

*A Nature Watch
Implementation Guide
For Visitor Centers*



Northern Great Lakes Visitor Center
Ashland, WI

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- USDA Forest Service
- Northern Wisconsin History Center
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^{UW}
Extension



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Introduction

A. Goals of Naturewatch

Nature viewing has rapidly become one of America's most popular outdoor activities. Numerous studies have shown that more than half of the American public enjoys observing, studying, or photographing the wide variety of wildlife and scenery that can be found in America's outdoors. Given the explosive growth of human population and an increased pursuit of nature-related recreation, interest in this activity will likely intensify in the decades ahead.

Consequently, in 1986, the President's Commission on America's Outdoors recognized the need to address a large and growing demand for nature viewing. In doing so, they declared that "protection and enhancement of recreational opportunities on federal lands and water, long-term conservation measures of our natural resources, and quality recreational opportunities and experience would be a priority." The United States Department of Agriculture Forest Service responded in 1988 by establishing **Naturewatch**, a program aimed at "increasing awareness, understanding the value, and promoting conservation and stewardship" of fish, wildflowers, and wildlife.

Goals of the USDA Forest Service Naturewatch Program:

Of fish, wildflowers and wildlife,

- Increase awareness
- Understand the value
- Promote conservation and stewardship

Naturewatch operates on the premise that if the American public and international visitors are provided with ample and accessible opportunities to see and learn about nature, viewers will become more knowledgeable and effective advocates for wildlife, native plants, and aquatic species conservation. Opportunities to see nature are enhanced by the National Watchable Wildlife Program through a nationwide network of nature viewing sites, accompanying signs and state viewing guide books. Experiential learning opportunities are provided by environmental education programs that promote sound and safe viewing practices, skills to minimize human impacts, a connection to the land, and a fostering of land and water stewardship.

In cooperation with the program sponsors and partners, **Naturewatch** is managed and administered by the Forest Service Wildlife, Fish, and Rare Plant Program. It is a program for people of all ages to experience wildlife, fish, and flowers in their natural settings and is meant to:

- 1) promote recreational viewing opportunities
- 2) facilitate learning about the environment
- 3) promote conservation efforts and wise use of natural resources.

To accomplish these objectives, **Naturewatch** is divided into three smaller programs: Eyes on Wildlife, Celebrating Wildflowers, and Fishwatch.

Eyes on Wildlife, also known as the Watchable Wildlife Program, is a wildlife, recreation, education, and conservation program that was developed by the USDA Forest Service in 1988. Its purpose is to facilitate habitat management and improvements for wildlife viewing. This is done by providing enhanced opportunities for all people to experience wildlife, by promoting learning about forest animals and plants and their habitat requirements, and by developing broad public support of conservation that maintains healthy ecosystems for all plant and animal species.

Three years later in 1991, **Celebrating Wildflowers** was established in response to public interest in education and involvement in the conservation and management of native plants. This program's goals are to share the beauty of America's wildflowers with the public, to increase awareness of this invaluable resource, and to promote its conservation by working with corporate, civic, and private partners. Emphasis is placed on the aesthetic, recreational, biological, medicinal, and economic value of plants.

Lastly, **Fishwatch** is an aquatic and fisheries focused educational program initiated in 1995 to elevate awareness of the importance for fish and clean water. It also serves to encourage an interest and excitement for fish viewing, provide fish viewing opportunities, and incorporate volunteers and partnerships in the conservation of our aquatic resources. Underwater television cams, stream profile viewing chambers, over water platforms, and river snorkeling are just a few of the techniques being used to get up close and personal with fish and other aquatic species.

B. Goals of the Northern Great Lakes Visitor Center Naturewatch Project

The **Naturewatch** program strengthens the connection between people and the natural resources upon which their lives depend. Visitor centers represent an ideal platform to deliver this program for the following reasons:

- a) large numbers of people come together in time and space
- b) these people represent a tremendously broad cross-section of the general public, coming from all across the country and around the world
- c) visitor centers have great facilities infrastructure
- d) these centers are often situated in outstanding natural settings, thus creating perfect backdrops for **Naturewatch** activities.

To more effectively utilize visitor centers as **Naturewatch** delivery vehicles, it was the goal of this project to use the Northern Great Lakes Visitor Center as a real-time laboratory for designing, testing, and evaluating **Naturewatch** implementation strategies. By experimenting with various topics, delivery methods, and evaluation techniques, we documented successes and pitfalls of implementing **Naturewatch** activities, resulting in this practical and easy-to-use implementation guide that can be adapted and utilized by visitor centers nationwide.

It is our hope that the Northern Great Lakes Visitor Center will be viewed as a specific, detailed case study for implementing **Naturewatch** in a visitor center setting. Every visitor center, its audience, and its setting are unique and different. This guide documents the actual process of how we customized, adapted, and applied the **Naturewatch** program to the specific strengths, weaknesses, site conditions, and audience of our center. It can serve as a valuable tool for your center as you go through the same discovery process.

C. Setting of the Northern Great Lakes Visitor Center

The Northern Great Lakes Visitor Center (the Center) was an ideal site for testing Naturewatch activities. This 36,000-square foot, \$8-million-dollar facility is strategically located near Ashland, Wisconsin, at the head of Chequamegon Bay on Lake Superior. Since its opening in May 1998, the Center's visibility along U.S. Highway 2, the major east-west route through the northern Great Lakes region, has concentrated large numbers of people, creating a perfect stage for this project. During the period of the Center's **Naturewatch** project, early June to late September 1999, the Center attracted over 83,000 visitors representing all 50 states and 25 foreign countries. This visitor flow assured high visibility of **Naturewatch** programs and a large, diverse sample size for testing implementation strategies and techniques.

The Center's 180-acre site is surrounded by Lake Superior coastal wetlands. Adjacent to the Center's land base is the 2,000-acre Wisconsin Department of Natural Resource's Fish Creek Sloughs. Adjoining the Center's northern boundary is the Whittlesey Creek National Wildlife Refuge, the newest refuge in the country. The Chequamegon Bay of Lake Superior is located less than one mile to the northeast and the 857,000-acre Chequamegon National Forest is only five miles to the west. On the site itself, a ¾-mile long boardwalk trail system weaves through a variety of unique habitats including a tussock sedge meadow, black ash swamp, and cedar and tamarack wetlands complex. The site also includes two warm water ponds, a spring-fed cold water pond, and small portions of Fish Creek and Terwilliger Creek. Situated in the path of a major migratory bird route and blessed with ideal resting, feeding, and breeding habitat, the Center also offers outstanding opportunities for bird-watching.

The Center is fortunate to have many features beneficial to Naturewatch, including a 55-foot observation tower overlooking Lake Superior, 100-seat theater, 2,500-square foot exhibit hall, an outdoor amphitheater, and a bookstore. In addition, the Center is jointly operated by the USDA Forest Service, National Park Service, University of Wisconsin-Extension, State Historical Society of Wisconsin, and the Friends of the Center, providing unique opportunities for collaboration in the development of implementation strategies and dissemination of project results.

D. A Visitor Center Approach to Naturewatch

After opening in May 1998, the Northern Great Lakes Visitor Center attracted over 48,000 visitors in just its first three months of operation. During that time, the Center staff experimented with a variety of programming structures and formats. A need for environmental education programs developed specifically for the traveling public became evident as traditional programs designed for a “non-traveling” audience proved ineffective. Through our **Naturewatch** project, we were able to thoroughly research, develop, and apply the following concepts primarily targeted at this traveling public:

- ✦ *Asynchronous programming:* Traditional environmental education programming is highly structured with scheduled programs at specific times and of specific duration, which is often not conducive to the traveling public’s schedule. Therefore, we experimented with continuous programming at peak public use times at the Center, giving visitors the opportunity to participate in programming that fit their schedule, not ours.
- ✦ *Make It Real, Take It Home:* In nearly all of the experimental activities we tried to ensure experiential learning that could be extended offsite. In other words, we introduced a **Naturewatch** concept or idea in such a way that visitors could easily apply it in their everyday life back home. For example, the actual construction of a birdhouse that visitors could take with them combined with the distribution of detailed building plans meant that they could go deeper into the activity at home if they desired.
- ✦ *Skills-based programming:* Often the only thing standing between the public and their increased enjoyment of nature is the lack of a simple, teachable skill. Some examples we experimented with included how to use binoculars and field guides.
- ✦ *Knowledge-based programming:* Another barrier to the public’s enjoyment of nature is a simple lack of knowledge about basic facts that could greatly improve their chances of viewing wildlife, such as when to look, where to look, how to look, or what to look for. Directing visitors to local wildlife hotspots was one way of overcoming this barrier.
- ✦ *Movement Along the Continuum:* Because programming or exhibits tends to self-select audiences, it is critical to deliver education that can move visitors at all skill levels some distance along the continuum of unaware, novice, or expert. More creative “entry level” programming does this while appealing to a broader, more diverse group and thus developing a broader base of public interest and support for a particular topic.

- ✦ ***Inside-Outside:*** Because visitors are often reluctant to venture outdoors, we attempted to pique visitors' interest with a provocative indoor display or program that would entice or tease them to go outside. An example of this was "It's in the Leaves," where visitors learned how to identify a few trees through an indoor display but were encouraged to use our nature trail to further hone their new skills.
- ✦ ***Demonstration:*** Our 180-acre site provides a perfect opportunity to physically show visitors how to make their property environmentally-friendly. While it's easy to tell visitors what they can do, showing them makes the experience more real and tangible. A good example of this was "Let's Go Native," where visitors learned how to develop a butterfly garden in their backyard by helping us plant and maintain a demonstration garden at our center.
- ✦ ***Interest-driven programming:*** The primary driving force behind our implementation approach was phenology, or the orderly timing and progression of natural events. While most visitors don't know it, exactly what interests them are most often phenological events, such as the visible migration of geese and swans or the blooming of roadside wildflowers. Consequently, our front desk staff often received the same questions repeatedly, such as "What are those big white birds out on the lake?" or "What's that yellow flower all along the highway?" From these questions, we were easily able to determine which topics were most interesting to visitors at any given time of the year. Our readiness ensured that we could then test implementation strategies and techniques knowing that the selected topic was one of interest to a majority of visitors. Situations such as those exemplified above were also excellent ways of introducing visitors to nature-related issues beyond that of identification, such as exotic species invasions. After quickly determining that phenological events dictated visitors' interests, we prepared activities that would answer visitors' questions before they had to ask. In almost all cases, this anticipation proved to be accurate and successful. Ultimately, being ready for phenology and open to visitor inquiry were the most successful approaches of all.

E. Using this Implementation Guide

The appropriate use of this implementation guide will be critical to the success of your center's **Naturewatch** program. First, it is important to understand that this is an implementation guide and NOT an activity guide. Simply implementing the suggested activities as documented here may work for your center in some cases, but more often than not, your center will have to adapt the topics and particular presentation techniques to fit the realities of your center and its location as well as the needs of your visitors. For example, while wolves are popular creatures in our area of the upper Midwest, it is likely that most visitor centers will not be so fortunate to have wolves present in their area. Obviously a similar activity using an animal with a similar story will have to be substituted in this situation. In most cases where it is suspected that a particular event is unique to our center, we have alerted other centers in the text of the need for adaptation. We suspect that it will be a rare occasion when your center can implement ~~the~~ activity exactly as described. More important is utilizing the concepts, strategies, techniques, and approach described in this guide.

The bulk of this guide consists of **40-Naturewatch** activities that the Northern Great Lakes Visitor Center designed, tested, and evaluated throughout the spring, summer, and fall of 1999. For each activity, you will find a single-sided title board and a double-sided text documentation. Throughout our period of experimentation, we found that colorful title boards such as these were highly beneficial in attracting visitors' attention. Therefore, we designed these activity announcements for immediate, "as-is" use by all visitor centers using the guide. The page can simply be removed from the binder and posted wherever you wish, likely at your main desk or within a temporary exhibit.

The layout of the text documentation for each activity is fairly simple and self-explanatory. Lead-in paragraphs briefly introduce each activity topic and its importance to humans and the rest of the natural world. These are followed by objectives ("Visitors will learn...") and a section suggesting ways in which visitors can get personally involved in the activity or associated issue. Next is "Implementation," where centers can follow a step-by-step process to carrying out each activity. Again, this section is not meant to be absolute — adapt, eliminate, or augment as your center sees fit. However, before doing so, be sure to read through our experience with and evaluation of each activity. Here, you will find background on how we approached each activity, i.e. how the idea originated and how we carried it out. You'll also find the results of our implementation techniques, as evaluated in numerous ways during and following each activity. We also give suggestions for improving each activity. The final section of each text documentation provides a list of resources pertinent to that particular activity. This list gives some of the major sources for information to get your center

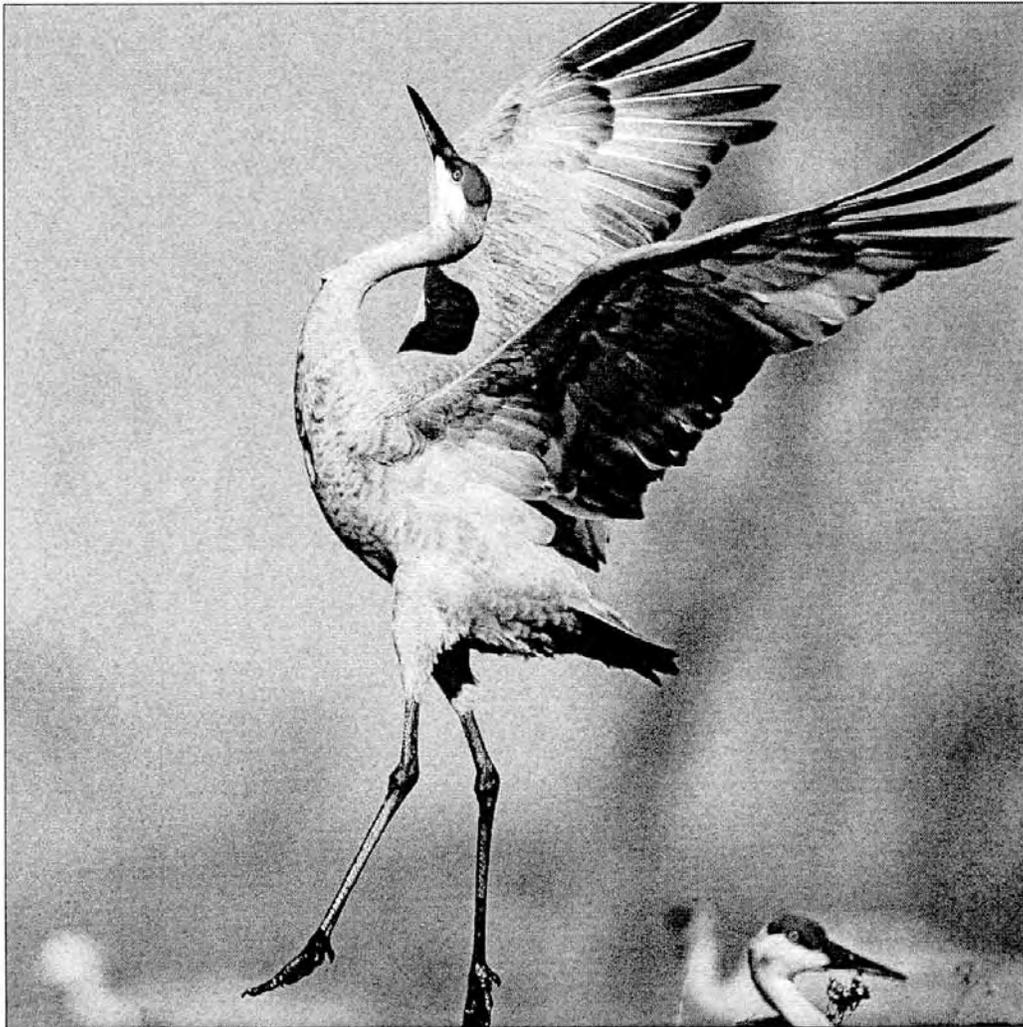
started on developing and implementing an accurate and informative activity.

Concluding the guide is a brief appendix consisting of eleven activity supplements. These supplements generally serve two purposes: (a) to illustrate an implementation strategy explained in the corresponding text documentation, and (b) in some cases, to provide an additional page of educational information that can simply be removed from the binder and used as needed, perhaps with a temporary exhibit. For example, the first page of the appendix pertains to “Backyard Birdhouses: and provides tips for building better birdhouses, information applicable to anyone anywhere. Conversely, a detailed summary of Hawk Ridge Nature Reserve is also found in the appendix. While this summary is not appropriate for most centers across the country to use “as-is,” it does illustrate a template for implementing its corresponding activity, “Hawks, Hawks, Hawks.”

We hope you find this guide useful for effectively implementing **Naturewatch** activities at your visitor center. Here at the Northern Great Lakes Visitor Center we are extremely excited about using the guide in the years ahead. After spending over four months testing and refining over 40 activities for over 83,000 visitors, we are encouraged by what we have learned and very eager to use that knowledge in the future to meet the nature-related needs of our visitors through the **Naturewatch** program.

A Place for Cranes

A Naturewatch Activity



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Join the study and preservation
of this elegant family of birds.

A Place for Cranes

Cranes are among the largest, rarest, and most beautiful birds on earth. While in many cultures they have a deep cultural and mythological significance, in North America, “cranes provide the incentive to conserve wetlands and grasslands upon which many other less charismatic but equally important species, also depend” (ICF website). The Wisconsin-based International Crane Foundation (ICF) “works worldwide to conserve cranes and the wetlands and grasslands communities on which they depend” (ICF mission).

Visitors will learn...

- General information about the International Crane Foundation
- Natural history of cranes
- The inspiring story of the endangered Whooping Crane
- How to participate in crane conservation

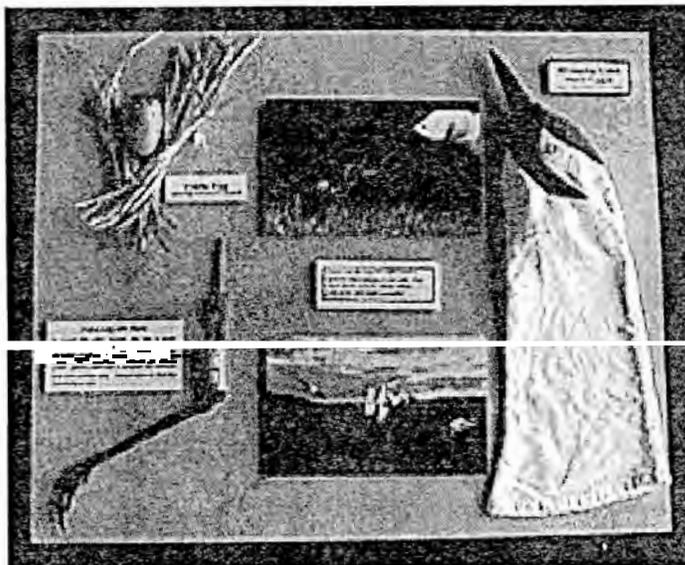
Visitors will be encouraged to...

- Visit the International Crane Foundation
- Participate in the annual Midwest Sandhill Crane Count
- Support the study and preservation of cranes and their habitats throughout the world

Implementation:

1. Contact the International Crane Foundation in Baraboo, Wisconsin (608-356-9462) to acquire their Trifold Tabletop Crane Display and Educational Crane Trunk (pictured below).
2. Display this temporary exhibit, which covers the objectives listed above, being sure to include handouts and brochures on cranes and the foundation.
3. Also provide a handout describing the Midwest Sandhill Crane Count and/or other surveys or crane celebrations (e.g. Platte River, Nebraska, and New Mexico).

Optional: Have a naturalist or other staff member make a presentation on a daily or weekly basis using the props of the temporary exhibit.



Some components of ICF's Educational Crane Trunk include a crane egg, crane leg with numbered band, and a whooping crane hand puppet used by staff to feed chicks.

Experience/Evaluation:

The International Crane Foundation (ICF) is a unique conservation organization and educational facility located about 280 miles from the Northern Great Lakes Visitor Center in Baraboo, Wisconsin. With the interest of promoting ICF, directing our visitors to this wonderful place, and educating about these intriguing birds, we contacted the Visitors Programs Coordinator at ICF and asked if she had a traveling display concerning cranes and ICF. She indicated that ICF did and they'd be happy to schedule a time when it could be displayed at our center.

This temporary exhibit will be displayed throughout the month of December, a time when cranes are no longer in our area, having moved south for the winter. Despite the unseasonal timing, we anticipate that visitors will be interested in the interactive learning materials, and the photos will speak a thousand words. We plan to place the display adjacent to our front desk, where staff will be able to oversee the hands-on components of the exhibit.

Because December will bring Wisconsin people to this area for early winter recreation, we anticipate that many visitors will already be familiar with ICF. Wisconsin birders, especially, are proud of ICF's work worldwide. We also expect the exhibit will spark discussion about recent public interest surrounding the proposed hunting of Sandhill Cranes and the reintroduction of Whooping Cranes in Wisconsin.

We have also arranged to display the exhibit again in April around the time of the statewide annual crane count, coinciding with the return of the Sandhills for breeding. We will include it as one of the educational options offered for Earth Day 2000.

Resources:

"The Majestic & Endangered Whooping Crane: An Alberta, Canada Perspective."

www.raysweb.net/specialplaces/pages/crane.html, no author or date.

Archibald, George and Curt Meine. 1996. *The Cranes: Status, Survey and Conservation Action Plan*. IUCN, Gland, Switzerland, (Available from IUCN Publications Services Unit, 219c Huntingdon Road, Cambridge, CB3 0DL, United Kingdom.)

Doughty, Robin. 1989. *Return of the Whooping Crane*. University of Texas Press, Austin.

Grooms, Steve. 1991. *The Cry of the Sandhill Crane*. Northword Press, Minnetonka, Minnesota.

International Crane Foundation (ICF) homepage. www.savinecranes.org, ICF, 1999.

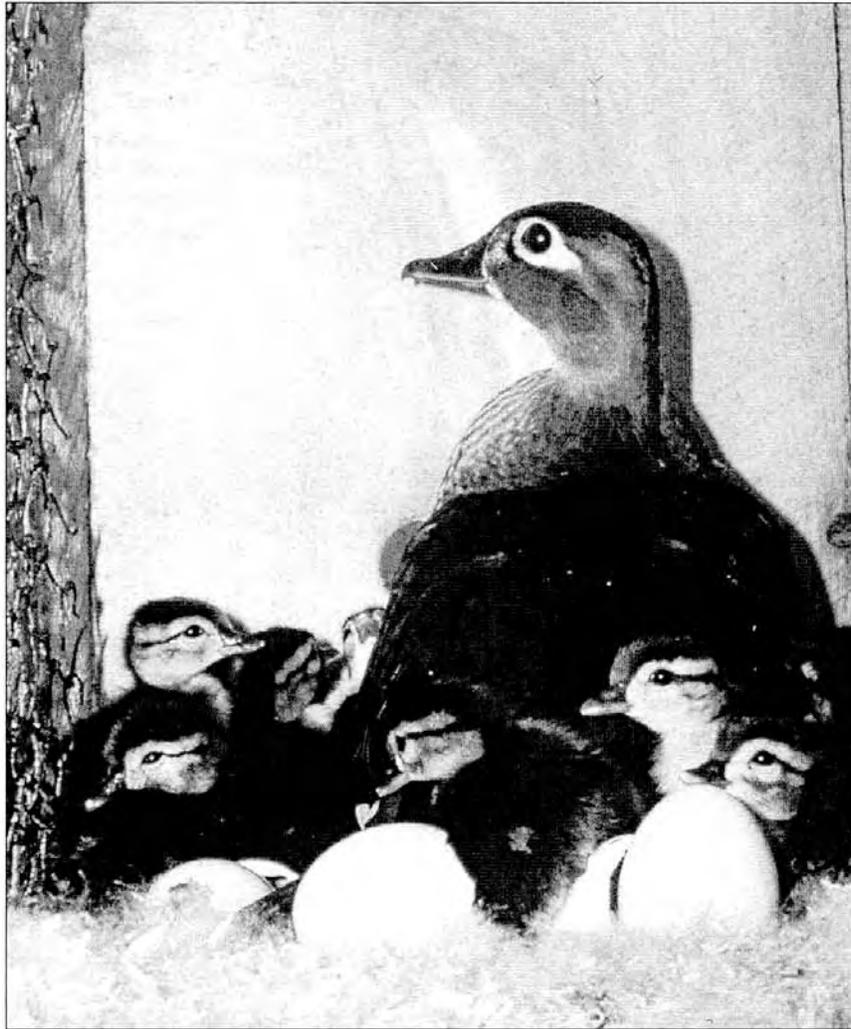
Johnsgard, Paul A. 1991. *Crane Music: A Natural History of American Cranes*. Smithsonian, Washington, D.C.

Schoff, Gretchen. 1991. *Reflections: The Story of Cranes*. The International Crane Foundation, Baraboo Wisconsin.

Whooping Crane Conservation Association, 3000 Meadowlark Drive, Sierra Vista, AZ 85635,
Tel: (520)458-0971.

Backyard Birdhouses

A Naturewatch Activity



Build a nest box and make a difference
in the lives of birds and other wildlife.

Backyard Birdhouses

Tree cavities, or holes, have become scarce in nature, contributing to severe declines in the populations of many native birds, such as Eastern Bluebirds. Birdhouse building is one simple and enjoyable way human families can support wildlife and habitat conservation. By erecting one birdhouse, a person can foster 15-30 young birds in just five years!

Visitors will learn...

- Which bird species need cavities for nesting and raising their young
- How to build a birdhouse and how to place it for best results
- Birdhouses need not be perfectly constructed to be successful
- They can make a positive impact on wildlife

Visitors will be encouraged to...

- Construct their own birdhouse at an on-site building session (materials provided)
- Join a local conservation group that monitors the success of pre-existing birdhouses
- Develop a system of birdhouses throughout their own backyard or neighborhood
- Leave natural cavities available to wildlife
- Submit birdhouse observations to the Cornell Laboratory of Ornithology's Nest Box Network

Implementation:

1. Temporary Exhibit
 - A sample birdhouse, preferably with one side wall transparent and a used nest with eggshells inside (with identification information)
 - Text describing why birdhouses are so important and where one can go to get started building their own
 - A tip sheet for more successful birdhouses, perhaps as a handout (See Appendix, page A-1)
 - A colorful book on building birdhouses and other homes for wildlife
 - A spotting scope set up on a nearby active birdhouse
 - A one-page handout with specific plans for building a simple birdhouse
2. Birdhouse Building Sessions
 - Use pre-cut and pre-drilled boards so visitors need only hammer in the nails to complete their birdhouse.
 - During the session, discuss the concepts listed above and tell visitors what types of birds (and other animals) they can expect to use the type of house they've made.
 - Distribute handouts as in the temporary exhibit.

Experience/Evaluation:

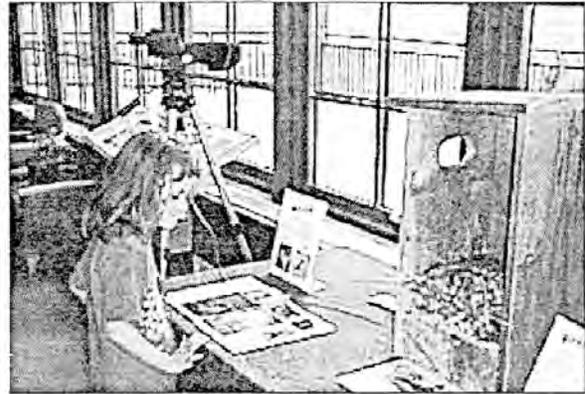
During the breeding bird season, our center had several birdhouses on site occupied by cavity-nesting birds, such as Tree Swallows. During this period, we set up the above-described exhibit near one of our windows so the scope could be directed at an active birdhouse. Inside, we used a large wood duck nesting box with a transparent side to grab people's attention. We also displayed a very crudely made bluebird house simply to emphasize that nest boxes need not be masterpieces of carpentry. The displayed book "Woodworking for Wildlife" was chosen for its visual appeal and outstanding content. To complement the exhibit and provide a more interactive learning experience, we provided four birdhouse building sessions throughout the time period, where visitors were supplied

hammers, nails, and pre-cut boards to make their own backyard birdhouse.

This activity was one of the most successful at our center in the summer of 1999. Particularly, the spotting scope and building sessions were of great interest to visitors. The spotting scope served to draw visitors into the exhibit. If there was a bird utilizing the house (which there almost always was), visitors were intrigued by the close views of the bird and a new look into the nesting cycle rarely seen so closely. This usually sparked discussion among visitors and subsequent investigation of the rest of the exhibit. Conversely, if a bird was not present, visitors often skipped over the rest of the exhibit. The displayed woodworking book worked very well, as it was perused by most visitors and was often requested at our bookstore. Over 50 visitors attended the four building sessions. Adults assisted children, and each family left equipped with birdhouses and enthusiasm for providing homes for wildlife.



Building birdhouses provides a memorable experience for visitors.



A colorfully illustrated book on birdhouses attracts the attention of a young visitor.

To improve your probability of success, be sure to:

- protect your spotting scope
- have an actively-used birdhouse on site
- provide safe building sessions.

Resources:

“Birdhouse Online.” <http://birdsource.cornell.edu/birdhouse/index.html>, Cornell Laboratory of Ornithology, 1999.

“Cornell’s Nest Box Network.” <http://birdsource.cornell.edu/cnbn/>, Cornell Laboratory of Ornithology.

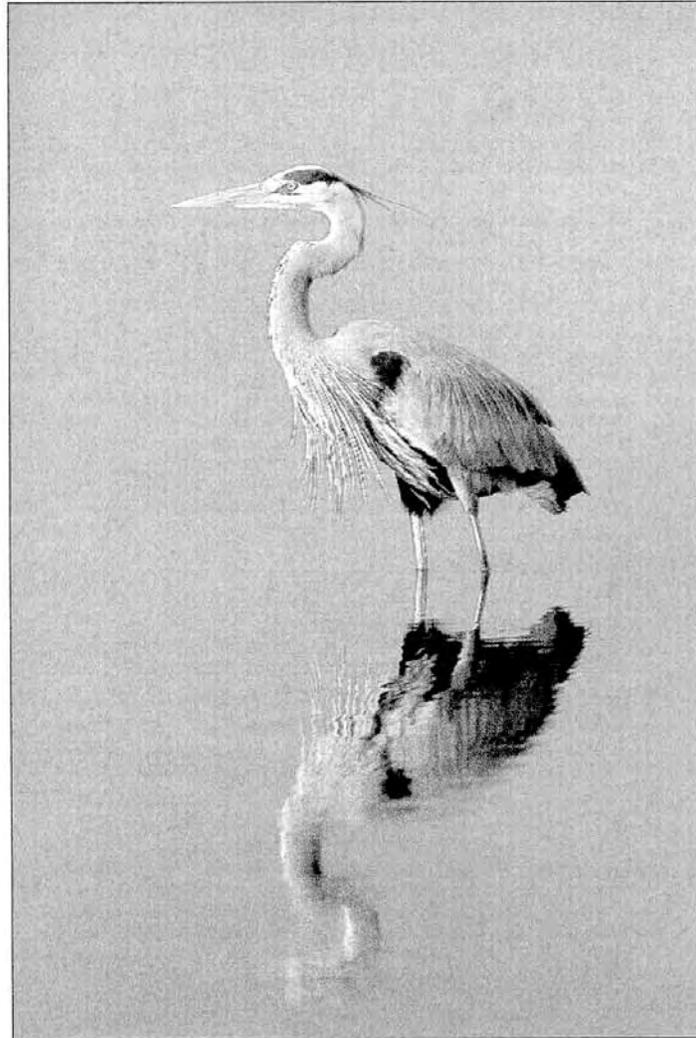
Dennis, John V. and Michael McKinley. 1995. *How to Attract Birds*. Ortho Books, San Ramon, California.

Henderson, Carrol L. *Woodworking for Wildlife*. Minnesota Department of Natural Resources Nongame Wildlife Program. St. Paul, Minnesota.

Stokes, Donald and Lillian Stokes. 1990. *The Complete Birdhouse Book*. Little, Brown and Company, Boston.

Bird Walk

A Naturewatch Activity



Casually explore the wonderful
world of birds.

Bird Walk

Nearly everyone has encountered birds in one way or another, whether it be in the wilderness of Alaska or the streets of New York City. Their prominence has made them one of the most popular and well-studied animals on earth. Beginners and experts alike continue to learn more about these diverse and intriguing creatures.

Visitors will learn...

- Visual identification skills
- Basic bird songs and calls
- Natural history and biology of select species
- The path to better birdwatching

Visitors will be encouraged to...

- Join a naturalist-led walk
- Practice bird identification wherever they may be
- Apply techniques for more successful birding
- Get involved in the conservation of bird species and their habitats

Implementation:

1. Advertise and offer naturalist-led bird walks on site at set times of the week during appropriate times of year.
 - The naturalist could discuss bird identification by sight (with a few basic bird songs), natural history of species, relationships between habitats and species, and a variety of other topics.
2. Provide binoculars to visitors and have the naturalist bring along a field guide.
3. Handout including tips on where, when, and how to find birds.

Optional: Bring a clipboard and data sheet to record bird species and numbers. Visitors enjoy having a list of what they've seen on the walk and at the same time would be contributing to studying birds at your center.

Experience/Evaluation:

The Northern Great Lakes Visitor Center site has an impressive diversity of habitats hosting a wide variety of birdlife. During late spring and early summer, numerous species can be seen and heard in a relatively short period of time. Therefore, throughout the summer of 1999, we offered 30-minute bird walks on our 0.75-mile boardwalk trail. Walks were offered as early in the day as visitors typically arrive and while birds are most active. Our naturalist presented the concepts listed above but also was very flexible to the needs of visitors. Questions were numerous and the naturalist used them to yield many interesting insights into the avian world.

The walks usually attracted an average of five visitors. This afforded ideal opportunities for viewing and for sharing. Visitors were highly pleased with their experience. The atmosphere was generally very relaxed and most were extremely interested in learning more about the birds than how to identify them. In the end, visitors walked away happily with a greater appreciation of their familiar feathered friends.



Visitors receive detailed tips on bird identification and habitat. During a guided bird walk, a naturalist, unlike a temporary exhibit, can adapt to the interests of visitors.

Resources:

Field Guide to the Birds of North America, 3rd Edition. 1999. National Geographic Society, Washington D.C..

Peterson, Roger Tory. 1980. *Peterson Field Guide to Eastern Birds.* Houghton Mifflin Company, New York.

Peterson, Roger Tory. 1986. *Peterson First Guide to Birds.* Houghton Mifflin Company, New York.

Stokes, Donald and Lillian Stokes. 1983. *A Guide to Bird Behavior: Volume 2.* Little, Brown and Company, New York.

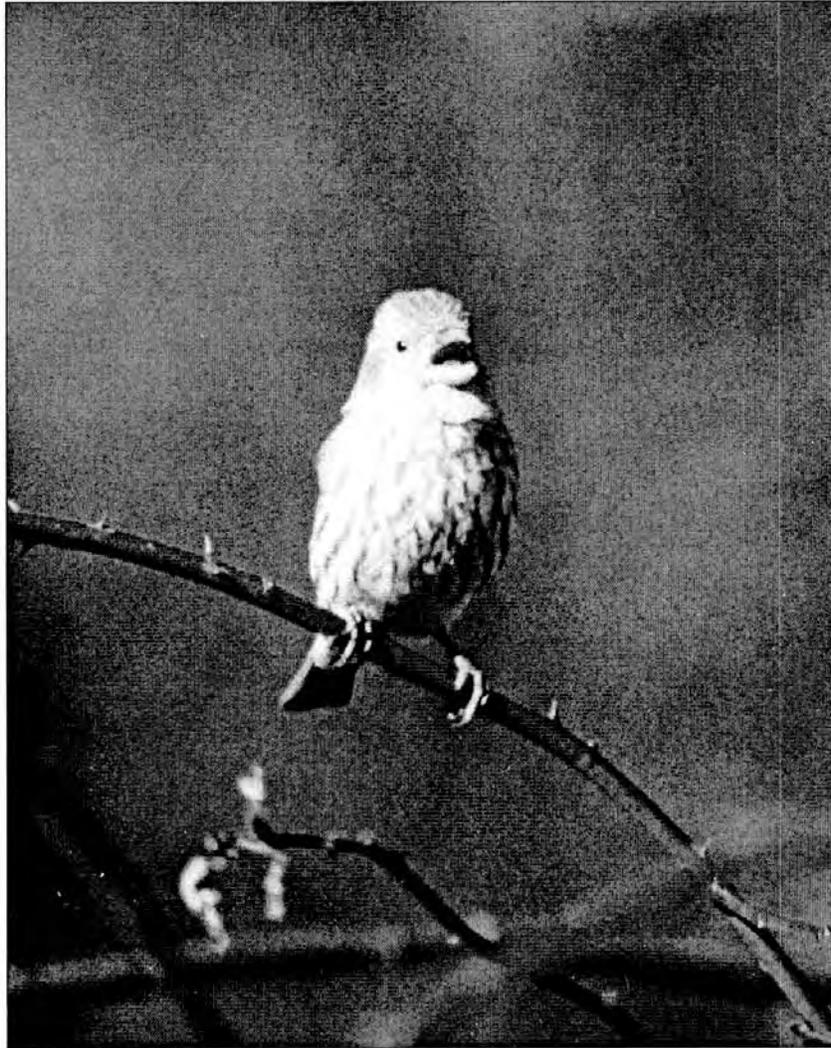
Stokes, Donald and Lillian Stokes. 1989. *A Guide to Bird Behavior: Volume 3.* Little, Brown and Company, New York.

Stokes, Donald. 1979. *A Guide to Bird Behavior: Volume 1.* Little, Brown and Company, New York.

Terres, John K. 1980. *The Audubon Society Encyclopedia of North American Birds.* Alfred A. Knopf, New York.

Birding By Ear

A Naturewatch Activity



Identify birds by their songs and calls.

Birding By Ear

Birding has become one of America's favorite forms of recreation. Hot spots have been identified all across the continent for those with the means to travel extensively to see their favorite species. But backyard birding has its own special rewards. Birding by ear is a skill that can make birding fun anywhere, even after spring foliage obscures birds from view. Identifying birds by sound often reveals many more species than can be seen.

Visitors will learn ...

- Birds can be identified without being seen
- Birds are most vocal during the morning hours of spring and early summer
- Learning bird songs and calls is not a difficult task
- Skills used in learning common bird songs lead to the identification of all bird songs

Visitors will be encouraged to ...

- Check out a cassette player with a tape of recorded bird songs to take into the field
- Join a naturalist-led walk outside to learn common bird songs
- Record bird species heard in a "Birder's Guide" log book
- Identify bird songs in their own backyard

Implementation:

1. Provide a portable cassette player to be checked out, including the following:
 - Pre-recorded tape with 3-7 bird songs likely to be heard outside your center
 - An information sheet (as shown below) listing the birds' names, a mnemonic describing each song, the habitat associated with the bird, and the counter number locating each bird on the cassette



- Field guide with pages tabbed to show the birds heard (seeing and hearing the bird simultaneous will strengthen the visitor's identification abilities)
2. Develop a system advertising the availability of the cassette player for check out, perhaps something as simple as a sign at your front desk or as complex as a Microsoft PowerPoint program projected on a television monitor.
3. Encourage the use of a log book where visitors can record the birds they heard while they were in the field.

4. Give a handout to visitors upon returning the player that lists some commonly heard backyard birds and resources for further study of bird songs and calls (See Appendix, page A-2).

Experience/Evaluation:

To coincide with peak singing times, we implemented this activity from June through late July. We chose seven birds common to our center whose songs were quite distinct from one another. We simply laminated and taped the information sheet to the back of the portable cassette player, which was accompanied by *A Peterson First Guide to Birds*. Our check-out system consisted of visitors giving us a credit card, license, or other valuable in return for the cassette player and field guide. We advertised the check-out in three ways: verbally, a small front desk sign, and a Microsoft PowerPoint program on a TV monitor. At the front desk, we had a log sheet where visitors could record their name, date, and the birds they found. We also offered several walks teaching birding by ear and provided a handout as described above.

Largely due to the cooperation of birds along our 0.75-mile nature trail, we had great success with this activity. By early June, breeding birds had established territories and we were able to create a tape of seven bird songs almost guaranteed to be heard in the order we put them on the tape. This was very helpful in keeping this activity simple for the visitor, preventing their need to rewind/cue through the tape constantly. Nevertheless, the attached information sheet was critical in providing tape counter numbers as well as mnemonics.

The PowerPoint program did not grab visitors' attention like we thought it would. The sign and verbal announcements at the front desk were most effective in attracting visitors. Visitors were pleased by our handout and seemed eager to learn more. Some other tips on successfully implementing this activity:

- Be sure that each recorded song is accompanied by a voice identification, such as "Red-winged Blackbird, onk-la-reeee"
- Be sure the tape counter is returned to zero and the tape is rewound prior to check out
- Be sure to prevent accidental erasure of the tape

Lastly, we highly recommend not offering guided walks teaching how to bird by ear. We tried this several times and found it very difficult both for the naturalist to teach and for the visitor to learn. This skill is one that visitors need to learn at their own pace.

Resources:

Birds of North America CD-ROM version 2.5. Thayer Birding Software, Naples, Florida. (Available at www.birding.com, or at 1-888-912-2473)

Know Your Bird Sounds (CD or Cassette). Northword Nature Guides. Available from NorthSound Music Group at 1-800-336-6398.

Peterson, Roger Tory. 1986. *Peterson First Guide to Birds*. Houghton Mifflin Company, New York.

Peterson's Birding By Ear (CD or Cassette). Peterson Field Guide Series. Houghton Mifflin Company, New York.

Hawk Eyes

A Naturewatch Activity



Watch and learn the ways
of these predatory birds.

Hawk Eyes

Whether soaring effortlessly on a gentle breeze or darting rapidly through the forest, hawks are impressive birds that most people are at least casually familiar with. At the top of the food chain, their presence reflects the health of the systems in which they inhabit. Most people, however, know little about hawks, the interesting lives they lead, or what it takes to ensure their survival.

Visitors will learn...

- Where, when, and how to find hawks
- Hawk identification
- Relationships between hawks and habitats
- Breeding and migration behavior

Visitors will be encouraged to...

- Observe and identify raptors on site
- Closely study hawks and their behavior in their own backyard
- Support the conservation of wintering, migration, and breeding habitats

Implementation:

1. Hawk Talk
 - During a period of peak raptor (and visitor) activity in your area, have a naturalist or knowledgeable volunteer search for hawks from an appropriate vantage point.
 - Station the naturalist where he or she can help visitors locate and identify hawks and discuss the biology, behavior, and habitat needs of those species seen.
2. Temporary exhibit
 - Mounted specimens of local raptors (or photos), with identification tips
 - Field guide to hawks, eagles, and falcons
 - Book on raptors
 - Handout of resources to help visitors expand their involvement (see list below).
3. Provide binoculars and a field guide for visitors' use while participating in on-site identification (a spotting scope is also effective).

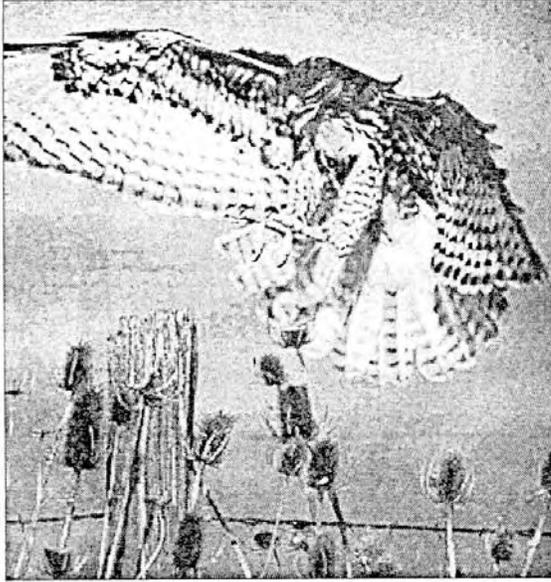
Experience/Evaluation:

With its 55-foot observation tower, the Northern Great Lakes Visitor Center provides an excellent vantage point for spotting wintering, migrating, and breeding hawks. During "good weather days" in the month of August, when breeding raptors and their young are prominent in northern Wisconsin, our naturalist spent 1-2 hours on the tower each day implementing this activity. Whether hawks were present or not, visitors were always interested in what he was doing. This question led to the discussion of raptors, their identification, and a background of each species. Perhaps most important were visitors' stories of their raptor experiences from their home areas and travels. The naturalist could use visitors' stories as teaching opportunities by giving them a greater understanding and appreciation of what they were witnessing.

Visitors also enjoyed the use of binoculars and our spotting scope, learning about the appropriate use of each along the way. Inside the observation tower, our exhibit included the Suttons' book *How to Spot Hawks & Eagles* and mounted specimens of two Bald Eagles (an adult and an immature) and an immature Red-tailed Hawk. The book received great response from visitors, shown by its wear after just a few weeks of display. The mounted specimens drew the most attention and taught a good lesson on identification of the displayed birds. Visitors were particularly pleased to learn how to distin-

guish between Golden Eagles and immature Bald Eagles. Visitors were very respectful of the unprotected or unsupervised bird mounts.

Overall, this activity was highly successful in raising awareness of hawks and the habitats they each need to survive. Visitors walked away with a memorable hawk sighting and an ability and desire to look a little closer at the diversity of hawks in their hometown.



Immature Red-tailed Hawks such as this one are regularly seen in late summer all across the Unites States.

Resources:

Clark, William S. 1987. *Peterson Field Guide to Hawks*. Houghton Mifflin Company, Boston

Hawk Mountain Sanctuary. www.hawkmountain.org, 1999.

Matteson, Surnner. 1995. *Hawks For Kids*. NorthWord Press, Inc., Minocqua, Wisconsin.

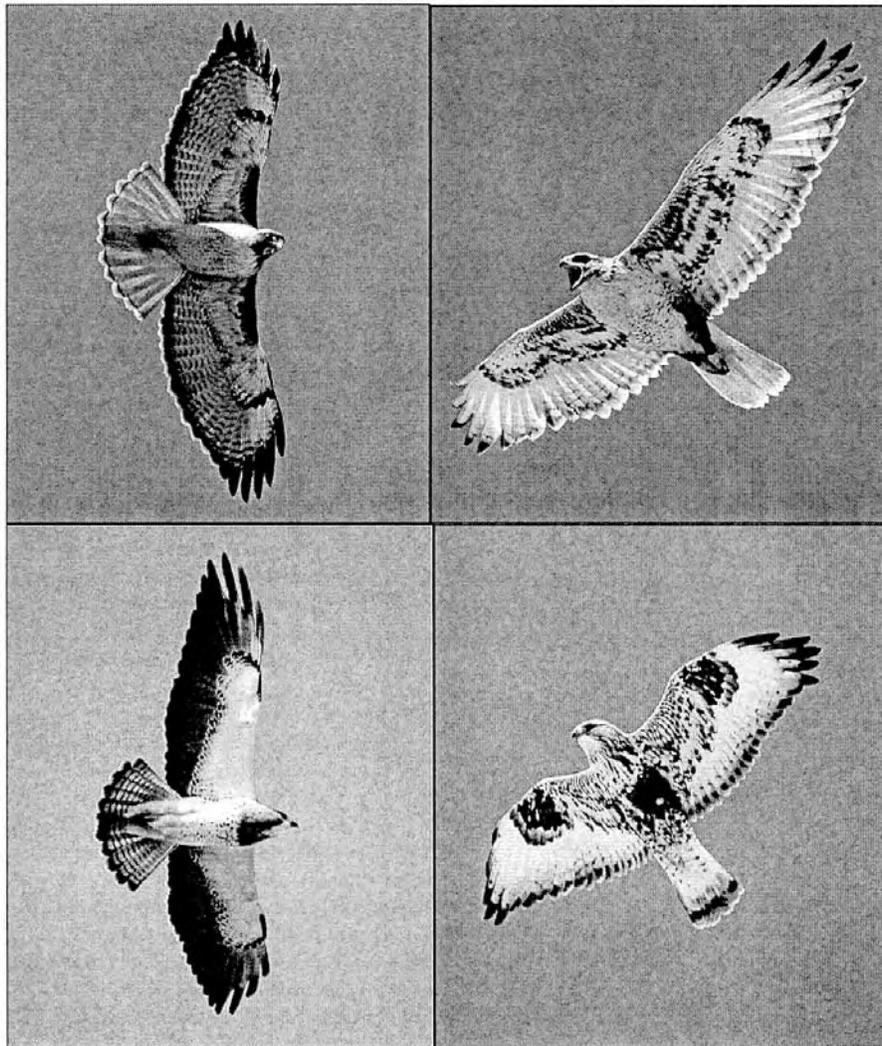
Snyder, Noel and Helen, 1991. *Birds of Prey, Natural History and Conservation of North American Raptors*. Voyageur Press, Stillwater, Minnesota.

Sutton, Clay and Patricia Sutton. 1996. *How to Spot Hawks & Eagles*. Chapters Publishing Ltd., Shelburne, Vermont.

Wheeler, Brian K. and William S. Clark. 1995. *A Photographic Guide to North American Raptors*. Academic Press Limited, London, England.

Hawks, Hawks, Hawks

A Naturewatch Activity



Discover where you can find
thousands of hawks in a single day.

Hawks, Hawks, Hawks

Few people realize the magnificent concentrations of migrating hawks that occur at various sites throughout the world. The Northern Great Lakes Visitor Center is fortunate to be located near such a special place. By merely drawing attention and visitors to this regional spectacle at peak migration time, we've helped nature tell her story and opened another door through which visitors may discover, learn, and commit themselves to wildlife conservation.

Visitors will learn...

- Why migrating hawks are concentrated at a specific site
- What species migrate past the site
- When to visit the site to increase the probability of seeing raptors
- Other features of the site
- How to get there

Visitors will be encouraged to...

- Visit Hawk Ridge Nature Reserve or some other migration hotspot
- Learn more about hawks in general
- Share their knowledge and excitement with others

Implementation:

1. In an area of high visitor traffic, advertise the hawk migration site nearest your center (during the appropriate time of year).
 - This may be as simple as a one sheet sign at your front desk or as elaborate as a temporary exhibit.
2. Make available a handout or brochure that will answer all of the objectives listed above.
 - Brochures usually can be obtained from the site itself.
 - If you need to develop a handout, be brief but complete and be sure to include a map as well as written directions to the site (See Appendix, page A-3)

Experience/Evaluation:

The Northern Great Lakes Visitor Center is approximately 80 miles east of Hawk Ridge Nature Reserve in Duluth, Minnesota. While Hawk Ridge is one of the top hawk-viewing sites in North America, Duluth is a hub of tourism in the upper Midwest from late spring through early fall. Knowing that about half of our visitors were traveling west and eventually would pass through Duluth, we implemented this activity as fall approached and the hawk migration began.

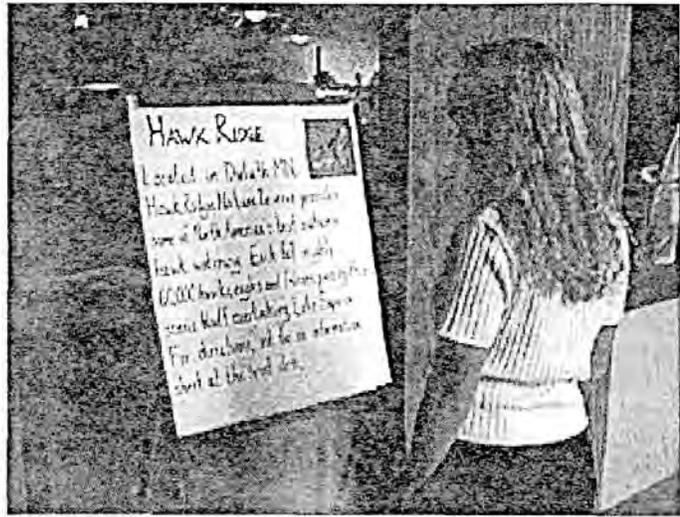
For us, this activity consisted very simply of a sign and handout at the front desk. In order to catch visitors' attention, we hand-wrote our sign with colored markers on a standing meeting-board, which was placed next to our front desk directly in the flow of visitor traffic. The sign included a gorgeous photograph of a flying hawk and read as follows:

Located in Duluth, Minn., Hawk Ridge Nature Reserve provides some of North America's best autumn hawk watching. Each fall roughly 60,000 hawks, eagles, and falcons pass by this scenic bluff overlooking Lake Superior. For directions and more information, ask here at the front desk.

To attract visitors, we included the impressive number of raptors seen and also described the ridge as a "scenic bluff overlooking Lake Superior." Whether there are hawks there or not, this latter phrase is often just what visitors are looking for. The handout included a short paragraph for each of

the objectives, the most important of which is directions on exactly how to get to the site.

Some interesting insights came out of this activity. Overall, it was very successful as implemented above. Almost all visitors were attracted to the sign as they entered and many were amazed by the number of hawks that could be seen. In just four days, twenty-five handouts were requested by visitors. However, at that time the meeting-board was needed for another purpose and was replaced by an 8.5 x 11" computer-printed sign with the same message and placed at the front desk. Visitor interest dropped off quickly, primarily due to the fact that the sign no longer stood out as it did when it was hand-written and in the flow of visitor traffic. This trend continued when the small sign was moved from the front desk to another location in the center. In the two following that relocation not one visitor asked for information on Hawk Ridge. Clearly, the large, noticeable sign in a high traffic area was necessary and successful in capturing the interest of most visitors. Once visitors reached Hawk Ridge, a naturalist was available to serve the many needs of visitors.



Resources:

Clark, William S. 1987. *Peterson Field Guide to Hawks*. Houghton Mifflin Company, New York.

Hawk Mountain Sanctuary. www.hawkmountain.org, 1999.

Hawk Ridge Nature Reserve website. www.hawkridge.org, 1999.

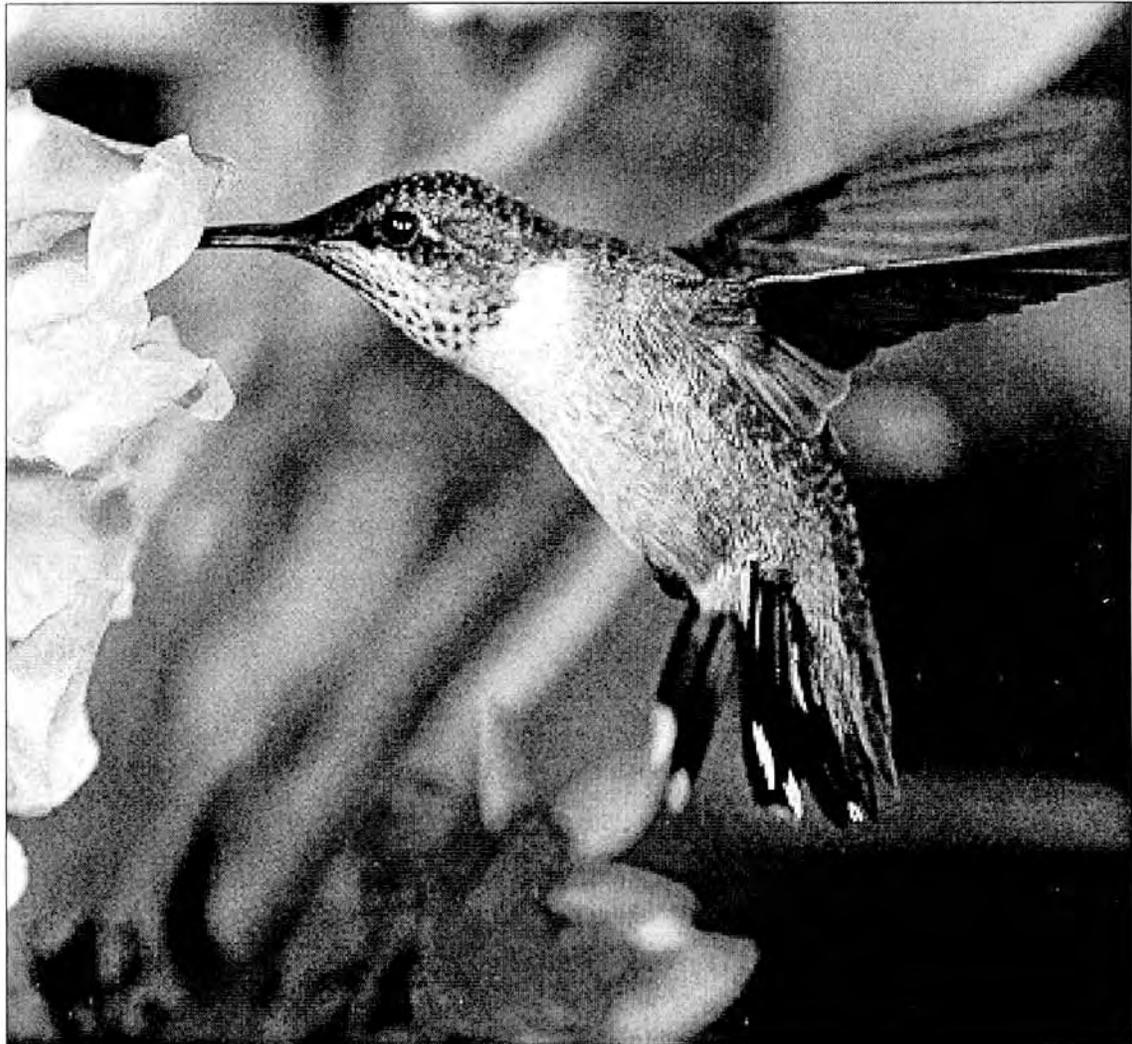
Kerlinger, Paul. 1995. *How Birds Migrate*. Stackpole Books, Mechanicsburg, Pennsylvania.

Matteson, Surnner. 1995. *Hawks For Kids*. Northword Press, Inc., Minocqua, Wisconsin.

Sutton, Clay and Patricia Sutton. 1996. *How to Spot Hawks & Eagles*. Chapters Publishing Ltd., Shelburne, Vermont.

Hummingbird Heaven

A Naturewatch Activity



Determine the importance of a backyard hummingbird feeder.

Hummingbird Heaven

Weighing only 3 grams, hummingbirds are among the most fascinating of all birds. With iridescent feathers flashing in the sunlight, they dart and hover and whirl out of sight. They are the only birds that can literally fly backwards, doing so with an incredible 80 wingbeats per second. Their attraction for the color red and their need to feed frequently make these tiny birds familiar favorites at backyard nectar feeders and flower gardens all across North America.

Visitors will learn...

- The importance of feeders to migrating hummingbirds
- Hummingbird species found locally
- How to distinguish males from females
- How to feed hummingbirds in their backyard

Visitors will be encouraged to...

- Record hummingbird observations at our center's feeder
- Feed hummingbirds in their backyard
- Learn and follow safe feeding procedures

Implementation:

1. In a visible location outside your center, erect a simple hummingbird feeder to coincide with the growing (blooming) season in your locale.
2. Inside your center, set up a spotting scope or provide a pair of binoculars for visitors to view the feeder at close range (Avoid birds colliding with windows by placing feeders at least 10 feet away from all windows).
3. Establish a nearby station that will provide visitors with brief information about hummingbirds to look for and the objectives listed above. Most importantly, provide a data sheet and pencil for visitors to record their sightings (See Appendix, page A-4).
4. Provide a handout that succinctly summarizes what visitors can do for hummingbirds.

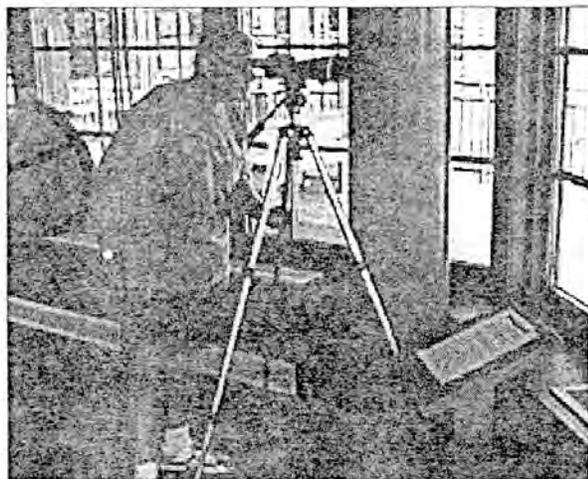
Experience/Evaluation:

The Northern Great Lakes Visitor Center is surrounded by hummingbird habitat. In early August, we began to detect hummingbirds on site and knew that with minimal effort they could be enticed into close viewing range just outside the center. Therefore, we erected a simple bottle-like hummingbird feeder filled with sugar water about 20 feet from our windows (to avoid collisions). Just inside the center, we set up a spotting scope on the feeder for super-close looks at these amazing creatures. We also had a simple station where visitors received brief background information and could record their hummingbird sightings, including their name, date, time of day, number seen, and sex of each bird seen. Because of our location in northern Wisconsin, only one hummingbird species, the Ruby-throated, is likely to be seen, so this simplified the process. In our case, visitor scrutiny came in the form of sex determination and in looking for vagrant species. If several hummingbird species can be found in your region, include information to help visitors identify them.

We were sure to let visitors know that their sightings would determine the importance of our feeder to migrating hummingbirds. We also told them of one rare species to look for so they would look even closer at key identification features. These identification skills can be applied to other birds and animals as well. An interesting outcome of the activity was being able to determine migration timing for Ruby-throated Hummingbirds in this area.

Overall, this activity was an incredible success. Hummingbirds were cooperative, visiting the feed-

ers every ten minutes or so. Visitors were guaranteed close-up views of the birds like they'd never seen before. They enjoyed the use of the spotting scope and were very enthusiastic about recording the birds they saw. In the 35 days the feeder was up, 85 people reported their observations on the supplied data sheets. Visitors walked away realizing the ease and importance of feeding hummingbirds. In future summers, we will provide a handout summarizing how to feed hummingbirds, including tips for hummingbird safety



Visitors view hummingbirds up close with a spotting scope and then record their sightings on a log sheet tracking the importance of our feeders and the migration of hummingbirds.

Resources:

Field Guide to the Birds of North America, 2nd Edition. 1987. National Geographic Society, Washington D.C..

Heidcamp, Arnette. 1990. *A Hummingbird in My House: The Story of Squeak.* Crown Publishers, Inc., New York.

Hummingbird Website. www.hummingbirdwebsite.com/articles/index.htm, Matrix Graphics Corporation, 1998.

Tekulsky, Mathew. 1990. *The Hummingbird Garden.* The Harvard Common Press, Boston.

Tufts, Craig. 1988. *The Backyard Naturalist.* National Wildlife Federation, Washington D.C.

'Attracting More Hummingbirds.'" www.birdsforever.com/hummers.html, Wild Birds Forever, 1999.

International Migratory Bird Day

A Naturewatch Activity



Celebrate birds and the habitats
they need to survive.

International Migratory Bird Day

Birdwatching has become America's third most popular hobby. But this hobby could be in jeopardy with declines in neotropical bird populations due to loss of habitat, expanding urbanization of the landscape, and the introduction of exotic species both in their North American breeding grounds and their Mexican and Central American wintering grounds. International Migratory Bird Day, an annual event initiated by Partners in Flight (an international work group of bird experts and conservation organizations from Canada, U.S., and Mexico), has been instituted to build awareness worldwide of the life histories and needs of neotropical migrant bird species.

Visitors will learn...

- Migration patterns of various bird species
- Breeding and wintering habitat needs
- The importance of birds to our lives

Visitors will be encouraged to...

- Learn to identify bird species
- Discover ways to promote breeding of birds in their area
- Develop non-consumptive hobbies, such as bird watching and backyard bird feeding
- Share their knowledge and enthusiasm about birds with others

Implementation:

1. Contact the Migratory Bird Office of the U.S. Fish and Wildlife Service for information on how to set up an International Migratory Bird Day celebration at your center. Also ask for any educational packets or teacher aids they can provide. (Make your initial contacts early in the year — January is not too soon.)
2. Contact the U.S. Fish and Wildlife Service field station nearest you (or your local chapter of Audubon Society) for assistance in helping to coordinate and promote International Migratory Bird Day events at your center.
3. Partner with area nature centers or environmental education providers who may also be considering such an event; pool resources and programs to eliminate competing for the same presenters or audience.
4. Cooperate with these agencies in developing the day's program, including contacting presenters, calling volunteers, arranging for necessary audio visual equipment and space, negotiating honorariums or fees, etc.
5. Solicit sponsors in the community to help defray the cost of speakers and supplies.

Experience/Evaluation:

We held our first annual International Migratory Bird Day celebration on May 8, 1999. Because that was the day before Mother's Day, we promoted the birdhouse building component of the day as a chance for community children to make a birdhouse as a Mother's Day gift. Three one-hour-long sessions were held outside on the veranda and each was well attended. Bird house kits had been pre-cut and pre-drilled by our senior maintenance workers, while the lumber had been donated by a local building center. We supplied nails and hammers and activity leadership. Satisfied children of all ages went home with bluebird houses for Moms.

Other events included:

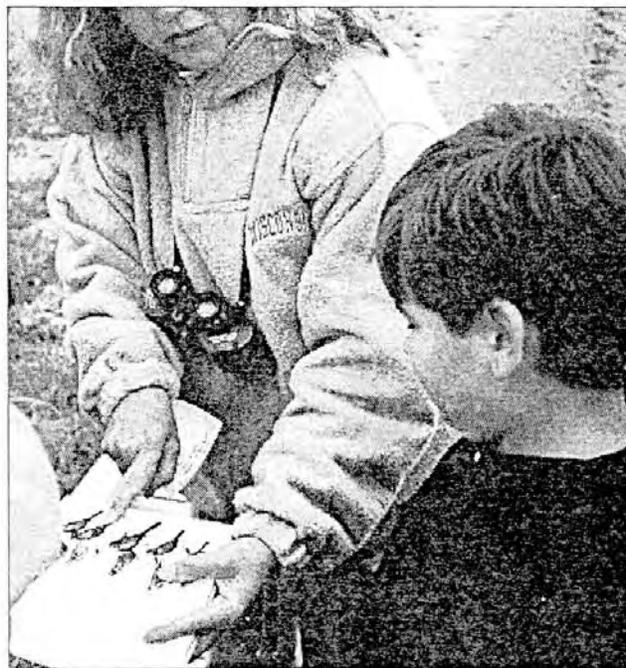
- guided bird walks for families with children, for beginning birders, and for advanced birders
- backyard bird feeding (a local feed store donated birdseed for this activity)
- natural history lectures from area bird experts
- a hands-on introduction to birds for small children (including touching a baby domestic goose and observing its feather growth)
- raptor migration count demonstration
- bird photography
- bird educational videos (loaned free from the U.S. Fish and Wildlife Service)
- our third annual "Chirp Off," winning bird callers from area elementary schools
- falconry demonstration (culminating event)

We set our program schedule to run from 9:00a.m. to 2:00 p.m., with concurrent activities until 1:00 p.m. and the falconry demonstration for everyone for the last hour. Attendance was sparse at the opening time. Next year we'll start the day with a video program in our auditorium and self-guided bird walks on the trail, rather than scheduling an expert speaker at that time.

The day's attendance was good, despite miserable weather. Most of the audience consisted of about 200 community members. People were pleased with the variety of choices of presentations and activities they could attend. In fact, the only complaint was that we should eliminate concurrent programs in the future; people felt torn or frustrated because they wanted to do everything and couldn't.

Resources:

Migratory Bird Management Office
U.S. Fish and Wildlife Service
4401 North Fairfax Drive
Arlington, VA 22203
(703)358-1711
www.fws.gov/r9mbmo/homepg.htm



North American Swans

A Naturewatch Activity



Learn shocking facts about the three swan species you could encounter.

North American Swans — Native and Exotic

Swans are among the largest and most conspicuous of all bird species. As graceful creatures, their presence generally symbolizes hope, gentleness, and good. However, a closer look at our three swan species reveals that beauty, in this case, is in the eye of the educated. Mute Swans, originally imported from Europe to grace private American ponds, now disrupt wetland waterfowl breeding areas wherever they have invaded.

Visitors will learn...

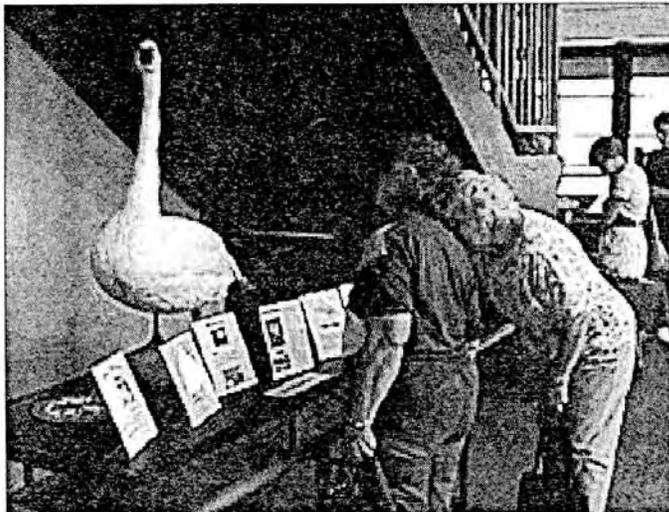
- Ecology and natural history of tundra and trumpeter swans
- Facts and fiction about mute swans
- Field identification of all three swan species
- Swan management strategies

Visitors will be encouraged to...

- Practice field identification
- Report observations
- Record and report neck-collar or wing-tag numbers
- Protect watersheds

Implementation:

1. Temporary Exhibit
 - If possible, acquire a mounted swan specimen to attract visitors' attention. (Do not label swan to allow visitors to identify it after reading identification information.) [If you can not acquire a swan, try another attention-grabber, such as a large color poster.]
 - Display text on identification, ecology, and natural history via acrylic stands or other presentation techniques.
 - Provide a field guide to birds for visitors to peruse.



Visitors read and gaze in awe of the huge and majestic trumpeter swan.

Experience/Evaluation:

The Northern Great Lakes Visitor Center is located adjacent to Chequamegon Bay, Lake Superior. As a major resting, feeding, and nesting area for numerous waterfowl species, the bay hosts all three swan species, Tundra, Trumpeter, and Mute, throughout various parts of the year. In the spring of 1999, a flock of over 200 Tundra Swans spent several weeks feeding on the bay right next to a major highway. It seemed visitor after visitor who came in would ask, "What are all those white birds out there?" We therefore set up the above-described exhibit focused on a Trumpeter Swan specimen that was donated to us.

This huge species was a magnet to visitors who couldn't help but investigate the text surrounding the unlabelled creature. Everyone who visited debated the identity of the swan and many would approach our front desk staff and ask what type it was. It was nice to see that everyone who spent time reading the text identified it correctly as a Trumpeter. Visitors were also able to determine the swans on the bay were indeed Tundras, based on the identification and natural history information they had read. Most important, visitors were surprised to learn the truth about exotic Mute Swans and were pleased to read about the reintroduction of Trumpeter Swans to the upper Midwest. This activity was extremely successful in raising awareness of swans and their wetland habitats.

Resources:

"Alberta Environment." www.gov.ab.ca/env/fw/threatsp/swan/man.html, Government of Alberta, 1999.

Defenders of Wildlife. 1995. *National Wildlife Viewing Guide Series*, Falcon Press, Helena

"Hinterland Who's Who: Tundra Swan." www.ec.gc.ca/cws-scf/hww-fap/tundswan/tundswan.html, Canadian Wildlife Service, 1995.

Field Guide to the Birds of North America, 3rd edition. 1999. National Geographic Society, Washington, D.C.

"Northwest Swan Study." www.airtime.co.uk/users/cygnus/muteswan.htm, Wes Halton, no date.

Peterson, Roger Tory. 1980. *Peterson Field Guide to Eastern Birds*. Houghton Mifflin Company, New York.

Raptors Galore

A Naturewatch Activity



Witness the spectacle of raptor migration.

Raptors Galore

Witnessing thousands of hawks and eagles in flight sends the human spirit soaring. Even watching one Bald Eagle in the sky overhead nourishes the soul. Future generations deserve to experience the same feelings.

Raptors represent the highest level of the food chain, and the health of their populations reflects that of entire ecosystems. Opportunities for visitors to participate in raptor surveys can increase public awareness and involvement in helping to monitor raptor numbers on an annual basis. This data then becomes an extremely valuable tool for detecting population trends and assessing related environmental conditions.

Visitors will learn...

- Raptors follow major migratory routes every spring and fall
- One can see thousands of raptors in a single day at key points along major migratory routes
- Raptor migration can be witnessed all across the United States
- Raptor identification requires attention to details other than plumage color

Visitors will be encouraged to...

- Observe, identify, and count migrating raptors on site
- Find a hawkwatch near their home and join in the excitement of searching for, identifying, and counting migrating raptors
- Start their own count where one doesn't already exist
- Get involved with conservation projects in their local area which contribute to healthy habitats for migratory and residential raptors

Implementation:

1. Arrange to have a volunteer conduct a daily raptor count during peak migration times.
2. Temporary exhibit
 - Mounted specimens of local raptors, with identification tips
 - Field guide to hawks, eagles, and falcons
 - Book on raptor migration
 - Map or list of hawkwatches in the United States
 - Daily log of raptor count results
 - Records of previous raptor migration counts (unless this is the center's first count)
 - Handout which includes suggestions and resources to help visitors expand their involvement (see above suggestions for participation).
3. Provide binoculars for visitors' use while participating in the raptor count (a spotting scope is especially effective for identification).
4. Allow for continued visitor logging of observations at times of the day when the count volunteer is not at the observation post (a binocular check-out system enhances the visitor's experience).

Experience/Evaluation:

A Northland College student voluntarily conducted the first raptor migration count at the Northern Great Lakes Visitor Center in the spring of 1999. The NGLVC is a significant concentration point for migrating raptors. The volunteer stationed himself in the observation tower of the center each day. At the conclusion of the count in late May, the above-described exhibit was set up to inter-

pret the results of the count. We set the exhibit up inside our observation tower to provide the visitor the chance to visualize the raptors flying by. Our exhibit included the Suttons' book *How to Spot Hawks & Eagles* and mounted specimens of two Bald Eagles (an adult and an immature) and an immature Red-tailed Hawk.

Overall, this activity was very successful in raising awareness of raptors and giving visitors some direction in determining what they might see when they look up, whether it be at our center or in their own backyard. The project created a great deal of interest from visitors and school groups. During the volunteer's visits, he was deluged with questions and offered continuous interpretation. He was able to stress the importance of counting raptors and monitoring populations, especially as related to larger environmental problems, such as the pesticide DDT. He was also able to transfer the wonder of bird migration to others.

Next spring, we'll have the exhibit in place during the count as well. While the exhibit can create some awareness after the fact, it is clear that visitors who participated directly in the count (or visitors who had an opportunity to learn from the volunteer who conducted the count) showed more interest in the migration and ultimate fate of raptors. It was interesting to observe that visitors were very respectful of the unprotected or unsupervised bird mounts. Even if your site does not have many migrating raptors or an observation tower, the counter, if placed in a high traffic area, will still receive many questions as to what he/she is doing. It was not essential to the activity's success that visitors actually see a raptor, although this would certainly be memorable for the visitor.



The proper use of binoculars and a spotting scope are valuable skills learned in this activity.

Resources:

Clark, William S. 1987. *Peterson Field Guide to Hawks*. Houghton Mifflin Company, New York.

Hawk Mountain Sanctuary. www.hawkmountain.org. 1999.

Hawk Ridge Nature Reserve website. www.hawkridge.org, 1999.

Kerlinger, Paul. 1995. *How Birds Migrate*. Stackpole Books, Mechanicsburg, Pennsylvania.

Matteson, Sumner. 1995. *Hawks For Kids*. Northword Press, Inc., Minocqua, Wisconsin.

Sutton, Clay and Patricia Sutton. 1996. *How to Spot Hawks & Eagles*. Chapters Publishing Ltd., Shelburne, Vermont.

Watching Birds

A Naturewatch Activity



© Patricia Sutton

Learn how you can start birdwatching.

Watching Birds

Over the last century, birdwatching has grown to become one of the most popular hobbies in the world. Uncommon in today's world is the person who does not have at least a peripheral interest in birds. Despite this familiarity and a passion to learn, the majority of the public is unaware of how to successfully delight in the free and active world of birds.

Visitors will learn...

- The broad diversity of bird species worldwide
- How to listen, how to look, what to look for
- Three things all beginners should have
- A step-by-step identification process
- How to attract select bird species

Visitors will be encouraged to...

- Get a decent pair of binoculars and a field guide
- Study their field guide to know what to look for
- Join a local birding group to get help learning birds
- Birdwatch on the effort level they desire

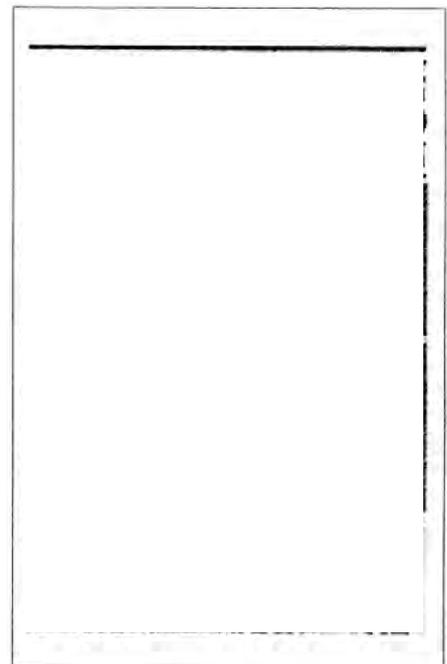
Implementation:

1. In your auditorium, or other video room, play the first 30 minutes of the video "Watching Birds." This can be played once or more daily or once every few days.
2. Introduce the video to interested visitors with some background information and conclude the program with a question and answer session.
3. Optional: Your center may want to dovetail this activity with an additional bird-related activity, such as a bird walk.

Experience/Evaluation:

In late summer, we discontinued our bird walks due a decrease in the number of birds and a lack of bird songs. To meet visitor interest in birds we offered this video once a day for two consecutive weeks. Our introduction included a caution to visitors about the video's poor quality (relative to today's standards) and a brief tribute to Roger Tory Peterson. Following the video, our presenter fielded questions and directed visitors to our bookstore for purchase of the video and other birdwatching information. Not incidently, we offered a general nature hike at the conclusion of the video to give visitors a chance to try out the skills they had just learned.

As expected, the video was fairly successful. In nine showings, 56 visitors attended. Visitors found the video to be informative and very relaxing and particular enjoyed the photography. Surprising was that few people knew who Roger Tory Peterson was prior to watching the video. Some post-viewing comments included, "Wonderful," and "interesting." While we are unaware of anyone purchasing any bird-related materials as



a direct result of this video, we do know that several people were interested in buying it but were not willing to pay the very expensive price for this “old” video. Most encouraging was the nature walk following the first day of the video’s showing. Only five people attended the walk but they all came straight from the auditorium. Two of them commented, “We’re not usually into nature hikes, but that birdwatching video really inspired us.” This alone speaks of success.

Resources:

“Birdwatching.com.” www.birdwatching.com, Ideaform, Inc.

“Watching Birds” [Video]. 1981. Metromedia, Inc. and Houghton Mifflin Company.

Duda, Mark Damian. 1995. *Watching Wildlife*. Falcon Press, Helena, Montana.

Griffin, Steven A. and Elizabeth May. 1995. *Bird Watching for Kids*. Northword Press, Minocqua, Wisconsin.

Peterson, Roger Tory. 1980. *Peterson Field Guide to Eastern Birds*. Houghton Mifflin Company, New York.

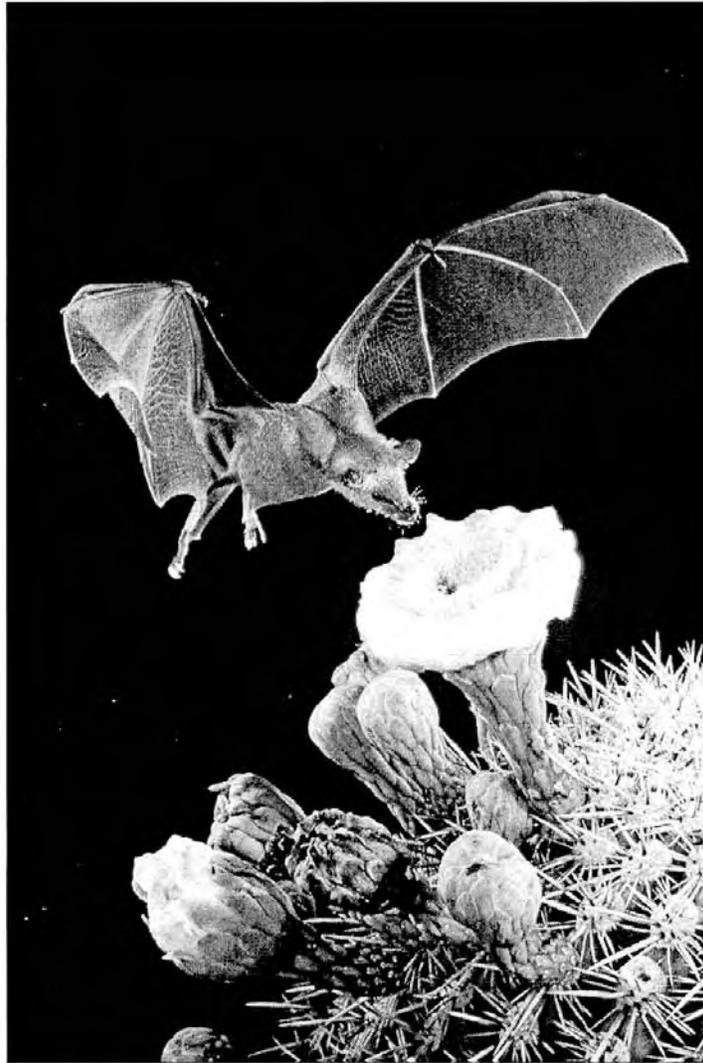
Peterson, Roger Tory, 1986. *Peterson First Guide to Birds*. Houghton Mifflin Company, New York.

Pistorius, Alan. 1998. *Everything You Need to Know About Birding and Backyard Bird Attraction*. Houghton Mifflin Company, New York.

Tufts, Craig. 1993. *The Backyard Naturalist*. National Wildlife Federation, Washington, D.C.

Beneficial Bats

A Naturewatch Activity



© Merlin D. Tuttle, Bat Conservation International

Learn the truth about these harmless
and essential elements of nature.

Beneficial Bats

Few creatures cause as much as repulsion (and panic) in humans as bats. Frequently misunderstood, bats are surrounded by numerous myths and superstitions. But the truth is that they are very gentle and harmless animals. An introduction to the beneficial lives of bats is critical to their appreciation and conservation.

Visitors will learn...

- The natural history of at least one bat species
- The importance of bats to the environment
- The importance of bats to humans

Visitors will be encouraged to...

- Appreciate bats in their backyard and elsewhere
- Build and erect a bat house
- Support the worldwide conservation of thousands of bat species

Implementation:

1. Invite “Bat Man (or Woman)” (a local bat expert) to give a scheduled presentation. Include:
 - A close-up look at a live bat, if possible
 - A brief summary of a local species’ natural history
 - Common misconceptions of bats
 - Why bats are good for other living things
 - Why bats are beneficial to humans
2. Offer a bat house-building session. (Again, include the above concepts, and provide a handout with detailed plans on how to build a bat house.)
3. Offer a nature walk at dusk in an area where bats are frequently seen scouring the sky for insects (but don’t necessarily announce that one of the goals is to BatWatch).

Experience/Evaluation:

This activity was inspired by a very cooperative Little Brown Bat (*Myotis lucifugus*) that roosted daily on the outside of our center. As you read on, you will see that the above implementation techniques have evolved as afterthoughts to what we hoped would be our little guy’s magnetic effect on curious visitors.

Considering that most people do not get to see a roosting bat, we decided to provide the opportunity to visitors to meet our furry flyer. To get visitors outside, we placed a sign at our front desk that pictured a bat and prompted visitors where to find one. Outside, the “bat area” was roped off so as not to disturb the sleeping creature. In front of the rope, we placed an information sheet identifying the species, giving its natural history, explaining its benefits to humans and nature, and plugging a visit to our bookstore where more information could be found. At the front desk sign, we also included a brief paragraph on common misconceptions about bats, so that even if visitors did not go outside they could still “get the point.” Our front desk staff made efforts to direct visitor groups outside and to promote a positive attitude about bats. They also loaned binoculars to those visitors who wanted them.

Overall, the opportunity to see a bat was not enough to spark visitors’ interest in learning more. Most visitors expressed that they always get to see bats, often in their homes. They frequently discussed their own bat stories and their misunderstanding of the animals was often revealed. While most people made no effort to go see the bat, our staff at the front desk was still able to answer visi-

tors' questions and encourage that they learn the facts. Those visitors who did go out to see the bat seemed to have a positive view of the creatures to begin with. We believe the passive nature of our implementation caused its low success. Next year, we're calling in "Bat Man."

Resources:

Altringham, J.D. 1996. *Bats: Biology and Behavior*. Oxford University Press, New York.

Bat Conservation International website. www.batcon.org, BCI, Inc., 2000.

Hensley, Donna and Merlin D. Tuttle. 1993. *Bat House Builder's Handbook*. University of Texas Press, Austin.

Tuttle, Merlin D. 1988. *America's Neighborhood Bats*. University of Texas Press, Austin.

The Bear Facts

A Naturewatch Activity



Study black bear biology and research techniques.

The Bear Facts

Large, secretive, and powerful ... bears are either respected and loved or feared and hated. Of the three North American species, black bears are the most numerous and widespread. In regions of abundance, black bear controversies may include issues of nuisance, hunting, or even a reported attack. By offering opportunities for people to learn more about bears, people will be better equipped to form attitudes and decisions based on facts.

Visitors will learn...

- The biology of black bears
- Techniques for studying bears and other wildlife
- How local research efforts have led to a greater understanding of black bears
- That bears are not vicious, man-eating beasts

Visitors will be encouraged to...

- Study the relationship between bears and humans
- Respect the lives of bears
- Get involved in local wildlife research

Implementation:

1. Invite a local bear researcher to your center to give a guest presentation on bears, bear research, and wildlife monitoring techniques (such as radiotelemetry).
2. Temporary Exhibit
 - Samples of equipment used to study bears
 - Photographs of bears during the research process, such as cubs being removed from a den
 - Map showing distribution of bear species
 - Text describing basic bear biology and population levels



Visitors crowd onto the observation tower to learn about radiotelemetry techniques. A radiocollared female black bear was detected, giving visitors an exciting memory of this program.

Experience/Evaluation:

In late July 1999, our naturalist saw a female radio-collared black bear with two cubs along our nature trail. After several phone calls, the researcher was located, a local high school science teacher who studies black bears locally with his students. We were interested to learn that our center lies in the middle of the sow's (female bear) home range. Using radiotelemetry, the bear could be located at any time from our center's 55-foot observation tower. This fortunate sequence of events led to a presentation and accompanying exhibit.

Undoubtedly, this program was the biggest success of the entire summer of 1999. After only internal advertisement, over 30 visitors attended this presentation on black bears. In 30 minutes, the researcher showed slides, overhead transparencies, and a five-minute video. His emphasis was on the work of himself and his students but he also discussed bear biology and fielded questions from visitors. Visitors were intrigued to hear about the local high school research program, and some seemed interested in learning how to start a similar project at their hometown schools.

Following the talk, visitors viewed the displayed exhibit and were then led to the top of our observation tower where the bear's radio signal was heard by all. They were very interested in seeing how the telemetry unit worked and were especially excited to learn where the sow (and likely her cubs) were located. Looking above at the bear's habitat and territory and pinpointing the bear's location was key to making this a memorable experience for visitors. We believe visitors walked away with a greater knowledge and appreciation of these wonderful animals.

Resources:

Anderson, Tom. 1992. *Black Bear: Seasons in the Wild*. Voyageur Press, Stillwater, Minnesota.

Burt, William H. 1980. *A Field Guide to the Mammals of North America*, 3rd edition. Houghton Mifflin Company, Boston.

Fair, Jeff. 1991. *Bears for Kids*. NorthWord Press, Minnetonka, Minnesota.

Furtman, Michael. 1998. *Black Bear Country*. NorthWord Press, Minnetonka, Minnesota.

Hall, E. R. 1981. *The Mammals of North America*. John Wiley and Sons, New York.

Kurta, Allen. 1995. *Mammals of the Great Lakes Region*. The University of Michigan Press, Ann Arbor, Michigan.

"The Bear Den." www.nature-net.com/bears, Don Middleton, 1999.

Wild Dogs

A Naturewatch Activity



Learn how you can identify similar wild species of the canid family.

Wild Dogs

Few wildlife species stir as much human emotion as the wolf. However, the power and wildness this reclusive and uncommon creature represents is experienced only occasionally by the public. Knowing the characteristics that distinguish a wolf (*Canis lupus*) from a closely-related coyote (*Canis latrans*) can turn a passing glimpse of a dog-like animal into a memorable event. Replacing fear with knowledge increases public support for protecting wolf populations and the large areas of wild land needed to sustain them.

Visitors will learn...

- How to identify wolves and coyotes
- Facts about wolf biology
- The basics of wolf management

Visitors will be encouraged to...

- Pay close attention to the animals they see
- Read and learn more about the lives of wolves and coyotes
- Support a reasonable balance between the needs of humans and the needs of wolves
- Visit the International Wolf Center in Ely, Minnesota

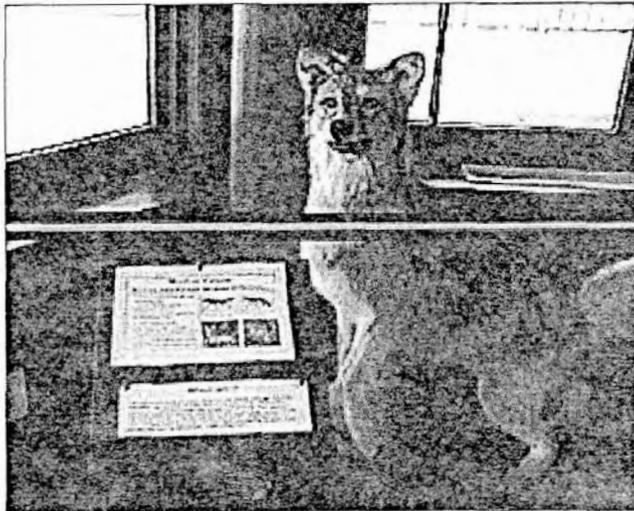
Implementation:

1. Display a mounted specimen of a wolf. (Do not label the specimen except with the question, "Which am I?")
 - Display an information sheet picturing and describing some differences between wolves and coyotes. Continue with basic information on wolf biology, such as size, distribution (map) and abundance, wolf pack structure, and social and hunting behavior.
 - Also introduce current management strategies of existing wolf populations and provide any brochures or handouts that encourage visitors to take another step toward understanding wolves and their relatives.

Experience/Evaluation:

Due to the overwhelming popularity of the wolf in the Great Lakes region, this activity has been very successful at our center. A mounted wolf specimen was donated to us and immediately drew attention from visitors upon its arrival. While a step down from a live animal, a mounted specimen is very life-like to most people and thus provides a vivid experience that no image can duplicate. Once lured by the large mount, visitors were very curious to read about these misunderstood creatures. They read our identification sheets with great focus, often discussing among their group the identity of the creature. When looking for the answer, they were particularly interested in reading the story behind the specimen. In our case, the fact that the immature female gray wolf had been illegally shot not far from our center caused quite an impact. We also provided a brochure on the International Wolf Center in Ely, Minn., located about 250 miles from our center. These disappeared rapidly, as did any misunderstanding of wolf identification.

Note: Most visitor centers will not be fortunate enough to have wolves in their region. To implement this activity, choose similar species with a similar story. Adapt the exhibit described above to fit the interest of the visitors in your particular area.



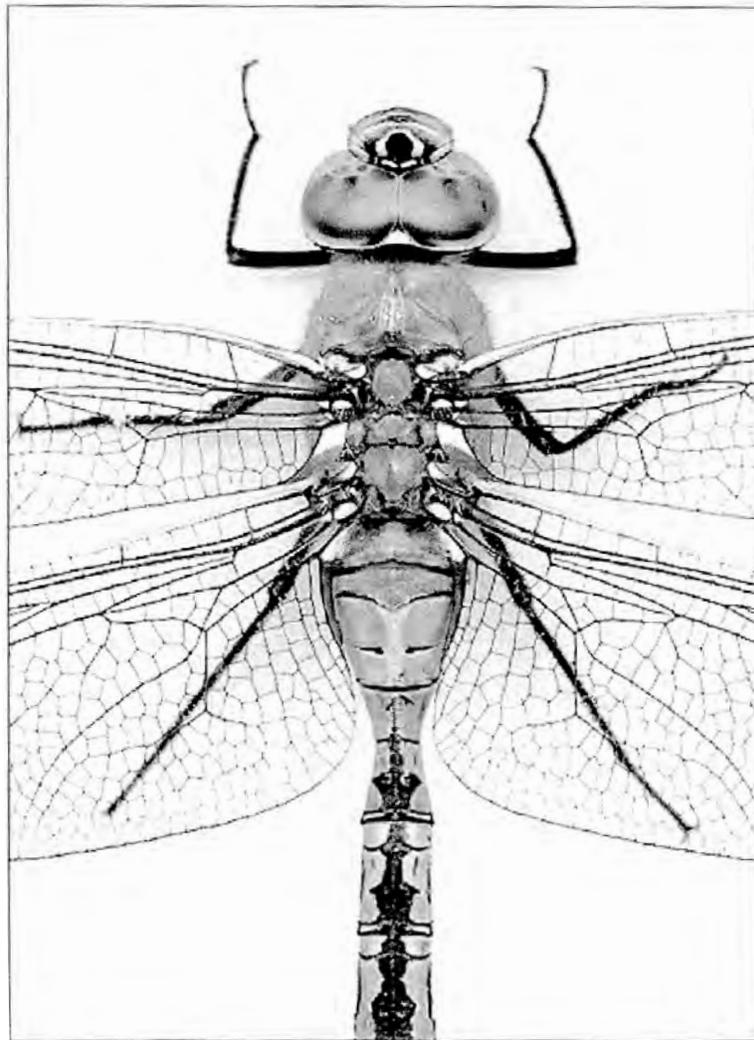
Despite “Do Not Touch” signs, a rope is still necessary to keep people from touching and possibly damaging this unique wolf specimen.

Resources:

- Alden, Peter. 1987. *Peterson First Guide to Mammals*. Houghton Mifflin Company, New York.
- Burt, William H. 1980. *Peterson Field Guide to Mammals*. Houghton Mifflin Company, New York.
- International Wolf Center. www.wolf.org, 1999.
- Mech, David L. 1970. *The Wolf: The Ecology and Behavior of an Endangered Species*. University of Minnesota Press, Minneapolis, Minnesota.
- “Restoring America’s Wolves.” www.nwf.org/wolves National Wildlife Federation.
- Turbak, Gary. 1987. *Twilight Hunters: Wolves, Coyotes, and Foxes*. Northland Publishing, Flagstaff, Arizona.
- Wolves in America Culture Committee. 1986. *Wolf!* Northword Press, Ashland, Wisconsin.

Appreciating Insects

A Naturewatch Activity



Discover the diversity of insects and their benefits to humans and other creatures.

Appreciating Insects

Insects, in general, are simply not popular. People of all ages often have reflex actions to destroy any insect they see. “Shoot first; ask questions later.” But the truth is that insects are some of the most fascinating and diverse creatures on earth. Their benefit to humans and the rest of the natural world cannot be underestimated and is often misunderstood.

Visitors will learn...

- Insects are amazingly diverse and abundant
- Insects can be found almost anywhere we look
- Some insects are destructive during one or more of their life stages
- Examples of ways in which insects are beneficial
- Which insects families can be found locally

Visitors will be encouraged to...

- Investigate the diversity of insects found along our nature trail
- Explore their backyard insects
- Harbor a new attitude toward insects

Implementation:

1. Temporary Exhibit
 - Preserved collection specimens obtained from a local museum or college
 - Text describing insect diversity, abundance, and relationship to humans
 - Pictures of some insect families that can be found around your center
 - A bowl of dead insects, including butterfly and moth wings, along with tweezers and a magnifying glass for closer scrutiny
 - A beginner’s field guide to insects
2. Naturalist-led nature walk, introducing visitors to the concepts included above

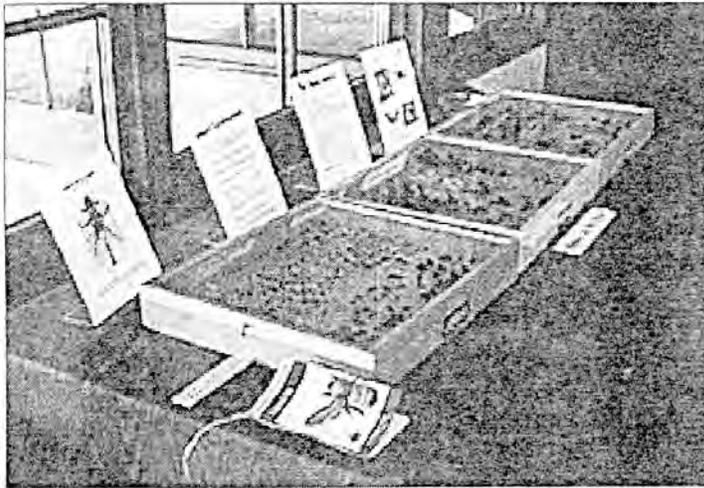
Experience/Evaluation:

The Northern Great Lakes Visitor Center implemented this activity at the peak of mosquito and black fly season, in an attempt to focus on the beneficial roles of insects in the environment and to interest visitors in learning more about insects. We borrowed three display drawers of mounted insects from a local college, which included butterflies, moths, beetles, flies, dragonflies, and a few others to visually alert visitors to insect diversity. We also developed a factsheet that included statements such as “230 million insects per acre” and “over one million species” to convey some background information. Drawbacks and benefits of various species were researched and quantified by dollar amounts, while photos of interesting-looking insects were used to entice visitors onto our nature trail. Dead insects were collected from around our center to allow visitors a closer look. Lastly, we displayed Leahy’s *Peterson First Guide to Insects* because this book is greatly simplified and colorful—two appealing qualities to the interested beginner.

Visitor response to the temporary exhibit was mediocre. After just several days of implementation, it became clear that visitors were very interested in looking at the mounted specimens but were very uninterested in the rest of the exhibit. The field guide was not paged through often and no copies of it sold in our bookstore despite its very low price. Children thought the bowl of dead insects was “cool,” but adults tended to avoid it. Development of the displayed factsheet was worthless, as few visitors read it, and thus few got the message that insects do humans more good than harm. Only a few inquiries were made regarding local insects, and it did not appear that any visitors

were enticed outside on their own to find insects on our nature trail.

Nature walks that included appreciation of insect diversity and value, however, proved more successful. The value of pollinating bees and mosquito-devouring dragonflies speak for themselves. We discovered that in order to change attitudes about generally unpopular wildlife, passive methods like temporary exhibits were simply not effective. Getting people out on the trail to see insects in nature worked much better. The beneficial and fascinating facts about the diverse members of the insect world can best be conveyed when an enthusiastic teacher guides discovery and discussion.



Our temporary exhibit consisted of *fact* sheets with insect photos, preserved specimens, a field guide, and a bowl of insects for interactive learning.

Resources:

- Borror, Donald J. and Richard E. White. 1970. *Peterson Field Guide to Insects*. Houghton Mifflin Company, New York.
- Headstrom, Richard, 1963. *Adventures With Insects*. Dover Publications, New York.
- Leahy, Christopher. 1987. *Peterson First Guide to insects*. Houghton Mifflin Company, New York.
- Milne, Lorus, and Margery Milne. 1997. *National Audubon Society Field Guide to North American Insects and Spiders*. Alfred A. Knopf, New York.
- National Wildlife Federation. 1989. *Ranger Rick's NatureScope*. Washington, D.C..
- Stokes, Donald. 1983. *A Guide to Observing insect Lives*. Little, Brown and Company, New York.
- Tufts, Craig. 1993. *The Backyard Naturalist*. National Wildlife Federation, Vienna, Virginia.

Butterfly Bonanza

A Naturewatch Activity



Marvel in the beauty of these delicate creatures.

Butterfly Bonanza

Butterflies are a beautiful, gentle, and diverse group of organisms whose colorful patterns and fluttery flight have dazzled humans for millennia. However, their primary importance in the natural world is their role as pollinators. Becoming familiar with this role and the butterflies themselves is crucial to the appreciation and conservation of these delicate creatures.

Visitors will learn...

- How to identify common butterfly species
- The best habitats to locate butterflies
- Butterflies and native wildflowers are interdependent
- How to attract butterflies to the backyard

Visitors will be encouraged to...

- Inventory and monitor butterflies on site (with naturalist)
- Inventory and monitor butterfly populations at home/community
- Create a butterfly garden
- Support local conservation projects that enhance butterfly habitat

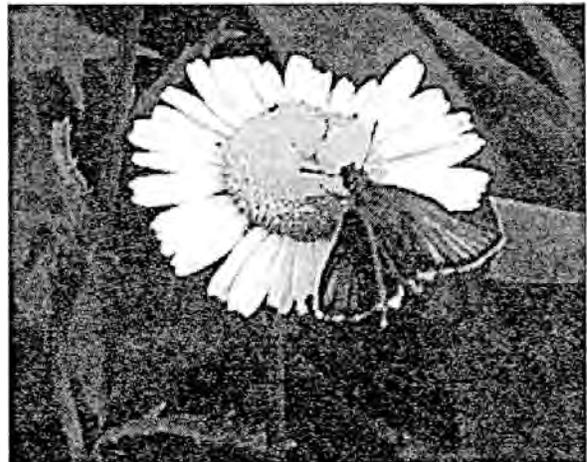
Implementation:

1. Offer a naturalist-led butterfly walk.
 - Supplies needed:
 - ✓ Butterfly (and wildflower) field guides
 - ✓ Data sheets or notebook in which to record observations
 - ✓ Handout list of popular butterfly nectar plants and caterpillar food plants (See Appendix, page A-5)
 - Optional supplies:
 - ✓ Binoculars for naturalist and visitors
 - ✓ Butterfly net, insect viewing jar

Experience/Evaluation:

One sunny day in late June, our naturalist noted an abundance of butterflies along our nature trail. To exploit this opportunity, a butterfly walk was scheduled, advertised and announced via a small sign at our front desk and a large hand-written sign placed near the entrance of our main exhibit hall. The activity was then implemented at the appointed time.

The walk was very successful with both young children and adults. We found that the hand-written sign attracted visitors' attention much more than the small, computer-generated sign at the front desk. The naturalist learned that the binoculars, butterfly net, and insect viewing jar proved to be unnecessary, as most butterflies were very cooperative. We suggest when using a net that the ethics of netting insects be discussed. Having a vis-



European Skipper feeding on daisy. During the first week in July, literally thousands of these skippers could be found along our center's 0.75-mile boardwalk trail.

itor record data seemed to work well in strengthening the visitor's role in the walk/survey. All visitors were pleased to receive a list of butterfly and caterpillar plants and seemed eager to start their own garden. This activity should only be implemented when there are many butterflies to be seen by visitors.

Resources:

Boring, Mel. 1996. *Caterpillars, Bugs and Butterflies*. NorthWord Press, Minnetonka, Minnesota.

Butterfly Gardening Links List. www.desertmuseum.org/fp/butterfly.html, Arizona-Sonora Desert Museum, 1999.

Butterfly website. www.butterflywebsite.com, Jack Mikula.

Classberg, Jeffrey. 1999. *Butterflies Through Binoculars: The East*. Oxford University Press, New York.

Opler, Paul A. 1998. *Peterson Field Guide to Eastern Butterflies*. Houghton Mifflin Company, New York.

Opler, Paul A. 1994. *Peterson First Guide to Butterflies and Moths*. Houghton Mifflin Company, New York.

Opler, Paul A., Harry Pavulaan, and Ray E. Stanford. 1995. *Butterflies of North America*. Jamestown, ND: Northern Prairie Wildlife Research Center Home Page.
www.npwrc.usgs.gov/resource/distr/lepid/bflyusa/bflyusa.htm (Version 02SEP99).

Stokes, Donald and Lillian. 1991. *The Butterfly Book*. Little, Brown and Company, Boston.

Tekulsky, Mathew. 1985. *The Butterfly Garden*. The Harvard Common Press, Boston,

Backyard Wildlife Habitat. www.nwf.org/habitats/backyard/beyondbasics/species/butterflies.cfm, National Wildlife Federation,

Monarch Magic

A Naturewatch Activity



Witness the monarch's metamorphosis, migration, and relationship with the land.

Monarch Magic

Two of the most amazing processes of nature are metamorphosis and migration. While many wildlife species undergo one or the other, the Monarch butterfly does both. Its endurance throughout its life cycle should inspire us all to preserve this delicate creature and the habitat it needs to survive.

Visitors will learn...

- The stages of the monarch's life cycle
- The monarch's larval food plant and an example of an adult nectaring source
- The wintering habitat of monarchs and imminent threats to its existence
- Monarchs returning north in spring are offspring of those who flew south the previous fall

Visitors will be encouraged to...

- Observe the monarch's life cycle in the natural world
- Plant the larval food plant and native nectar sources in their backyard
- Support conservation and restoration projects which will protect, enhance and increase monarch habitat, especially on wintering grounds

Implementation:

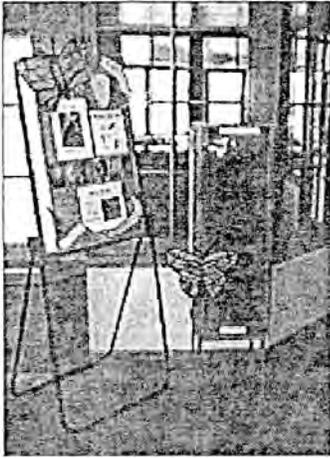
1. Temporary Exhibit
 - Potted milkweed plant within a transparent enclosure (larvae NEED milkweed plants)
 - Potted nectar source also within the enclosure
 - Monarch larvae on the milkweed plant
 - Labels identifying the plants as larval food or nectar sources for adults
 - Photographs of life cycle and information describing migration and wintering habitat (See Appendix, page A-6)
2. Butterfly Releases
 - Focus first on display, then lead visitors outside to celebrate the release of newly-emerged adults.
 - Tip: Pass the monarch from visitor to visitor until it flies away (never touch the wings; offer fingertips to the butterfly's legs).

Experience/Evaluation:

Even though we wanted to set up a display in mid-August when Monarch larvae are easiest to find on milkweed plants, our timing was delayed because we needed an attractive method of exhibiting the display. It wasn't until early September that we searched local stands of milkweed for monarch caterpillars. We counted ourselves lucky at that point to find even three. We fed them fresh milkweed leaves daily in a netting-covered fishbowl, but it was after Labor Day before we were able to complete the display. We dug and potted a common milkweed plant for the larvae, as well as some goldenrod in bloom to nourish the emerging adults. The plants and larvae were placed within a five-foot tall "cage" that we constructed ourselves using a wooden frame and some screen.

On the cage, we asked visitors if they could find three pupae because each of the three caterpillars had pupated by the time we displayed the exhibit. We also labeled the plant species and designated each as a larval food plant or an adult nectaring source. Beside the plants, we used a corkboard to display text and pictures. Decorating and nearly covering the board were constructions by local school groups of the all the stages of the monarch life cycle. The rest of the board was utilized as described above.

One of the adults was released a week later during a school group's visit to the center. The dis-



play helped us explain the fascinating life cycle and migratory behavior of the Monarch. Our weather in the north had already turned quite cool, and few Monarchs could still be seen in the area. We released at the warmest part of the day. Typically, releases could occur by the end of August or earlier in September.

Over the three weeks it was displayed, this exhibit received less attention than we had anticipated. The colorful pictures and decorations as well as a very large screen cage should have been enough to intrigue visitors from a distance. This was not the case, however. One reason for this may have been that the screening we used obscured the plants from a distance. Likewise, those visitors who did investigate the exhibit had difficulty locating the pupae, partly the result of good camouflage and partly because of the screening.

A few visitors showed a lot of interest in studying the display, asking questions, and desiring more information. However, the vast majority did not show interest. We think getting the display up earlier, potting plants when they are younger so they don't wilt so quickly (milkweeds have very deep root systems), and replacing the screening with plexiglass will help.

As is the case in so many of our experiences, the exhibit technique has its limitations. The exhibit would be an excellent follow-up to a guided nature walk when Monarchs are most abundant. As is usually the case, it's hard to beat personal contact with visitors. We are also fairly certain that interest will be much greater in August when visitation is double or triple that of September. There's nothing more enticing than wondering what other people are looking at and talking about.

Resources:

Boring, Mel. 1996. *Caterpillars, Bugs and Butterflies*. Northword Press, Minnetonka, Minnesota.

"The Butterfly website." www.butterflywebsite.com Jack Mikula, 1999.

Journey North homepage. www.learner.org/jnorth, 1999.

MonarchWatch homepage. www.monarchwatch.org 1999.

North American Butterfly Association homepage. www.naba.org, 1999.

Opler, Paul A. 1998. *Peterson Field Guide to Eastern Butterflies*. Houghton Mifflin Company, New York.

Stokes, Donald and Lillian. 1991. *The Butterfly Book*. Little, Brown and Company, Boston

Stokes, Donald. 1983. *A Guide to Observing Insect Lives*. Little, Brown and Company, New York.

Water Bugs

A Naturewatch Activity



Capture invertebrates and discover their importance to aquatic ecosystems.

Water Bugs

Beneath the swift current of a river or stream lies a mysterious and often unknown world. While the only signs of life here to most people are fish, these aquatic systems hold a much wider variety of organism, usually in great abundance. Among these are the benthic macroinvertebrates, large bottom-dwelling insects that play an extremely important role in the health of aquatic ecosystems.

Visitors will learn...

- Why aquatic invertebrates are important to ecosystems
- Why these insects are useful indicators of water quality
- Invertebrate sampling techniques
- Fundamental classification of inverts
- Macroinvertebrate identification
- How to assess water quality using a Pollution Tolerance Index

Visitors will be encouraged to...

- Participate in sampling invertebrates and assessing the water quality of an on-site water source
- Sample a water source near their home
- Pay closer attention to inconspicuous but equally important organisms such as inverts

Implementation:

1. In your auditorium, or other video room, play the 18-minute video "Water Bugs," available from the University of Wisconsin-Superior,
2. Following the video, offer a session at an on-site water source where visitors can practice and experience what they just saw in the video.
 - Provide nets, waders or boots, and pans or buckets for visitors to get involved in sampling.
 - Ideally, conduct a water quality assessment using one of the many indices that include benthic macroinvertebrates, such as a Pollution Tolerance Index.
 - Be sure to have identification guides or keys and a data sheet that includes directions for calculating the index.
3. Provide a handout that includes an identification guide and a blank data sheet so visitors can assess the water quality at a source near their hometown.

Experience/Evaluation:

Assessing water quality using aquatic invertebrates is a fairly common educational activity at schools and camps nationwide. Considering the general success of the activity in those circumstances, we attempted to expand this to an asynchronous program for visitors. This could be accomplished through the use of our 100-seat auditorium and a small pond and creek drainage adjacent to the center.

On Saturday, September 11, 1999, we offered the program as described above. An advertisement came in the form of a verbal PA announcement and a daily program schedule displayed in several places within the center. Little visitor interest was shown. Visitation was relatively low on this particular day. We attracted seven people for the movie "Water Bugs," which is an excellent film but may be a bit too advanced for the general public. Those visitors who did attend did not even stay for the whole 18 minutes. When it was explained to them that they'd have the opportunity to get some hands-on experience at our creek outside, no one was interested, even though it was a beautiful day.

We believe that higher visitation and better promotion of this activity would lead to greater success. It should also be noted that we only tried the program on one occasion, and perhaps that particular day was an exception. Regardless, it was clear that visitors needed some other reason to get involved because the idea of water bugs was simply not appealing. Considering the success of this activity with schools and other groups, we think it has high potential and thus plan on offering it again in the future with some modification. A spring showing just before opening day of trout fishing might be appropriate.



Adjacent to our center, a pond and its drainage area are excellent places for sampling aquatic insects.

Note: To help visitors identify aquatic invertebrates, we found from our work with elementary and middle school students that students can quickly learn to use a dichotomous key if some brief instruction is given first.

Resources:

“Benthic Macroinvertebrates.” www.bges.csuohio.edu/norp/old/bmi.html, Northeast Ohio Rivers Project, no date.

Caduto, M.J. 1990. *Pond and Brook: A Guide to Nature Study in Freshwater Environments*, 2nd ed. Prentice-Hall, New Jersey.

“Developing Tools for Measuring Biodiversity of Aquatic Invertebrates.” <http://biology.usgs.gov/docs/www.gls.c.usgs.gov/science/stewardship/invert.htm>, USGS Great Lakes Science Center, 1999.

McCafferty, P.W. 1981. *Aquatic entomology: the fishermen's and ecologist's guide to insects and their relatives*. Jones and Bartlett Publishers, California.

Merritt, R.E. and K.W. Cummins. 1988. *An Introduction to the Aquatic Insects of North America*.

Mitchell, Mark K. and William B. Stapp. *Field Manual for Water Quality Monitoring*. Thomson-Shore, Dexter, Michigan, 1992.

University of Wisconsin-Extension. “Key to Life in the Pond.” Available from UWEX Environmental Resources Center at 608-262-0020.

“Water Bugs” (VIDEO). 1996. Wisconsin Lake Superior WaterWatch, UW Board of Regents.

Frog Serenade

A Naturewatch Activity



Help monitor frogs and
the health of their habitats.

Frog Serenade

Frogs are vocal and visible creatures. They are an important link in aquatic ecosystems, consuming thousands of insects and themselves serving as a food source for fish, birds, and other animals. They are also indicators of environmental quality, with diversity and abundance declining as habitat quality deteriorates. Therefore, monitoring frog populations allows for the monitoring of ecosystem health.

Visitors will learn...

- that individual frogs establish distinct breeding territories by calling
- that each species of frog sings a different breeding song
- that breeding times vary for each species and are water temperature-related
- how to identify at least one frog by its call

Visitors will be encouraged to...

- monitor frog abundance on site
- use tapes and CDs to learn frog calls at home
- monitor frog species diversity and abundance at local wetland habitats (many state departments of natural resources enlist volunteers to help collect data for long-term frog surveys)
- support local efforts to protect wetland habitats

Implementation:

1. Frog Survey
 - At the nearest accessible wetland or pond, establish a station where visitors can hear calling frogs.
 - Choose one dominant species that visitors are likely to hear and recognize without difficulty.
 - Display an information sheet explaining the concepts listed above as well as a brief background on the chosen frog species and how to identify its call (perhaps with recording).
 - Most importantly, provide a data sheet where visitors can record their name, date, time of day, and the number of individual frogs they heard during their survey. Encourage a specific length of time for visitors to listen in order to make the data useful in assessing frog abundance over time.

Experience/Evaluation:

Our visitor center has three wildlife-rich ponds, one of which is directly adjacent to our building with a veranda overlooking it. In mid-summer, Green Frogs are abundant here and their explosive call dominates that of all other frogs. Accessibility to the pond and cooperation from the frogs resulted in a very successful activity. In just three weeks, over 25 groups of visitors stood on the veranda and censused the pond's population of breeding male Green Frogs. A survey sheet and pencil were provided on a stand outside where visitors overlook the pond. If your survey site is not roofed, you will need to devise a way of keeping the data sheet dry, perhaps by only activating the station on rain-free days. In our survey, we asked that visitors spend three to five minutes listening and entering data. To entice visitors outside to the survey site, we also placed the frog information sheet inside the building. This was only partially successful in moving visitors outside. Surprisingly, we were able to determine the green frog's breeding period based on this voluntary visitor survey.

Green Frog Survey

Help us monitor green frogs!

- ✓ For an accurate survey, spend about 3 to 5 minutes at the pond listening for and recording green frogs.
- ✓ Listen for the green frog's twanging bantone note, like that of a loose banjo string or rubber band. You'll know it when you hear it.

Name	Date	Time of Day	# of different Green Frogs
Kennel Rabbit	7/27/99	8:15 am	0
Steve Libby	7/28	11:20 am	5
John Moore	7/28/99	1:32 pm	2
Paul Quinn	7/29/99	1:07 pm	9
J. Feldner	7/29/99	2:10	24 / 5 min
Charles M. Healy	7/29/99	2:58	30 / 5 min
Rachel	7/29	3:26	38 / 4 min
Mark G. A.	7/30	4:15	21 / 3 min
Robert C. ...	7/30	4:15	21 / 3 min
F. ...	7/30	4:15	11 / 2 min
Nolan's	7/30	4:55 pm	6
Proctor's	7/30	4:55 pm	6
...	7/30	4:55 pm	2 / 2 min
K. Rabbit	7/30	8:35	0
GUNDAY	7/30	8:35	2
K. Rabbit	7/30	8:35	0

In this activity, visitors determined the green frog's breeding period by recording the number of frogs heard calling at a nearby pond. Note that by the end of July few or no frogs were heard.

Resources:

Conant, Roger and Joseph Collins. 1998. *Peterson Field Guide to Reptiles and Amphibians of Eastern/Central North America*. Houghton Mifflin Company, New York.

Conant, Roger, Stebbins, Robert, and Joseph Collins. 1992. *Peterson First Guide to Reptiles and Amphibians*. Houghton Mifflin Company, New York.

Harding, James H. and J. Alan Holman. 1992. *Michigan Frogs, Toads, and Salamanders*. Cooperative Extension Service, Michigan State University, Lansing, Michigan.

Wisconsin Frogs (cassette of recorded frog breeding songs produced by Raymond Anderson & Deborah Jensen, University of Wisconsin, Stevens Point). Madison Audubon Society. Madison, Wisconsin.

Wisconsin Herpetology Homepage. www.mpm.edu/collect/vertzo/herp/atlas/welcome.html, Gary Casper, 1999.

Watchfrogs

A Naturewatch Activity



See why frogs can be indicators
of ecosystem health.

Watchfrogs

Frog eggs, tadpoles, and adults provide food for hundreds of bird, fish, reptile, and mammal species in and around ponds, lakes, streams, and wetlands. When water quality declines, frog diversity and abundance drop. Deformed frogs may even be found where chemical pollution has entered a watershed. Both by monitoring frog populations and by examining adult frogs of different species each year, we may be alerted of a localized water problem so that investigation and action can be taken.

Visitors will learn...

- Tadpoles undergo metamorphosis in the process of becoming adults
- Both tadpoles and adults are sensitive to changes in water quality as chemicals may be absorbed through their skin
- Poisons enter the food chain via plants or insects that have been sprayed with persistent pesticides or herbicides; these poisons then accumulate in organism tissues thus causing deformities or death to predators such as herons, eagles, and cormorants
- Pollutants can cause deformities during frog or toad metamorphosis

Visitors will be encouraged to...

- Help capture and examine a sample of frogs on site
- Connect the concepts of healthy habitat, biodiversity, and quality life for humans
- Get involved with activities in their own communities to protect and monitor wetland water quality

Implementation:

1. Frog Walks (led by naturalist)
 - Identify frog species (field guides, breeding songs).
 - Observe tadpole development.
 - Teach visitors how to use low impact techniques for capturing frogs and checking for physical deformities.
 - Discuss pesticides and herbicides and how they enter wetland food webs. (Use examples of thin-shelled eggs resulting in severe population declines of eagles, ospreys, and peregrine falcons during widespread DDT use. Cite examples where similar tragedies are occurring today (see resources).
2. Play "Deadly Links," a Project WILD Game that simulates poisons in the foodweb (need group of ten or more people willing to be active participants).

Experience/Evaluation:

The Northern Great Lakes Visitor Center was built on previously pastured and cultivated land (former coastal wetland). With the exception of stocking native trout, wildlife has simply moved into three recently-dug ponds. Cattails and other aquatic plants, aquatic insects, and a diversity of birds and frogs provide daily Naturewatch opportunities.

The naturalist attracted spontaneous interest inside the Center by showing a visiting youth group and counselors an adult green frog and a year-old green frog tadpole that had recently been captured at the edge of the spring-fed pond. Other visitors joined in. The breed's biology was explained, as well as an invitation extended to enjoy frog and other nature watching, as well as to capture and examine frogs for deformities. Questions and stories punctuated the walk to the pond.

Low-impact techniques for netting frogs were demonstrated, and teams were sent forth to cap-

ture frogs. They were instructed to return to a meeting site to share any frogs they were able to capture. On this particular occasion, only two frogs could be netted, although males could be heard calling at various points (territories) all around the pond. No deformities were detected. A brief, informal discussion of potential hazards that could threaten wetlands or streams followed. The naturalist explained that the center had experienced an accidental oil spill in the pond from a leak in the elevator shaft, that clean-up measures had been completed, and that it was reassuring that no deformed frogs had been reported that year.

The youth group agreed to play the “Deadly Links” game and enjoyed it very much. It gave them a chance to run, but even more importantly, it helped them to understand the devastating effects of poisons and harmful chemicals in the environment. Whether watching or playing, all ages enjoyed finding out how frogs are truly the princes (and princesses) of the pond by serving as water quality warning systems.

This activity was offered to visitors in mid-summer, but could just as well be done from early spring to late summer. Several species could be examined and monitored at different times throughout the season.

Resources:

Carson, Rachel. 1962. *Silent Spring*. Houghton Mifflin Company, New York.

Conant, Roger and Joseph Collins. 1998. *Peterson Field Guide to Reptiles and Amphibians of Eastern/Central North America*. Houghton Mifflin Company, New York.

Conant, Roger, Stebbins, Robert, and Joseph Collins. 1992. *Peterson First Guide to Reptiles and Amphibians*. Houghton Mifflin Company, New York.

Project WILD Elementary Activity Guide. 1986. Western Regional Environmental Education Council, Boulder, Colorado.

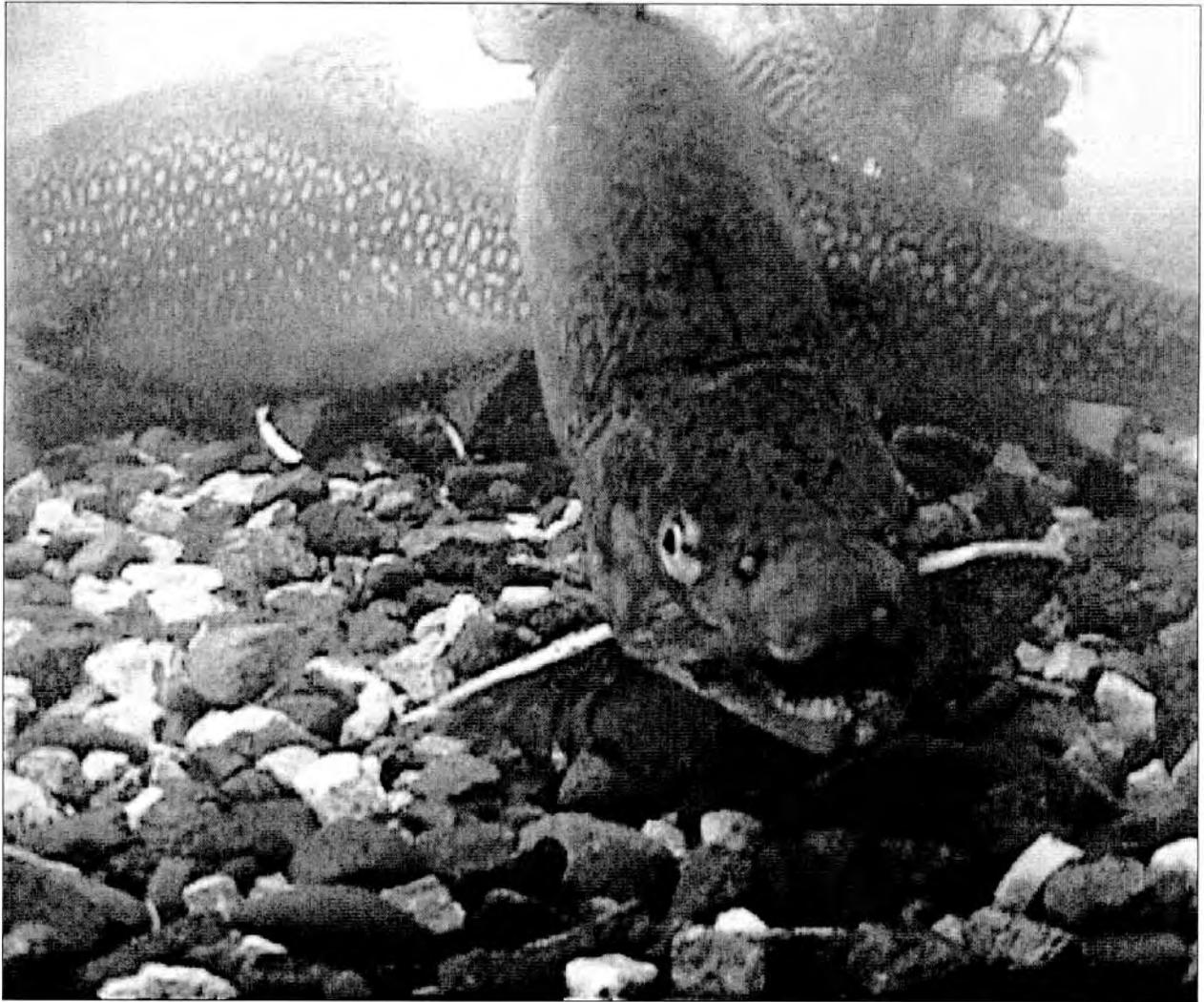
Wisconsin Herpetology Homepage. www.mpm.edu/collect/vertzo/herp/atlas/welcome.html, Gary Casper, 1999.



Visitors expend energy and learn about the environment in “Deadly Links.”

Saving Native Fish

A Naturewatch Activity



See the splendor of threatened native fish.

Saving Native Fish

The population of Lake Superior Coaster Brook Trout (*Salvelinus fontinalis*) has deteriorated in the last century due to overfishing and habitat destruction. As these causes persist, it is important that the general public be made aware of the imminent loss of this beautiful fish to the biodiversity of the region, to the fishing industry, and to the integral role the coaster performs in a healthy Great Lakes ecosystem.

Visitors will learn...

- The historical and current population status of coaster brook trout
- Coaster brook trout biology and ecology
- What makes the “coaster” different from “regular” brook trout
- Management strategies for existing populations

Visitors will be encouraged to...

- Find out more about coasters and other native fish whose populations are declining
- Support the protection and restoration of critical stream and lake habitat

Implementation:

1. Present visitors with the opportunity to view a threatened native fish. This can be accomplished through the use of a large aquarium. Better yet, if there is an adjacent water source, consider a program focusing on the release of a threatened species at your center. (Check with conservation agencies about the possibilities of the release and their involvement in the program). Fish watching activities after the release can include feeding, migrating, or spawning.
2. Depending on your mode of implementation, present the objective information through either a speaker presentation or a temporary exhibit. In either case, provide a handout summarizing the story of the species and directing the visitor to where he/she may find out more about threatened native fish.

Experience/Evaluation:

The Northern Great Lakes Visitor Center site includes three man-made ponds that have been colonized by cattails, frogs, and aquatic insects. One of the ponds is spring-fed, with water temperatures cold enough to support brook trout. In the interest of raising public awareness about coasters (and hope for a spring overflow to take some of the fish to a nearby Lake Superior feeder creek), we arranged with the U.S. Fish and Wildlife Service to release 30 adult coasters into the cold-water pond. All it took after that was a hand-written sign and verbal invitation to the release. More than 20 visitors attended the outdoor program on a cold and dreary day in June. Visitors were delighted by the unique opportunity to closely view large adult brook trout. USFWS biologists presented background information on the species, fielded questions, and then proceeded to release the fish into the pond. Over the next few weeks, adult coasters could be seen snatching insects from the surface of the pond. Visitors walked away with memorable views of a beautiful fish and an awareness of declining native fish populations.



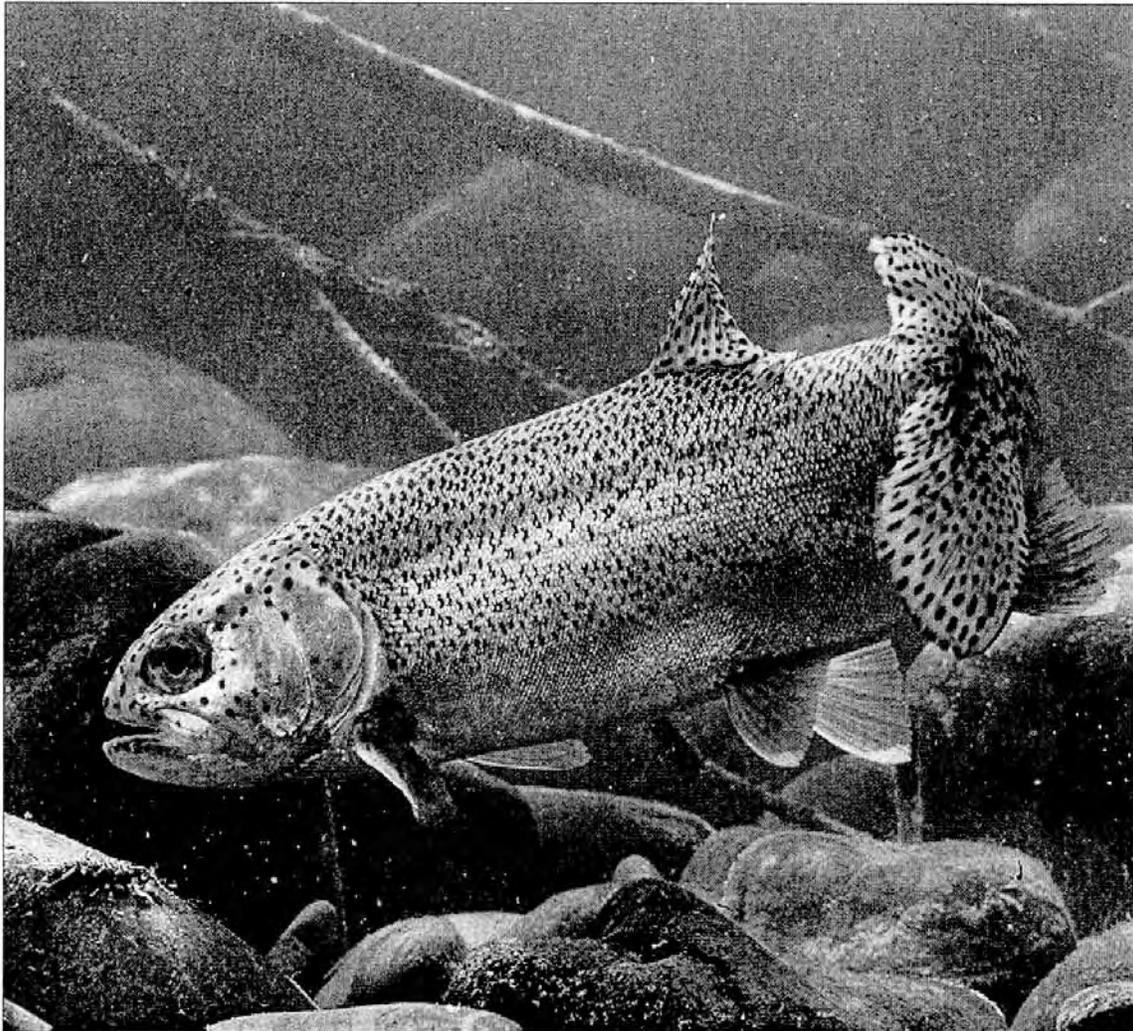
A fisheries biologist explains coaster brook trout to visitors during a scheduled release program at the Northern Great Lakes Visitor Center.

Resources:

- Burr, Brooks M. and Lawrence M. Page. 1991. *Peterson Field Guide to Freshwater Fishes*. Houghton Mifflin Company, New York.
- Dann, Shari L. *The Life of the Lakes: A Guide to Great Lakes Fishery Education Materials*. Michigan State University Extension.
- Filisky, Michael. 1989. *Peterson First Guide to Fishes*. Houghton Mifflin Company, New York.
- Fischer, Adelheid. "Little Salmon of the Springs." *The Minnesota Volunteer*. Nov.-Dec. 1995, 10-21
- Perich, Shawn. 1994. *Fishing Lake Superior*. Pfeifer-Hamilton, Duluth, Minnesota.
- Quinn, John R. 1994. *The Fascinating Freshwater Fish Book*. John Wiley & Sons, Inc., New York.
- "FishLinks." www.newberg.k12.or.us/EY/HTML/fishlinks.html. Ewing Young, 1999.
- "Trout in the Classroom Online." www.newberg.k12.or.us/EY/HTML/trout.html Ewing Young, 1999.

The Way of a Trout

A Naturewatch Activity



Peer into the rarely seen underwater world of the rainbow trout.

The Way of a Trout

Rainbow trout are among the most well-known fish to anglers and non-anglers alike. But how many people actually get to see the ways of these beautiful fish? For the fisherman, knowing the habitat and habits of the trout will increase the chances of catching them more often. For the general public, witnessing the trout's underwater life will provide greater appreciation of this fish and a new respect for the cycles of nature.

Visitors will learn...

- The habitat and habits of trout
- The life cycle of a female rainbow trout
- How an ecosystem functions as a unit
- The role of humans in an ecosystem

Visitors will be encouraged to...

- Support the protection and enhancement of America's freshwater fisheries
- Look closer at the interrelatedness of nature's parts
- Practice "catch and release" fishing

Implementation:

1. In your auditorium, or other video room, play Trout Unlimited's excellent 30-minute video called "The Way of a Trout." This can be played once or more daily or once every few days,
2. Introduce the video to interested visitors with some background information and conclude the program with a question and answer session.
3. Optional: Your center may want to dove-tail this activity with an additional fish-related activity, such as a temporary exhibit or presentation.



Experience/Evaluation:

While fishing is very popular in the Great Lakes and other regions, few people actually get to see native fish in their natural underwater environment. The selected video has unique and breathtaking underwater photography that gives viewers this opportunity. Throughout the summer of 1999 our center had a standard schedule of videos playing in our auditorium. This video was one of them and turned out to be extremely successful. In 38 showings, over 300 visitors watched "The Way of a Trout." Unlike some of our other videos, visitors almost always stayed and watched the entire video. Feedback was very positive, including comments such as, "Wonderful," and "Excellent." It was clear that visitors left with a much clearer picture and much greater appreciation of what's happening below the water's surface. Our center, and Trout Unlimited, surely met its goals with this wonderful video.

Resources:

Burr, Brooks M. and Lawrence M. Page. 1991. *Peterson Field Guide to Freshwater Fishes*. Houghton Mifflin Company, New York.

Dann, Shari L. *The Life of the Lakes: A Guide to Great Lakes Fishery Education Materials*. Michigan State University Extension.

Filisky, Michael. 1989. *Peterson First Guide to Fishes*. Houghton Mifflin Company, New York.

Perich, Shawn. 1994. *Fishing Lake Superior*. Pfeifer-Hamilton, Duluth, Minnesota.

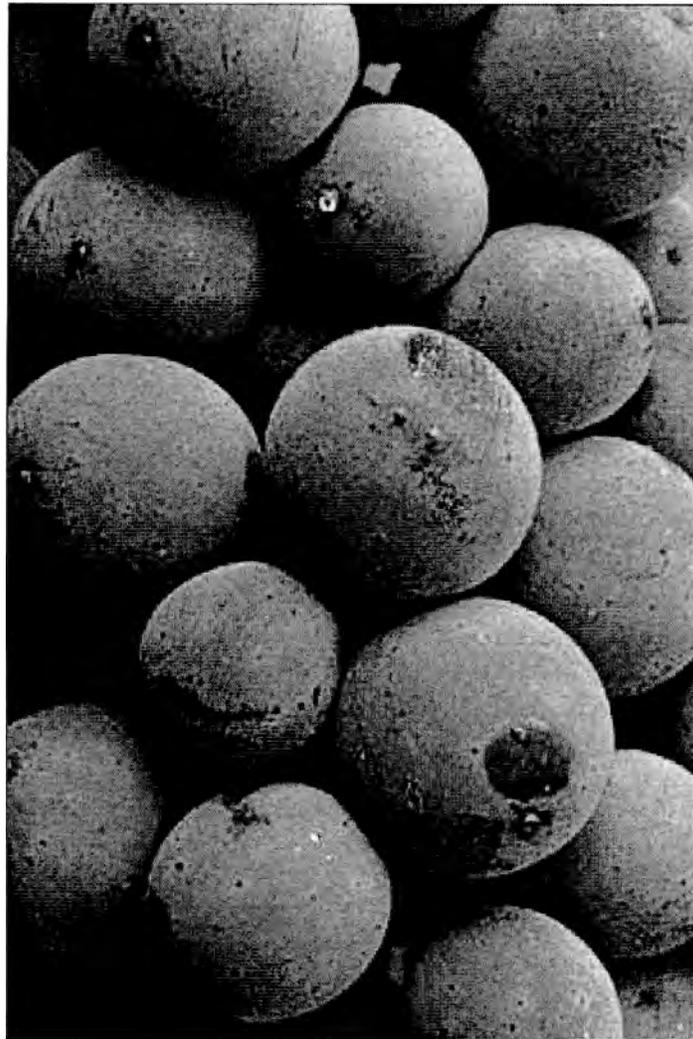
Trout Unlimited. "The Way of a Trout" (Video). Minnesota Mining and Manufacturing, 1985.

"FishLinks." www.newberg.k12.or.us/EY/HTML/fishlinks.html, Ewing Young, 1999.

"Trout in the Classroom Online." www.newberg.k12.or.us/EY/HTML/trout.html Ewing Young, 1999.

Blueberry Delight

A Naturewatch Activity



Learn how to fill your bucket with one of nature's most delicious treats.

Blueberry Delight

For various reasons, berry picking has become an extremely popular hobby throughout the entire country. People find great joy in finding, harvesting, and preparing a wide variety of wild berries and fruits. But how often do these hobbyists understand the habitat in which they pick? Awareness of the land and its importance to a good berry crop is thus critical to the conservation and survival of these fruit-producing ecosystems.

Visitors will learn...

- How to identify blueberry plants and berries
- The habitat and distribution of wild blueberries
- Which wildlife also eat blueberries
- Specifically where to find blueberries
- The importance of fire to some blueberry habitats

Visitors will be encouraged to...

- Visit local blueberry farms and wild blueberry hotspots
- Practice safe and lawful berry-picking techniques
- Recognize and conserve the habitats where blueberries grow

Implementation:

1. Temporary Exhibit (pictured below)
 - Live, potted blueberry plant
 - Local map showing specifically where to go to pick berries
 - Displayed book on edible berries and fruits
 - Handout listing local berry farms and giving at least one blueberry recipe (See Appendix, page A-7)
 - Handout summarizing berry identification and guidelines for picking
 - Text showing and describing blueberry identification, habitat, and range of distribution
 - Text linking blueberries to fire, native wildlife, and native ecosystems



Experience/Evaluation:

Northern Wisconsin is one of the best places anywhere to pick wild blueberries. Considering the popularity of the hobby in this region, we anticipated great interest in this exhibit, which we implemented exactly as described above.

As expected, this activity was one of our most successful of the entire summer season. Visitors were drawn by the potted plant, a large map, and vivid graphics. After scanning the table, they were most interested in the map, two handouts and *The Great Lakes Berry Book* by Bob Krumm. After one day of display, only 4 of 50 handouts remained. The book sold ten copies in our bookstore in less than one week, making it the most popular book sold during that period. Unfortunately, the text on blueberry identification, habitat, and relationship to fire was not quite as popular among visitors, probably due to the relative appeal of the other exhibit components.

Note: This activity can easily be adapted to fit the most appropriate berry or fruit in your area. Be sure to keep your live plant fresh and to advocate only safe and legal berry-picking areas.

Resources:

Elias, Thomas S. and Peter A Dykeman. 1982. *Field Guide to North American Edible Plants*. Outdoor Life Books, New York.

Krumm, Bob. 1996. *The Great Lakes Berry Book*. Falcon Press Publishing Co., Helena, Montana.

Peterson, Lee Allen. 1977. *Peterson Field Guide to Edible Wild Plants*. Houghton Mifflin Company, New York.

Young, Darrell D. 1983. *Wild Plants You Can Eat*. Julian Messner, New York.

Celebrating Wildflowers

A Naturewatch Activity



Get to know some of nature's
most common wildflowers.

Celebrating Wildflowers

Wildflowers naturally attract human attention. Travelers and locals alike are curious to know what's in bloom. Learning a native flower's name and biology is like learning the name and background of a new friend. A somber realization also occurs when admirers learn that many roadside flowers are exotic and thus threaten native vegetation and wildlife. This awareness is often a person's first step in understanding that a species' presence or absence may be an indicator of overall ecosystem health, and also a first step toward becoming involved in the protection and restoration of native species.

Visitors will learn...

- A broad diversity of “showy” wildflowers border America's roads and highways
- What flowers are in bloom, the biology of each, and whether each is native to the area
- Many native flowers are not as “showy” and are not seen roadside but with minimal effort can be found, identified, and equally enjoyed
- Wildflowers often have significant interactions with other organisms

Visitors will be encouraged to...

- Observe and identify wildflowers on site, at home, and when traveling
- Contribute to wildflower conservation projects, such as eradicating exotics, planting natives, or overall habitat restoration
- Turn their own yard into a diversity of wildflowers and associated organisms

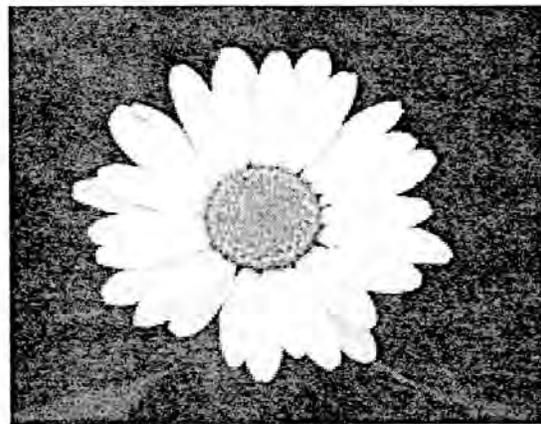
Implementation:

1. Temporary Exhibit
 - Table with vases containing fresh samples of various roadside and “off-road” wild flowers
 - Accompanying text with each showing name of flower, how to identify it, and where to find it
 - Indicate whether each species is exotic or native and include the implications of this designation (See Appendix, page A-8).
 - If pertinent, provide the flower's legend and any specific relationships between each flower and other organisms.
 - Display a good field guide on wildflower identification.
 - Provide a location(s) where visitors can go to practice their identification skills, particularly on “not-so-showy” wildflowers (such as Jack-in-the-pulpit).
2. Naturalist-guided wildflower walks
 - Teach the concepts listed above. Pay special attention to indicator species, exotics vs. natives, and those species harboring close relationships with other organisms such as insects.

Experience/Evaluation:

We established this activity in response to numerous questions from visitors regarding “that yellow flower I saw driving in” or “the big purple flower all along the highways.” Originally, a single vase containing the most popular flower blooming at the time was provided with some descriptive text and a field guide. This soon expanded to include a variety of roadside flowers and was continually updated throughout the season. We then used these roadside flowers to encourage visitors to get out of their cars and in the field looking closer at less visible but equally as beautiful wildflowers. Guided walks further encouraged those visitors who were intimidated by the process of wildflower identification.

This activity was highly successful. It was simple to produce, fairly simple to maintain (other than keeping fresh flowers), and could be carried out spring through fall. Most importantly, its simplicity served the needs of interested visitors—it was brief, aesthetically pleasing, and very fulfilling. Unfortunately, our efforts to get people out on our trail were often unsuccessful, probably because the exhibit did not sufficiently “spark” their interest. However, the displayed field guide was very popular and sold well in our bookstore during the period of the exhibit. Likewise, our wildflower walks, often falling under the umbrella of “nature walk,” were successful in teaching about wildflower identification and diversity.



Left: Vases with fresh flowers and a fact sheet teach visitors about “not-so-showy” and showy wildflowers, such as the Ox-eye Daisy (right).

Resources:

- Bates, John. 1995. *Trailside Botany*. Pfeifer-Hamilton Publishers, Duluth, Minnesota.
- Edsall, Marian S. 1985. *Roadside Plants and Flowers*. The University of Wisconsin Press, Madison.
- National Park Service’s Celebrating Wildflowers page. www.nps.gov/plants/cw/ 1999
- Newcomb, Lawrence. 1977. *Newcomb's Wildflower Guide*. Little, Brown and Company, Boston.
- Niering, William A. and Nancy C. Olmstead. 1998. *National Audubon Society Field Guide to North American Wildflowers-Eastern Region*. Alfred A. Knopf, Inc., New York.
- Tenenbaum, Frances. 1996. *Peterson Flash Guide to Roadside Wildflowers*. Houghton Mifflin Company, New York.
- USDA Forest Service’s Celebrating Wildflowers page: www.fs.fed.us/outdoors/naturewatch/flower.html, 1999.

Down the Road

A Naturewatch Activity



Play your part in preserving the health and future of forested ecosystems.

Down the Road

The Future of Forests

Wisconsin forest ranger Fred Wilson in 1928 said, “Trees are important to ..landscapes from the standpoint of beauty as single specimens or in groups. In forest and farm woodlands, they are vital tools for the stabilization of soil and in slowing water runoff. Forests are our largest public hunting and fishing grounds and produce wildlife and recreational benefits as well as timber crops.” His words are just as true today, a time when private landowners play a critical role in ensuring the health of forests for many generations to follow.

Visitors will learn...

- The distribution of forested land in the state (location, abundance, ownership)
- Conservation goals in the state
- Where to get more information on forested land

Visitors will be encouraged to...

- Enjoy the fall color by hiking the many trails in area forests
- Consider their role in the future of forests throughout the state, nation, and world
- Learn optimal management and harvest techniques for sustainability
- Contact appropriate agencies for more information

Implementation:

1. Temporary Exhibit
 - Colorful posters from federal, state, or private forest conservation agencies
 - Laminated leaves to decorate the display
 - Brochures on forests and forestry available from forest agencies and organizations, including private woodland owner association information
 - Photos showing people recreating, living, and working in forests (make sure you represent both genders, all ages, and diverse ethnic groups)
 - Photos or posters of wildlife dependent on area forests
 - Text simply describing why and how leaves change color

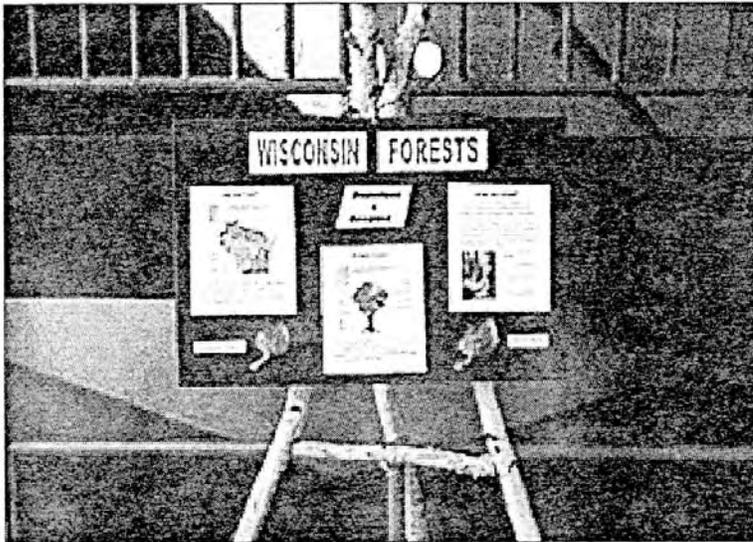
Experience/Evaluation:

Visitors usually become more interested in forests during the fall season when trees provide a dazzling display of colors. For this reason, we implemented this activity in mid- to late-September when nature’s show heightens in northern Wisconsin.

Forest conservation agencies have devoted significant resources to preparing forest education materials for the public. We contacted state and private conservation agencies and asked for posters and brochures highlighting the forests of our state. We set up the materials in our temporary exhibit area, incorporating laminated leaves and a birch-branch stand to attract visitors to the display (shown below).

Unfortunately, the display on its own failed to attract much attention. Here are some ways we could have better tied the activity to visitor experience:

- Station the exhibit near the front desk and commit staff time to inviting visitors to help themselves to the forest information.



A birch-branch stand, laminated leaves, and colorful graphics were used to attract visitors' attention to Wisconsin forests.

- Similarly, have staff encourage visitors to enjoy the hiking trails in area forests (handing them a trail locator map) or to enjoy a fall color drive, and then directing them to the forest literature.
- Offer nature hikes that include appreciation and explanation of why leaves change colors, following up with a stop by the exhibit to pick up forest literature.
- Having a volunteer staff an art/craft table where visitors could do colorful leaf prints, again offering forest literature upon completion of their activity.

Resources:

State Department of Natural Resources

U.S. Fish and Wildlife Service Forestry Information page.

<http://refuges.fws.gov/NWRSFiles/InternetResources/Forestry.html>, USFWS, 1999.

U.S. Forest Service homepage. www.fs.fed.us, USFS, 1999.

Wisconsin Woodland Owners Association. (715) 346-4798

Forest Regeneration

A Naturewatch Activity



Witness the effect of deer and rabbits
on the growth of young trees.

Forest Regeneration

White Cedar and other northern conifer forests have thrived in the upper Midwest since the Ice Age but today are becoming increasingly scarce due to the cutting of old growth forests and the lack of natural regeneration. By researching the effects that deer and rabbits have on cedar growth, proper management techniques can be better implemented to ensure the survival of cedars, deer, and rabbits.

Generating public awareness of this and similar problems can lead to increased support of forest management research and implementation. Cooperation between visitor centers and local colleges provides both the expertise and site visibility needed to demonstrate regional natural resource management techniques to the public.

Visitors will learn...

- Certain native trees are favorite foods of deer, rabbits, or other prolific herbivores
- Increased herbivore populations often impede efforts to re-establish these native trees where they have been lost due to overharvesting or large-scale disturbance
- Herbivores may have different effects on the natural regeneration of trees, and research is needed in this area
- Small-scale biological research determines methodology for large-scale site management

Visitors will be encouraged to...

- Join in the hands-on work involved in conducting the research, such as physically establishing and monitoring research sites
- Establish similar study sites on their own property (concerning native trees browsed heavily by deer or other herbivores) and communicate the results to a college or public agency conducting forest management research in their area

Implementation:

1. Establish research demonstration site(s):
 - Determine which species in your area is/are heavily browsed by deer, rabbits, or other animals and would appropriately demonstrate the concepts listed above.
 - In cooperation with a local expert or conservation organization, set up a highly visible research site along a trail or other high-traffic area.
 - At the site, display text explaining the research, including its purpose, methodology, and meaning to the visitor.
 - Offer sessions when visitors can get involved in setting up the site and in assessing the results.

Experience/Evaluation:

At our center, this activity originated through a partnership with a local college. As part of a program known as Plantwatch, the college's conservation biology professor and his students established a number of sites on our center's property studying the effects of deer and rabbit browse on the growth of young cedar trees. Our center is an ideal testing site because it has a small, high-quality cedar forest, in addition to a formerly pastured area that was cedar forest prior to being farmed. One of the study sites was established right off our nature trail, and a sign was erected to explain those ideas mentioned above. The study site consisted of deer and rabbit exclosures in known cedar browsing areas. One exclosure kept out only deer and an adjacent exclosure kept out both deer and

rabbits. Young cedar trees were planted within each enclosure as well as outside of each (to serve as a control). The growth of these cedars in all three areas of the site will be monitored over time with the help of visitors to determine the effects of browsing by increasing populations of deer and rabbits.



Deer and rabbit enclosures used to study the effects of grazing by these two abundant herbivores. Notice the lack of an understory layer to this forest plot.

Applying this activity in a highly visible area was vital to its success. Visitors could not help but wonder what the cage was for and thus read the text with great curiosity. In reading, visitors were intrigued by learning the detrimental effects of browsing rabbits and deer. They could closely relate to this because deer and rabbits are often common garden pests in many areas. Also, the abundance of cedar along our nature trail significantly increased visitor interest in this problem. In implementing this activity, be sure to emphasize the relationship between your center and the local research group. We found that visitors were pleased to hear that community groups were cooperating in tackling local problems, which also seemed to increase the visitor's desire to get involved.

Resources:

"The White-tailed Deer — a Keystone Herbivore." 1997. *Wildlife Society Bulletin*, 25: 217-226.

Bates, John. 1995. *Trailside Botany*. Pfeifer-Hamilton Publishers, Duluth, Minnesota.

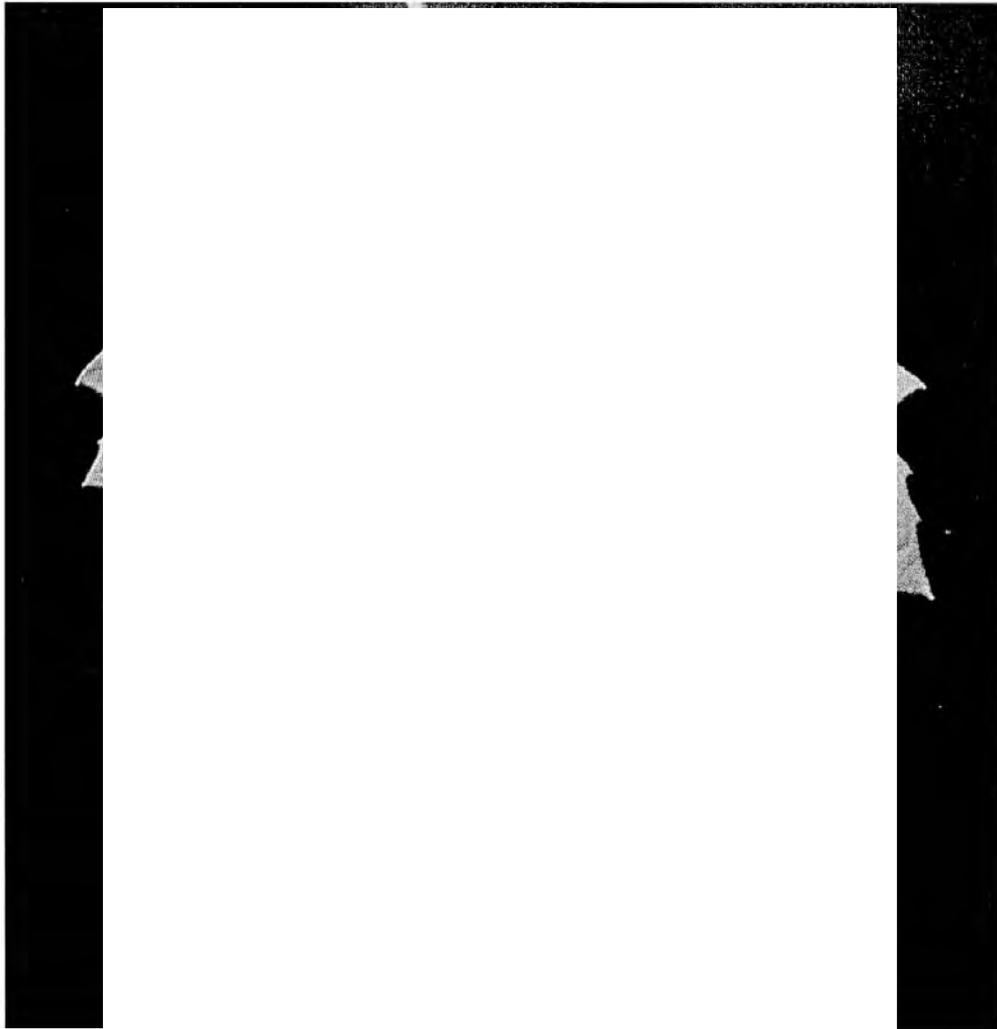
Frelich and Lorrimer. 1985. "Current and Predicted Long-term Effects of Deer Browsing in Hemlock Forests in Michigan." *Biological Conservation*, 34: 99-120.

McShea, Underwood, and Rappole. *The Science of Overabundance: Deer Ecology and Population Management*. Smithsonian Press, Washington, D.C.

Rooney and Waller. 1998. "Local and Regional Variation in Hemlock Seed Establishment in Forests of the Upper Great Lakes Region." *Forest Ecology and Management Journal*, 21 1-224.

It's in the Leaves

A Naturewatch Activity



Learn what to look for when
identifying summer trees.

It's in the Leaves

identifying trees strengthens the bond between humans and the natural world by turning a “curtain of green” into a mosaic of interrelated parts. A species’ presence often indicates the habitat type and wildlife that can be found there. Knowing the names of trees also allows for further reading, learning, and teaching.

Visitors will learn...

- Like other organisms, trees can be readily identified based on unique characteristics
- Certain types of trees grow in specific types of habitat
- To start, learn the most common trees of your area

Visitors will be encouraged to...

- Bring a field guide on the center’s nature trail and practice tree identification skills
- Join a naturalist-guided hike to identify trees and learn about associated wildlife
- Identify trees at home and elsewhere

Implementation:

1. Temporary Exhibit
 - Display a selection of fresh (or pressed) leafy branches representing the most common and readily identifiable trees of the area.
 - Label with common names, identifiable characteristics, and brief natural history (such as associated habitat and wildlife).
 - Leave an additional tree sample unidentified and provide a field guide for visitors to practice their new skills.
2. Naturalist-led Tree Identification Walk to teach the concepts explained above in the field

Experience/Evaluation:

This was one of the few activities that we developed without response to visitor questions or phenological events. Due to the diversity of habitats found on our site’s nature trail, we thought visitors would likely be interested in the wide variety of trees encountered there as well as those found in their own backyard. Therefore, we set up the temporary exhibit described above using six species found on our nature trail.

Fresh samples of tree branches and leaves were very appealing to visitors, bringing life and nature in from the outdoors. The interactive nature of handling and closely inspecting each sample piqued great interest in the subtleties of tree identification. In addition, the trees we selected, such as white cedar and black ash, were not intimidating to the beginner because they can be readily identified. Nearly everyone who explored at least part of the exhibit also tried to identify the unlabeled tree sample. Some visitors expanded their experience by paging the guide in search of a familiar but unidentified backyard tree. The only negative aspect of the display was the daily need to keep some of the samples fresh. We decided that next year we’ll laminate those that wither and curl quickly, such as black ash. Experiment with samples of various tree species in your area to determine which will last the longest in your display.



Fresh samples of tree leaves allow visitors to “feel” their way through the tree identification process.

Resources:

Bates, John. 1995. *Trailside Botany*. Pfeifer-Hamilton Publishers, Duluth, Minnesota.

Forest Trees of Wisconsin, 1990. Bureau of Forestry, Department of Natural Resources, Madison, Wisconsin.

FORSite webpage. www.fw.vt.edu/dendro/Forsite/contents.htm, no author or date.

Little, E.L. 1980. *The Audubon Society Field Guide to North American Trees: Eastern Region*. Random House, Toronto.

Little, Elbert L. 1997. *National Audubon Society Field Guide to North American Trees: Eastern Region* Chanticleer Press, Inc., New York.

Petrides, George A. 1986. *Peterson Field Guides: Trees and Shrubs*. Houghton Mifflin Company, New York.

Natural Resource Skills—Tree Identification. <http://gaia.flemingc.on.ca/~dhendry/nrstrid.htm>, Sir Sandford Fleming College.

Watts, May Theilgaard and Tom Watts. 1970. *Winter Tree Finder*. Nature Study Guild, Rochester (NY).

Let's Go Native

A Naturewatch Activity



Restore nature's balance by landscaping with native wildflowers and grasses.

Let's Go Native

Since the time of European colonization, exotic, or non-native, plants have been invading North America's native ecosystems. In most cases, the spread of these exotics has been detrimental to the health of native plant communities and their associated wildlife. Halting the spread of such non-native species will likely protect native habitats and restore them to their original diverse and healthy state.

Visitors will learn...

- Benefits of locally native plant species
- Problems associated with exotic plant species
- The name and identification of at least three locally native species
- The relationship between native plants and the rest of the natural world

Visitors will be encouraged to...

- Participate in planting native wildflowers and grasses on site
- Participate in the removal of exotic plant species on site
- Go native in their backyard
- Study the use of exotics vs. natives by wildlife on site and in their own backyard
- Support local conservation projects that restore native communities

Implementation:

1. On-site restoration activity
 - Determine an area on site where native wildflowers may be planted.
 - After careful consideration of the species to be planted, order native plants or seeds from a local nursery.
 - Have the area physically prepared for planting, i.e. clearing, weeding, tilling, etc.
 - During time of adequate staffing or when a volunteer can help, display the following invitation at the front desk: "Let's Go Native" — Help restore native wildflowers to the land.
 - The volunteer or staff then engages the visitor(s) in an informal educational opportunity, providing plant or seeds, direction, and necessary tools. Discussion and planting takes place at the chosen planting or weeding site.
2. Present participants with a small thank you such as a wildflower bookmark or note card that contains a poem or other writing relevant to restoring native wildflowers to the natural landscape. Sharing the talents of local artists or center staff makes the gift very special.
3. Provide a list of native wildflowers of the region to visitors who inquire about the activity, whether or not they opt to join in the actual work.

Tips:

- If offering a scheduled session for a number of visitors to plant, be sure to give the program more appeal than just a "planting" program. You could offer a "wildflower identification" walk or a slide program celebrating the beauty and diversity of native wildflowers of the area. Then culminate with the planting activity.
- Have stakes in the ground with labels to show visitors where their plant should be planted.

Optional: Implement the above activity following an exotic species removal session. Plant the natives where the exotics were removed.

Experience/Evaluation:

The diverse habitats of the Northern Great Lakes Visitor Center host an impressive number of native plant species. Unfortunately, disturbance to the site in various forms has resulted in a large number of exotic species invasions, including many common roadside wildflowers and grasses. The center is also home to a large diversity of insects and other wildlife dependent upon the existing vegetation. We used the appealing idea of a native butterfly garden to teach about native and exotic plant species.

To make our garden as visible as possible to visitors in the future, we established the experimental planting area adjacent to our main entrance. We then carefully selected and ordered the species to be planted. Upon their arrival, we prepared the bed for planting by clearing bushes and debris, tilling over the soil and laying out labeled stakes where each species and plant would go. Then on a warm day in October we advertised the opportunity for visitors to enjoy the beautiful day and learn a bit about wildflowers. Nine people eagerly participated in planting our butterfly garden. Since the plants were dormant for the winter and they could not see what the plants look like, we prepared laminated photos of each of the species being planted. Our naturalist introduced each of the species, provided tools and plants, and directed visitors on the most successful planting techniques. The interactive portion of the activity with the visitors took approximately 30 minutes to complete.

The visitors thanked us for the learning opportunity. Smiles of satisfaction and kindled flames of knowledge and enthusiasm were evident as people helped pack up tools and wished us success with our plants. Several said they'd be back the following summer to see how the plants were doing.

Resources:

"Butterfly Gardens and Habitats." www.naba.org/pubs/bgh.html, North American Butterfly Association, 1999.

"Green Landscaping with Native Plants." www.epa.gov/greenacres, USEPA, 1998.

Lady Bird Johnson Wildflower Center. wcv.wildflower.org, 1999.

National Wildlife Federation. www.nwf.org, 1999.

Native Plant Conservation Initiative. www.nps.gov/plants, National Park Service, 1999.

The Nature Conservancy. www.tnc.org, 1999.

Wild Ones, Ltd. www.for-wild.org, 1999.

Restoration of Native Plant Communities

A NatureWatch Activity



Help return vegetation to its
healthy, native state.

Restoration of Native Plant Communities

In most cases, native plants provide a natural, more diverse, and healthier ecosystem for a wider variety of wildlife species, including humans. Techniques successful in eradicating one non-native species may have similarly positive results in controlling other exotics.

Visitors will learn...

- Non-native plants, or exotics, crowd out native vegetation and reduce the diversity and health of affected ecosystems
- Efforts can be made to re-establish native vegetation in areas where exotics have taken over
- Small-scale biological research can determine methodologies for large-scale site restoration

Visitors will be encouraged to...

- Join in the hands-on work involved in researching restoration techniques, such as physically establishing sites or contributing to periodic monitoring
- Learn more about the exotic vegetation in their own backyard and what they can do to restore vegetation native to the area

Implementation:

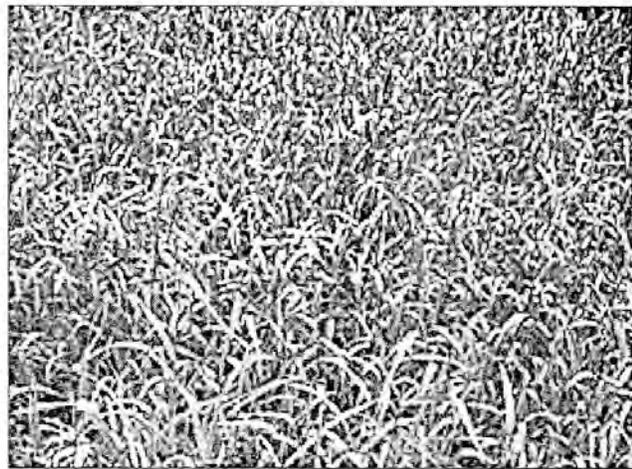
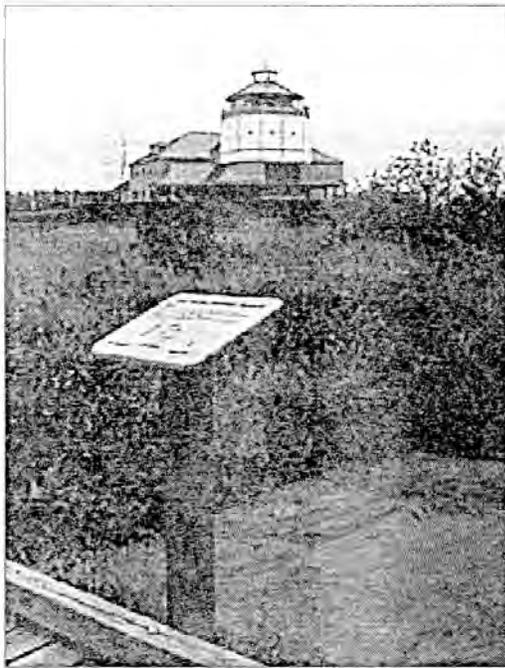
1. Create an on-site restoration demonstration.
 - Determine the exotic species on your site and which should be used to successfully demonstrate restoration of native vegetation
 - In cooperation with a local expert or conservation organization, set up a highly visible site along a trail or other high-traffic area that will field test a specific restoration technique
 - If desirable, establish several sites using varying techniques to determine which is most successful
 - At each site, display signage explaining the research, including its purpose, methodology, and meaning to the visitor
2. Offer sessions when visitors can get involved in setting up research sites and in assessing the results of each technique

Experience/Evaluation:

At our center, this activity originated through a partnership with a local college. As part of a program known as Plantwatch, the college's conservation biology professor and his students established a number of sites on our center's property studying the restoration of native sedges in meadows now dominated by Reed Canary Grass (*Phalaris arundinacea*). One of the study sites was established right off our nature trail and a sign was erected to explain those ideas mentioned above. The restoration process was initiated by using black plastic to cover and kill the exotic Reed Canary Grass. This plastic was later removed and the area planted with sedges and other native plants. The site will then be monitored to see if sedges flourish or if the exotic grass re-invades. If native sedges thrive, it is hoped that Reed Canary Grass can be eliminated completely from the center's meadows using this technique (with future help from visitors and other groups).

Applying this activity in a highly visible area was vital to its success. Visitors could not help but wonder what the black plastic square was and thus read the signage text with great curiosity. In reading, visitors were surprised to learn that this abundant grass was not native to the area and was detri-

mental to the wetland ecosystem. In implementing this activity, be sure to emphasize the relationship between your center and local research groups. We found that visitors were pleased to hear that community groups were cooperating in tackling local problems. This also seemed to increase the visitor's desire to get involved.



A sedge restoration sign along the nature trail (left) interprets a black plastic square used to research the dominating effect of Reed Canary Grass (right).

Resources:

Brown, Lauren. 1979. *Grosses: An Identification Guide*. Houghton Mifflin Company, New York.

Eggers, Steve D. 1987. *Wetland Plants and Plant Communities of Minnesota and Wisconsin*. U.S. Army Corps of Engineers, St. Paul District.

Fassett, Norman C. 1951. *Grosses of Wisconsin*. The University of Wisconsin Press, Madison, Wisconsin.

Lady Bird Johnson Wildflower Center. www.wildflower.org, 1999.

Native Plant Conservation Initiative. www.nps.gov/plants, National Park Service, 1999.

Seeds Abound

A Naturewatch Activity



Get to know seeds and their importance to humans and the rest of the natural world.

Seeds Abound

One of the most overlooked aspects of the natural world is seeds. Plain and inconspicuous, seeds receive little attention compared to the beautiful, brightly colored wildflowers with which they are associated. But without seeds, there would be no wildflowers. Visitors should be enticed to learn the diversity and importance of seeds, especially in reference to reestablishing native plant diversity in American landscapes.

Visitors will learn...

- to identify at least three different plants by their seeds rather than their flowers
- various adaptations plants have for dispersing their seeds
- ways in which humans and animals use seeds
- the difference between exotic and native plants
- how exotics overpower native species through their competitive methods of dispersal

Visitors will be encouraged to...

- look at seeds in their own back yard
- collect, save, and plant native seeds in their own back yard
- find out which native plants are rare in their home region
- volunteer near home to collect and/or plant seeds for conservation organizations involved in native plant community or ecosystem restoration

Implementation:

1. *Nature Hike*

The presenter hikes the nature trail and identifies seeds, berries, nuts and cones readily available along the trail. The presenter then researches facts about the seeds that can be presented in an interpretive, sensory manner so visitors can relate the seeds to other natural aspects of the trail or other aspects of their own life. Examples could include:

- Cedar or pine cone middens (waste piles) showing that red squirrels are present
- Thistle seeds gathered by goldfinches and thistle down used for nesting material
- Jewelweed pods ejecting their seeds when touched
- Beggar ticks sticking to visitors' clothes
- Spikenard berries smelling like root beer
- Tasting blueberries and asking how their seeds are dispersed

2. Temporary Exhibit

- Have several magnification boxes (bug boxes) with different seeds in them. Present the visitor with the challenge of identifying seeds to corresponding pictures of plants.
- Have field guides and magnifying glasses available (demonstrate how to use binoculars upside-down as magnifiers).
- Develop a dichotomous key for the seeds presented.

3. Seed Bingo (Rainy Day Activity)

- Make up ten or more Bingo-type cards with different arrangements of plant (seed) names or photos of wildflowers in bloom. Prepare drawing chits that contain the seed names, show slides of the same plants in seed stage, or simply show the seeds. Enjoy having fun with the visitors. Have them use seeds to mark their matches.

Experience/Evaluation:

As summer progressed and the numerous wildflowers were waning, a plethora of seeds became the stars of nature's show. Many of the flowers visible alongside our boardwalk trail came to seed and offered the attentive hiker an intriguing view into the world of plants. In response to this, we offered a naturalist-led walk as described above.

Turnout for the walk was much higher than expected, with 15 visitors attending. Those who experienced the hike were mesmerized by the diversity of seeds that could be found in such a short time. Our naturalist was able to turn a relatively unpopular topic into a memorable experience for visitors. A few asked if they could bring seeds from the Northern Great Lakes Visitor Center site back home with them. Some who stated they had only brief amounts of time at the beginning of this activity extended their stay, once they realized how diverse and important seeds are to the environment. One visitor asked if there was a list of native seeds that they could plant. We did not attempt the other two implementation techniques due to the success of this nature hike.



Intrigued visitors listen attentively as a naturalist describes the close relationship between thistle plants and American Goldfinches.

Resources:

- Burns, Diane L. 1996. *Berries, Nuts, and Seeds: A Take Along Guide*. NorthWord Press, Minnetonka, Minnesota.
- Hunken, Jorie. 1993. *Botany for All Ages: Discovering Nature Through Activities for Children and Adults*. Globe Pequot Press, Old Saybrook, Connecticut.
- Lingelbach, Jenepher. 1986. *Hands On: Nature: Information and Activities for Exploring the Environment with Children*. Vermont Institute of Natural Science, Woodstock, Vermont.
- Peterson, Lee A. 1977. *Peterson Field Guides: Edible Wild Plants*. Houghton Mifflin Company, New York.
- Stokes, Donald. 1976. *A Guide to Nature in Winter*. Stokes Nature Guide Series. Little, Brown and Company, Boston.

The Perils of Purple Loosestrife

A Naturewatch Activity



Find out how this non-native species
is destroying wetlands and what
you can do to stop it.

the Perils of Purple Loosestrife

Most people would look at purple loosestrife in bloom and acclaim its beauty. But to those who know the truth behind this species, it is an aggressive exotic that disrupts aquatic ecosystems throughout North America. For this reason, the spread of purple loosestrife and other exotics with similar effects should be controlled and prevented.

Visitors will learn...

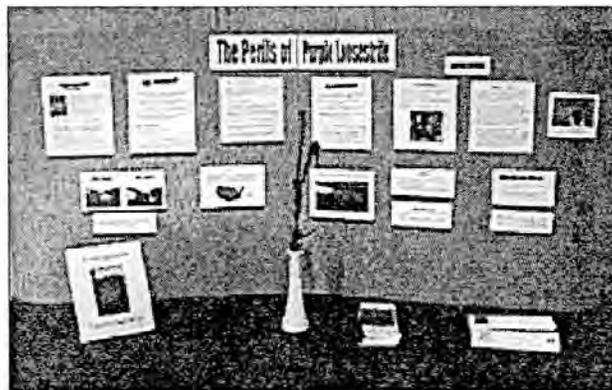
- How to identify purple loosestrife
- The problems caused by purple loosestrife
- Its distribution and dispersal
- Methods for control

Visitors will be encouraged to...

- Be aware of this and other exotic species
- Control purple loosestrife on their property
- Report any sightings of the plant to local conservation agencies

Implementation:

1. Temporary Exhibit (shown below)
 - Purple loosestrife cuttings in vase
 - Brochure, flyer, or handout summarizing the plant's story (See Appendix, page A-9)
 - Response cards allowing visitors to report their sightings
 - Text meeting the objectives described above
2. Invite a guest speaker from a local agency to present information on purple loosestrife.



Experience/Evaluation:

Like most places in the U.S., northern Wisconsin's wetlands are plagued by purple loosestrife. Anticipating the prominence of this exotic species on local roads and highways, we set up a temporary exhibit during the plant's blooming period (late summer in northern Wisconsin). We also invited a guest speaker from the Great Lakes Indian Fish and Wildlife Commission, one local group working regionally to control purple loosestrife. She gave a 20-minute presentation on four occasions throughout the period.

Overall, this activity was very successful. By far, the temporary exhibit was the more successful of the two, receiving quite a bit of attention throughout the duration of the plant's blooming season. The displayed brochures and locator cards disappeared rapidly, with hundreds of these being taken in the one month the exhibit remained on display. The live plant helped to capture attention. On the other hand, the presentations were not well-attended. The four programs (three given during day and one in evening) attracted 3, 7, 3, and 5 visitors respectively. Considering the high volume of visitor traffic during the time of the presentations, this method of education was clearly ineffective in this case. However, the exhibit did a superb job at sparking the interest of visitors and raising their awareness of this perilous plant. This was likely because visitors could spend little time involved in the exhibit but could walk away with a brochure to read on their own time at home or later during their travels.

Resources:

Bates, John. 1995. *Trailside Botany*. Pfeifer-Hamilton Publishers, Duluth, Minnesota.

Niering, William A. and Nancy C. Olmstead. 1998. *National Audubon Society Field Guide to North American Wildflowers — Eastern Region*. Alfred A. Knopf, Inc., New York.

"Purple Loosestrife: What You Should Know, What You Can Do" (brochure). Ontario Federation of Anglers and Hunters, Peterborough, Ontario (PO BOX 2800).

"Purple Loosestrife." www.dnr.state.wi.us/org/land/er/invasive/info/loose2.html Wisconsin Department of Natural Resources, 1999.

"Purple Loosestrife." <http://refuges.fws.gov/NWRSFiles/HabitatMgmt/PestMgmt/PurpleLoosestrife.html>, U.S. Fish and Wildlife Service, 1999.

Vegetation Studies

A Naturewatch Activity



Play with plants and learn why they're important to you and to wildlife.

Vegetation Studies

Plants almost everywhere — so many, in fact, that most people are too intimidated to even attempt to describe them in detail. Despite our general appreciation of the beauty that plants provide, we rarely think of them as we should — as the foundation of life on earth. Understanding plants is part of understanding all life.

Visitors will learn...

- Identification of a variety of plants, including trees, wildflowers, and understory herbs
- Important facts about some common plants
- Why plants in general are so important
- One way of scientifically studying vegetation

Visitors will be encouraged to...

- Use identification techniques for plants in their backyard
- Appreciate the role plants play in our environment
- See the plant world as an inviting and essential piece of the environment

Implementation:

1. Naturalist-led Vegetation Walk
 - The presenter hikes the nature trail and identifies some of the most common and diverse plants along the trail. The presenter then researches facts about the plants, i.e. what visitors “should” know about them. On the hike, have field guides and keys available to use with visitors.
 - During the hike, practice the identification of the prominent and common plants. Demonstrate the use of a dichotomous key and other identification techniques.
 - Once the plant has been identified and key features noted, share with visitors a unique fact concerning the plant and its importance to wildlife or other aspects of nature.
 - Continue in this fashion until a wide variety of plants, including showy wildflowers, tall trees, small shrubs, and understory herbs, are discussed.
 - Throughout the hike echo the theme of why plants in general are important to the environment and to humans especially. Be sure that visitors leave with raised awareness to the “greenery” around them.

Optional: Establish a study site for quadrat vegetation sampling (or some other sampling technique). In teaching this diversity study method across habitats, visitors can participate in data collection and leave with a greater sense of how to assess vegetative communities around them.

Experience/Evaluation:

As previously mentioned, the Northern Great Lakes Visitor Center, like most places, has a huge diversity of vegetation types. In early summer, we offered a vegetation hike to visitors to teach them the basics about plants and plant identification. The activity was implemented exactly as described above and included a study demonstration. We simply made a square out of four sticks and had visitors count the number of different plant species within the quadrat in one habitat versus that in another. Some of the plants discussed on our hike included skunk cabbage (pictured), white cedar, reed canary grass, blueflag iris, tamarack and speckled alder.

In general, this activity, which we offered only once, was moderately successful. Advertisement was similar to that of other hikes and in this case resulted in only two visitors. However, this resulted

in a very in-depth program, as these two enthusiastic visitors were really able to get involved in a hands-on fashion. Their identification skills strengthened throughout the hike as they became more familiar with field guides and how to use a dichotomous key. They were always interested to hear what made each plant unique, such as the smell of a bruised skunk cabbage plant, and sometimes even questioned the use of the plant before our naturalist would even present this information. And while it was clear that the visitors had the most interest in the showy plants, such as blueflag iris, they seemed to have left with a much greater appreciation of the diverse world of plants. Unfortunately, however, it seemed they were relatively unimpressed by the quadrat sampling techniques.



Skunk Cabbage is an intriguing plant for a variety of reasons. Its early-season sprouting and name-giving odor are two of the most appealing to visitors.

Resources:

- Bates, John. 1995. *Trailside Botany*. Pfeifer-Hamilton Publishers, Duluth, Minnesota.
- Benyus, Janine M. 1989. *Northwoods Wildlife: A Watcher's Guide to Habitats*. NorthWord Press, Minocqua, Wisconsin.
- Benyus, Janine M. 1989. *The Field Guide to Wildlife Habitats of Eastern United States*. Simon & Schuster, New York.
- Hunken, Jorie. 1993. *Botany For All Ages*. The Globe Pequot Press, Old Saybrook, Connecticut.
- "Importance of Plants and Plant Communities." www.calpoly.edu/%7Edchippin/celebrate.html no author or date.
- Little, Elbert L. 1997. *National Audubon Society Field Guide to North American Trees: Eastern Region*. Chanticleer Press, New York.
- Niering, William A. and Nancy C. Olmstead. 1998. *National Audubon Society Field Guide to North American Wildflowers — Eastern Region*. Alfred A. Knopf, New York.
- Shanberg, Karen and Stan Tekiela. 1995. *Nature Smart: A Family Guide to Nature*. Adventure Publications, Cambridge, Minnesota.

Backyard Conservation

A Naturewatch Activity



Make your backyard healthier
for you and for wildlife.

Backyard Conservation

The fate of approximately 92 million acres of land in the United States rests in the hands of homeowners. Their use and/or abuse of natural resources has had and will have a huge affect on humans, wildlife, and ecosystem health, not only on those 92 million acres but worldwide. The goal of this activity is to inspire landowners to learn and practice natural resource conservation measures wherever possible, starting in their own backyards.

Visitors will learn...

- Ten conservation practices that can be used in the backyard
- The difference one backyard can make
- Detailed procedures for enhancing backyard wildlife habitat
- Where to get a Backyard Conservation Starter Kit

Visitors will be encouraged to...

- Practice sound conservation techniques in their backyard
- Enhance backyard wildlife habitat
- Order a Backyard Conservation Starter Kit

Implementation:

1. Order the Backyard Conservation Starter Kit from the National Association of Conservation Districts at 1-800-825-5547 ext. 32.
2. In your auditorium, or other video room, play the 9-minute video "Backyard Conservation" on a daily or other scheduled basis.
3. At the conclusion of the video, discuss with visitors the Backyard Conservation project and the components of the Backyard Conservation Starter Kit.
4. Provide a handout of the Backyard Conservation Wildlife Habitat tip sheet (or other conservation practice) and be sure to include a phone number of where the starter kit can be ordered.
5. If possible, plan a follow-up field session on your center's grounds showing a backyard conservation technique.



Some of the components of the Backyard Conservation Kit, including pamphlets, tip sheets, a video, and even a booklet for kids.

Experience/Evaluation:

One of the biggest goals of our summer programming was to give visitors the opportunity to take what they learned here at our center and practice it in their own backyards. This activity did just that. It was easy to set up and easy to encourage follow-up. The brevity and wonderful photography of the video "Backyard Conservation," appealed to nearly all visitors who attended the sessions. Visitors were very interested in the starter kit and some mentioned they thought it would be good for them to get for friends or family members. By providing the wildlife habitat tip sheet included in the Starter Kit, we could pass along one conservation measure that everyone would enjoy. Most people usually want to see wildlife in their backyard, and the results of their practices are visible and very rewarding. The National Wildlife Federation (NWF) also has a good Backyard Wildlife Habitat Kit and certification program. See the NWF website for more details.

Even though visitor attendance at these sessions was low, it was satisfying to help those who were interested to start down the road toward a healthier environment for wildlife and for themselves.

Resources:

A Backyard Wildlife Habitat homepage. www.nwf.org/habitats/, National Wildlife Federation.

Backyard Conservation homepage. www.nhq.nrcs.usda.gov/CCS/Backyard.html, USDA Natural Resource Conservation Service.

Backyard Conservation Starter Kit, available from the National Association of Conservation Districts at 1-800-825-5547 ext. 32.

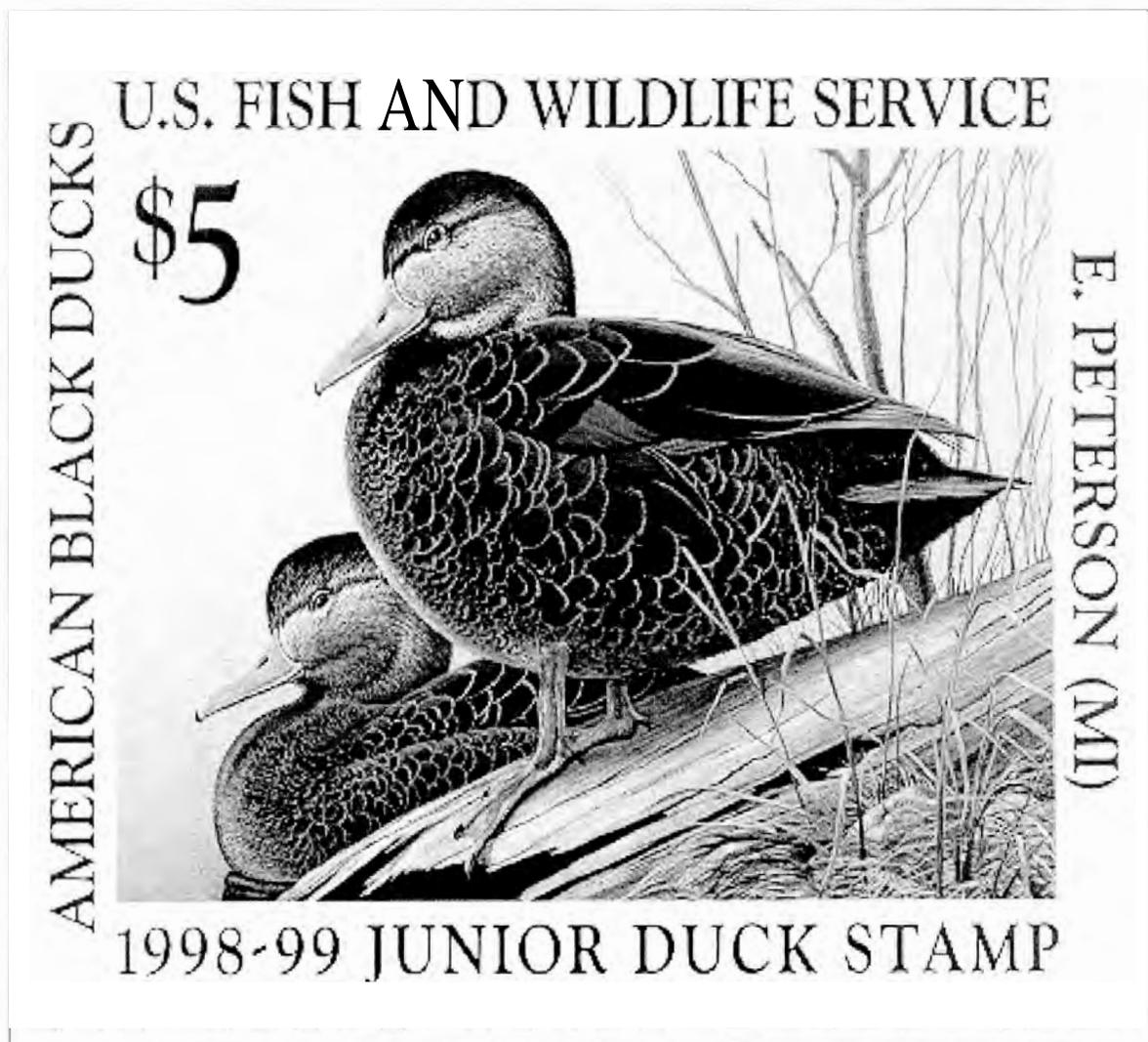
Henderson, Carrol L, Dindorf, Carolyn J., and Fred J. Rozumalski. *Lakescaping for Wildlife and Water Quality*. St. Paul, MN: Minnesota Department of Natural Resources Nongame Wildlife Program.

Henderson, Carrol L. *Landscaping for Wildlife*. St. Paul, Minn.: Minnesota Department of Natural Resources Nongame Wildlife Program.

Merilees, Bill. 1989. *Attracting Backyard Wildlife*. Voyageur Press, Stillwater, Minnesota.

Duck Stamp Success

A Naturewatch Activity



Support wildlife conservation
through the arts.

Duck Stamp Success

The Federal Duck Stamp Program is one of the most successful conservation ventures in existence today. Since 1934, every waterfowl hunter has been required to purchase and carry a stamp annually, and since 1949, a competition has taken place to determine each year's stamp design. Revenues collected from stamp sales are deposited directly into the Migratory Bird Conservation Fund to purchase wetlands and wildlife habitat for inclusion into the National Wildlife Refuge System. Critical to the success of this program is the involvement of all citizens, including hunters and non-hunters alike.

Visitors will learn...

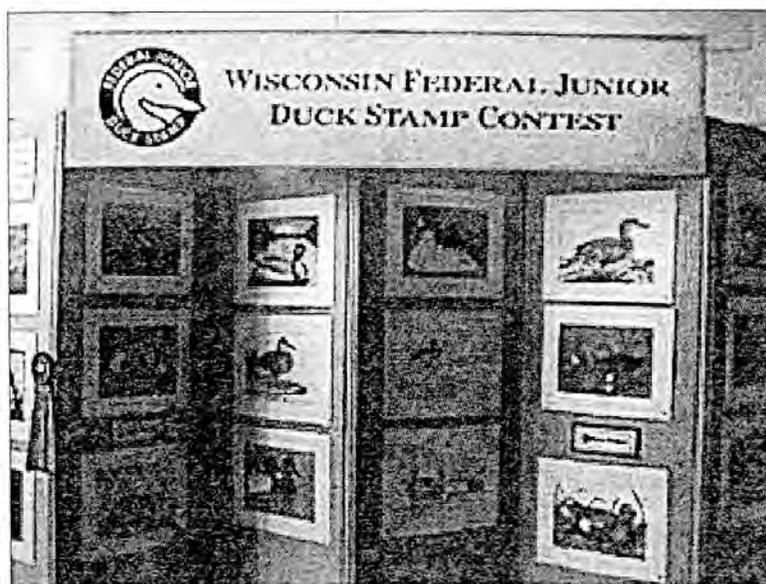
- A history of the duck stamp program
- The purpose of the Junior program
- How to enter in the design competition or otherwise get involved
- The impact of duck stamps in helping wildlife

Visitors will be encouraged to...

- Take pride in junior design entries
- Enter the stamp competition or tell friends how to enter
- Buy a duck stamp to support this conservation program

Implementation:

1. Temporary Exhibit
 - Display your state's federal duck stamp contest entries. Contact your local U.S. Fish and Wildlife Service office for acquisition details.
 - Include a brief summary of the program's history, purpose, and impact on wild lands.
 - Also include brochures or pamphlets that include an entry form for next year's contest and indication of where duck stamps can be purchased.



Experience/Evaluation:

In August 1999, the Northern Great Lakes Visitor Center displayed Wisconsin's Federal Junior Duck Stamp Design Competition entries. Also on display was a two-page summary of the duck stamp and junior duck stamp programs, which included the components listed above. We also provided booklets on the programs and competitions, which included entry forms for the following year's contest.

The exhibit was very attractive and enjoyable to visitors. The abundance of artwork lured in visitors. Once involved, they were simply amazed by the talents of these young artists. Much of the appeal came from the fact that it was young people who had done this detailed and beautiful work. The text included was brief enough to capture and keep their attention, while giving visitors a wonderful overview into a relatively unknown federal program. Perhaps most successful were the booklets containing entry forms. Most visitors took one of these, most often with someone they knew in mind. Grandparents and parents were excited to get one for the young artist in their families. Next year, to better encourage visitors to support the conservation goals of the stamp program, we will provide visitors with direct purchase forms.

Resources:

Federal Duck Stamp Program Home Page. www.fws.gov/r9dso/ U.S. Fish and Wildlife Service, 1999.

Northern Prairie Biological Resources Waterfowl Identification Tools.
www.npwrc.usgs.gov/resource/type_1.htm, Northern Prairie Wildlife Research Center, 1999.

U.S. Department of the Interior, U.S. Fish and Wildlife Service, Federal Duck Stamp Office, 1849 C Street, NW, #MS 2058, Washington, D.C. 20240.

Refuges for Wildlife

A Naturewatch Activity



Fit your backyard into the
National Wildlife Refuge system.

Refuges for Wildlife

Established in 1903, the United States' National Wildlife Refuge System has grown to presently include over 92 million acres of land and water. The importance of these refuges to fish, birds, plants, and other native wildlife cannot be overstated. Equally important are the unofficial refuges found in the backyards of many everyday people all across the country.

Visitors will learn...

- A brief history of the National Wildlife Refuge System
- The values of the System for wildlife and for people
- Details about one local refuge
- The importance of backyard habitat to wildlife
- How to create a backyard refuge

Visitors will be encouraged to...

- Celebrate National Wildlife Refuge week
- Visit refuges and support their existence
- Create or enhance their own backyard refuge (See Appendix, page A-10)
- Show the location of their backyard refuge in relation to those of the National System

implementation:

1. Temporary Exhibit
 - Large map of the National Wildlife Refuge System matted against corkboard
 - Map pins of 5 different colors
 - U.S. Fish and Wildlife Service brochures on visiting Refuges (for handout)
 - Bird mount (or other mounted wildlife specimen typical of refuges)
 - Text describing the objectives listed above
 - Directions for visitors to put the color-coded pins on the map
 - Before and after pictures of at least one sample backyard habitat

Experience/Evaluation:

In the fall of 1999, the nation's newest National Wildlife Refuge was established directly adjacent to the Northern Great Lakes Visitor Center. We implemented the above activity to coincide with the dedication ceremony of the refuge, with national wildlife refuge week, and with the peak migration of many wildlife species that utilize refuges. As always, one of our goals was to give visitors the opportunity to make a difference in their own backyards.

We established our temporary exhibit exactly as described above by contacting our regional office of the United States Fish and Wildlife Service to receive a large map of the Refuge System. This was matted on a number of square foot corkboards, which were then attached to a large exhibit display with Velcro. Text included a brief history about the Refuge System, things to do during Refuge week, facts about the newly established refuge adjacent to our center, and a list of wildlife to be found there. Brochures on visiting refuges were also obtained from our regional USFWS and made available for visitors. Other text described the importance a backyard has as a refuge and details on the four basics of backyard habitat: a) food, b) water, c) cover, and d) places to raise young. Before and after pictures showed the dramatic change backyard habitats can experience with effort of owners. Then we offered map pins of five colors, pressed into a small piece of corkboard, and asked visitors to place one colored pin on the large map to show the level of their backyard refuge. Four colors represented each of the four backyard basics and the fifth color represented all of the above. Lastly, we

included a Trumpeter Swan to increase visual appeal, thinking that this appeal may also make visitors more likely to support refuges, knowing that swans are a species that uses them.

This activity was a great success. Located between our front desk and gift shop, visitors were instantly attracted to this large exhibit, which stands about 8 feet tall and 10 feet wide. The swan and map were immediate attention-getters. For unknown reasons, visitors did not spend much time reading the text on the left side of the map, i.e. the text on Refuge history, Refuge week, or the new Refuge adjacent to our center. They did read the text on the right, i.e. the text dealing with backyard refuges. Perhaps this was due to the proximity to the attention-getting swan, which was also on the right side of the map. Regardless, visitors got very involved with the map and map pins. As hoped, visitors took pride in putting a pin on their hometown to represent their backyard refuge. In this way, they could see how their backyard refuge fit into the nation's entire Refuge System. Visitors often studied the map thoroughly simply because it was a very interesting map showing all of the refuges. They could look and see the direction they were headed in their travels and plan a refuge excursion accordingly. Toward this same end, visitors took the brochures rapidly — nearly 100 were taken in less than two weeks.

An interesting side note is that we received numerous questions regarding the identification of the swan, which we had not labeled. This led to tips on swan identification and a more personal experience between visitors and our staff. To our surprise, however, we observed that many people, including a few waterfowl hunters, thought the bird was a snow goose. Unlike the threatened swan, snow geese can be hunted. This suggests that we need a program for hunters and others on waterfowl identification.

Resources:

Backyard Conservation homepage. www.nhq.nrcs.usda.gov/CCS/Backyard.html, U.S. Department of Agriculture Natural Resource Conservation Service.

Backyard Wildlife Habitat homepage. www.nwf.org/habitats/, National Wildlife Federation.

Backyard Wildlife Habitat Kit, available from National Wildlife Federation at 410-516-6583

Merilees, Bill. 1989. *Attracting Backyard Wildlife*. Voyageur Press, Stillwater, Minnesota.

National Wildlife Refuge System homepage. <http://refuges.fws.gov/>, U.S. Fish and Wildlife Service.

“National Wildlife Refuge System: Promises for a New Century.” U.S. Fish and Wildlife Service booklet, post-1996, available from 1-800-344-WILD.



Visitors gain a sense of pride by incorporating their backyard refuges into the National Wildlife Refuge System.

Field Guides to Nature

A Naturewatch Activity



ALASKAN BROWN BEAR

Open the door to education
through identification.

Field Guides to Nature

The natural world is multi-faceted and very complex. Despite the enormity of its components, humans have still developed tools and aids to identify as many of these parts as possible. To the professional, identification is the foundation for all study; for the amateur, it intrigues and satisfies. When used properly, field guides to nature open the door to inquiry and conservation.

Visitors will learn...

- The benefits of identifying nature
- Different formats of field guides and the proper use of each
- The numerous subjects of nature covered by field guides

Visitors will be encouraged to...

- Identify as many components of nature as possible, both in the field and in their own backyard
- Use identification as a tool for teaching others about each of nature's parts

Implementation:

1. Offer a naturalist-led walk that will describe and practice the use of field guides and the objectives described above. Include concepts such as:
 - why identify
 - becoming familiar with your guide prior to going into the field
 - photo guides vs. illustrated guides
 - the importance of combining text with pictures
 - use of a dichotomous key
2. Distribute a handout listing the subjects and types of field guides available and where they can be purchased.

Experience/Evaluation:

From previous walks, we have casually noted that many visitors are unfamiliar with field guides or have one but don't use it effectively. Therefore, we developed this activity to teach this fundamental yet often overlooked skill. Fortunately, our nature trail samples a wide variety of habitats, offering ample opportunity to study trees, birds, wildflowers, insects, mushrooms, and other wildlife.

Visitor attendance for this activity, when advertised as an opportunity to learn how to use field guides, was marginal at best. We offered a naturalist-led "field guide" walk on three busy days in July. Two of the walks attracted no visitors, and one walk attracted only two. However, these two visitors were new to nature watching and very interested in what types of field guides there are, where to get them, how to use them, and where to learn more. Our naturalist brought several different types of field guides along on the walk, and the visitors were delighted to practice their new identification methods and skills. After the walk a handout was distributed which listed all of the Peterson Field Guides, Peterson First Guides, Peterson Field Guide Coloring Books, Peterson Flashguides, and Audio/Video Aids. It also included the Peterson Field Guide Series website and phone number. These visitors were extremely excited to receive this resource and left with an eagerness to get more involved in the natural world.

Interestingly, whenever "Nature Walks" are offered (and field guide use is incorporated as a tool), many people express gratitude for having learned this useful skill and follow up by scouting the bookstore for a field guide to get them started.



Field guides and binoculars are the perfect tools for viewing, understanding and appreciating nature.

Resources:

Benyus, Janine M. 1989. *Northwoods Wildlife. A Watcher's Guide to Habitats*. NorthWord Press, Inc., Minocqua, Wisconsin.

Benyus, Janine M. 1989. *The Field Guide to Wildlife Habitats of Eastern United States*. Simon & Schuster, New York.

Finders and Guides, Nature Study Guild, Rochester, New York.

National Audubon Field Guide Series, multiple subjects, Alfred A. Knopf, New York.

National Audubon Society's Pocket Guides, multiple subjects, Chanticleer Press, New York.

Peterson Field Guide Series, www.Detersononline.com, (800)225-3362.

Peterson First Guide Series, multiple subjects, Houghton Mifflin Company, New York, (800)225-3362.

On Trail

A Naturewatch Activity



Take a relaxing stroll into the beautiful and mysterious world of nature.

On Trail

Nature trails are essential in providing low-impact accessibility to the increasing number of people seeking to enjoy the natural world. The experiences they provide are exhilarating, enlightening, and often memorable. Increasing awareness of such trails and their attributes will increase visitors' appreciation and conservation of the environment.

Visitors will learn...

- that the center has a nature trail
- that binoculars and field guides are available for check-out
- what types of wildlife have recently been seen on trail
- where the trailhead is

Visitors will be encouraged to...

- walk the trail and note the diversity of nature along the way
- use binoculars to bring nature closer while respecting many animals' tolerance boundaries
- seek out additional nature trails at other locations
- support efforts to balance recreational and conservation needs

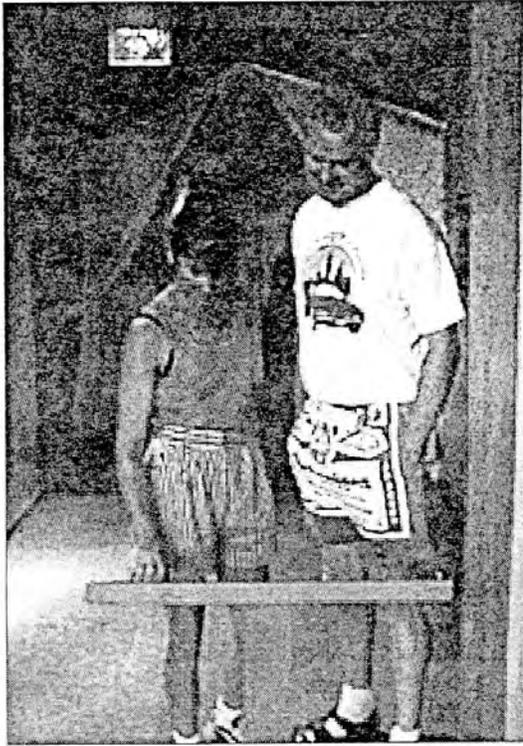
Implementation:

1. Establish a station in an area of concentrated visitor traffic that will advertise your on-site nature trail or a nearby, accessible trail, including:
 - A map of the trail showing the habitats it passes through
 - A description of its length and how long it will take to walk
 - A clear indication of where the trail can be accessed
 - A list or log book of recent wildlife sightings on the trail (See Appendix, page A-11)
2. If on site, provide binoculars and field guides that can be checked out for use on trail.

Experience/ Evaluation:

The Northern Great Lakes Visitor Center has a 0.75-mile boardwalk trail sampling a wide variety of northern habitats. Inside, we have a permanent station showing a map of the trail, its length, and the types of habitats to be encountered. We also have an adjacent temporary station directing visitors to the trailhead and to the front desk for check out of binoculars and field guides. Lastly, we have a list of some recent wildlife sightings on trail, including birds, butterflies, wildflowers, and others. This list is updated every two weeks.

The boardwalk trail has been received enthusiastically by visitors. More importantly, our techniques employed to get visitors out on the trail have also been successful. By seeing a map and reading about the unique habitats to be encountered, visitors can quickly determine if the walk is something they want to do. Knowing the relative ease and brevity of our boardwalk has also resulted in many visitors taking the short time to enjoy the outdoors. Visitors were also pleased to read about the exciting creatures they might encounter during their brief hike. However, we've noticed that the binoculars and field guides were not checked out very often. Perhaps visitors didn't personally discover the usefulness of binoculars for seeing wildlife up close, or maybe they just didn't want to make the extra effort in asking for these items at the front desk prior to their walk. Offering naturalist-led walks (with binoculars) helps to open up this new world to many visitors,



Immediately after exiting the main exhibit hall, visitors encounter information about the trailhead, recent trail sightings, and where to check out binoculars.

Resources:

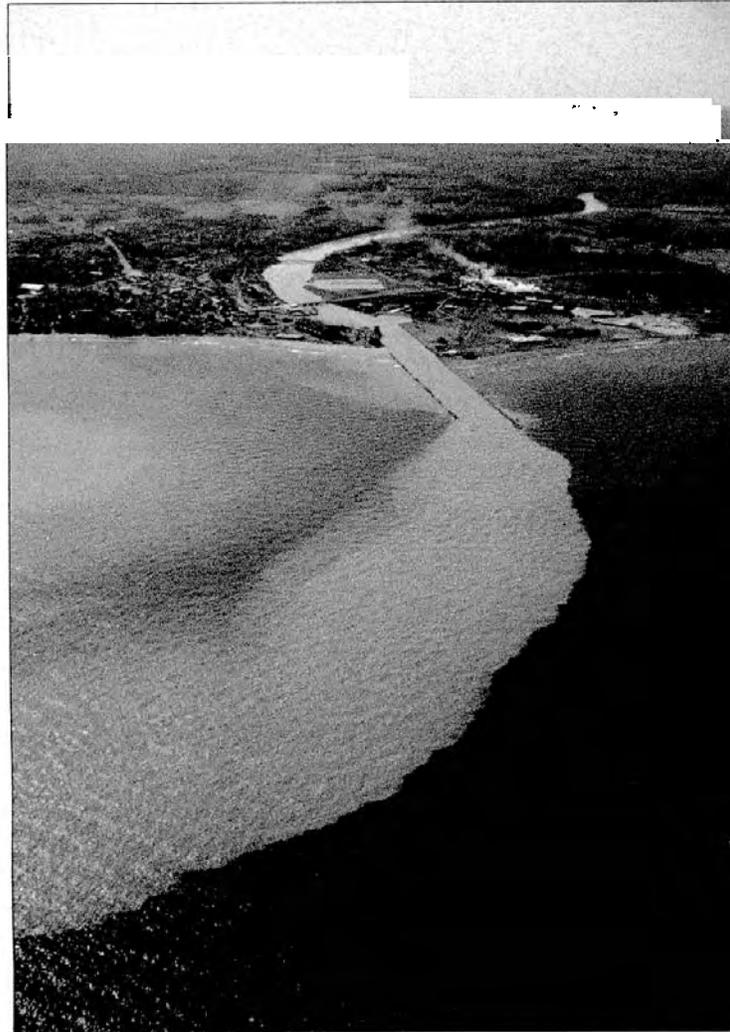
Defenders of Wildlife (Edited by Wendy E. Hudson). 1992. *NatureWatch*. Falcon Press Publishing Co., Helena, Montana.

Gross, Michael, Trapp Suzanne, and Ron Zimmerman. 1994. *Signs, Trails, and Wayside Exhibits: Connecting People and Places*. UW-SP Foundation Press, Stevens Point, Wisconsin.

Peterson Field Guide Series, www.Detersononline.com, (800)225-3362, Houghton Mifflin Company, New York.

Runoff

A Naturewatch Activity



© John and Ann Mahan

Learn the effects of heavy rains on water quality and drainage.

Runoff

Widely known as the largest and cleanest of all the Great Lakes, Lake Superior is the destination of many travelers seeking comfort and relief from the summer heat. But when these visitors reach this destination, they are occasionally surprised to find that the waters of Lake Superior do not appear as pristine as they had anticipated. After heavy rainfall, the Chequamegon Bay of Lake Superior turns red from red clay runoff transported by rushing streams from the surrounding land. People want to know why the bay is red. The answer is simple ... or is it?

Visitors will learn...

- Why the lake water is not blue
- The effects of the brown/red water on wildlife
- The processes governing the geology and hydrology of this region

Visitors will be encouraged to...

- Swim in Lake Superior despite its color
- Uphold the beautiful reputation of Lake Superior
- Recognize the relationship between soil, water, and wildlife
- Examine how land use practices in their home region may similarly affect their water resources

Implementation:

1. Explanation of storm effects
 - After a heavy rain, anticipate visitor questions related to the storm's effects.
 - Write an explanation on a flipchart or markerboard near the visitor entrance and front desk.
 - a) Include visuals whenever possible.
 - b) Keep the text short and terminology simple.
 - Include samples that can help people understand the storm's impact (soil, vegetation, contamination, etc.).
 - Prepare front desk staff with information to help them verbally explain evidence of the storm's impact; prepare staff to address any underlying environmental problems that have been revealed or worsened by the storm.

Experience/Evaluation:

The summer of 1999 was one of wettest on record in the western Lake Superior region. Severe storms dumped heavy rain on short intervals throughout June and July causing increased water levels on Chequamegon Bay, Lake Superior, and the adjacent Fish Creek Sloughs. But more noticeable to most visitors was the deep red color of the lake waters visible from the main highway running along the shoreline of the bay. This red was nothing like the sparkling blue that most expected. Visitor after visitor came into our center and the first thing they said was, "Why is the water so red?" The question became so common on such a regular basis that our front desk staff created a large sign explaining the mechanism for the red water.

Our sign succinctly stated that the red color was due to red clay, the predominant component of this region's topsoil. When it rains heavily, this topsoil is disrupted and the stirred clay disperses throughout the floodwaters of the region. These floodwaters drain into the Chequamegon Bay of Lake Superior. We also explained that red clay does little to alter the quality of the lake's water or the lives of the wildlife inhabiting it, although it may make hunting a bit more difficult for a fish-eat-

ing bird.

Throughout the summer, visitors were constantly pleased to learn why the water was red. Nearly every visitor who came in had no idea that red clay was such a large component of the geology of the Lake Superior region. While wildlife was often not their concern, they were always curious as to how this affected the cleanliness of the water. To them, blue meant clean and brown meant dirty. Our front desk staff did a great job of teaching visitors that this wasn't necessarily true. Here, a valuable lesson evolved from some heavy rains and a handy method for explaining their effects.

In retrospect, the simplicity of the answers we offered didn't capitalize on the "teachable moment" in terms of imparting deeper understanding of land use issues and how they impact our water systems. We'll be thinking this one through before the next summer's big rains come. How to impart some insight to the passerby who just stopped by to find out why the bay is red ... tree harvesting methods? ATV use in sensitive areas? Loss of native vegetation along streambanks?

Resources:

Design of Stormwater Wetland Systems. Available from Metro Washington's Council of Governments at 202-962-3256.

Firehock, Karen and Jacqueline Doherty. 1995. *A Citizen's Streambank Restoration Handbook.* Izaak Walton League of America, Gaithersburg, MD.

"Water Quality Information." <http://water.usgs.gov/owq/> U.S. Department of the Interior, U.S. Geological Survey, 1999.

Walking Alone

A Naturewatch Activity



Experience nature at your own pace.

Walking Alone

While nature trails do provide quality experiences for visitors, their full potential is not realized without a higher level of interpretation. Often it is a naturalist or environmental educator who verbally supplies this expertise during guided walks and other activities. This method, however, is often incomplete and time-consuming. Everyday visitors utilizing nature trails on their own time need continuous interpretation. Self-guided nature trails meet this need.

Visitors will learn...

- The importance of habitats and communities in nature
- Wildlife and habitat relationships
- A few native communities/habitats
- The value of a personal, low-impact nature experience

Visitors will be encouraged to...

- Maximize their nature experiences by proceeding softly and listening attentively
- Utilize all five senses during their experience
- Pay closer attention to the less-conspicuous aspects of nature
- Recognize the value of each community type, while supporting and promoting the conservation of each

Implementation:

1. Self-guided Nature Trail
 - On your nature trail or similar natural area surrounding your center, provide interpretive signage at established stops or stations.
 - If desirable, include the interpretive text at each station.
 - Another option is to number each station and provide visitors with a self-guiding brochure or booklet that contains the text.
 - In either case, include all of the concepts listed above, being especially sure to fit the trail experience into a larger whole.
2. Establish a station in an area of concentrated visitor traffic that will advertise your trail and, if applicable, provide necessary trail booklets as well as:
 - A map of the trail showing the habitats it passes through
 - A description of its length and how long it will take to walk
 - A clear indication of where the trail can be accessed
 - A comment sheet for visitor feedback regarding the trail, the booklet, and their trail experience



Experience/Evaluation:

The Northern Great Lakes Visitor Center has a 0.75-mile boardwalk trail sampling a wide variety of northern habitats. Due to its relatively recent completion, the trail does not yet have any interpretive signs. While it is anticipated that permanent signs will be incorporated shortly, we felt the need to quickly develop a temporary form of self-guiding interpretation. We did this through a trail booklet and nine stops along our trail loop.

Stops were designated at areas of interest covered during previous naturalist-led walks. A diversi-

ty of interesting and conspicuous topics was chosen, ranging from the aroma of balsam poplar trees to the effects of exotic vegetation. It was critical that the booklet text be unrelated to phenology, *i.e.* that it applied three seasons of the year (excluding winter). Therefore, we made native community or habitat types the focus, as opposed to particular flowers, birds, or other things that change with the seasons. Stops were marked using aluminum numbers screwed onto the lower railings of the boardwalk. We also tied orange ribbon around the railings to make the stops more conspicuous. At the trailhead, we had a permanent station showing a map of the trail, its length, and the types of habitats to be encountered. We included trail booklets and a comment sheet. The booklets were simply made from folded 8 ½" x 11" sheets and included black-and-white drawings and a map of the trail and stops. Because of the large volume of visitors using the books, we asked that they return the books after using them on trail.

Visitors using our trail and trail booklets were extremely pleased with their experience. The comment sheet revealed that they found it very relaxing, very informative, and an overall good time. Of over 30 comments, all were positive feedback. A few gave suggestions that we somehow label vegetation along the trail. We have planned this for the future. We suspected that the aluminum numbers and orange ribbon were not visible enough, but no comments were received saying that the stops should be better marked. Our biggest problem was hardly a problem at all-visitors liked the booklets so much that they didn't return them. Some visitors didn't even walk the trail and took booklets anyway. It seems that this relatively simple venture was extremely interesting and very educational for most visitors.

Resources:

- Defenders of Wildlife (Edited by Wendy E. Hudson). 1992. *NatureWatch*. Falcon Press Publishing Co., Helena, Montana.
- Gross, Michael, Trapp Suzanne, and Ron Zimmerman. 1994. *Signs, Trails, and Wayside Exhibits: Connecting People arid Places*. UW-SP Foundation Press, Stevens Point, Wisconsin.
- Ham, Sam H. 1992. *Environmental Interpretation: A Practical Guide for People with Big Ideas and Small Budgets*. North American Press, Golden, Colorado.
- Lewis, William J. 1980. *Interpreting for Park Visitors*. Eastern Acorn Press, Boulder, Colorado.
- NPS Trails Management Handbook*. 1988. U.S. Department of the Interior, National Park Service, Denver Service Center, Denver, CO. (US Gov. Print. No. 1988-576-279/85200)

Wildlife Viewing Sites

A Naturewatch Activity



Better your chances of seeing wildlife by visiting the right places at the right times.

Wildlife Viewing Sites

The world around us is a diverse place supporting a huge variety of wildlife. For many, viewing this wildlife in its natural setting is an awesome and inspiring experience. Through this experience comes the foundation for appreciation, understanding, and conservation of wildlife and the rest of the natural world.

Visitors will learn...

- Local wildlife viewing areas
- What type of habitat and wildlife to expect
- How to get to each site

Visitors will be encouraged to...

- Take advantage of local viewing hotspots
- Ethically and responsibly view wildlife
- Support efforts to fund wildlife programs and protect wildlife and its habitat
- Have fun in these unique places

Implementation:

1. Visit each of the sites you will be promoting to visitors; be sure the sites are safe and accessible.
2. In an area of high visitor traffic, place a large sign with a brief (—50 word) message explaining the objectives listed above for ONE viewing site.
 - Include a handout giving directions to each site.
 - On either a daily or weekly basis, change the viewing site to reduce impact from visitors to any one site and expose a variety of habitats and wildlife to numerous visitors.
 - If time allows, you may wish to feature several viewing sites at a time.
 - You may also wish to develop a more elaborate advertisement of the sites, perhaps in the form of a temporary exhibit.

Experience/Evaluation:

The Northern Great Lakes Visitor Center sits in the center of an incredible diversity of wildlife habitats, ranging from suburban wetlands to a national forest. These habitats provide ample wildlife viewing opportunities in proximity to our center, allowing visitors the rare opportunity to expend little effort in seeing the natural world. To make these opportunities a reality while keeping our time expenditure at a minimum, we implemented this activity in its simplest form.

In order to catch visitors' attention, we hand-wrote our sign with colored markers on a standing meeting-board placed next to our front desk directly in the flow of visitor traffic. The sign included an attractive color wildlife photograph and the words were written with a colored marker. We advertised only one site at a given time. In some cases, directions were simple enough to include within the message; in others, visitors were directed to the front desk for detailed directions. We changed the sign on a weekly basis, but found that strict guidelines need not be met here. An example of one of our signs follows:

"Located 2 miles east on U.S. Highway 2, Prentice Park is the perfect place for a brief visit into Ashland's natural world. Two observation platforms, hiking trails, and a deer yard offer ample opportunities to see herons, ducks, otters, mink, white-tailed deer, and a variety of wildflowers."

Feedback was generally positive concerning this activity. Most important was location, location, location. Because the sign was directly in the flow of visitor traffic, they couldn't help but read it. Visitors found the brief, colorful message and simple text appealing. Many visitors were delighted to read about the interesting wildlife that could be found locally.

It's hard to determine how many visitors actually followed **up** on our suggestions. The first day the above sign was up, a visitor asked about the chances of seeing otters there. After learning the chances were good, she was definitely going to visit. Other than that, we didn't receive any further inquiries about that site. Evaluation on another featured site was easier because numerous visitors asked for a handout with directions. With relatively little effort, this simple activity can be highly successful.

Resources:

Defenders of Wildlife. 1995. *National Wildlife Viewing Guide Series*, Falcon Press, Helena, Montana.

Defenders of Wildlife (Edited by Wendy E. Hudson). 1992. *NatureWatch*. Falcon Press, Helena, Montana.

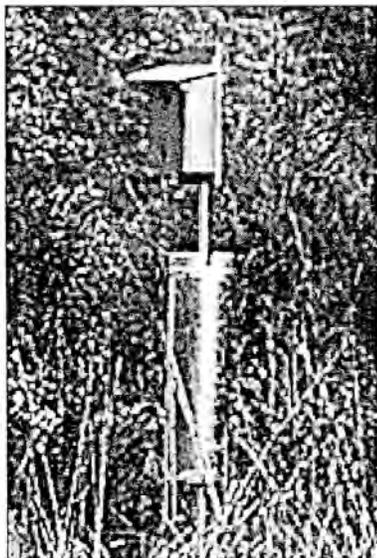
Duda, Mark Damian. 1995. *Watching Wildlife*. Falcon Press, Helena, Montana.

Appendix

Backyard Birdhouses

Some Tips For Better Birdhouses

- ❖ Use unfinished wood — chemical fumes are harmful to birds
- ❖ Drill small drainage and ventilation holes in the bottom and sides of the box
- ❖ Include a rough surface on the inside under the entrance hole to allow nestlings easy access out of the box
- ❖ Do NOT make an outside perch under the entrance hole
- ❖ Clean your nest boxes annually
- ❖ Use baffles and guards to deter predators (as shown below)
- ❖ Learn more about the birds you are trying to attract and what it takes to attract them



Birding By Ear

Common Birds You Might Hear in Your Backyard

Mourning Dove

Yellow Warbler

Downy Woodpecker

Red-winged Blackbird

Red-bellied Woodpecker

Common Grackle

Eastern Phoebe

Northern Cardinal

Blue Jay

Purple Finch

American Crow

House Finch

Black-capped Chickadee

American Goldfinch

White-breasted Nuthatch

Chipping Sparrow

House Wren

Song Sparrow

American Robin

And many others...

Cedar Waxwing

To study bird songs, check out these cassettes and CDs:

- ❖ Thayer's Birding Software (CD)
- ❖ Stokes Guide to Bird Songs and Calls (CD)
- ❖ Peterson's Birding By Ear (Cassette or CD)

Hawks, Hawks, Hawks

Hawk Ridge Nature Reserve

Why so many hawks?

During the fall, migrating hawks concentrate in impressive numbers at the western tip of Lake Superior. Reluctant to cross a large body of water, the hawks, migrating from as far away as the Arctic towards wintering areas as distant as South America, funnel down the North Shore along the bluffs at Duluth. Here the hawks ride the updrafts which form along the ridges parallel to the lake shore.

What to see?

Beginning in mid-August with American Kestrels, Sharp-shinned Hawks and Broad-winged Hawks, migration continues into December with the last of the Red-tailed and Rough-legged Hawks, Northern Goshawks and eagles. Peak migration occurs from mid-September to late October, when thousands of hawks can be seen in a single day. Of the 20 species of hawks that have been seen at Hawk Ridge, the Ferruginous Hawk and the Gyrfalcon are among the rarest.

When to go?

The greatest number of hawks are seen at Hawk Ridge on partly sunny days with west or northwest winds, conditions that usually follow the passage of cold front. Days with east winds are almost always uneventful. Generally, between 9 a.m. and 3 p.m. is the best time of day to visit. Regardless of whether you see many hawks, this is still a great place to visit (and it's free!).

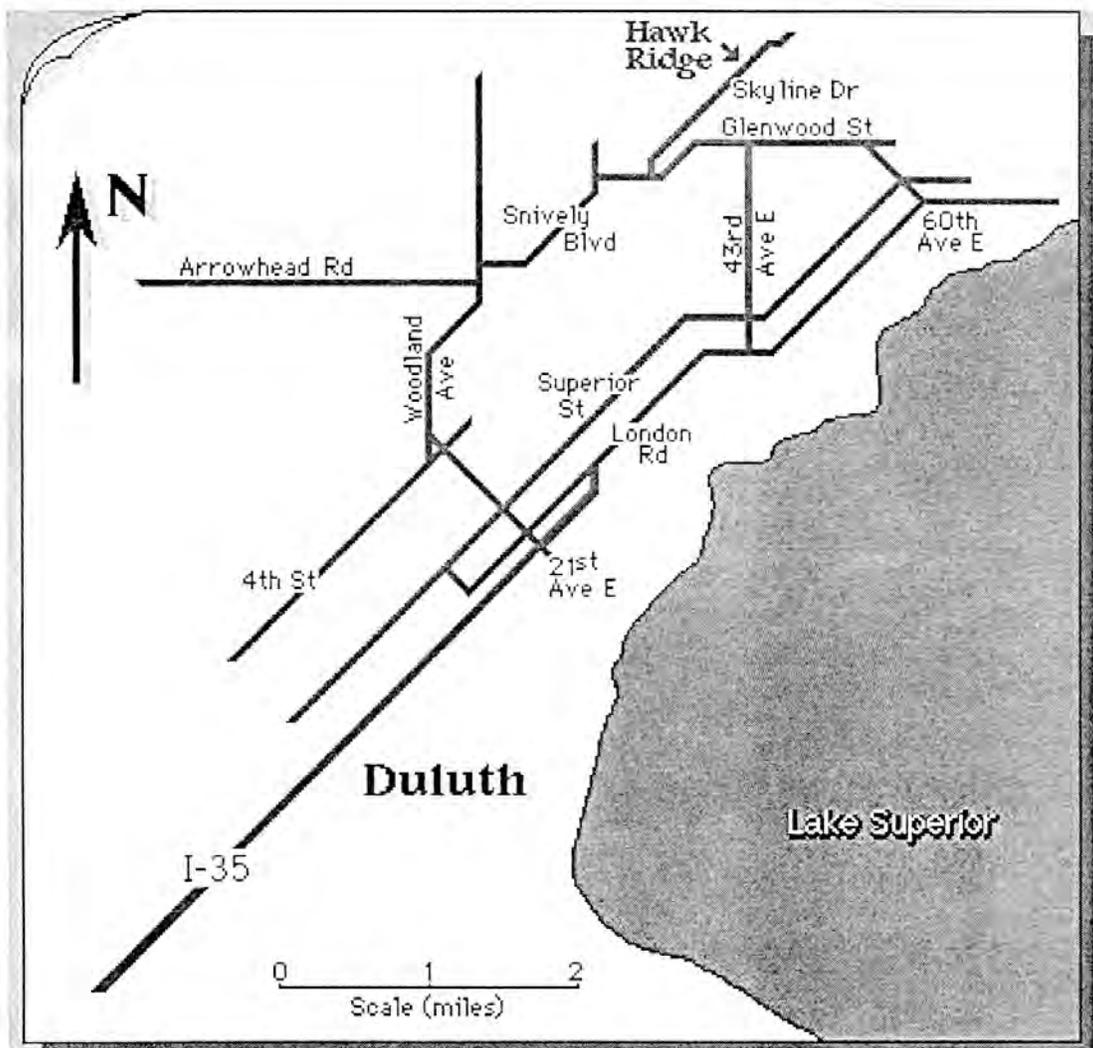
What else does Hawk Ridge have to offer?

From late August through mid-October a naturalist is available to serve the many needs of visitors. Available at most times are slide presentations and denionstrations involving banded raptors for school and other groups, a display case providing information for visitors, scheduled visits to an observation blind at the banding station, an October Weekend featuring identification workshops and field trips, and informal hawk identification classes on some weekends. At

any time, numerous hiking trails weave their way over and around the bluffs.

How to get to Hawk Ridge Nature Reserve

From Ashland, take US 2 west to Highway 53 in Superior. Follow 53 north across the Blatnik Bridge into the city of Duluth. Exit at Interstate 35 North and take this to its end at London Road, which is also Highway 61 here. Make a right onto London Road and travel approximately 2 miles. Turn left onto 43rd Ave and take this to its end at a third stop sign. Turn left here onto Glenwood Street and travel about ¼ mile up the hill to somewhat hidden road on the right. Make this hard right onto Skyline Drive and go about 1 mile (about half a mile beyond the end of the pavement and the first overlook) to the Main Overlook.



Hummingbird Heaven

Hummingbirds

- ❖ If you see a hummingbird at the feeder in front of you, be sure to record it below. Your sightings will determine the importance of our feeder to migrating hummingbirds.
- ❖ The only species you're likely to see in the eastern U.S. is the Ruby-throated Hummingbird. Males are green on the back and whitish underneath with a ruby-red throat, or gorget. Females and immatures look very similar but lack the red throat.
- ❖ If you see a hummingbird that looks *rufous*-colored instead of green and white, report it immediately to the front desk. This could be a *Rufous* Hummingbird, a western species that is very rare in Wisconsin.

Name	Date	Time of Day	Number	Sex
Louis Villoro	9/7/1999	8:05 am	1	Female

Butterfly Bonanza

Butterfly Nectar Plants

Daisies
Aster
Azalea
Butterfly weed
Milkweed
Coneflower
Lantana
Phlox
Zinnia
Buddleia
Marigold
Lilac
Mints
Thistle
Clover

Caterpillar Food Plants

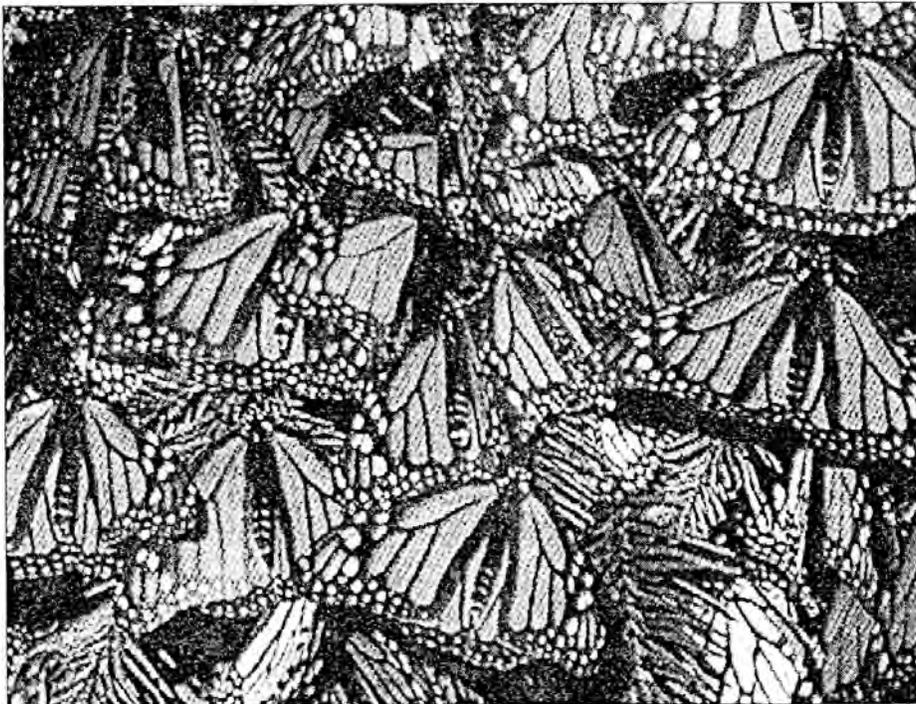
Birch
Butterfly weed
Milkweed
Dill
Hollyhock
Senna
Sorrel
Spicebush
Willow
Parsely
Willow
Dogbane
Cow Parsnip
Thistle
Grasses

Monarch Magic

Monarch Migration

Have you seen a monarch butterfly recently?
Wish it luck!

- ❖ Recently emerged adults fly to Central Mexico for winter.
- ❖ As many as four million monarchs per acre roost there in mountaintop fir trees.
- ❖ This forested habitat is threatened by logging and development activities.
- ❖ The wintering adults' offspring will ultimately reach the Great Lakes the following spring.



Blueberry Delight

Local Blueberry Farms

Good Earth Gardens
Rt.1 Box 196
Bayfield, WI 54814
(715) 779-5564

Blue Vista Farm
County Trunk J
Bayfield, WI 54814
(715) 779-5400

Highland Valley Farm
Rt.1 Box 212, Valley Rd.
Bayfield, WI 54814
(715) 779-5446

Hillcrest Orchards
Rt.1 Box 202
Bayfield, WI 54814
(715) 779-5756

Recipes

(from Bob Krumm's *The Great Lakes Berry Book*)

Crazy Crust Blueberry Pie

Pastry:

- ◆ 1 cup all-purpose flour
- ◆ $\frac{3}{4}$ cup water
- ◆ 2 tablespoons sugar
- ◆ $\frac{2}{3}$ cup shortening
- ◆ 1 teaspoon baking powder
- ◆ 1 egg
- ◆ $\frac{1}{2}$ teaspoon salt

Filling:

- ◆ 1 quart blueberries
- ◆ 1 teaspoon cinnamon
- ◆ 1 cup sugar
- ◆ $\frac{1}{4}$ teaspoon nutmeg

Preheat oven to 425 degrees. In small mixer bowl, combine all the pastry ingredients. Blend well at lowest speed, then beat 2 minutes at medium speed. Spread batter in 10- to 9-inch deep-dish pan. To prepare filling, combine blueberries, sugar, and spices. Carefully spoon filling into center of pastry batter. Do not stir. Bake 40 to 45 minutes until crust is golden brown.

— Emily Krumm

Celebrating Wildflowers

Orange Hawkweed

DID YOU KNOW?

- ❖ Hawkweeds are members of the Daisy family.
- ❖ The name *hawkweed* is derived from a folktale that hawks ate this flower to aid their vision.
- ❖ Orange Hawkweed is also known as “devil’s paintbrush” because it invades farmers’ fields and spreads quickly.
- ❖ It dominates the landscape by secreting a toxin to inhibit other plants around it.
- ❖ While two less prevalent hawkweed species are native to the North Woods, Orange Hawkweed is not.
- ❖ One way of controlling it is to fertilize the soil to produce rival plants that will crowd it out.

The Perils of Purple loosestrife

Stopping the Spread

The best way to stop the invasion of purple loosestrife is through prevention. The Wisconsin Department of Natural Resources recommends the following steps:

1. Be on the lookout for pioneering plants and remove immediately.
2. Rinse off equipment, boats and trailers, clothing, and footwear before moving between areas.
3. Remove and destroy all loosestrife planted in gardens.
 - ❖ **As** of 1987, state law bans the sale, offering for sale, distribution, planting, or cultivation of purple loosestrife.
 - ❖ Use native alternatives for your garden with similar color, structure, and height. These include: *Gayfeather; joe-pye weed, marsh milkweed, ironweed, bergamot, lobelia, salvia, and beardstongue.*
 - ❖ Note: No sterile varieties of purple loosestrife exist!

Refuges for Wildlife

Create your own refuge!

Simply provide the four basic wildlife needs:
food, water, cover, and places to raise young.

- 1) Food: Plant native food-producing flowers, shrubs, and trees, and put up bird feeders.
- 2) Water: Provide a wetland, pond, or birdbath.
- 3) Cover: Provide dense shrubs, hollow logs, rock piles, brush piles, evergreen trees, and dense grassy patches.
- 4) Places to Raise Young: Put up birdhouses, bathhouses, and squirrel boxes. Leave dead trees standing to provide natural cavities. Provide dense shrubbery, small ponds, and insect-friendly plants.

On Trail

Recent trail sightings:

(updated September 29, 1999)

Birds

- Great Blue Heron
- ◆ Red-tailed Hawk
- Golden-crowned Kinglet

Insects

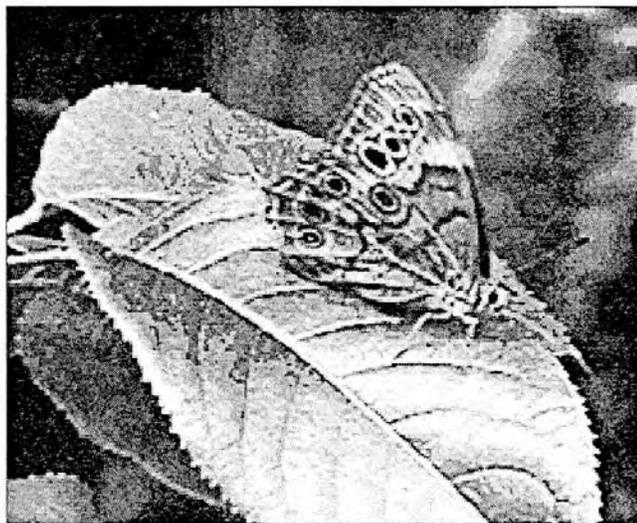
- Clouded Sulphur
- Giant Water Bug
- ◆ Underwing moths

Wildflowers

- Asters
- ◆ Goldenrod
- Red Clover
- Virginia Creeper
- Bird's-foot Trefoil

Other

- ◆ Spring Peeper
- Red Squirrel
- Spiders
- ◆ Pretty fall colors



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