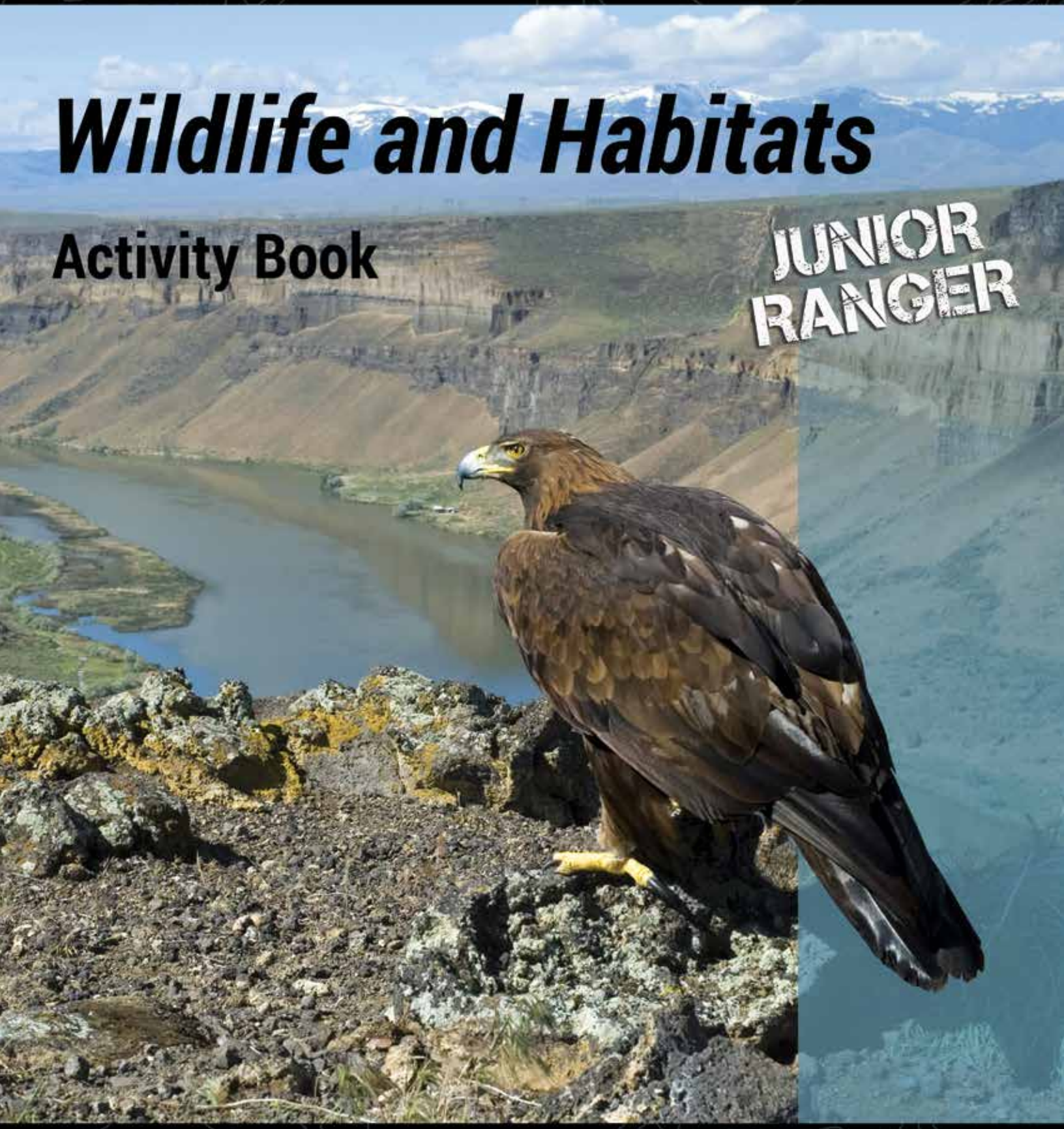
U.S. Department of the Interior
Bureau of Land Management

Wildlife and Habitats

Activity Book

JUNIOR RANGER



Contents

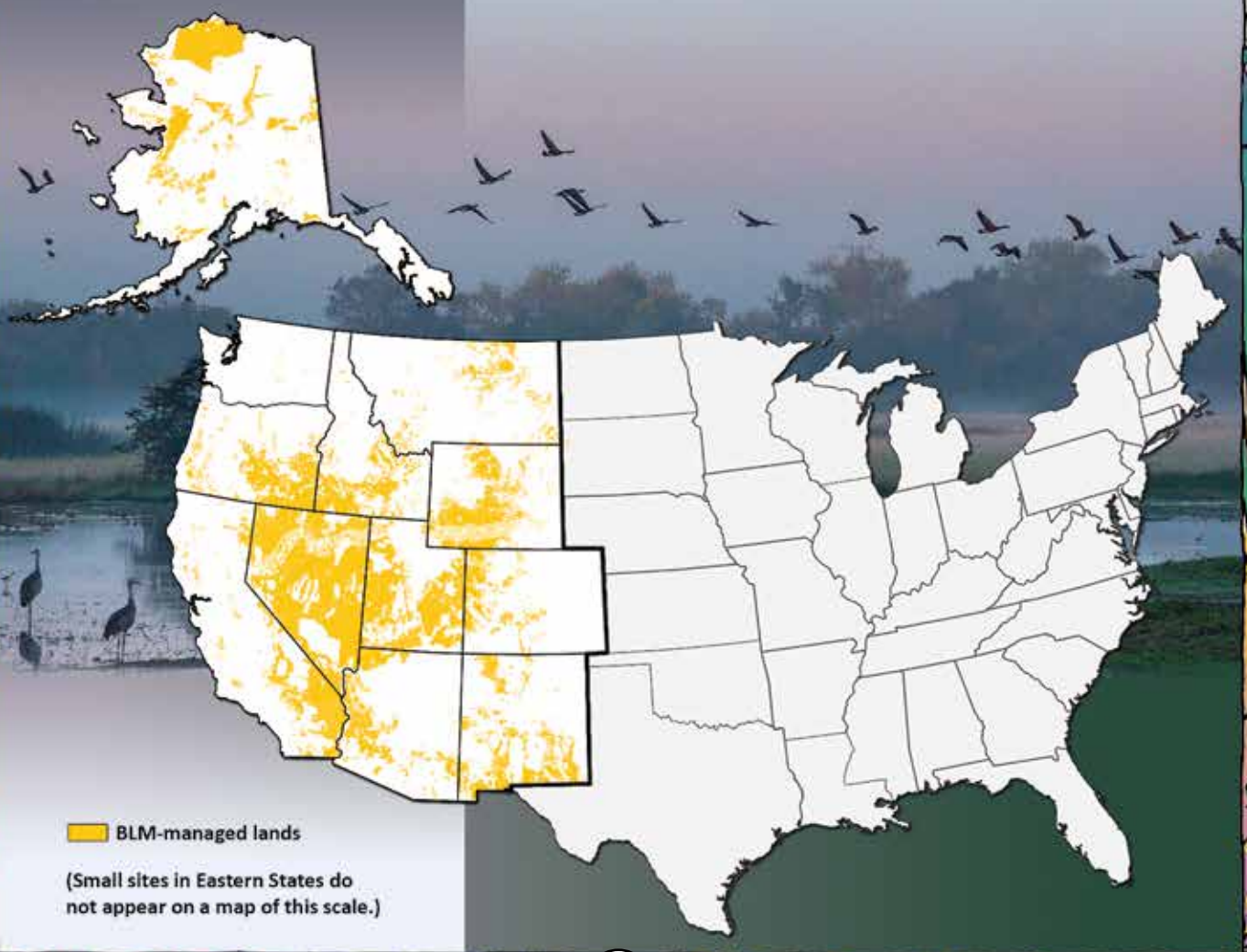
Junior Rangers

The Junior Ranger program introduces young adventurers to the lands and resources managed by the Bureau of Land Management (BLM). We hope you enjoy the activities in this book. When you are finished, cut out the Junior Ranger certificate on page 25. Then, say the Junior Ranger pledge and sign the certificate. We invite you to join the adventure!

Public Lands Belong To You!

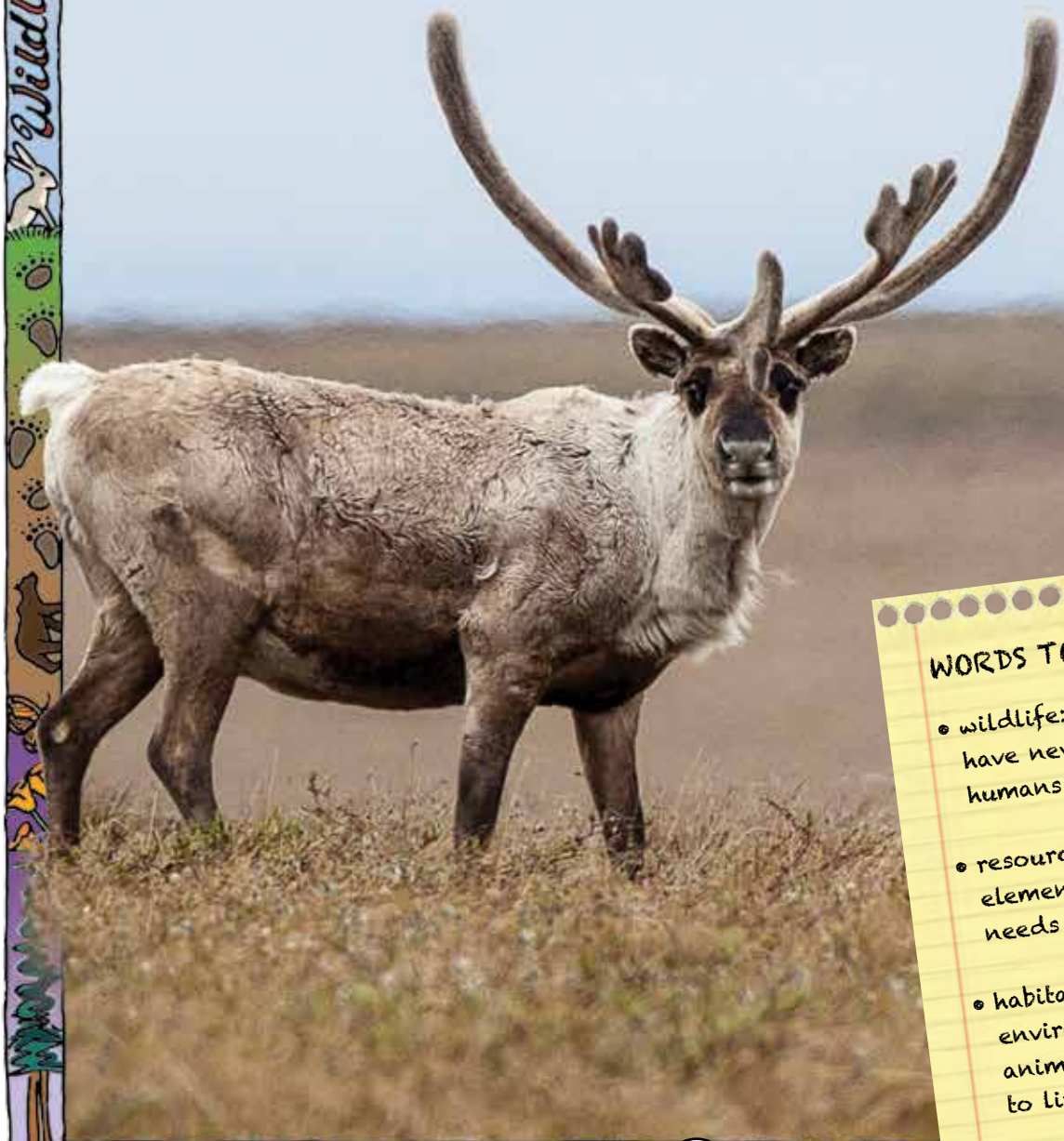
The BLM is a federal government agency that takes care of nearly 245 million acres of public land. These lands belong to all Americans, including you. Most are in the Western United States. The BLM also manages a number of smaller sites in the Eastern United States.

The BLM manages public lands for many uses. These lands provide natural resources, such as coal, oil, and natural gas. They provide habitat for wildlife, food for grazing animals, and timber for people. The lands contain evidence of the past, such as dinosaur bones and plant fossils. Archaeological sites on public lands help us learn about people who lived here long ago. Today, people enjoy exploring the big open spaces on the lands.



Did You Know?

Our public lands and waters are home to more than 3,000 species of wildlife—from tiny fairy shrimp that live out their lives in small, temporary pools, to huge caribou that travel hundreds of miles between summer and winter homes. The forests, deserts, grasslands, mountains, coastal areas, and other landscapes provide an incredible variety of habitat types. The survival of threatened and endangered species depends on healthy habitats. The BLM manages more wildlife habitat than any other federal or state agency.



WORDS TO KNOW

- wildlife: animals that have never been tamed by humans
- resources: materials and elements that satisfy the needs of a living thing
- habitat: the natural environment where an animal finds what it needs to live and reproduce

What is Habitat?

Home Sweet Habitat

Habitat is the place where an animal finds everything it needs to survive and reproduce. Habitat is where an animal finds the right food, water, and shelter from the weather and predators. It also provides enough space for the animal to escape threats and to raise young. There are many different types of habitats found in forests, grasslands, deserts, mountains, rivers, and coastal areas.

Activity: How's Your Habitat?

What about you? What do you need to survive? Where do you find food, water, shelter, and space?

Draw a picture of your habitat. Show or tell where you find the food, water, shelter, and space that you need to survive and grow.

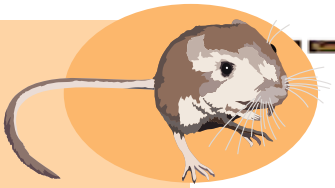
Different Places, Different Spaces

Wildlife habitats are as varied as the animals that inhabit them. Each species has its specific needs for food, water, shelter, and space. Food sources might include plants, seeds, or other animals. Some animals drink from streams and lakes to satisfy their thirst. Others get most of their water by eating fruit or succulent leaves. An underground burrow is shelter for some, while others hide under rocks or scramble up trees.

Activity: Who Lives Here?

Read about some of the wild inhabitants of public lands. Draw a line to match the animal on the left with the habitat type on the right.

Kangaroo Rat



- Can survive without ever drinking water; draws moisture from diet of seeds
- Conserves body fluid; spends hot days in underground burrow
- Predators include owls, bobcats, snakes, hawks, and foxes

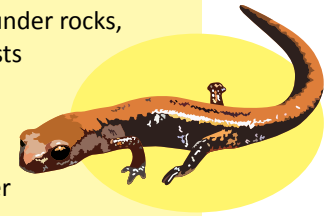
Northern Spotted Owl

- Nests in holes in standing dead trees (snags) and abandoned squirrel nests
- Hunts at night by diving through air to catch prey
- Eats small rodents, mostly flying squirrels, voles, and woodrats; has strong beak to tear flesh and break bones

Little Brown Bat

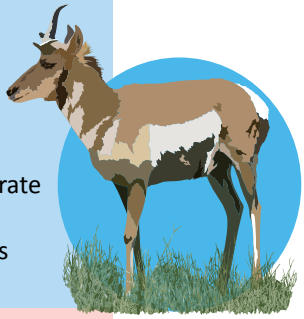
- Roosts in dead trees, old buildings, and caves where temperature doesn't change much
- Can detect tiny objects in total darkness
- Can catch and consume more than 1,000 insects in 1 hour
- May migrate long distances from summer roosts to winter hibernation sites

Larch Mountain Salamander



- Shelters in deep crevices, under rocks, and in rotten wood in forests
- Predators include shrews and snakes
- Is most active in spring and autumn, when weather is cool and damp

Pronghorn



- Eats mostly flowering plants, shrubs, and brush
- Can reach speeds up to 60 mph
- Lives in large herds of up to 1,000 individuals; during winter, may migrate hundreds of miles in search of food
- Finds shelter along steep riverbanks and ravines

Brown Pelican

- Uses long, broad wings to glide over the ocean in search of prey
- Feeds by "dive bombing," which stuns its prey, usually fish; also eats some amphibians and crustaceans
- Builds large (up to 30 inches in diameter) nests of sticks lined with grass and leaves

Cave, Malta, Montana

- Temperature within the cave ranges from 45-47 degrees Fahrenheit year round
- Nearby water sources
- Plentiful insects in the area except during winter

Tidal wetland, Jupiter Inlet Lighthouse Outstanding Natural Area, Florida

- Adjacent to a lagoon, 1/4 mile from the Atlantic Ocean
- Plentiful fish of many sizes and varieties
- Areas of dense shrubs, palm trees, mangroves, and sand bars
- Warm water

Grassy plains, Upper Missouri River Breaks National Monument, Montana

- Native plants such as sagebrush, rabbitbrush, and wheatgrass
- Wide open spaces
- Home to fast predators, such as golden eagles, wolves, coyotes, and bobcats
- Plentiful water sources

Open desert scrub, Sonoran Desert National Monument, Arizona

- Hottest American desert
- Generally dry, but with two rainy seasons; rain often evaporates before reaching ground
- More than 2,000 native plant species, including cactus and mesquite
- At least 60 mammal, 20 amphibian, 100 reptile, and 350 bird species, most featuring specific desert adaptations

Old-growth forest, Headwaters Forest Reserve, California

- Redwood trees with heights of more than 300 feet
- Snags (standing dead trees) that provide nests and dens for more than 40 animal species
- Fallen trees and branches that shelter rodents and other small animals
- Moist air from dense summer fog sometimes causes "rain" to fall from redwood leaves

Forested slopes, Columbia River Gorge, Oregon and Washington

- Up to 4,000 feet deep
- Loose, rocky slopes on both sides of gorge
- Piles of decaying wood on the ground
- Volcanic rubble at entrances to lava tubes

Activity: A-Maze-ing Habitats

Components of habitat:

food	**shelter**
water	**space**

Solve the mazes to help each animal find an important habitat component. Then complete the sentences using the words from the box. Use each word only once.

1. Seeds contain food and _____ for the kangaroo rat.

2. A mosquito is _____ for the little brown bat.

3. The grasslands give the pronghorn _____ to find food and to flee from predators.

4. For the salamander, rocks provide _____ from the sun and safety from predators.

Activity: One Size Doesn't Fit All

Though desert conditions are harsh to humans, deserts are home to many types of wildlife. Of the deserts found in North America, the Sonoran Desert has the largest variety of habitats. This desert is more than 100,000 square miles and is located mostly in Arizona. Its wide valleys, mountain ranges, and forests of saguaro cactus are habitat for numerous wildlife species. The sizes of the habitats vary as widely as the animals that make their homes there.

The Sonoran Desert provides habitat for the desert tortoise, desert bighorn sheep, and golden eagle. Read about each of these desert dwellers. Use the tables to record what each needs for food, water, shelter, and space (some information has been filled in for you). Then, look for each habitat component on the map on page 9. Identify each map unit (using A, B, C, D, etc.) where you find that component.

Desert Tortoise

Sonoran desert tortoises live on the lower slopes of mountains, where they eat wildflowers, grasses, shrubs, and young cactus. These plants provide most of their water needs. Adults can live for an entire year without drinking water. Tortoises dig burrows under rocks and shrubs to provide shade and protection from ravens, foxes, coyotes, and other predators. An adult male desert tortoise can find everything it needs to survive in an area of about 1/10 of a square mile.

Sonoran Desert Tortoise*	Description or Examples	Location(s) on Map of Habitat Component
Food		
Water	Moisture in the plants they eat	D, E, and F
Shelter		
Space	About 1/10 of a square mile	

* **Note:** Desert tortoise food, water, and shelter locations on the map will be below the rock face since the desert tortoise cannot climb the rock face.

Desert Bighorn Sheep

Desert bighorn sheep roam large expanses of the Sonoran Desert in search of food—grasses, wildflowers, shrubs, and cactus. The water content of the plants allows them to go for days without drinking. Bighorn sheep have excellent eyesight and can see predators from far away. They can't outrun mountain lions, but they can outclimb them. So they keep close to mountains, cliffs, and rock faces. These rugged areas also provide shelter under overhanging rocks and in caves.

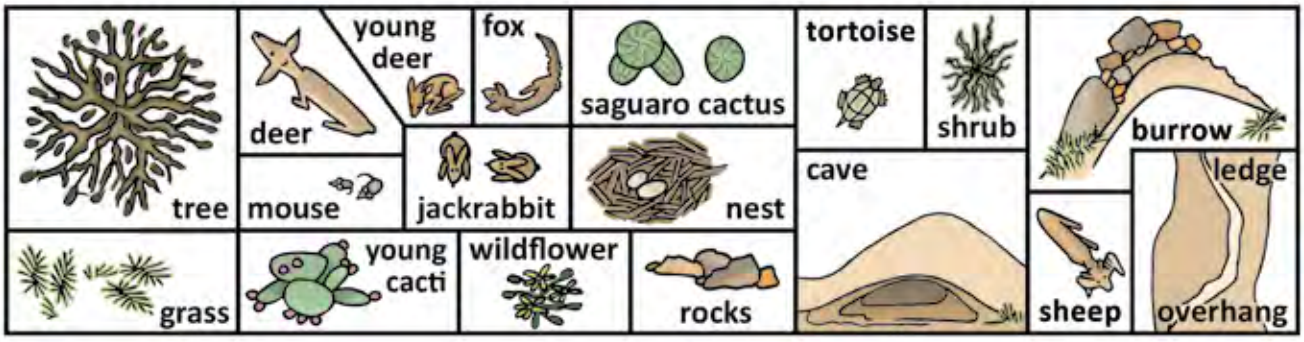
Desert Bighorn Sheep	Description or Examples	Location(s) on Map of Habitat Component
Food		
Water		
Shelter	Caves, overhanging rocks, cliffs, and mountains	A, B, and C
Space		

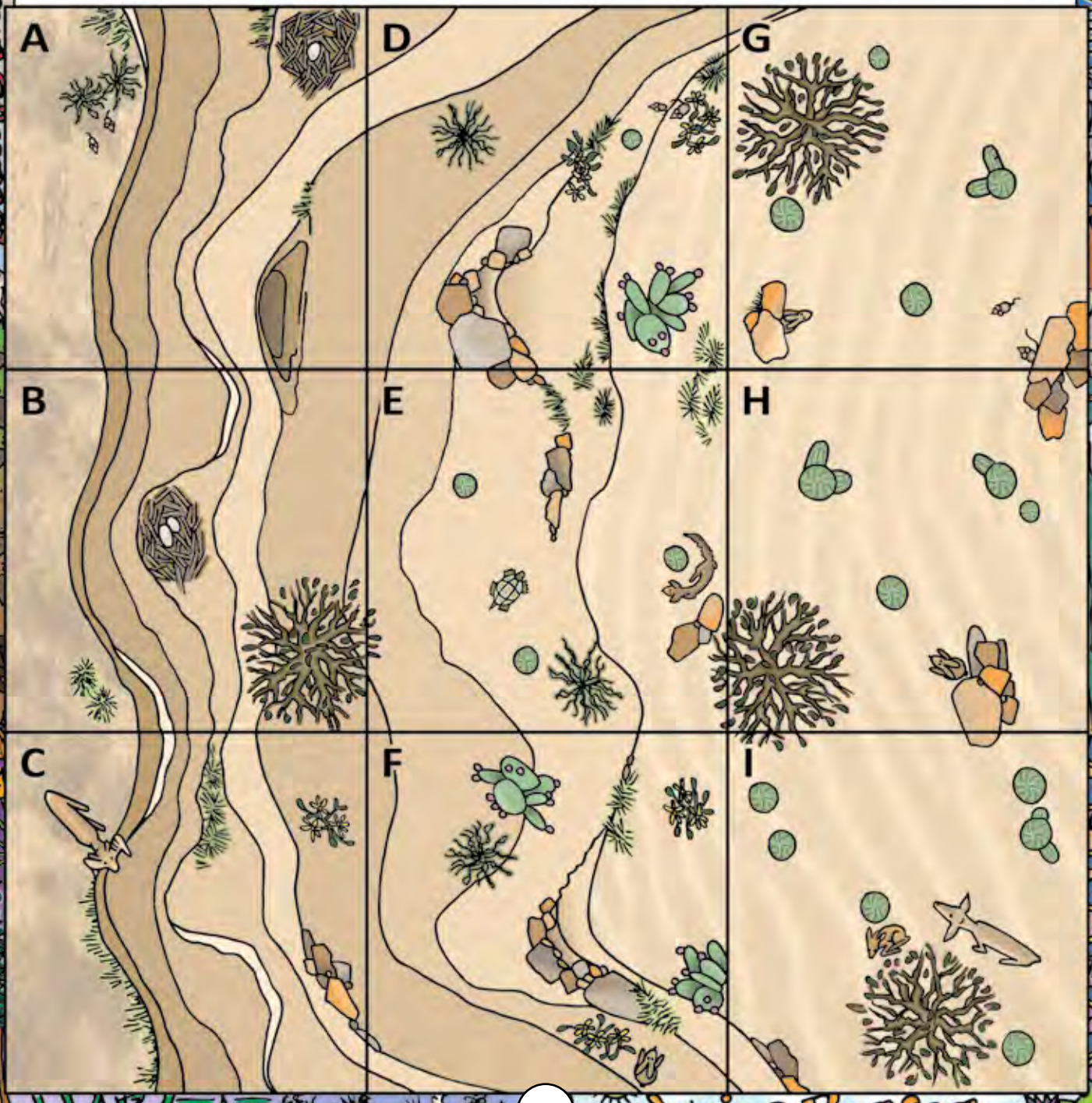
Golden Eagle

Golden eagles are among the largest raptors in North America. Adults have wing spans of 6 to 7 1/2 feet. These powerful hunters travel hundreds of miles in search of food. With eagle-eyesight, they can spot food more than a mile away. Diving upon prey, their speeds exceed 150 miles per hour. In the open, smaller animals, such as mice, desert tortoises, jackrabbits, and foxes, have little chance of escaping the eagle's talons. Golden eagles can also take down deer and young bighorn sheep. The water content of prey satisfies most of their water needs. High on mountainsides, out of reach of most predators, adult pairs build their nests. Caves and overhanging rocks provide shelter from the desert sun.

Golden Eagle	Description of Examples	Locations on Map of Habitat Component
Food	Jackrabbits, mice, foxes, young deer, tortoises, young bighorn sheep	A, D, E, F, G, H, and I
Water		
Shelter		
Space		

KEY


tree
deer
young deer
fox
saguaro cactus
tortoise
shrub
burrow
mouse
jackrabbit
nest
cave
ledge
grass
young cacti
wildflower
rocks
sheep
overhang


A
D
G
B
E
H
C
F
I

Activity: Find the Sonoran Desert Wildlife

The Sonoran Desert is home to a wide variety of wildlife. Some of them are pictured here. Can you find the names in the word search puzzle? Hint: Names appear frontwards, backwards, vertically, horizontally, and diagonally.

centipede
desert bighorn sheep
desert tortoise
fox
golden eagle
great horned owl
hummingbird
jackrabbit
javelina
kangaroo rat
lizard
mule deer
pygmy owl
quail
rattlesnake
roadrunner
scorpion
spider wasp
tarantula
turkey vulture

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

Activity: Bring the Sonoran Desert to Life!

Color the animals and the desert habitat. How many different animals did you find?

Changes to the Landscape Cause Habitat Loss

Natural occurrences, such as earthquakes, wildfire, floods, and windstorms, can cause dramatic changes to habitat in a short period of time. Other changes—such as the shifting of a shoreline by the constant pounding of waves—are more gradual.

Human activity can also lead to loss of habitat. Wild areas disappear to make space for farms and towns. Cutting down trees or forests, or **deforestation**, means less habitat for woodland animals. As our population grows, natural areas are cleared for new housing developments. New roads to take people from one place to another divide up, or **fragment**, wildlife habitat.

WORDS TO KNOW

- deforestation: the removal of trees or forests from an area
- fragment: divide an area into smaller parts that are not connected

Activity: Threats to Wildlife Habitat

The clues below describe things that can cause the destruction of wildlife habitat. Fill in the blanks with the missing words to complete the crossword puzzle on the right.

Across

5. The sudden and violent shaking of the Earth's crust—called an _____ —can cause both small and dramatic changes to the land.
7. _____ occurs when a river, stream, or other body of water overflows land.
9. Contamination of the air, water, or land is called _____.
10. When new _____ are built to connect people, habitats are fragmented.
11. A beaver _____ can change the area around a stream into a pond or wetland.
12. A lightning strike, or the careless actions of just one person, can spark a destructive _____.

Down

1. As more homes are needed for humans, _____ developments replace natural areas.
2. The changing of _____ causes habitats to change in a cycle that repeats every year.
3. One of the main causes of habitat loss is the clearing of land for agriculture, or _____.
4. The clearing of forests is called _____.
6. Extreme winds of storms, such as _____, can knock down trees and change wildlife habitat in a matter of minutes.
8. When a _____ erupts, lava and hot ash can bury both plants and animals.

Write the circled letters here: ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

Unscramble the letters to complete the following:

When habitats are threatened or destroyed, animals must

___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ in order to survive.

Wonderful Wildlife: Fun Facts

Discover some of the amazing animals that inhabit our public lands. Then, unscramble the letters to learn the state where the BLM site is located. Write the name of the state on the map.

1. Muskoxen were once nearly extinct. Today, thousands of the bushy-haired bovines make their home on the Arctic tundra. These massive mammals munch grasses and tiny arctic willows on BLM-managed lands along the **Dalton Highway**.
KLAAAS __ __ __ __ __ __

2. Rocky Mountain bighorn are the largest wild sheep in North America. The sheep have split hooves with padded soles. This adaptation helps them leap from ledge to ledge along steep cliffs. The **Whiskey Mountain Bighorn Sheep Area** is home to the largest wintering herd. **OMGYWIN**
__ __ __ __ __ __ __

3. Vistors to the **Wildwood Recreation Site** get an underwater view of salmon in the fish's natural freshwater habitat. The Cascade Streamwatch has a viewing window built right into the banks of the Salmon River.
ONGOER __ __ __ __ __ __

4. Northern elephant seals migrate thousands of miles to "haul out" on the beaches of the **Piedras Blancas Light Station Outstanding Natural Area**. This stretch of coastline is an important breeding area for these once-endangered marine mammals.
ICONAFLAIR __ __ __ __ __ __ __ __ __ __

5. Wildlife of the **Cottonwood Canyon Wilderness Area** are well-adapted to their desert home. Chuckwalla lizards hydrate by eating a lot of fruits, flowers, and waxy leaves. Gila monsters, on the other hand, are guzzlers. By storing water in their bladders, they can go for weeks without a drink!
HAUT __ __ __ __

6. **Fort Stanton Cave** is the largest cave managed by the BLM and one of the longest caves in the country. For thousands of Townsend's big-eared bats, it is a winter home (or hibernaculum).
ICONEXMEW __ __ __ __ __ __ __ __

7. Snout to tail, paddlefish can reach more than 5 feet in length. This species has been around millions of years (since the Late Cretaceous period). Paddlefish can be found in the waters of the **Upper Missouri Wild and Scenic River**.

ANNATOM __ __ __ __ __ __ __

9. At dawn and dusk, Rocky Mountain elk graze on native grasses near the **Ely Elk Viewing Area**. During the day, they tend to hide behind sagebrush shrubs. Antlers on the majestic males can reach 4 feet above their heads.

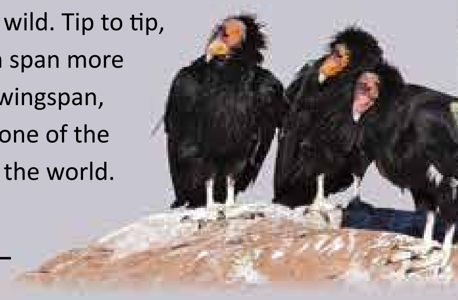
ANDEVA __ __ __ __ __ __

8. Every spring, nearly 800 pairs of raptors—falcons, eagles, hawks, and owls—descend on the **Morley Nelson Snake River Birds of Prey National Conservation Area**. They come to nest and raise their young. This unique landscape has one of the densest concentrations of nesting raptors in the world.

OHIDA __ __ __ __ __

10. At **Vermilion Cliffs National Monument**, California condors raised in captivity are released in the wild. Tip to tip, their wings can span more than 9 feet. By wingspan, these raptors are one of the largest birds in the world.

NOIZARA __ __ __ __ __ __ __



11. At the **Meadowood Special Recreation Management Area**, when temperatures drop below 32 degrees Fahrenheit, wood frogs freeze—literally frozen stiff, their hearts stop beating. But these hardy amphibians do not die. Warm weather thaws them and brings them out of hibernation.

IVAIRING __ __ __ __ __ __ __ __

12. West Indian manatees pass through the waters bordering the **Jupiter Inlet Lighthouse Outstanding Natural Area**. Manatees feed on sea grasses that grow along the shore. To help this endangered sea mammal, the BLM is working with other agencies and local governments to restore "manatee grass."

IDOLFAR __ __ __ __ __ __ __

13. At 13,185 feet, **Mosquito Pass** is one of the highest roads in the U.S. There, pint-sized pikas make "haystacks" of grasses and flowers to dry in the sun. To survive winter, a pika must gather enough "hay" to fill a bathtub. **COOLROAD** __ __ __ __ __ __ __ __

Habitat for Sage-Grouse: There's No Place Like Sagebrush Steppe

The greater sage-grouse is a bird found in western **shrublands** where sagebrush is the main, or **dominant**, plant. These ground-dwelling birds depend on sagebrush for food and shelter. During the winter, sagebrush leaves are the only thing sage-grouse will eat. In spring, females build nests, lay eggs, and raise their young in the shelter of the sagebrush. Without sagebrush, the sage-grouse cannot survive.

Scientists have learned that sage-grouse need a certain amount of leaf **cover**, or **canopy**, for nesting. Female sage-grouse generally will not build nests if there is too little or too much sagebrush canopy. They need to hide their nests from predators. But they also need open space nearby. They need space to move about in search of food. They also need space for raising their chicks.

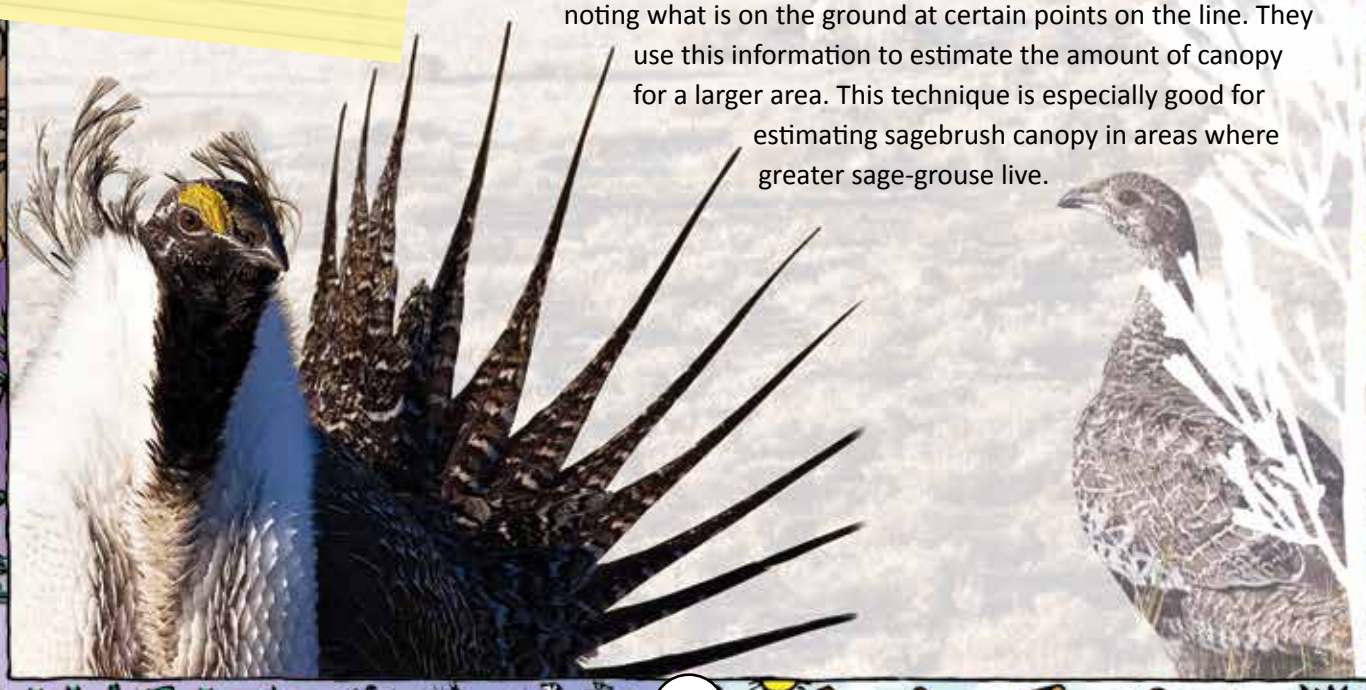
WORDS TO KNOW

- shrubland: an area where shrubs are the primary vegetation
- dominant: most common, main
- cover: something that protects, shelters, or hides an animal
- canopy: the combined, including overlapping, leaves of a community of plants

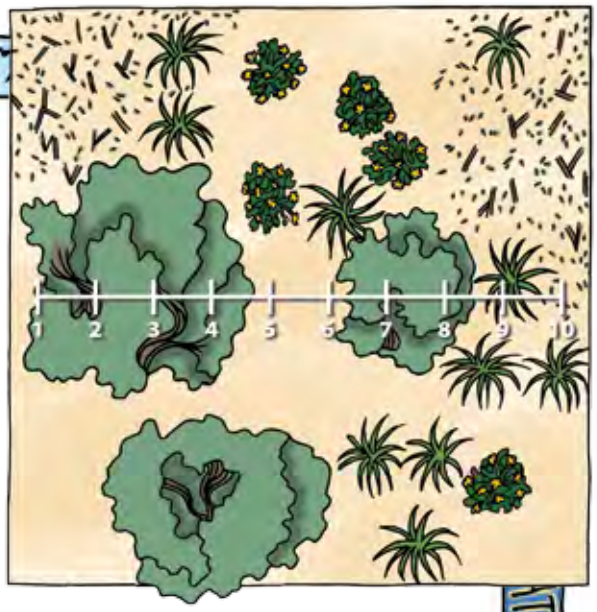
To help the greater sage-grouse, BLM scientists need to know if an area has the right amount of sagebrush canopy for nesting. Through research, scientists have learned that sage-grouse do best where the sagebrush covers about 15 to 25% of an area. By estimating the sagebrush canopy of a particular area, scientists know if more plants, or fewer plants, are needed to make it suitable for sage-grouse nesting.

Activity: Calculate Canopy

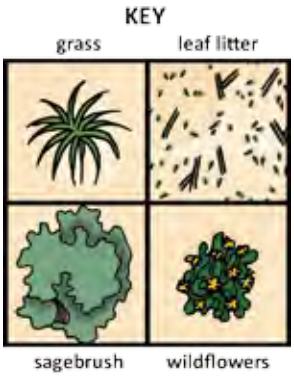
Method 1: One way scientists estimate canopy is with the **point transect method**. It's as simple as laying down a straight line, such as a rope, and noting what is on the ground at certain points on the line. They use this information to estimate the amount of canopy for a larger area. This technique is especially good for estimating sagebrush canopy in areas where greater sage-grouse live.



Use the diagram of the point transect to estimate sagebrush canopy. Use the table to identify what is found at each number—bare ground, sagebrush, wildflowers, grass, or leaf litter. If there are no plants or litter at a number, mark "bare ground." You will use the results to determine if this habitat has the right amount of sagebrush canopy for greater sage-grouse nesting. Remember, the best amount of sagebrush canopy for nesting is about 15 to 25% in an area.



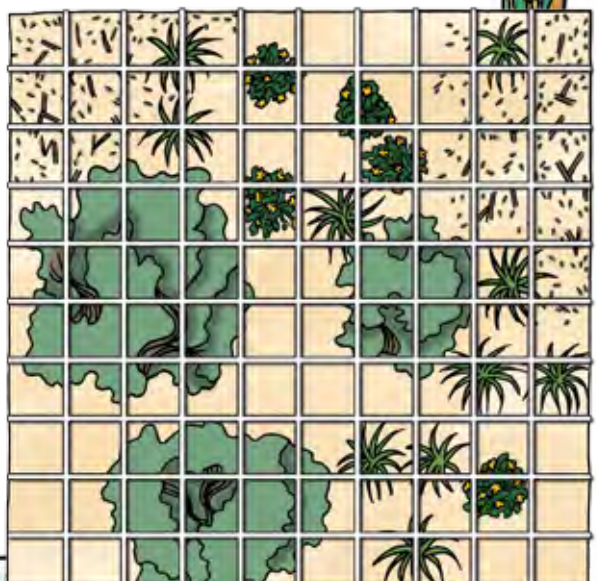
	1	2	3	4	5	6	7	8	9	10	Total
Bare ground											
Litter											
Grasses											
Wildflowers											
Sagebrush canopy											



1. How many points on the transect have sagebrush canopy? _____
2. Take the number of sagebrush canopy points and put it over 10 to make a fraction. _____ /10
3. Write your fraction as a percent (multiply the number of sagebrush canopy points by 10). What percent of sagebrush canopy cover did you find in the transect sample? _____ x 10 = _____ %
4. Is this the best amount of sagebrush canopy for sage-grouse nesting? Explain.

Method 2: Another method scientists use to measure canopy is with a quadrat. A quadrat is a square frame that has been divided into smaller units. Use the diagram of the quadrat to measure the percentage of sagebrush canopy cover. Count the number of squares in each quadrat covered by each type of ground cover—sagebrush, wildflowers, grass, or leaf litter. If only part of the square is covered, count the entire square. The quadrat is divided into 100 smaller squares (1 unit square = 1%).

	Percent of area covered
Sagebrush	%
Wildflowers	%
Grass	%
Litter	%



1. What part or percentage of the area was covered by sagebrush canopy? ____ %
2. Is this a suitable amount for sage-grouse nesting? Explain.
3. Did you get the same or different results from the two methods?
4. Which method do you think is more accurate?

Being a Good Steward

As a Junior Ranger, you have a role in protecting wildlife and their habitats. Like the people who work for the BLM, you can be a **steward** of public lands.

Stewardship is the careful and responsible treatment of something valuable. Each person can do his or her part to care for public lands and their resources. By being good stewards, people limit the effect of their activities on the environment. They can help ensure that future generations will be able to use and enjoy public lands and that important habitats will be conserved.

WORDS TO KNOW

- steward: someone who protects or is responsible for land or property
- stewardship: the safeguarding of something of value, such as land or property

Here are some things you can do to protect wildlife and their habitats when you explore the outdoors:

- **Observe and photograph wildlife from a distance.** Limit noise and stay downwind when possible.
- **Never feed animals.** Feeding wildlife can damage their health and change natural behaviors.
- **"Trash your trash."** Bring a bag or other container to carry out your trash.
- **Control pets at all times.** Better yet, leave them at home.
- **Avoid wildlife during sensitive times.** These times include cold winters (when food may be scarce), mating and nesting seasons, and when animals are rearing their young.

Know before you go...

The key to a safe outing is what you do before you leave home. Learn what you can about your destination. Information will help make the trip more enjoyable, and you will be prepared to minimize your impact on the environment.

For more information, visit the Leave No Trace website: www.LNT.org

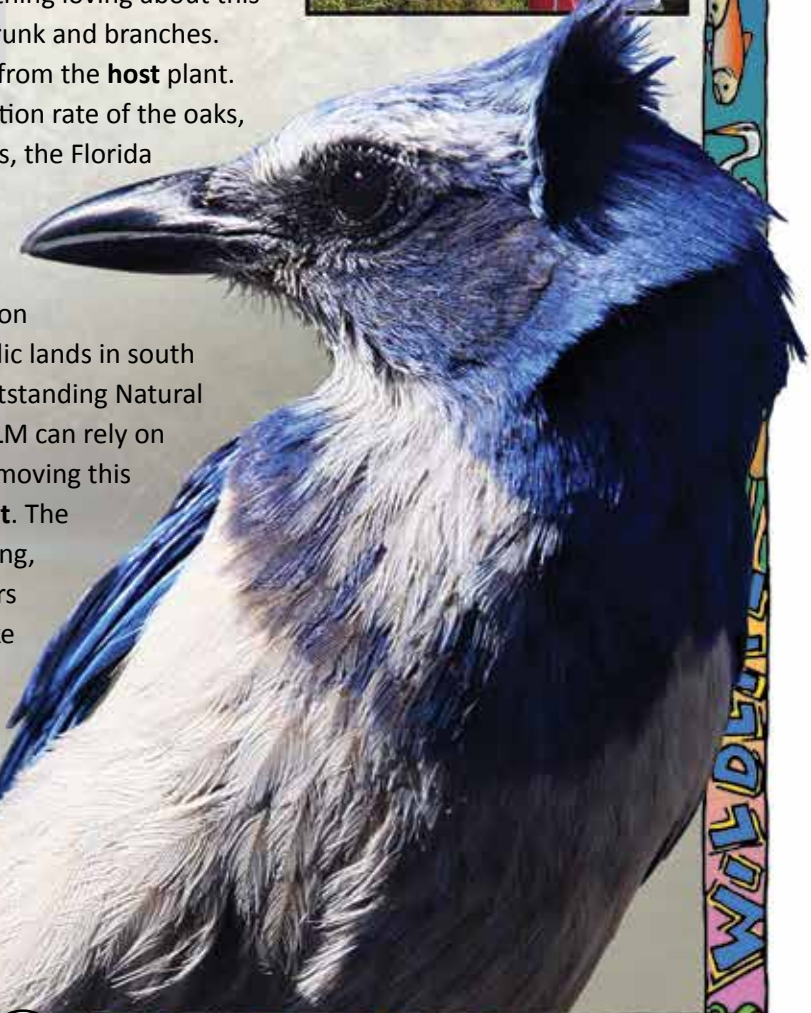
Florida Kids Help Their Feathered Friends

At the BLM's Jupiter Inlet Lighthouse Outstanding Natural Area in south Florida, local kids—including Scouts and high school environmental sciences students—volunteer regularly to help improve wildlife habitat.

The area is home to more than 25 animal species that need special attention, including the Florida scrub-jay. This bird depends on scrub oak, a tree that grows in sandy soils, for much of its food and for nesting sites. Acorns are by far the Florida scrub-jay's most important food. From August to November, each scrub-jay may harvest and bury 6,000-8,000 scrub oak acorns throughout its territory. The birds then retrieve and eat these supplies during the winter months.

Unfortunately, populations of Florida scrub-jay have decreased, mainly because of damage to their habitat. At Jupiter Inlet, a major threat to scrub oak habitat is the so-called love vine. But there is nothing loving about this **parasite**. As it grows, it wraps around an oak tree's trunk and branches. Using tiny suction cups, it sucks water and nutrients from the **host** plant. Invasion by love vine harms the health and reproduction rate of the oaks, sometimes even killing them. And without scrub oaks, the Florida scrub-jay cannot survive.

The U.S. Fish and Wildlife Service has said that the survival of the Florida scrub-jay depends greatly on maintaining and improving scrub oak habitat on public lands in south Florida. This includes the Jupiter Inlet Lighthouse Outstanding Natural Area. Luckily, the BLM can rely on helping hands in removing this tough **invasive plant**. The efforts of many young, dedicated volunteers have helped to make this special area a safe haven for the Florida scrub-jay.



WORDS TO KNOW

- parasite: a living thing that lives on or inside another living thing, causing harm
- host: the plant or animal that supports a particular parasite
- invasive plant: a nonnative plant that may take over a community of native plants

In the Spotlight:

BLM Fisheries Biologist Brad Tribby Rawlins, Wyoming

Growing up on public lands…

Growing up in Miles City, Montana, Brad Tribby's shoes were nearly always dirty. When Brad wasn't in school or helping with chores, he was outside—baseball, soccer, and football in the warm weather and hockey in the winter. Summer vacation meant biking and hiking with friends, swimming, fishing, and just exploring. Like most kids, he enjoyed TV and video games, but virtual adventures were no match for exploring the outdoors.

Like father, like son…

Throughout middle school and high school, Brad went hiking and camping with his dad, a BLM wildlife biologist. This meant a lot of time on BLM lands. On one particular trip, Brad remembers, he caught a fish that had a tag attached to it. This meant that someone was studying the fish. Brad knew he could help by reporting information about the fish. After calling the local fish and wildlife agency, Brad received a letter telling him all about the fish—when and where it was tagged, and its length and weight at that time. Brad was very curious to learn why that information was important. The experience was a turning point in Brad's life, and he decided he might become a fisheries biologist.

Hooked on fisheries…

After graduating from high school, Brad went to college where he studied a wide range of subjects, including biology. He also volunteered as a science intern with fisheries biologists, observing and experiencing their day-to-day work. Fisheries biology was a good fit—Brad was hooked!

In the Spotlight, continued

Brad joins the BLM…

Managing fisheries resources on more than 3 million acres of public land keeps Brad busy. "One week I'll be estimating populations of fish. The next week I'm planting willow trees along a stream. A big part of my work is making sure fish habitat remains healthy. Streams and rivers need to have the right amount of gravel, rocks, and woody debris for the fish to thrive. They also must have the right plants along the banks. Another important part of my job is working with people, such as anglers, who use the public land resources. I can't be everywhere, so it's important to find out what they see and experience. I also want to know what we can do to improve their recreation experiences."

Preparing the next generation…

When Brad isn't out in the field or working in his office, you might find him visiting a school. He knows that the future health of our river and stream habitats depends on today's students. Brad wants them to know that the subjects they are studying—reading, writing, and math—are essential to his work as a scientist. "I read scientific journals to learn the latest about the fish and to learn how to improve fish habitat. I write to persuade organizations to donate money for projects, and I write reports on how those projects are going. I need to know the average lengths and weights of the fish, the size of the populations, and if those populations are increasing or decreasing. I create tables, graphs, and maps to communicate this information with other scientists and resource managers."

The best part of the job…

"There is nothing more rewarding for me than seeing people out fishing on a stream that I've worked tirelessly on," Brad explains. He also enjoys giving and getting advice from the other anglers. "I love managing fisheries so future generations will have the same recreation experiences that I value so much."

Activity: Crack the Code

Brad has a message for Junior Rangers. Can you decode it?

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z

"Put down the ___ ___ ___ ___ ___ ___ ___ . Go ___ ___ ___ ___ ___ ___ ___ . ___ ___ ___ ___
19 3 18 5 5 14 19 15 21 20 19 9 4 5 20 1 11 5

___ ___ ___ ___ ___ . ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ . Get ___ ___ ___ ___ ___ .
1 8 9 11 5 3 1 20 3 8 1 6 9 19 8 4 9 18 20 25

Just ___ ___ ___ ___ ! The ___ ___ ___ ___ ___ ___ ___ ___ has so much to offer and
16 12 1 25 15 21 20 4 15 15 18 19

is ___ !"
9 14 3 18 5 4 9 2 12 25 18 5 23 1 18 4 9 14 7

BLM Career Profiles

Preserving and restoring healthy habitats for the wildlife that live on our public lands requires many skilled and dedicated people. If you are interested in wildlife and habitats, you might consider a future career with the BLM. Here are descriptions of some of the exciting careers available for people who want to serve on our public lands.

Wildlife Biologist

Wildlife biologists study and monitor wildlife and their habitats in a particular area. They observe and research the impacts that human activities have on the natural area. Some wildlife biologists spend much of their time out on the public lands gathering information about the animals and their natural habitats. They work with other specialists to improve habitats by constructing fences and nesting structures, restoring vegetation, and protecting sources of water. Many wildlife biologists specialize in areas such as mammalogy, herpetology, and ornithology. To become a wildlife biologist, you should study biology, zoology, plant science, and ecology in college.

Fisheries Biologist

Fisheries biologists study and monitor fish in their natural habitats—creeks, rivers, ponds, and lakes. Their work includes researching populations of fish, monitoring migration, and observing spawning. They keep a close watch on natural events and human activities that can threaten fish habitats. Fisheries biologists spend much of their time in the field. Their work can involve collecting soil, water, plants, and even fish specimens. This helps them determine if fish populations are healthy or unhealthy, safe or threatened. They help protect and improve fish habitats. To work as a fisheries biologist for the BLM, you need a college degree in animal science, oceanography, aquatic biology, or a related field.

Conservation Scientist

Conservation scientists manage the overall quality of BLM lands, including deserts, shrublands, forests, wetlands, and coastal areas. These scientists ensure that native plant communities and the wildlife that use them as habitat are protected and conserved. BLM conservation scientists have college degrees in forestry, biology, ecology, botany, or related sciences.

Fire Technician

BLM fire technicians work to prevent, control, and extinguish fires. They do this in a number of ways, including reducing grasses, dry shrubs, dead branches, and other "fire fuels" that burn easily. They collect weather information to predict how a fire will behave. Using this information, they devise plans to control wildfire to prevent or reduce damage to wildlife habitat. The minimum requirements for working in fire management are a high school diploma and experience fighting wildfire. College courses in fire ecology, forestry, mathematics, engineering, and biology are also valuable to careers in fire management.

Park Ranger

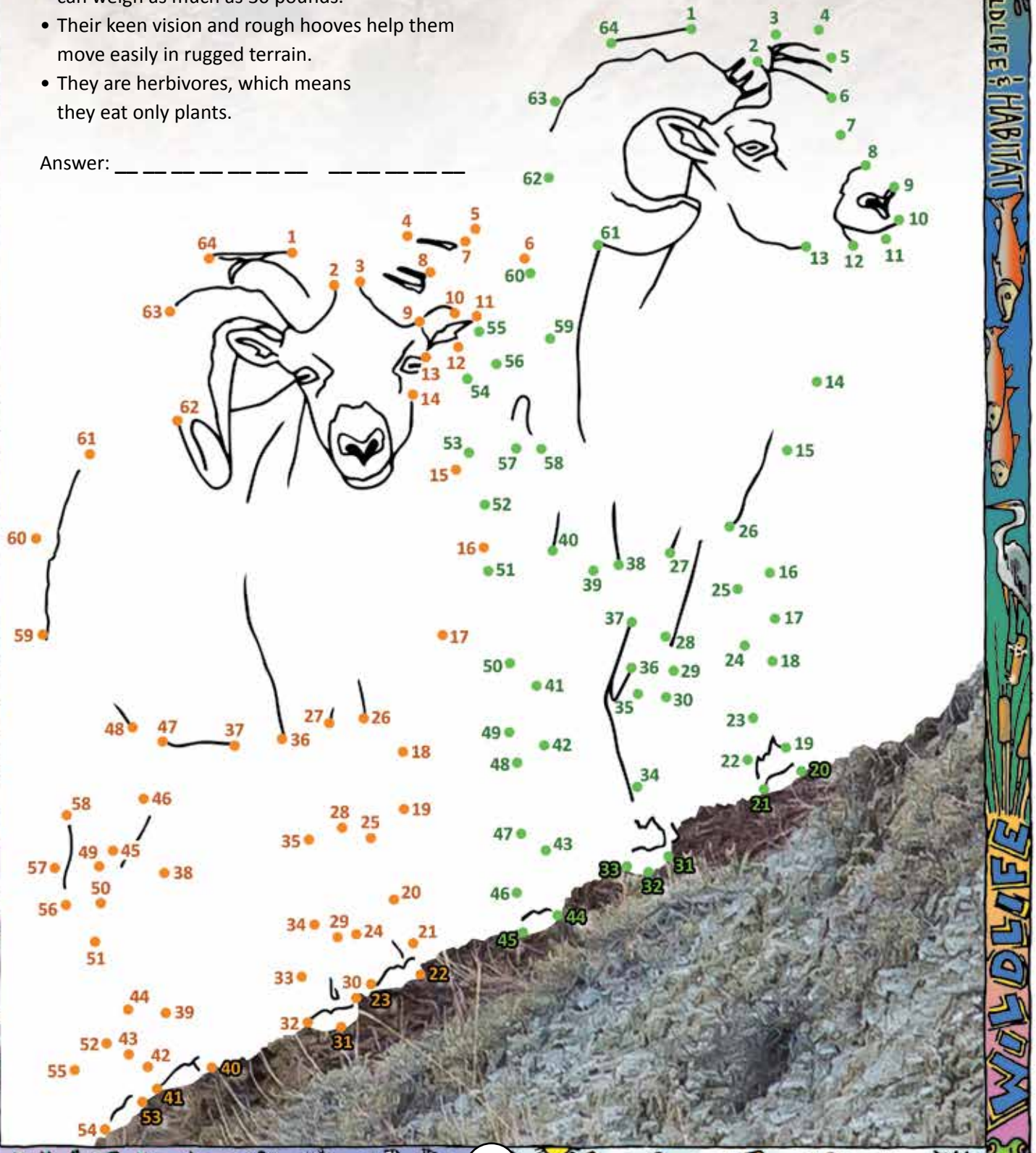
Park rangers spend most of their time outdoors monitoring natural and cultural resources, including habitats and wildlife, on our public lands. They also help ensure the safety of the people who enjoy visiting public lands. These lands are used for many purposes; park rangers must be able to communicate that idea to visitors. This requires an understanding of natural and cultural resources and the laws protecting those resources. Park rangers often work closely with local governments and the people who have an interest in using public lands—including ranchers, farmers, miners, foresters, and recreation enthusiasts. College degrees are desirable but not always required. Most BLM park rangers have degrees in fields such as recreation management, conservation, botany, geology, forestry, and wildlife management.

Activity: Get Connected—What Do You See?

Here are some clues to help you:

- Males are famous for their big, curling horns, which can weigh as much as 30 pounds.
- Their keen vision and rough hooves help them move easily in rugged terrain.
- They are herbivores, which means they eat only plants.

Answer: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _



Bureau of Land Management

Junior Ranger

JOIN THE ADVENTURE

As a Bureau of Land Management Junior Ranger, I promise to:

- Do all I can to help preserve and protect the natural and cultural resources on America's public lands.
- Be aware of how my actions can affect other living things and the evidence of our past.
- Keep learning about the importance of nature and our cultural heritage.
- Share what I have learned with others!

_____ _____

Date **Junior Ranger Signature**

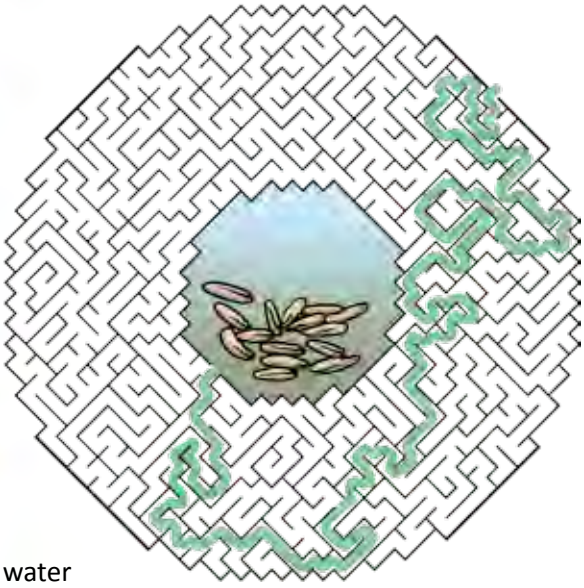
Cut out and save certificate

Answer Key

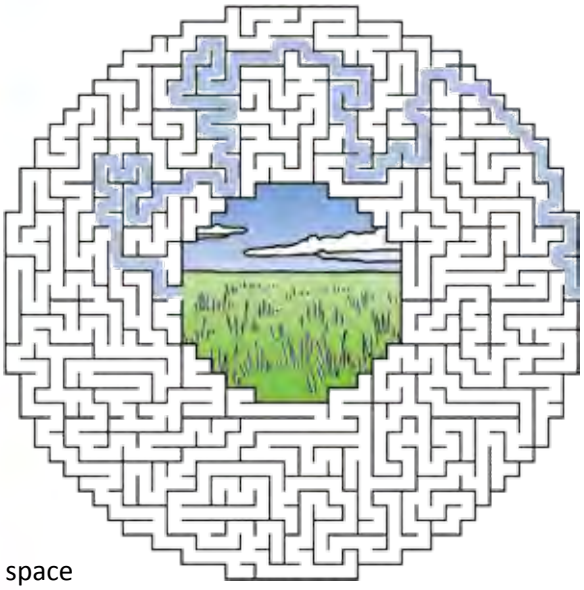
Activity: Who Lives Here?

Kangaroo Rat	⇨	Open desert scrub
Northern Spotted Owl	⇨	Old-growth forest
Little Brown Bat	⇨	Cave
Larch Mountain Salamander	⇨	Forested slopes
Pronghorn	⇨	Grassy plains
Brown Pelican	⇨	Tidal wetland

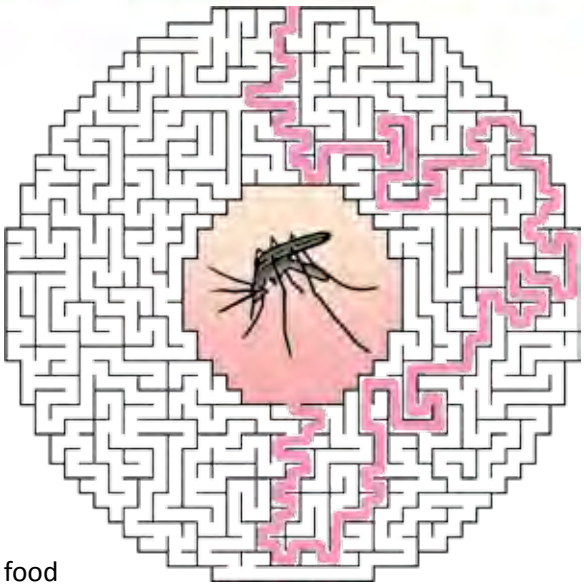
Activity: A-Maze-ing Habitats



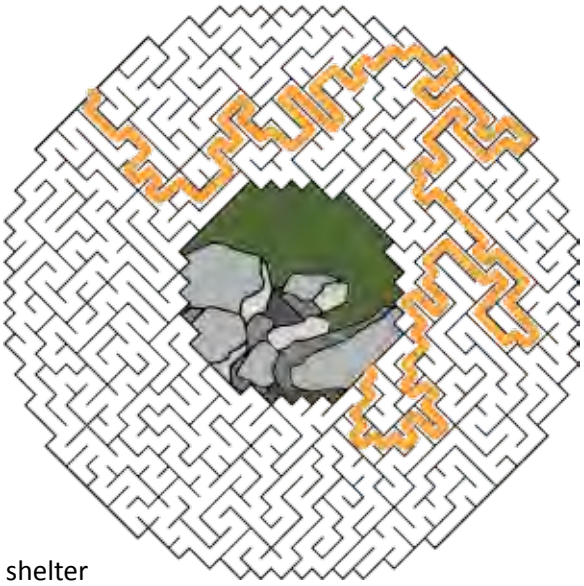
1. water



3. space



2. food



4. shelter

Activity: One Size Doesn't Fit All

Sonoran Desert Tortoise	Description or Examples	Location(s) on Map of Habitat Component
Food	Wildflowers, grasses, shrubs, and young cactus	D, E, and F
Water	Moisture in the plants they eat	D, E, and F
Shelter	Burrows under rocks and shrubs	D and F
Space	About 1/10 of a square mile	

Activity: One Size Doesn't Fit All (continued)

Desert Bighorn Sheep	Description or Examples	Location(s) on Map of Habitat Component
Food	Grasses, wildflowers, shrubs, and cactus	A, B, C, D, E, F, G, H, and I
Water	Water in the plants they eat	A, B, C, D, E, F, G, H, and I
Shelter	Caves, overhanging rocks, cliffs, and mountains	A, B, and C
Space	Large expanses of the Sonoran Desert	

Golden Eagle	Description of Examples	Locations on Map of Habitat Component
Food	Jackrabbits, mice, foxes, young deer, tortoises, young bighorn sheep	A, D, E, F, G, H, and I
Water	Water content of their prey	A, D, E, F, G, H, and I
Shelter	Nests high on mountainsides; caves and overhanging rocks	A, B and C
Space	Hundreds of square miles	

Activity: Find the Sonoran Desert Wildlife

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

Activity: Threats to Wildlife Habitat

Across

5. earthquake
7. flooding
9. pollution
10. roads
11. dam
12. wildfire

Down

1. housing
2. seasons
3. farming
4. deforestation
6. tornadoes
8. volcano

When habitats are threatened or destroyed, animals must ADAPT OR MOVE in order to survive.

Wonderful Wildlife: Fun Facts

1. Alaska
2. Wyoming
3. Oregon
4. California
5. Utah
6. New Mexico
7. Montana
8. Idaho
9. Nevada
10. Arizona
11. Virginia
12. Florida
13. Colorado

Activity: Calculate Canopy

Method 1

1. 6
2. 6/10
3. 6 x 10 = 60%
4. No, because it is greater than 15-25%.

Method 2

1. 44%
2. No, because it is greater than 15-25%.
3. Different
4. Answers may vary.

Activity: Crack the Code

"Put down the screens. Go outside. Take a hike. Catch a fish. Get dirty. Just play! The outdoors has so much to offer and is incredibly rewarding!"

Activity: Who Are We?

Answer: bighorn sheep

Ready For More?

Visit these BLM websites to learn more about wildlife and habitats:

BLM Learning Landscapes: blm.gov/education

BLM Volunteers: blm.gov/volunteer

Find your public library: *harvester.census.gov/imls/search*

Locate a nature center or natural area: *discovertheforest.org*

Watchable Wildlife has a network of wildlife viewing areas in every state. Look for a brown sign with white binoculars, or visit the Watchable Wildlife website to locate viewing areas: *wildlifeviewingareas.com*

Visit these sites for help in planning your public lands adventure: *blm.gov/recreation and recreation.gov*

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Junior Ranger
Wildlife and Habitat
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