



The mission of the National Wildlife Federation® is to educate, inspire, and assist individuals and organizations of diverse cultures to conserve wildlife and other natural resources and to protect the Earth's environment in order to achieve a peaceful, equitable, and sustainable future.

As America's largest member-supported conservation group, NWF leads grassroots efforts to safeguard wildlife, wild places and the natural resources on which we all depend.

The National Wildlife Federation has been a leader in environmental education for nearly 65 years. From our Schoolyard Habitats® program and teacher workshops to Ranger Rick™ magazine and our award-winning television shows and films, NWF's dynamic education efforts reach out to help people discover, experience and connect with the wild in our world.

For more about NWF's education programs, visit us at [www.nwf.org](http://www.nwf.org).

The National Wildlife Federation's *Keep the Wild Alive*™ program is an ambitious endangered species campaign that aims to build support for endangered species, engage the public in species conservation efforts, and move several imperiled species closer to recovery.

For more information about the *Keep the Wild Alive* campaign, or to learn about simple actions you can take to help endangered species, please visit the *Keep the Wild Alive* website at [www.nwf.org/keepthewildalive](http://www.nwf.org/keepthewildalive) or call (202) 797-6800.



AMERICAN ZOO AND AQUARIUM ASSOCIATION

Founded in 1924, the American Association of Zoological Parks and Aquariums, now known as the American Zoo and Aquarium Association (AZA), is a nonprofit organization dedicated to the advancement of zoos and aquariums in the areas of conservation, education, science, and recreation. AZA's vision is to work cooperatively to save and protect the wonders of the living natural world.

The AZA and its accredited zoo and aquarium members constantly strive to maintain the highest standards in wildlife care and conservation. To demonstrate this commitment, AZA members participate in over 700 cooperative conservation and management programs. Through these programs, AZA assists its members in managing their captive populations and conducting and overseeing zoo and aquarium-based and field-based conservation, research and education projects. Since 1991, AZA's Conservation Endowment Fund has awarded over \$2 million to support 146 projects benefiting wildlife worldwide.

AZA-accredited zoos and aquariums draw over 134 million visitors each year. With their incomparable commitment to conservation education in living classrooms, AZA zoos and aquariums teach more than 12 million people annually. More than nine million students enjoy on-site education programs at our member institutions each year — over three and a half million receive them free of charge.

We are proud of our dedication to conservation and science and conservation education. In 2000 alone, AZA members supported over 2200 conservation and associated scientific and educational projects in 86 countries worldwide. In the same year, over 58,000 volunteers contributed over five million hours to support AZA member zoos and aquariums. Through projects like the Butterfly Conservation Initiative and other local efforts, AZA institutions are becoming community conservation centers. Contact your local accredited zoo or aquarium to find out how you can get involved. Visit [www.aza.org](http://www.aza.org) or call (301) 562-0777 to learn more.

# ACTION PROJECTS

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Butterflies are critical components of functioning ecosystems due to their key roles as pollinators and as indicators of ecosystem health. Butterflies are also beloved by the public, which is largely unaware that many species are threatened or endangered. The National Wildlife Federation has joined the American Zoo and Aquarium Association and the U.S. Fish and Wildlife Service in a multi-year Butterfly Conservation Initiative, aiming to enhance recovery of imperiled butterfly populations in North America and raise public awareness about the ecological role of butterflies and the need to preserve them and their habitats.

NWF has many programs that focus on butterflies and provide opportunities to help conserve them, including the *Keep the Wild Alive* campaign, Backyard Wildlife Habitat and Schoolyard Habitats. Drawing on the conservation and education experience of these different programs, NWF would like to provide several model projects that can be easily carried out with or without our assistance.

The main objectives of these projects are: 1) to enhance students' knowledge of butterfly ecology and conservation through hands-on, interactive learning experiences; 2) to raise public awareness of the threats to butterflies and the need to conserve them; and 3) to give students opportunities to contribute to imperiled butterfly protection and habitat restoration.

## **Project I: Create a Schoolyard Butterfly Habitat**

*Suggested Age Group: K-8*

Educators and students can work together to create a butterfly habitat on school, facility or community grounds. By planting the appropriate native host and nectar plants and providing water sources and other habitat features, you can turn your school grounds into a National Wildlife Federation certified Schoolyard Habitats site — it's easy and fun! Schoolyard Habitats projects provide unique, hands-on, outdoor learning opportunities that cannot be duplicated in the traditional classroom setting and become an important part of your local ecosystem. Your new site will provide outdoor learning opportunities that are interdisciplinary, standards-based, and inexpensive — as well as beneficial to butterflies and other local wildlife. NWF's Schoolyard Habitats program can provide resources, training and curriculum support to participating schools, institutions and community groups. Visit [www.nwf.org/schoolyardhabitats](http://www.nwf.org/schoolyardhabitats) for more information.

## ACTION PROJECTS CONTINUED

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### **Project 2: Growing and Transplanting Host Plants**

*Suggested Age Group: K-8*

Since 1999, NWF's *Keep the Wild Alive* campaign has been working with grade school students in Concord, New Hampshire to help the endangered Karner blue butterfly. Working with the New Hampshire Fish and Game Department (NHFG), students grow wild lupine (*Lupinus perennis*), the host plant of the endangered Karner blue butterfly, in their classrooms during the winter and then transplant the seedlings to U.S. Fish and Wildlife Service (USFWS) conservation land during spring. This is an especially effective tool in teaching the close relationship between plants and animals and transferring the knowledge gained to a natural, habitat-wide context. This creative project can be replicated in many areas where imperiled butterflies are found, as long as the project is implemented in partnership with the appropriate national, state or local partner charged with conserving threatened and endangered species. In fact, AZA member Roger Williams Park Zoo began working with NWF, NHFG, USFWS and other partners on the New Hampshire project in 2002. NWF can provide contact information for local resource agencies and educational resources to interested classrooms. Contact: (202) 797-6892 or [wildalive@nwf.org](mailto:wildalive@nwf.org) for additional information. AZA can provide contact information for accredited zoos and aquariums working with butterflies and host plant conservation. Contact: (301) 562-0777 for additional details.

### **Project 3: Restoration of Butterfly Habitat**

*Suggested Age Group: Middle and High School*

Classrooms and youth service programs can participate in a restoration event hosted by refuges, land trusts, or other organizations overseeing imperiled butterfly recovery, including many AZA institutions. Many endangered butterfly habitats managed by the Fish and Wildlife Service and other resource agencies need help implementing habitat management plans. For butterflies, often the most effective habitat restoration method is the most simple: removal of invasive exotic plants. This activity does not require much expertise and is suitable for almost all ages. It also teaches a valuable lesson on the benefits of native species versus invasive exotics and can advance students' understanding of the intimate relationship between butterflies and plants. NWF's *Keep the Wild Alive* campaign and AZA can help participants identify a local partner to help design a restoration project and host the event, as well as assist educators in preparing students before they participate in the event. Contact: (202) 797-6892 or [wildalive@nwf.org](mailto:wildalive@nwf.org) for additional information from NWF or (301)562-0777 for information from AZA.

# BUTTERFLY CONSERVATION NEWS

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The American Zoo and Aquarium Association (AZA) and the National Wildlife Federation (NWF) have joined forces with the U.S. Fish and Wildlife Service (FWS) and other partners, including the Xerces Society to promote the recovery of imperiled North American butterfly populations. One of our many goals is to raise public awareness about the ecological role of butterflies and the need to preserve them and their habitats through an exciting project called the Butterfly Conservation Initiative.

The aim of the Butterfly Conservation Initiative (BFCI) is to bring together the energy and expertise of a wide range of individuals and organizations committed to community conservation. Through the BFCI, gardeners, school groups, entomology experts and critter fans can all come together to help make a difference in our communities.

For more information, contact the NWF's *Keep the Wild Alive* campaign at (202)797-6892 or the American Zoo and Aquarium Association at (301)562-0777.



## ACTION REPORTS

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### **Singing the Karner Blues at the Toledo Zoo**

For over ten years, scientists and volunteers at the Toledo Zoo have been working hard to reintroduce the tiny Karner blue butterfly to the Oak Openings habitat in the Toledo area. Before the Zoo team started on this project, this endangered insect was extinct in Ohio. Karner blues depend on the oak savanna habitat, much of which has been lost to development and is no longer available to Karner blue butterflies. To help with this problem, staff from the Toledo Zoo have been working with the Ohio Department of Natural Resources, U.S. Fish and Wildlife Service biologists, and land managers from the Nature Conservancy to restore Karner blue habitat near the Zoo.

### **Earning a Gold Medal for Silverspot Conservation at the Oregon Zoo**

In the Pacific Northwest, biologists at the Oregon Zoo are working hard to recover the Oregon silverspot butterfly and its host plant, the western blue violet. Together with the Nature Conservancy, the U.S. Fish and Wildlife Service, Washington State Department of Fish and Wildlife, and Seattle's Woodland Park Zoo, Oregon Zoo staff are raising silverspots in captivity for release into the wild. The recovery team is also working to restore butterfly habitat so the released silverspots have enough nectar to eat and good places to lay eggs. The Zoo and its partners are now working to protect the endangered Fender's blue butterfly as well.

### **AZA-Accredited Zoos and Aquariums With Butterfly Exhibits and/or Gardens**

Did you know that in addition to being fun places to see bears and penguins, lots of AZA-accredited zoos and aquariums also have butterfly exhibits and special gardens designed to attract butterflies and other pollinators?

Visit your local AZA-accredited zoo or aquarium to see what they're doing to help butterflies in their own backyards and all over the world!

**Arizona**

Arizona-Sonora Desert Museum, Tucson

**California**

Oakland Zoo, Oakland

Sacramento Zoo, Sacramento

San Diego Wild Animal Park, Escondido

San Francisco Zoo, San Francisco

Six Flags Marine World, Vallejo

**Colorado**

Cheyenne Mountain Zoo, Colorado Springs

Denver Zoo, Denver

Pueblo Zoo, Pueblo

**Connecticut**

Beardsley Zoo, Bridgeport

**District of Columbia**

Smithsonian National Zoological Park, Washington

**Florida**

Brevard Zoo, Melbourne

Caribbean Gardens: The ZOO in Naples, Naples

Central Florida Zoo, Lake Monroe

Miami Metro Zoo, Miami

**Illinois**

Brookfield Zoo, Chicago

Henson Robinson Zoo, Springfield

**Indiana**

Fort Wayne Children's Zoo, Fort Wayne

Indianapolis Zoo/White River Gardens, Indianapolis

Mesker Park Zoo and Botanic Gardens, Evansville

**Kentucky**

Louisville Zoo, Louisville

**Louisiana**

Audubon Insectarium, New Orleans

**Massachusetts**

Franklin Park Zoo, Boston

**Michigan**

Detroit Zoo, Detroit

**Minnesota**

Minnesota Zoo, Minneapolis

**Missouri**

Dickerson Park Zoo, Springfield

Saint Louis Zoo, St. Louis

**Nebraska**

Folsom Children's Zoo, Lincoln

**New Jersey**

Bergen County Zoological Park, Paramus

**New York**

Bronx Zoo, Bronx

New York State Living Museum, Watertown

Rosamond Gifford Zoo at Burnet Park, Syracuse

Ross Park Zoo, Binghamton

Seneca Park Zoo, Rochester

**North Carolina**

North Carolina Zoo, Asheboro

**Ohio**

Cincinnati Zoo and Botanical Garden, Cincinnati

Cleveland Metroparks Zoo, Cleveland

Columbus Zoo and Aquarium, Columbus

Toledo Zoo, Toledo

**Oregon**

Oregon Zoo, Portland

**Oklahoma**

Oklahoma City Zoo, Oklahoma City

Tulsa Zoo, Tulsa

**Pennsylvania**

Elmwood Park Zoo, Norristown

Erie Zoo, Erie

**Tennessee**

Memphis Zoo, Memphis

**Texas**

Dallas World Aquarium, Dallas

Moody Gardens, Galveston

San Antonio Zoological Gardens and Aquarium, San Antonio

**Utah**

Utah's Hogle Zoo, Salt Lake City

**Washington**

Woodland Park Zoo, Seattle

**Canada**

Calgary Zoo, Calgary, Alberta

Toronto Zoo, Toronto, Ontario

Vancouver Aquarium, Vancouver, BC

# RESOURCES

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## Native Plants:

The **Lady Bird Johnson Wildflower Center** has a comprehensive directory listing native plant suppliers across the United States [www.wildflower.org](http://www.wildflower.org)

The **New England Wildflower Society** has also compiled a directory of botanical clubs and native plant societies in both the United States and Canada [www.newfs.org/nps.htm](http://www.newfs.org/nps.htm)

NWF's **Backyard Wildlife Habitat Website** features a searchable native plant guide [www.nwf.org/backyardwildlifehabitat/index.cfm?pid=42&](http://www.nwf.org/backyardwildlifehabitat/index.cfm?pid=42&)

## Butterflies:

### eNature

[www.enature.com](http://www.enature.com)

### Journey North

[www.learner.org/jnorth](http://www.learner.org/jnorth)

### North American Butterfly Association

[www.naba.org](http://www.naba.org)

### Northern Prairie Wildlife Research Center's Butterflies of North America

[www.npwrc.usgs.gov/resource/distr/lepid/bflyusa/bflyusa.htm](http://www.npwrc.usgs.gov/resource/distr/lepid/bflyusa/bflyusa.htm)

### Monarch Watch

[www.monarchwatch.org](http://www.monarchwatch.org)

## Partnering Organizations:

### American Zoo and Aquarium Association

[www.aza.org](http://www.aza.org)

### National Wildlife Federation

[www.nwf.org](http://www.nwf.org)

### US Fish and Wildlife Service

[www.fws.gov](http://www.fws.gov)

### Xerces Society

[www.xerces.org](http://www.xerces.org)



## Further Resources:

**Enchanted Learning** has a variety of on-line activities [www.enchantedlearning.com/subjects/butterfly/activities](http://www.enchantedlearning.com/subjects/butterfly/activities)

### Photos Courtesy of:

Cover: Karner blue butterfly—Mitch Magditch, Toledo Zoo; page 2: Karner blue butterfly—Ken Cole, Animals Animals; page 5: monarch butterfly—Albert P. Bekker, California Academy of Sciences; page 6: all stages of Karner blue butterfly—Mitch Magditch, Toledo Zoo; page 11: buckeye butterfly—T.W. Davies, California Academy of Sciences;

## Alignment with National Science Education Standards

	Butterfly Life Cycle	Pollination Partners	Great Butterfly Migration
<b>STANDARDS</b>			
<b>SCIENCE AS INQUIRY</b>			
Science as inquiry		✓	
<b>LIFE SCIENCE</b>			
Characteristics of organisms	✓	✓	✓
Life cycles of organisms	✓		
Organisms and environments	✓	✓	✓
Structure and function		✓	
Reproduction and heredity	✓		
Regulation and behavior	✓		✓
Diversity and adaptations		✓	
Populations and ecosystems	✓		✓
<b>SCIENCE AND TECHNOLOGY</b>			
Technological design			
Understanding about science/technology			
<b>SCIENCE IN PERSONAL AND SOCIAL PERSPECTIVES</b>			
Populations, resources, environment	✓		✓
Risks and benefits			
Science/technology in society			
<b>HISTORY AND NATURE OF SCIENCE</b>			
Science as a human endeavor			
Nature of science		✓	
<b>PHYSICAL SCIENCE</b>			
Properties and changes in properties in matter			



