Bear Dilemma Teacher Plan

Nuts and Bolts

Objective: Students will define wildlife management as the application of scientific knowledge and technical skills to protect, preserve, conserve, limit, or enhance wildlife and its habitat; describe how wildlife resources can be managed and conserved; demonstrate their understanding that wildlife species are important components of a larger ecosystem that should be managed within the context of that ecosystem; distinguish between consumptive and nonconsumptive resource users; consider the needs of people as well as wildlife in the sustainability of the resource; and distinguish between game, nongame, endangered, and threatened species of wildlife.
Grade level: 9-12
Time: 90 minutes or two 45 minute sessions.
Group size: 15 to 30 students
Setting: In or Outdoors.

Students conduct a board of commissioners meeting to hear the concerns of constituents regarding the increasing bear population in a local county and make a decision concerning this issue.

Materials

Copy or copies of the Big Tree County scenario, role cards, and a timer with a bell. A flip chart and marker might be handy for making notes that the whole class can see, but is not necessary.

Preparation

Review the background information provided and prepare a short 15 minute verbal presentation about the information on wildlife management. Be sure to discuss key concepts using Michigan's black bear as an example. Have students distinguish between game and nongame animals.

Background Information

For management purposes, wildlife often has been divided into categories, including game, nongame, endangered, and threatened. Game species are those that currently are hunted, fished, or trapped by humans for recreational or economic purposes. Nongame species are those that traditionally are not hunted, fished, or trapped for either recreational or economic purposes by humans. Endangered species are those in danger of extinction throughout all or a significant portion of their range. Threatened species are those likely to become endangered.

Wildlife management applies scientific knowledge and technical skills to protect, preserve, conserve, limit, or enhance wildlife and its habitat.

Conservation is the use of natural resources in a way that ensures their continuing availability to future generations through wise use or protection. Wildlife management considers the needs and desires of people, as well as the viability of wildlife. In the context of an ecosystem, management of one species of wildlife may have consequences-positive or negative-for other species within the same ecosystem.

Black Bear (*Ursus americanus*) populations in Michigan have been steadily increasing since at least the 1990s. An estimated 11,000 bears (including cubs) occupy approximately 35,000 square miles of suitable bear habitat in the Upper Peninsula (UP) and Northern Lower Peninsula (NLP). Greater than 85 percent of the bear population resides in the UP where large tracts of state, federal, and private commercial forest lands contain good to excellent bear habitat. Bear populations in the UP are increasing and decreasing in the NLP. An increasing number of bear observations in southern Michigan suggest that bears are expanding from the NLP into the Southern Lower Peninsula.

Black Bears have the same basic needs as all other animals: food, water, shelter, and space. Black bears are omnivorous and opportunistic feeders, using both plant and animal matter. In early spring, bears frequent wetlands feeding on plants such as skunk cabbage, sedges, grasses, and squawroot. Fruits and berries are important during summer and fall, including blueberry, elderberry, blackberry, June berry, pokeberry, wild grapes, chokecherry, black cherry, dogwood, and hawthorn. Hard mast from oaks, beech, hickory, and hazelnut become important in the fall as bears accumulate significant fat reserves for the winter. Bears feed heavily in the fall and can gain as much as one to two pounds per day.

The majority of animal matter consumed by bears includes colonial insects and larvae such as ants, bees, beetles, and other insects. However, bears are opportunistic feeders and they are capable of preying on most small to medium sized animals including mice, squirrels, woodchucks, beaver, amphibians, and reptiles. Under certain conditions bears may actively hunt for newborn white-tailed deer fawns. When available, bears also feed on carrion. Human-related foods include agricultural crops (e.g. corn, apples, peaches, and cherries), apiaries, bird feed, and garbage.

Black bears are most frequently found in large, heavily forested areas. In Michigan, bears tend to use a mixture of vegetation cover types including deciduous lowland forests and coniferous swamps, mature and early-successional upland forests, and some degree of forest openings consisting of grasses and forbs.

In Michigan, bears typically enter their den by December and come out in late March or April. Bears are not true hibernators because they only drop their body temperature by a few degrees, where as a hibernating animal's body

temperature is almost the same as their surroundings. Bears are easily awakened and capable of fleeing immediately if they feel threatened during their denning period. Dens may be excavated or constructed as ground nests. Bears will also den in rock cavities, root masses, standing trees, openings under fallen trees, and brush piles.

Generally, female black bears are sexually mature at three to five years of age, yet are known to breed at two years of age in the Northern Lower Peninsula (NLP). Males are sexually mature at two years of age but typically do not participate in breeding until four to five years of age. Cubs are born helpless and hairless, typically in January while females are in the den. Cubs weigh 10 to 16 ounces at birth but because of high fat contents in their mother's milk, they grow quickly. By the end of their first summer, cubs typically weigh 50 to 60 pounds. Cubs stay with their mother for about a year and a half, denning together the winter after birth and separating in late May the following spring. Adult females typically breed every other year.

Black bears are relatively long lived. In Michigan, black bears have been known to live to be over 30 years of age. Most recorded deaths in Michigan are from hunting or vehicle collisions.

There are natural limits to the number of bear a particular habitat can support. This concept is known as the biological carrying capacity. An area of land will support only so many bear. Black bears shift activity patterns seasonally in response to the availability of food. The area that a bear occupies seasonally or annually is referred to as its "home-range." The size of home-ranges typically varies by the sex and the age of the bear. Females with newborn cubs have smaller home-ranges that gradually increase as cubs mature and male home-ranges are generally larger than females. Females in the NLP had an average home-range size of about 50 square miles, and males had an average home-range size of about 335 square miles. Home-ranges of female bears generally overlap, but overlap of mature male home-ranges is less common.

Humans are the main predator of bear. Wildlife managers are able to manage bear populations using regulated hunting to ensure a viable bear population as well as a healthy forest ecosystem. Wildlife managers use season lengths and bag limits to regulate the number of bears taken by hunters each year. Annual monitoring ensures that bear populations remain at a level that is compatible with local community tolerance for bear and with the forest ecosystem.

Bear populations in some areas have begun to expand. Although most areas have not yet reached the biological carrying capacity, many are approaching a new threshold defined as the "cultural carrying capacity." The cultural carrying capacity is a function of the human population. As developments expand into what was once bear habitat, the bear populations may have more need to survive in urban environments. At some point the bear

population exceeds a level acceptable to the local human population. This threshold varies more by the tolerance of the human population than the actual density of the bear population.

Introduction (30 minutes)
Present your short wildlife management presentation to the group. Discuss with the students the key concepts you discussed in the presentation using black bear as an example. Have the students distinguish between game and nongame animals.

Body (50 minutes)
Distribute the copies and present the Big Tree County scenario to the students. Then select five or seven students to serve as members of the Board of Commissioners, and appoint one of them as chairperson. Select one student to portray each of the individuals described in the character cards. Depending on the class size, educators may or may not use all of the roles. Allow students about 5 minutes to develop a position on the role they have been given.

Have the rest of the students participate as townspeople. Instruct them that they will develop their own personal positions on the issue, which they may change after listening to the positions of the speakers.

Have each student with a role give a brief (3-4 minutes) presentation to the Board of Commissioners from the perspective of the person he or she represents, stating his or her opinions on the issues and offering suggestions as to how to resolve the issue. This session should be conducted in the same manner as a normal public meeting.

The Board of Commissioners then takes a brief recess to make a decision. While the Commissioners are meeting, the student constituents involved in the role-play and the students in the audience will cast their own written votes. Tally the student votes.

Have the Board of Commissioners report its decision to the group. The decision of the Board is compared to the votes cast by the constituents.

Conclusion (10 minutes)
Discuss with the students how they feel about the decision of the Board of Commissioners. Did it reflect the prevailing perspective of the constituents? Did everyone vote the same? How did the view point of each board member and group representative influence those votes? Which groups will be supportive of the board's decision and which will be opposed? How did the interplay of ideas and perspectives strengthen the ability of the group to fully address this issue?

BEAR DILEMMA - STUDENT PAGES

Big Tree County's Bear Dilemma

Big Tree County is a county in the Upper Peninsula of Michigan. In Big Tree County there are many lakes, rivers and springs as well as upland and lowland forests. Within Big Tree County there is over 200,000 acres of public forest. There are also thriving orchards and apiaries that make this county famous. Another draw to Big Tree County is the various types of hunting and fishing opportunities including bear hunting. About 1,200 bear licenses are offered every season and about 240 bears are harvested. The bear season typically runs mid September through late October. Hunting for bear is allowed in most of the state forest (except near parking lots and adjacent buildings) and throughout the county on many private lands. However, mother bears with cubs are protected from take during the bear season. Even with the hunting opportunities within Big Tree County citizens are becoming concerned with the increase in the bear population.

Residents from all around the county have petitioned the local board of commissioners to do something about the increasing bear population in Big Tree County. Ms. Peach, the local orchard owner, allows hunting on her property but continues to have major bear damage throughout the summer, her prime time for growing fruit. She feels that in order to keep her orchard profitable there should be a special season open in the summer to keep the bears away. Mrs. Bumble's apiary is near Ms. Peach's orchard and has sustained bear damage as well, she is in favor of removing all bear from the area. Many other residents in the area are supportive of hunting but do not have issues with the current bear population size or even want more bears. However the issue has divided the counties residents and arguments about what to do with the bears are common. Some residents don't mind seeing the bear and are willing to tolerate their presence. Many visitors to the state forest do not want the bears harmed because they enjoy having the chance to see a bear on their trips to the forest.

The Board of Commissioners has called a public meeting to listen to the concerns of their constituents and ultimately to make a decisions concerning the issue. The Board of Commissioners is charged with managing using the best available science and with balancing social concerns. Bear populations could biologically be lower or higher so the decision to decrease the bear population or continue to let it increase is a social consideration that must be weighed evaluating the pros and cons of either decision. The board has made no decision as to what option or options (more than one might be appropriate) to approve and has convened this meeting to hear ideas from their constituents.

Adapted from Project Wild K-12 Curriculum and Activity Guide. Council for Environmental Education 2004. Lesson: Deer Dilemma

BEAR DILEMMA - STUDENT PAGES

Big Tree County's Bear Dilemma – Role Cards

Ms. Patty Peach grows different kinds of fruits at her orchard and has had increasing damage to her trees and plants from the local bear population. Ms. Peach has tried many non-lethal deterrent methods but has been unsuccessful and continues to receive major damage to her orchard during the summer from the bears. She feels it may be necessary to have a special season in the summer in her area to keep the bears from destroying her orchard.

Mrs. Betty Bumble has a large apiary near Ms. Peach's orchard and has also had many problems with bears coming and damaging her bee hives in search of honey. Mrs. Bumble hates the bears and sees no value in their presence. She is supportive of removing all the bear from the area.

Mr. Pat Packer likes to go camping and backpacking in the state forest in Big Tree County. He is concerned about himself and other outdoor users being safe with the increase of bears and is also worried about having any special hunting seasons allowed in the area which could cause conflicts or safety hazards. Mr. Packer does not oppose the lethal removal of bears from the area; he just wants to be sure things are done safely and in the least conspicuous way possible.

Mr. Fred Fetish loves the bears! He makes sure to have plenty of food sources available on his property to draw the bears in. He especially loves when the mother bears bring her cubs to his yard. He does not want any harm to come to the bears, especially mother bears and their cubs!

Mrs. Debbie Defender is a member of an animal rights organization that believes hunting of animals for any reason is cruel and unnecessary. She enjoys seeing the bear in the area but is concerned about he potential for accidents and about the health of the bear population. She feels local residents should use other methods of control.

Mr. Stewart Stalker is an avid hunter and enjoys hunting bear. He believes that the best way to manage the bear population is to allow regulated hunting in the state forest and surrounding private properties (where allowed). He also sees this as an opportunity to provide hunter education to the community and to dispel some of the misconceptions about hunting and bear management.

Mr. Willy Worry has seen a mother bear and her cubs in and near his neighborhood. He is very concerned for the safety of the kids in his neighborhood. Thinks there must be too many bears if they are seen this often in residential areas and the population needs to be reduced.

Ms. Lilly Lessons is a school teacher at a school adjacent to the state forest and has seen bears raid the schools dumpsters. She is very afraid that a bear will attack the students while they are outside. She is very concerned about the idea of hunting occurring so close to the school and wants to make sure the kids are safe.

Dr. Don Diversity teaches environmental biology at a local university, where he also does research on wildlife populations and factors that affect population changes. He prefers monitoring the bear population size annually and using a combination of management techniques tailored to the population size each year.

Mrs. Ida Irk is mad about seeing bears within city limits! This is unacceptable! Animals belong in the woods not in the city!

Mr. Brett Bar is a hunter who has tried hunting for bear since he was old enough to hunt and is incredibly upset that to this day he hasn't been able to harvest one. There need to be more bear in this area to give all hunters a chance to harvest a bear!