Endangered Species

SCIENCE

Grades: 3-5

Objective: The student will differentiate between wants and needs, understand and cite examples of basic needs within familiar ecosystems, and understand that if basic needs aren't met, organisms may become threatened, endangered, or extinct

What's Inside?

- Reading passage
- Student quiz
- Lesson plan
- Student handouts

Sources: Penn State College of Agricultural Sciences, Cooperative Extension

Threatened, Endangered & Extinct Lesson Plan

Resource from Penn State College of Agricultural Sciences

Keywords: habitat, ecosystem, food, water, shelter, space, basic needs, threatened, endangered, extinct

Goals:

- The student will differentiate between wants and needs.
- The student will understand and cite examples of basic needs within familiar ecosystems.
- The student will understand that if basic needs aren't met, organisms may become
- threatened, endangered, or extinct

Materials:

- *Threatened, Endangered & Extinct* reading from Environment & Ecology Series
- "What Are Basic Needs" Worksheet
- "Can You Solve These Basic Needs Riddles?" Worksheet
- Chart paper
- Markers

Background Information

All living organisms have basic needs. Air and sunlight are part of all ecosystems. Although there are a few living exceptions like anaerobic bacteria, nearly all living things need oxygen, which is a component of air. Although researched resources varied on the exact number of basic needs, the four highlighted in this lesson: food, water, shelter and space.

FOOD - Food is necessary to provide an animal with energy to carry out daily functions. The diets of animals depend on the seasons of the year, their size, age, sex, and behavior. Food availability is naturally effected by weather events such as drought, floods, or tornadoes. Man also effects many food sources of animals.

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WATER - Water is critical to living things. Water is necessary for internal health, plant growth, and bathing. Some water provides shelter for living things. Ponds, streams, and birdbaths are sources of water for some, and other living things are able to obtain all the water they need from their food supply. Too little or too much water can directly effect the health of living things.

SHELTER - Animals seek shelter for security, a place to feed, a place to rest and sleep, and a place to raise and care for young. Shelters may come in many forms: vegetation, rock piles, chimneys, fence posts, trees, cliffs, holes in the ground, or billboards. Sometimes animals seek shelter in more than one place, depending on the activity: feeding, resting, storing food, etc.

SPACE - Animals must travel to meet their needs, socialize, and reproduce. This area is known as its home range, or space. Usually, small animals have small home ranges, and large animals have larger ones. Migratory animals may have several spaces necessary to survive. Animals often defend and protect their space to raise young. This is called a territory. Animals must maintain a healthy population within their space. Overcrowding will decrease food supply, and small populations can effect socialization.

THREATENED – Species that may become endangered within a foreseeable future throughout their range unless the steps are taken to prevent decreasing.

ENDANGERED – Species that are in serious danger of extinction and have already been reduced to critically low numbers or have experienced drastic habitat.

EXTINCT - Species that no longer exist across their former range.

Preparation:

- Read background information and *Threatened, Endangered, & Extinct* essay
- Title chart paper - Basic Needs (optional)
- Make copies of student handouts
- Copy "Threatened, Endangered, or Extinct Poem" on chart paper

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Lesson Steps: PART ONE – BASIC NEEDS

- Initiate discussion of lesson by focusing how living things are able to survive in a habitat/ecosystem because their basic needs are met.
- Partner students and have them brainstorm a list of everything they need to survive.
- Ask for volunteers to share, and write down an adequate number of responses on a list on the white board, or on post-its. These responses will be sorted into wants and needs.
- Discuss the difference between "wants" (extras in life, not necessary for survival) and "needs" (necessary for survival). Create a t-chart on the white board and sort class responses.

Possible wants/needs:

wants	needs
own bedroom	home (shelter)
video games	exercise/play space
soda	water
cookies, chips	food & air

- If necessary to develop further understanding, partner students and have them discuss a pet's wants/needs.

Possible wants/needs:

wants	needs
big fluffy bed	home (shelter)
farm field, woods	yard or park to exercise/play
dog treats	dog food

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- Discuss:
  - Which needs are you able to get easily? Which needs take effort?
  - Does everyone in our class get what they need the same way? Are some needs met the same for everyone?

- Continue discussion. "Think about home and school."
  - Are your needs met differently?
  - Can you think of a time when your need wasn't met? What did you do? What would you do if you could no longer get something you needed?

- "Think about plants and animals in different ecosystems and biomes."
  - What needs are plants and animals easily able to get in an ecosystem? What needs may be difficult to meet?
  - What would a plant/animal do if needs couldn't be met in an ecosystem?

- Ask for volunteers to assist in categorizing basic needs of living (humans, animals, birds, plants) organisms.

- Distribute copies of Threatened, Endangered & Extinct. Have students read the section about basic needs. Discuss.

- Review/discuss directions for worksheet - "What are basic needs?" Assign for independent seatwork.

- Optional homework: worksheet "Can you solve these basic needs riddles?"

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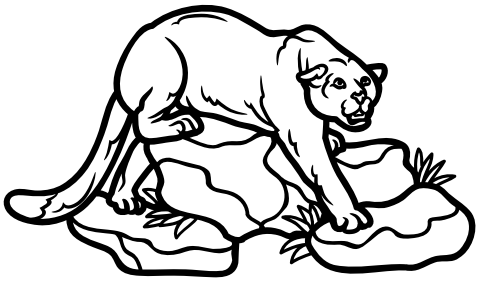
Environment & Ecology Series

Resource from Penn State College of Agriculture



THREATENED, ENDANGERED and EXTINCT

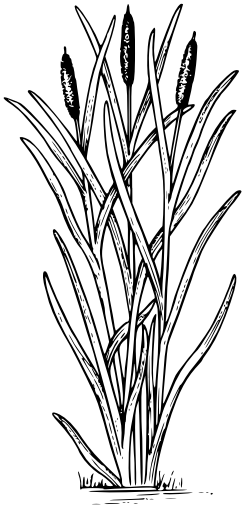
Earth is home to millions of living things. Many of these living things are plants and animals. Each type of plant and animal has its own shape, size, and color. Some even have their own smell and sound. We call these different things traits.

Traits help plants and animals survive where they live. For example, the spotted fur on a newborn fawn helps it hide on the forest floor. Hiding can help a fawn survive. Another example is the thorns on a black locust tree. They protect the branches from browsing animals.

Plants and animals get their traits from their parents. Each plant or animal has a combination of their parents' traits. Take YOU, for example: Your hair color, smile, and voice are just a few of the traits passed onto you by your parents. However, you do not look or sound exactly like your parents or anyone else. You are the only you!

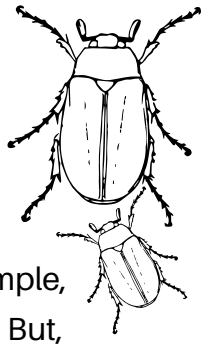
Each plant and animal lives in a place that suits it best. This place is its habitat. Habitat is where a plant or an animal finds what it needs to survive. The most important things an animal needs in its habitat are food, water, shelter, and space. For example, foxes need habitat with mice and small animals to eat. Foxes need places to find water, such as streams and ponds. They also need places for shelter.

Foxes like dens in the ground. Foxes need a habitat big enough to hold all these things. The best fox habitat is often near a farm. Farms have woods and fields with plenty of fox food, water, shelter, and space.



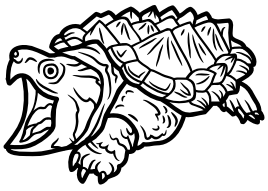
Plants need different things from their habitat. They need water and nutrients from the soil. Plant roots take these up to help the plant grow. Plants need gases from the air, like carbon dioxide, to make food in their leaves. Plants also need energy from sunlight to make this food. When they have what they need, plants can live and grow in their habitat. Each type of plant has a habitat that suits it best. Cattail plants need lots of water and sun. They grow on the edges of ponds and wetlands where their roots are always wet. Prickly pear is a cactus plant that prefers dry, rocky habitat on hillsides or in deserts. It does not need much water.

Sometimes habitats change. If this happens, plants and animals may die or move to another place to find what they need. Weather and insects often cause big habitat changes. Can you think of any other things that could cause a habitat to change?



When habitats change, plants and animals can sometimes change or adapt to survive right where they are. This can take a long time! For example, if one kind of plant does not get enough water where it grows, it will die. But, a few of its kind might survive a dry spell if they have extra wax on their leaves. This wax helps a plant hold water in its leaves. The surviving plants may produce more plants like themselves.

Many of these new plants may have their parents' trait of extra wax. They will be better able to survive dry times in the future. Over long periods, sometimes thousands of years, plants and animals slowly adapt to their habitat. This helps them survive a changing habitat.



Turtles are animals that adapted to their habitat. They do not have teeth, but they need to eat their food. Many types of turtles adapted to have a hard, sharp beak that lets them tear their food. Snapping turtles have a hooked beak and strong jaw. When snapping turtles bite down, their food does not get away! Can you think of other animals that have adapted to their habitat?

Plants and animals are called endangered when there are very few left. Atlantic sturgeon is an endangered fish in parts of the US. Dams and water pollution changed their river habitat. Bald eagles were endangered once too. Many people worked hard to protect them. When a type of plant or animal is at risk but not quite endangered, we say it is threatened.

Laws help protect endangered and threatened plants and animals. There are also laws that protect habitat. Wildlife refuges, game lands, state forests, and parks are places where habitat is protected. Hunting laws also protect certain kinds of animals to keep their numbers at healthy levels. Every different kind of plant and animal is important to our world. The best thing we can do for plants and animals is to protect and care for their habitat. All living things need a good place to live.

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Threatened, Endangered, & Extinct
Environment & Ecology Series Quiz

Directions: Circle the one correct answer for each question below:

1. What does it mean if an animal is extinct?
   a. There are a lot of them living
   b. There are none left living
   c. There never was such an animal living
   d. There are only a very few left living

2. What does habitat mean?
   a. The way an animal or plant moves
   b. What a plant or animal eats
   c. A place where a plant or animal meets its' needs to survive
   d. The habits of a plant or animal

Directions: Fill in the blanks with the correct answer from the word bank below. Use only one word per blank.

Word Bank

pollution people endangered endangered other animals trait
threatened diseases rainforests elephants
passenger pigeons snails

3. A _____is a unique shape, size, color, smell, or sound of a plant or animal.

4. Plants or animals become extinct because of_____,
_____ , _____, or _____.

5. The Atlantic Sturgeon is listed as being_____ because there are only a very few left.

6. The number of Bald Eagles has increased, and they changed from being listed as _____ to being listed as _____.

Quiz Answers

1) b.

2) c.

3) trait

4) diseases , other animals , pollution , or people (in any order).

5) endangered

6) endangered , threatened

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What are basic needs?

All ecosystems have **sunlight** and **air** to provide life to organisms.
Other basic needs that organisms require are **food, water, shelter**, and **space**.
Give examples of how the following organisms find basic needs in their ecosystem.

organism	food	water	shelter	space
you				
dog 				
sunflower 				
fox 				

1. A farmer accidentally destroyed a fox's den when he plowed the land to make a new farm field. How could the fox adapt to survive?

_____

_____

2. What if an organism is unable adapt or find basic needs within its ecosystem?

_____

https://ecosystems.psu.edu/outreach/youth/sftrc/environ-series

BASIC NEEDS RIDDLES

Choose from the word bank to solve each riddle.

garter snake **cottontail rabbit** **snail**
dandelion **praying mantis** **robin**

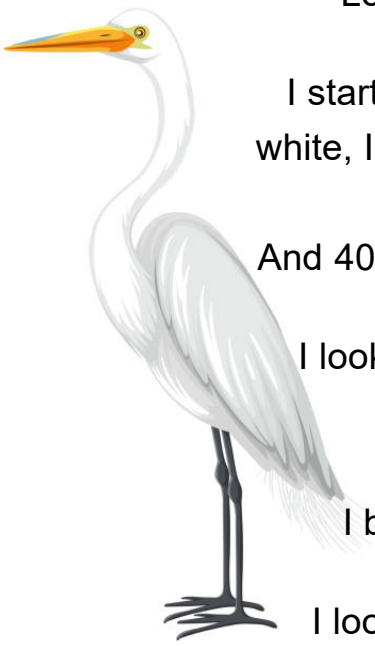
food	water	shelter	space	Who am I?
I am a plant eater. I love to eat clover, dandelions, and garden plants.	I will drink from puddles or other places where water collects.	I like thick brush where I can lay down and hide.	I'm usually alone, but relatives are close by.	
I wait patiently to reach out and grab tasty insects.	Insects that I eat provide me with water.	I like greenish-brown stick like plants that look like me.	I 'm usually alone after I hatch from an egg with hundreds of brothers and sisters.	
I make my own food using energy from the sun.	I get water from the soil.	I don't need a lot of shelter, and I like sunny areas.	I need space on the ground to spread out and my seeds need a lot of space to fly in the wind.	
Leaves and stems are some of my favorite food.	I get water from plants that I eat.	I carry my house on my back. I like to hide under leaves. I don't like the bright sun.	I don't need a lot of space. I usually live where my food is.	
My favorite food is worms, but I'll eat grubs, spiders, berries, and seeds.	I drink from puddles, bird baths, or where water collects.	I build my nest on a sturdy branch in a leafy tree so it is hidden.	I like open spaces with trees where I can find food and raise my young.	
I like to eat frogs, salamanders, and insects. I swallow them whole.	I drink from puddles or where water collects on the ground.	I like cool places under rocks or logs.	During warm months I like to stay in the same area.	

Threatened, Endangered, Extinct Poem

The poem created below is an example that was created from information taken from the PA Game Commission website. Student generated poems do not have to follow this rhyming format.

The Great Egret

Walking quietly along the forest path, in the crisp, autumn air,
I looked toward the shallow river and guess what I saw there?
A tall, majestic bird, with black legs and black feet,
Looking in shallow water for frogs and minnows to eat.



I started paging through my field guide, looking for the bird of
white, I found it on page seventy-three, oh what a beautiful sight!
I noted that its wingspan reached 55 inches wide,
And 40 inches tall is measured from top to ground along its side.

I looked back toward the bird creeping silently with the flow,
Its yellow beak finding food, oh what a show!
My curious eyes found a nest way up in the trees,
I bet it just flew down in the refreshing autumn breeze.

I looked back at the guide and discovered that I was lucky
As it turns out, the great egret is an endangered specie
The birds were once hunted for their feathers of so white,
Polluted water and habitat loss contributed to their plight.

I hope people appreciate the beauty of this bird,
And continue to take steps to help it so it can be part of our world!