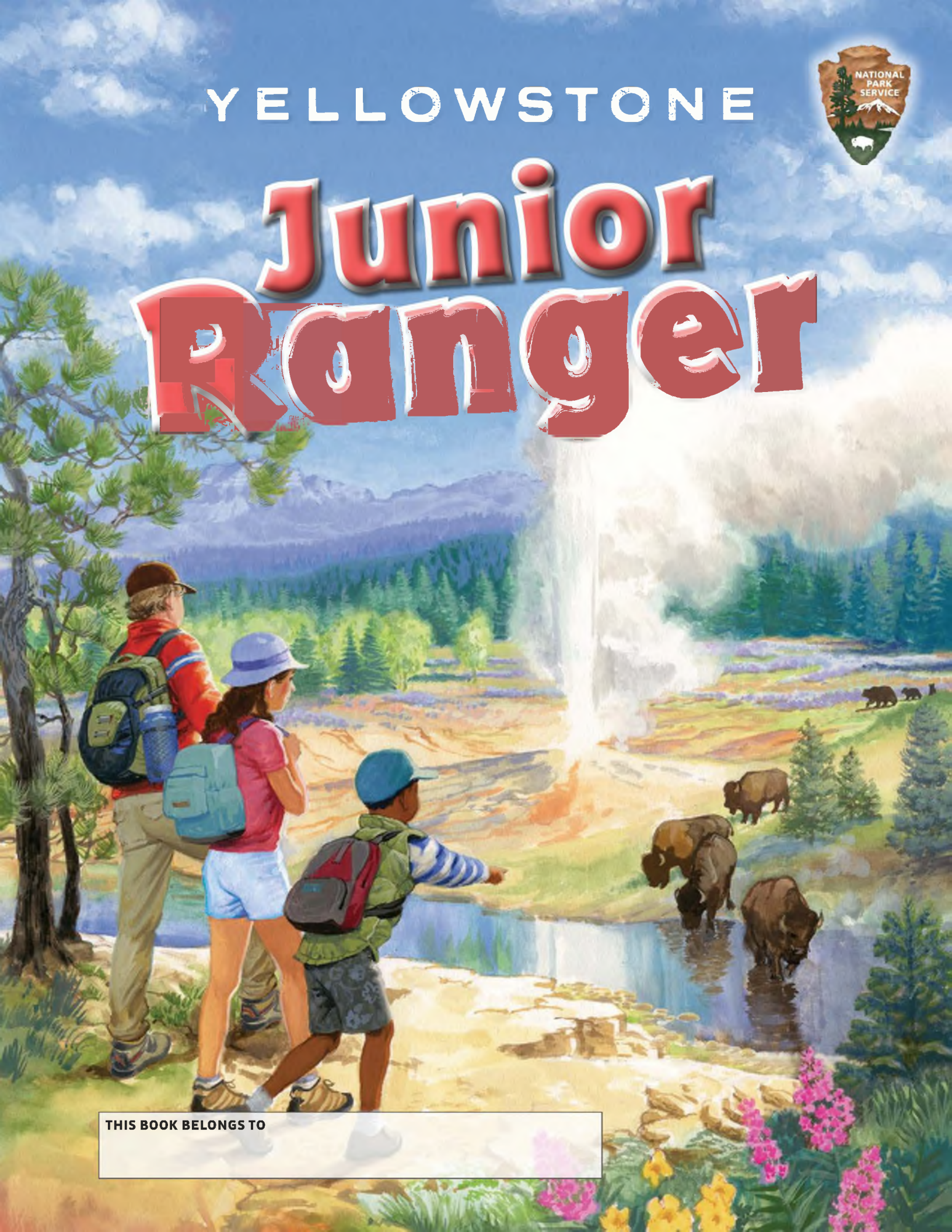
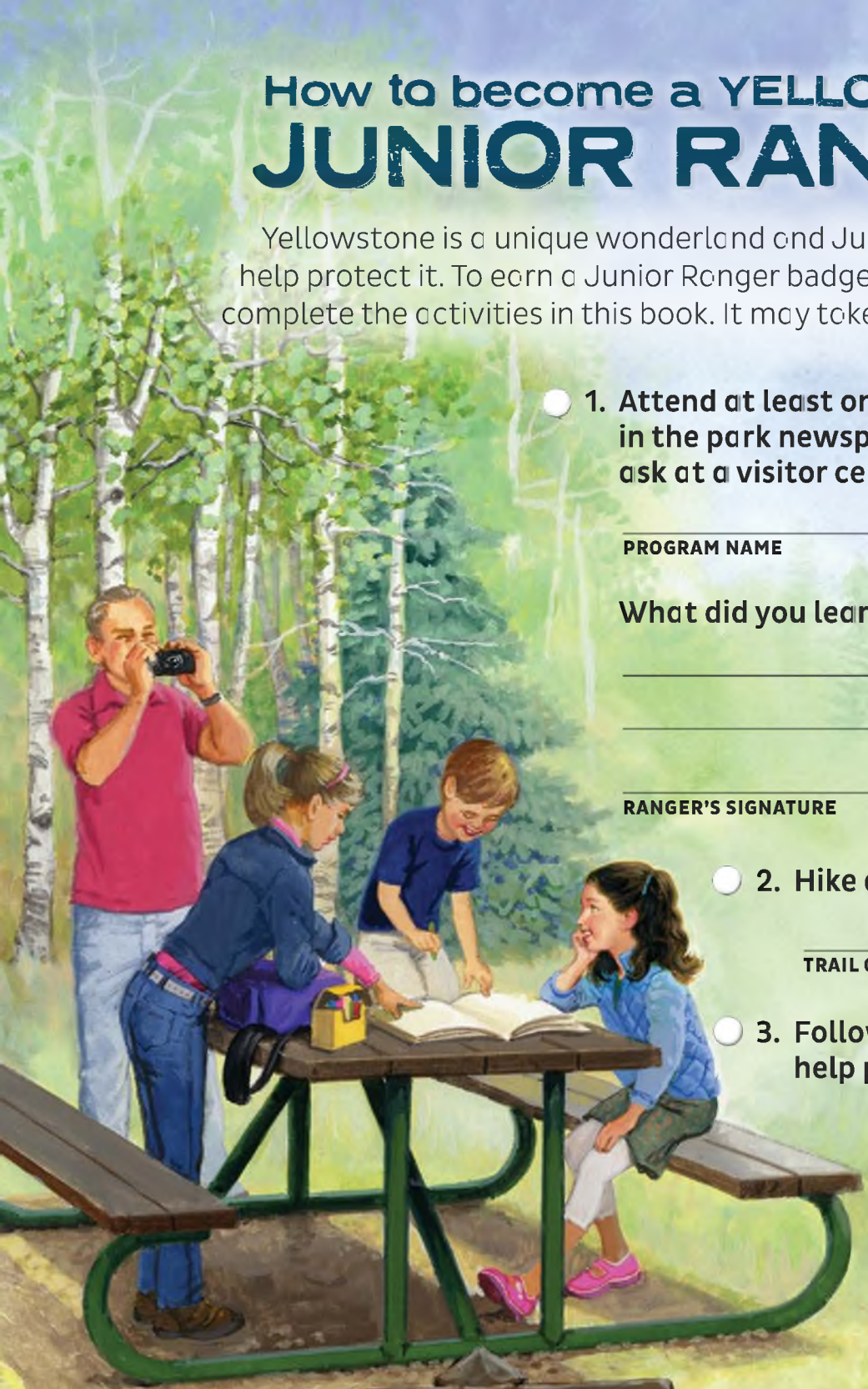

YELLOWSTONE
NATIONAL PARK SERVICE
Junior Ranger
THIS BOOK BELONGS TO

How to become a YELLOWSTONE JUNIOR RANGER

Yellowstone is a unique wonderland and Junior Rangers can help protect it. To earn a Junior Ranger badge, visit the park and complete the activities in this book. It may take two days to finish.



- [ ] **1. Attend at least one ranger-led program. Look in the park newspaper for a list of programs or ask at a visitor center.**

PROGRAM NAME

What did you learn?

RANGER'S SIGNATURE

- [ ] **2. Hike any park trail or boardwalk.**

TRAIL OR AREA NAME

- [ ] **3. Follow park rules to be safe and help protect Yellowstone.**

4. **Complete pages 2 and 3, and at least as many activity pages as are listed below for your age. Look for the pages with your symbol on them.**

geyser	grizzly bear	bison
		
AGES 4–7	**AGES 8–12**	**AGES 13+**
6 pages	**8 pages**	**match your age or every page**

○ I am _____ years old. I completed _____ (#) pages.

○ 5. **Why do you think national parks are important?** _____

_____

_____

Bring your completed booklet to any visitor center.
A ranger will review your work and award you an official Junior Ranger badge!

LEARN MORE ABOUT YELLOWSTONE AT www.nps.gov/yell

National Park Service Mission

There are more than 400 national park sites in the U.S. They include parks, battlefields, monuments, seashores, historic sites, and recreation areas. The National Park Service (NPS) preserves these places because they are important to our nation.

The arrowhead is the symbol of the National Park Service. It is a reminder of the culture and history national parks protect. Each image in the arrowhead represents something protected by the National Park Service.

Fill in the blank with the correct word from below.

The _____ represents the **wildlife** protected by the NPS.

The _____ represents the **plants** protected by the NPS.

The _____ represents the **geology** protected by the NPS.

The _____ represents the **natural resources** (like clean air and water) protected by the NPS.

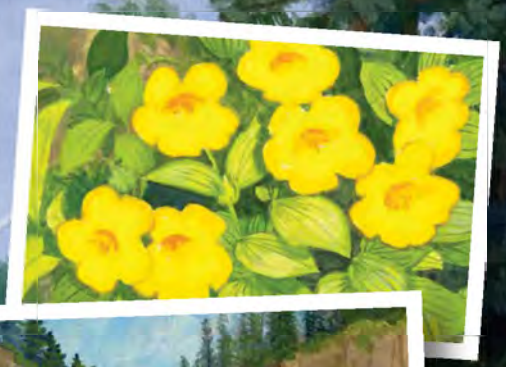
The _____ represents the **history** of our nation protected by the NPS.

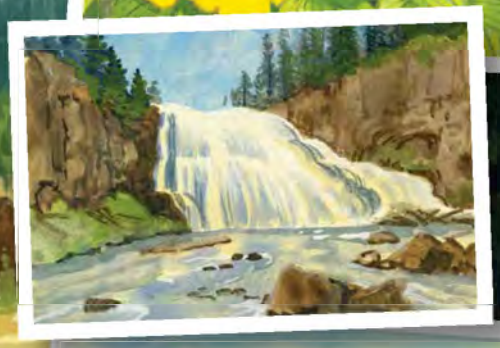
SUPERVOLCANO

You are standing on one of the world's largest active volcanos. Magma near the surface pushed up and shaped the landscape. The Yellowstone supervolcano's last major eruption, about 640,000 years ago, left a collapsed caldera (like a giant bowl) 45 miles (72 km) wide. Magma provides the heat for more than 10,000 hydrothermal features like geysers and hot springs!

Circle the items in the park affected by the Yellowstone volcano.

SNOW-CAPPED PEAKS
GEYSERS
WATERFALLS
LODGEPOLE PINE TREES
SCIENTISTS
TRUMPETER SWANS IN WINTER
OLD FAITHFUL INN
HOT SPRINGS AND MUDPOTS
MONKEYFLOWER
EARTHQUAKES
YOU





Choose one of the items from the list and explain how it is affected by the volcano.

DISCOVER YELLOWSTONE

Yellowstone's wonders have amazed people for thousands of years. Today YOU can explore and discover Yellowstone's wonders.

Use your senses to complete six of the activities.

Touch the bark of a tree. Is it *rough* or *smooth*? (CIRCLE ONE)

How many bison do you **see** in Lamar or Hayden Valley?

Look up at the night sky. Where do you see more stars?

- ○ Home
- ○ Yellowstone

Stand quietly on a trail in a geyser basin and close your eyes. What do you **hear**?

Dance like an aspen leaf blowing in the wind.

Look closely at a wildflower (remember not to pick it!). How many petals does it have?

_____

How does Yellowstone make you **feel**?

What does the air **smell** like near the hot springs and mudpots?

Draw your favorite Yellowstone place, animal, plant, or experience.

MY PARK JOURNAL

Rangers use journals to record what they see, do, and think. Today, the journals of early Yellowstone travelers, such as 1830s trapper Osborne Russell and 1870s surveyor Ferdinand Hayden, tell us about their adventures.

Use this page to describe some of your Yellowstone experiences. Who do you think will be interested in reading your journal in 100 years?

Find a quiet place you like and write down everything you see and hear.

Where are you? Why do you like this place?

If you could be any animal in the park, which one would you be and why?

Describe one thing about your Yellowstone trip that you want to remember forever!

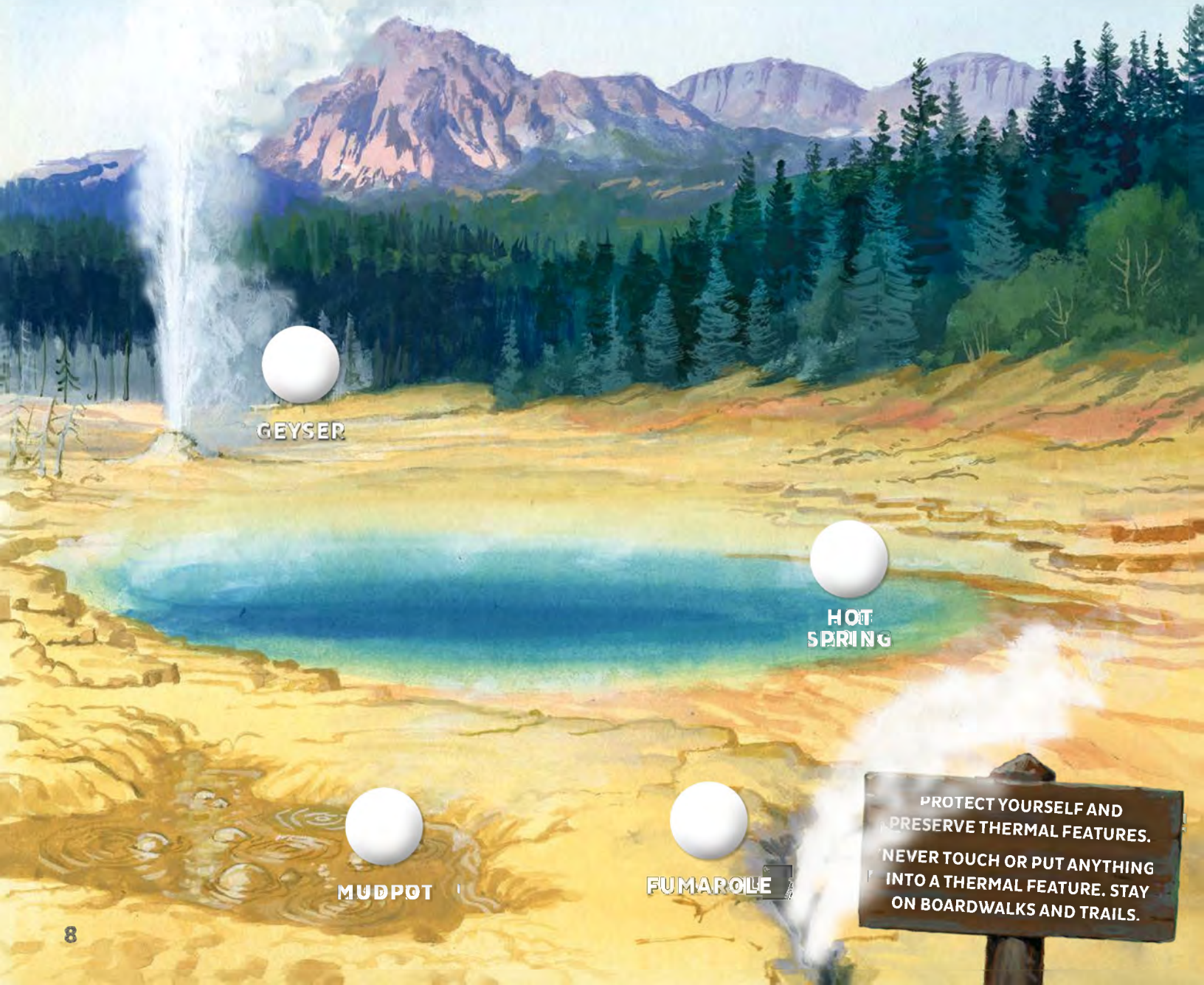
What do you want Yellowstone visitors to see or experience when they visit 100 years from now?

Letting off STEAM

Yellowstone has more than 10,000 hydrothermal features. There are four different types.

Circle the types of thermal features you have seen in the park. Use the numbers to match the descriptions with the correct features.

1. Hot acidic water breaks down clay creating hot bubbly mud
2. Hissing steam without much water
3. Hot water and steam are thrown up into the air
4. A pool of hot water or hot water gently flowing



LIVING COLORS

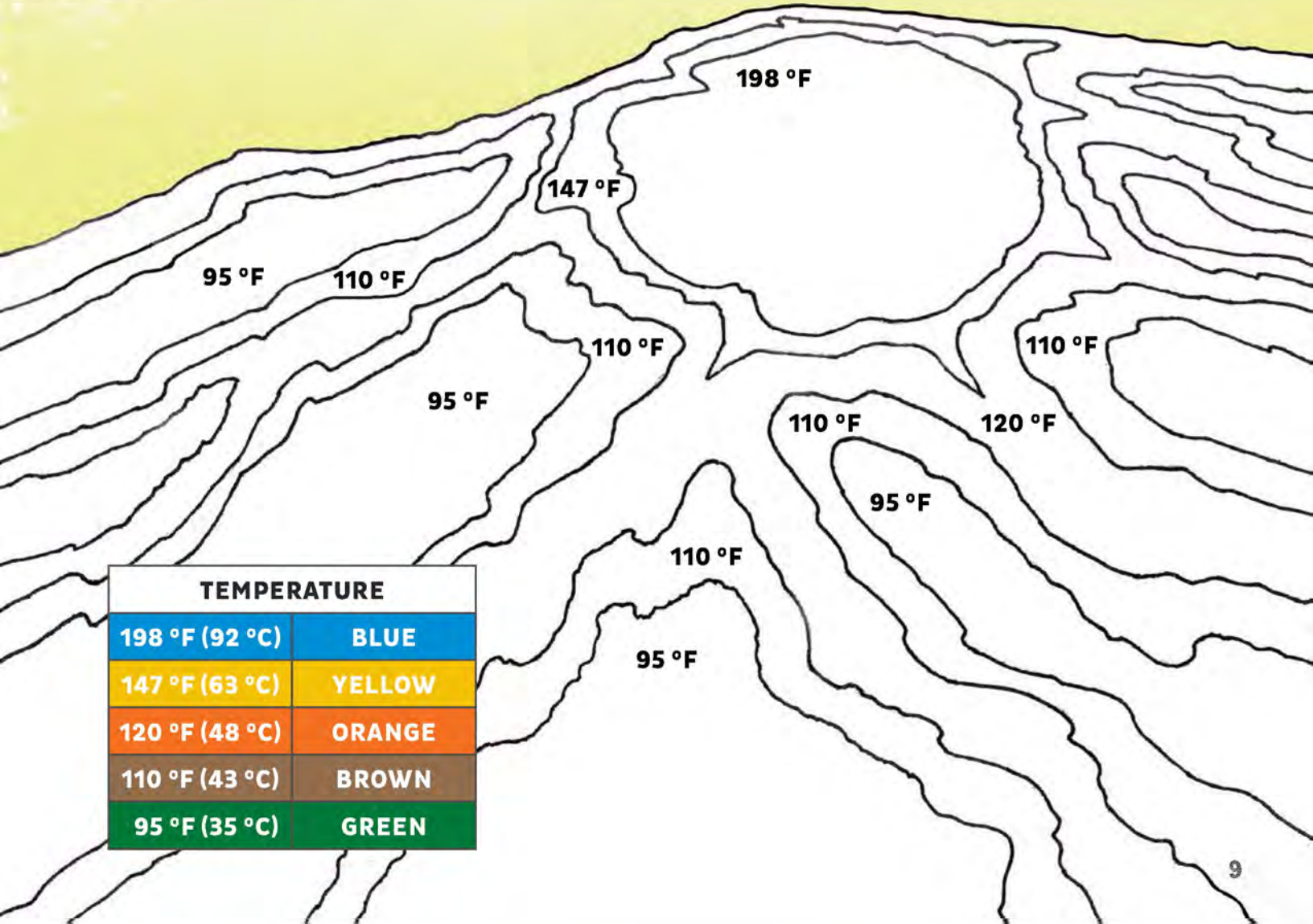
How hot is that water? The color around hot springs may offer a clue. Trillions of tiny single-celled organisms, called microbes live in the hot water. One microbe is too small to see with the naked eye, but grouped together they appear as brilliant bands of color. Each microbial community lives in a favored temperature range—not too hot and not too cold.

1. Visit a hot spring. How many different colors do you see in the water?_____
   Each color is made by a different community of extremophiles, such as bacteria.

2. What color do you see in the center of the pool?_____
   That's usually the hottest spot in the hot spring.

   What color do you see at the edges of the hot spring?_____
   That's usually where the coolest water is found.

3. Color this hot spring with the colors listed in the water temperature chart.



TEMPERATURE	
198 °F (92 °C)	BLUE
147 °F (63 °C)	YELLOW
120 °F (48 °C)	ORANGE
110 °F (43 °C)	BROWN
95 °F (35 °C)	GREEN

RECIPE for a GEYSER

Yellowstone National Park was established to preserve the largest concentration of geysers in the world. Though every geyser is different they have a few things in common. Due to a narrow constriction in their "plumbing systems," pressure can build and force geysers to erupt, blasting hot water and steam into the air.

Show how geysers work by drawing the water as it moves through the geyser below.

1

Draw the **water** as it falls to the Earth and seeps deep into the ground.

2

Draw the water as **heat** from the magma moves it upward into the cracks of the geyser's **plumbing system**.

3

Preservation of geysers is possible with help from Junior Rangers like you. Watch a geyser erupt and draw what you see.

GEYSER INGREDIENTS

FIND THE INGREDIENTS FROM EACH STEP THAT FORM A THERMAL FEATURE:

- _____
- _____
- _____
- _____

PREDICT Old Faithful

Though most geysers are not predictable, Old Faithful Geyser is famous for its regularity. Use the rangers' formula below to predict its next eruption.

1. Wait for Old Faithful to erupt and time its eruption from when water begins splashing continuously out of the cone until only steam is coming out.

   A. Starting Time: _____

   B. Ending Time: _____

   C. Length of eruption to nearest half minute: _____

2. Using the table below, find the length of the eruption (**C**) in the first column. Read directly across to the second column and circle the interval or number of minutes (**D**) until the next eruption.

C LENGTH OF ERUPTION	**D** INTERVAL UNTIL NEXT ERUPTION
less than 3 minutes	**69 minutes**
more than 3 minutes	**94 minutes**

3. Add the starting time for the first eruption (**A**) with the interval number of minutes until the next eruption (**D**) to predict the time for the next eruption:

   (**A**) _____ start time + (**D**) _____ interval = ☐
   [time next eruption predicted]

4. Visit the Old Faithful Visitor Education Center to find the rangers' prediction for the next eruption: _____ Is your prediction similar? _____

5. If you are still at Old Faithful for the next eruption, write the time it started here: _____. Compare the actual starting time to your prediction and the rangers' prediction. Remember that Old Faithful is a natural feature and changes often, so any prediction may not prove to be exactly right.

A GRAND VIEW

At the Grand Canyon of the Yellowstone River, the river has carved through colorful layers of rock that have been "cooked" and softened by hydrothermal activity. The beauty of the canyon was captured in photos and paintings that helped inspire Congress to protect Yellowstone as a national park in 1872.

Stand quietly at a safe overlook and look all around the canyon.

ARTISTIC EXPRESSION

Draw something you would like to remember about the canyon.

POETIC INSPIRATION

What things do you see when you look at the canyon?

_____ _____ _____ _____

Which colors can you see in the canyon?

_____ _____ _____

What sounds do you hear in the canyon?

_____ _____

What word best describes the canyon?

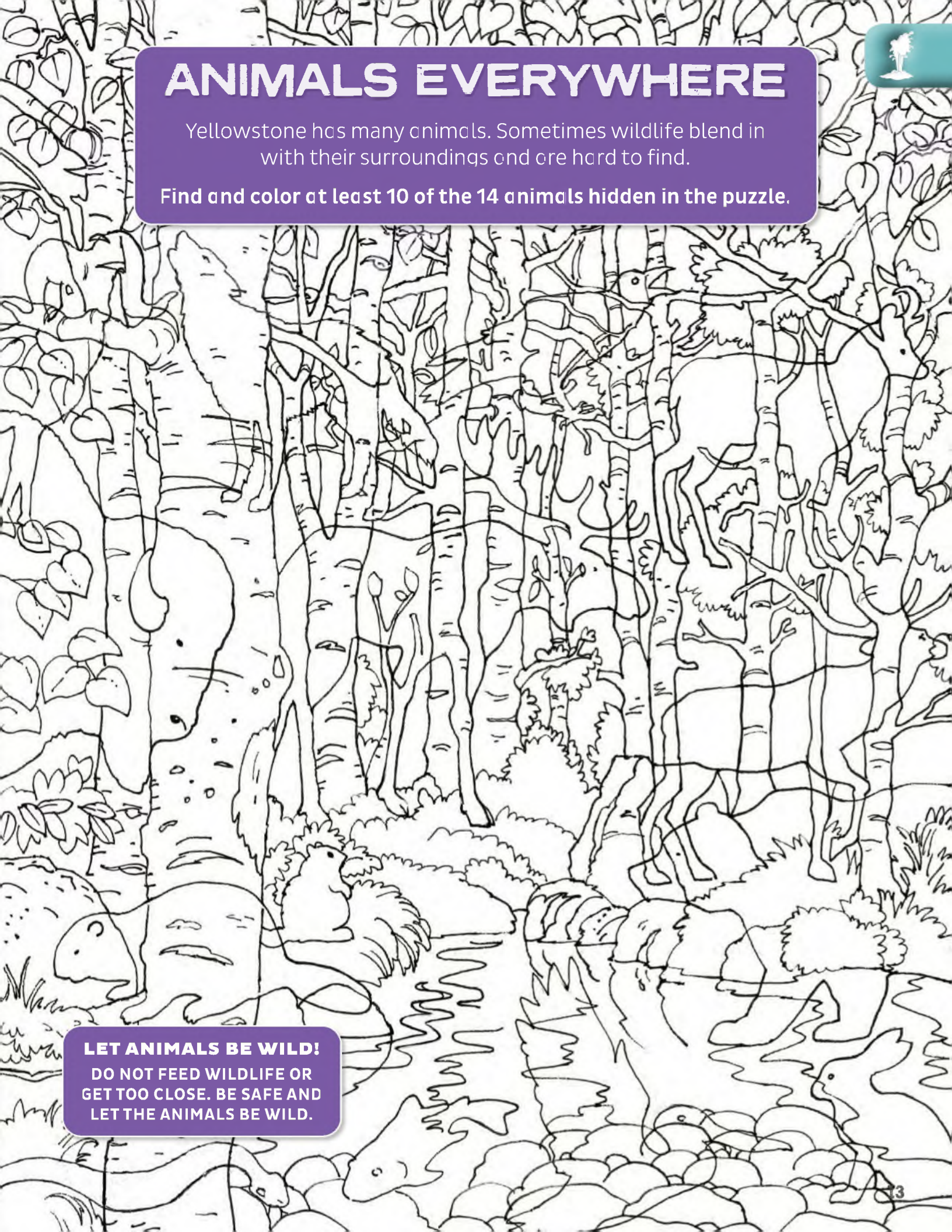
_____

Read your words aloud as a poem.

ANIMALS EVERYWHERE

Yellowstone has many animals. Sometimes wildlife blend in with their surroundings and are hard to find.

Find and color at least 10 of the 14 animals hidden in the puzzle.



LET ANIMALS BE WILD!

DO NOT FEED WILDLIFE OR GET TOO CLOSE. BE SAFE AND LET THE ANIMALS BE WILD.

HEALTHY HABITATS

Wildlife depend on healthy habitats for their survival. A habitat is where an animal or plant lives. It provides food, water, shelter, and space.

Look for several types of habitats in Yellowstone, such as **grasslands, forests, mountain slopes, wetlands,** and **aquatic** habitats. Do you notice different types of plants and animals in each habitat?

Visit at least one of the habitats in the park and look around you. Draw some of the plants you see in the correct habitat on these pages. If you know the names of any of the plants, label them.

Draw and label at least four animals you see or know that live in the different habitats. (HINT: SEE ANIMALS ON PAGES 16 AND 17.)

What could change the habitats in Yellowstone and affect the plants and animals that live here?

WILD ABOUT WILDLIFE

Yellowstone is home to 67 types of mammals; 330 species of birds; 16 different fish; 4 kinds of frogs, toads, and salamanders; and 6 types of snakes and lizards.

Have you and your family remained at least 100 yards away from bears and wolves, and 25 yards from all other animals? ○ **YES** ○ **NO**

Check the animals you have seen in the park.

____ ____ ____ ____ **I V O R E**

BISON	**ELK**	**MOOSE**	**BIGHORN SHEEP**
			
PRONGHORN	**MULE DEER**	**PIKA**	**LEAST CHIPMUNK**
			
GOLDEN MANTLED GROUND SQUIRREL	**RED SQUIRREL**	**UINTA GROUND SQUIRREL**	**YELLOW-BELLIED MARMOT**
			

Circle the animals that are bigger than you.

In the blanks above, label each group of animals as **carnivore** (eat meat), **omnivore** (eat both), or **herbivore** (eat plants). Which one are you?

____ ____ ____ ____ I V O R E

COYOTE	GRAY WOLF	MOUNTAIN LION	WHITE PELICAN
			
GREAT GRAY OWL	**BALD EAGLE**	**CUTTHROAT TROUT**	**OSPREY**
			

____ ____ ____ I V O R E

CLARK'S NUTCRACKER	RAVEN	SANDHILL CRANE	MAGPIE
			
BLACK BEAR	**GRIZZLY BEAR**	**BADGER**	**RED FOX**
			

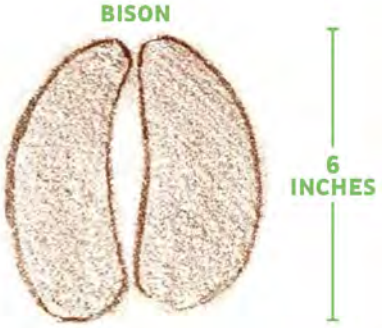
What does it mean to be wild?

WILD ANIMAL STORIES ON THE LAND

Tracks and scat (animal droppings) can tell you a lot about animals and their habits. Track patterns sometimes tell you a story about what an animal was doing such as walking, running, or stopping to eat. Identify tracks and scat in Yellowstone using the drawings on these pages. Look for other signs such as hair, feathers, nests, burrows, marks on trees, or gnawed plants. These signs can help you identify an animal.

Identify each animal, and then draw a line to its track.

Barrow's Goldeneye



MEASURE THE TRACKS AND SCAT YOU FIND IN THE PARK

INCHES (in)

1 2 3 4 5 6 7

Find an animal track or some scat and draw it here.

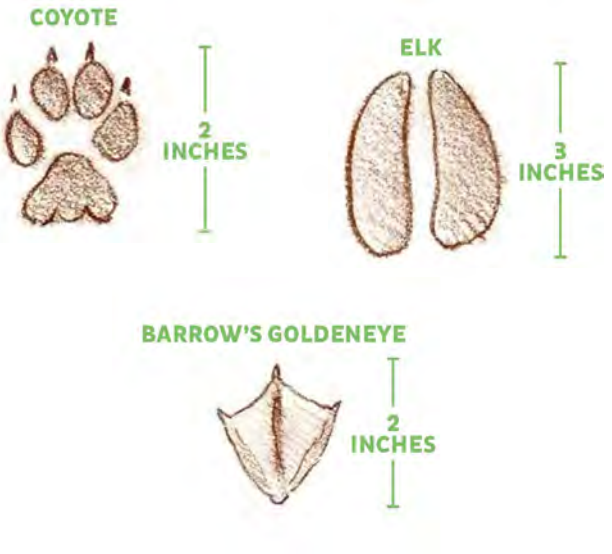
Where did you find it?

What animal do you think left this sign?

What other signs of animals do you see?

What story can you tell from the signs you found?

Label how long and how wide your track is.



CENTIMETERS (cm)
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17

BEAR COUNTRY

Yellowstone is home to both grizzly bears and black bears.

Read the descriptions of grizzly and black bear ecology in the columns below, then label the purple and green column either grizzly bear or black bear. The orange column in the middle describes both bears.

_____ BEAR	BOTH BEARS	_____ BEAR
• prefer forests and edges of meadows	• eat both plants and meat: grass, flowers, roots, nuts, berries, mushrooms & insects, fish, elk, small mammals, carcasses	• roam open meadows or mountain slopes
• 1½ inch (3.8 cm) claws help climb trees for protection	• hibernate in winter	• 3 inch (7.6 cm) claws and huge shoulder muscles help dig for food
• 135–315 pounds (61–143 kg)	• keen sense of smell to detect food from 3 miles	• average 350 pounds (159 kg)
• cubs stay with their mother for 1 year	• cubs born in winter den	• cubs usually spend 2 years with their mother

NATIVE BISON

Bison in Yellowstone were saved from near extinction and are an icon of the West. Many Native American tribes used almost every part of the buffalo for food, tools, clothing, and shelter.

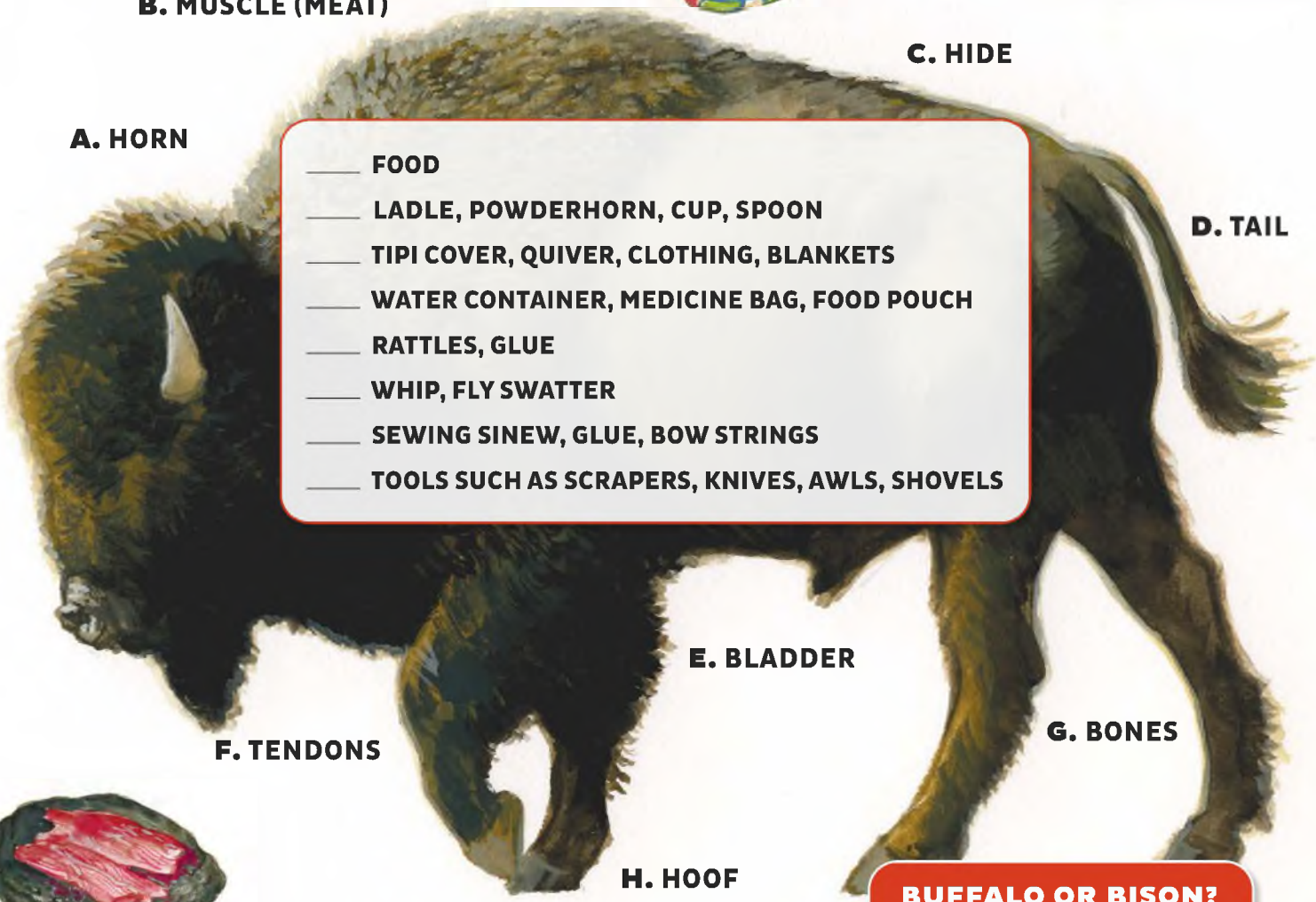
Match parts of the bison with their uses.

B. MUSCLE (MEAT)

C. HIDE

A. HORN

D. TAIL



E. BLADDER

F. TENDONS

G. BONES

H. HOOF

____ **FOOD**

____ **LADLE, POWDERHORN, CUP, SPOON**

____ **TIPI COVER, QUIVER, CLOTHING, BLANKETS**

____ **WATER CONTAINER, MEDICINE BAG, FOOD POUCH**

____ **RATTLES, GLUE**

____ **WHIP, FLY SWATTER**

____ **SEWING SINEW, GLUE, BOW STRINGS**

____ **TOOLS SUCH AS SCRAPERS, KNIVES, AWLS, SHOVELS**

BUFFALO OR BISON?

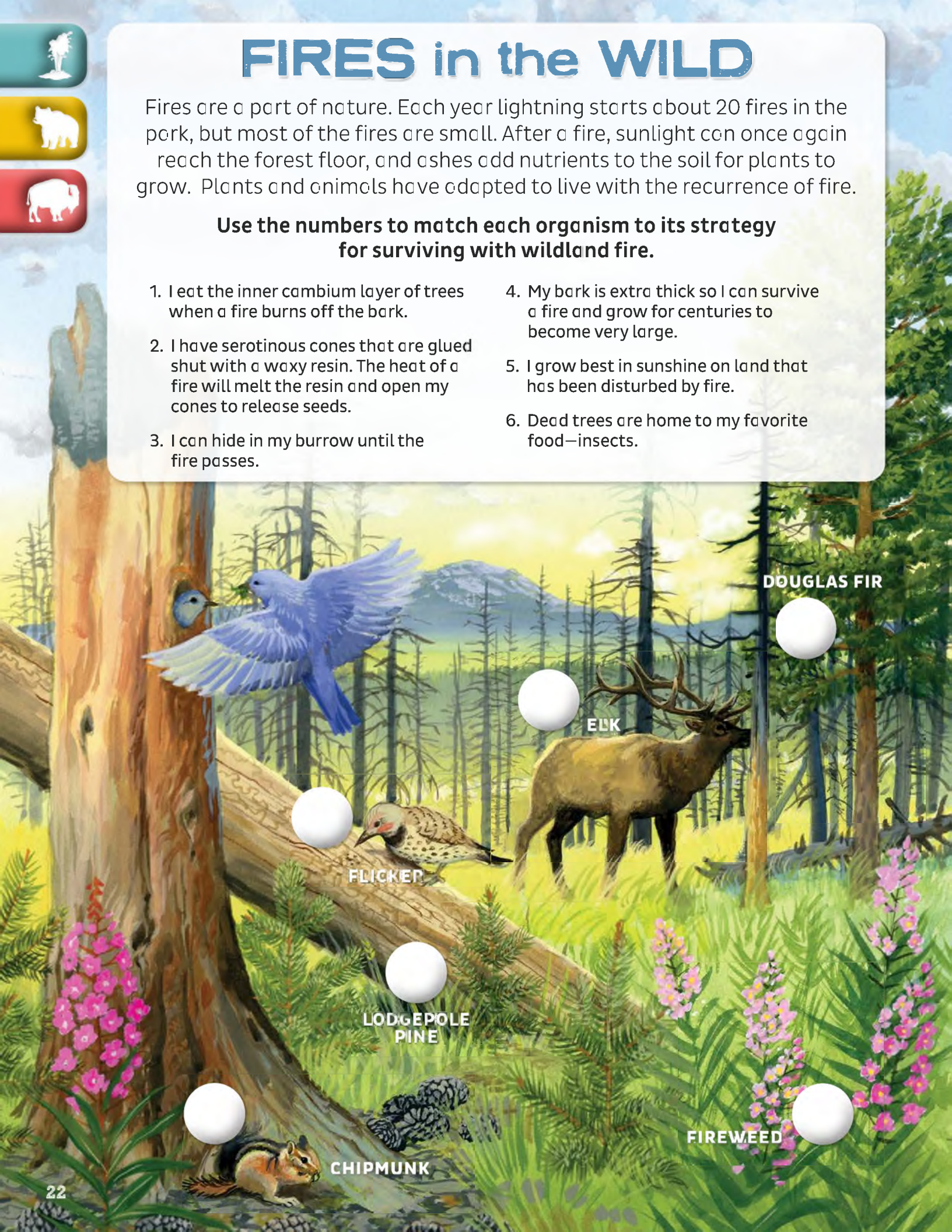
Though commonly called **buffalo**, American bison should not be confused with Cape or Water buffalo of Africa or Asia. Call them buffalo if you want, but the largest animals in Yellowstone (scientifically speaking) are **bison**.

FIRES in the WILD

Fires are a part of nature. Each year lightning starts about 20 fires in the park, but most of the fires are small. After a fire, sunlight can once again reach the forest floor, and ashes add nutrients to the soil for plants to grow. Plants and animals have adapted to live with the recurrence of fire.

Use the numbers to match each organism to its strategy for surviving with wildland fire.

1. I eat the inner cambium layer of trees when a fire burns off the bark.
2. I have serotinous cones that are glued shut with a waxy resin. The heat of a fire will melt the resin and open my cones to release seeds.
3. I can hide in my burrow until the fire passes.
4. My bark is extra thick so I can survive a fire and grow for centuries to become very large.
5. I grow best in sunshine on land that has been disturbed by fire.
6. Dead trees are home to my favorite food—insects.



CONNECTIONS

Find 10 words.

Find 20 words.

Find 30 words.

Yellowstone National Park is part of the Greater Yellowstone Ecosystem. In an ecosystem, everything connects, like pieces in a puzzle. If you have all of the puzzle pieces, such as the plants and animals, then the ecosystem will usually be healthy.

Circle the plants and animals you find and check them off the list.

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

BACTERIA	BULL SNAKE	GROUND SQUIRREL	MAYFLY	PELICAN	RED FOX
BALD EAGLE	COYOTE	GROUSE	MOOSE	PEREGRINE FALCON	TROUT
BIGHORN SHEEP	ELK	HUMAN	MOUNTAIN LION	PINE MARTEN	TRUMPETER SWAN
BISON	GRASSHOPPER	LYNX	OSPREY	PINENUTS	WILLOW
BLACK BEAR	GRIZZLY	MAGPIE	OTTER	PRONGHORN	WOLVERINE

HOME on the RANGE

Read the story and answer the questions.

Yellowstone bison are descended from the vast herds of 30 to 60 million that once roamed North America. Native Peoples of the Great Plains hunted the bison as a way of life. When European Americans began hunting bison, many bison were killed for their hides, or for sport. By the 1890s wild bison were nearly extinct except for one small herd in Yellowstone.

Though living in Yellowstone provided some protection, poachers still killed some to sell bison heads illegally. The United States Army was in charge of protecting Yellowstone in the 1890s and soldiers patrolled the park in search of poachers. After hearing about Edgar Howell, a particularly effective poacher, the leader of Fort Yellowstone, Captain George Anderson, sent out a dedicated group of soldiers to look for him. The soldiers patrolled on skis for days until they crossed into the snowy wilderness east of the Yellowstone River. They followed Howell's tracks to his camp in Pelican Valley. When they found bison heads hanging in a tree, the soldiers knew he must be nearby.

From a distance, they saw him shoot bison. Scout Felix Burgess quietly skied across a wide valley of open snow. Armed only with a pistol, Burgess snuck up on the scoundrel and captured him in the act of skinning some of the last remaining wild bison in the country. The poacher was held in jail but soon released because he could not be punished under current law.

The story of how Felix Burgess bravely captured the poacher, and of Howell's later release, helped convince Congress to create a law in 1894 with tougher punishments for anyone caught poaching—the Lacey Act. With much hard work by soldiers and rangers, and the help of the Lacey Act, the wild bison of the U.S. were saved from extinction. Today, we enjoy seeing thousands of wild bison in Yellowstone.

Many of Yellowstone's bison are descended directly from the small herd that remained safe, wild, and free in Yellowstone through the tough times of the past – the only bison in the country that have always been wild!

After reading their history, how do you feel when you see the herds of bison in Yellowstone?

_____

What can save wild animals like bison from extinction?

6	1	10	8	5	3	7	12	11	4	9	2

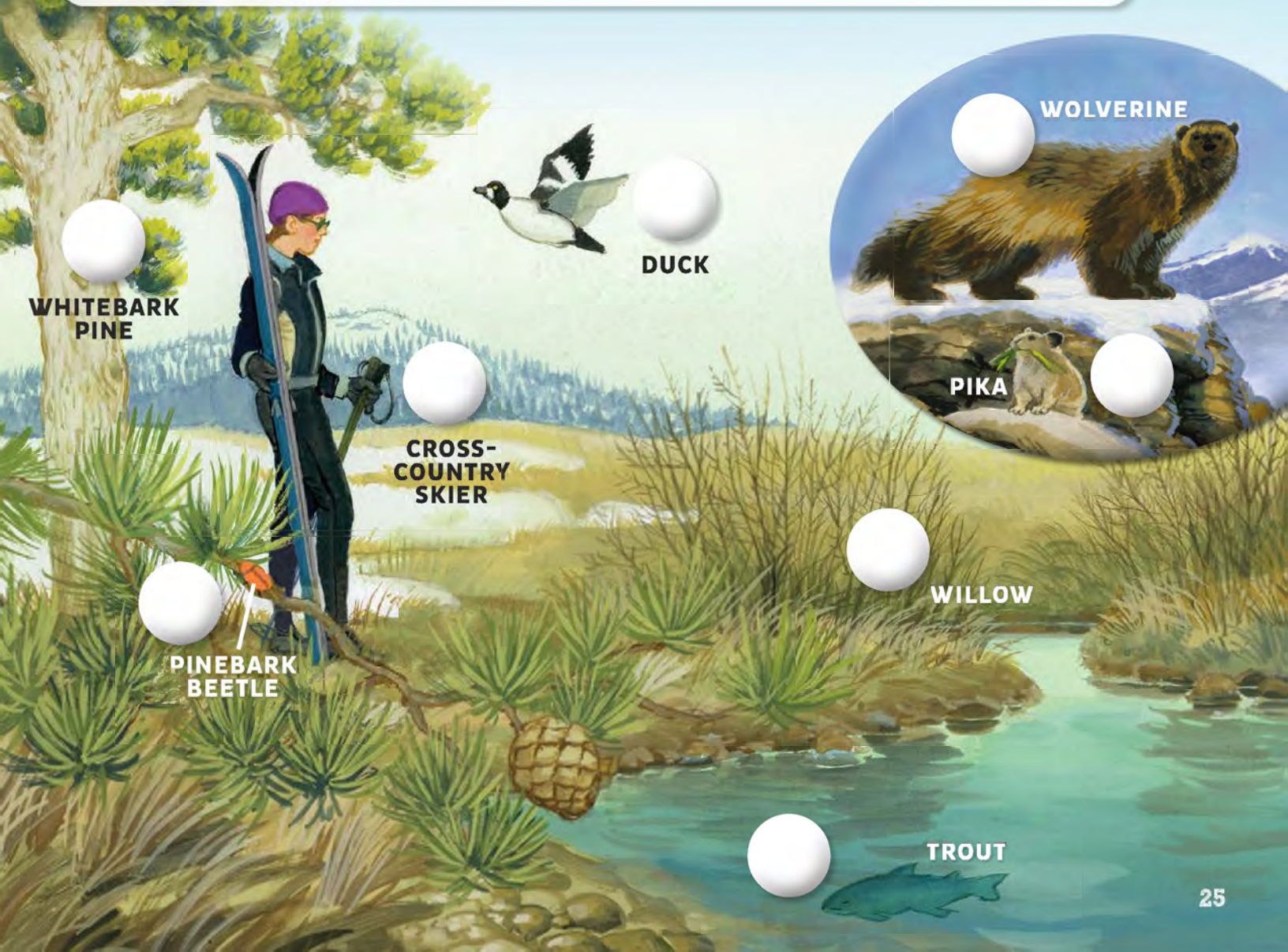
To find the answer, write the circled letters above in the blanks.

CHANGING CLIMATE

Yellowstone has always gone through a lot of changes: volcanic eruptions, ice ages, fires, and more. Recently, measurements made by scientists prove that the park's climate is getting warmer and drier. If they could talk, what might some of the living things say about this?

Write the number for each quote beside who might say it.

1. Uh oh! There's not enough snow on the trail. I guess I'll hike from here.
2. My burrow on top of the mountain is too warm and I'm too small to travel far to a taller, cooler mountain.
3. A longer, warm growing season helps me grow taller.
4. Where's the really cold weather to make the insects under my bark go away? I don't have enough water to make sap to push all of them out.
5. Without extreme cold, we have more time to attack drought-weakened trees.
6. It's harder to find deep snow for ease of travel and denning even in the high mountains and forests.
7. This river is too warm to swim or eat much. I'll try to find a cooler spot in the deeper water.
8. Hey! What happened to the pond I lived in last year? It dried up!



MY YELLOWSTONE

Yellowstone's wonders continue to inspire us to **learn** from and honor our past, **explore** and care for our park, and **protect** the earth for our future.

1. Which actions can you take to protect Yellowstone and help the Earth?

___ Turn off the water when I brush my teeth.

___ Reuse bags at the store.

___ Turn off lights and electronics when not in use.

___ Donate old clothes and toys, and buy used instead of new.

___ Use a refillable water bottle.

___ Walk, bike, and carpool when I can.

___ Recycle.

___ Put litter in the trash if it can't be recycled.

___ Turn off or point outdoor lights downward to protect the night sky from light pollution.

___ Hang clothes to dry.

___ Share what I learn with others.

___ _____.

2. How can you teach your friends about Yellowstone and protecting our planet:

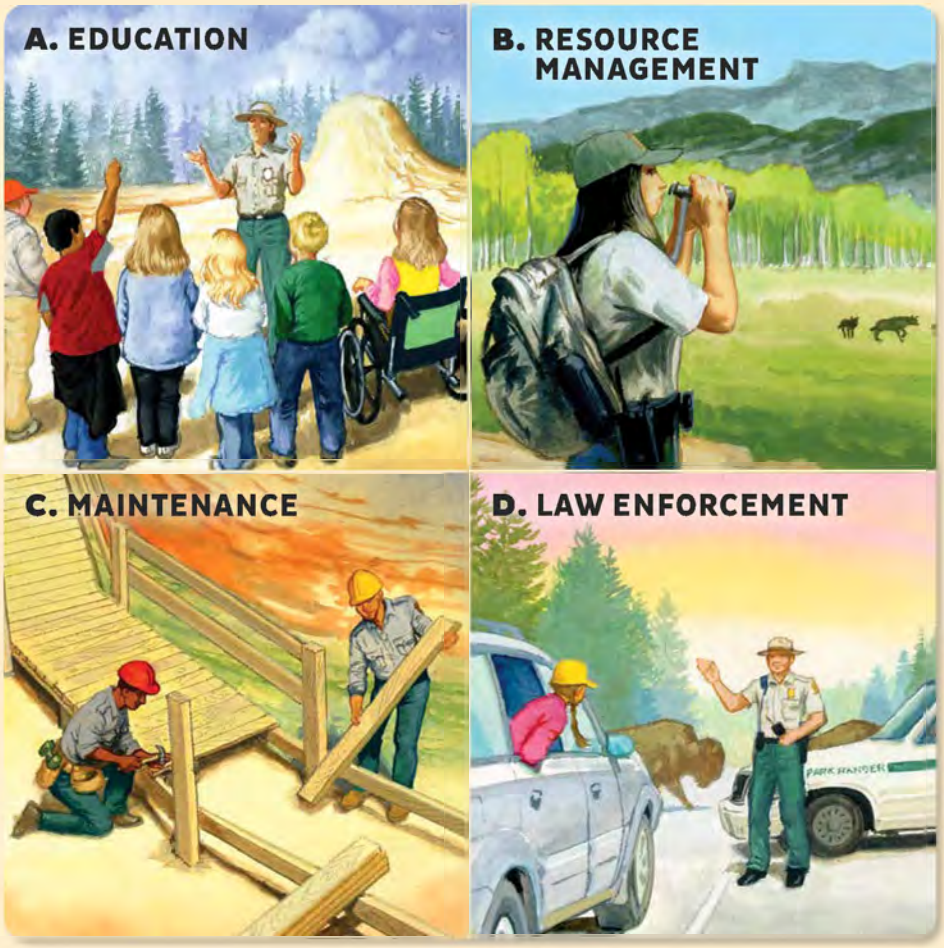
_____

_____

JOIN the Park Ranger Team!

There are many types of park rangers who work to protect the park and visitors. We work as a team with other park employees, and are dedicated to preserving Yellowstone into the future for children like you.

Match these rangers with their descriptions, then answer the questions below.



____ I help visitors connect with their park. I answer questions, guide walks, and share programs that help people to learn and care about Yellowstone.

____ I protect the park and visitors by enforcing the rules and helping visitors who get lost or hurt. I remind you to keep your distance from wildlife and stay on the boardwalks.

____ I manage wildlife, remove non-native plants, and care for historic objects. I conduct research to better understand the park's natural and cultural resources.

____ I build trails and boardwalks, take care of park buildings, plow roads, and repair things.

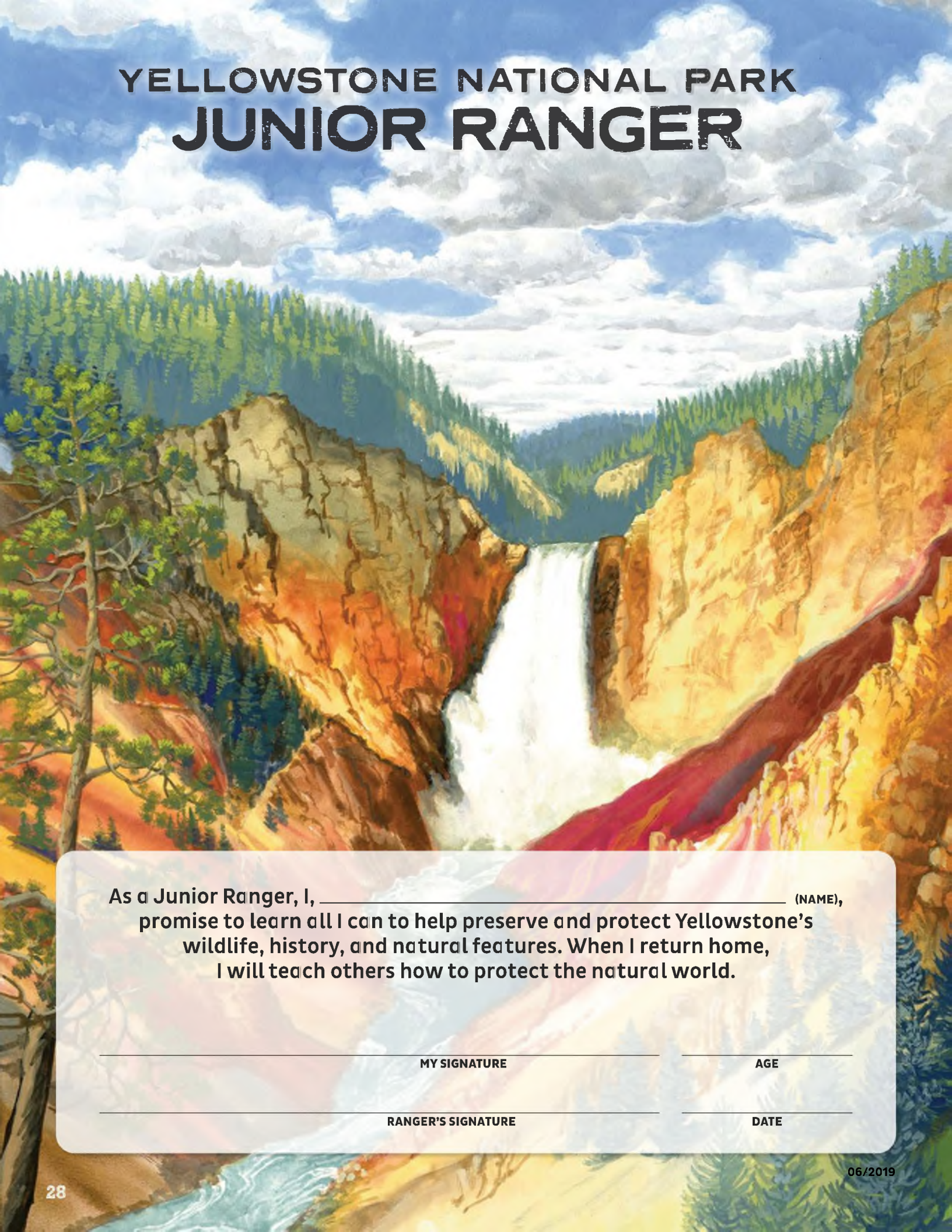
Which type of ranger would you like to be and why? _____

_____

What is the most important part of a ranger's job? _____

_____

Thanks for joining the Ranger team! Junior Rangers help protect the park by following rules. You leave flowers, rocks, and artifacts where you find them and you don't litter. You stay on trails and boardwalks to explore the park safely. You never feed animals and you always stay a safe distance from wildlife. When you share what you learn about the park with friends and family back home, you are helping protect America's special places for the next generation!



YELLOWSTONE NATIONAL PARK
JUNIOR RANGER

As a Junior Ranger, I, _____ (NAME), promise to learn all I can to help preserve and protect Yellowstone's wildlife, history, and natural features. When I return home, I will teach others how to protect the natural world.

_____ MY SIGNATURE

_____ AGE

_____ RANGER'S SIGNATURE

_____ DATE

06/2019