

A Bear's Menu

WHEN: Before the expedition

DISCIPLINES: Biology, mathematics, and fine arts

DESCRIPTION

Working in small groups, students examine the feeding habits of bears and draw pictures to show what bears do in spring, summer, fall, and winter. Students use a small pattern of a grizzly bear and increase its scale to construct a full-size silhouette of a grizzly in order to appreciate the bear's size.

LEARNER OUTCOMES

The student will be able to:

- Describe the seasonal cycle of a bear's life by examining its eating habits.
- Recognize the shape and size of an adult grizzly bear and compare it to his/her own body size.
- Describe how to distinguish black and grizzly bears.

BACKGROUND

Yellowstone provides habitat for both black and grizzly bears. Although they are different species and each has unique physical and behavioral characteristics, they share similar dietary requirements. Their feeding habits determine where they go to feed during the year as food availability changes with the seasons.

Grizzly bears were listed as a "threatened" species in 1975 under the Endangered Species Act. Due to the animal's great size and need for large, unpopulated tracts of land, Yellowstone has identified specific areas of the park as essential bear habitat. In these bear management areas, human use is limited and bears pursue natural behavioral patterns. Management of the land is essential for the protection and recovery of this threatened species. These efforts and those of many other agencies have allowed the grizzly population to grow to the point that they may be delisted as "threatened" species if their habitat remains healthy.

MATERIALS

Activity 1--Yellowstone Bears handouts, Bear Food Chart handout, Bear Characteristics handout, large circular pieces of paper, markers, crayons, pencils

Activity 2-- Grizzly Bear Pattern handout, scales, tape measure, scissors, measuring tape, drawing paper (total of 8 pieces, each 60 x 90 cm)

SUGGESTED PROCEDURES

Activity 1—SEASONS OF THE BEAR

The teacher will:

1. Divide students into small groups and distribute the Yellowstone Bears handouts. Allow time for students to read about each bear aloud in their small groups and complete its list of characteristics.
2. Discuss the differences in physical characteristics and behavior between black bears and the grizzly bears. Compare the diets of black bears and grizzly bears.

3. Distribute the Bear Food Chart to small groups. Discuss how to read the chart and be sure all students understand how to interpret its information, including vocabulary terms and names of plants and animals.
4. Pass out large circular sheets of paper. Instruct students to divide the circles into fourths and label them spring, summer, fall, and winter. Have students draw bears during each of the seasons, illustrating what the bears eat at that time of year. Students may wish to use the Bear Characteristics handout for accuracy in their drawings. **ALTERNATIVE:** Assign different small groups to make a poster illustration of each bear season.
5. Collect and display drawings. Discuss the bears' yearly feeding patterns. Why is this called a cycle?
6. Ask students where bears will be and what they will be eating at the time of their expedition.
7. Pose this dilemma: Some biologists warn that bears' traditional food sources are declining all across the Yellowstone region. Cutthroat trout are being eaten by lake trout in Yellowstone Lake, and a fungus is killing the white bark pine trees that supply the nuts that many bears fatten up on in the fall. What do you think could happen if these trends continue? What can be done, if anything, to protect these important food sources?

EXTENSION: Have students find articles about the latest research regarding bears, their diets, and their habitat. Yellowstone's website www.nps.gov/yell is one good source of this information.

Activity 2—GRAPH A GRIZZLY

The teacher will:

1. Divide the students into eight groups. Explain that the class will be making a life-size cutout of a grizzly bear. Distribute the grizzly pattern to each group and assign one numbered section to each group. Also distribute a piece of drawing paper to each group. Have students create a grid of 4" squares on their drawing paper (at least five squares by four squares) in pencil.
2. Explain to students that they will be increasing the size of the drawing on the pattern four times. Discuss ratio if this is part of your mathematics curriculum. Ask students to transfer each pattern piece, enlarging the scale of the lines drawn on the pattern.
3. Have students cut out their enlarged pieces, fit them together, and tape them.
4. Display the grizzly bear low on the wall where students can get down on all fours and compare their size to that of the grizzly bear.
5. Have students review the information on the Yellowstone Bears: Grizzly Bears handout they completed in the previous activity.
6. Discuss differences between grizzly bears and students, especially size. Are there any similarities in diet? Discuss importance of habitat for an animal as large as a grizzly bear. Discuss Yellowstone's role in protecting grizzly bears.

Yellowstone Bears: The Black Bear

LESSON RESOURCE: REFERENCE SHEET

Black bears live in the forests and open meadows of Yellowstone. They spend much of their time, spring through fall, looking for food. A black bear's diet is similar to a grizzly bear's. Most of its food consists of plants, such as grasses, berries, nuts, roots, and occasionally the soft chewy layer of wood beneath tree bark. It eats some meat, such as carcasses, small rodents, elk, spawning trout, frogs, and salamanders. Black bears eat almost any insect, especially ants.

Black bears come in a variety of colors. They may be black with a light brown nose, brown, cinnamon, or blond. Black bears are smaller than grizzly bears. Adult black bears can weigh 60-145 kg (135-315 lb.) and measure about 1 meter (3 ft) at the shoulder. Black bears, even cubs, are excellent climbers, and their short claws (3.8 cm or 1.5 in.) help them climb trees for protection and reach the seeds within pinecones. Both grizzly bears and black bears can easily run up to 64 km per hour (40 mph) for short distances.

A black bear makes its den in a natural cavity such as a cave, a hollow tree, an abandoned den of another animal, or under rocks, logs, or tree roots. When born, a cub weighs about as much as a can of soup and is only 20-25 cm (8-10 in.) long. When they leave the den, cubs are about 2.27 kg (5 lb.). Black bear cubs stay with their mother for a little more than a year. A black bear mother may raise six to eight litters in her lifetime. Black bears typically live from 15 to 20 years.

Black Bear Characteristics

Weight: _____

Height: _____

Color: _____

Diet: _____

Habitat: _____

Average Life Span: _____



Yellowstone Bears: The Grizzly Bear

LESSON RESOURCE: REFERENCE SHEET

Grizzly bears, with their distinctive shoulder hump of strong muscle and long front claws, feed and roam in Yellowstone's open meadows, close to forested hillsides. Grizzlies can be brown, black, cinnamon, or even blond, with many hairs having silver tips. Although they measure a little more than 1 meter (3.5 ft.) at the shoulders, they can reach nearly 2 meters (7 feet) when they stand on their hind legs. Adult bears can weigh 90 to 320 kg (200-700 lb.), but the average size is about 154 kg (340 lb.).

Bears have a keen sense of smell that helps them find food and to know when other animals and people are nearby. Grizzly bears like to feed on lots of plants such as grasses, roots, berries, and pine nuts. They eat some meat, such as winter-killed or wolf-killed carcasses, elk calves, spawning trout, and small burrowing animals. They also like to eat insects, such as ants, grasshoppers, and moths. A recent study in Yellowstone found that grizzlies consume 266 species of other living things in the park.

Besides digging for some of their food, grizzly bears use their long claws (7.5 cm or 3 in.) to dig their winter dens. While in their dens, cubs are born, weighing only about half a kilogram (1 lb.). For the next couple of months, cubs feed on the rich milk of their mothers. When they emerge from their dens in the spring, cubs weigh between 2.0 and 4.5 kilograms (5-10 lbs.). While bears are in their winter dens, they do not eat, drink, urinate, or defecate. Grizzly bear cubs frequently spend two years with their mother before venturing out on their own during the spring of their third year. A grizzly bear mother may raise four to six litters in her lifetime. Most grizzly bears live between 15 and 20 years.

Grizzly Bear Characteristics

Weight: _____

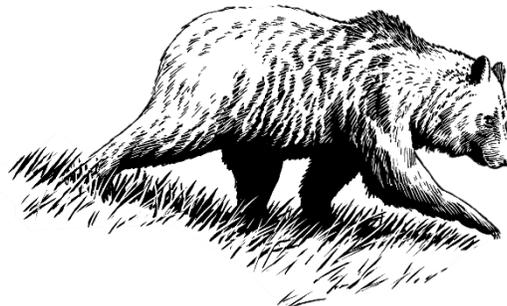
Height: _____

Color: _____

Diet: _____

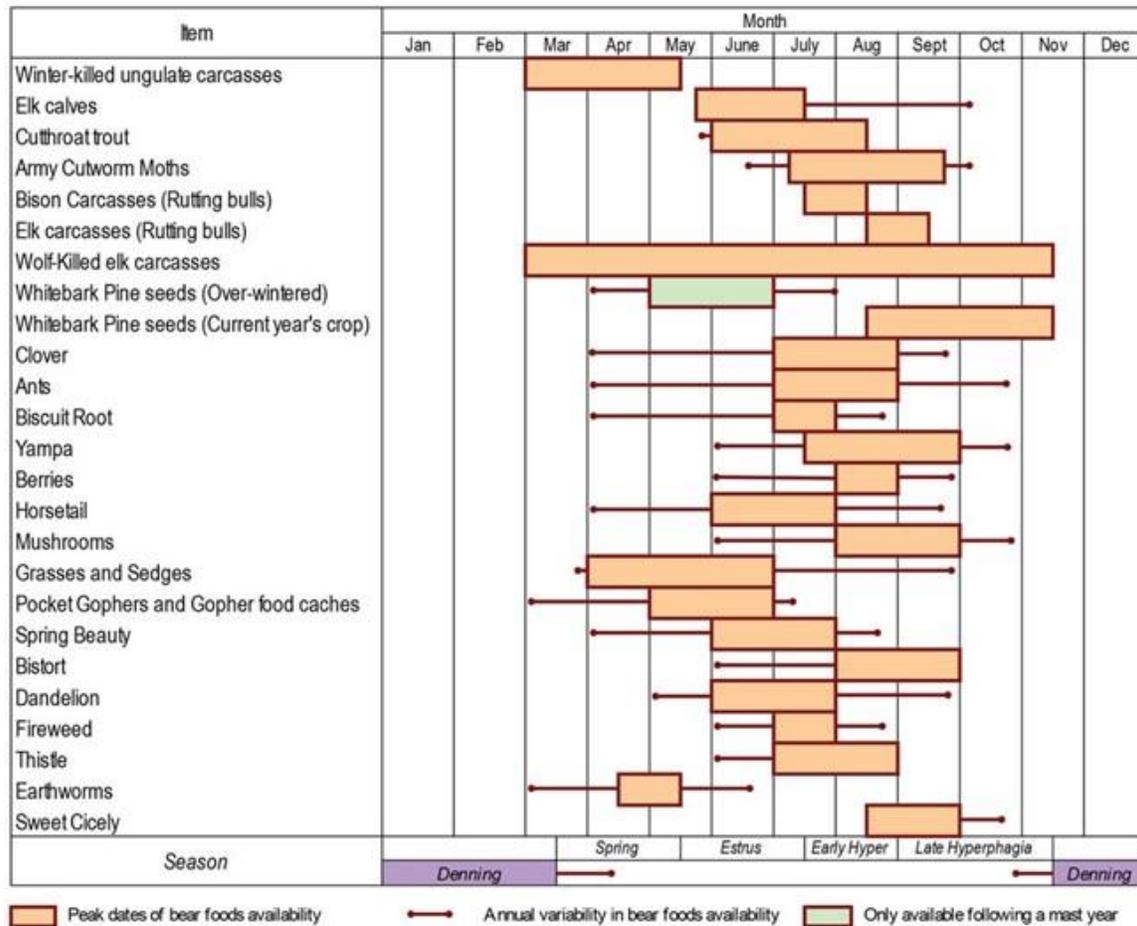
Habitat: _____

Average Life Span: _____



Bear Food Chart

LESSON RESOURCE: REFERENCE SHEET



The chart above shows what foods, both plants and animals, are eaten by bears throughout the year.

GLOSSARY:

Carcass—the body of a dead animal (often a food source for other animals)

Denning--period when a bear is in a den (usually a small underground chamber) where it will spend the winter hibernating; cubs are born in the den

Estrus--the time when bears mate

Hyperphagia--a state before hibernation in which bears are always hungry and eat so much that they gain a lot of body fat (up to 3 pounds or 1.5 kg per day!)

Mast year--a year when pines produce a lot more seeds than usual

LESSON RESOURCE: REFERENCE SHEET

Characteristics of Black and Grizzly Bears

Grizzly

hump



rump lower than shoulders

Black

hump absent



rump higher than shoulders

dish shaped profile



ruff of long fur

straight profile



ruff absent

claws longer and less curved



claws shorter and more curved



claws longer



toes closer together and less arced

claws shorter



toes more separated and more arced

* A line drawn under the big toe across the top of the pad runs through the top 1/2 of the little toe on black bear tracks and through or below the bottom 1/2 of the little toe on grizzly tracks.

Grizzly Pattern

LESSON RESOURCE: REFERENCE SHEET

Grizzly Pattern 1 square = 4"
(Height at shoulders approximately 39")

