

## **MAINTAINING BIODIVERSITY**

### **PEOPLE AND BIODIVERSITY**

The people of Illinois make a significant impact on the landscape and its diversity. Clearing forests, plowing prairies, draining wetlands, developing urban areas, building roads and conducting other human activities have drastically reduced the diversity of habitats in Illinois and the overall biodiversity of the state. When people alter habitats they kill and/or force out the organisms that live in them, upset ecological relationships and reduce the ecosystem's ability to perform services like flood control, water purification and nutrient recycling. Some of the habitats that originally occurred in our state can only be found in nature preserves, state parks, conservation areas and other protected sites that shelter the state's biological diversity. However, we can help protect biodiversity, a task that involves all of us. All species are significant, many in unknown but, perhaps, vitally important ways.

### **HOW CAN WE PROTECT BIODIVERSITY?**

One of the greatest challenges in protecting biodiversity is how to balance the needs of the present without jeopardizing those of the future. There is no one way to address this challenge, partially because there is no single reason why we are losing biodiversity. There are several goals, however, which can be attained by people working together. One proposal is to maintain a state of relative equilibrium with our environment, called sustainability. A society that reaches sustainability is one that is able to persist for many generations without producing significant amounts of pollution, depleting natural resources and causing a decline in biodiversity. Many different points of view need to be taken into consideration before sustainability can be achieved. Land-use planning is needed so that space may continue to exist for species and ecosystems. Restoration of habitats is an important goal. Research must be done rapidly to find out as much as possible about what species exist, how they depend on their habitats and how habitats can be managed to ensure healthy populations. Legal protection is necessary for some species. Stewardship of natural resources should be considered when corporations make business decisions. Captive breeding can be used to increase the population of some species. Gene banks are being developed to store seeds and plant parts to preserve biodiversity for future generations. Citizens can take action in their own communities to solve biodiversity problems. Educating people about the problem will lead to better understanding and solutions. Ensuring the survival of species, genes and ecosystems will require a combination of approaches, and the collective thinking of people from all disciplines and backgrounds. It will mean fostering compassion for other species, educating ourselves about the connections among all elements of biodiversity and coming to terms with the consequences of our behavior for other people and other species.

### **INDIVIDUAL INVOLVEMENT**

Individual involvement is an important step in developing awareness of and appreciation

for the environment. Besides improving some aspect of the natural resources, taking environmental action results in personal rewards like enhanced confidence, increased self-esteem and the development of decision-making, critical-thinking and cooperative-learning skills. Environmental action projects can range from the construction of homemade sampling equipment used to monitor a local stream to practicing water conservation at home through shortened shower times or consolidated laundry loads.

## **DEVELOPING HABITATS ON SCHOOL SITES**

Wildlife habitat improvement projects undertaken on school sites can be beneficial in many ways. Involving students in the projects from planning through maintaining the site can lead to a sense of ownership by students, who will then take this experience with them and foster stewardship responsibilities in their daily lives. Developing the habitat is an aid to wildlife populations, too. The benefits to wildlife can be observed and measured. Educators can incorporate the habitat site into existing lessons in a variety of subject areas.

## **EXAMPLES**

The following items are some examples of how people are working to maintain biodiversity.

### **Bee Good to Your Lips**

A company called Burt's Bees purchases beeswax for the production and sale of lip balm. That's good news for beekeepers across the United States who use the income from beeswax sales to better manage their honey bees. Most people don't know it, but honey bee populations have declined in the last few years. If the trend continues, the cost to farmers could be billions of dollars a year. The reason? Bees are very important for pollinating crops. Saving bees will require changes on many fronts—from reducing pesticide use to saving bee habitats.

### **Now, That's More Lichen It!**

Forest scientists need lots of high tech instruments to measure air quality, right? Well, traditionally, they have had to spend thousands of dollars a year to buy and operate electronic air-monitoring instruments. But now they have a new, more cost-effective instrument: lichens! Lichens are actually two organisms in one: a fungus and either an alga or a bacterium. Together these "partners," which grow on rocks and other surfaces, can live in some of the harshest environments on earth—including the frigid reaches of Antarctica. Tough as they are, though, lichens are very sensitive to air pollution. A botanist discovered how certain lichens respond to three different air pollutants—ozone, sulfur dioxide and nitrogen oxide. By monitoring where lichens are growing and how healthy they are, scientists can draw conclusions about the presence of these pollutants in an area.

### **Beautifying Neighborhoods**

Want to help be a crime buster in your community? Follow the "Clean and Green"

program example, a very successful Chicago program of community cooperation. The Chicago Alternative Policing Strategy, or as it is better known the “CAPS program,” co-sponsors “Clean and Green” a citywide cooperative effort to clean up Chicago neighborhoods. The Chicago Police Department, the Streets and Sanitation Department and area communities work together to spruce up neighborhoods from April to October, by clearing debris, planting flowers and implementing creative strategies to beautify inner city neighborhoods. The City provides tools, materials and pick up of trash and debris while the neighborhoods supply the volunteers. All 25 policing districts in Chicago have encouraged adoption of the “Clean and Green” program because it helps communities work on cooperative projects which in turn helps cut down on crime. It brings area residents and city workers together to improve neighborhood conditions in many ways. By getting people to work together in programs like “Clean and Green,” they learn to work for positive improvements and take pride in their neighborhoods.

### **A New Way of Doing Business**

Taking recycling to a new level is Ford Motor Company’s goal for this millennium. The company began recycling efforts in 1991, and the National Recycling Coalition has since awarded Ford the “Recycling Leadership Award” for efforts to recycle the company’s own waste and for using recycled materials in auto production. During the 1990s, they used more than four billion pounds of recycled materials world-wide. Ford Motor Company uses plastic soda bottles and computer casings in automobile grills, reprocessed carpet in fan shrouds, auto battery casings in new splash shields and used tires in brake pedals and floor mats. Active recycling programs are in place in their facilities, like their paper recycling and reduction effort. North American plants alone are recycling 450 million pounds of waste each year, which has saved more than \$8 million annually for the company.

### **City Sewer Savvy**

Kids around the country are spray painting messages on city streets. Working with local governments, they’re helping to save their local rivers, streams and bays. By painting “DON’T DUMP: DRAINS TO LAKE OR STREAM” (or other waterway, depending on where they live) on city storm drains, they’re reminding residents that pollutants dumped down these drains flow into local waterways. And those waterways are important habitats for wildlife—not to mention critical fishing spots and valued places for recreation.

### **Ending the Conflict**

Throughout history, many wars have been fought over natural resources such as land, forests and water. While problems regarding resources still exist, a number of groups are trying a new approach, called conflict management, to end conflicts before they escalate into fighting. In conflict management, disagreeing groups get together with an impartial party to discuss their concerns. Each side is asked to listen closely to the other side. The impartial party helps to clarify what each side is asking for. In many cases, once groups get beyond their anger and frustration, they find that their needs can be met. One way conflict management has been used is to find workable solutions for the issue of recreational water use. Jet ski and speed-boat users often are in direct conflict with canoeists and fishermen. Zoning for use of time and space on water bodies is often an

effective compromise.

### **Restoring the Tallgrass Prairies**

The Midewin lands (southwest of Chicago) are a piece of the 36 million acres of prairie that once existed in Illinois. Beginning in the 1830s, the rich prairie soils were plowed by settlers, who wanted to farm the land. Later, with World War II looming, the U. S. Army commandeered many thousands of acres in Midewin for use as an ammunition plant. That use continued for more than 50 years, until the Army abandoned the land and environmentalists succeeded in winning approval for an ambitious plan to restore Midewin. Much planning, cooperation and hard work have gone into restoring this prairie. As part of the plan, the U. S. Forest Service is growing acres of native plants on parts of the site. The seeds of those plants are harvested and planted to create this new “prairie forest.”

### **Concerned Citizens Unite**

Altgeld Gardens is a Chicago Housing Authority community of about 10,000 people on the southeast side of Chicago. It is located in the center of a toxic doughnut of heavy industry and waste dumps. A mammoth water treatment plant that contains acres of waste-drying areas is present as are more than 100 industrial plants and 50 active or closed waste dumps. The area contains 90 percent of Chicago’s landfills. Altgeld Gardens, whose residents are virtually all African-American, was built on the edge of an old industrial dump. Today airborne pollutants from this industrial area cause a host of ailments: watery and burning eyes; skin rashes; conjunctivitis; asthma; and other respiratory illness. Residents suffer from high rates of bladder and lung cancer. A citizens group, People for Community Recovery, working with other environmental groups, like the Southeast Environmental Task Force, decided to fight the area’s powerful industrial companies. They have won some key battles. In 1998, an incinerator was shut down, and plans to build another landfill were blocked.

### **The Power of Plants**

How did people treat illness and disease before there were grocery stores and pharmacies? They looked to nature to treat their symptoms. Many native plants in Illinois were used for food and for their healing properties. Bloodroot, a spring woodland wildflower, can be used to treat respiratory illnesses, including bronchitis, asthma and laryngitis. The compound salicin, closely related to aspirin, was discovered in the bark, leaves and buds of willow trees. Native medicinal plants, and the knowledge handed down by native cultures, is very valuable today, as we continue to find ways they can help control diseases.

### **Songbirds on the Net**

A student in Illinois logs onto the Internet and enters her observation: yellow warbler spotted today! She’s one of many students participating in an environmental education program called MISTNET (Migration Information Songbird Tracking NETwork). Participants track the migration of several songbird species between their winter habitats in the tropics and their summer habitats in the United States and Canada. The students are helping scientists monitor songbird populations, which are decreasing because of habitat

loss. The students are learning a lot about birds and migration, and they're participating in a project that gives a whole new meaning to the phrase "web of life."

### **Planes, Trains and Automobiles**

Smart growth is a new name for an old idea in Chicago. Before the automobile was available, people had to live near their work, shopping centers and schools. This large city was once a small trading town on the only water connection between Lake Michigan and the Mississippi River. When railroads came through the Midwest, the city began to grow. City planners like Daniel H. Burnham and Frederick Law Olmstead developed ways to preserve the beauty of Chicago while planning for its transportation and business growth. For example, the Burnham Plan of 1909 addressed planning for roads and buildings in Chicago as well as parks and beaches along Lake Michigan. Today, balancing the population growth of Chicago with the expansion of buildings, roads, airports, sewers and utilities, has impacted our natural resources, resulting in air and water pollution, global warming and losing natural areas to development. A new movement called "Smart Growth" promotes ways of building and rebuilding neighborhoods and incorporates long-term planning practices to protect the area's natural resources.

### **Poached Eggs**

Fossil records show that paddlefish have been swimming in Illinois waters since before dinosaurs ruled. Recent declines in the number and range of paddlefish have been caused by over-harvesting, water pollution, sedimentation of gravel areas needed for spawning and the construction of dams, altering natural water flow, water levels and water temperature and blocking migration and access to spawning grounds. Poaching (illegal killing) of paddlefish for their eggs creates other problems. The eggs can be used for caviar, although they may contain chemical contaminants, making them unsafe to eat. All these factors have made survival very difficult for these ancient creatures. Today, people throughout the Midwest are working hard to save the paddlefish. Since the fish travels great distances, fishermen and federal, state and tribal management agencies are cooperating to protect it. Commercial harvest and snag fishing of paddlefish is banned in most Illinois waters. Conservation police officers are working to catch poachers. Other projects that are helping paddlefish populations include stocking young paddlefish into water bodies, using radio transmitters to track the movement and habitat use of individual paddlefish and removal of some dams.

### **A New Crop of Farmers**

Throughout Illinois farmers are working to protect and improve the quality of their land. Some have begun to practice "sustainable agriculture." Sustainable agriculture considers weather patterns, soil type, ecoregions and crop requirements when making decisions. This type of farming can reduce the need for pesticides and large farm machinery, while lowering fuel costs and conserving fuel. A variety of food types may still be grown. The practice also benefits wildlife and water quality. The U. S. Department of Agriculture's Sustainable Agriculture Research and Education program and the Illinois Department of Agriculture also support and promote sustainable agriculture.

### **Stewardship Volunteers Hard at Work**

Illinois has many plant and animal species that have been brought here from all over the world, escaped from cultivation or captivity and now grow freely in the wild. These new residents are known as nonnative or exotic species. These organisms often grow and/or reproduce faster than native species and have few or no natural control methods, like predators. In many cases these organisms replace native species. Volunteers throughout the state are working to eliminate some nonnative species. They help restore natural areas that have been overburdened with nonnative species, such as kudzu and purple loosestrife.

### **Populations at Risk**

When you think of a lifesaver, chances are good that you don't think about a law. But the Endangered Species Act, passed in 1973, is a law developed to protect all species in the United States from extinction. Each state has also adopted its own endangered species law to protect species that may be in trouble in the state but not throughout the nation. Using scientific information, federal and state agencies determine which species are threatened or endangered. Then they develop plans to help the species recover. According to the U. S. Fish and Wildlife Service, populations of more than half of the 1,177 plants and animals the Act protects in the United States are stable or growing. The most heralded success of the Act is the recovery of the bald eagle population with a tenfold increase in just 25 years. It also has aided the survival of the white fringed orchid, the peregrine falcon and the Illinois chorus frog.