



# What is Biodiversity?



**Biodiversity is the variety of species, their genetic make-up, and the natural communities in which they occur. Biodiversity is important to sustain healthy ecological systems, to provide resources for recreational opportunities and other beneficial uses, and to assure the longterm welfare of ourselves and future generations.**

Biodiversity is the variety of life on earth. It includes everything from the tiniest microbes to the tallest trees, from creatures that spend their entire lives deep in the ocean to those that soar high above the Earth's surface. When people think about biodiversity, they often picture a South American rainforest or African savanna; however, Pennsylvania also has a great wealth of biodiversity.

Biodiversity represents the very foundation of human existence. The planet Earth provides the physical base for our life-support system, the biosphere in which all life exists. Surrounded by an envelope of air, along with soil and water, Earth teems with millions of different types of plants, animals, fungi and microorganisms. Together, these varieties of species make up the natural diversity of life, or biodiversity.

This biodiversity provides us with the basic necessities of life. The activities of all these organisms together maintain the atmosphere, develop new soils, break down wastes, store and filter water, pollinate our crops, provide us with food, and protect us from disease. Without these ecological services, we cannot have abundant food, natural fibers for our clothes, lumber for our homes and furniture, a clean environment, and good health.

Even though Pennsylvania is home to a great richness of life, our biodiversity is threatened. Natural events such as storms and fires have impacts on biodiversity and nature is usually able to renew itself from natural events over time; however, human influences can cause extensive, irreversible effects on biodiversity and impact the overall health of our environment. We must conserve biodiversity because our very existence depends on it. Every strand in the web of life is important. If we want to ensure the long-term health of our planet Earth, we need to be informed about biodiversity and understand why it's important.

## ?? Where is biodiversity ??

You'll find it everywhere in Pennsylvania—from the largest lake to the smallest puddle, from the densest forest to the driest barren, from a low-lying marsh to a mountain ridge. It marches in vast parades along streams and rivers and lurks in the merest pinch of city-lot soil. It's a living bank account, providing the "capital" that underlies all human experience and prosperity. Its beauty, abundance, and complexity continually fascinate and inspire us—as it has since the first flicker of human consciousness more than 1.5 million years ago.

**What is it? It's biodiversity—the wonderful variety of life on Earth.**

## Additional Resources for Biodiversity Information

### Pennsylvania Department of Conservation and Natural Resources (DCNR)

Rachel Carson State Office Building  
P.O. Box 8767  
Harrisburg, PA 17105-8767 (717) 787-2869  
[www.dcnr.state.pa.us](http://www.dcnr.state.pa.us)

\*Environmental and conservation education, state parks and forestry

### Pennsylvania Department of Education (PDE)

Office of Environment and Ecology  
8<sup>th</sup> Floor – 333 Market St.  
Harrisburg, PA 17126 (717) 783-3946  
[www.education.state.pa.us](http://www.education.state.pa.us)

\*Environment and Ecology Standards

### Pennsylvania Game Commission (PGC)

2001 Elmerton Ave.  
Harrisburg, PA 17110-9797 (717) 787-4250  
[www.pgc.state.pa.us](http://www.pgc.state.pa.us)

\*Wildlife resources \*Education \*Species reintroduction \*Habitat management

### Pennsylvania Fish and Boat Commission

1601 Elmerton Ave.  
Harrisburg, PA 17106 (717) 705-7800  
[www.fish.state.pa.us](http://www.fish.state.pa.us)

\*Management of aquatic resources \*Fish, reptiles and amphibians \*Education

### The Nature Conservancy, Pennsylvania Chapter

2101 North Front Street  
Building #1, Suite 200  
Harrisburg, PA 17110 (717) 232-6001  
[www.nature.org/wherework/northamerica/states/pennsylvania](http://www.nature.org/wherework/northamerica/states/pennsylvania)

\*Preservation of natural communities

### Western Pennsylvania Conservancy

800 Waterfront Drive  
Pittsburgh, PA 15222-2075 (412) 288-2777  
[www.paconserve.org](http://www.paconserve.org)

\*Land conservation \*Fostering land stewardship ethics

### Pennsylvania Association of Environmental Educators (PAEE)

Schuylkill Conservation District  
1206 AG Center Drive  
Pottsville, PA 17901  
[www.paee.net](http://www.paee.net)  
\*Promotion of environmental education activities statewide

### Audubon Pennsylvania

100 Wildwood Way  
Harrisburg, PA 17110 (717) 213-6880  
[www.pa.audubon.org](http://www.pa.audubon.org)  
\*Birds, wildlife habitat and environmental education

### Pennsylvania Association of Conservation Districts (PACD)

25 N. Front Street  
Harrisburg, PA 17101 (717) 238-7223  
[www.pacd.org](http://www.pacd.org)  
\*Environmental Education representing county conservation districts

### Pennsylvania Department of Environmental Protection (DEP)

Rachel Carson State Office Building  
P.O. Box 2063  
Harrisburg, PA 17105-8454 (717) 772-1828  
[www.dep.state.pa.us](http://www.dep.state.pa.us)  
\*Refer to the DEP web site for additional information supporting the poster drawings

### World Wildlife Fund (WWF)

1250 24<sup>th</sup> Street, NW  
P.O. Box 97180  
Washington, DC 20090-7180 (202) 293-4800  
[www.worldwildlife.org](http://www.worldwildlife.org)  
\*Biodiversity curriculum \*Windows on the Wild

### The Biodiversity Project

4507 N. Ravenswood Ave., #106  
Chicago, IL 60640  
[www.biodiversityproject.org](http://www.biodiversityproject.org)  
\*Biodiversity communication



## What's your Pennsylvania Biodiversity IQ?!

Be sure to match the answer with the picture on the front of the poster.

- Which definition best describes the word "biodiversity"?
  - too many bird species in one area
  - the total of all amphibians in a pond
  - the variety of life
  - a mathematical equation
- This common Pennsylvania plant found in forested wetlands gives off a unique smell when crushed or bruised. It's also a favorite food of Black Bears emerging from their winter dens. Which plant is it?
  - plantain
  - skunk cabbage
  - wild grapes
  - cattails
- This Pennsylvania mammal has a weird habit of preying on porcupines. Besides getting into "sticky" situations, this animal climbs trees rather well. What is this animal's name?
  - fisher
  - bobcat
  - coyote
  - gray fox
- There are many different species of butterflies and moths in Pennsylvania. Butterflies and moths
  - will eat almost anything
  - are insects
  - are both commonly found during the day
  - do not drink water
- Hawks and falcons help control insect, rodent and small bird populations. In autumn, many hawks and falcons fly
  - close to the ground
  - toward the Atlantic Ocean
  - north
  - south
- What animal represents the return of an endangered species? This animal nests on a ledge on the 15th floor of the Rachel Carson State Office Building in Harrisburg, headquarters of the Department of Conservation and Natural Resources and the Department of Environmental Protection. This nesting site is one of 10 active nesting sites in Pennsylvania.
  - chimney swift
  - harbinger of spring
  - peregrine falcon
  - northern short-tailed shrew
- Chemicals absorbed from the Orange Butterfly Weed plant make both adult butterflies and their caterpillars.
  - green in color
  - hyperactive
  - experience symptoms of high blood pressure
  - distasteful to birds
- Scientists studying bug zappers have learned some interesting facts. Which of the following are among them?
  - Insects are attracted to bug zappers because of the zapper's smoky smell
  - Bug zappers are changing the position of the earth's magnetic pole
  - Bug zappers are beneficial for bats and flowers
  - Bats are good natural bug zappers.
- This animal's deep sleeping habits are being explored by scientists trying to find answers to the problems of human osteoporosis and kidney diseases. Which animal is it?
  - bog turtle
  - black bear
  - saw-whet owl
  - Canada goose
- Also called the "swamp rattler" this snake is small, endangered and one of the three venomous snakes in PA. Which snake is it?
  - garter
  - eastern massasauga
  - black rat
  - hogsnose
- Because of its unique flying style and characteristics, this insect has been studied by the US Air Force in wind tunnel experiments. Which insect is it?
  - Grasshopper
  - June bug
  - dragonfly
  - potato beetle

### BONUS:

Which of the following would people have to do without if there were no bees?  
a. almonds  
b. honey  
c. apples  
d. pickles  
e. all of the above

### General Principles of Biodiversity

- Biodiversity is the variety of life on Earth. Scientists study biodiversity at a habitat level, a species level and a genetic level.
- Biodiversity is the natural capital for the life-support system on the planet.
- The variety of species supports and enables an ecosystem, providing many ecological services and products which support cultural systems.
- Conserving biodiversity helps maintain environmental health and our quality of life. Focusing on biodiversity is an investment in Pennsylvania's future.

### Pennsylvania Academic Standards

The Pennsylvania Academic Standards for Environment and Ecology mandate that Pennsylvania's public schools shall teach, challenge, and support every student as they acquire the knowledge and skills needed to understand biodiversity (Ecology standard 4.1) and the link between biodiversity environmental health, and threatened and endangered species (Ecology standard 4.1). Since biodiversity is all-encompassing to the life sciences, biodiversity concepts are linked to many other academic standards.

## Ten Minute Mystery

The following is a 10 minute mystery from Pennsylvania Windows on the Wild curriculum. If you'd like to solve more mysteries about some amazing and little-known connections among people, species and ecosystems in Pennsylvania, contact the PA Game Commission website.

Jack, Chris and Laura were taking a winter hike through Canoe Creek State Park. As they followed the trail around the bend, Jack shouts, "A cave!" Before Chris and Laura could catch him, Jack sprinted right to its entrance. Hoping that they could keep him from entering, Chris and Laura calmly whispered, "Stop! You'll wake the bats!" Jack jerked around sharply and replied, "What's the big deal?"

### SO...WHAT IS THE BIG DEAL ???

**Clue #1** The season is winter, the time of hibernation for bats.

**Clue #2** In winter, the bats food source is absent.

**Clue #3** Huddling close together keeps the bats warm.

### ANY IDEA WHAT THE BIG DEAL IS YET?

**Think about it.....**Chris and Laura know that all bats hibernate, but this area also shelters the Indiana bat, which is a federally listed endangered species. In Pennsylvania, Indiana bats have been found wintering in only five sites (limestone caves and abandoned mines). The big deal about keeping Jack from entering the cave is human disturbance. During the winter, human disturbance of bat caves interrupts vital hibernation processes that can lead to death. For example, the Indiana bat hibernates in clusters of approximately 250 bats per square foot. When a human enters the cave, it can disturb a bat on the fringe of the cluster creating a ripple of activity that spreads throughout the group. A winter of repeated disturbances causes bats to burn vital fat stores and they may run out of energy before spring.



### "Environmentally Friendly" PRODUCTION NOTES:

Printed on recycled Paper ♻️ 20% Post Consumer Waste, ♻️ Acid free, and Chlorine Free ♻️ Printed with Plant Based Ink



### SCORING:

Give yourself 10 points for each correct answer. Highest possible score: 120 points  
**120 points** WOW! You're a Biodiversity Guru!  
**100-110 points** Congratulations! You're an official Biodiversity Steward.  
**70-90 points** You're on the right track. Keep exploring—you'll have fun and learn a lot!  
**70 and below** Oops! There's a great big world out there to explore! Keep exploring and you too will have fun and learn a lot!

**ANSWERS:** 1. c; 2. b; 3. a; 4. b; 5. d; 6. c; 7. d; 8. d; 9. b; 10. b; 11. c; Bonus, e.