LESSON PLAN—NOTES ABOUT THE **BEAVER PEOPLE**

David A. Bainbridge

Learning Goals

- To help students become familiar with the physical characteristics of beaver and to know why these are important to the beaver's way of life.
- To have students become familiar with the beaver's habits and habitat: life cycle, food, shelter, environment.
- To have students become aware of both the historical importance of the beaver.
- To help students understand the ecological importance of beaver today
- To have students become familiar with some traditional stories and beliefs about the beaver.
- To increase oral and written language skills in English (and in the local Native language where possible)

For use in the upper primary grades, but can be upgraded for upper grades. *It is suggested that the teacher begin a personal collection of beaver material. It is helpful to have a beaver skin and beaver skull. Start a beaver notebook and build a beaver kit.*

Some questions to consider in introducing **Beaver**.

- What kind of an animal is a beaver? from the deserts of California to northern Alaska
- How and where do beaver live?
- Were there beaver in England and France?
- Are there any around here? Where?
- How does a beaver family live?
- How do you catch a beaver? Live trapping or trapping for fur….
- Why was beaver pelt so important in 1800?
- What other parts of the beaver do people use, and for what?

Objectives:

- The students will describe the life cycle of the beaver.
- The students will describe the beaver's house, how it is built, and how the family of beaver live together
- The students will list and identify the types of food eaten by beaver.
- The students will tell how a beaver's habits help protect it from enemies.
- The students will describe beaver habitat: land form, vegetation, other animals and birds found there, etc.
- The students will list some of the problems that occur when beaver and people live too close together and will be able to suggest some solutions.
- Students will do simple math problems related to beaver habits and habitat. (dam size, height, volume, distance traveled for food)

Activities:

- Read with the class The Life Cycle of the Beaver or The Lily Pond by Hope Ryden.
- Watch the PBS video on Beaver https://www.pbslearningmedia.org/resource/tdc02.sci.life.colt.beaver/beavers/
- Discuss what a beaver house looks like and how it is built. Lower grades: Have students color the picture of the beaver and babies in their lodge.
- What kind of house will they build on a big river?
- On the fur coast or mountains invite an elder or other community member to the class to talk about beaver. Find out where beaver live in the area and where people from the community have traditionally trapped beaver. Record this information on a map of the local area.
- Read about what a beaver eats. Take a field trip to collect samples of beaver food. Examine the food samples you have collected. Peel off the bark and taste the different kinds of sticks. List and describe the types of food. What are the variables which might affect a beaver's diet?
- Discuss how you would know if you were near a live beaver lodge. What signs would you look for?
- If possible visit a beaver lodge on a pond or river bank and have students develop their skills of observation. Look for beaver tracks and trails, beaver cuttings and trees that have been felled (How new do they look?), a feed pile near the house and other signs that beaver are living close by.
- Describe what was observed and what can be inferred from the observations.
- Brainstorm about beaver habitat; what environment does a beaver need to survive? Have students list the components of an ideal beaver habitat.
- Make a mural of a beaver pond showing the dam, lodge, vegetation and other creatures which live there. Include the beaver signs observed in the previous activity.
- Build a beaver lodge. In this activity students will not only learn about the construction of a lodge but also how hard beavers have to work!
- Understand how beaver houses might change on a large river like the Colorado River in California or a fast moving stream in the Rocky Mountains?
- Discover when beavers were parachuted in to the wilderness to build dams
- Explore why the beaver would have two entrances to his lodge
- Discuss what happens when beavers and people live too close together. List the problems and then try to suggest one or more solutions for each.
- Explore the problem caused by introducing beaver to Argentina?
- Look to see how problem or orphan beavers are relocated to natural areas. https://www.youtube.com/watch?time_continue=35&v=h80eAPDkaw8&feature=emb_title

The Life Cycle of the Beaver

Study Guide:

Read or have students watch video or film. Then ask the following questions:

- Who can tell me where beaver live? (lakes, river, ponds)
- How are beaver's bodies well built for swimming? (strong bodies, webbed back paws, tail for steering)

- Does the water hurt their eyes? (Note: the book does not point this out so be sure to tell students that a beaver does not close his eyes. He has a special cover to protect his eyes underwater and also special closings to protect his ears and nose. Also there is a special flap behind their front teeth so they can chew under water.)
- Who remembers what else beaver use their back paws for? (to comb their fur.) Note: The beaver has a special split toenail on his back paw designed just for grooming.
- A beavers teeth keep growing — they need to be worn down by chewing on trees.
- How many babies does the mother beaver have in the spring? (three or four)
- What are baby beaver called? (kits)
- What do beaver eat? (green plants, water lily roots, twigs, tree bark—(what do they like best aspen when available)
- With what do the beaver build their dams? (sticks, grass, mud, stones)
- What does a beaver do for a warning signal when there is danger? (slaps his tail on the water)
- When do beaver leave their first home? (often when 2 years old, but may stay longer if the food supply is good)
- How does the beaver get into his house? (He uses a tunnel that opens underwater.)
- Why do the beaver smell so good? (They clean house regularly and keep their fur very clean)
- How do beaver get food in winter? (From a pile of branches and sticks they put under the water in front of their house in the summer and fall)
- When do beaver start a new family? (Kits are born in April or May.)
- What is the name of the large group of animals beaver belong to? (rodents)
- Name some other rodents. (muskrat, mouse, squirrel)

What are the beaver's enemies or predators?

- Wolves, wolverines, mountain lions, coyotes and bears will attack beaver on land.
- Otters sometimes go right into beaver lodges and attack the beaver.
- Hawks, owls, eagles and foxes go after the kits on land.
- People who want beaver for meat or fur set traps or snares or even shoot beaver.

How does a beaver protect himself from enemies?

- Beavers are primarily nocturnal. They do most of their work at night and so are not easy to see.
- They build very strong lodges to keep out predators. The lodges usually have more than one tunnel.
- What is the largest beaver dam ever found? Where was it? (1/2 mile long, Alberta)
- Beaver have refuge holes along the bank where they can go to rest or hide.
- Beaver try to stay close to the water so they can dive and swim. They build their dams to make the water deeper and safer.
- If a beaver senses danger, he warns others with a slap of his tail.

How does a beaver survive the cold winter?

- Beaver store lots of branches in feed piles under the water close to their lodge so they can swim to these under the ice.

- Beaver can breathe in their lodges because there is always a small air hole at the top. When they are in the water there is a layer of air under the ice where they can breathe.
- Beaver lodges are very thick and strong and can keep out the cold. The beaver has very warm fur which he keeps oiled.
- Beaver have a greater effect on their environment than most animals. When they move into a new area they can cause drastic changes. In the same way, if a beaver dam is broken and can't be fixed or the beaver decide for some reason to leave the area, once again there is a great change over the following years. When beaver live in inhabited areas they can do a lot of good, but also a lot of damage as they work to change the environment. Methods to keep them from blocking drains have been developed-but don't always work.

Why do the beaver build dams?

- They build dams to back up the water and make it deeper. They need deep water:
- - to hide the entrance tunnels to the lodge.
- - so the water won't freeze to the bottom and they have room to swim under the ice
- - to store their food.
- - to dive into to protect themselves from predators.

What happens to the surrounding area when a beaver builds a dam?

- The water spreads out and the surrounding area is flooded.
- Existing trees and other vegetation will die but new types of vegetation will grow.
- A large area around the pond may become marshy. New birds and animals will move into the area.

What other creatures benefit from a beaver pond?

Other rodents: squirrels, mice, muskrats (muskrats will often share the beaver house)
birds: ducks, swans, snipes, etc.
frogs, insects
weasel, mink, marten
moose and other animals come to drink and feed

How do dams affect fish?

Dams make good pools, this helps keep water cool and creates safe spaces
Dams also reduce flooding
Dams store water for the dry season
Salmon and trout benefit from beaver dams

What happens if the dam is broken and the pond drains?

The changes will be more gradual than when the dam was built. Slowly the pond will become smaller and shallower and different animals will live there. The surrounding area which was only marshy will dry out and the forest will start to move in. The rich mud helps things grow and eventually the pond may become a grassy meadow or a patch of willows. The beaver may return after the aspen or willows grow large again.

How did the return of wolves to Yellowstone Park help the beaver?
They kept the elk out of the riparian areas and plants the beaver like to eat grew again.

Traditional Stories and Beliefs
Goal: To have students become familiar with some traditional stories and beliefs about beaver.

Objectives:
- Students will know that in many cultures it is believed that long ago animals were people and could change back and forth and that many of their present characteristics came from things that happened to them at that time.
- Beaver were often considered almost human and treated well
- Students will retell one traditional story about the beaver.
- Students will know why it is important to have respect for animals, and how that respect is shown for the beaver.
- Students will relate several traditional beliefs about beaver.

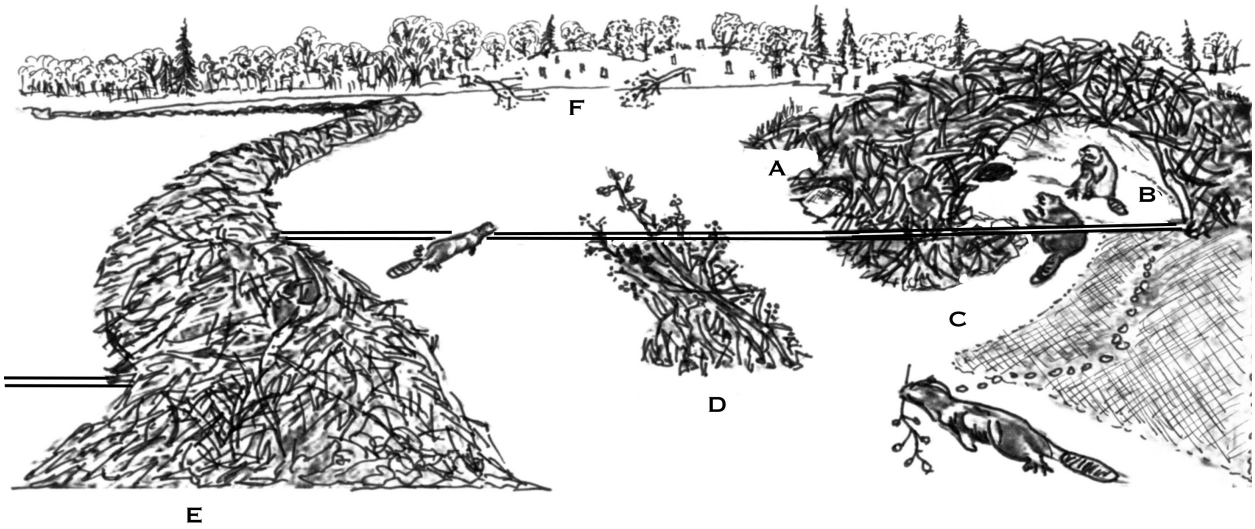
Activities:
- Read Animal People or a similar story to the class to introduce students to the idea that long ago animals could take human form and that many of their present characteristics come from things that happened then.
- There are several types of traditional beliefs about beaver. As with other animals their signs could be read to foretell weather or some coming event. There were also beliefs about how you should treat beaver, or what will happen if you show disrespect.
- Read "Beavers" from *Old Beliefs - Upper Kobuk*. Also look at the "Beavers" page from *Beliefs from Nikolai*. http://ukpreservation.com/wp-content/uploads/2012/07/Beliefs-from-Nikolai.pdf
- Discuss traditional beliefs. Why is It important to respect these beliefs today? (For more background information refer to *Make Prayers to the Raven* by Richard Nelson, p.136-138)
- Are there any special ways that First Nations people thought beaver should be treated? (Many. for example a Koyukon trapper would try to assure his future success by returning the beaver's bones to a lake or river, along with a request: "*Be made again in the water*." Because he showed them respect in this way, the animals would keep coming back to him.)

Have students find and read one or more of the following traditional stories about beaver:
- "Porcupine and Beaver" (several stories)
- "Porcupine, Beaver and Bear"
- "The Female Beaver" from *When People Meet Animals http://ankn.uaf.edu/curriculum/Athabascan/Athabascans/when_people_meet_animals.html*
- "The man who swam with the beavers" Man realizes that beaver and all creatures must be treated as equals
- "How the Beaver Got His Flat Tail" http://www.uwosh.edu/coehs/cmagproject/ethnomath/legend/legend12.htm.

- **Sajo and the Beaver People** by Grey Owl is still a good book for younger readers.
- Discuss the different types of traditional stories and the purpose of these stories. *(to teach behavior, explain the natural world, entertain, carry on a tradition, improve sustainability,*
- Have students write their own story about how the beaver got one of his distinguishing physical characteristics.

- **EAGER- The Surprising, Secret Life of Beavers and Why They Matter.** by Ben Goldfarb, 2018 Chelsea Green is an excellent resource.
- Lanman, R.B. et al. 2013. The historical range of the beaver (*Castor canadensis)* in coastal California. California Fish and Game 99(4):193-221.
- Pollock, M.M., G.M. Lewallen, K. Woodruff, C.E. Jordan and J.M. Castro (Editors). 2017. **The Beaver Restoration Guidebook: Working with Beaver to Restore Streams, Wetlands, and Floodplains**. United States Fish and Wildlife Service, Portland, Oregon. 219 pp.
- Ripple, W.J. and R.L. Beschta. 2012. Trophic cascades in Yellowstone: The first 15 years after wolf reintroduction. Biological Conservation. 145(1):205-213.
- Ryden, H. 1989. **Lily Pond: Four Years with a Family of Beavers.** William Morrow.

By David A. Bainbridge with parts adapted from lessons by Donna Miller MacAlpine, Linda D. Deardorff, Paula Z. Hogan



Match the letter with the label:

Beaver house
Winter storehouse of leaves and stems
Beaver dam
Main entrance
Secondary entrance
Tree cutting

The Beaver People