Deer Dilemma

Objectives

Students will (1) define wildlife management as the application of scientific knowledge and technical skills to protect, preserve, conserve, limit, or enhance wildlife and its habitat; (2) describe how wildlife resources can be managed and conserved; (3) demonstrate their understanding that wildlife species are important components of a larger ecosystem that should be managed within the context of that ecosystem; (4) distinguish between consumptive and nonconsumptive resource uses; (5) consider the needs of people as well as wildlife in the sustainability of the resource; and (6) distinguish between game, nongame, endangered, and threatened species of wildlife.

Grade Level: 9–12

Subject Areas: Social Studies, Language Arts, Science, Environmental Education

Duration: minimum two 45-minute sessions

Group Size: 15 to 30 students

Setting: indoors

Conceptual Framework Topic References: WMIA, WMIA1, WMIA2, WMIA3, WMIA4, WMIB, WMIC, WMIIA, WMIIB, WMIIB1, WMIIC, WMIIC1, WMIIC3, WMIID, WMIIE

Key Terms: wildlife management, conservation, game animal, non-game animal, endangered, threatened, consumptive, nonconsumptive

Appendices: none

Method

Students conduct a board of commissioners meeting to hear the concerns of constituents regarding the ever-increasing deer population in and around a local park and make a decision concerning this issue.

Materials

Copy or copies of the Crystal Lake Park scenario on page 430, role cards on page 431, a timer with a bell

Background

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.

The white-tailed deer (*Odocoileus virginianus*) is the most common and easily recognized large herbivorous game mammal in the United States. Deer populations are currently at record levels throughout most of their range and deer densities are greater than when the early colonists arrived in the New World.

By the early 1900s, deer had vanished from much of their historical range because of extensive forest clearing and unregulated hunting for food and profit. Deer populations began to rebound with the advent of modern wildlife management and the passage of the Federal Aid in Wildlife Restoration Act. Although many states had passed laws to protect deer, very few had the financial capabilities to hire enough game wardens to enforce these laws. This act helped states by dedicating a portion of a federal excise tax on sporting goods and firearms to wildlife management work.

White-tailed deer have the same basic needs as all other animals: food, water, shelter, and space. A deer eats herbaceous and woody plant material. However, the types of plants and the extent to which deer will eat different plants can vary greatly across the deer's range. Deer in areas of high deer populations generally are less picky eaters. Deer in low-density deer herds can be more selective in their food choices. Deer obtain water both by drinking and through eating succulent, herbaceous vegetation.

Deer live in farmland and timberland. They also may live in forests, but areas of early successional forest stages and agriculture fields are considered to be better deer habitat and are capable of supporting higher deer densities. Subdivisions with manicured lawns and ample herbaceous plantings are better deer habitat than many of our large, undisturbed forestlands.

Deer are a prey species with a high reproductive rate allowing for rapid population growth in the appropriate situations. One male, or buck, deer will breed with many different female, or doe, deer during a given mating season. Mature does (those at least 2 years old) generally have two fawns annually. If the deer herd is in excellent physical condition, many does may have triplets. In fact, deer populations in excellent physical condition often have yearling does producing two fawns, and the female fawns even can have fawns themselves in their first year of life. In the absence of predators, deer populations can grow to very high densities in a short time.

There are natural limits to the number of deer a particular habitat can support. This concept is known as the biological carrying capacity. A parcel of land will support only so many deer. Once that number is reached, the general health of the deer population will begin to decline. Mature does will produce only one fawn, and yearlings and fawns no longer breed. At this level of population density, the deer begin to greatly affect the species composition of the land they live on. Deer will eat any plant material within their reach. The result is a forest completely devoid of any understory habitat and the disappearance of all the woodland creatures that depend on the understory as their habitat. Plants once found in that area become virtually nonexistent and the once-balanced ecosystem becomes skewed to one species, deer. Regeneration of tree species is often halted because the deer almost immediately browse the young saplings.

Overabundant deer herds, therefore, are potentially devastating for forest ecosystems as a whole. Since societal changes and economic concerns have virtually eliminated natural predators of deer, such as wolves and cougars, throughout much of their range, humans are left as the last remaining predator of deer. Wildlife managers are able to manage deer populations using regulated hunting to ensure a viable deer herd as well as a healthy forest ecosystem. Wildlife managers use season lengths, bag limits, and sex permits (where hunters can hunt either does or bucks) to regulate the number of deer taken by hunters each year. Annual monitoring ensures that deer populations remain at a level that is compatible with local community tolerance for deer and with the forest ecosystem.

continued

As additional areas are closed to hunting for a many reasons, deer herds in these 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 rural habitat, the deer populations become protected and grow uncontrolled. For a period of time, this growth has no noticeable impact for the humans or the deer. At some point, however, the deer 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 deer population. Deer begin eating ornamental plants, and the number of vehicle-deer collisions increase.

Biologists and researchers continue to study methods to control deer and human conflicts in those areas. Lethal measures are currently the most effective method; however, much research has been conducted on birth control and other nonlethal methods.

Procedure

1. Present information on wildlife management to students, and discuss key concepts using the white-tailed deer as an example. Have students distinguish between game and nongame animals.
2. Present the Crystal Lake Park scenario to students. Make copies of the scenario for each of the students.
3. Select five to seven students to serve as members of the Board of Commissioners, and appoint one of them as chairperson.
4. Select one student to portray each of the individuals described in the student pages at the end of the activity. Depending on class size, educators may or may not use all of the roles. (Names may be adjusted to match the gender of the students.)
5. Allow students time to develop a position on the role they have been given.
6. 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.
7. Have each student with a role give a brief (3 to 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. (Students may be encouraged to attend a local board or commission meeting to learn how these meetings function.)
8. 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.
9. Have the Board of Commissioners report its decision to the group.
10. The decision of the Board is compared to the votes cast by the constituents.
11. Discuss with 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 viewpoint 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?

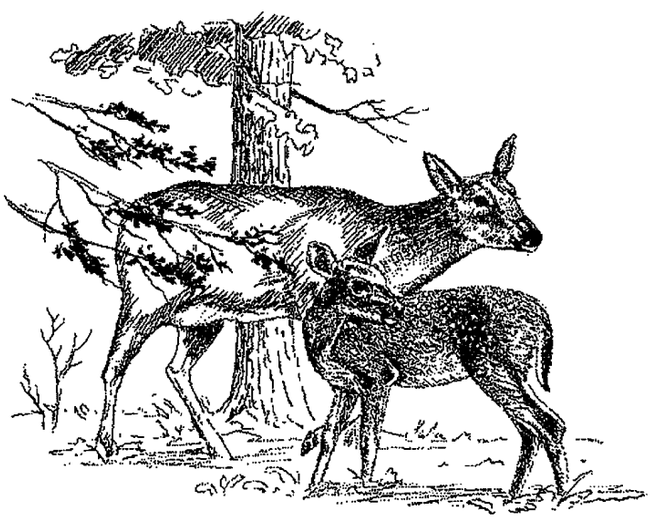
12. Have the students discuss the main concepts of the activity:
    - What is the purpose of conservation? What is wildlife management? How can wildlife resources, such as deer, be managed for conservation purposes? How is scientific knowledge (of biology, ecology, etc.) important in understanding the complexities of wildlife management?
    - Should deer be managed to consider other plants and animals or just humans? What are the positive and negative consequences for each of these components in our ecosystem?
    - Each constituent group had different views. How could the consideration for all of these concerns affect the scope and effectiveness of those responsible for wildlife management?
    - How should the deer be managed on privately owned land that is not directly controlled by state or federal wildlife management agencies?

Extensions

1. Encourage students to contact local wildlife professionals, foresters, park managers, and local interest groups to develop an understanding of how those situations are handled in their state or community.
2. Have students research management issues related to deer or other wildlife in their community and discuss how wildlife management concepts apply to the issue.

Evaluation

1. Use the students' presentations and discussions of how and why wildlife could be managed from Steps 3 through 11 in the Procedure section as an evaluation tool.
2. Have the students write their responses to the questions posed in Step 12 of the Procedure section.



continued

Student Pages

Crystal Lake Park's Deer Dilemma

Crystal Lake Park is an 850-acre multiple use park in Suburbanville, USA. The park has several soccer fields, a baseball complex, and a 6-acre lake used for fishing and canoeing. There is a nice picnic area adjacent to the lake. Nature trails exist around the lake, and the upper end of the lake is composed of a small wetland renowned for its excellent bird watching. Several nature trails exist in the forested portion of the park, but approximately 600 acres of the park land is seldom, if ever, entered by park visitors. The park is bordered on the southern and eastern sides by subdivisions. To the west lies the last remaining farm in this portion of the county. The Wolfpack River bounds the northern portion of the area.

Residents of the subdivisions, along with Charlie Fields, the neighboring farmer, have petitioned the local Board of Commissioners to do something about the ever-increasing deer population in the park. Mr. Fields currently allows hunting on his property but complains that the deer simply move to the park when the hunting starts and that very few are taken by the hunters on his property during the hunting season. Incidentally, he has resorted to using out-of-season nuisance animal permits to shoot the deer at night while they are eating his crops. Mr. Fields does not like this option but feels he must shoot the deer in order to keep his farm profitable. The residents of the local communities have tried everything from fencing and repellants to feeding the deer in hopes of keeping the deer away from their flowers and out of the roads. Many residents are ready to use lethal control in this area. However, the issue has divided the community, and arguments about what to do with the deer are common. Some residents don't mind the deer and are willing to tolerate their presence. Many park visitors do not want the deer harmed in any way because they enjoy seeing the herds of deer grazing on the soccer fields in the evenings as they drive through the park.

The Board of Commissioners has called a public meeting to listen to the concerns of their constituents and ultimately to make a decision concerning this issue. State laws do not prohibit hunting in this park, so the decision will need to be made at the local level. 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.

Role Cards

Charlie Fields

Mr. Fields is a local farmer. His family has farmed this land for three generations, and he plans to pass the farm along to his children. He grows mostly grain crops on his farm. For the past 5 years, he has experienced considerable loss from deer eating his crops. Mr. Fields leases the hunting rights on his farm to a local group of hunters. The hunters have told Mr. Fields that they see very few deer during the hunting season because they all appear to move into the park. Mr. Fields is frustrated and would like the county to open the park to hunting in order to reduce the density of deer.

Dorothy Right

Mrs. Right is a local attorney who lives in one of the adjacent subdivisions. Mrs. Right enjoys hiking in the park during the evening hours with her two children. She is very concerned about the idea of hunting occur-ring adjacent to their subdivision and doesn't want any harm to come to her children. Mrs. Right does not oppose the lethal removal of deer from the park; she just wants to be sure things are done safely and in the least conspicuous way possible.

Michael Green

Mr. Green is a resident of the local subdivision and is an avid gardener. His roses were once award-winning and the envy of his friends and neighbors. Now his roses are food for the local deer herd. He is very upset and has tried several forms of repellants and fences to no avail. Mr. Green hates the deer and sees no value in their presence. He is supportive of removing all deer from the park.

Bob Stats

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

Betty Bumper

Ms. Bumper lives at the end of county road in an area that is quickly becoming developed with new housing. Her work schedule demands that she be on the road at sunrise and at dusk when the deer appear to be most active. Therefore, she has hit several deer, and her auto insurance has increased. She is supportive of whatever means can be taken to diminish the number of deer in the area.

Don Dearlove

Mr. Dearlove is a member of an animal rights organization that believes that hunting of animals for any reason is cruel and unnecessary. He enjoys seeing deer in the area but is concerned about the potential for accidents and about the health of the deer herd. He feels local residents should use other methods of control.

Lynn Ranger

Ms. Ranger is a park naturalist who can testify about the reduction in the understory plant diversity of the park and how the population of deer has affected it. She has documented evidence that some rare plants are declining in number and some animal species are being affected by the declining plant diversity.

John Dodds

Mr. Dodds's son contracted Lyme disease last year, and he blames the deer. He is in favor of any means of removing the deer to diminish the threat of contracting this disease.

Brad Arms

Mr. Arms is one of the people who hunt on Charlie Fields's land. He believes that the best way to manage the deer herd is to allow regulated hunting in the park. He also sees this as an opportunity to provide hunter education to the community and to dispel some of the misconceptions about hunting and deer management. He is willing to pay for the opportunity to hunt in the park and to donate a portion of the harvested meat to food shelters in the community.