



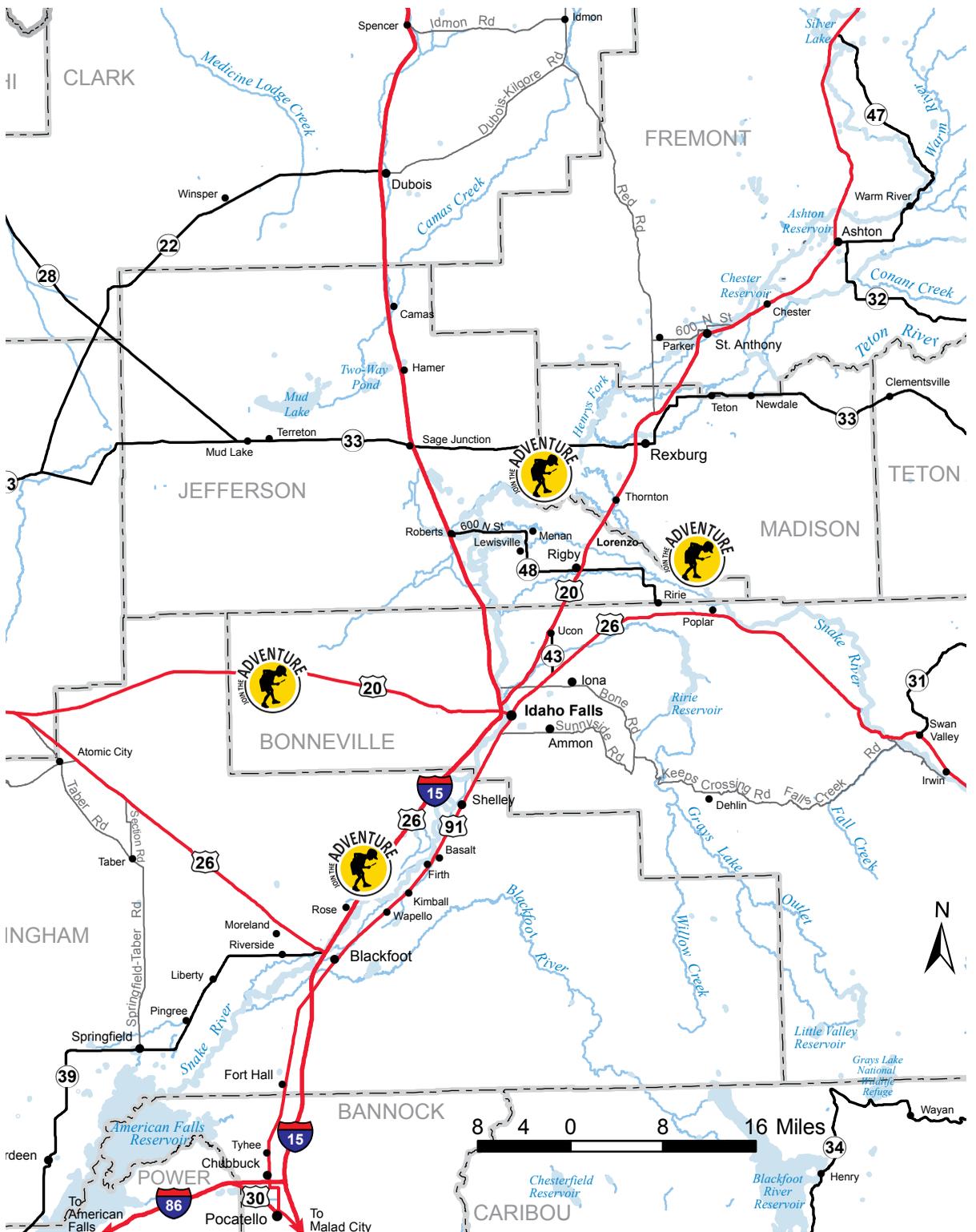
Junior Explorer

Trekking Volcanoes

in eastern Idaho

Yahoo!
I get to be
a Xenolith.







Junior Explorer

Trekking Volcanoes

in eastern Idaho



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Hello Junior Explorer

Get ready to have some fun! In this field guide you will trek around the rim of a volcano, hike on trails through lava fields, and hike along a creek warmed by the earth. You will learn about the animals, plants, rocks, and new words that describe them. Take some time on a Saturday afternoon at each spot or maybe on a school field trip to learn and fill out the field book.

So how do you become a Junior Explorer? This booklet contains six activities for each specified location, Menan Butte, Hells Half Acre and Cress Creek. The requirements to obtain your Junior Explorer badge vary depending on age. For those of you in fourth grade and above, you need to complete five of the six activities in each section. If you are in third grade or below, you only need to complete three of the six activities to claim your prize. Once you complete all three sections in your field guide, read and sign the pledge on the back page and mail it or bring it into the visitor center to receive your certificate and Junior Explorer badge.

That's not all! Upon completion of each section, you may also claim a prize. Just bring in your completed section to the Visitor Center and you can pick out a prize of your own! The Eastern Idaho Visitor Information Center is at 420 Memorial Drive in Idaho Falls, Idaho.

Nature is a great place to learn as long as you know how to be kind and safe. So you will learn a few outdoor tips along the way.

Be Kind to Nature

- If you see a wild animal, stay quiet, and watch it from a distance.
- If you see or have any trash, pack it out in your backpack.
- Use the restrooms in the parking area before you start your trek.



Explore the Outdoors Safely

Before setting off on your trek, take your water bottle with you. Your adventure may be hot and dry at certain times of the year and there is no water on site. Watch your footing. Rocky trails are common in this area. Look out for rattlesnakes.

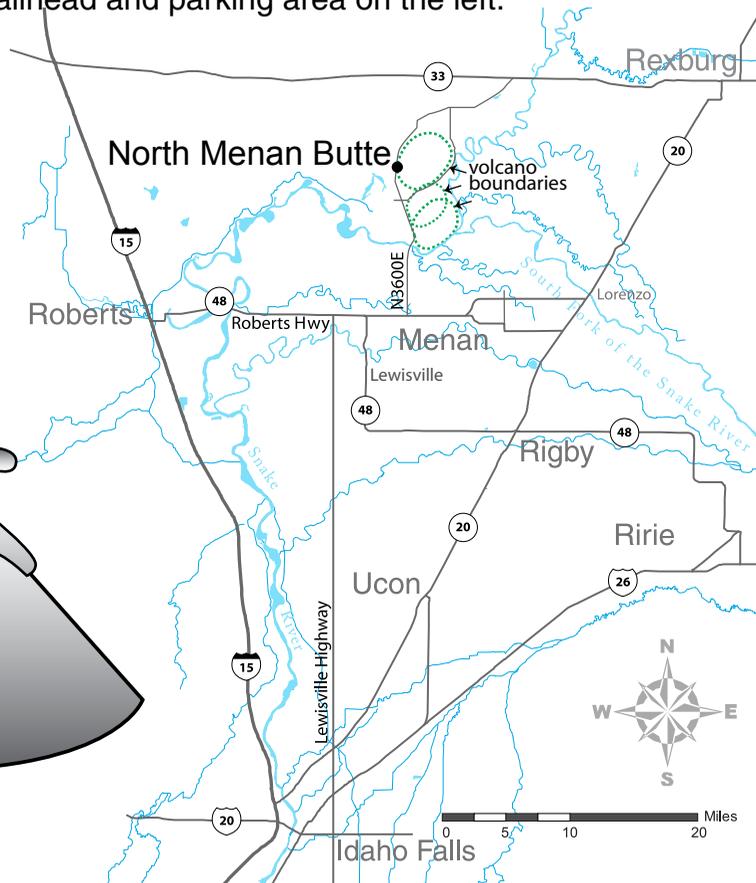
The First Volcano to Trek!

North Menan Butte

Directions

From Idaho Falls: Travel north on Highway 20. Turn left on Menan-Lorenzo Highway just before Highway 20 crosses the South Fork of the Snake River. Drive west on Menan-Lorenzo Highway for 5.9 miles, and then turn north on 3600 East. After 2.2 miles you will cross over the Snake River and the road becomes Twin Butte Road. Continue north on Twin Butte Road to trailhead.

From Rexburg: Take Hwy 33 west from Rexburg for 7 miles. Turn Left onto N 3600 E / Twin Butte Road. Take your first right on a paved road. Continue on the road for 2 miles and you will see the trailhead and parking area on the left.



The Volcano called North Menan Butte

Welcome to this volcano—one of the treasures of eastern Idaho. It formed about 10,000 years ago when hot magma in the earth hit cold water in the Snake River, causing a large explosion. Pieces of rock exploded out and molded together like clay when they fell to the ground and cooled off.

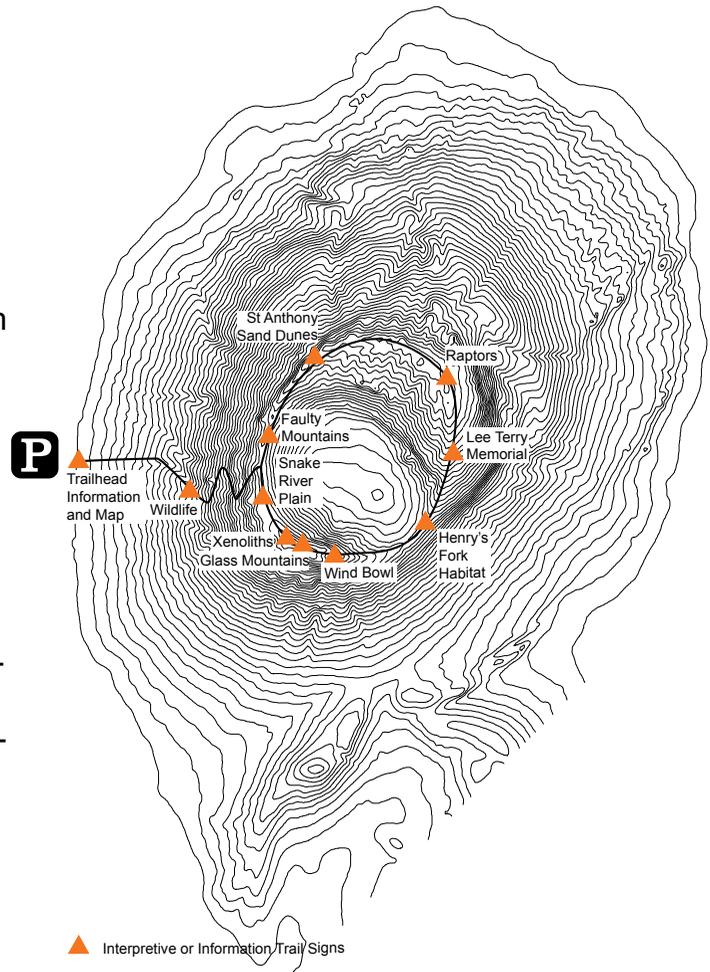
A trail takes you 800 feet up to the top of the volcano rim, where you can see over 50 miles on a clear day, and you can walk around the rim and check out the colorful interpretive signs.

Native Americans used this place as a winter camp, and rustlers from Wyoming hid their stolen cattle in the “rustler’s corral” on the south side of the volcano.

You probably won’t see any outlaws these days, but chances are good that you’ll see wildlife. North Menan Butte is home to mammals like mule deer, jackrabbits and coyotes, birds of prey such as eagles, hawks and falcons, and even rattlesnakes.

If you come in the spring or early summer, you’ll see lots of wildflowers, junipers and sagebrush that add a splash of green any time of year.

North Menan Butte is a wild place, so there are a few things to remember. Leave what you find so that others may share your sense of discovery. Vault toilets are available at the trailhead, but no water, so please bring it from home.



Map of Trail and Signs Around the Rim of the Volcano

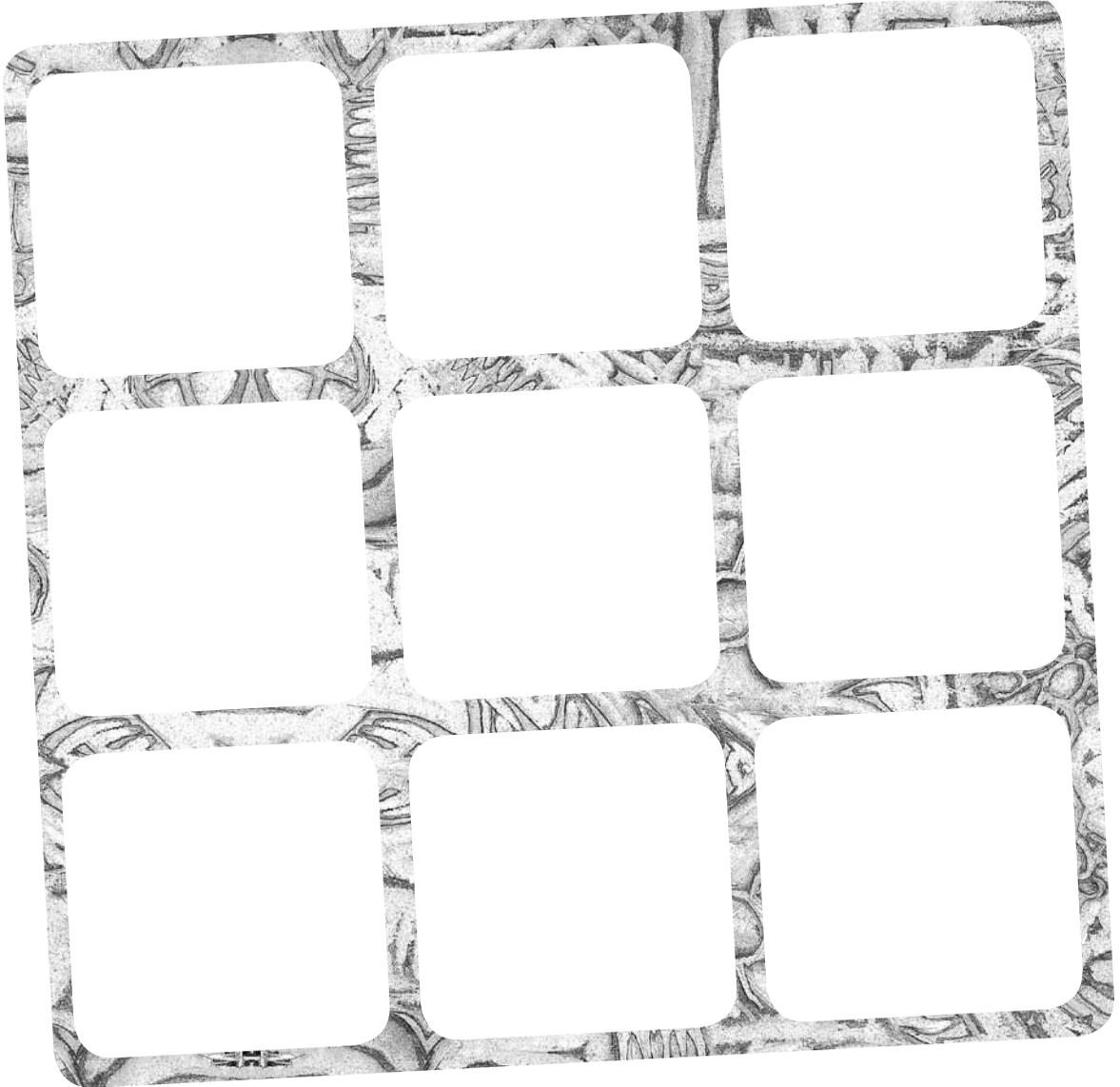
Picture This...

The magma from this volcano exploded right up through the Henry's Fork River. What do you think that looked like? Use these two pages to draw a picture using your imagination.



Bingo in the Wild!

This volcano is full of life. Before exploring the trail, fill in the squares with names or draw the plants and animals listed below. Cross them off the board if you see them on the trail. When you complete a row, say "Bingo!"



Rattlesnake
Bluebird
Ground Squirrel
Juniper Berry

Coyote
Lizard
Hawk
Eagle

Sagebrush
Wildflower
Jackrabbit
Orange Rock Lichen

Connect the Dots!

Clue: these animals are often seen flying above the volcano in search of dinner, and they nest in the cliffs. Connect the dots to find out who.

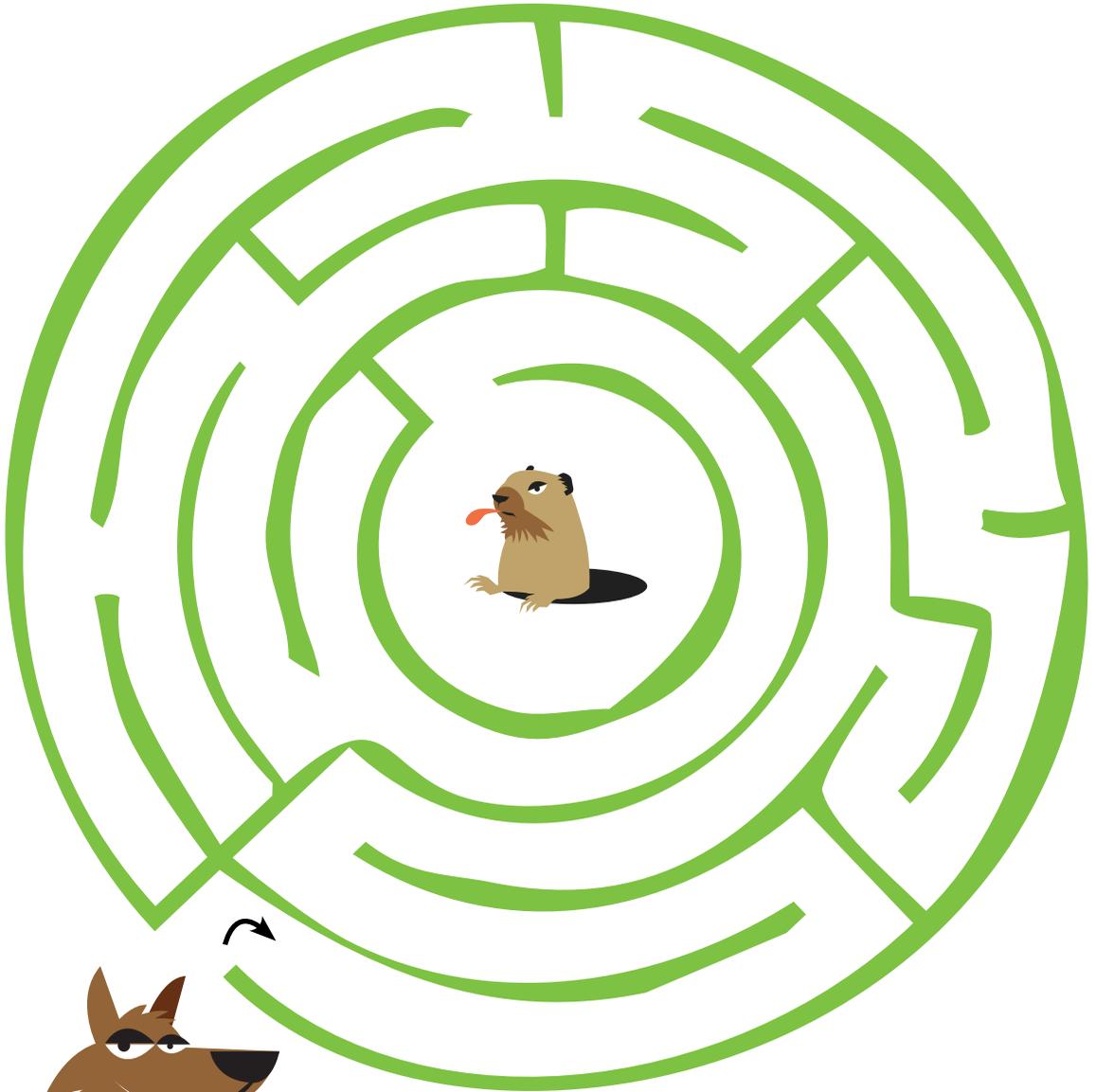
Unscramble the letters below to find out the name of the animal you just drew.

degnlo
lgae



A-maze-ing Animals

During North Menan Butte's hot and dry summers, many animals rest during the day to conserve energy and move around at night. They rely on things like having a super sharp sense of hearing and smell to find food.



Using your pencil, follow Cody Coyote as he looks for something to eat. Do you think he will catch Gordy Ground Squirrel before he jumps back into his burrow?

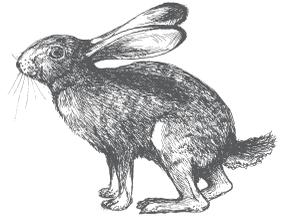
What's in a Word?

Find these words for features in the North Menan Butte area. They are described on signs along the trail. Look at the letters across, down, diagonally, and backward.

basalt
erosion
juniper
rattlesnake

wildlife
habitat
raptor
xenolith

volcano
coyote
dunes
cottonwood



a d r j k o p s f g l k o q w u
 m u p a f q k r m o t u o c v r
 a n m o t f o k n b f l k e u a
 c e f d i t t a e a b a s a l t
 o s u i p f c p o e d c h j u t
 t e z a l l p e e n b e a i h l
 t c r i o v e r t c r i b t e e
 o g c v j o n u e r o s i o n s
 n j o n a q j l n j e l a q j n
 w i y a v o j d w i o a v o n a
 o u o b j w u a o n d b j o u k
 o s t p h f n n e s a p i f x e
 d c e c a z i x d c o s a z i x
 l a a a s i p x l a o a s i p x
 d o k t f m e v w i l d l i f e
 c l o i u c r h e t a t i b a h

Strange Rock (xeno-lith) on the trail.

A **Xenolith** is a rock fragment stuck in a different piece of rock. Read the xenolith sign on the trail. It is located at the south rim of the volcano. "See the map on page 3" then look around this area for two types of xenoliths. How are they different from one another and the rock into which they are stuck?

Describe the First Kind of Xenolith You See

Shape (is it rounded or pointed)?

Color

Texture (describe the feel - is it smooth, sharp, or rough)?



Describe the Second Kind of Xenolith You See

Shape (is it rounded or pointed)?

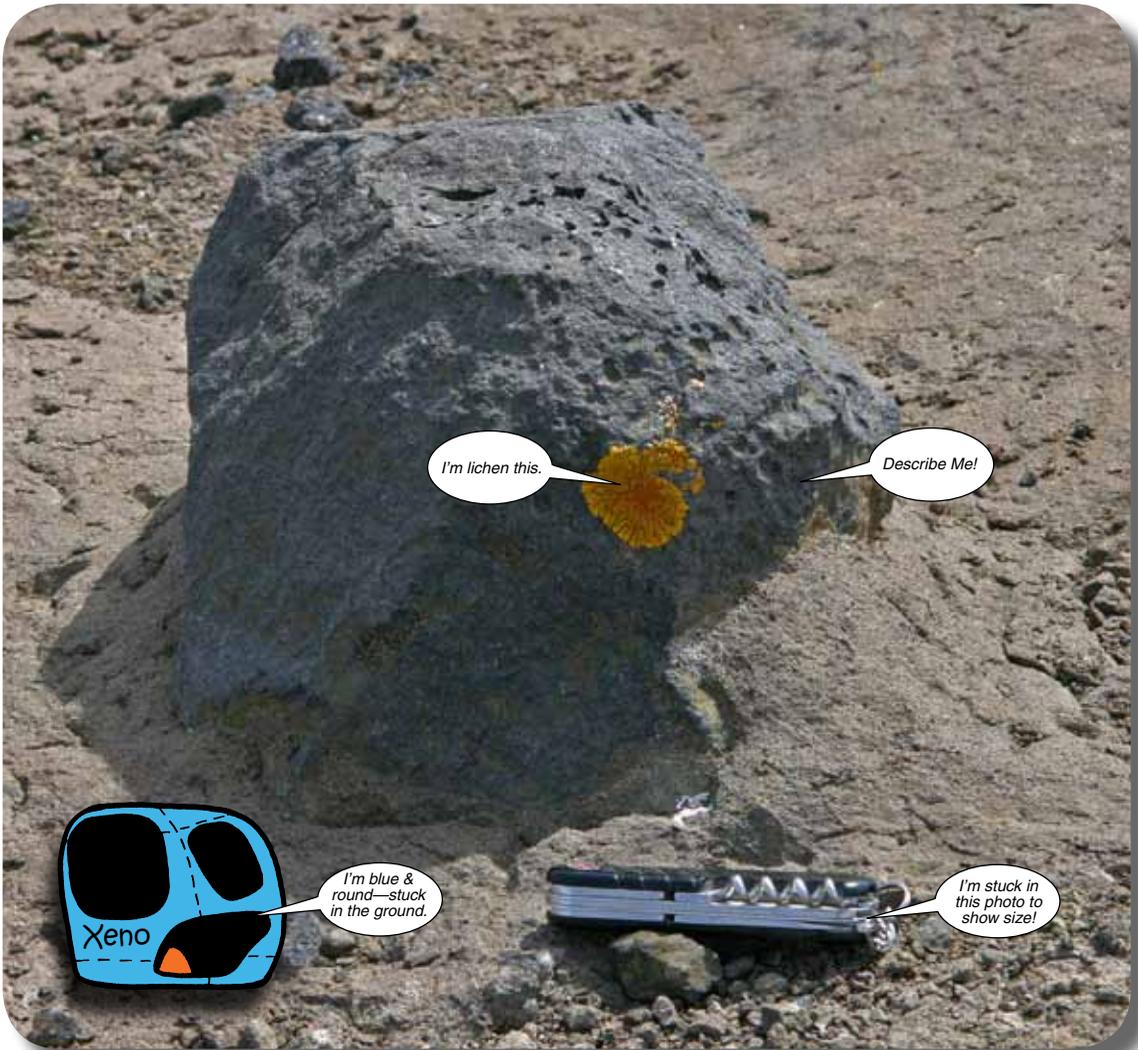
Color

Texture (describe the feel - is it smooth, sharp, or rough)?

Describe the Rock That Holds All Xenoliths Here

Color

Texture (describe the feel - is it smooth, sharp, or rough)?



What do you think caused these differences in color, shape and texture?

Personal Reflections

Share some of your thoughts about North Menan Butte with us! What do you hear, see, touch, and smell? How does this place make you feel? Did you see any other volcanoes nearby when you were on top of this one?

North Menan Butte is a beautiful place unlike any other in the country, but it is also easily damaged. When walking up the path to the top of the volcano you can see scars left from people that damaged it before you were even born.

What are some things you can do to protect the volcano and other special places like it?

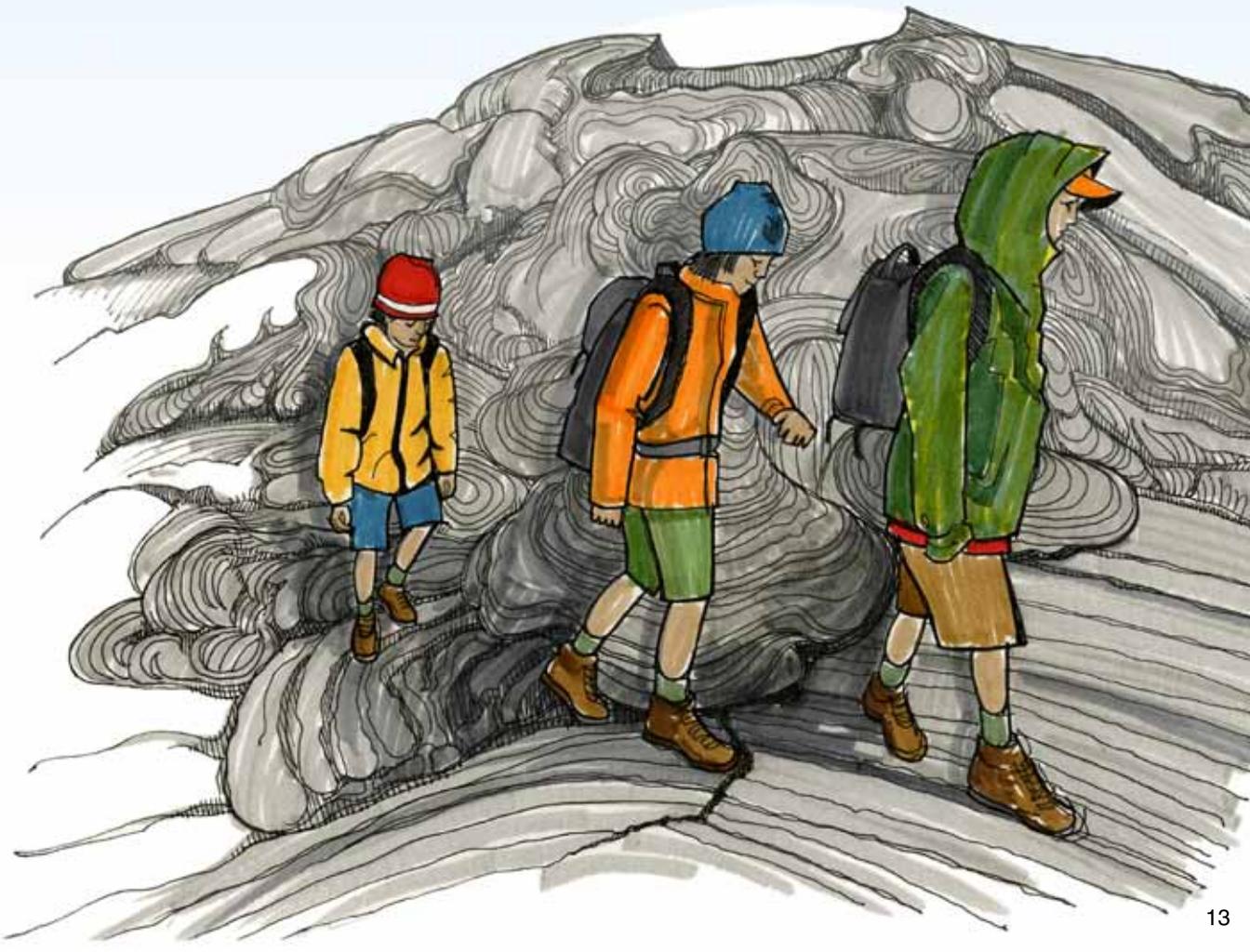
Time to Claim your prize!

When you have finished this section on North Menan Butte, have your parent sign here.

BLM Official checks here prize claimed?

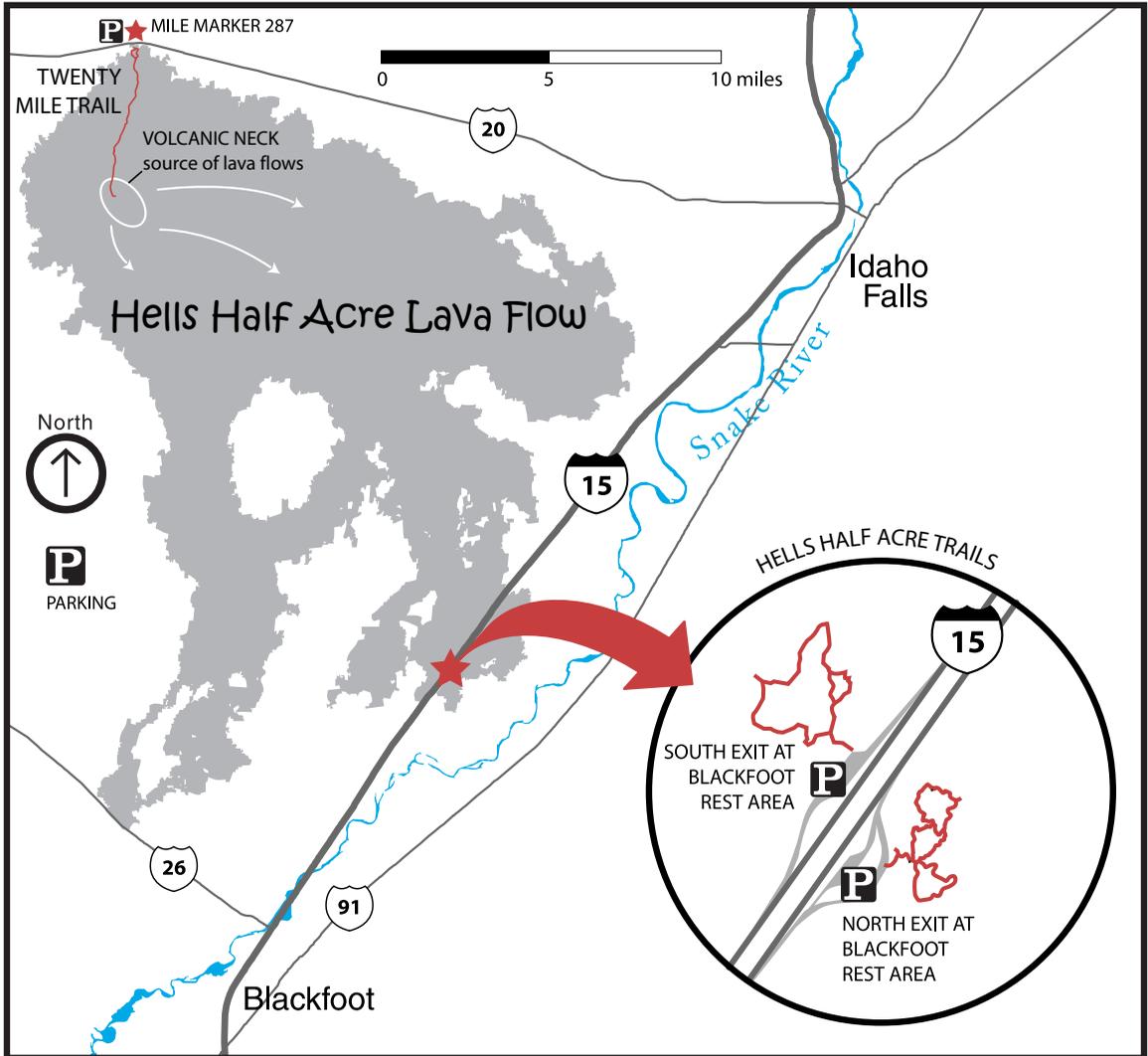
A Second Volcano to Trek!

The Lava Trails System at Hells Half Acre



Hells Half Acre and the Lava Trails

Welcome to the Hells Half Acre volcano and its lava flows—another one of eastern Idaho’s geologic treasures. Three trails head across the lava flows—one primitive and two developed with interpretive signs. Even though this area looks uninhabited, it is growing and alive with wildlife and vegetation.



This lava flow (gray on the map) is one of hundreds of flows across Idaho’s Snake River Plain. The Snake River has been pushed south from its original location by the Hell’s Half Acre lava flow.

Directions to the Hells Half Acre Lava Trails System

Guess What? Junior Explorers can complete the activities for the Lava Trails by hiking any one of the three trails. We encourage you to explore each trail to discover their unique characteristics.

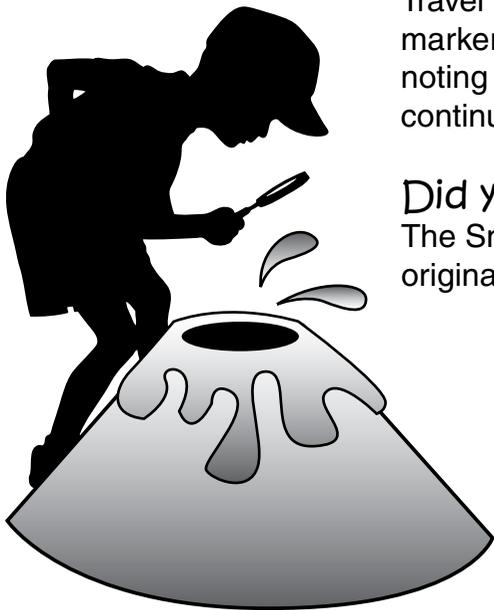
Hell's Half Acre Trails (off of interstate I-15)

There are two developed lava trails with interpretive signs discussing geology and biology of the Hell Half Acre lava flow. This is a popular destination for environmental education groups.

Access to these trails is located about 20 miles southwest of Idaho Falls and 5 miles east of Blackfoot. If you are coming from the south, the trail exits are 33 miles north of Pocatello. While traveling northbound or southbound on Interstate 15, take the exit labeled "Blackfoot Rest Area".

Twenty Mile Trail

Here you will find rocky, unpaved trails offering scenic solitude. There is a short 0.5 mile loop trail and a 4.5-mile (each way) trail to the main vent of the Hell's Half Acre lava flow. Take water. Trail routes are marked with poles across the lava. A picnic area, fire ring and portable toilet are located at the trail. Be prepared and wear sturdy hiking boots because the lava rock is sharp and jagged.



Travel west from Idaho Falls on Highway 20 to mile marker 287. Continue 0.3 miles until reaching the sign noting "Lava Trail." Turn south onto the gravel road and continue one-quarter mile to the trailhead.

Did you Know?

The Snake River has been pushed south from its original location by the Hell's Half Acre lava flow.

Hike and Carry

What are some things you might want to bring or wear when you are hiking on the Lava Trail System at Hells Half Acre?



Circle the objects you would bring or wear on your lava trek and explain to an adult why you circled the items.

Home Sweet Cave for Townsend

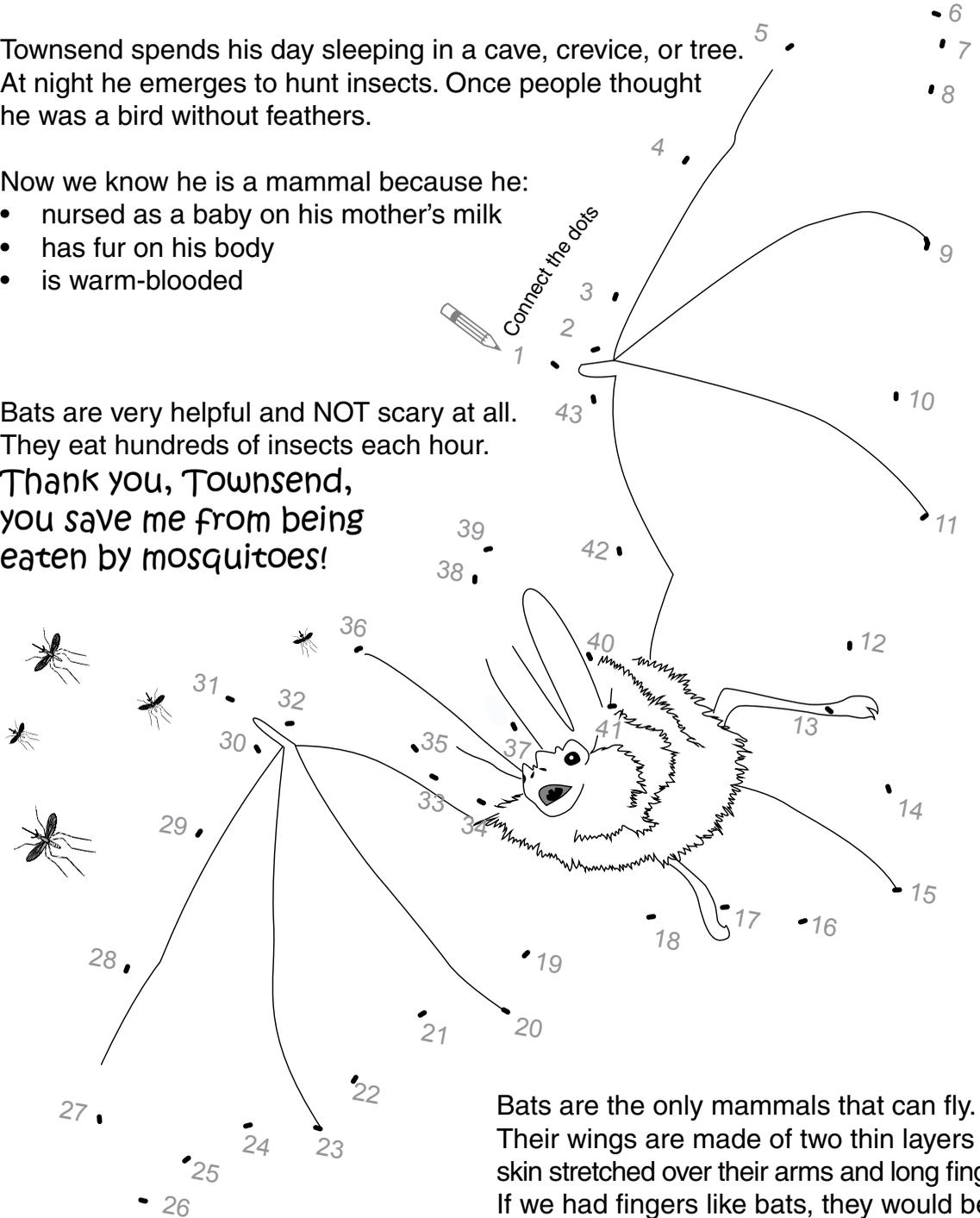
Townsend spends his day sleeping in a cave, crevice, or tree. At night he emerges to hunt insects. Once people thought he was a bird without feathers.

Now we know he is a mammal because he:

- nursed as a baby on his mother's milk
- has fur on his body
- is warm-blooded

Bats are very helpful and NOT scary at all. They eat hundreds of insects each hour.

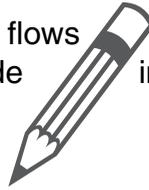
Thank you, Townsend,
you save me from being
eaten by mosquitoes!



Bats are the only mammals that can fly. Their wings are made of two thin layers of skin stretched over their arms and long fingers. If we had fingers like bats, they would be longer than our legs!

Secret Code for Lava Flows

Use the SECRET CODE to decipher how lava flows form and we can protect them. Write the word on the line above the code in each sentence.



1 = e

.....
letters go here on this line

A **(17-1-13-1-11-12-19-13-1)** struck the earth's surface 17 million years ago in southeast Oregon creating a hotspot.

2 = s

3 = l

4 = n

.....
letters go here on this line

A **(14-11-13-2-18-11-13)** is a fracture in the earth's crust that releases heat continuously and allows magma and hot gases to escape to the earth's surface

5 = a

6 = w

7 = g

.....
letters go here on this line

8 = k

Earth's rocky outer crust is not a **(2-11-3-19-20)** shell; it is broken up into huge, thick plates that drift atop the soft underlying mantle.

9 = y

10 = c

11 = o

.....
letters go here on this line

12 = r

Plates are made of **(12-11-10-8)** and

13 = t

.....
letters go here on this line

14 = h

(20-12-19-16-13) all over the globe. They move up and down, sideways and also change in size.

15 = u

16 = f

.....
letters go here on this line

17 = m

The **(10-11-4-13-19-4-1-4-13)** is moving across the hotspot, leaving volcanic activity as it moves.

18 = p

19 = i

20 = d

Currently the hotspot is located under



.....
letters go here on this line

(9-1-3-3-11-6-2-13-11-4-1) National Park.

.....
letters go here on this line

Rift is a large **(10-12-5-10-8)** in the Earth's crust.

.....
letters go here on this line

Rift zones occur where the Earth's **(10-12-15-2-13)** is being pulled in opposite directions, creating the large cracks or rifts.

.....
letters go here on this line

A portion of **(14-1-3-3-2-14-5-3-16-5-10-12-1)** is designated as both a Wilderness Study Area and National Natural Landmark.

The National Park Service manages portions of the lava flow and

.....
letters go here on this line

.....
letters go here on this line

preserves it at **(10-12-5-13-1-12-2)** of the **(17-11-11-4)**
National Monument and Preserve



A Few of Your Favorite Things

Draw your favorite feature, plant, animal, texture, or smell you experience on your trek.

Yellow currant
 Belly bush
 Marmot
 juniper
 rabbit
 mouse
 sage
 brush
 horned
 larkrattle
 Snake
 peat
 cactus
 Pahrano
 Arrowleaf
 jay
 rock
 wren
 wren



Word Color!
 Birds in Blue.
 Rocks in Gray, Reptiles in Red,
 Mammals in Brown, and Plants in Green.

Go "Lava" Walking

Use your detective skills to look for these sights on the trail. Leave them here in their home and do not bring them back to your home.

Prairie Falcon



Lava Bomb



Lizard



draw what YOU saw



Sagebrush



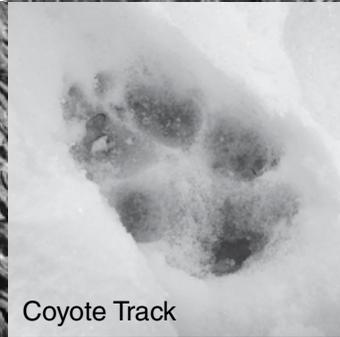
Monkeyflower



Pahoehoe



Coyote Track



Leave only footprints, take only pictures and memories.

I did my best to protect this special place on planet Earth by not picking flowers, collecting rocks, or feeding animals. I also put litter in its proper place.

.....
you sign here



Time to Claim your prize!

When you have finished the Lava Trails section, have your parent sign below.

.....
BLM Official checks here **prize claimed?**

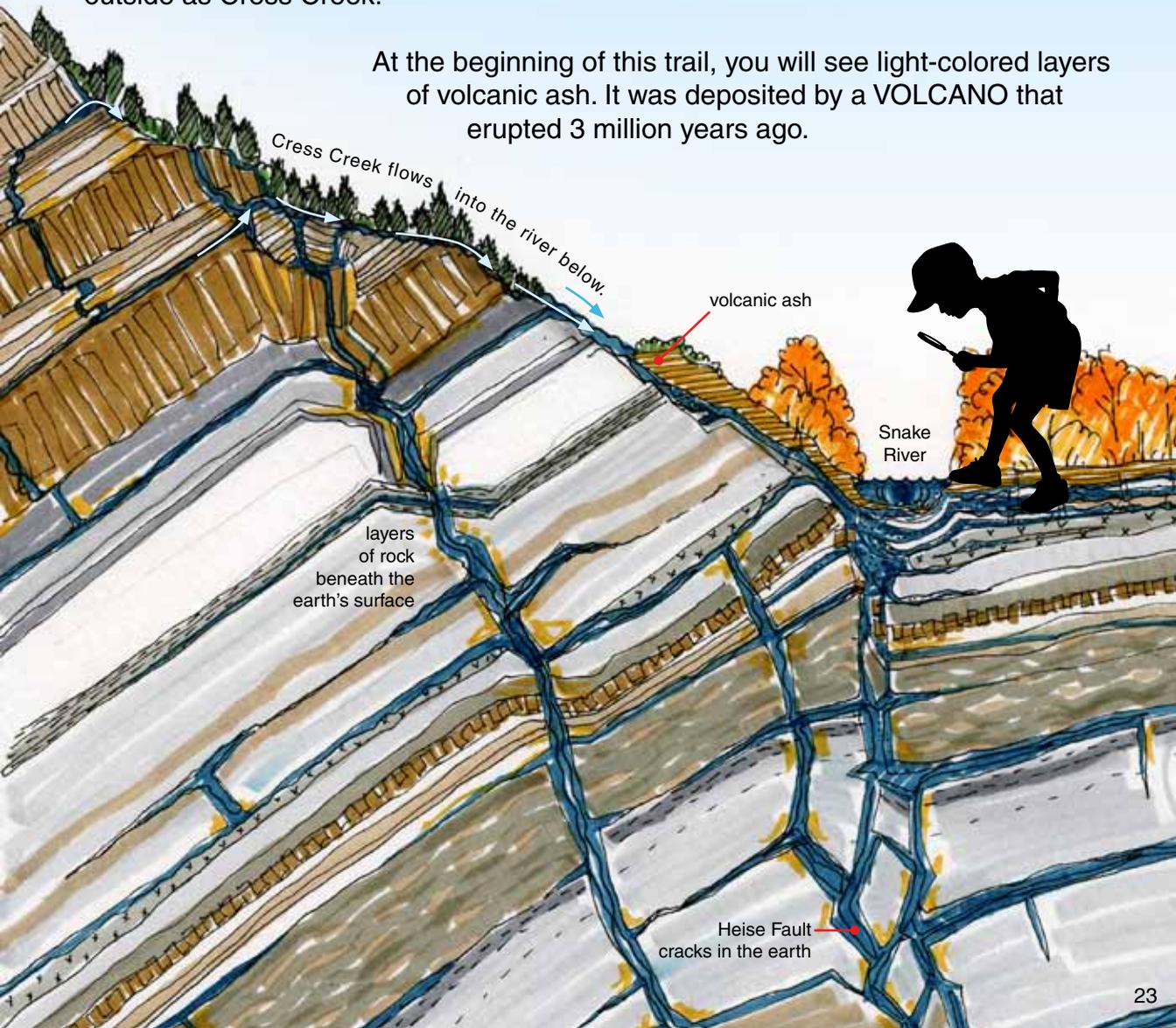


The Third Place to Trek!

Nature Trail at Cress Creek

The earth is sliced like a piece of cake in this picture to help us visualize why Cress Creek is warm. Water circulates and heats up deep inside the earth before flowing outside as Cress Creek!

At the beginning of this trail, you will see light-colored layers of volcanic ash. It was deposited by a VOLCANO that erupted 3 million years ago.



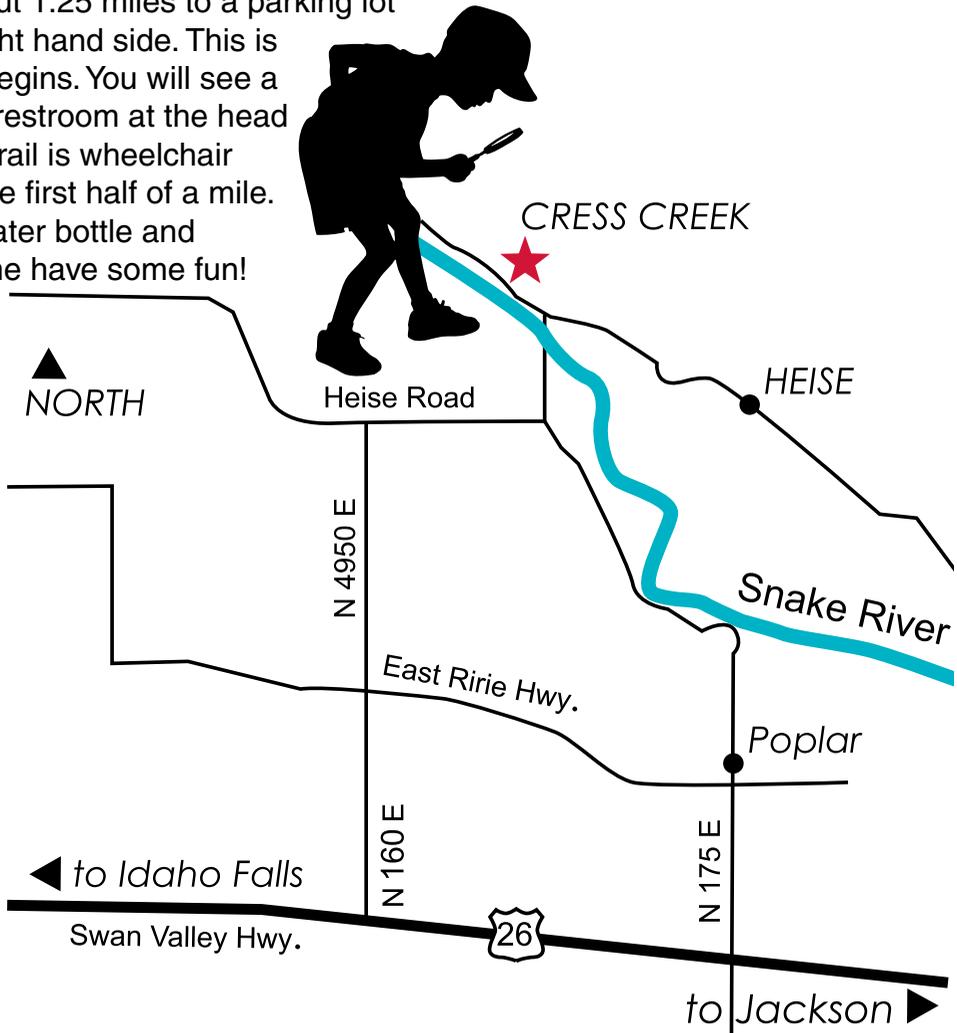
Trekking Cress Creek!

Directions

The Cress Creek Nature Trail lies roughly 20 miles northeast of Idaho Falls above the South Fork of the Snake River.

From Idaho Falls, take the north Yellowstone Highway through town. Follow Highway 26 northeast towards Ririe and Jackson. About three miles past the Ririe exit, turn left at the signs for Heise and Kelly Canyon (160 E. Street), continue to follow the signs to Heise.

Just after the road crosses the South Fork of the Snake River, turn left onto a gravel road, Travel about 1.25 miles to a parking lot on the road's right hand side. This is where the trail begins. You will see a sign and a nice restroom at the head of the trail. The trail is wheelchair accessible for the first half of a mile. So bring your water bottle and a lunch and come have some fun!



What's So Great About This Place?



We invite you to take a journey through sagebrush, grass, juniper covered slopes, and along a lush creek. You will see sweeping views of the Snake River and the land beyond, distant mountain ranges and rocks from volcanoes. The trail is a journey through changing times and environments. On your trek, you will become familiar with life in the Cress Creek area, life as it is now and as it was once long ago.

Although you may not notice right off, Cress Creek has been defined by volcanic activity. Look up on the hill side and you'll see layers of the volcanic ash which was deposited by a volcano 3 million years ago. Geothermal properties abound here. Cress Creek itself is warmed by the heat of the earth and Heise Hot Springs, located just down the road, is famous for its geothermal waters.

The colorful signs along the way are pages from Cress Creek's book. You are invited to read the story as you take your journey. If you hike quietly, you may see some mule deer, rabbits, small lizards and even an eagle.



Treasure Hunt!

What does Cress Creek look like to an eagle?
As you trek from the parking lot, pay attention to the sign names  along the way and where they are on this “aerial” photo. Follow the trail to find the hidden treasure on the ground.

Here’s a clue? It is under something green with blue berries near the picnic table.



Migration to Irrigation

Water They Here For?

Cress Creek

trail

Overlook



TREASURE IS HERE

Build Your Own Volcano!

Now that you have trekked across numerous volcanoes located in southeast Idaho, you can build your own! The baking soda and vinegar volcano is a simple science experiment that you can do in your kitchen that mimics a real volcano. Have your parents help! Expect the project to take about 30 minutes to complete.

What You Need:

6 cups flour
2 cups salt
4 tablespoons cooking oil
warm water
plastic soda bottle (empty)
dishwashing detergent
food coloring
vinegar
baking dish or other pan
2 T baking soda



Here's How:

1. First make the 'cone' of the baking soda volcano. Mix 6 cups flour, 2 cups salt, 4 tablespoons cooking oil, and 2 cups of water. The resulting mixture should be smooth and firm (more water may be added if needed).
2. Stand the soda bottle in the baking pan and mold the dough around it into a volcano shape. Don't cover the hole or drop dough into it.
3. Fill the bottle most of the way full with warm water and a bit of red food color (can be done before sculpting if you don't take so long that the water gets cold).
4. Add 6 drops of dish soap to the bottle contents. The detergent helps trap the bubbles produced by the reaction so you get better lava.
5. Add 2 tablespoons baking soda to the liquid.
6. Slowly pour vinegar into the bottle. Watch out - eruption time!

Tips:

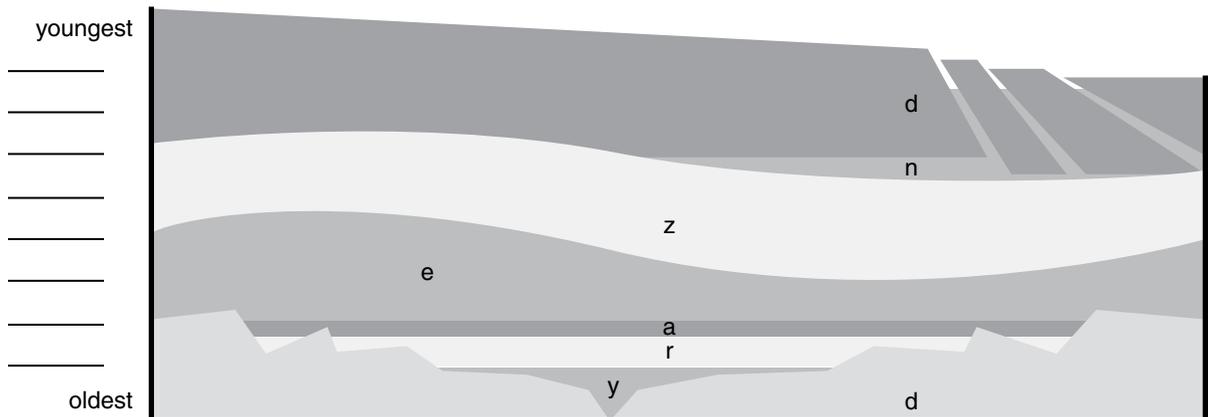
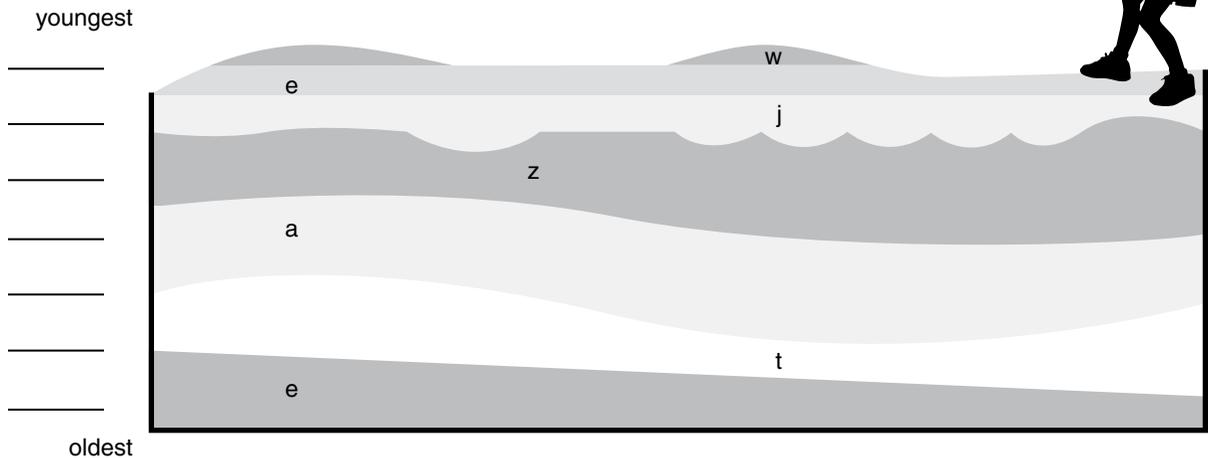
- The cool red lava is the reaction between the baking soda and vinegar.
- When this happens, carbon dioxide gas is produced...present in real volcanoes.
- As the carbon dioxide gas is produced, pressure builds up inside the plastic bottle, until the gas bubbles (thanks to the detergent) out of the 'volcano'.
- Adding a bit of food coloring will result in red-orange lava! Orange seems to work the best. Add some red, yellow, and even purple, for a bright display.

Lay it on Me: Geological Layers

Geologists discovered that as sediment built up over periods of time, flat layers of rock formed deep in the earth. Geologists can “read” these layers and learn about the age of the rock formation. Sediment layers are built up from the bottom, so the lowest layers are usually the oldest and highest layers of rock and soil are usually the youngest. The study of rock layers stratigraphy.

When environmental events such as weathering or erosion occur, rock layers can become worn away to form caves or canyons. When volcanic erupt or the earth quakes, rock layers can pushed up at an angle and broken. Younger layers of rock may deposit into one or more layers of older, worn down rock layers.

These two diagrams demonstrate the oldest and youngest rocks. Study the diagrams and try to order the layers from oldest to youngest.





Animal Tracks

Although you may not see all the animals that live here along the Cress Creek trail, you may find signs of them by their tracks and droppings. Unscramble the words to discover who calls Cress Creek and the South Fork of the Snake River their home.

XFO =



KNMUCHPI =



DILRZA =



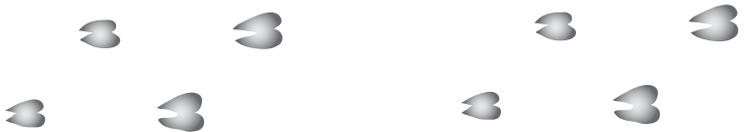
RNEHO =



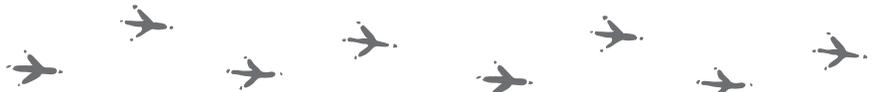
YOOTEC =



RDEE =



APMEGI =



SOEOM =



Questions to Think About

1. Put your finger in Cress Creek. How does the water feel? Circle an answer.

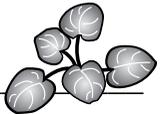
Cold

Warm

2. Sit quietly next to the stream for a few minutes. Do you see any animals or insects? Write down those that you see.

3. Do you think this might be a good spot for animals to come and drink when you are not there? What animals might get water here?

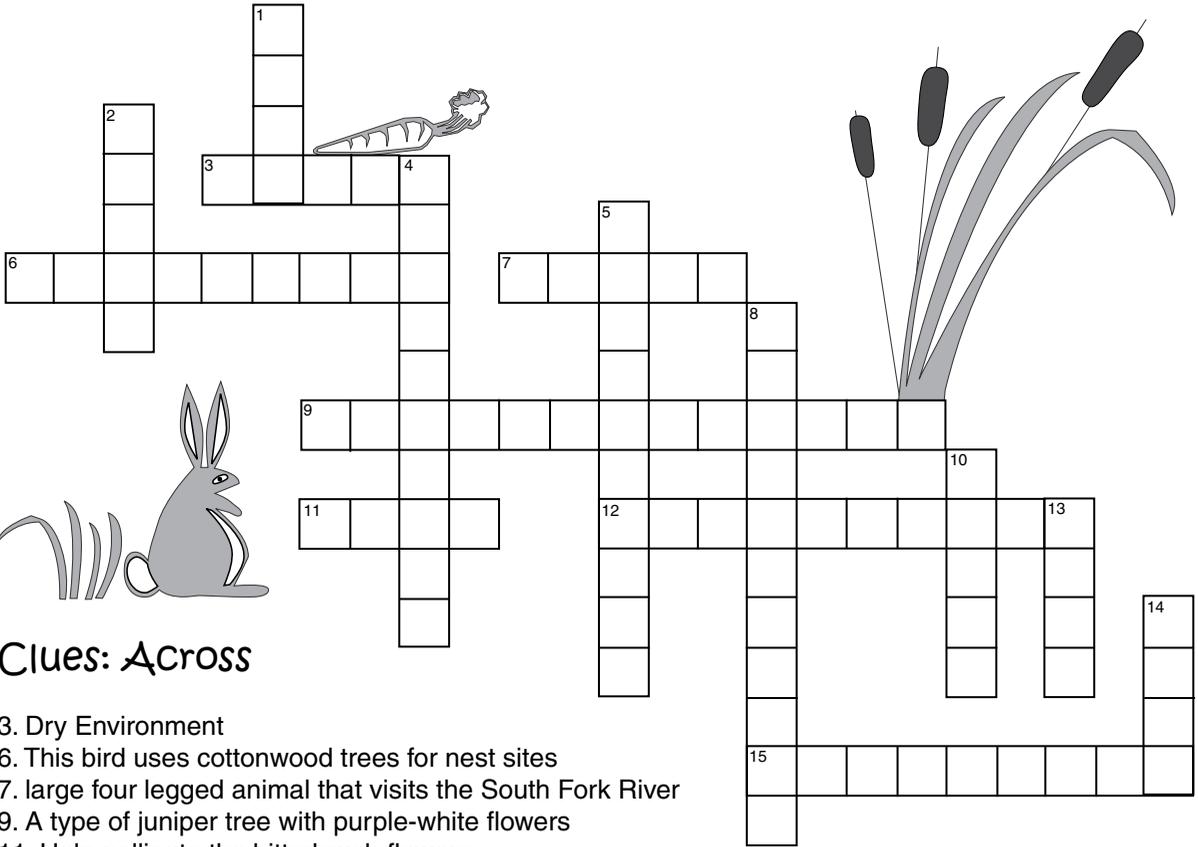
4. What plant is Cress Creek named for?



5. Look at the color in the area around the creek. Are the plants more green near the creek than on the hillside away from the creek?

6. Do you think the creek area has more kinds of plants and animals than the areas far away the creek?

CRESS CREEK Crossword Puzzle—answers are on the trail signs.



Clues: Across

3. Dry Environment
6. This bird uses cottonwood trees for nest sites
7. large four legged animal that visits the South Fork River
9. A type of juniper tree with purple-white flowers
11. Help pollinate the bitterbrush flowers
12. What cress creek is named for
15. A grayish/green brush that smells good and provides protective cover for rabbits and sage-grouse

Clues: Down



1. Burns orange and hot
2. Crack in the earth
4. Name of the trail you are on
5. Dominate tree found along the south fork of the Snake River
8. A sour brush that big game animals like to eat
10. Wet environment
13. Another name for animal droppings
14. A type of juniper tree that doesn't need much water

Answers: Across = 3. Bitterbrush; 6. Bald Eagle; 7. Moose; 9. Cottonwood; 11. Bees; 12. Watercress; 15. Sagebrush
 Answers: Down = 1. Fire; 2. Fault; 4. Cress Creek; 5. Cottonwood; 8. Cottonwood; 10. Mesic; 13. Scat; 14. Utah

Have you made it to the Cress Creek Overlook?

Down below you can view the meandering Snake River and beautiful cottonwood trees. Take a moment and sketch what you see below!

Time to Claim your prize!

When you have finished this section on Cress Creek, have your parent sign here.

.....
BLM Official initials here

prize Claimed?



Bonus Activity - Animal Costumes for Char

Chars are cartoon CHAR-actors. Cut them and all of their animal costumes out of these pages with scissors. What would you put on Char if it wanted to be a moose? bat? a blue bird? a fox? or a sage-grouse? What colors would you make those animals? Maybe you can come up with a new animal.

Take your best CHAR in its costume to one of the three treks in this book.

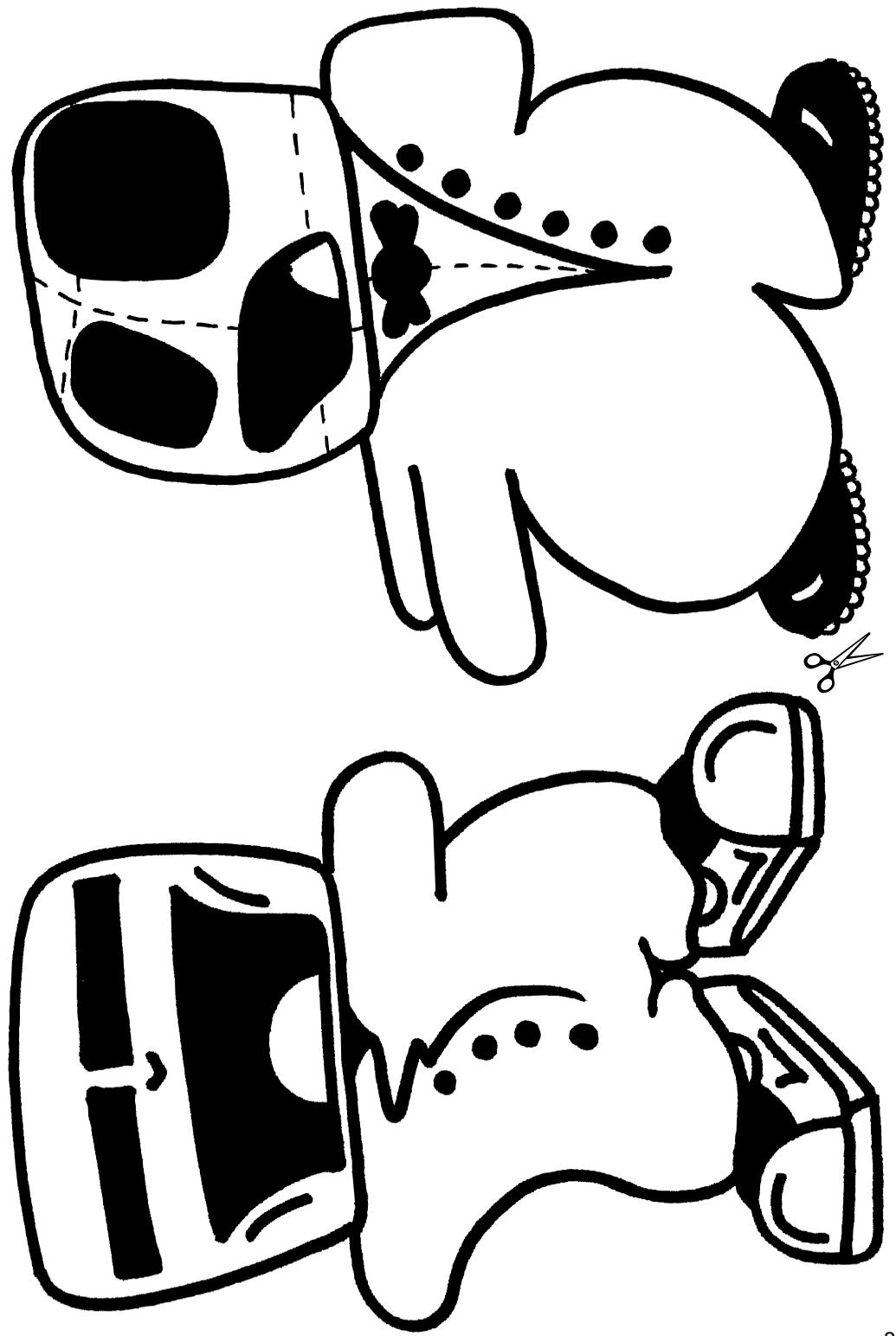
Place it on a rock, in a tree, or in your hand.

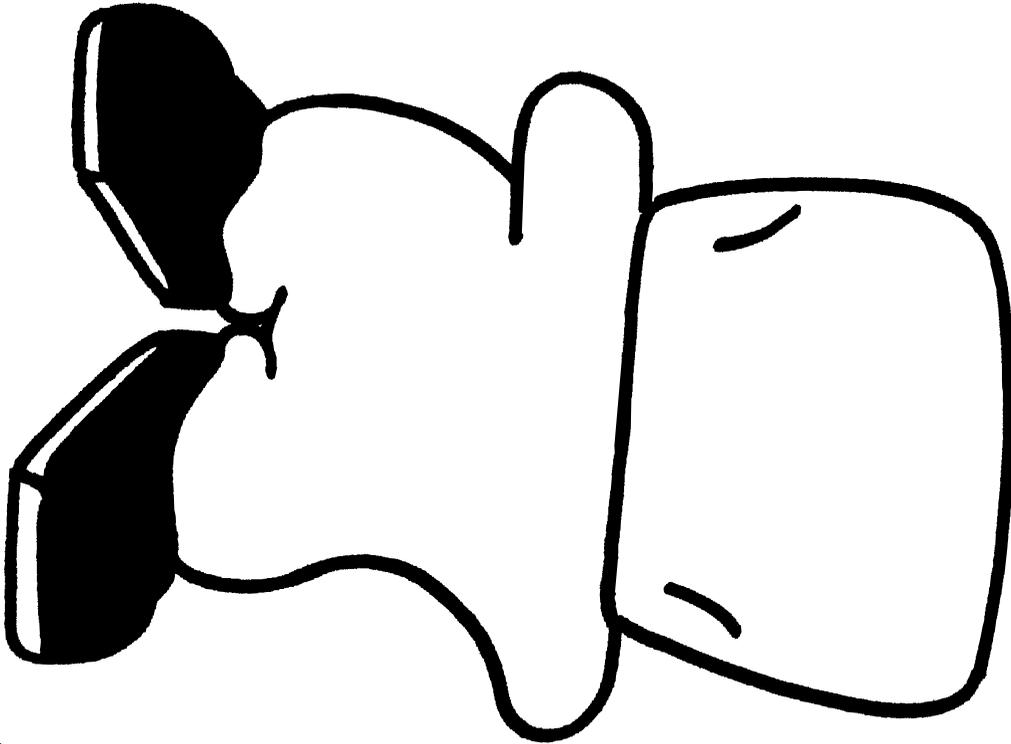
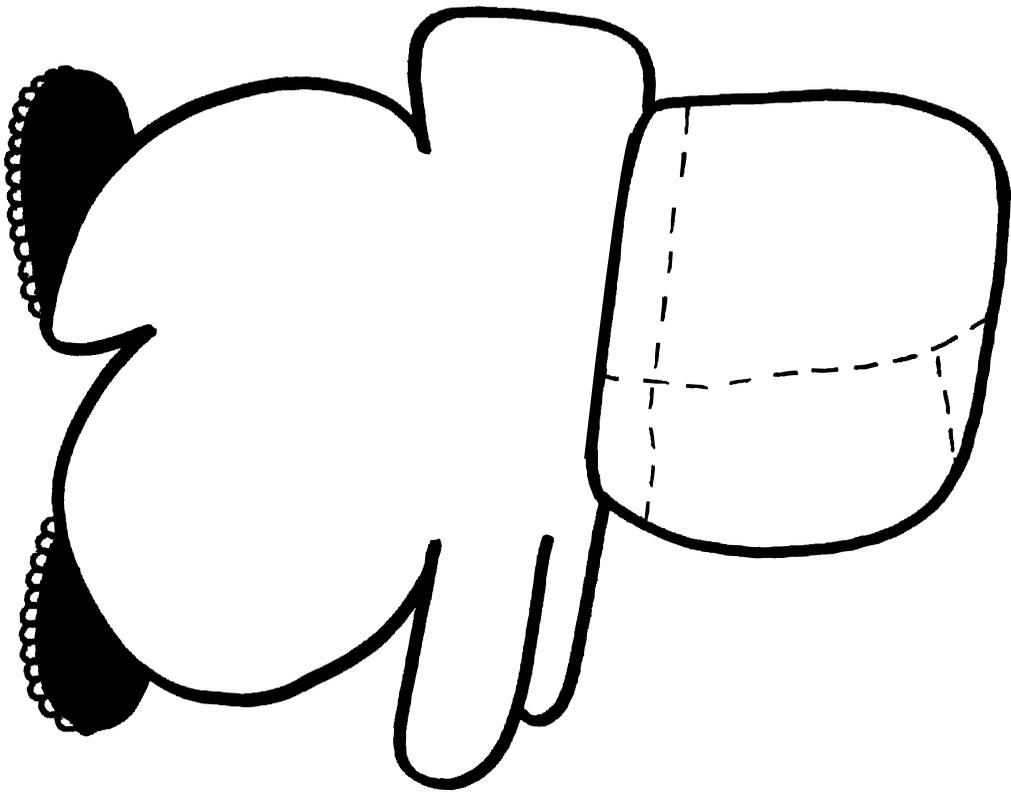
Take a photo of yourself with your CHAR to share with your classmates and family.



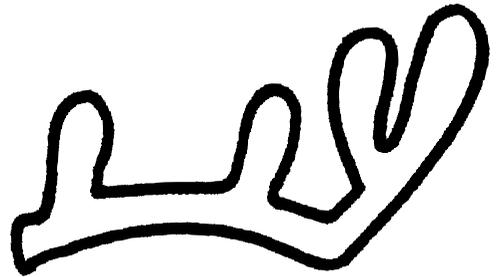
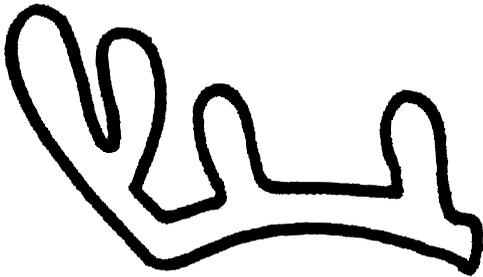
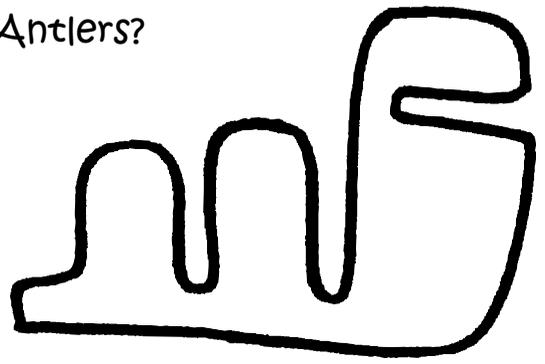
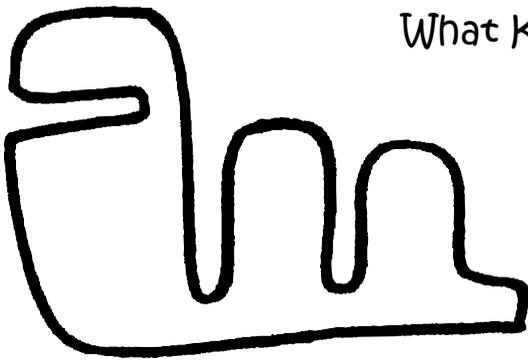
Char dresses up as a bald eagle.

Cut Out, Dress, and Color Your CHARACTORS!



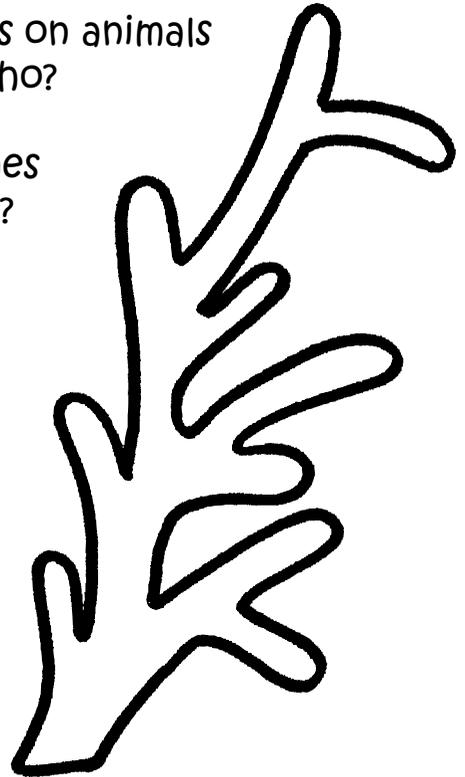
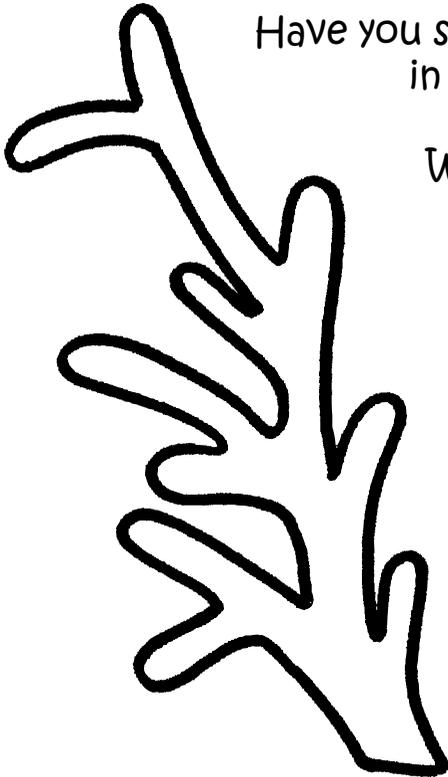


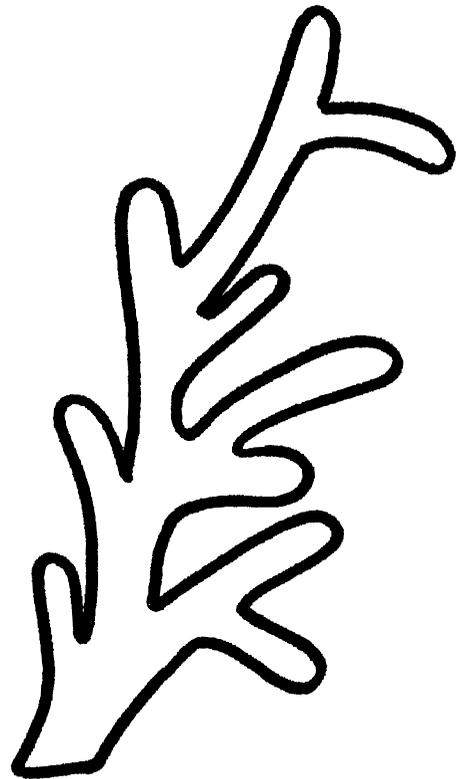
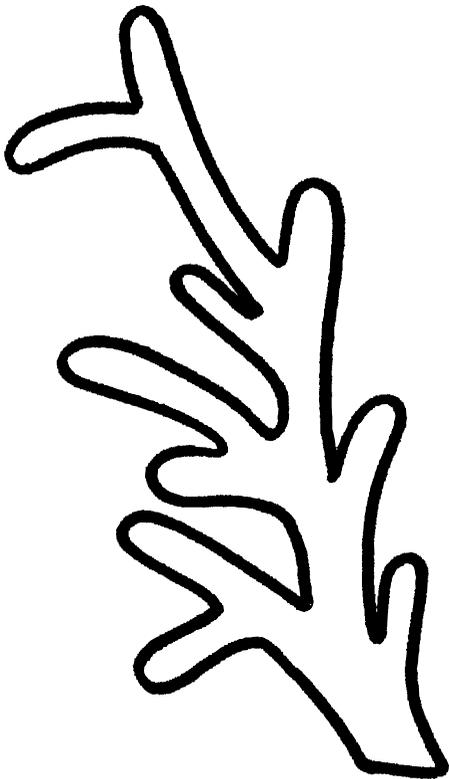
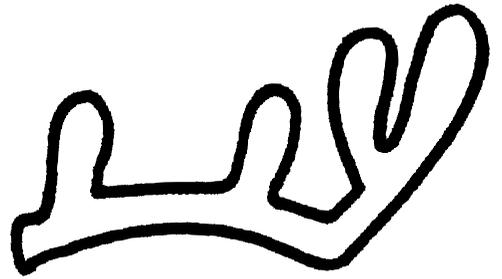
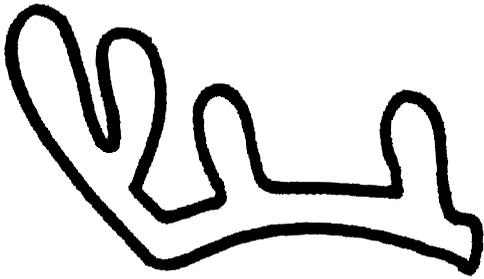
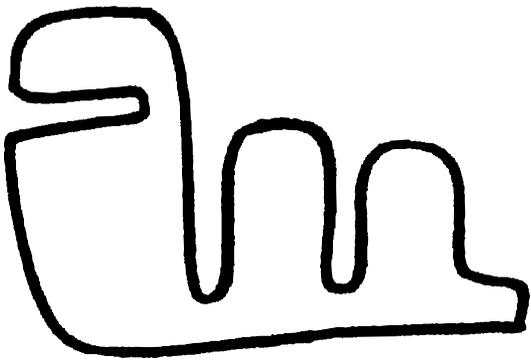
What Kind of Antlers?



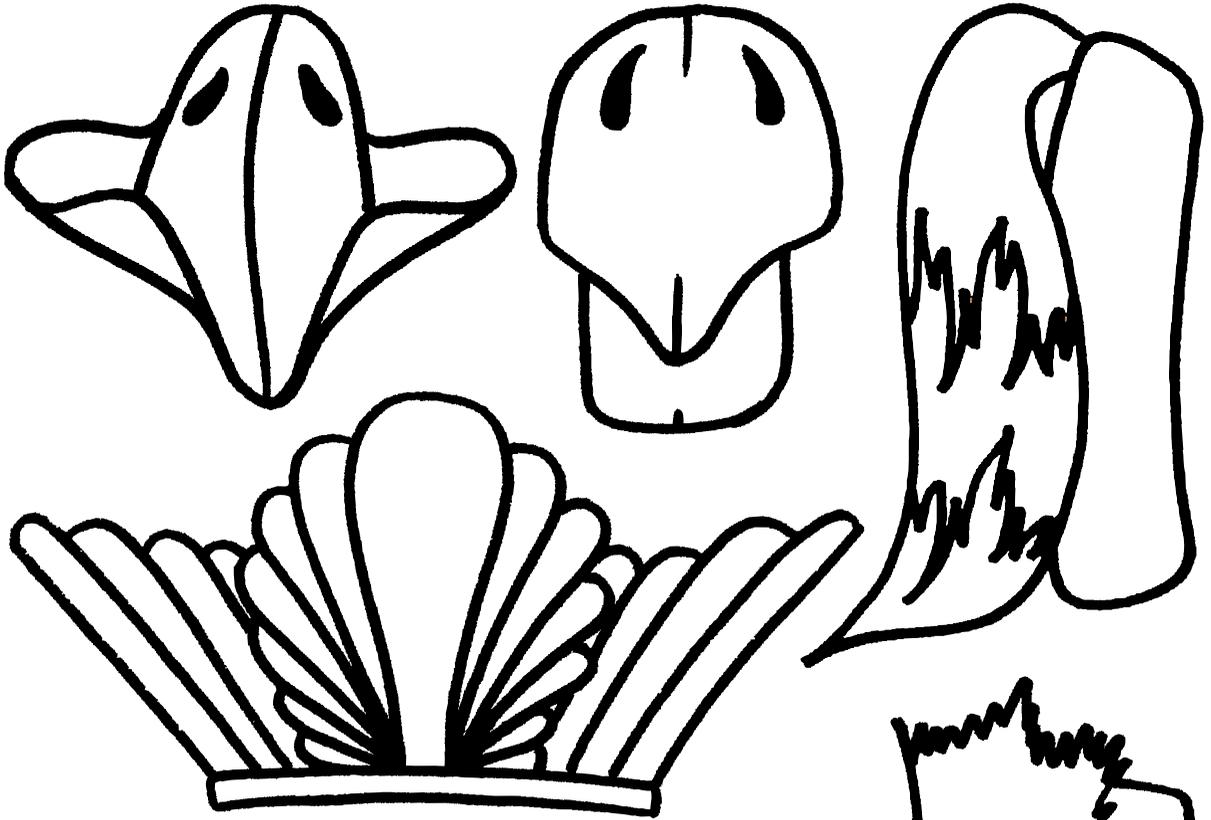
Have you seen these antlers on animals
in your part of Idaho?

What are the names
of these animals?

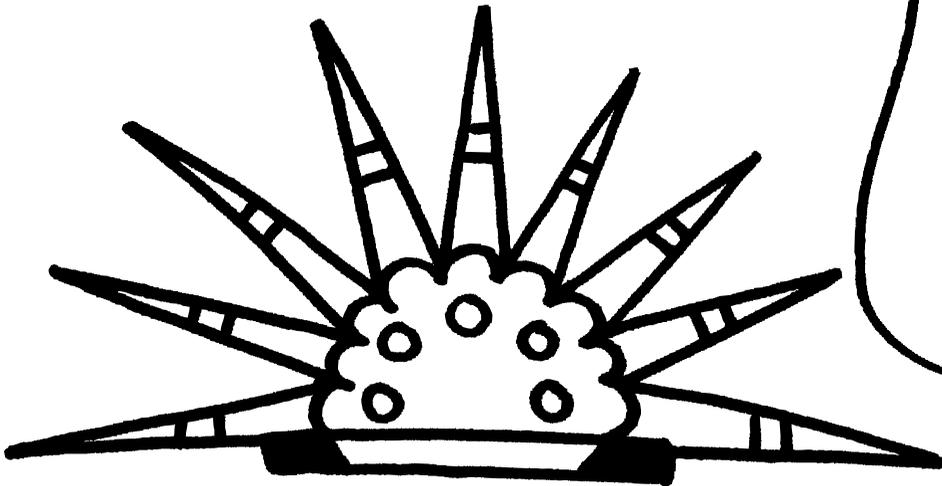


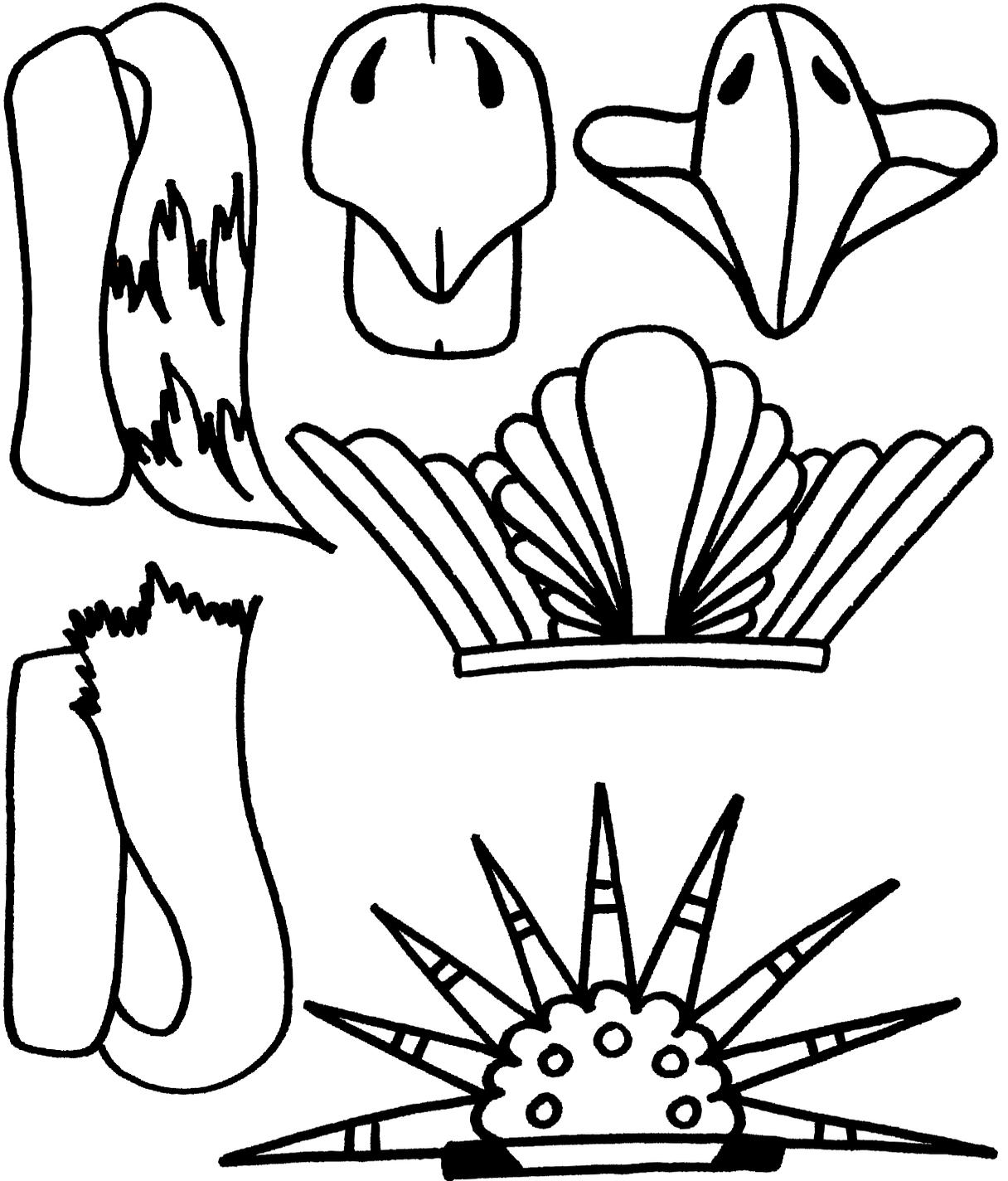


Does CHAR want a Beak?

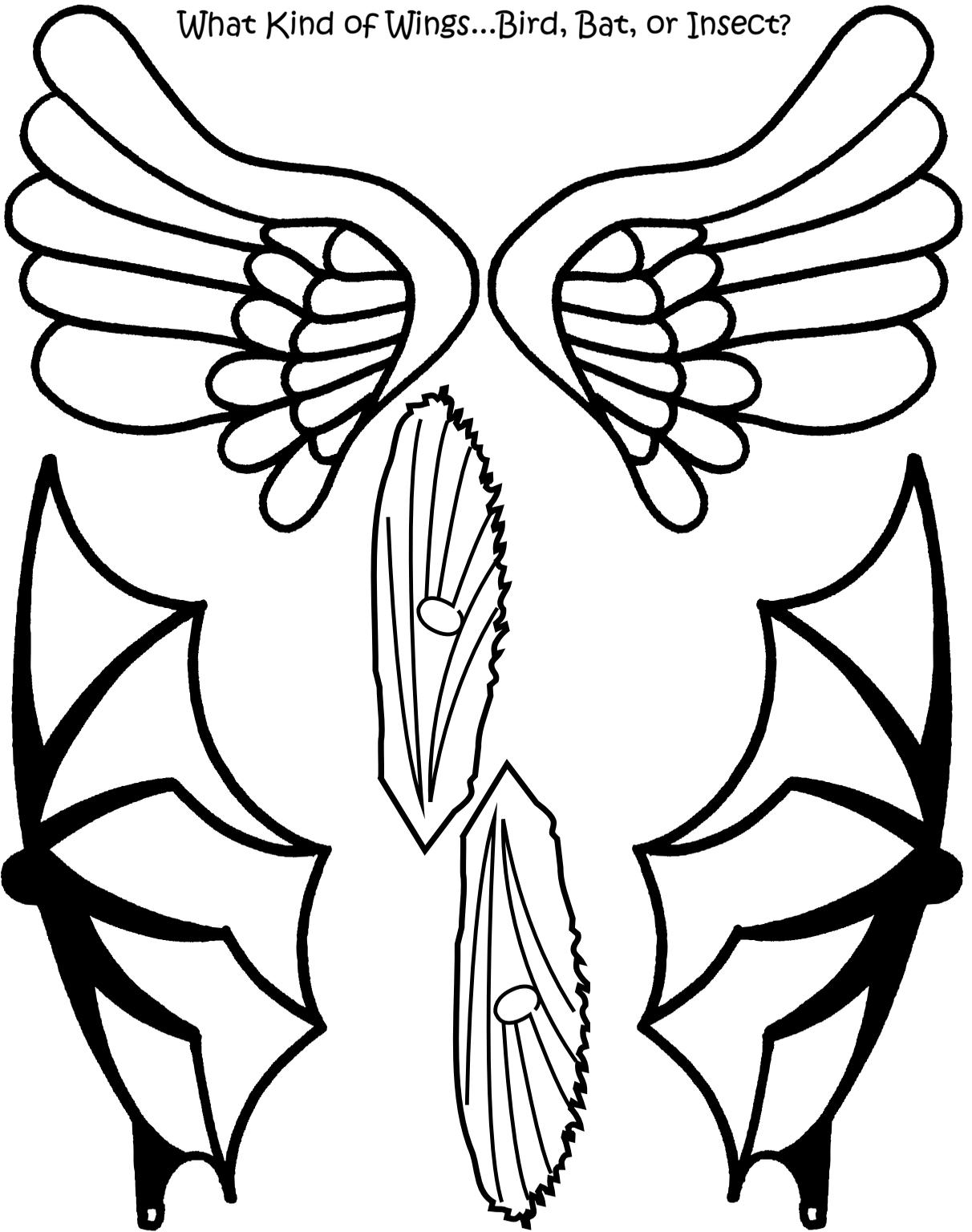


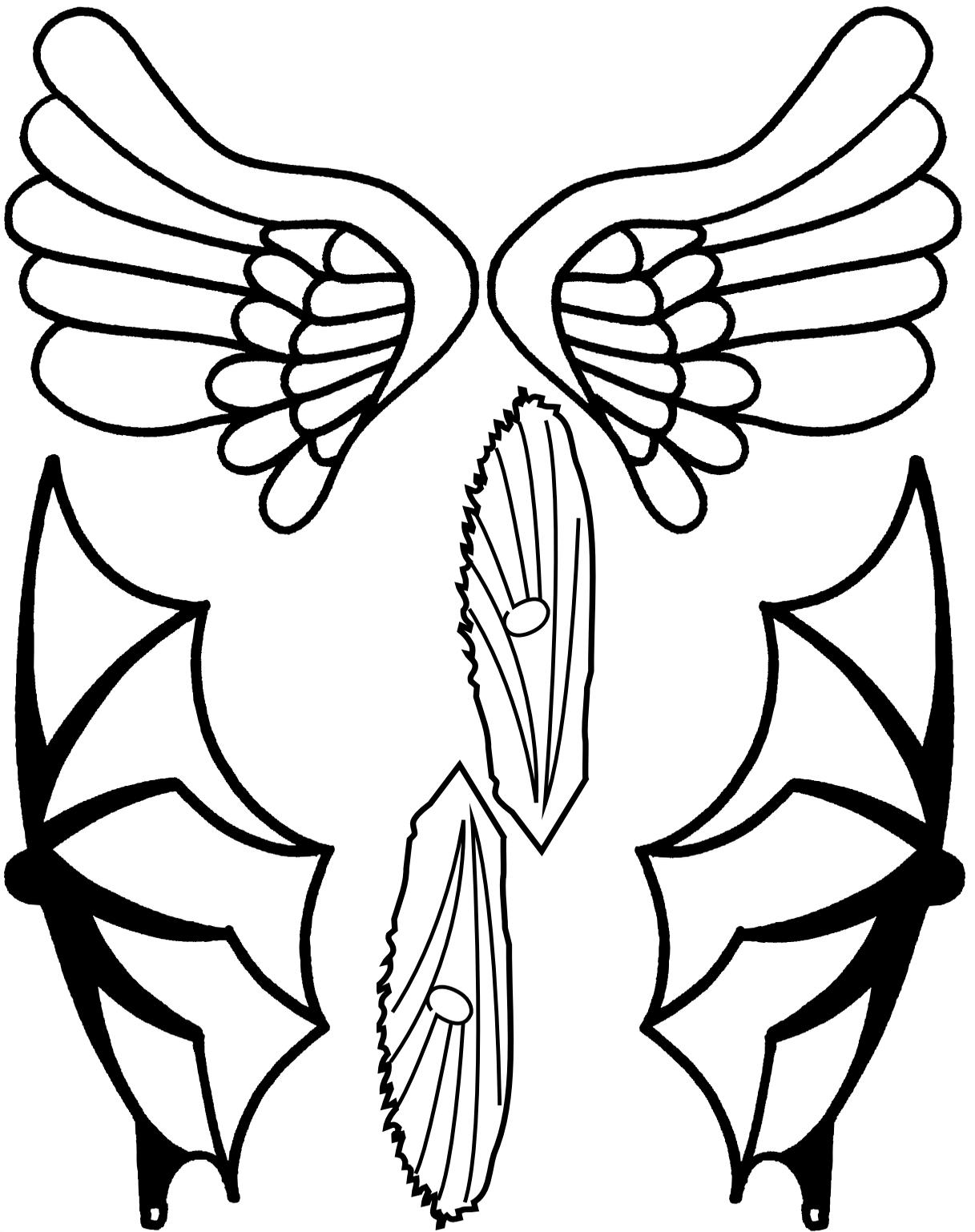
How about a Hat?
Coyote, fox, bird, or sage-grouse?





What Kind of Wings...Bird, Bat, or Insect?





Congratulations!

Now that you have completed the Junior Explorer Program, please sign the Junior Explorer Pledge, and drop this booklet off at the Eastern Idaho Visitor Information Center or mail it to:

Eastern Idaho Visitor Information Center
420 Memorial Drive
Idaho Falls, ID
83402

You will receive your certificate and badge.



Junior Explorer Pledge

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

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

.....
you sign here

.....
date here



Welcome Junior Explorer

Get Outside!

In this field guide, you will trek around the rim of a volcano, hike on trails through lava fields, and hike along a creek warmed by the earth. You will learn about the animals, plants, rocks, and new words that describe them.

Earn your Junior Explorer badge and certificate trekking the places in this book and completing this field guide while you are there. Take some time to do this on a Saturday afternoon with your family or maybe on a school fieldtrip with your class. Find the Idaho Junior Explorer series online.



Your CHARactor Artist
is 17-year-old Jacob

This field guide was produced by the
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208-524-7500