Bluff Lake Self-guided Tour Stations

Welcome to Bluff Lake Nature Center!

We are excited to have you!
This pamphlet will help guide you along your tour of Bluff Lake. The loop around the lake is one mile in length. If you do not wish to tour the whole loop, please reference the key in back and visit the stations that interest you most.

Leaders: This guide is more in depth than the kids’ pamphlets—it gives more history and uses more complex terms, but contains much of the same information.

What is in BLACK is printed in the kids’ pamphlet, what is BLUE is unique to yours. To cater to as many age groups as possible, we have created this pamphlet with a range of vocabulary and concepts. Your group may find some of this pamphlet too advanced or too basic -- adjust as needed!

Before you come out to Bluff Lake, make sure that everyone in your group is dressed for the weather and has water, as Bluff Lake does not yet have running water.

Please try to schedule your visit around our school programs, which run on Tuesday-Friday in the morning. Additionally, if you have more than five to your group, we ask that you call ahead so that we can send you a brief form. We also request a donation of $2 per head for large groups.

Our office number is (720) 708-4147.

If you wish, you can call our office and we can have a staff member meet you at the site and give a brief introduction.
Before we begin, please remember:

- Stay on trails & walk quietly. Loud noises will scare wildlife and disturb other visitors.
- Even leashed dogs stress wildlife, please walk pets elsewhere.
- Trails are for walking and jogging. Please, no horses, bikes or motorized vehicles.
- No sledding, tubing or snowmobiling on the hill. It will damage the habitat and is very dangerous as there are yucca and rocks on the hillside.
- The Lake is not suitable for fishing, swimming or boating.
  - No food or drink beyond the bluff.
  - No fishing, hunting or trapping.
  - No camping, fires or fireworks.
  - No alcohol or drugs.
  - No firearms, paintball or archery.
- Keep your eyes open for scat, tracks and other wildlife clues!

- Have fun!

Let’s start at

**Station 1: The Pergola**

Pergolas were common features of Italian Renaissance gardens, often covering walkways or serving as grape arbors. Here under the pergola at Bluff Lake, you can see Denver and the Front Range, and witness a spectacular view of our 123-acre refuge.

Once you have finished at the outfall, begin to walk up the ramp or stairs back to the top. As you head up, make sure to look back over all that you’ve just seen—all the animals, plants and tiny details that make up these magnificent habitats!

We hope you enjoyed your time at Bluff Lake and learned some new things!

As a non-profit, our donors and funders are central to keeping our doors open. To make a donation, there is a donation box in the garden or you can donate online at www.blufflake.org

Bluff Lake thanks you for your support! Please come back and see us soon!
Cattails grow in wetlands and trap garbage and debris like a strainer traps pasta. Cattails also filter chemicals by soaking up polluted water through its stems and leaves! The fuzzy brown part on the top is really thousands of seeds that burst open in the winter, sending seeds flying in the wind. The cattails provide a great hiding place for many animals. Look at the flattened areas of cattails where deer have made beds!

Phytoremediation is the proper name for the act of using plants to purify the soil and leech out pollutants.

A little history:
Bluff Lake was originally an irrigation reservoir in the late 1800s. In 1929, the Stapleton International Airport began building, and in 1970 the 123 acres now known as Bluff Lake became its “crash zone.”

For the next 25 years, Bluff Lake was undisturbed by people and surrounded by a barbed wire fence. This absence of humans allowed for wildlife such as deer, foxes, badgers, snakes, turtles, coyotes, owls, hawks, rabbits and many birds and ducks to make their homes at Bluff Lake.

However, the airport had an impact on the area. Many believe the prairie dogs living in the area had problems hearing due to airplane noise, making them easy prey for hawks and other predators. Also, Sand Creek and Bluff Lake were polluted with de-icing fluid because of the planes. This led to a lawsuit because it violated the Clean Water Act. When the agreement was settled, an organization was created to preserve the 123 acres for exclusive use as a wildlife refuge, allowing Bluff Lake Nature Center to be born!

The Bluff (on top of which you are standing) is a geological formation that is man made due to concrete left over from the airport. To the north of the lake there is a dam and old concrete boxes that are believed to have been put there by the farmers that used it as an irrigation pond long ago. To the south of the lake (by the Aurora boundary), there is another bluff that was formed over time by the natural carving from the flow and floods of Sand Creek.

Here is a good chance to speak to your group about reducing our environmental impact, and how sometimes the things we do have hidden consequences.
When you’re ready, follow the stairs or the ramp and turn right down to ... Nicknamed for the Great Horned Owls who sometimes come here, this station has much to look at! If you want to explore more, the path to the right splits off of the loop towards Sand Creek.

Next, take a look at the cottonwood trees around you. The female trees produce a fluffy white seed in the early summer, giving the tree its name. As summer turns to fall, the leaves turn bright yellow. Found in prairies and at the sides of rivers and creeks, cottonwoods are a traditional sign that of being close to water. Their seeds are carried by the wind and when they land in creeks and rivers they float to the banks and grow there. When the pioneers crossed the Great Plains, they would look for cottonwood trees to tell them where to find water. At Bluff Lake, cottonwoods are a favorite food of the American Beaver. You’ll be able to see evidence of this very soon!

As you walk, look for wild licorice plants. Usually found in rich soil (like that beside a creek), the seeds of the wild licorice are inside of brown pods with hooked prickles called cockleburs. Sometimes called “hitchhiker seeds” for the way they attach to animals and humans, many have said that this seed was the inspiration for Velcro! Also, the Blackfoot Indians used wild licorice for medicine and steeped the leaves in hot water to treat earaches.

Station 2:
The Owl Tree

Station 8:
Bluff Trail Bench

Once you’ve rested, turn around and look at the markings in the side of the bluff. Many of the holes were made by Bank Swallows who burrow in colonies. Bank Swallows live in riparian ecosystems, and typically nest in vertical banks and bluffs along rivers, streams, and lakes. Bank Swallows eat mostly insects.

Next, look eastward at the Bat House. This structure, installed by volunteers of Bluff Lake, is home to 200 little brown bats. Bats are the natural predator of mosquitoes, and help to keep Bluff Lake’s mosquito population at bay!

Did you know:
- Bats locate insects using echolocation
- They then use their superior flying skills to capture and eat them
- One little brown bat can catch and eat 600 mosquitoes in one hour!!!
Prairie Dog Town

You can now walk up to the top of the service road on the southern edge of the property and try to spot some prairie dogs! This can be tricky at times, as the prairie dogs are easily frightened, but once you’re at the top, look east along the fence and about 50 yards away you will notice the burrows and the prairie dogs sitting on them!

Prairie dogs are social animals, live in “towns” and greet each other with a sort of kiss. Prairie dogs employ a complex form of communication that involves rhythmic chirps and barks— you can hear this as they warn each other of danger. In addition to being cute and fuzzy, prairie dogs have been dubbed a “keystone species,” meaning they are extremely important to balancing their ecosystem. Prairie dog burrows provide the nesting areas for Mountain Plovers and Burrowing Owls. Prairie dog tunnel systems also help channel rainwater into the water table to prevent runoff and erosion. They also aerate, or give more air to the soil!

A keystone species is a species that has a disproportionate effect on its environment relative to its biomass. Such species affect many other organisms in an ecosystem and help to determine the types and numbers of various other species in a community. Other keystone species include sea stars, urchins, sea otters, grizzly bears and beavers.

More properly known as a drop structure or grade control, this man-made waterfall helps to add oxygen to the water and prevent erosion. The Army Corps of Engineers helped Bluff Lake install this structure to channelize Sand Creek in order to prevent it from flooding.

Today, visitors get to enjoy the beauty of the waterfall, and ducks love to play in the waterfall’s eddies and bubbles. Can you spot any ducks today?

Common ducks of Bluff Lake

Mallard Facts:

- **Females** are brown-streaked with an orange bill broadly marked with black in the center, whitish tail feathers.
- **Why are females brown?** They are meant to be inconspicuous and camouflage so as to protect their eggs.
- **Occasionally you may be able to see blue under the wings of both.**
- **Males** have an iridescent green head, yellow bill and chestnut breast.
- They also have a white ring around their neck.

This creek side habitat is called a “riparian zone” — read the interpretive sign in front of you to learn more! A riparian zone is the interface between land and a river or stream. Plant habitats and communities along the river margins and banks are called riparian vegetation, characterized by hydrophilic plants.
Our next stop is…

Station 4: The Boardwalk

As you approach the boardwalk, make sure to be very quiet, so as not to scare the wildlife. Look to your left and you’ll see evidence of a beaver chew!

You can remind your group that this is the cottonwood tree they just learned about!

Wetlands have three components that set them apart: special plants, special soil and, of course, water. The wetland at Bluff Lake is a freshwater marsh, which is characterized by being frequently under water. The special soil of the marsh is rich in organic deposits that come from decomposing cattails and other vegetation. Notice the abundant cattails all around you—we will talk a little more about these at Station 9.

As you walk out onto the boardwalk, what you see depends on the season. In the spring and early summer, cattails grow to eight feet tall and the lake is full and brimming with birds and wildlife. However, at times, the lake recedes and you may be seeing an entirely different habitat—it may be just a lake bed, habited by different animals and plants.

If you are at Bluff Lake at a point with no water:

Water reaches Bluff Lake two ways. First, rainfall and two, through the storm drains. Without much rain, the special soil in the lake which is incredibly absorbent soaks up the water. Without water, birds can’t eat fish and other aquatic animals, so they fly away and find another home with more food.

The Prickly Pear Cactus is another common prairie plant. It grows flat, rounded stems called platyclades that act like a leaf. It grows two types of spines: large, smooth fixed spines and small hair-like spines that easily detach from the plant and can prick. It produces a small fruit called prickly pear, also called tuna, cactus fig, or Indian fig. Ethnic groups like Native Americans and some Hispanic groups eat both the fruit and the platyclade!

Blue Grama - Blue Grama is the Colorado state grass. On the end of the stalk is a line of seeds that look like eyelashes. These seeds provide a great food source for animals in the winter when there is little food to be found. Established plants are well-suited for life on the prairie, as they are grazing-, drought-, and cold-tolerant! These natural opportunists have an interesting strategy, rapidly consuming water when it’s available, and becoming dormant during less favorable conditions.

Big Blue stem or Turkey-Foot is a tall native prairie grass found in the Colorado Eastern Plains. Its stalk turns from blue to a reddish color after the first frost. It is called Turkey-foot for its distinctive shape.

Facts: Native Americans used to use Turkeyfoot to treat digestive problems. It can grow up to ten feet tall!
The yucca plant also has a **symbiotic**, or shared, relationship with the **yucca moth**. The plant provides nectar to the moth and the moth serves as the yucca’s only pollinator, helping it reproduce. Yuccas also provide a home for **ladybugs**, who eat the pesky **aphid**. Aphids, in turn, produce a sweet liquid that is consumed by **ants**, thus promoting the formation of ant colonies around the yucca plant. Native Americans used the leaves to make fiber for fabric, then used the tips of the leaves as needles for sewing. Yucca root is rich in nutrients and is still cooked by many. **Wow— one plant can do so much!**

Take a look around—how many **ant hills** do you see? Harvester ants use their **mandibles**, which act like claws to move dirt and make rooms for the colony. Ants also use their mandibles to spread gravel over the top of their shelter to protect it from flooding and fire. The rooms in the ant hill are used for storing food, taking care of young ants, and mating. Some of these ant hills could be up to **SIX FEET DEEP** underground!

**GIRLS RULE!**

All ants inside the colonies are females, and males’ main role is in the process of reproduction. There are many chambers inside and a special one is devoted to the queen!

Please encourage your group not to step on the anthills, just as they wouldn’t want their homes to be stepped on!

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**Station 5:**

**Dam Trail Bench**

Here you have a canopy of **Crack Willows** over the trail. This common wetland tree is called a Crack Willow because the branches tend to break off suddenly with a loud **CRACK**! To the north of the trail there is another wetland habitat, mostly covered in **Giant Reed Grass**. As you look beyond the reed grass there is an area of tall cottonwood trees, where the ground is covered in grasses.

Now is a good time to slow down and be as quiet as possible. Stop and look past the reed grass, under the cottonwoods. It is very likely that you will see deer, as this is a place where they find food, water,

If you don’t spot a deer, you can point out areas where the grass has been flattened down. This is where many of the deer sleep at night, and thus, are called “**deer beds**.”

To your left, look for the **irrigation structure** left over from the 1800s. This structure helped to irrigate the fields of crops in the space that is now Reed Grass on the right side of the trail. Try to imagine this field filled with rows of crops! Can you do it?

Also, be careful because at times of the year this section has many mosquitoes. You can walk quickly if you need to, or reapply bug spray!
As you continue around the curve, on your left you will approach Station 6: The Bird Blind.

This structure is a camouflaged screen used to observe wildlife without scaring or disrupting the natural behavior of the animals. Some birds you may here see are the **Killdeer**, **Red-winged Blackbird**, **Great Blue Heron**, **Snowy Egret**, **Cormorant** and **Canada goose**!

Push the button at the bottom right of the informational sign for a fun, interactive experience!

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**Welcome to the Prairie!**

As you continue up the hill (beginning what we call the “Bluff trail”), notice the change in habitat from wetland to prairie!

At first glance, the prairie habitat looks dry and pretty dead. This can be deceiving, as the prairie habitat is rich in biodiversity and interesting relationships!

**Cottontail rabbits** love **rabbit brush** for two reasons. One, it is a source of food, available for about ¾ of the year. Two, it provides them with shelter to hide from high flying predators like hawks. In the fall, rabbit brush blossoms with bright yellow flowers and the nectar these produce is also food for many insects like **Painted Lady butterflies** as well as bees. Simply put, Rabbit Brush is **SHELTER and FOOD** for cottontails!

This takes us to the **yucca plant**, another abundant prairie plant. Yucca is also important to cottontail rabbits and forms its own sort of mini-ecosystem.

Yucca plants have spiky leaves that provide protection and shelter for rabbits who choose to dig their burrows around them.