



Junior Dunes Ranger Activity Book





Become a Junior Dunes Ranger!



Welcome to White Sands, friends! My name is Riley, and I am excited to share my favorite place with you today. We are going to have a great adventure exploring and learning about White Sands, the world's largest gypsum dunefield. My book has activities that are especially made for you depending on your age.



Kit Fox: Ages 6-8



Jackrabbit: Ages 9-12



Bobcat: Ages 13 and up

When you are finished with your activities, please return your book to a park ranger in the visitor center to be sworn in as an official White Sands Junior Dunes Ranger! If you have any questions, please ask a park ranger. Let's explore White Sands!

Riley

Parents: This is a family program. Feel free to help your aspiring Junior Ranger. We hope that your whole family learns about the park.

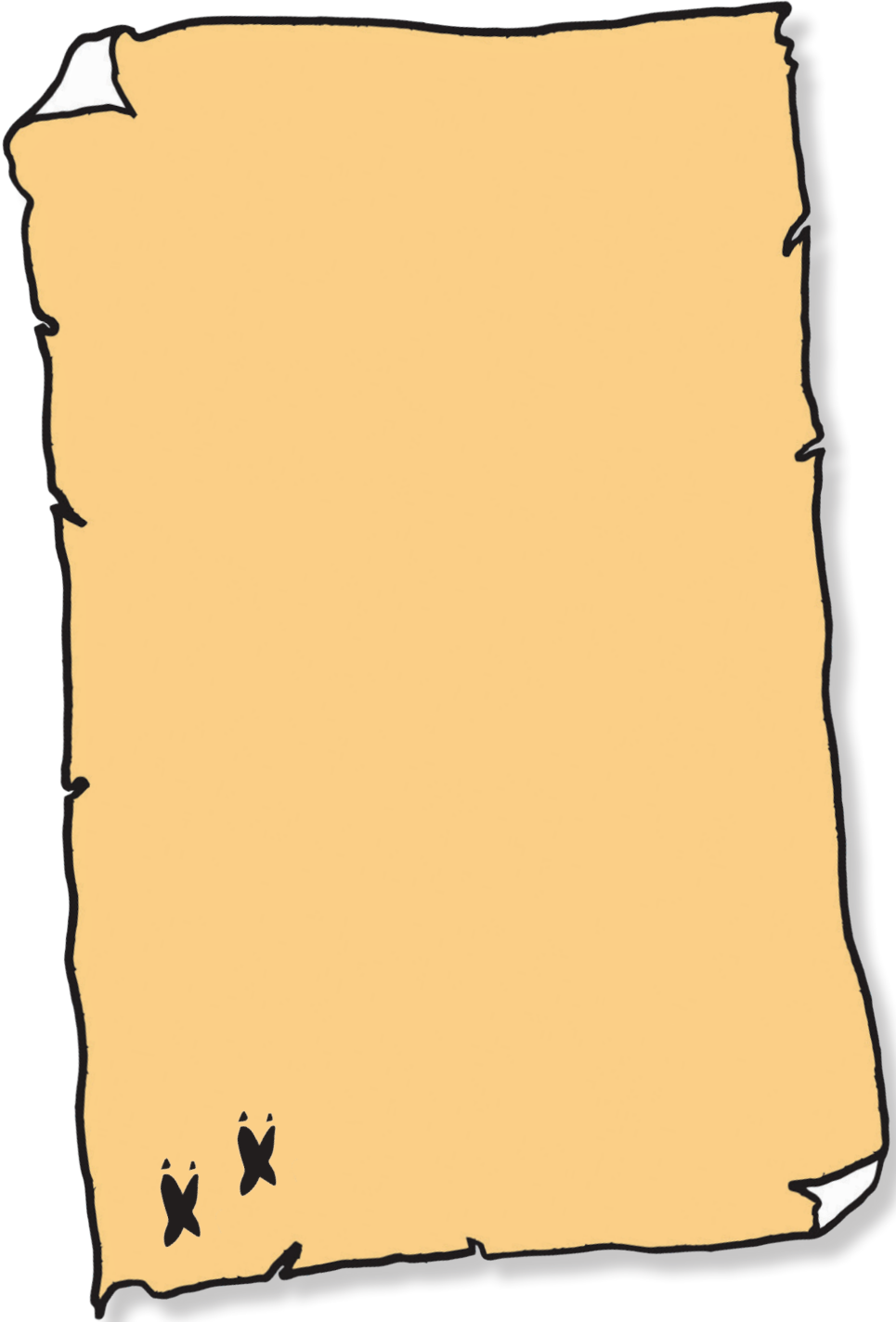
Are you on a tight timeline and can't return your book today? Not a problem. Mail in your book to the address below and a ranger will take a look at it.

Address: White Sands NP, PO Box 1086, Holloman AFB, NM 88330.

Recording Your Memories



As you explore White Sands, write or draw something in the journal below that you will want to remember about your visit today.



Having Fun and Being Safe

Leave No Trace

SAFETY TIP!

Lightning can strike up to ten miles away from a storm. When thunder roars, go indoors!





Riley loves being outside and having fun! She knows the best way to enjoy White Sands is to follow a few safety tips. Find and circle all the safe ways Riley and her friends are enjoying the dunes in the image below.

Riley's safety tips:

Drink lots of water

Be prepared for your hike

Throw away trash in a trash can

Keep pets on a leash

Wear a hat, sunscreen, & sunglasses

Hike with a friend





Solving Riley's Riddles

Riley wrote a few riddles about her friends. Use the pictures below to help solve Riley's riddles. Fill in the blank with the number of the animal below that matches the riddle.

My blood is cold, my rattle bold
If I'm in sight, stay clear! I bite!
But worry not; the taste I've got
Is for eggs, small birds, and mice.

Who am I? _____

By day I sleep, by night I creep
To gather my favorite seeds.
I blend in at night to avoid any fights –
White fur makes me hard to see!

Who am I? _____

Eight legs have I, eight eyes to spy,
A trail my spinner leaves.
My fangs are meek, and only seek
To munch bugs smaller than me.

Who am I? _____

White I am not, so I'm easy to spot
As I crawl along the sand.
Stink I have plenty, so don't try to pet me!
Respect I must command.

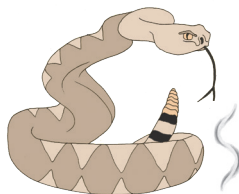
Who am I? _____

My beak is long, it's very strong,
Just ask the food I eat.
I can fly up in the sky,
And run fast on my feet

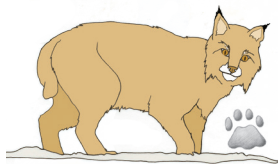
Who am I? _____

My ears are pointy, tipped with black;
For my short tail I'm named.
I leave no claw marks in my track;
As a stealthy hunter I'm famed.

Who am I? _____



1. Western Diamondback Rattlesnake



2. Bobcat



3. Greater Roadrunner



4. Darkling Beetle



5. Apache Pocket Mouse



6. Tarantula

Be a Park Ranger

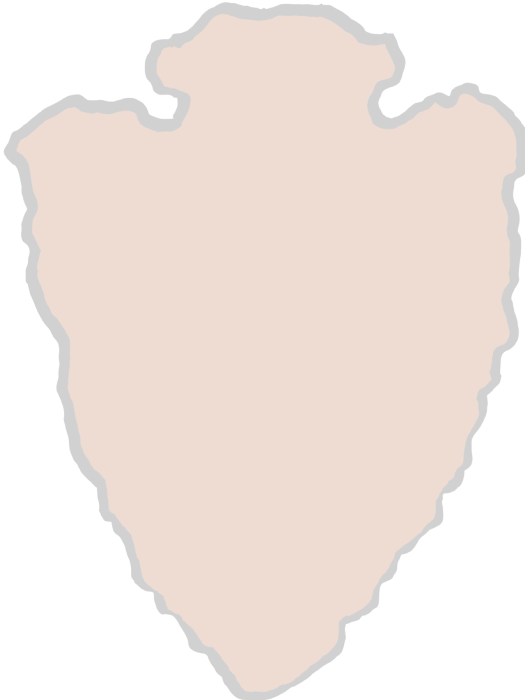


Riley has a lot of park ranger friends, and each one of them has a different reasons why they decided to become a park ranger.

What does being a park ranger mean to you? Write your response below.

Riley knows she is in a national park when she sees the National Park Service arrowhead. Have you seen an arrowhead? If not, look around the visitor center or on the front cover of this book.

Each of the pictures in the arrowhead, like the mountain, mean something important. Draw your favorite part of the arrowhead below. Why did you choose to draw that item? Write your response next to the arrowhead.





Dining in the Desert

A food chain shows how each living thing gets its food. Some animals eat plants, and some animals eat other animals. Plants are called **producers** because they combine sunlight, water, and carbon dioxide in a process called photosynthesis. Through photosynthesis, plants produce oxygen and carbohydrates—a simple sugar (food). Animals cannot make their own food so they must eat plants and/or other animals. They are called consumers. Consumers come in three tiers, primary, secondary, and tertiary. **Primary consumers** eat only plants (herbivore). **Secondary consumers** can eat both plants and other animals (omnivore). **Tertiary consumers** eat only other animals (carnivore). Then there are **decomposers** (bacteria and fungi) that feed on decaying matter.

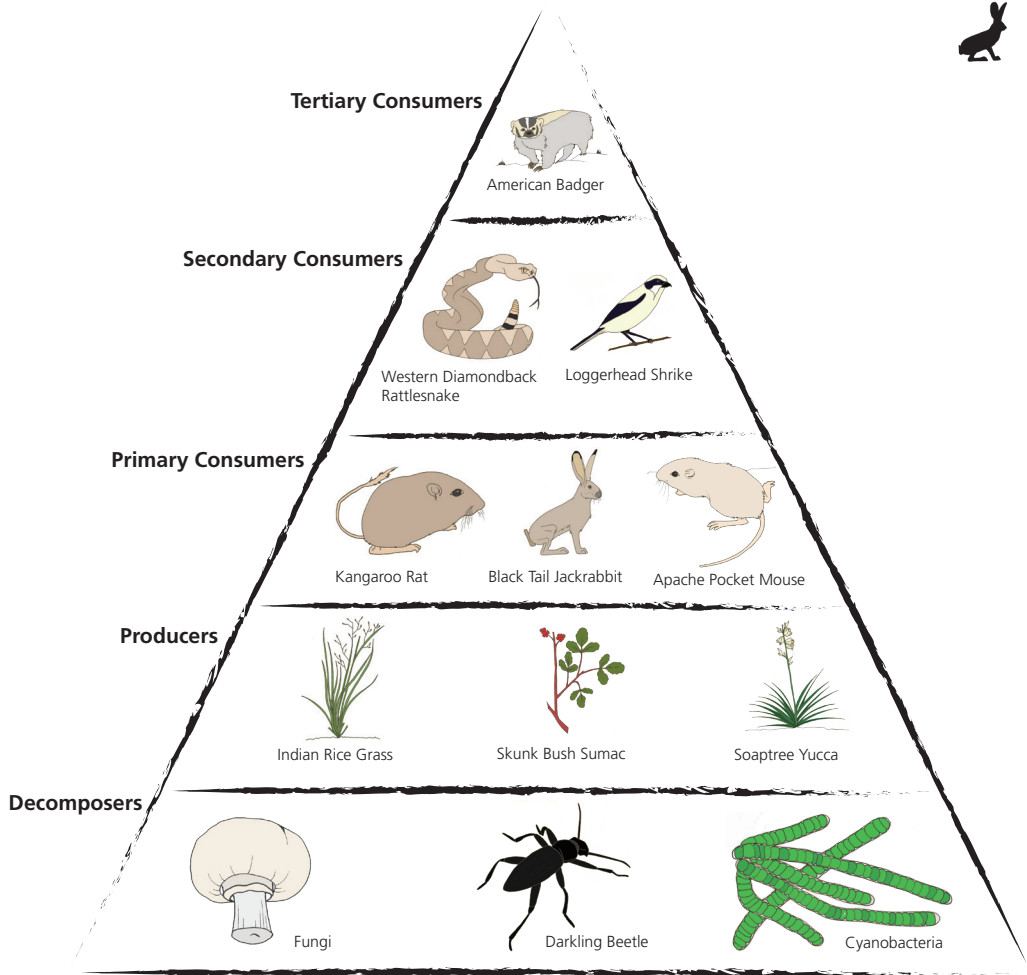
Unscramble the letters to fill in the blanks with the correct word. Use the word bank on the right if you need help.

Soil, _____, (aibctera) and fungi capture nitrogen from the air and make it _____ (busela) for plants. Otherwise, most desert plants could not grow.

Plants like the _____ (uyacc) and _____ (nidain) rice grass provide food and shelter for moths, ants, _____ (orgaknoa) rats, Apache _____ (oktpce) mice, and other animals. These plants are called _____ (rmpiyar) producers because all life on the dunes _____ (pnededs) on them.

Spiders, _____ (cropsonsi), and lizards eat insects.

Badgers, _____ (eyscoto), kit foxes, and snakes eat mice and other _____ (stderon).



Word Bank:

- usable
- yucca
- bacteria
- rodents
- scorpions
- coyotes
- pocket
- depends
- primary
- indian
- kangaroo

What would happen to the badger population if the pocket mouse and kangaroo rat caught a disease and many of them died?



Transforming Rock into Sand and Dunes

Riley has a question for you. Where did all this gypsum sand come from? This activity will help you answer Riley's question.

Take a look at the exhibits in the museum and label the three white arrows on the map below as either water or wind.

San Andres Peak
8,235 ft

San Andres Mountains

Lake Lucero

70 ← to Las Cruces

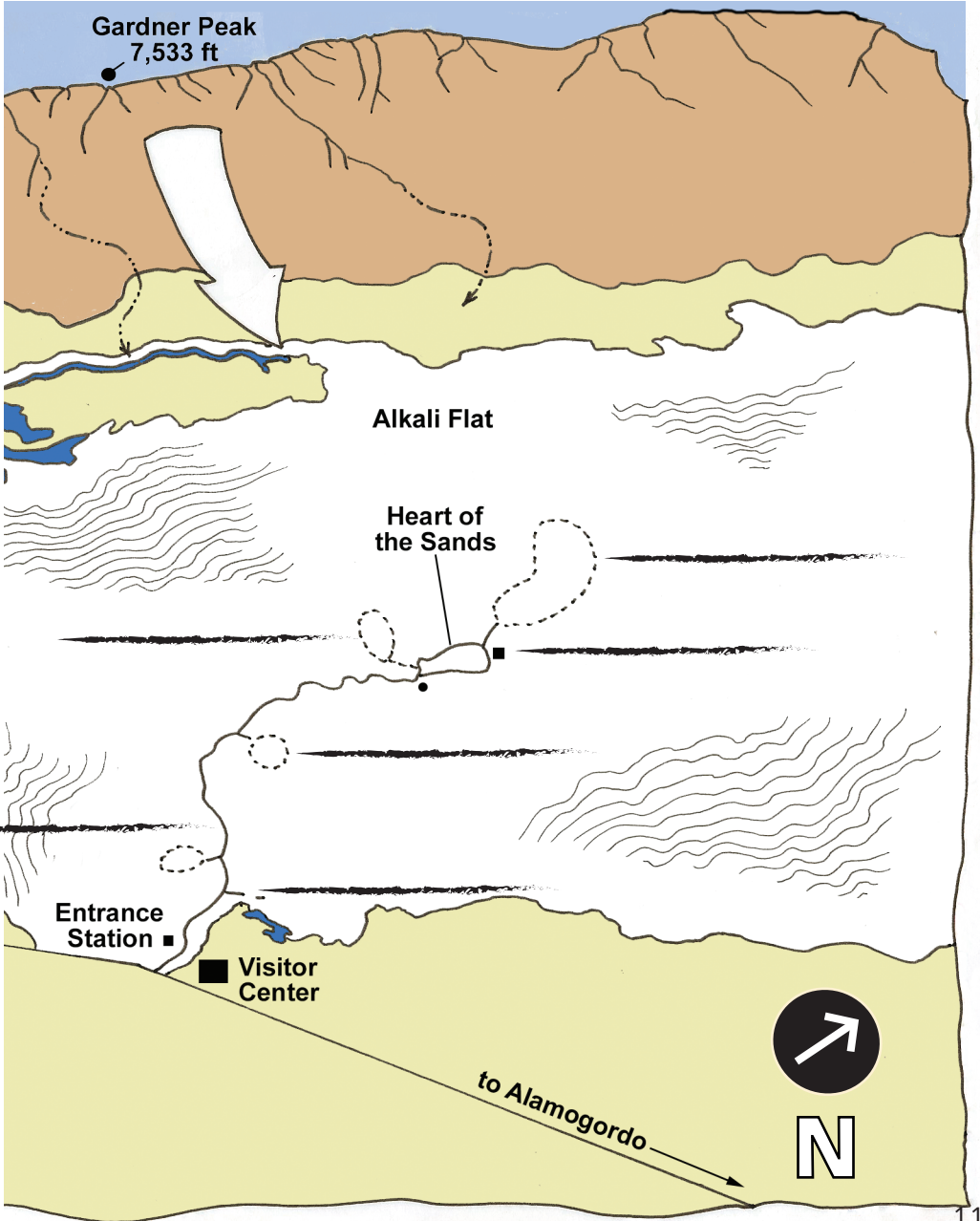
Draw a selenite crystal Draw coarse sand Draw fine sand



Looking at a map of Dunes Drive below, label the map using the numbers next to the words below.

Word Bank:

- 1. Playa Trail
- 2. Interdune Boardwalk
- 3. Dune Life Nature Trail
- 4. Alkali Flat Trail
- 5. Amphitheater
- 6. Backcountry Trail





Walk With Giants

20,000 years ago, camels, lions, giant ground sloths, and mammoths called this place home. These animals are extinct, but they left their footprints behind in the gypsum.

Draw a line from the animal on the left to its' track on the right.

Harlan's Ground Sloth



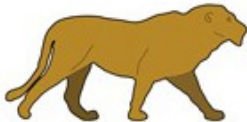
This animal probably looked like its modern one humped cousin, but with longer legs. It stood up to seven feet tall at the shoulder.

Ancient Camel



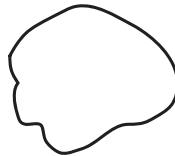
This carnivore was even bigger than modern African lions. With its long legs, it may have run up to 30 miles per hour.

American Lion



This predator was once one of the most common predators in North and South America. It preyed on ancient sloths, camels, and even horses.

Dire Wolf



This massive creature could weigh as much as a semi-truck. Its tusks could be up to 16 feet long. It fed on grasses, shrubs, and some trees.

Columbian Mammoth



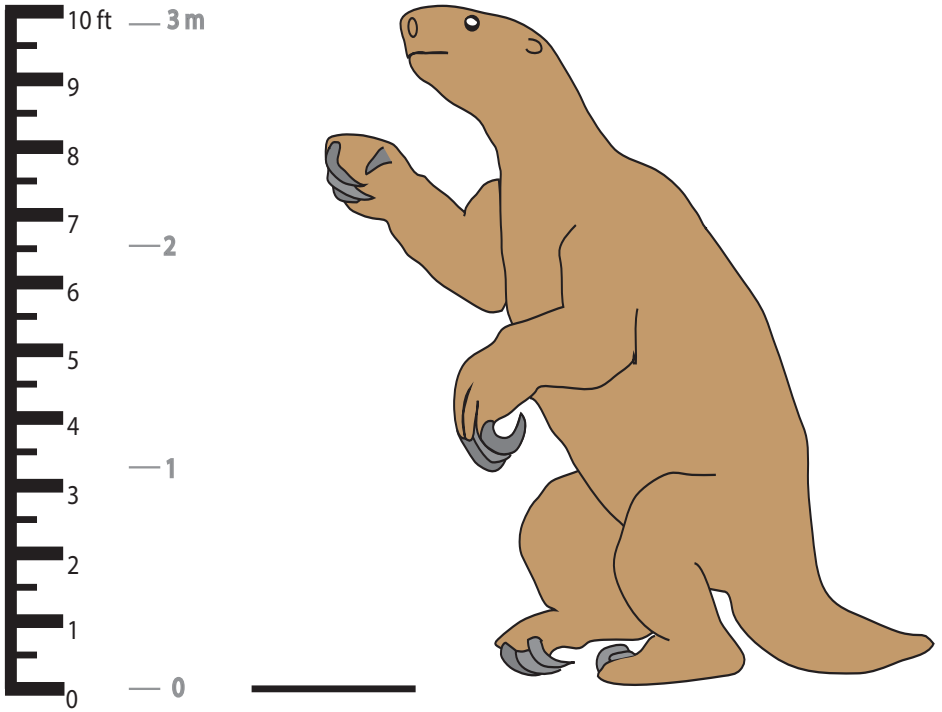
Related to modern sloths, armadillos, or anteaters; this strange mammal could be 10 feet tall and weigh over a ton.

Measuring Up



The Harlan's ground sloth was a powerful animal, with strong jaws, long claws, and bone plates under its skin that worked like armor. Preserved footprints tell us that 11,000 years ago humans hunted these giants.

Mark your height on the ruler on the left and then draw a picture of yourself at that height next to the giant sloth.



Take a walk in the sand. Look at the footprint you made. How long do you think your footprints will remain?



Exploring the Soaptree Yucca

One of the most common plants at White Sands is the soaptree yucca. This yucca is one of only four plants that can grow on the moving dunes. The plant is able to do this because of its ability to grow through the dunes as they move. The other amazing thing about the soaptree yucca is that every part of the plant can be used in some way.

Riley wrote several interesting facts about the soaptree yucca below. Use the words in bold to fill in the boxes to the right.

The yucca has beautiful white **flowers** that bloom after it rains. The flowers can be eaten.

The flowers grow on flower **stalks** that move water through the plant. These stalks can be used as walking sticks.

The leaves of the yucca are called **bayonet leaves** because they are so sharp and pointy. The sharp tips can be used as needles.

The yucca produces thousands of **seeds** that provide food for mice and other rodents. Humans can also use the seeds to make a black dye.

The **taproot** finds water in the gypsum to keep the plant alive. The root can be used like a potato but make sure to remove the toxic skin.

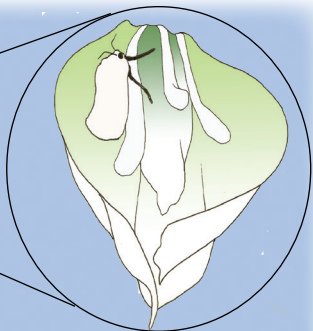


DID YOU KNOW?

Another cool part of the soaptree is how the plant is pollinated. Yuccas of all types are pollinated by yucca moths. These moths blend in to the coloring of the flower so they can be difficult to see.



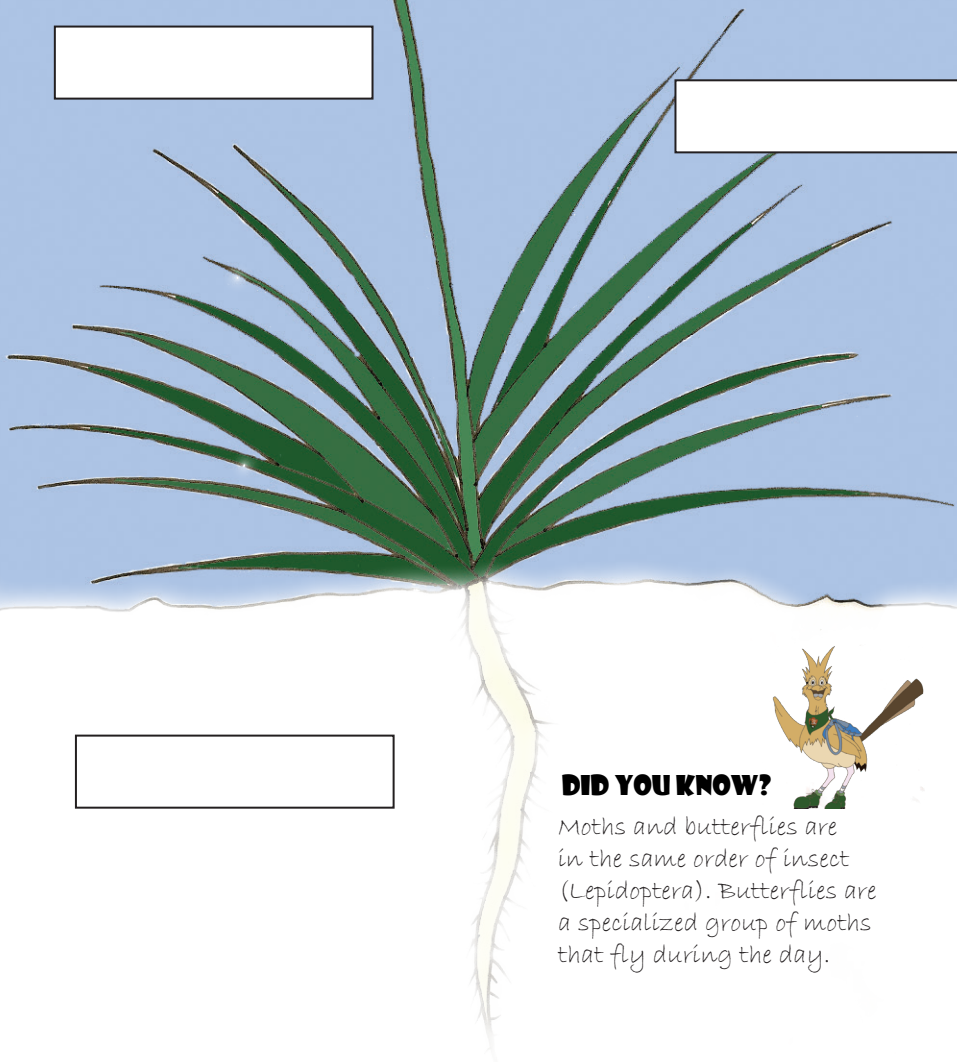
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DID YOU KNOW?



Moths and butterflies are in the same order of insect (Lepidoptera). Butterflies are a specialized group of moths that fly during the day.

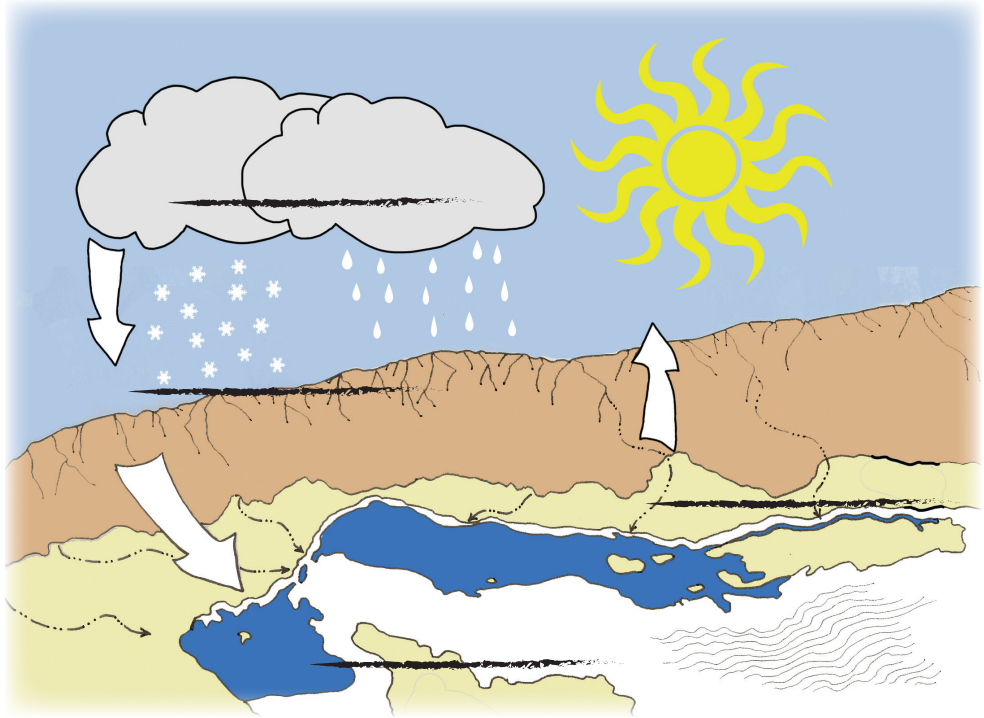


Holding the Dunes Together

One of Riley's safety tips is to drink plenty of water. Water is just as important for the dunes as it is for us. Without water, the dunes would blow away. Water is the glue that holds the dunes in place. Throughout a calendar year the water goes through all steps of the water cycle.

Look at the diagram below. It shows the four major steps of the water cycle. Label each process in the water cycle using the numbers next to the words and then circle one or more of the processes that you observe in the dunefield.

Word Bank: 1.collection 2.precipitation
 3.evaporation 4.condensation



Precipitation - Rain or snow coming down from clouds.

Evaporation - When puddles on the ground disappear as the sun heats up the water.

Collection - Water that pools in low lying areas.

Condensation - As water evaporates, the moisture condenses and forms clouds in the sky.

When you are in the dunes, do the following actions and answer the questions below.



Touch the sand on the surface. What did it feel like? Was it hot or cold?

Dig down a few inches in the sand. What is the difference between the top of the sand and down a few inches? What do you think makes this difference?



DID YOU KNOW?

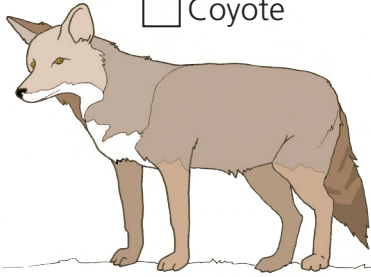
This illustration shows us that two feet below the surface, in a low area, you will find our water table, which is very unusual for a desert.

Nature and Geology Checklist

This is a checklist of some of Riley's favorite things. As you visit the park, check off any of them that you find. Some of the critters only come out at night so don't be discouraged if you can't find them all.

Mammals

Coyote



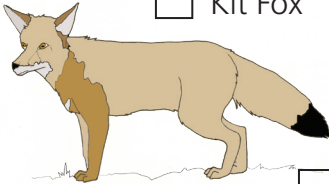
American Badger



Apache Pocket Mouse



Kit Fox



Kangaroo Rat

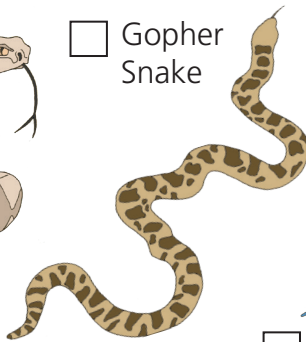


Blacktail Jackrabbit



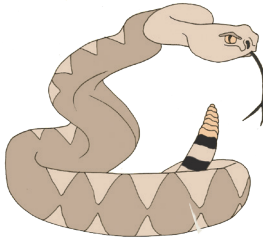
Reptiles

Gopher Snake



Bleached Earless Lizard

Western Diamondback Rattlesnake

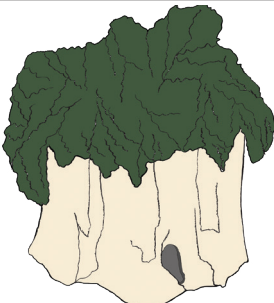


Little Striped Whiptail

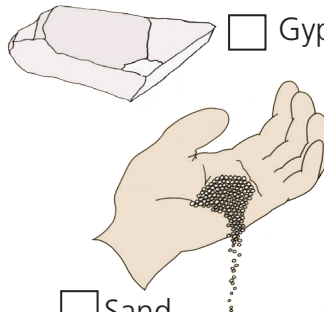


Geology

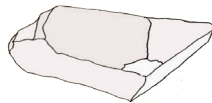
Plant Pedestal



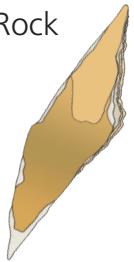
Sand



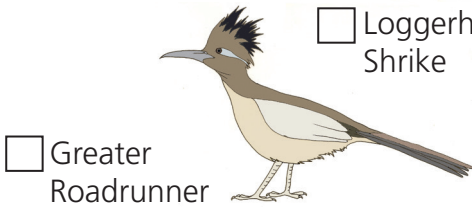
Gypsum Rock



Selenite Crystal



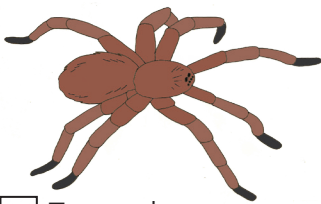
Did you see something that's not on the list? Draw or describe it in the space below. Ask a ranger if they can help identify it.



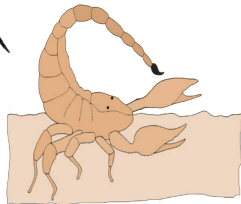
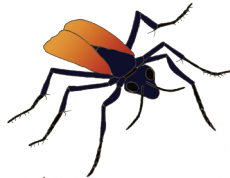
Loggerhead Shrike

Raven

Birds



Tarantula Hawk Wasp



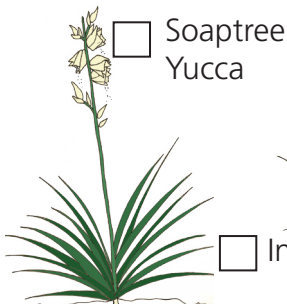
Tarantula



Darkling Beetle

Scorpion

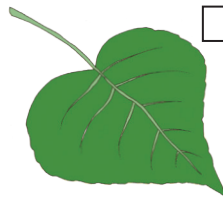
Insects



Soaptree Yucca



Indian Rice Grass



Cottonwood Tree Leaf

Skunk Bush Sumac



Plants

Junior Ranger Pledge

I am proud to be a Junior Ranger at White Sands National Park. I will continue to learn about nature, and all people, so we can work together to protect our national parks and the places we live.

Certificate of Achievement

This certifies that

_____ has met the requirements of a White Sands Junior Dunes Ranger.

Ranger Signature

