



## Activity 4-1 Future Worlds

### AT A GLANCE

Build a pyramid to reflect personal priorities for the future. Investigate the way humans affect the natural world and discover how people are working to protect the environment and improve the quality of life in Illinois and on earth.

### OBJECTIVES

Express personal values by creating a personal vision for the future, especially as it relates to biodiversity. Reach group consensus using negotiation and conflict resolution skills. Discuss ways to arrive at the envisioned future. Analyze various approaches people in Illinois and around the world are taking to arrive at those futures.

### SUBJECTS

English language arts

### SKILLS

gathering (brainstorming), organizing (prioritizing), analyzing (comparing and contrasting, discussing), interpreting (relating), presenting (articulating), citizenship (debating, evaluating the result of citizen action, planning citizen action, seeking consensus, working in a group)

### LINKS TO ILLINOIS BIODIVERSITY BASICS

#### CONCEPTUAL FRAMEWORK

values and beliefs; human values

#### VOCABULARY

conflict management, consensus, cultural diversity, invasive species, legislation, lichens, pollinating, racial justice, recycling, smart growth, stewardship, sustainable

#### TIME

two class periods

#### MATERIALS

copies of “Future Blocks,” “Priority Pyramid” and “Making It Happen” for each student and for each group; scissors; glue or tape

#### CORRELATION TO COMMON CORE STANDARDS AND NEXT GENERATION SCIENCE STANDARDS

English language arts: Writing Standards for Literacy in Science, Production of Writing, 4; Research to Build and Present Knowledge, 8; Range of Writing, 10

Some people look into our future and see a gloomy, inhospitable picture: a world that is less healthy, less safe, less diverse, more crowded and more polluted. While such portraits of doom may scare some people into action, they often have the opposite effect. Negative forecasts can become self-fulfilling prophecies, making people—especially young people—resigned and hopeless. This activity doesn’t take a doom and gloom approach. Instead, it is designed to get your students to begin envisioning the future they want to inhabit and to learn about some real-life examples of how people in Illinois and around the world are working to make the future brighter.

### CHICAGO PLANS FOR THE FUTURE

In 1909, the Commercial Club of Chicago released “Burnham’s Chicago Plan of 1909,” one of the most influential and famous city plans in world history. Among its many provisions, that plan envisioned that the shore of Lake Michigan and a regional network of natural landscapes be protected as public parklands. Because of this foresight the Chicago region is ecologically healthier and more beautiful than it might have been. The air is cleaner, the water purer, there are more lakeside, parkland and forest preserves than if previous generations had not thought of the future. Therefore, what we do today helps determine what will happen in the future. Many organizations and agencies continue to work toward sustainable long-range planning for Chicago.

### BEFORE YOU BEGIN

#### Option #1

Make a copy of “Future Blocks,” “Priority Pyramid” and “Making It Happen” for each student and for each group. Also provide scissors and glue or tape.

#### Option #2

Make a copy of the “Priority Pyramid” and “Making It Happen” for each student and for each group. Also provide scissors and glue or tape.



## Activity 4-1 Future Worlds (continued)

### WHAT TO DO

#### Option #1

##### 1. Make personal pyramids.

Give each student a pair of scissors and a copy of both the “Future Blocks” and the “Priority Pyramid.” Explain to the students that the blocks list 15 different possible conditions or components of their future world. Have the students read through all the conditions. Make sure they understand all the words in the blocks. Then ask them to think about which of these conditions they most want to have as part of their world when they’re 50 years old. Clean air? Cures for illnesses? Less crime?

Have the students rank all the components from the most important to the least important. Tell them to cut out the squares and arrange them in the pyramid. The most important component should be placed in the top box of the pyramid, the next two components on the next tier and so on. Once the students have arranged all the blocks, have them mark each block with the number that reflects the priority rating they gave it. (The priority rating numbers are one through five and correspond to the levels of the pyramid.)

##### 2. Create group pyramids.

Arrange the group into teams of four or five students. Have the students work together to come up with a single pyramid that represents the team’s priorities for the future. Everyone on the team should record the priority ratings each member of the group gave each block and compare them with his or her own personal pyramid.

##### 3. Suggest methods of reaching consensus.

It might not be easy for teams to reach consensus regarding their group pyramid. The students may discuss their reasons for various choices, prioritize options or try other methods of reaching a group decision. But if they get stuck or seem to be struggling to achieve a fair process, you may want to interrupt and share the following negotiation suggestions:



- a. Make a list of all the possibilities for the top spot. Are there more than three? If not, would everyone accept having his or her first choice listed among the top three? If that’s the case, students may have an easier time resolving the question of order.
- b. Give everyone a chance to present his or her choice for the top square of the pyramid and explain why it was chosen. The other students should listen closely to these explanations. A student who lists bees as a top priority, for example, may explain that she’s concerned with how bee pollination is critical for food production. Then other students who have pushed to place “enough food for all people” in the top spot may realize that they share the same concern as the “bees” proponent. This strategy may help narrow choices or change the nature of the discussion.
- c. If the students are still struggling to reach a resolution, have them take a time-out to reflect on the process. Are certain views being overlooked because some students are quieter or less stubborn than others? Is the group uncomfortable with anyone’s way of working out the problem? By reflecting on the dynamics of their discussion, the students may be able to isolate the obstacles to group consensus.



## Activity 4-1 Future Worlds (continued)

- d. Encourage each student to offer a solution that involves concessions on all sides. Afterward, the students should vote on which compromise package they prefer. If there are ties, hold a tie-breaking vote.

### 4. Discuss the consensus process.

Bring the class back together and ask a representative from each team to present the team's top three priorities to the class. Students can also summarize some of the conflicts the group experienced, as well as how the conflicts were resolved.

After each team has made a presentation, ask your students to reflect on the process of reaching consensus. Were they surprised by the disagreement among the members of the group about future visions? Did any of the students change their own views by talking with other group members? How do they think their team's decision-making process might reflect some of the challenges that communities and societies face in working toward a positive future? (Make sure the students think about how hard it is to make positive changes for their community or the world, especially if people have different ideas about what they want and what they feel is important or right.) How much harder would it have been if the students had only enough time or money to ensure that their top two or three priorities would be achieved? (Again, you might want to point out the difficulties encountered by governments and organizations that are struggling to improve Illinois or the world when their resources are limited.)

### 5. Discuss solutions.

Ask the students if they have ever thought much about how they want the world to look in 50 years. Is simply thinking about dreams for the future enough to make them come true? If not, is it valuable? Why or why not? Ask students to look over the blocks in their pyramids. Can they think of anything they or

other people are doing to ensure that these things will happen in the future? Are there other things they would add to the pyramid?

### 6. Hand out "Making It Happen" sheets.

Tell the students that they now have a two-part assignment. First, they should compare their personal pyramid to the pyramid their group created. How do they explain the similarities and differences? How do they feel about the process they went through? How do they feel about the result?

Next, hand out copies of "Making It Happen." Ask the students to read about each of the projects and choose three approaches that they think best achieved the top three priorities set by their team's pyramid. (See "Making It Happen Answer Sheet.") They should write one or two sentences explaining how each of the projects they picked is working to achieve the specified objectives and what they think each project's strongest and weakest aspects are.

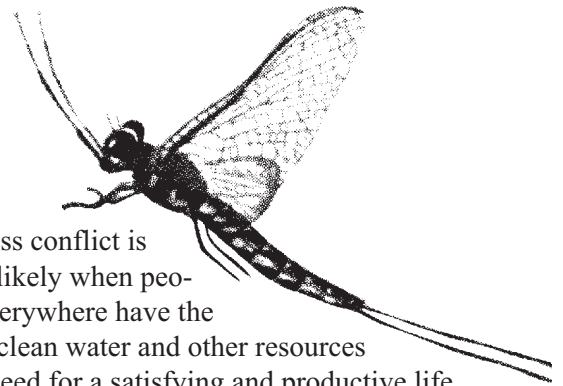
### 7. Have a wrap-up discussion.

After students have completed the assignment, make a list on the board of every priority square that made it onto a group's top-three list. Then ask the students to describe the projects they matched to those squares. Did people pick different projects to achieve the same goal? Why? Do they think any of the actions address more than one objective?

Discuss possible strengths and weaknesses of the approaches listed. Do students think local projects are more effective than passing national legislation? Do they prefer preventive approaches (like education) or fix-ups (like pollution-cleaning technology)? Point out that there are a lot of ways to bring change to the world—such as educating people, passing legislation and developing innovative technologies or strategies.



## Activity 4-1 Future Worlds (continued)



### Option #2

#### 1. Brainstorm about conditions for the future.

Ask the students to think about what they want the future to be like in Illinois. What things or conditions do they want when they're adults or when their own children are grown up? List their ideas on the chalkboard.

#### 2. Make personal pyramids.

Give each student a copy of the "Priority Pyramid." Explain to the students that they need to fill in the pyramid with the conditions they want to see in Illinois in the future, ranking the conditions from the most to the least important. The most important condition should be placed in the top box of their pyramid, the next two conditions on the next tier, and so on. The students can use the ideas the group generated and add their own ideas.

#### 3. Share personal pyramids and create group pyramids.

Arrange the class into groups of four or five students. Have the students share their pyramids with their team. Then have them work together to come up with a single pyramid that represents the team's priorities for the future. Everyone on the team should record the arrangement the group comes up with.

#### 4. Suggest methods of reaching consensus.

See step three in Option #1.

#### 5. Discuss the class process.

Bring the group back together and ask a representative of each team to present the team's top three priorities to the class. Students can also summarize some of their group's conflicts and how the conflicts were resolved.

As the groups present their pyramids, discuss with them the implications of each of their top three priorities. What kinds of things are entailed in each of their conditions? For example, if they chose less conflict as a condition of the future, they should see

that less conflict is more likely when people everywhere have the food, clean water and other resources they need for a satisfying and productive life. As the students discuss each condition, they should come to realize that everything they selected can be traced, at least in part, to a healthy environment.

When all the teams have presented their results, ask your students to reflect on the process of reaching consensus. See step 4 in Option #1.

#### 6. Discuss solutions, hand out "Making It Happen" sheets and have a wrap-up discussion.

See steps five through seven in Option #1. Adapt the discussion to fit the different groups' pyramids.

### MAKING IT HAPPEN—Answer Sheet

Each of the pyramid "blocks" can be matched with at least one of the "Making It Happen" examples. Here is a quick reference sheet for your use, but your students might make other connections that also work.

**Bee Good to Your Lips:** bees

**Now, That's More Lichen It!:** clean air

**Beautifying Neighborhoods:** less crime

**A New Way of Doing Business:** less trash

**City Sewer Savvy:** clean water

**Ending the Conflict:** less conflict

**Restoring the Tallgrass Prairies:** natural lands/open spaces

**Concerned Citizens Unite:** racial justice and diversity

**The Power of Plants:** cures for illnesses

**Songbirds on the Net:** environmental education

**Planes, Trains & Automobiles:** smart growth

**Poached Eggs:** healthy fish populations



## Activity 4-1 Future Worlds (continued)

**A New Crop of Farmers:** enough food for  
all people

**Stewardship Volunteers Hard at Work:**  
fewer invasive species

**Populations at Risk:** mussels and  
prairie-chickens

### WRAPPING IT UP

#### Assessment

1. Use both “Priority Pyramid” worksheets and observed student interaction for the assessment. Inform the students that they will be evaluated on these assignments.
2. Before constructing pyramids, ask your students to write about their top priority for the future and the reasons it is most important to them. Use the following journal starter: “When I imagine a sustainable future, I think of . . .”
3. Have each student write a newspaper article on an imaginary, but realistic, event that addresses the number one concern from his or her personal pyramid.

#### Portfolio

The personal “Priority Pyramid” can be used in the portfolio.

#### Extension

##### 1. Future logs

Have the students keep a “future log” for a day. Explain that the point of the log is to focus on how their activities, behaviors and even their thoughts can affect the future. In the log they should simply write down what they do, think, say and so forth—just as they would in a diary. In the log, however, they should use “bullet style” instead of paragraphs. At the end of the day, they should think about and write down how each “bullet” affects the world around them, either positively or negatively, and what the ramifications could be for the future. For example, if a bullet reads, “Had a PBJ sandwich for lunch, with a bag of chips and ginger ale,” the student might write down the fact that he or she recycled the soda can—a positive action for the future that saves natural resources and landfill space. But the student might also mention throwing away his or her lunch bag instead of using it again, or instead of bringing lunch to school in a heavy-duty container that can be used over and over. Have the students add ways that they can do more to create a positive future by changing their daily actions.

##### 2. Class action project

Determine the block that holds the highest priority for the class. Have students brainstorm a range of activities that might be appropriate related to this block. Do the consensus-building activity as a whole class to prioritize a class action that they would carry out. Then have students implement the goal by creating the “I Make a Difference Club.”



## Activity 4-1 Future Worlds (continued)

### Resources

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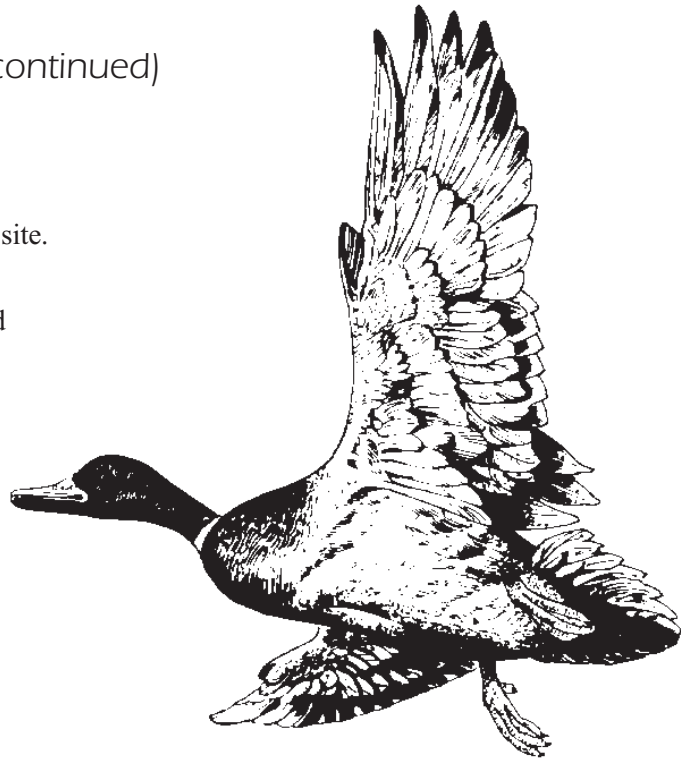
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## MAKING IT HAPPEN

### 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. Populations of honey bees, native bees and other pollinators are declining. If the trend continues, the cost to farmers and all of us will be very great. These organisms are important for pollinating crops as well as native plants. Saving pollinators 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 more cost-effective instrument: lichens! Lichens are actually two organisms in one: a fungus and either an alga or a bacterium. Together these "partners," that 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, and many forest scientists are doing just that!

### Beautifying Neighborhoods

"Clean and Green" is a very successful Chicago program of community cooperation. The Chicago Streets and Sanitation Department, Chicago Department of Transportation, Chicago Mayor's office and area communities work together to clear debris, plant flowers and implement 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. This program helps communities work on cooperative projects. It brings together area residents and city workers to improve neighborhood conditions in many ways. These people learn to work for positive improvements and take pride in their neighborhoods.

### A New Way of Doing Business

Ford Motor Company began recycling efforts in 1991 and continues to be an industry leader in the field. The National Recycling Coalition awarded Ford with the "Recycling Leadership Award" for efforts to recycle the company's own waste and for using recycled materials in auto production. Vehicles in North America are composed of 20 to 25 percent post-consumer recycled material by weight, much of which is from



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recycled metals. Ford has concentrated efforts to use recycled materials in nonmetallic components of their vehicles, too. Some examples of these procedures include using plastic soda bottles and computer casings in automobile grills, using reprocessed carpet in fan shrouds, using recycled auto battery casings in splash shields and incorporating used tires in brake pedals and floor mats. They are also working with closed-loop recycling in which materials from auto components go back into use for development of the same product. Active recycling programs are in place in their facilities, too.



Recycling benefits the company and the community by diverting consumer and industrial waste from disposal, reducing depletion of natural resources, reducing energy consumption and reducing costs.

### City Sewer Savvy

Kids around the country are spray painting messages on city streets. Are they breaking the law? No way! 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.







## MAKING IT HAPPEN

### **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 Homes is a Chicago Housing Authority community on the southeast side of Chicago. It is located in the center of a toxic doughnut of heavy industry and waste dumps and has one of the densest concentrations of potentially hazardous pollution sources in North America. This complex, whose residents are nearly all African-American, was built on the edge of an old industrial dump. Residue from the industrial areas causes a variety of ailments in the residents. Cancer rates are high for the people of this area, too. A citizens group, People for Community Recovery, working with other environmental groups, like the Southeast Environmental Task Force, decided to fight the powerful industrial companies. Since 1979, they have been working to enhance the quality of life of residents living in communities affected by pollution. They educate people and advocate for policies and programs in an effort to coordinate local residents on issues of the environment, health, housing, neighborhood safety and economic equity. They were among the originators of environmental justice and have made significant contributions to people and the environment.

### **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



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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 on to the Internet and enters her observation: yellow warbler seen today! She's one of many students participating in an environmental education program called Journey North, A Global Study of Wildlife Migration and Seasonal Change. Participants learn about and track the migration of numerous species including songbirds, hummingbirds and monarchs. The students are helping scientists monitor wildlife populations, learning a lot about migration and participating in a project that gives a whole new meaning to the phrase "web of life."

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

Before the automobile was available, people had to live near their work, shopping centers and schools. Chicago 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, climate change 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.



## MAKING IT HAPPEN

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 are closely monitored and regulated. 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 survive in the wild. These new residents are known as nonnative or exotic species. These organisms

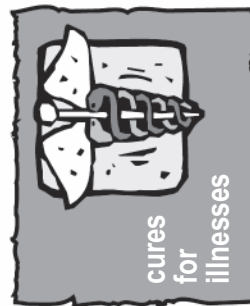
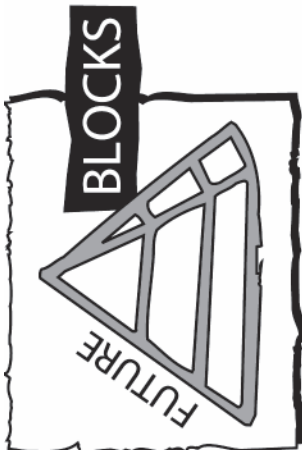
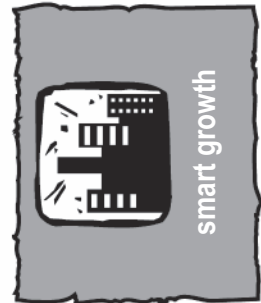
often grow and/or reproduce faster than native species and have few or no natural control methods, like predators. In many cases these organisms replace native species. Volunteers throughout the state are working to eliminate some nonnative species. They help restore natural areas that have been overburdened with non-native 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, there are more than 1,500 species listed as endangered or threatened in the United States as of 2015. Many of these species have stable or increasing population numbers due to the protections provided by the Endangered Species Act. One of the most heralded success stories of the act was the recovery of the bald eagle population, and its removal from the endangered and threatened species list. This legislation has also aided the survival of the eastern prairie fringed orchid, peregrine falcon and Hine’s emerald dragonfly.



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