

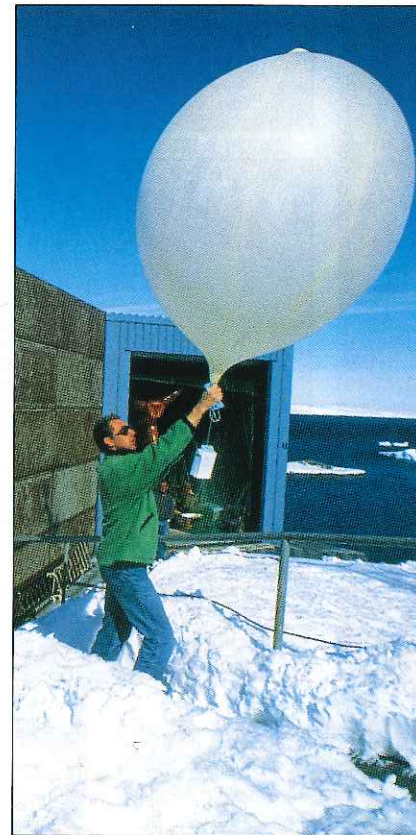


Ecologists face mysteries all the time. One of the biggest right now is this: What happened to the frogs in Henderson, Minnesota? In 1995, children there noticed that many frogs were badly deformed. Could parasites be the cause? Pollution? Or could it be something else?

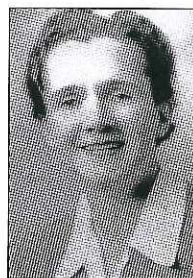
Deformed frogs in Minnesota are just part of a larger, even more disturbing mystery. All over the world, the number of frogs, toads, and other amphibians is shrinking. Again, nobody has a clear idea why. It might be global warming, disease, habitat destruction, pollution, or a combination of all these factors. The disappearing amphibians have scientists concerned. More than most animals, amphibians are sensitive to environmental changes. Whatever is going on, it could be an early warning sign of trouble ahead for humans. By examining the world around us, ecologists can tell us what's wrong and, perhaps, how to fix it.

▼ **WHAT DO ECOLOGISTS DO?** Many spend time in the field, studying natural areas, where they measure pollution levels or observe animal behavior. Some show how damaged ecosys-

tems can be revived. Others educate people about problems like habitat destruction. Still others use computers to predict changes in the climate or in animal populations.



► **IN 1962, AMERICAN** biologist Rachel Carson published one of the most famous ecology books ever. *Silent Spring* showed how pesticides used by farmers destroyed more than just insects. The chemicals got into the food chain and harmed a wide range of animals, including humans. Carson's book helped kick off the modern effort to preserve the environment.



► **IN 1970, THE** peregrine falcon appeared to be doomed. A pesticide, DDT, had thinned out the birds' egg shells. Babies could not

be born because eggs could not take the mother's weight. A 1972 ban on DDT and an intensive rescue effort by scientists helped save the birds. Recently removed from the endangered species list, peregrine falcons can now be seen soaring above cities like New York and Minneapolis.



ECOLOGY IS sometimes involved in public relations. Health concerns and legends about vampires once caused people to slaughter bats. It took decades for scientists to show that bats pose no threat to humans and are natural

bug zappers to boot. A single bat can eat 1,200 mosquitoes an hour. Today, many people build bat houses outdoors so they can control pests naturally. However, most bat populations remain in decline.



Solar Car Challenge

THE U.S. DEPARTMENT of Energy sponsors the American Solar Car Challenge. Open to cars powered by batteries that draw energy from solar cells, the teams race 2,300 miles from Chicago to Los Angeles. The goal of the challenge is to develop cars that don't pollute the air. Competition is in two classes: stock (in which spending is limited) and open. Above is the stock-car Third Degree Burner, developed at Stanford University, which covered the course in 10 days (91 driving hours).

▼ **ECOLOGY AND** economics are closely tied, as shown by the efforts to save Kenya's Arabuko-Sokoke Forest. Nearby residents have become butterfly "farmers"

who catch and breed butterflies from the forest. They send the chrysalises to zoos overseas. Without the money they make from butterflies,

local people would probably cut down the forest to create farmland. That would snuff out 250 species of butterflies, not to mention other animals.



Anyone can study the environment and take steps to preserve it. Here are some things you can do.



ACT. Once you've informed yourself, find a way to do something. Perhaps you'll need to write letters or volunteer at a local wildlife refuge. Don't be afraid to call up experts or public officials to get information or to express an opinion. Most are happy to help young people. If the people you reach are not helpful, don't be discouraged.



READ. Find out about local environmental issues, such as water pollution or urban sprawl. How do they affect you? What's being done about them?



WRITE. Keep a wildlife journal. Record your observations of wildlife and your thoughts about it. Turn some of your ideas into a poem, an essay, or a song.

Be an Amateur Ecologist



DISCOVER. Your backyard or local park contains a great deal of wildlife. Spend half an hour or so observing the insects and other animals there. Perhaps even write a list of what you see. Once you've identified an interesting animal, focus on it. How many individuals of that species do you see? How do they behave? What's special about them to you?



CONSERVE. By learning how to save natural resources, you learn more about them. For instance, estimate how much water your family uses flushing the toilet every day (how many gallons per flush times how many flushes per day). Research ways to lower that amount of water. One way is to place a brick in the tank. Conservation measures often cost more money at first but save money (and the environment) over time.

On this map of the world, each number identifies a different type of biome. Match the name of the biome with the number that identifies it.

BIOME MATCH-UP

1.	a. savannah
2.	b. mountain
3.	c. temperate rain forest
4.	d. deciduous forest
5.	e. desert
6.	f. coniferous forest
7.	g. temperate grassland
8.	h. tundra
9.	i. chaparral
10.	j. tropical rain forest

ECOLOGY CROSSWORD



ACROSS

- 1. Biome of U.S. prairies (2 words)
- 4. Biome that borders a desert
- 5. Treeless and very cold biome
- 7. Ability to work, supplied by food
- 8. Different populations of species living together in the same area
- 9. Biome of rivers, lakes, and ponds
- 10. Gaseous form of water
- 11. Ecosystems with the same climate conditions
- 12. Several communities make up an _____
- 13. Manufactured substances that cannot be recycled
- 14. Method by which energy is passed along in a community
- 17. Sea _____, mammal that eats sea urchins
- 18. Place that a plant or animal holds in its community
- 19. Urban _____, spreading out of cities

DOWN

- 2. Trapping of sun's energy by gases in Earth's atmosphere (2 words)
- 3. Food stored in plants' leaves
- 4. Water _____, process by which water is reused
- 6. Layer of gases that surround Earth
- 7. The dying out of a species
- 15. Biome of scarce rainfall
- 16. Animal hunting another animal

MORE READING ON ECOLOGY

BOOKS FOR CHILDREN

- Elizabeth Billington, *Understanding Ecology*, Frederick Warne and Co. Inc., 1968.
- Leslie Colvin and Emma Speare, *The Usborne Living World Encyclopedia*, Usborne, 1992.
- Linda Gamlin, *Life on*

Earth, Gloucester Press, 1988.

- Steve Pollock, *Eyewitness Science: Ecology*, Dorling Kindersley, 1993.
- _____, *Atlas of Endangered Places*, Facts on File, 1993.
- Richard Spurgeon, *Usborne Science &*

Experiments: Ecology, Usborne, 1988.

- Janice VanCleave, *Janice VanCleave's Ecology for Every Kid*, John Wiley & Sons, 1996.
- BOOKS FOR ADULTS**
- Peter J. Bowler, *The Norton History of the Environmental Sciences*,

W.W. Norton, 1992.

- Paul Fleischer, *Ecology A to Z*, Dillon Press, 1994.
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ANSWERS:

PAGE 3: What's the difference between *ecology* and *environment*? *Most people use the word ecology interchangeably with environment, but they don't really mean the same thing. Ecology is the study of the environment.* **PAGE 5:** These are the land biomes. What water biomes can you think of? *Coral reefs, deep-sea trenches, and other saltwater ecosystems make up the marine biome. It also includes areas near land, such as estuaries, the junctions where freshwater rivers and streams meet up with the sea. The freshwater biome includes rivers, streams, ponds, and lakes, as well as wetlands, like bogs, swamps, and marshes. Less than three percent of the world's water is fresh water, and most of it is found in glaciers and at the North Pole and South Pole.* **PAGE 8:** How much rain falls on the U.S. every day? *About 4.2 trillion gallons. Nearly 70 percent of it evaporates or is used immediately by plants.*

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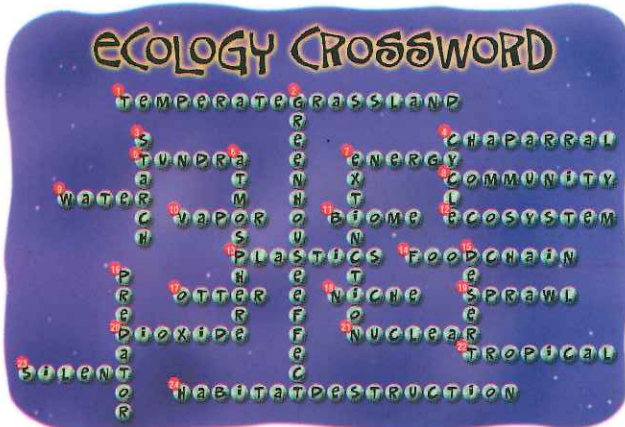
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ORIGINAL ILLUSTRATIONS:

Acme Design Company: Biome Map, pp.4-5; The Greenhouse Effect, Global Warming, p.9; Be an Amateur Ecologist, Biome Match-up, p.18. Michael Kline Illustration: Cartoons, cover, p.15; 6 Ways of Looking at Our Planet, pp.2-3; The Food Chain, The Food Web, Relationships in Nature, pp.6-7; Succession, p.12; Ecology Crossword, p.19. Wood Ronsaville Harlin, Inc.: Greg Harlin: Water Cycle, Carbon Cycle, pp.8-9.

ANSWERS:

PAGES 18-19: BIOME MATCH-UP: 1. h; 2. f; 3. d; 4. e; 5. g; 6. a; 7. i; 8. b; 9. j; 10. c. **ECOLOGY CROSSWORD:**



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