the sand.
2. I dig down in the sand and become dormant during hot dry spells (this is called estivation). When it begins to rain the vibrations from the raindrops wake me up.
3. I can mature from egg to adult in only two weeks and I can survive an enormous amount of water loss (up to 40%).

Cottontail Rabbit
1. I have adapted to living in open areas by running in a zig-zagging pattern to escape danger.
2. My grayish-brown fur helps me to blend in with my surroundings; my distant relative, who lives in cold mountain areas, has fur that turns white in the winter.
3. My big ears do more than just pick up sound waves. They also help keep me cool during the summer by radiating heat.

Tiger Beetle
1. My large pincer-like jaws are used to grasp my prey.
2. I have six long hairy legs. My quick movements make it hard for my predators to catch me.
3. I escape the extreme weather conditions of the dunes by digging down 2-3 feet in the sand.

Brown Pelican
1. My large pouch-like bill (it can hold up to 2 gallons of water) is adapted for catching fish.
2. My webbed feet and short legs make me an excellent swimmer, but not very good at walking on land.
3. I flap my pouch to keep cool in the summer (like a dog pants).

Hognose Snake
1. I obtain all my water needs from the toads I eat.
2. When in danger I puff up my neck and hiss loudly to scare my predators away. If that does not work, I make myself unappealing by rolling over and playing dead.
3. I have an upturned snout which I use for digging up toads that have buried into the sand.

Opossum
1. When in danger, I make myself very unattractive to my predator - I defecate, drool, give off a bad smell, and then finally "play dead". They certainly won’t want to eat me!
2. My footprint looks like a hand and I have almost no hair on my prehensile tail.
3. As soon as I am born I crawl up to my mother’s pouch where I stay until I am 2-3 months old.

Whitetail Deer
1. When danger approaches I raise my white tail to warn my nearby friends and family.
2. When young, white spots on my back look like filtered sunlight and help me to stay hidden from danger.
3. I stamp my hooves and snort loudly to warn others of approaching danger.
Interpret - an animal that eats plants and animals
Predator - an animal that eats other animals
Competition - an animal that eats both plants and animals

Biome - a plant community
Climate and Location

Animals - a group of animals
Plants - a group of plants

Enclosed - a group of animals that live in a specific area

Habitat - the area in which an animal is found

Biological - related to living things
Ecological - related to the study of living things

Humans - the dominant species in the environment

Ecosystem - all living things and their environment

VOCABULARY

Hibernation - the state of passing the winter
Home Range - the area in which an animal resides

Herd - a group of animals

Dilemma - a difficult situation

Conservation - the protection of natural resources

Carrying Capacity - the maximum number of individuals that can be supported by a given environment

Supply - the amount of available food

Behavior - the way an animal acts

Food Chain - the order of food energy transfer

Evaporation - the process of making water into vapor

Adaptations - the process of making plants and animals better suited to their environment
**Sand dune** - A hill or ridge of (wind-blown) sand.

**Scat** - Animal droppings; feces; poop.

**Shelter** - Cover; cover from elements for natal activity, bedding, traveling, breeding, etc.; varies depending upon species.

**Sign** - Something which suggests the presence or passage of an animal such as its track, droppings, broken branches, etc.

**Survive** - To remain alive or in existence.

**Thicket** - Woody vegetation composed of shrubs such as bayberry, small pines and live oaks.

**Threatened** - In wildlife terms, a species present in its range but in danger because of a decline in numbers and/or habitat.

**Track** - The impression of a single foot.

**Track pattern** - A series of tracks showing the sequence of the animal’s steps.

**Wildlife** - Animals that are not tamed or domesticated; may be as small as an organism visible to humans only through a microscope, or as large as a whale. Wildlife includes, but is not limited to, insects, spiders, birds, reptiles, fish, amphibians, and mammals, if nondomesticated.
Brown Pelicans Are Among the World's Largest Birds. The Average Adult Body Length is 3-5 Feet, With a Wing Span up to 8 Feet and a Weight of 5-8 Pounds.

Brown Pelicans Are Found Along the West, Gulf, and Atlantic Coasts of North America.

Scientific Name: Pelecanus Occidentalis
Common Name: Brown Pelican

Behavior:
- Pelicans are very important to the pelican, as they eat off all kinds. They are adapted to both water and land, and they are excellent swimmers. Smaller groups are often seen swimming in single file, while larger ones are often seen swimming in schools. The ocean or sounds, or on the ground, they become active during the day when they can easily be seen.

Food Habits:
- Pelicans feed on a variety of marine life, including fish, squid, and crustaceans. They often catch their prey by diving into the water from a height of 30 feet and then return to the surface with their catch. They can also swim underwater for up to 30 minutes at a time to catch their prey.

Habitat:
- Pelicans are typically found along coastal areas, where they can easily access their food sources. They prefer areas with shallow water and a plentiful supply of fish.

Distribution:
- Pelicans are found along the West, Gulf, and Atlantic coasts of North America, from the southernmost parts of California to the northernmost parts of Canada.

Description:
- Adult pelicans are large birds, with a wingspan of up to 9 feet and a weight of up to 20 pounds. They have a distinctive pouch-like throat pouch that they use to catch fish. Their plumage is mostly white, with a black tail and a red gular pouch.

Ancestral:
- Brown Pelicans are members of the Pelecanidae family, which includes other large and colorful seabirds such as theRed-footed Booby and the Royal Tern.

Scientific Name: Pelecanus Occidentalis
Common Name: Brown Pelican

Ancestral:
- Brown Pelicans are distantly related to other large seabirds such as the Audubon's Pelican, the Grey Heron, and the Common Crane.

Relationship:
- Brown Pelicans are part of a larger group of seabirds known as the Pelecaniformes, which includes pelicans, gannets, and cormorants.
Pelicans have large pouch-like bills (which hold up to 2 gallons of water), which are used to scoop up fish (but not to store them). There is a small hook on the end of the beak, and this is used for preening (smoothing and cleaning feathers) and turning eggs in the nest. Pelicans will flap their pouches to cool their bodies (like a dog will pant).

The pelican’s webbed feet have four toes, rather than the three typical of other web-footed birds. The third toe has a long claw which is used to preen the back of the neck. The thick webbing is an aid for swimming, and the toes are flexible enough for the bird to be able to perch firmly on a tree limb.

**Mortality:**

Brown pelicans became one of the many endangered species of the 1940s and 1950s, largely due to the use of the pesticide DDT. Earlier, around the turn of the century, their survival had been threatened by humans shooting them for their feathers. Conservation efforts have enabled the brown pelican to make a substantial comeback and their status has been downgraded to special concern. However, they still have other dangers to contend with such as oil-spills, monofilament line, fish hooks, pesticides and other human-made materials.

**Fun Facts:**

The brown pelican has the largest pouch of any bird in the world. When a pelican is hot it will flap its bill to cool off.

Pelican young weigh more than their parents for a period before they take flight.

Brown pelicans can fly up to 35 mph in calm winds.

Pelicans have existed for more than 30 million years (humans have existed less than 1 million years).

As young birds, brown pelicans can make a few squawking sounds but become virtually mute as adults. On rare occasions, a low croak may be heard.

**Track:**

The pattern appears as a web-footed, 4-toed waddle type track.
Eastern Cottontail Fact Sheet

**Scientific Name:** Sylviagus floridanus

**Common Name:** Eastern Cottontail

### Description

The upper body is generally light brown and the underparts are white. Year to year, the population fluctuates numerously from region to region and across the mountains. Populations fluctuate noticeably in response to weather patterns. This is a distantly related species from some of the other rabbits in the region. They have a light brown face and white underparts, which gives them a distinctive appearance. They have a hilly call that is white on the underparts. The upper body is generally light brown and the underparts are white.

### Habitat

It lives in heavy brush, strips of forest, near open areas, edges of fields, and blackberry. During the winter, it eats woody plants such as red maple, apple, wild cherry, sumac, and shrubbery. It is omnivorous and will consume different types of plants. It is often found in open areas where there is light brush.

### Food Habits

Grasses, weeds, plants, and shrubbery are staples in their diet.

### Behavior

Eastern Cottontails are usually quiet, but they do have a distinctive call that is often heard in the region. They are primarily active during the day and spend the rest of the day in sheltered areas. When under threat, they will run to escape danger, the rabbit will run in a zig-zag pattern.

### Fun Facts

- Females have been known to have as many as 7 litters of 4 to 7 young in a year.
- Mating is harder to catch.
- They have small ears.

### Distribution

It is the most widely distributed member of the genus Sylvilagus in North America. In North Carolina, it is common from the eastern brier islands to the mountains. Populations fluctuate noticeably from region to region and across the mountains. Populations fluctuate noticeably in response to weather patterns. This is a distantly related species from some of the other rabbits in the region. They have a light brown face and white underparts, which gives them a distinctive appearance. They have a hilly call that is white on the underparts. The upper body is generally light brown and the underparts are white.

### Characteristics

- Body size: 9 to 17 inches
- Body weight: 2 to 4 pounds
- Color: Light brown
- Size: 9 to 17 inches
- Weight: 2 to 4 pounds
- Threat: Red maple, apple, wild cherry, sumac, blackberry

### Eastern Cottontail Facts

- The eastern cottontail's ears help the rabbit to stay cool by radiating excess heat.
- Nests are usually constructed from local plant life and lined with fur plucked from the rabbit's body.
- Rabbits typically have paired paws with the front feet diagonal and the hind feet side by side. The front foot is 1 inch by 1 inch, the hind foot is 1.5 inches by 1.5 inches.
- Rabbits usually have paired paws with the front feet diagonal and the hind feet side by side. The front foot is 1 inch by 1 inch, the hind foot is 1.5 inches by 1.5 inches.

### Eastern Cottontail Care

- The eastern cottontail is a small, nocturnal animal that can be found in a variety of habitats, including fields, forests, and urban areas.
- Their diet consists of grasses, weeds, and shrubbery.
- They are typically active during the day and spend the rest of the day in sheltered areas.
- When under threat, they will run to escape danger, the rabbit will run in a zig-zag pattern.
Eastern Hognose Snake Fact Sheet

Common Name: Eastern hognose snake

Scientific Name: Heterodon platyrhines

Distribution: Eastern-central Minnesota to extreme southern New Hampshire; south to southern Florida; west to eastern Texas and western Kansas.

Description: The hognose is a stout-bodied snake with a pointed, slightly upturned snout and wide neck. Color is extremely variable: yellow, tan, brown, gray or reddish with squarish dark splotches on back interspaced with round dark dorsolateral blotches. Solid black is common in some areas. Underside of tail is distinctly lighter than belly color.

The average size is 20 - 33 inches in length. The largest ever recorded measured 45 1/2 inches. The young measure 6 1/4 to 10 inches at hatching.

Habitat: Prefers open sandy-soilled areas, thinly wooded upland hillsides, cultivated fields, woodland meadows. Sea level to 2,500 feet.

Food Habits: Toads are the mainstay, however frogs and salamanders are also eaten. Young snakes may also eat crickets and insects.

Behaviors and Adaptations: The defensive habits of the eastern hognose snake are fascinating. When approached it will flatten its head and neck, inflate with air, and exhale with loud hisses. The snake will make short lunges but does not bite, for the act is all bluff. If poked or kicked, the snake will writhe in apparent agony with mouth and tongue dragging in the dust. Feigned death soon overtakes the poor creature and it lies limply on its back. If the attacker leaves, the hognose snake shortly lifts its head to survey the situation and moves off to safety.

This species is diurnal and follows the scent trails of toads to their daylight hiding places. The snout is used for digging down into the cooler sands, for rooting out the toads, and in other burrowing. Hognose snakes live on land and definitely not in trees. They can swim well, when necessary.

Hognose snakes obtain all the water they need from the toads they eat.

Track: All snakes have a distinctive track that looks somewhat like s-shaped curves.
Gray Fox can run at a speed of 28 mph for short distances.

The gray fox is the only fox species that can climb trees. By climbing a tree, they can escape predators and have a safe place to rest.

Gray foxes are intelligent and possess an acute sense of smell and hearing, which helps protect them from predators when hunting or being hunted.

Shadows quietly passing.

Gray color helps camouflage them in the environment, which they appear as a large gray shadow. They are active throughout the year, quietly nocturnal and secretive. Their behaviors are fascinating, and they often sneak up on unsuspecting prey.

Food Habits:

They feed on a variety of small mammals, birds, reptiles, fish, and insects, but their diet is mostly made up of small birds and rodents.

Habitat:

The gray fox is found in a variety of habitats, including woodlands, fields, and forests. They prefer to live near water sources and have a strong preference for woodlands and bushy shrublands, including poisons.

Description:

Adults average about 33-40 inches long, including the tail. The average weight is about 7-10 pounds. They have a sleek shape, a black-tipped tail, and black-tipped ears.

Distribution:

Gray foxes are found in most of the United States, except in the North Central and Northwestern regions. They are native to North America, from Mexico to the eastern United States and Canada.

Scientific Name: Urocyon cinereoargenteus

Common Name: Gray Fox
Fox tracks are oval and have 4 toes with claws in front of a small heel pad. The track is about 1 5/8 - 1 7/8 inches long. They can be distinguished from dog tracks by evidence of perfect-stepping, the lack of foot drag and the purposefulness of the trail. The gray fox pads on the rear of each foot have a pronounced hook-like projection on each side. A fox straddle measures 4 inches or less. A slow stride measures 8-12 inches and running, 18-36 inches.
Laughing gulls are gulls of the genus Larus. Larus comes from the Latin "laurus," which sounds like "high," meaning "spruce tree." The scientific name from the Latin is Larus, a Latin name for "laugh," hence "laughing gull.

Until they fly and leave the nest, both parents will incubate the eggs (especially 3-4) and care for the young. Small or large colonies, gulls are quite social, roosting in flocks on land or water, and breeding in part of gulls located above their eyes, which to eliminate excess salt and quickly on land and in water. This allows them to move easily and swim through the water. Laughing gulls, like all gulls, have webbed feet which are well adapted for swimming. Larus atricilla, known as the laughing gull, is a medium to small, grayish-brown bird with black eyes and a yellow bill. Laughing gulls are found along the coast, usually near people, and are common throughout the eastern United States. The adult laughing gull is 15-17 inches long with a wingspan of about 3 feet. A permanent resident of the coastal Carolinas and the Atlantic and Gulf coasts.
For easy identification, the laughing gull is the only black-headed gull commonly found in North Carolina.

Tracks: The laughing gull track shows a webbed foot with three toes; the fourth, or hind toe, rarely imprints. The track is 1 1/2 inches by 2 inches.
It is the only marsupial, or pouched animal, native to the United States.

The gestation period is only 12 to 13 days, and the young are weaned in about 60 days and leave the pouch after about 80 days. When born, each baby uses its front feet and claws to claw the 7 to 10 nipples. When about to become adults and to lead solitary lives, these animals are most active in spring and summer. They are nocturnal. Mosely nocturnal, oppossums are often encountered by headlights when crossing roads.

Oppossums are omnivores. The skull contains 50 various teeth. Their snout and dentition contains hook- and needle-like canines. They have a wide range of food habits. Oppossums are extremely adaptable. They prefer land habitats, but are also found in woodlands, along streams, and in towns. Their home range is 15 - 40 acres. They weigh 4 - 8 pounds. The head and body of 12 - 20 inches, and the tail is usually 10 - 15 inches long. They are grey in northern states, but become much darker in southern states. Basically harmless, mottled pink and black, and rounded. The tail is pale with large, dark, like ears. It is also almost as long as the body and is found throughout the Carolinas, Virginia, and Maryland.

The Virginia Oppossum is abundant in the southeastern United States and is known to be nomadic and to lead solitary lives.

**Fun Facts:**

**Behavior:**

- **Food Habits:**
  - The Virginia Oppossum may live 3 years under ideal conditions.
  - The Virginia Oppossum is abundant in the southeastern United States and is known to be nomadic and to lead solitary lives.
It has more teeth (50) than any other mammal in North America.

When cornered, the opossum may "play dead," (hence the expression, "playing possum"). Sometimes it stays in this trance-like state for up to 6 hours.

Opossum fossils date back to Upper Cretaceous time. It is among the most primitive of living mammals.

**Track:**

There are five toes on front and hind feet, and claws on all toes, except on the opposable "thumb" on the hind foot. The track is usually 2 inches long. A tail mark is usually seen.
Raccoon May be heard through the day or the night. Raccoons may sometimes use a chimney for a den and the sounds of the
domesticated human may become extinct or sounds in the southern region. The raccoon may even become
domesticated humans, or perhaps a den or hollow log, rook coves or ground burrows during

Raccoons are nocturnal predators, only active during the night when food is abundant. They are efficient climbers and can

Food: Raccoons are omnivorous. They eat nearly anything that can be found in or near the water, including

Habitat: Raccoons are adaptable and can be found in a variety of habitats, from forests and swamps to urban areas. They are often found near bodies of water,

Description: The raccoon is a large, arboreal animal with a distinct appearance. It has a bushy tail, dark fur on the face and ears, and a pink nose.

Distribution: Raccoons are found throughout the United States, from the Atlantic to the Pacific coast. They are also found in parts of Canada and Mexico. Raccoons are common from the southern United States to lower Canada. Throughout the

Scientific Name: Procyon lotor

Common Name: Raccoon, Common Raccoon, Black Bear
Sometimes the young fall from tree dens as high up as 20 feet but will usually be retrieved by the mother without any injuries.

**Track:**

The raccoon makes 2-3 inch long tracks that look like a series of small handprints. The long finger-like toes on their tracks are their most recognizable and distinctive feature. The track pattern of the raccoon shows the large hind track placed next to the smaller front track of the opposite side. Their tracks are often found in the mud along streams, swamps and lakes.
The Spadefoot toad is 1/2 by 1 inch. The Spadefoot toad's front and rear flaps are paired. The front pair face inward. The whole back is 1/2 by 1 inch. Yellow lines on the back should serve as a warning. Many people have strong allergic reactions from handling this toad. The

TRACT:

Only two weeks, and can survive enormous amounts of water loss. The ground for short periods of time, they can manage from 60 to 90 or so, in Presenter, Because these toads live in areas where water may only stay on the surface for minutes or hours. The digger toad is known as a wetland-like subspecies, usually underground for several weeks until periods of little or no rainfall. It may become dormant and cover itself with sand or loose dirt. This is done to avoid predators and the hot sun. In sand or loose dirt. This is done to avoid predators and the hot sun.

The Spadefoot toad uses small spades on its hind feet to dig burrows in

BEHAVIOR:

They usually feed at night on insects and other small animals.

HABITAT:

Sand, sandy, gravelly or rocky soils; from flatland to forest.

Every two seconds, some persons liken the sound to that of a cow. Their vocal sound is an explosive, low pitched grunt, shorter in duration, when are irregular pats or yellow lines. The toad's eyes have the eyes of wedge-shaped, spade; on the inner side. The hind feet have the wedge-shaped, spade; on the inner side. The Spadefoot toad are slightly wiggled and raised from 1/4 to 3/4 inch long. The Spadefoot toad are slightly wiggled and raised from 1/4 to 3/4 inch long.

Distribution:

Spadefoot toads have short bodies, the head and chest are white, and they are found from South New England to southern Florida east to Louisiana. Absent from most upland areas in the South, and some of the Keys; west to southwestern Missouri, northeastern Arkansas, and Spadefoot toads are found from South New England to southern Florida east to Louisiana. Absent from most upland areas in the South, and some of the Keys; west to southwestern Missouri, northeastern Arkansas, and Spadefoot toad.

Scientific Name:

Scaphiopus holbrooki

Common Name:

Spadefoot toad
### Tiger Beetle Fact Sheet

**Common Name:** Tiger beetle  
**Scientific Name:** Cicindelidae hirticolis

**Distribution:** Tiger beetles are considered summer insects. Most of them are sun-loving species found on beaches and dry soil. They range throughout North America, and depending on the species, can be found from the Eastern United States to Montana and Oregon and as far north as Canada.

**Description:** This black and white bodied beetle has long hairy legs, strong wings, and long antennae that rise from the top of the head. Its eyes are quite large and bulibous, and it has a pincher-like jaw. It is a swift and agile runner and is difficult to catch.

The different species of tiger beetle range from 3/8 - 7/8 inches; the smallest is the dainty tiger beetle, and the largest is Dejean's flightless tiger beetle (not found in the eastern U.S.).

**Habitat:** Sandy places with scattered vegetation.

**Food Habits:** The tiger beetle mainly eats small insects and spiders, but has also been known to eat small fiddler crabs. All adults are ferocious predators that seize small insects with powerful pincher-like jaws. They bang the prey against the ground several times until it is dead, then they suck the juices out and chew parts of the body shell.

The voracious larvae digs a hole in the sand, fastens itself near the top of the tunnel and plugs the opening with its enormous head. As an unsuspecting insect walks by, the tiger beetle larvae springs out in a partial backwards somersault, grabs the prey in its powerful pincher-like jaws and drags it into the burrow.

**Behaviors and Adaptations:** The tiger beetle escapes the extreme weather conditions of the dunes by digging a burrow 2 - 4 feet deep in the sand. The quick movements of the adult tiger beetle make it hard for predators to catch.

**Fun Facts:** All beetles are worth noting due to their large numbers. If every plant and animal species sent a representative to a convention, one out of every five delegates would be a beetle. Specifically tiger beetles are not harmful to plants as they do not eat plant/crops nor do they lay eggs on vegetation.

**Track:** The tiger beetle leaves a print which looks like someone took a pencil and lightly moved it through the sand and then put many tick marks on either side. The track can be relatively straight or zig-zagging.
The color change of an adult deer's coat is a good example of camouflage.

To warn other deer of approaching danger, they short browse and stamp their feet.

the more favored because areas.

where they are easily concealed. Fallen leaves of shrubs hideck seen to be
enduring all day. During the day they feed down in secluded forest areas
and during daylight hours as well. They feed mostly at night. Beginning at dusk and
White-tailed deer feed primarily at dawn and dusk. They then feed at night.

White-tailed deer remain in a fairly fixed home range of about 2 to 3 square miles.

Their home range is broken up into mixed forest areas, old fields and crop
lands, as well as the meadows where they feed.

Description:

White-tailed deer are 3 feet in length and 3-1/2 feet tall. The weight
is 125 pounds in males. Females are somewhat smaller.

White-tailed deer are found in the coastal plain of North Carolina in the Pedemont and mountain.

Distribution:

White-tailed deer occurs in most forests, forest edges and brushy
areas.

Scientific Name:

Odocoileus Virginianus

Common Name:

White-tailed deer

Behaviors:

White-tailed deer feed primarily at dawn and dusk. They then feed at night.

White-tailed deer remain in a fairly fixed home range of about 2 to 3 square miles.

5 - 10 years in the wild.

where the deer runs from danger. The white-tailed deer lives approximately
by the municipality where you reside. You are asked to identify
the plant and a white band across the nose. There is a white patch
moisture, the coat color is generally reddish-brown in summer and a
winter coat. The coat color is generally reddish-brown in summer and a

White-tailed deer are found in the coastal plain of North Carolina in the Pedemont and mountain.

Distribution:

White-tailed deer occur in most forests, forest edges and brushy
areas.

Scientific Name:

Odocoileus Virginianus

Common Name:

White-tailed deer
tree trunks. The summer hairs are solid, fine, and short to allow for cooling, while winter hairs are long, coarse, waxy and hollow. Short, fuzzy underfur helps insulate.

Fawns, also, are protected from predators by their coloration. White spots (which look like sunlit areas) conceal fawns as they lie motionless in grasses, often separated from their mother as she feeds nearby.

**Fun Facts:**

A deer's antlers are very specialized. It is the mammal world's only example of regularly regenerated body parts. Antlers, unlike horns, are bone.

Antlers are recycled. Animals, such as mice and squirrels, like to chew on the antlers, which contain calcium and other minerals the rodents need.

White-tails can run up to 35-40 mph. They can jump 8 1/2 feet vertically from a standing-still position and jump 30 feet horizontally.

**Track:**

When galloping, the white-tail deer uses the "rocking horse" gait, common among large animals, in which the hind feet swing far ahead of the front foot tracks. Deer tracks show two toes in a heart-shaped print, but often not well defined. Length varies from 1 1/2 to 3 inches; the smallest prints belong to fawns and largest to mature bucks. When walking, deer place their hind feet in or near the prints of their forefeet, so prints often overlap.
Nags Head, North Carolina 27959
P. O. Box 592

Return to: Jockey's Ridge State Park

understand and agree to all the conditions within it.

I.

If not, mail completed Parental Permission Form.

If yes, do you have these forms?

If no, mail the contact person an Educator's Guide.

Programs attended:

Have you or your group participated in park programs before? If yes, please indicate previous programs.

Special considerations of group: (e.g. allergies, health concerns, physical limitations)

Areas of special emphasis

Number of chapters

Age/grade

Number of students

Time of departure from park

Time of arrival at park

Meeting place

Program desired and program length

Day/Date/Time of requested program

Address

Phone (home)

Phone (work)

Name

Contact person

Date received

Request received by

SCHEDULING WORKSHEET
PARENTAL PERMISSION FORM

Dear Parent:

Your child will soon be involved in an exciting learning adventure - an environmental education experience at ______________________. Studies have shown that such “hands-on” learning programs improve children’s attitudes and performance in a broad range of school subjects.

In order to make your child’s visit to “nature’s classroom” as safe as possible we ask that you provide the following information and sign at the bottom. Please note that insects, poison ivy and other potential risks are a natural part of any outdoor setting. We advise that children bring appropriate clothing (long pants, rain gear, sturdy shoes) for their planned activities.

Child’s name ____________________________

Does your child:

• Have an allergy to bee stings or insect bites? ____________________________
  If so, please have them bring their medication and stress that they, or the group leader, be able to administer it.

• Have other allergies? ____________________________

• Have any other health problems we should be aware of? ____________________________

• In case of an emergency, I give permission for my child to be treated by the attending physician. I understand that I would be notified as soon as possible.

___________________________ ______________________
Parent’s signature date

Parent’s name ____________________________ Home phone ____________________________
(please print) Work phone ____________________________

Family Physician’s name ____________________________ phone ____________________________

Alternate Emergency Contact

Name______________________________ phone ____________________________

Jockey’s Ridge State Park, NC  9/2  September 1993
Please return the completed form to Park Staff. Thank you.

1. Did the program(s) meet the stated objectives or curriculum needs? If not, why?

2. What part of the program(s) did you find the most interesting and useful?

3. What part(s) did you find the least interesting and useful?

4. What can we do to improve the program(s)?

5. General comments

6. Group (school) name

Please answer these additional questions:

Leaders of school groups and other organized youth groups

Program evaluation

North Carolina Parks & Recreation
Four-wheel drive vehicles are allowed on the Sondance beach during only certain hours. When tsunami warnings are in effect and sometimes they are.

Due to access, the Crosswalk across Highway 158 is eliminated, and visitors are required to come to the park entrance for access.

Dune will be subjected to moderate vegetation to hold the sand in place. The number of visitors allowed to climb the highest sand dune each year. Scientists hope that the number of visitors allowed at Jockey's Ridge State Park is limited to only certain areas of the park to prevent trampling of beach grass and sea oats. Only a limited number of the beach can be picked up speed. The dump trucks can't keep up with the sand that moves on the beach.

Anchored to southwest, and begins covering Sondance Road, this year is the

Impacted from docks. Some beach erosion is also caused on the sound side of the island. Water in many homes. There is pool, window, and room damage. Mobile homes destroyed. Boats damaged is done to businesses, boats and restaurants. Fledging on the island with long feet of damage is done to businesses, boats and restaurants. Extreme of the tourist season. Show signs of 9-12 feet break through low near in the dunes. Extreme

Category 3 hurricane, wind at 110-150 mph. Hurricane (you name it) hits during the height

Categorize impact from each scenario, as they relate to each scenario.

Create impact from each team responding to the following scenarios. Discuss different points of view.

<table>
<thead>
<tr>
<th>Economic Consequences</th>
<th>Visitor Services / Park</th>
<th>Natural Resources</th>
</tr>
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<tbody>
<tr>
<td>How will the scenario impact your operation?</td>
<td>How will the scenario affect your facility?</td>
<td>How will the scenario affect the ecosystem?</td>
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any hurricane or natural disaster

As follows:

Divide the class into 3 teams, each team representing a different interest. The team interests are Draw Our Sand Dune "Post-Vision Activity #2"
Several Northeaster Storms with 50 MPH sustained winds (over several days time) occur this winter. The large waves cause substantial beach erosion. Oceanside homes, motels and businesses are in danger of being destroyed. (Since no hard stabilization is permitted, property owners must move homes or lose them.) The steady northeast winds also affect the sand dune.

The park acquires more land. The state is able to purchase the land along the Soundside Road where the sand dune is moving, as well as a large in holding on the sound side of the park. The Registered Natural Heritage Area (protected area) is expanded to include most of the park.