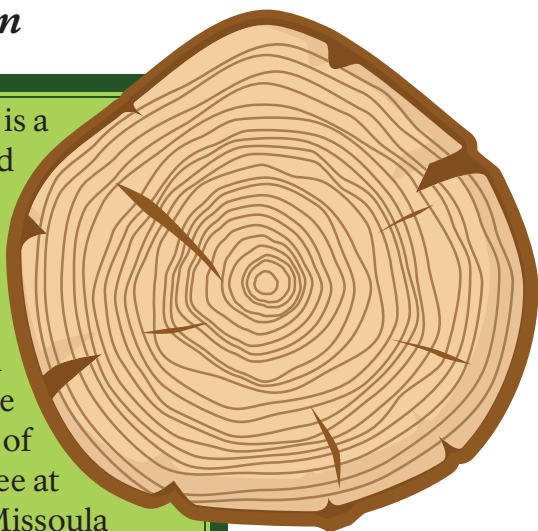


Ginkgo Petrified Forest

Vantage, Washington

Petrification is a process where trees and wood are turned to stone. The trees are buried and protected from natural forces, transforming the wood to solid rock over huge amounts of time. Most of the wood you see at Ginkgo is from the Missoula Floods, so you can see how the trees looked 13,000 years ago!



Take the **The Trees of Stone Interpretive Trail** 2 miles west of the Visitor Center. On the trail you'll see lots of fossils, erratics, and petrified logs. Pick your **favorite thing** and **draw it!**



BONUS: Ginkgo Petrified Forest has its own Junior Ranger program. Complete it to earn another badge!

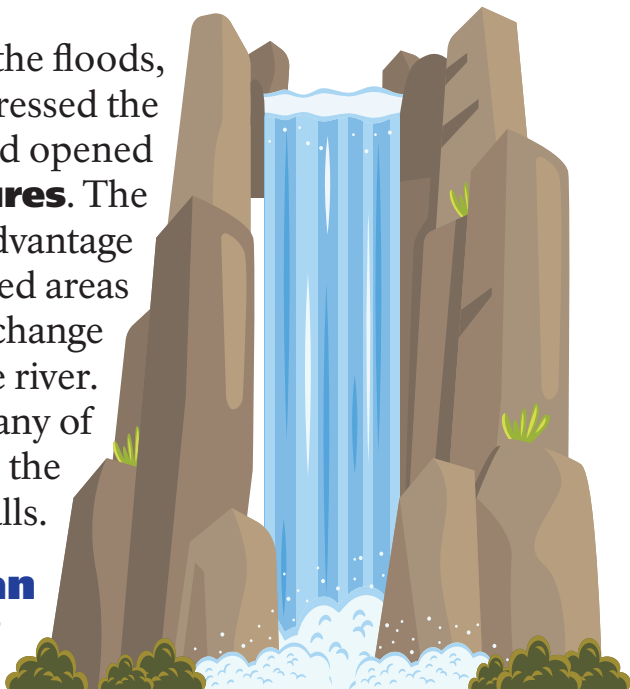
Palouse Falls State Park

Lacrosse, Washington



Long before the floods, tectonic forces stressed the basalt bedrock and opened **deep fractures**. The megafloods took advantage of these weakened areas and used them to change the course of the river. Palouse Falls has many of these cracks in the canyon walls.

**How many can
you find?**



Columbia River Gorge National Scenic Area

Cascade Locks, Oregon

Even though the landscape looks different from the parks in Washington and Montana, the Ice Age Floods carved out this spectacular gorge, too. As you're driving through the Columbia River Gorge, you will see different types of waterfalls!



Plunge

Drops vertically and away from the cliffside, losing contact with bedrock.



Horsetail

Shaped like a horse tail, dropping vertically and maintaining contact with bedrock.



Cascade

Tumbles along a series of rock steps.



Block

Pours over a wide section of a stream.



Fan

Descends from a stream above and gets broader or "fans out" at the bottom.



Segment

Separates into several parts.



Punchbowl

Pours out of a narrow opening in the stream and into a pool.



Tier

Falls, falls, and falls again creating several "tiers" that can be viewed at once.





Some of the waterfalls you can drive to include Latourell, Multnomah, Bridal Veil, Wahkeena, Horsetail, and Starvation Creek. However, there are dozens of waterfalls you can hike to!

Visit three waterfalls and write down what shape they are!

Waterfall Name	Type of Shape

Tualatin Ice Age Trail

Tualatin, Oregon



The Tualatin Ice Age Trail includes

**Tualatin Heritage Center
Tualatin Public Library
Community Park
Visitor Information Center & Commons**

plus at least seven more!

The Library is a great starting point. They'll be able to direct you to other spots. The trail provides lots of info on Tualatin's prehistoric inhabitants and the Ice Age Floods!

Try to hit at least three stops, and complete three activities from the trail!

- ☆ Check out the **bones and fossils** they have on display at the Tualatin Library.
- ☆ Take a picture with **Brian Keith's mastodon** sculpture in the Tualatin Commons.
- ☆ Find out the weight of the **erratic boulders** at the Tualatin Heritage Center.
- ☆ Learn the story of the **Tualatin Mastodon** at the Heritage Center.
- ☆ See the **Willamette Meteorite**.
- ☆ Take the **Fields Bridge hike** and describe what ecosystem you're walking through. (Make sure to read the signs along the trail!)
- ☆ Visit the **Sherwood & Lake Oswego fault**.
- ☆ Visit the **mastodon dig site**.



This extinct species of ground sloth, *Megalonyx*, was numerous around 11,000 years ago. Unlike its tiny, tree-dwelling cousin, the ground sloth was twice as tall as a full-grown human!

Glacial Lake Missoula Area

Missoula, Montana

Check out the glacial erratics around the **University of Montana** campus and the surrounding neighborhoods! How many can you find?

Missoula, Montana

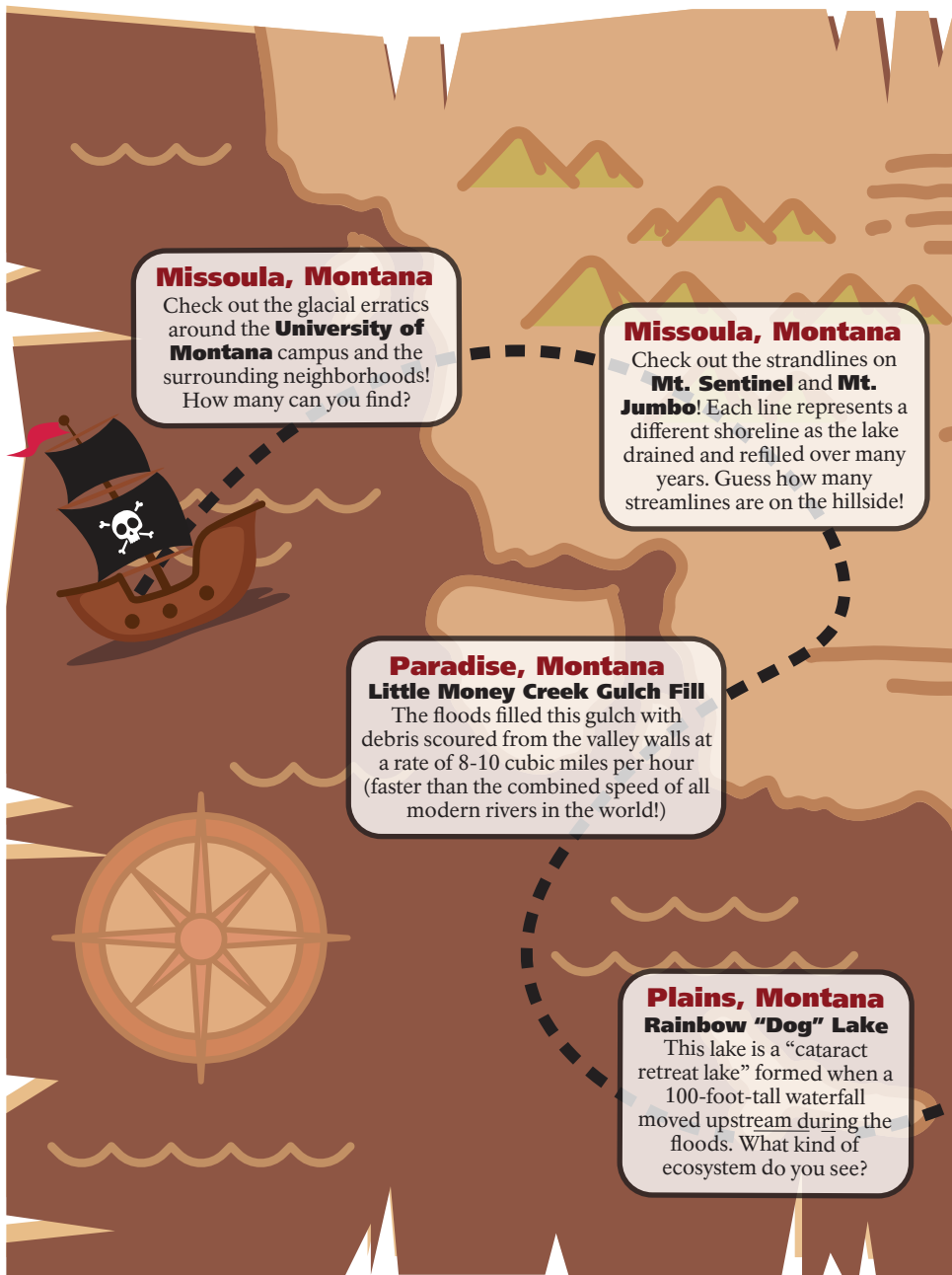
Check out the strandlines on **Mt. Sentinel** and **Mt. Jumbo**! Each line represents a different shoreline as the lake drained and refilled over many years. Guess how many streamlines are on the hillside!

Paradise, Montana Little Money Creek Gulch Fill

The floods filled this gulch with debris scoured from the valley walls at a rate of 8-10 cubic miles per hour (faster than the combined speed of all modern rivers in the world!)

Plains, Montana Rainbow "Dog" Lake

This lake is a "cataract retreat lake" formed when a 100-foot-tall waterfall moved upstream during the floods. What kind of ecosystem do you see?



Take a self-guided driving tour of the Glacial Lake Missoula area in Montana to some Ice Age Flood features! The whole tour is about **255 miles** and takes **4 hours**.

Don't forget to pick up a map from the **Missoula Natural History Center!**

Hwy 382, Montana

The Camas Prairie

Ripple Marks can be as big as 35 feet high and 100 feet long! Where else do you see ripple marks like this? Are they always this large?

Ninemile, Montana

Ninemile Rhythmites

These rhythmites represent different layers of sediment deposited over 1000 years by Glacial Lake Missoula! The dark layers are winter deposits, and the light layers are summer deposits!

Hwy 382, Montana

Markle Pass Kolks

Deep circular ponds and rocky holes were formed by underwater tornadoes during the floods. How many kolks can you find?

Junior Ranger Badge

Congrats, you did it!

Stop by the Paradise Center or Montana Natural History Center to take your pledge and receive your Junior Ranger Badge!

Paradise Center

Paradise, Montana

The **Paradise Visitor Center**

was the town's elementary school from 1910 to 2013. Today, it's home to exhibits about the historic railroad town and the Missoula Floods, and even hosts a community theatre and art studio!



Walk around the Paradise Center and complete the following activities!

- ☐ Go to the interactive map of Montana in the Missoula Floods exhibit. See how much of Montana was drowned by Glacial Lake Missoula.
- ☐ Take a ride on the old merry-go-round outside.
- ☐ Check out the classroom exhibit. What differences do you see between this classroom and yours?
- ☐ Learn about the town of Paradise when it was still a railroad town.



Montana Natural History Center

Missoula, Montana



Standing nearly 7 feet tall is the **North American Camelops**. This extinct ancestor of modern camels lived between 3.6 million to 11,700 years ago. Only skeletal evidence has been found, so scientists still don't know if the Camelops had a hump!

The museum is home to many hands-on activities and exhibits!
Complete at least 3 of the following activities.

- ☐ Learn what a Naturalist is and develop some of your own Naturalist skills. Be sure to check out the Naturalist Lab for fun activities!
- ☐ See a life-size replica of a Tyrannosaurus rex skull and check out fossils from thousands-to-millions of years ago!
- ☐ Watch the "Great Floods" video in the Glacial Lake Missoula exhibit
- ☐ Learn how to garden for pollinators, and check out butterflies, feathers, and other specimens under a microscope!
- ☐ Learn about how wildfire has shaped our forests, how mountain pine beetles fit into the ecosystem, and what animals and plants benefit from fire.
- ☐ Explore geology! Check out all the rocks, gems and minerals you can find around Montana! Pick out some of your favorites.
- ☐ Explore the touch table in the Kids' Discovery Room.



How to receive your badge...

1. Check our website for the closest location that has badges on site. Return your booklet in person to receive your badge and take your oath as a Junior Ranger.

2. Mail your completed booklet to:

Ice Age Floods NGT

1008 Crest Drive

Coulee Dam, WA 99116

Make sure to clearly print your name and return address on the lines below. We will return your booklet when we send you your badge.

**Congratulations on completing the Ice Age
Floods National Geologic Trail Junior Ranger
program!**

Junior Ranger Pledge

As a Junior Ranger, I
promise to teach others
about what I learned



today, explore
other parks and
historic sites, and
help preserve and
protect these
places so future
generations can
enjoy them!

Park Stamps

Ice Age Floods Trail Stamp

YOUR NAME

PARKS VISITED

RANGER'S NAME

DATE

This Junior Ranger booklet is possible through cooperation with:

- **The Ice Age Floods Institute**
- **Geological Society of America & Geoscientists in the Parks**
- **National Park Service**
- **Lake Roosevelt National Recreation Area**
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