Guided Nature Experience
Pre and Post-Program Activities

Grade Level: 6-8

Next Generation Sunshine State Standards
- SC.6.E.6.2 ; SC.6.L.15.1
- SC.7.E.6.6; SC.7.L.17.3
- SC.8.N.1.3

Program Overview

Encounter live animals in the Dalton Discovery Center, look for jumping fish on an electric boat ride, and take a peek into the von Arx Wildlife Hospital where we care for more than 3,200 wild animals per year. Learn how you can help the Conservancy protect Florida's water, land, and wildlife.

Learning Objectives Students will be able to:

1. Analyze and describe how and why organisms are classified according to shared characteristics.
2. Recognize and identify southwest Florida's various ecosystems and landforms.
3. Identify the impact that humans have had on Earth, such as deforestation, urbanization, water quality, and changing the flow of water.
4. Understand how species are classified as endangered and the causes of extinction.

Pre -Program Activity 1: Oh Deer! Game

Duration of Activity: 1 hour

Adapted from Project WILD

Materials: large area for running (indoors or outdoors), Oh Deer Tally worksheet (provided), string, tape or cones to mark off boundaries, chalkboard or chart

Background:
The activities in this lesson build on the concepts about habitats and introduce the idea of **carrying capacity**- the balance between the availability of habitat components (food, water, shelter) and the number of animals a habitat can support- and the **limiting factors** that affect animal **populations**. Examples are disease, predator and prey relationships, weather, pollution and habit destruction.

Directions:
1. Review the essential components of a habitat with the students: food, water, shelter, and space.
2. Select a large playing field, ideally outdoors or in a gymnasium. Divide the playing field in half with tape, cones, etc.
3. Count the class off in fours. Have the 'ones' line up parallel to the dividing line on one half of the playing field; all the rest line up on the opposite side. Have each group face away from the other.
4. The ones become the "deer." They need to find food, water, and shelter to survive. The twos, threes and fours are the "resources" (food, water, or shelter). All players must select a resource to be or find.
   Symbols for resources are:

Food:	Water:	Shelter:

5. Announce to players, "choose your resource!" At which point, all players must select food, water, or shelter, and act it out with the appropriate hand gesture. Once they have chosen, they may not change it until a new round starts.

6. Once everybody has chosen their resource and hand gestures are in place, play begins by announcing "Oh Deer!", at which point all players turn to face each other. The deer must run over to the other players and find their corresponding resource (have students hold hand gestures the whole time. Resources do not run.). Once a deer has found its matching resource, it should run to it. Each deer that reaches the necessary habitat component takes the "food," "water," or "shelter" back to the deer side of the line.
7. "Capturing" a component means the deer successfully met its needs and has reproduced (the habitat component is now part of the herd). Any deer that fails to find food, water, or shelter dies and becomes a habitat component and is available in the next round as food, water, or shelter for the deer that are still alive.
8. Play for a couple of rounds to see how the deer population fluctuates based on resource availability. Students may choose a new resource at the beginning of each round. Record the number of deer at the beginning of the activity and at the end of each round (use the attached sheet).
9. After the activity, gather students to discuss and share their experiences. A small herd of deer might begin by having more than enough of its habitat needs. However, as the deer population expanded over several rounds, there was not sufficient food, water, or shelter. The carrying capacity of the habitat was exceeded. At that point, deer starved, or died of thirst or lack of shelter, and they returned as part of the habitat. This happens in nature also.

Follow-Up:
1) Post the data recorded during the activity on a chalkboard or chart. The number of deer at the beginning of the activity and end of each round represent the number of deer in a series of years. This will be a visual representation of the fluctuation in deer populations. Wildlife populations will peak, decline, and rebuild as long as there is good habitat and sufficient numbers of animals to reproduce successfully.
2) Questions for Discussion:
   - What do animals need to survive?
   - How do these components influence "carrying capacity"?
   - What are some "limiting factors" that affect the survival of animals?
   - Why is good habitat important for animals? Compare habitats that people and animals use with those that people and animals don't use.

When thinking about taking action around the schoolyard, such as designing a new parking lot or building, we need to consider how that action affects the biodiversity of our schoolyard before making decisions.

Resources:
Source: Project Wild K-12 Curriculum and Activity Guide, © Council for Environment Education, Houston, TX, rev. 2001

Oh Deer! Tally Sheet:
http://d2qtpn53ex22nh.cloudfront.net/uploads/classroom_resources/U1.L4.WS2.OhDeerTallysheet.SF.pdf

(see below for worksheet)

Oh Deer! Tally Sheet

(For Teacher Use: Record the number of deer at the beginning of the activity and at the end of each round.)

ROUND	DEER (start of round)	FOOD	WATER	SHELTER	DEER (end of round)
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

<u>Pre-Program Activity 2</u>: Research Florida's Ecosystems

Duration of Activity: 1 hour

Materials: computers or educational books

Directions:
1. Split the class into five groups. Then assign each group a different Florida ecosystem (Pine Uplands, Freshwater Marsh, Mangrove Estuary, Scrub, and Ocean).
2. Each group will then research their specific ecosystem using computers and books. They should each address certain points pertaining to their habitat, including:
   - Describe the environment, what it is made of and the climate.
   - Describe the main plant life found in this area. Explain why it lives so well in that area.
   - Describe the main or most commonly found animal life in this area. Pick one reptile, one mammal, one insect, and one bird. Then choose one animal to focus on and explain how it uses its surroundings to find food, water, and to build a shelter.
   - If they want to add anything else, such as invasive species or human impacts, they may include those as well.
   - Each group will present their ecosystem to the class so every class can learn about the various ecosystems.

Post-Program Activity 1: Understanding Invasive Species

Duration of Activity: 1 hour

Students will research local invasive species to better identify them and understand the implications of non-native species introduction.

Materials: computer lab/research materials, Invasive Species worksheet (provided), computer & projector, colored pencils/markers/crayons, construction paper or large printer paper

Background:
An invasive species is *a non-native species that does not occur naturally in a specific location*. The introduction of an invasive species is likely to cause harm to the native species in that ecosystem. Invasive species can be plants, animals, and other organisms (e.g., microbes). Human actions are the primary means of invasive species introductions.

Examples of Invasive Plant Species:
- Air Potato Vine: It creates unique habitats by forming dense canopies over native tree communities, causing them to become degraded and diminished.
- Brazilian Pepper Tree: It forms dense monospecific stands that crowd out native species; possibly produces chemicals that inhibit the growth of native species.
- Australian Pine Tree: These trees outcompete native vegetation by producing a dense leaf litter beneath them. Because of shallow root systems, Australian pine trees tend to uproot and topple during high winds and pose a significant hazard to coastal storm evacuation routes.

Examples of Invasive Animal Species:
- Lionfish: They eat native fish, which can reduce native populations and have negative effects on the overall reef habitat and health as they can eliminate species that serve important ecological roles. Lionfish also compete for food with native predatory fish such as grouper and snapper.
- Burmese Python: These snakes can grow to be 16-20 feet long and have few predators, with alligators and humans being the exceptions. They prey upon native species and may reduce their populations locally. While pythons will eat common native species and exotic species, they can also consume threatened or endangered native species.
- Cane Toad: The skin-gland secretions of cane toads are highly toxic and can sicken or even kill animals that bite or feed on them, including native animals and domestic pets. The skin secretions may irritate the skin or burn the eyes of people who handle them. Tadpoles of native frog species can be killed by consuming cane toad eggs. Cane toads also potentially compete with native frogs and toads for food and breeding areas.

- Brown Anoles: Evidence suggests that the brown anole is primarily responsible for reduced numbers of green anoles, particularly in human-altered habitats. Brown anoles displace green anoles to higher in trees, and adult male brown anoles sometimes prey upon smaller green anoles.

Directions:
1. Ask students to define the term invasive species and to give a few (local) examples if they can. Ask students to brainstorm what effect each of these invasive species have on native species populations.
2. Students will individually, or as a pair, research an invasive plant or animal species found in Southwest Florida. Ask students to imagine that they have been hired by a local conservation organization to create awareness of invasive plant and animal species in their community. Students will be creating an educational pamphlet, poster or handout for an invasive animal or plant of their choosing. Teachers may choose to assign plants or animals to students or have students choose an invasive species on their own.
3. Using all available resources, each student is responsible for responding to the questions about its species on the attached worksheet. Students are also responsible for finding a photo or illustration of their assigned species (or, if time and resources allow, may sketch or photograph their own images). Possible online resources for research include the federal government's Invasive Species Web site (https://www.doi.gov/invasivespecies/) and Florida Fish and Wildlife Conservation Commission (http://myfwc.com/wildlifehabitats/nonnatives/invasive-species).
4. Once students have finished their research, they can start creating the pamphlet, poster, or handout. Students are able to be as creative as they want. This may have to be sent home as homework or saved for another class period to finish up.
5. For evaluation, ask students the following questions.
   a. What impact do non-native species have on their native counterparts?
   b. How might non-native animal or insect species affect a habitat?
   c. What methods are there for controlling populations of non-native plant and animals species?
   d. How can you help prevent the spread of invasive/non-native species?
   e. Do non-native species affect humans? Explain.
6. For extending learning, students could conduct a species abundance survey at their school identifying invasive and non-invasive plant and animal species. Students would identify species and record the number of that species found. With this information, students could create graphs or pie charts indicating the percentage of each plant and animal found.

Invasive Species Awareness Project

Your Invasive Species: _____

1. In what area of the world did this plant or animal originate?

2. How and when is it believed to have reached your community?

3. What are the particular needs of your plant or animals, in terms of space (including subterranean roots), water, and sunlight?

4. Where does one find this plant or animal in your community?

5. What dynamic does this plant or animal have with other species (both native and other non-native species)?

6. What native species are affected most by this invasive plant or animal?

7. Why does it thrive in your ecosystem?

8. What is the impact of this plant or animal on the ecosystem? How might this impact, in turn, affect the humans in your community?

9. What measures have been taken locally to control this species? By what people or organizations?

10. What measures have been taken in other parts of the region or country to control this species? By what people or organizations?

Be sure to include all of the answers to the research questions in your project as well as a photo or illustration of your species and a map showing the distribution of your species!

Post-Program Activity 2: Here Today, Gone Tomorrow

Duration of Activity: 1.5 hours

Adapted from Project Wild K-12 Curriculum and Activity Guide

Students will become familiar with the different categorizations assigned to plant and animal species, such as extinct, endangered, threatened, and vulnerable, and understand some of the influences that can cause declining populations.

Materials: computer lab/research materials, student worksheet (provided), computer & projector

Background:
Species have gone extinct throughout history, but the rates of extinction within the last 100 years have dramatically increased due to human activity. It is difficult to specifically pinpoint the exact number of extinct species that occur each year. Loss of wildlife habitat is considered by many to be the foremost cause of species extinction. Other major causes of extinction may be unregulated/illegal commercial and personal harvest, habitat modification, pollution contamination, competition and predation from invasive species, predator control, disruption of migration routes and breeding behaviors, and natural causes.

Directions:
1. Review and discuss with the students the definitions of extinct, endangered, threatened, and vulnerable according to a standard dictionary and compare them to definitions from a wildlife conservation standpoint. Understand that differences in definition may be a result of legal connotations that are often present in a standard dictionary.

Word	Standard Definition (Found on dictionary.reference.com)	Wildlife Conservation Definition (adapted from IUCN Red List)
Extinct	No longer in existence	There is a complete disappearance of a species
Endangered	Threatened with danger	Species is facing a very high risk of extinction in the wild
Threatened	An indication or warning of probable trouble	Species is present in its home range, but threatened because of a decline in numbers
Vulnerable	Capable or susceptible to being wounded or hurt	Not presently in danger, but of some concern because of low numbers and decreasing populations

2. Assign students, or allow them to pick their own native species in Florida that is extinct, endangered, threatened, vulnerable, or near threatened. If a student picks a species that is listed as least concern talk about why those species might be thriving and not in danger of being endangered (ie. generalists, less human impact) but encourage them to select a species that does have lower populations. Some resources for finding species:

www.fws.gov/endangered/ - This site lists species that are listed as endangered or threatened according to US Fish and Wildlife Service

www.iucnredlist.org – If a species is selected that is not on the Fish and Wildlife site, this site covers a broader spectrum of species and includes species that may be listed as vulnerable or near threatened

Native species seen during guided nature center tour at the Conservancy:

- Endangered: Florida Panther (model)
- Threatened: Eastern Indigo Snake
- Vulnerable: Loggerhead sea turtle
- Near Threatened: Diamondback Terrapin, Horseshoe Crab
- Least Concern: Florida Pine Snake, Red Rat Snake, American Alligator, Florida Chicken Turtle, Yellow Rat Snake, Florida King Snake, Mississippi Mud Turtle, Red-eared Slider

3. Students will individually research a native species that is not listed as least concern by a conservation website. Using the worksheet provided students will put together a 2-minute "elevator speech", encouraging quick, rapid talks about each species that provide full information about the listing, causes of the listing, and the impact of extinction.
   a. For extended learning, more formal presentations may occur that utilize a PowerPoint of some sort to more thoroughly investigate how the species is incorporated into its ecosystem and what is currently being done regionally, nationally, and globally to preserve the species.
4. For evaluation, ask students the following questions:
   b. What are two reasons for concern if your species became extinct?
   c. Who decides what species are listed as endangered, threatened, etc. and how do they decide?
   d. What is the most likely cause of extinction in your species?

Source: Adapted from Project Wild K-12 Curriculum and Activity Guide, © Council for Environment Education, Houston, TX, rev. 201

Name: _____

Here Today, Gone Tomorrow

Native Species: _____

1. What is your species listed as?

2. Has it ever been listed as anything else? (Has population change caused a relisting)

3. Are there any other states/regions where the species is listed differently?

4. Why might a different site list the species as another classification? How are classifications decided on?

5. What are the most prevalent factors affecting populations?

6. What would be the impact of a loss of this species?

7. What can you do to help improve the success of this species?