

# Laws of Nature

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Grade Levels:2-8

## In a Nutshell

Through a physically active game and an exploratory hike, students will examine the four laws of ecology. They will search for evidence of these laws in the natural world and examine the role of the laws in their own lives.

## Objectives

Upon completion of this unit, students will be able to

- Define the term ecology;
- Describe in their own words the four laws of ecology
  - Everything is connected to everything else.
  - Everything must go somewhere.
  - Nature knows best.
  - There is no such thing as a free lunch.

Cite evidence that shows 2 or more of the laws at work at CWES.

# Laws of Nature Pre-visit Activities

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*The following materials are aids to help prepare your students for their visit to the Central Wisconsin Environmental Station. The vocabulary list contains terms and concepts your students will encounter in their visit. Please modify the definitions as needed. The activities listed below are merely options—it is not necessary to do them all or to follow any particular order. Keep in mind that your students' learning experiences at CWES will be enhanced if they are familiar with these concepts and terms prior to the on-site activities.*

## **Vocabulary**

- Bioaccumulation:** when toxins (from pesticides or other poisons) build up in the fatty tissue of an animal's body over time; these toxins are passed up the food chain when this animal is eaten by another.
- Consumer:** (plant-eaters, animal-eaters) organisms that get their food energy from from other living things.
- Decomposer:** (recyclers) plant and animals that feed on once-living material and cause it to break down.
- Ecology:** the study of the relationship between living things and their environment.
- Food Chain:** the passage of food energy through a series of organisms; for example, sun-grass-mouse-fox.
- Food Web:** a system of interlocking food chains; the total pattern of all the separate food chains in a community.
- Predator:** an animal that hunts or captures other animals for food.
- Prey:** an animal that is hunted by another animal for food
- Producer:** (green plants) organisms in a community that convert light energy from the sun into the food energy that can be used by consumers.

# Laws of Nature Pre-visit Activities

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## Activity #1

Initiate a discussion with students about whether or not they think people's attitudes about some subjects might change over time. Fashion in clothing, furnishings and food might serve as examples to begin. If not raised by students, ask them if they can think of any examples of changes in understanding about wildlife, the environment, and uses of natural resources.

Ask the students, working in groups of two to four, to generate a list of questions relating to an understanding of the environment that they might ask of adults in their community. For example:

- What was the biggest problem facing the environment when you were my age?
- What do you see as the biggest problem facing the environment now?
- What general changes, if any, do you notice in how society views the environment?
- What environmental issues, if any, are you concerned about?
- What recommendations do you have for addressing these issues?

Review the questions generated by each group before they conduct their interviews.

Ask the students to interview at least one long-living person in their community. Next, have the students interview each other.

Discuss differences. What are some factors, which might contribute to any changes in understanding that they have identified?

*Adapted from Project Wild Changing Attitudes.*

# Laws of Nature Post-visit Activities

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*A visit to the Central Wisconsin Environmental Station can be a school-year highlight for both students and their educators. We feel the knowledge and concepts gained during a Station visit apply outside the Station as well. The following activities will allow students to expand their knowledge and help them incorporate those lessons into their everyday lives. Feel free to pick from and modify the activities as best suits your group.*

## **Activity #1**

Find pictures (or real examples) of spider webs. (If you investigate spider web examples outdoors, spray them gently with water in spray mister to make them easier to see.) Why do spider webs often represent the laws of nature?

## **Activity #2**

Naturalist John Muir said, “When we try to pick out anything by itself, we find it hitched to everything else in the universe.” Challenge the students to think of an object that is not connected to anything else. Have them write to reason why they feel it is not connected. Then, have them discuss their idea with the rest of the class. Encourage discussion and debate.

# Laws of Nature Resources

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## Teacher Resources

NatureScope. 1985. *Trees are Terrific*. Washington DC: National Wildlife Federation.

## Youth Literature

Boring, Mel. 1996. *Caterpillars, Bugs and Butterflies*. Minocqua, WI: North Word Press, Inc. 48pp.

Dendy, Leslie. 1995. *Tracks, Scats and Signs*. Minocqua, WI: North Word Press. 48pp.

Norsgaard, E. Jaediker. 1990. *Nature's Great Balancing Act*. New York: Cobblehill Books. (For Grades K-6)

Pringle, Laurence. 1975. *Chains, Webs, and Pyramids*. New York: Thomas Y. Crowell Co. (For Grades 4-6).

Robertson, Kayo. 1986. *Signs Along the River: Learning to Read the Natural Landscape*. Boulder, Co: Roberts Rinehart, Inc. (For Grades K-9).

Saven, Beth. 1991. *Earthwatch: Earthcycles and Ecosystems*. Reading, MA: Addison Wesley Publishing. (For Grades K-9)

Spurgeon, Richard. 1988. *Ecology*. Tulsa, OK: EDC Publishing. (For Grades 5-adult).