Lesson 2: The Population Puzzle

Theme

All living things interact in the environment, and the population size of one species can affect that of another. Wildlife biologists work to keep the populations of many different species stable for different reasons (popular game species, non-game species on the decline, etc.). Keeping track of populations and making sure there are enough resources to go around can get tricky!

Learning Objectives

Students will learn about interactions in nature and how populations of animals are affected by resource availability (carrying capacity). Concepts will be illustrated with real-life conservation stories from Rhode Island.

Corresponding Activities for this Lesson

- Oh Deer!
- Terrific Turkeys
- Food Web Interactions

Materials

- Lesson 2 PowerPoint
- Terrific Turkeys playing cards
- Blank paper
- Markers, crayons, colored pencils, pencils or pens
- Basket, hat or bag
- Ball of yarn or string
- Laminated habitat/animal cards
- White-tailed deer antler, skull, pelt
- Wild turkey feather and skull

Lesson (Can be split into shorter lessons):

1. **Explain to students that today we will be exploring how animals interact with each other and the different components of their habitat.**

2. **Place laminated habitat and animal cards into a basket, hat, or bag. Ask students to take a card from the basket and form a circle. Ask students to hold up their cards so that everyone else can see the picture. Explain to the students that the circle represents the ecosystem, and that all of the animals and habitat components on the cards can be found in Rhode Island.**
   - Start with one student holding an animal card and ask them what they think their animal would eat. For example, the white-tailed deer would eat acorns.
   - When the student makes the connection between the animal on their card and the food item, run a line of yarn between the students and ask them to hold the ends. Explain that a connection has been made between these two living things. If the second student is holding an animal card, ask them what they think their animal might eat. If they are holding a habitat card, ask them if there are any other connections they can make with others in the circle.
   - Continue creating connections between students until a web of yarn crisscrosses the circle. Explain that they have created a food web.

3. **Ask students how many strings they are holding. Are there some animals with more connections than others?**
   - Ask the students what they think would happen to the food web if some animals disappeared from the ecosystem.
   - Ask one of the students holding multiple strings to let go. What happens to the food web? Ask a couple more students to let go of their strings. How does the food web look now?
   - Explain that for an ecosystem to function properly, each species matters.

4. **Show students the slide of the puzzle with missing pieces. Explain that an ecosystem with missing species is like the puzzle; the picture is incomplete.**
   - Explain to students that when wildlife biologists think about the ecosystem, they aren't just thinking of individual animals, like the one deer or the one hawk that we saw in our food web. They are thinking about populations of wild animals. Ask students if anyone has heard the word population, or knows the definition.

5. **Explain that a population is a group of individuals of the same species living and interbreeding within a given area. For example, in Rhode Island, we have a large population of white-tailed deer, but a very small population of black bears. Ask students if they think populations can interact like we saw in the food web activity.**
   - Yes, they can! If a population of a particular animal drops too low or disappears, that impacts the environment and other species that interact with it. Ask students if they can think of some examples of how the growth or decline of a population of a particular species might positively or negatively impact the ecosystem or other species.
   - We know that if a population shrinks too much, that animal may be considered endangered, which is not good. But what happens when a population grows too much?