



CONSERVE WILDLIFE

FOUNDATION OF NEW JERSEY

The following lesson plans are included in this kit to enhance the learning experiences of children participating in *Species on the Edge Art & Essay Contest*.

The first lesson plan is intended to precede the contest; the second highlights the poster and essay components; and the third should occur after the contest.

YOUR FEEDBACK IS WELCOMED AND APPRECIATED.

You may email comments to: Maria.Grace@ConserveWildlifeNJ.org or call (609) 984-0621.

To learn more about the Conserve Wildlife Foundation of NJ, please visit www.ConserveWildlifeNJ.org

Lesson #1 (Precedes the Art & Essay Contest) When Habitats Collide

Grade Level: Grade 5

Setting and Estimated Class Time

- Indoor classroom setting
- Estimated class time for steps 1 – 8: 1 hour

Lesson Objectives

After participating in this lesson, students will be able to:

1. List the basic needs of people and provide examples for how these needs are met within a house as well as within a neighborhood;
2. Identify ways that some wildlife species adapt or change to living around people;
3. Identify reasons why other species are not able to adapt or change and can be more easily impacted by people;
4. Describe actions that can be taken to address potential impacts that development and growth may have on certain wildlife populations.

Materials: None

Background Information

People have the same basic needs as other animals, both wild animals as well as domestic animals. Every animal needs a home. An animal's home, or its 'habitat,' not only includes its shelter but the areas outside and around the house or shelter where the animal frequents to obtain food and water. Hence, the basic needs that must be met for an animal to survive include shelter, food, water and space. An animal's habitat is the area where the animal is able to meet its needs sufficiently; and, it may be similar to the neighborhood or community that a person lives in.

As of the Year 2000, New Jersey had over 8,400,000 residents and continues to have the greatest number of people per square mile (almost 1,135), thereby recognized as the most densely populated state in the country. While the State can boast of being home to more than 800 species of wildlife, it also lists almost 10% of these species as being

“Keeping New Jersey’s Wildlife In Our Future”

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threatened or endangered. Preserving and maintaining the diversity of the State's wildlife populations is important, not only to reflect the integrity and vitality of New Jersey's ecosystems, but to also not upset these systems biologically and ecologically.

The New Jersey Department of Environmental Protection is charged with maintaining the delicate balance between the needs of the State's residents and the needs of the State's wildlife populations. Needless to say, in many instances the 'habitats' of people collide with the habitats of different species. Development poses the biggest threat to the State's more sensitive wildlife populations, along with pollution and the alteration or manipulation of habitat.

The purpose of this lesson is to help students understand that the places where people live are often shared with, or located within a short distance from, other animals. As people live on in established neighborhoods, communities and cities, or as they spread out in newly developed areas, they will manage to meet their needs accordingly. In so doing, their activities will most likely impact the populations of certain animals. It is not what people need, or why people need certain things that are detrimental; what is important is how people meet these needs – how they maintain their neighborhoods and communities and how they manage the growth and development of these areas.

Procedure

1. Draw a simple diagram of a house on the chalkboard, making sure that there is a blank area for writing a list up on the board on either side of the house.
2. Ask the students to state what exists inside or immediately outside the house that helps them to meet their basic needs (i.e., refrigerator, stove, running water, bedroom/shelter, yard, etc.). Have the students write these items down inside the house diagram.
3. Ask them to consider if the house is able to supply them with their basic needs on an ongoing basis, without being replenished (the answer is most likely 'no'). Then ask them to consider the types of trips that they and other family members make from the house to other places, in order to meet the needs of the family. Have them write these places outside of the house and draw a two-way arrow that connects the place with the drawing of the house. Such trips could include:
 - A **grocery store** to obtain food and drink items;
 - A **shopping mall** to purchase clothing and shoes;
 - A **post office** to pay bills for services related to electricity, water, credit card bills, etc.;
 - A **hardware store** to repair or construct something related to the house;
 - A **gas station** for gasoline in a car that takes you to these places;
 - An **auto repair shop** where a mechanic occasionally must fix the car that takes you to these places;
 - A **bank or ATM machine** to cash checks and/or obtain money for the purchases and services listed above;
 - A **place of employment** (numerous places) where you or family members are employed in order to obtain money for the purchases and services listed above.
4. Next, ask the students to answer these questions and write these items on the board:
 - a) How are some services and needs brought to, and into, the house? (Consider: electrical and telephone wires; television cable; natural gas lines; oil tanks; water pipes; sewers; etc.);
 - b) How are these places physically connected with each other? Or, how do people get around in order to travel to these places? (Consider: roads; freeways; sidewalks; parking lots; bridges; etc.).
5. Ask the class to describe what the terms "neighborhood" and "community" mean to them. In either case, do their descriptions include the home, the places that must be visited by the people living in the home, and the transportation avenues that connect these places? A person's neighborhood has sometimes been compared to an animal's habitat – the place where the person's needs are sufficiently met.

6. As residents in New Jersey proceed to develop or redevelop geographical areas to better meet their needs, such development can alter, interfere with, or possibly destroy, the habitat and behavioral needs of New Jersey wildlife. Ask the students to identify ways that some species of wildlife can adapt and survive while living within or near an active neighborhood or community, or near the activities of people (such as near timber cutting or an industrial park, or within a multi-use recreational area). Consider:
- Develops new or different food sources, types of food, or means to obtain food;
 - Develops new or different locations for, or types of, shelter;
 - Develops new travel patterns or routes to obtain food or water;
 - Survives because a predator that normally keeps the population down is reduced or eliminated by people;
 - Alters migratory and/or mating behaviors;
 - Exists with land-based or water pollution and litter;
 - Produces large broods even if the population decreases;
 - Is able to relocate to a different area entirely.
7. Next, discuss why other species of wildlife cannot adapt and eventually the population of the species is impacted. Consider if the species:
- Has only one food source; if its food source is impacted than the population is impacted;
 - Lives in only one type of habitat or has a specific type of nesting site; if this area is impacted than the population is impacted;
 - Is unable to live with land or water pollution, as well as litter; cannot adapt to it;
 - Depends on several habitats when migrating and one habitat or more is impacted;
 - Is already considered to be a rare species and even when the population is considered to be healthy, the number is species is low;
 - Competes with introduced species or predators – other animals that require the same habitat and/or food source or predators that consider the species to be a food source;
 - Produces small broods or takes longer time to produce offspring, so that if the population decreases it takes the species longer to recover because of a low birth rate;
 - Interferes with the activities of people, so that the animal may be considered a hinder or danger and then harmed, poisoned or shot.
8. Finally, ask the students to suggest what can be done, and by whom, to minimize or prevent such impacts on the more sensitive wildlife species and populations while still meeting the needs and services required by people within any given neighborhood and community.

Assessment

1. List the basic needs of people and provide examples for how these needs are met within a house as well as within a neighborhood.
2. Identify three ways that some wildlife species can adapt or change, in order to maintain a healthy population in and around people. Identify three reasons why other species are not able to adapt or change and can be more easily impacted by people.
3. If you were the mayor of a small but growing town, describe three actions that you would take to address any potential impacts that development and growth may have on the wildlife species and populations in the region.
4. Is biodiversity important to you? Why or why not?

Lesson #2 (Art & Essay Contest)
Species on the Edge – Solving a Mystery

Grade Level: Grade 5

Setting and Estimated Class Time

- Indoor classroom setting
- Estimated class time for steps 1 - 8: 1 hour
- Estimated class time for steps 9 - 10: 30 minutes
- Estimated class time for steps 11 - 12: 1 hour

Lesson Objectives

After participating in this lesson, students will be able to:

1. Describe their perceptions of some types of animals and what influences exist that help form these perceptions;
2. Describe the meanings of “rare,” “threatened,” “endangered,” and “extinct” as they apply to wildlife;
3. Identify natural and human causes of, or impacts on, the reduction in the population of certain wildlife species, both in New Jersey, nationally; and globally;
4. Identify one or more endangered and/or threatened wildlife species in New Jersey and research additional information about the selected species, including what it looks like; its basic needs; habitat and/or range; current status and impacts on its population; and, what people can do to help protect this population and habitat.

Materials

- ‘New Jersey’s Endangered and Threatened Wildlife’ flyer found in the *Species on the Edge Art & Essay Contest Kit*.
- Flipchart pad or large pieces of paper
- Crayons, magic markers, and/or other art supplies
- 11 in. x 17 in. OR 12 in. x 18 in. poster paper (1 per student)

Background Information

Wild animals in New Jersey, the United States, and around the world are threatened with extinction. It is difficult for scientists and wildlife biologists to determine the exact number of species that become extinct each year, since there are animal species that are still unnamed or undiscovered, as well as difficult to locate. As a result, the estimates for extinction rates of animals can be controversial. Most scientists agree though, that this rate is being accelerated by human activity. In fact, some scientists estimate that human activity is responsible for the extinction of as many as 100 plants and animals each day.

Although extinction is a natural process, excessive and intensive human activities in the environment have caused a dramatic increase in its rate. Around the country as well as in New Jersey, the loss of habitat due to development and other human activities is considered to be the greatest cause of species extermination. Other major influences include habitat modifications, introduced and invasive species, population growth, pollution, over consumption of natural resources, as well as natural causes.

Different terms are used to describe the current population status or general health of an impacted wildlife population. These include the following:

Extinct: Complete disappearance of a species.

Extirpated: Locally extinct, that is, extinct in a particular state or country, but perhaps still present elsewhere.

Endangered: In immediate danger of extinction

Threatened: Present in its range, but threatened because of a decline in numbers

Rare: Not presently in danger, but of concern because of low numbers. It is important to note that some species can always be rare because of their position in the food chain or because of habitat preference.

In terms of federal programs, the U.S. Endangered Species Act of 1973 gives authority to protect endangered species to the U.S. Secretaries of the Departments of Interior and Commerce, with responsibilities further delegated to the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service. As of 1999, the USFWS listed 343 animals as being endangered, with an additional 126 listed as threatened. Many other wildlife species are under review for classification as threatened or endangered.

At the state level, in 1973 the New Jersey State Legislature passed the Endangered and Nongame Species Conservation Act, which resulted in the formation of the New Jersey Division of Fish and Wildlife's Endangered and Nongame Species Program (ENSP). ENSP has achieved major milestones in conservation management since its inception: Bald eagle numbers have soared from 1 in 1973 to almost 70 pairs today; peregrine falcons have recovered from 0 pairs to 20 pairs; and osprey numbers have increased from 30 to over 300 pairs today. Currently, 73 animals are listed in New Jersey as being endangered and/or threatened.

State and federal listings of endangered and threatened species may vary because areas encompass different habitat conditions within their boundaries. For instance, an animal may have been lost within one state's boundaries but may be plentiful in another state.

There are a variety of things that can be done to reduce human impacts on rare species, including the preservation or conservation of open space, wetlands and sensitive ecosystems; pollution reduction and prevention; and, waterway and litter cleanups.

In addition, a variety of factors must be explored in order to recover a species through a reintroduction plan. Such questions include:

- How will the introduced species affect other inhabitants?
- Why did the species decline in the first place?
- Is there enough genetic diversity for population sustainability?
- Are there regulations, policies, events and other needs in place that will now enable the population of the species to recover?

Finally, scientists and wildlife biologists responsible for reintroducing a species must also consider society's tolerance for living with the species. How does the species affect people? How do people perceive and/or value the species? Are they afraid of it? Do they think that its recovery will impact their safety or livelihood? While the recovery of most species present few conflicts, others may raise public concern.

The purpose of this lesson is to introduce students to the diversity of threatened and endangered species in New Jersey. In so doing they will: explore their personal perceptions of them, discuss what they think is impacting these populations, research a particular animal and share their findings; and understand the impacts on that particular animal and what can be done to protect it.

About Endangered Species in the United States

Write to: Office of Endangered Species, U.S. Fish & Wildlife Service, U.S. Dept. of Interior, Washington, D.C. 20204.

Or visit: <http://www.fws.gov>

About Endangered Species in New Jersey

Write to: Endangered and Nongame Species Program, P.O. Box 400, Trenton, New Jersey 08625-0400

Or visit: www.conservewildlifenj.org OR www.NJFishandWildlife.com/tandespp.htm

Procedure

1. Through group discussion, ensure that the students are aware of the following concepts that relate to ecological systems and biological behaviors of animals within an ecosystem: basic needs of an animal; food chains and food webs; habitat; and predators and prey.
 2. Obtain the list of animals in New Jersey that are listed as endangered or threatened. This list (www.NJFishandWildlife.com/tandespp.htm) includes the following types of animals: birds, reptiles, amphibians, invertebrates, mammals and fish. Make copies for the students to share in class. ***(A list is also included with the Species on the Edge Art & Essay Contest kit.)***
 3. Distribute the lists of animals to the students and divide them into small groups of 4 students per group. Provide each group with 1 piece of flipchart paper and some crayons or markers.
 4. Ask the students what their perceptions are of specific animals or categories of animals on the list. (Examples of their perceptions could be: furry animals are cuddly; spiders are scary; snakes are dangerous; rodents carry disease; etc.) Have the students share their perceptions with group members and document all of the perceptions of the group on their flipchart paper. Have a representative from each group share their list with the entire class when all of the groups have completed this task.
 5. When the group presentations are completed, have them remain in small groups but ask the class to identify the sources of information and influences in each of their lives that shape their perceptions of animals. These can be listed on the chalkboard. (Examples of influences could be specific television shows and books; newspaper articles; stories told by family members and friends; direct experiences; advertisements; etc.)
 6. Next, discuss the meanings of, and differences between, “extinct,” “endangered,” “threatened” and “rare” with the class, as these terms are described in the background information for this lesson.
 7. Ask the groups to turn over their flipchart papers to create another list. This time, ask them to share ideas about the natural and human-related causes that could impact the population of an animal in an area and cause a reduction in its population. (Examples of such causes could be loss of habitat due to new homes/development; water pollution; pesticides; more predators; loss of land for migratory needs; etc.) Again, have a representative from each group share their list with the entire class.
 8. Ask the groups to write their names and date on the flipchart paper and collect sheets for further reference.
 9. Announce to the students that they are detectives with training in wildlife biology that have been asked to solve some mysteries. They must pick an animal from the list of animals in New Jersey that are endangered or threatened - a creature that they know very little about. They must do a thorough investigation of the animal by:
 - Creating an illustration of what the animal looks like (poster);
 - Describe what the animal’s basic needs are and what habitat it prefers; describe why it is currently on the State’s threatened and endangered species list; and identify what humans can do to reduce or prevent their impact on this species (essay). **Note:** Detectives must generate factual and current information about their selected animal.
- Note:** If students are participating in the Species on the Edge Art & Essay Contest,
- Make sure their essays answer one of the contest’s essay themes (which you can obtain in the Species on the Edge Contest Kit).
 - Have them work individually to select and then research an animal. (If they are not participating, they can work in pairs or small groups to select an animal and then conduct their investigation as pairs or groups.)
 - Submit artwork and essay according to the guidelines set forth in the rules and regulations.
 - Submit entries before the deadline – postmarked January 31st.
10. Discuss ways in which the students can locate statistics, pictures and information about the selected species. (Consider school or public library resources - books, periodicals and newspapers, commercial bookstores, on-line state and national organizations and agencies, interviews, etc.).
 11. Once the posters and essays are completed, ask for volunteers or student group leaders to share their illustrations and provide a brief overview of their findings to the class.

12. Divide the class into the small groups that were used in step #3. Distribute the saved flipcharts to the appropriate groups. Ask the groups to review the first 'perceptions' list that they created and review it for modifications. When completed, ask them to turn over the flipchart paper and review their list of impacts on wildlife populations. Again, ask them for modifications. Ask each group to appoint a representative who will share their groups' reflections with the class.

Note: Completed posters and essays for contest consideration should be submitted according to the rules and regulations in the "*Species on the Edge Art & Essay Contest*" brochure available at www.ConserveWildlifeNJ.org. Or, they can be displayed in the classroom or in the school hallway, perhaps as part of a mural or collage.

Extensions

1. Contact the state and federal offices that maintain the threatened and endangered animal lists to learn about 'success stories' regarding species that have been recovered or reintroduced.
2. Conduct a similar exercise focusing on the State's threatened and endangered plants.

Assessment

1. Arrange the following terms in a list so that they progress from the least amount of danger to a species to the greatest amount of danger: endangered, rare, extinct, threatened.
2. Describe two natural or human-related causes that could impact the population of an animal in an area and cause a reduction in its population.
3. Describe concerns that arise when an animal species become extinct.

Adaptation of

Project WILD K-12 Curriculum and Activity Guide. "*Here Today, Gone Tomorrow.*" Council for Environmental Education; 2001; pgs. 154 - 157.

Project WILD Curriculum and Activity Guide. "*Back from the Brink.*" Council for Environmental Education; 2001; pgs. 355 – 363.

Additional Resources

To learn about upcoming **Project WILD professional development workshops and how to obtain a copy of the Project WILD K-12 Curriculum and Activity Guide**, visit www.state.nj.us/dep/seeds/projwild.htm or contact Liz Jackson at the Division of Fish and Wildlife, NJDEP, 605 Pequest Road, Oxford, New Jersey 07863
Phone: 908-637-4125.

Lesson #3 Follow-up Activities

1. Wildlife Pen Pals

The purpose of this activity is to familiarize students with the diversity of threatened and endangered wildlife species in New Jersey – their individual characteristics, preferences, needs and behaviors, as well as the impacts that the activities of people have on the population and overall health of each particular species. This activity must be done with students who have selected and researched a threatened or endangered wildlife species in New Jersey (see Lesson #2). Post all of the student essays and posters in the classroom or hallway so that they are visible to the students. Next, write the names of each of the students on slips of paper and put them into a bag or bowl. Have each of them select a name from among their classmates. Do not allow them to announce the name or swap them – they are a secret!

As a writing homework assignment, have them write a ‘pen pal’ letter to their selected student from the perspective of the animal that they (the writer) had researched. Information to be included in the letter are factual hints or clues about the animal, such as features about its habitat; physical features; favorite food sources; worst enemies; preferred shelter or home; etc. Encourage the students to be imaginative and creative with their writing and to sign the letter with a silly animal name that doesn't give the animal away. Their challenge is to write a letter that alludes to the wildlife species that they researched without naming the animal.

Ask the students to seal their completed pen pal letter in an envelope and give it to you before class begins, with the name of the student to receive it written on the envelope. Distribute the pen pal letters to the appropriate recipients. After they finish reading their letters, have them attempt to select the animal that ‘wrote and sent it’ based on their review of the essays and posters. Once everyone has had time to guess or learn who the pen pals were, try the activity again.

2. “Species on the Edge” Campaign

This activity must be done with students who have selected and researched a threatened or endangered wildlife species in New Jersey (see Lesson #2). Divide the class into small groups of 3 – 4 students. Pretend that each group of students work together as public relations staff for the same advertising company and that they are charged with creating a public relations campaign for one of the threatened or endangered wildlife species researched by a member of their group. Once the group selects the animal to work with, their campaign strategies should include sound planning strategies (i.e., goal, targeted audiences, strategies, desired outcomes, etc.) as well as public relations strategies and tools (i.e., slogan and message(s), logo, publication, poster, ads, announcements, television commercial, etc.). Have each group share their campaign with the class.

Adapted From

Project Learning Tree Environmental Education Pre K-8 Activity Guide. “*Habitat Pen Pals.*” The American Forest Foundation, Washington, DC; pgs. 18 – 19; 1994.

Project Learning Tree Environmental Education Pre K-8 Activity Guide. “*Life on the Edge.*” The American Forest Foundation, Washington, DC; pgs. 335 - 339; 1994.

Additional Resources

To learn about upcoming Project Learning Tree professional development workshops and how to obtain a copy of the **Project Learning Tree Environmental Education Pre-K-8 Activity Guide**, visit <http://www.state.nj.us/dep/seeds/plt.htm> or contact Elizabeth Faircloth at the Forest Resource Education Center, NJDEP, 370 East Veterans Highway, Jackson New Jersey 08627. Phone: 732-833-9816