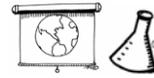




BEAVER DRESS UP



BACKGROUND: See the included *Beaver Facts* sheet that gives background information on the natural history and adaptations of the beaver as well as the history of the fur trade and its impact on the beaver. Also see the other attached information sheets – Outline of Beaver Dress Up Materials, The Beaver Saga and the Beaver Song.

GOAL: Students will have the opportunity to see, hear and sing about the natural history of the beaver – its adaptations for its environment as well as the impact humans have had on it throughout history.

OBJECTIVES: Students will be able to...

- List three adaptations a beaver has in order to live in its habitat
- Discuss the life history of Colorado wildlife
- Discuss human impacts on wildlife
- Explore the strategies that the beaver uses in obtaining nourishment, finding shelter, regulating temperature, avoiding predation, and reproducing

GRADE LEVEL(S): 2-adult

MATERIALS (for any class size):

- Beaver Dressup kit that includes materials that simulate actual adaptations of the beaver
- Beaver Saga Story
- Beaver Saga Role Cards

TIME REQUIRED: 45-70 minutes (this activity in the form it is written – may vary with or without certain adaptations or listed components)

STANDARDS MET: G5, S4, S7

LOCATION: This program can take place in any indoor or outdoor location big enough to have the entire class sitting down as well as a 10x20 foot location for the presenter. It can be added to a “Beaver Prowl” (taking students to a site where they can see beaver or recent activity of beavers) which would occur at a site that shows obvious recent beaver activity.

PROCEDURE:

PREP

- Review the teacher information sheets on the beaver.

LESSON

- Discuss how different animals are adapted to the environments in which they live. Ask the students if they can think of any and have them share some of them. Write a list of environmental factors for adaptations on a white board or flip chart.



- Explain at you'd like to share a story about the beaver and ask for volunteers (a total of 8 volunteers).
- Assign roles for each volunteer using the role cards on the Beaver Saga sheet.
- Give the signs ("Awww..." and "Oh!") to two additional volunteers and ask them to sit facing the class.
- Explain to the volunteers that they will need to say their line when their character's name is called. The sign holders will hold up their sign when prompted.
- Read the story.
- After the story is completed, revisit the list of environmental factors and adaptations that you started at the beginning of class. Ask students to add any that they may have heard during the story.
- Explain that, in order to learn more about the beaver's adaptations, you will need a volunteer. NOTE: Be sure your beaver dress up materials are going to fit the person chosen as the volunteer.
- Dress up the volunteer using the materials for adaptations. Be sure to put the 'fur coat' and 'tail' on prior to the rest of the materials. Refer to the Outline of Beaver Dress Up Materials for more information.
- As you are dressing the volunteer as a beaver, review the adaptations. Ask students if they can think of any and pull out the appropriate dress up part.
- When completed, invite students to add anything more to the flip chart list on adaptations.
- If time permits, keep the volunteer dressed as a beaver and sing the beaver song (refer to the Beaver Song sheet included in the lesson).

ASSESSMENT:

- Participation in the activity





BACKGROUND INFORMATION SHEET

OUTLINE OF BEAVER DRESS UP MATERIALS

Beaver Dress Up (from head to toe)

ears (ear muffs): Valves shut off ears and nostrils to keep water out when diving. The mouth has a flap that closes to prevent water from entering the lungs. Hearing is their best sense, smell is second.

eyes (swim goggles): protected by third, transparent nictitating membrane

teeth (foam core cut-out): always growing--up to 6 mm per day. (If they don't chew, they will grow long and prevent their molars from meeting in the back, so they will eventually starve. Some sources say that the teeth could grow back into the beaver's skull and puncture it.). The orange color indicates the presence of iron, which strengthens the teeth. The teeth are hard enamel in front and soft dentine in back, which allows them to remain sharp with chewing. (The dentine wears away first, while the enamel resists wear). Beavers can cut down a tree with a 5 inch diameter trunk in just 3 minutes, and have been known to cut down a tree with a trunk 5 feet thick.

fur (coats): Beavers have two types of fur: long, silky guard hairs (waterproof) and a dense, wooly undercoat (for warmth).

front feet (gloves): not webbed, very agile, used for holding twigs when eating, digging, and placing mud on dams and lodge

tail (rubber piece): Used as a rudder (to help them steer) and diving plane (to help them dive under the surface), a warning signal (slap water to communicate danger), fat storage, a kickstand or prop while falling trees, and as a thermo-regulator (radiates heat in summer, counter-current exchange keeps body heat in during winter.)

castor glands (oil can and perfume bottle): secrete castoreum for waterproofing and scent marking. Located near tail. Castoreum was considered a "cure-all" by early settlers, and the castor glands were in high demand. Castoreum was also used in making perfume.

hind feet (rubber cut-out pieces): webbed, with second claw double for grooming





BACKGROUND INFORMATION SHEET

BEAVER FACTS

Beaver Facts

Castor canadensis: The beaver's scientific name. The beaver is on the back of the Canadian nickel.

mammal: The beaver has fur, has live birth, is warm-blooded, and feeds milk to its young.

nocturnal/crepuscular: Although some documents claim they only became nocturnal due to heavy hunting and trapping.

winter living: They do not hibernate, they will cache food in mud deep in the pond for the winter.

rodent: Largest in North America. Teeth continually grow (as in all rodents).

family: 4-10 beavers, live with parents for two years. Young are called kits and are born in April fully furred, able to swim, and with open eyes. Colony is matriarchal (run by mature female) but both males and females care for the young. Mate for life.

herbivore: Eats green leafy vegetation and inner bark from aspen, willow, cottonwoods, and other poplars. It will excrete their scat into the water, through a cloaca, so it is rarely found.

weight: Usually up to 30-60 pounds (13.5-27 kg)*

length: 85-100 cm. long (including the tail, which is 23-25 cm)

life span: May live up to 10-12 years in the wild, (heavy mortality in the first two years, however). 19 years is the record in captivity.

prey: Fairly safe in water, but very vulnerable on land. Predators include: coyotes, otters, bears, wolves, wolverines, bobcats, lynx, mountain lions, humans

diving: Can stay underwater for 15 minutes, and swim for 1/2 mile while underwater.

engineers: dams (stimulated to build dams by the sound of running water). Largest known dam was 4.2 meters high by 1000 meters long. Beavers are able to carry things while walking upright. Females tend to build more than males. Once thought of as mainly a nuisance (because they flood crops, roads, timber; chew down parkland trees, and carry parasitic diseases which humans can contract), beavers are now being brought into areas to protect and restore wetlands, and help with flood control.

architects: Builds lodges with several rooms and several underwater entrances. Or if a stream is already deep enough, they will burrow into a bank and not build a lodge. Sometimes different lodges are used for summer and winter residences.

farmers: By flooding area, promotes growth of aspen and willow.

innkeepers: Pond is habitat for many other animals.

The Fur Trade

The beaver is responsible for much of the early exploration of N. America. The fashion in Europe was to wear a hat made from the beaver's pelt. In 1635, King Charles passed a law that stated all hats must be made from the beaver's pelt. Beavers were trapped nearly to extinction in Europe when they were discovered to be



plentiful in N. America. Trappers and traders from France, Spain, England, and the U.S. explored much of the West while looking for beaver. (Alexander Mackenzie, North West Co., blazed a trail to the Pacific in 1793 through southern Canada. In 1804, President Jefferson made the Louisiana Purchase, and sent Lewis and Clark to find a waterway to the Pacific. They came back telling of abundant game and beaver.) By 1750, an estimated two million beaver had been killed in North America. By 1834, pelts were becoming scarce. Also in 1834, there was a change in fashion in Europe to silk hats (Beau Brummel) which may have saved the beaver from possible extinction.

Interesting facts:

- In 1600, there were 60 million beaver in N. America. In 1720 alone, 2 million beaver were trapped. Beavers were exterminated from most of their former range, but are now being reintroduced.
- A beaver felt hat cost then as much as a new car costs us today (inflation taken into account).
- In order to separate the guard hairs from the desirable wooly under hairs, the hatters would use a mercury compound to dissolve the guard hairs. This compound would get into their blood stream through their skin, and eventually cause them to go crazy. Thus, the "mad hatter" from Alice in Wonderland.

SOURCES:

Peterson's Field Guide to Mammals by William H. Burt and Richard P. Grossenheider, pp 151-153.

Wild Animals of North America, National Geographic Society, chapter 15 by Willis Peterson pp.220-229.

Rocky Mountain Mammals, by David Armstrong, pp 109-112.

"Leave it to the Beaver," High Country News, Aug 24, 1992, vol. 24 No. 15.

"Beaver Ecology" class outline from Wolf Ridge Environmental Learning Center, MN

- * This statistic varies depending on the source. The 30 to 60 pound range was cited from Peterson's Field Guide to Mammals, and seems to be a good average for beavers of Colorado.





BEAVER DRESS UP STORY SHEET AND ROLES

THE BEAVER SAGA

It was a bright, sunny summer day in an aspen forest of Summit County. Wait a minute! That's a lousy beginning to a beaver story. Beavers are crepuscular - they are active at dawn and dusk.

Okay, well. The beautiful sunny day faded to a beautiful twilight.

BOOPSIE beaver, a swinging single, came upon a stream she thought would make a good home. But she thought...

BOOPSIE: "Humm, lots of aspen trees, what a good area for a home, but it's a bit shallow. Coyotes could follow me in there really easily."

So she started constructing a dam. Well, who should come along but BENNY beaver. Well, I don't know who saw who first, but one thing led to another and soon they were happily building a lodge and a dam together. BENNY was so happy he said...

BENNY: "I need a living room, bathroom, a pantry, a dry-room, and a nursery! Let's finish this dam so we have a pond where we can build a lodge."

SIGN: "Awwww..."

In no time at all the stream overflowed its sides and a pond was formed. The pond provided a home for many other plants and animals that couldn't live in the fast moving water.

Fall came around and the couple started constructing a food pile, or cache. Now, don't think they were going off killing other animals. No! They're vegetarians and only eat the bark of trees, cattails, and other fauna nearby. BENNY and BOOPSIE busily gnawed aspen trees nearby and stored them under the water in their den.

When the cold Colorado winter came along, the two were tucked away in their home. Winters are long and cold in Colorado and beavers don't ski. They had to find something to do right? Well, they sure did. And so...that spring BECKY, BIFF, and BARISHNIKOV beavers were born in the comforts of their lodge. Shortly thereafter, the whole family emerged. BECKY said...

BECKY: "Boy am I glad to be out of that smelly lodge!"

It soon became apparent that all three kits were natural swimmers. They got tired sometimes and had to hitch a ride on their parent's backs. BARISHNIKOV seemed to dance through the water while BIFF and BECKY followed closely behind.

All was going well in the BEAVER family until a sudden spring storm knocked holes in the dam, which the entire family rushed to repair. BIFF seemed to be the most affected by the storm and said...



BIFF: "Dude, what a bummer."

With their lodge repaired, the Beaver kits were able to focus on growing stronger and perfecting their swimming skills.

Then...two TRAPPERS happened upon their lodge.

SIGN: "Oooohhhhh..."

Luckily, BOOPSIE used that fantastic tail of hers and gave a warning slap on the water and all the beavers dove below.

But those TRAPPERS were very persistent. They said...

TRAPPER 1: "Look at all them-there beavers!"

TRAPPER 2: "Yup. Bet we could get a bundle for those beaver pelts. Them things make great hats!"

The TRAPPERS continued on. However, they had only one thing in mind. They got some traps.

SIGN: "Oooooohhhhh....."

Well, those beavers went on with life ignoring their close call with the TRAPPERS. When fall came the whole family built a cache and went inside for the winter. It was a very cold winter but they were quite comfortable because beavers are endothermic, meaning they are able to regulate their body temperatures.

With the huge responsibility as the head of the family, BOOPSIE took very good care of herself. Because of this, she was healthy enough to have several kits by the end of the next winter. Added to the family were BELINDA, BARTHOLEMEW, BILLIE, BRENDA, BARBARA and BONZO beaver.

Later that spring BELLA, a lone beaver, came by. She thought...

BELLA: "Nice pond, but I smell castorium. Someone else must be living here. Guess I'll have to move on."

Sad, but true, only one family of beavers is allowed at each pond.

The beaver family, big as it seemed, was happy as could be. But, a tragedy struck.

SIGN: "Oooohhhhh..."

BONZO, still a young unlearned beaver, stumbled into one of the traps set by the TRAPPERS and became part of a beaver skin coat. As BONZO's foot lay in the trap he thought:



BONZO: “I’m only a young, baby kit. I didn’t know any better! The food in the trap looked so inviting.”

Now as you can imagine it was getting pretty crowded in the lodge. The kits were complaining, what could they do?

With a tearful smile, BOOPSIE sent off her eldest kits, now two years old. BIFF met up with BELLA. Remember BELLA? Well, he followed the trail of castorium she had left and the two went off to set up their own pond.

SIGN: “Awww...”

What became of the other kits?

Well, BARISHNIKOV, dancing too far from water, got attacked and eaten by a pack of wolves.

SIGN: “Oooohhhh...”

BECKY went off on her own, leaving a trail of castorium along the way, looking for her own home. Don't know what happened to her. Maybe we'll see her tonight as the cycle continues.

ROLE CARDS:

Boopsie: Hmm, lots of aspen trees, good area for a home, but it’s a bit shallow. Coyotes could follow me in there very easily!

Benny: I need a living room, bathroom, a pantry, a dry-room, and a nursery! Let’s finish this dam so we have a pond where we can build a lodge.

Becky: Boy, am I glad to be out of that smelly lodge!

Biff: Dude. What a bummer.

Trapper 1: Look at all them-there beavers!

Trapper 2: Yup. Bet we could get a bundle for those beaver pelts. Them things make great hats!

Bella: Nice pond, but I smell castorium. Someone else must be living here. Guess I’ll have to move on.

Bonzo: I’m only a young, baby kit. I didn’t know any better! The food in the trap looked so inviting.





BEAVER DRESS UP SONG SHEET

THE BEAVER SONG

Beaver one, beaver all,

Let's all do the beaver crawl

Chit, chit chit... (action: one arm up like you're climbing a ladder)

Chit, chit chit... (action: one arm up like you're climbing a ladder)

Chit, chit chit... (action: one arm up like you're climbing a ladder)

Chit, chit chit... (action: one arm up like you're climbing a ladder)

Beaver two, beaver three,

Let's all gnaw on the beaver tree,

Chit, chit chit... (action: hold hands up like holding corn on the cob and eating it)

Chit, chit chit... (action: hold hands up like holding corn on the cob and eating it)

Chit, chit chit... (action: hold hands up like holding corn on the cob and eating it)

Chit, chit chit... (action: hold hands up like holding corn on the cob and eating it)

Beaver four, beaver five,

Let's all do the beaver dive,

Chew, (action: Jump up and point hands like you're diving sideways into the water)

Chew, (action: Jump up and point hands like you're diving sideways into the water)

Chew, (action: Jump up and point hands like you're diving sideways into the water)

Chew, (action: Jump up and point hands like you're diving sideways into the water)

Beaver six, beaver seven,

Ahh, this pond is just like heaven (action: hands up in the air and out to the side with palms up like showing something to people)

Beaver eight, beaver nine,

Stop! It's beaver time

Go beaver, (action: do the dance move *stirring the pot*)

Go beaver, (action: do the dance move *stirring the pot*)

Go beaver, (action: do the dance move *stirring the pot*)

Go beaver, (action: do the dance move *stirring the pot*)

