

U.S. Fish & Wildlife Service

Missisquoi

National Wildlife Refuge Educator's Guide

Missisquoi
National Wildlife Refuge
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Federal Relay Service
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Welcome!

Welcome to Missisquoi National Wildlife Refuge. The 6,592-acre refuge includes most of the Missisquoi River delta where it flows into Missisquoi Bay. The refuge consists of quiet waters and wetlands which attract large flocks of migratory birds. It serves as a popular destination for birdwatchers, wildlife and nature enthusiasts, environmental education classes, photographers, fishermen, and hunters. The U.S. Fish and Wildlife Service and The Friends of Missisquoi National Wildlife Refuge welcome you to get to know the ecological wealth and diversity of the Missisquoi National Wildlife Refuge. We invite you to take time to enjoy the displays within the visitor center, and more importantly, to get out on the refuge and experience this special place first-hand.



History

Missisquoi National Wildlife Refuge was established in 1943 to protect and manage habitat for migratory birds. It is located on the eastern shore of Lake Champlain near the Canadian border in Franklin County, Vermont. The refuge headquarters is five miles northwest of Swanton on Tabor Road just off Route 78. First conceived in 1978, construction of the refuge headquarters and visitor center is the result of years of planning; repeated attempts to secure funding; and the hard work, persistence and dedicated effort of many people. In 1986, the site of the old Donaldson farm, where turkeys and pigs and other livestock were once raised, was chosen for this new facility. The 7,250 square foot headquarters and visitor center was designed with energy efficiency in mind and utilizes geothermal, solar and wind energy. It officially opened in October, 2005 thanks in large part to the unyielding support of United States Senators Patrick J. Leahy and James M. Jeffords and the shared vision of the staff, volunteers, local community and state officials of Vermont.

What We Have To Offer

The headquarters houses interpretive and educational exhibits, a retail sales area, staff offices, a conference room, a workroom for refuge volunteers, a multi-purpose room, classroom, and public restrooms. The classroom is equipped with audiovisual equipment including; VHS & DVD player; audio cassette player; document camera, laptop computer; sound system, large screen, and ceiling mounted projector and can accommodate approximately 50-70 students/visitors.

Two ponds are located, just outside the classroom, along the Discovery Trail and are used for pond study and aquatic sampling. Opportunities for observing wildlife occur from refuge nature trails, observation areas, parking pull-offs or from a boat. Refuge nature trails are open year-round for pedestrian use only. Cross country skiing and snowshoeing are allowed during the winter months. Trail handouts are available at the Visitor Center.

Exhibits emphasize connectivity between habitat, wildlife, and people and the vital role the Missisquoi National Wildlife Refuge plays in protecting the environment and providing crucial habitat to migratory birds and endangered species.

This Educator's Guide has been developed to help educators use the learning opportunities available at Missisquoi National Wildlife Refuge. Our hope is that through the use of the activities and resources offered, students and teachers will gain understanding, and from that understanding develop appreciation, and from that appreciation will come action that results in protection of our precious fish, wildlife and natural resources. Henry David Thoreau wrote, "The earth is more to be admired than to be used." When introducing a child to the excitement of the natural world, Rachel Carson believed that, "It is not half so important to know as to feel." It is in this spirit that we developed this guide – as a tool for educators to become more aware of the world around them and to help them and their students know the deep personal satisfaction of being in touch with the earth.

Rules Of Respect At The Refuge

Before your group visits the refuge, have a discussion about what kind of behavior they think is appropriate on the field trip. As a class, brainstorm and discuss a list of rules. Such a discussion can make students more likely to be courteous while on the refuge because they have designed the rules themselves. Remind the students that the refuge is different than a playground. It is protected, as are the plants and animals that live there. The students can play an important role

in protecting the refuge. It may also help to remind the students that they will be visiting the home of many plants and animals. They should act like polite guests. Below is a list of the basic behaviors that students and all visitors should follow while on the refuge:

- The outdoors is a place for learning, just like the classroom. Follow directions and be respectful of others, including the plants, animals, and people.
- Hike only on established trails. By staying on the designated trails, students will not harm the plants and animals. This will allow others to enjoy the plants and animals too.
- Take only memories - leave only footprints. All of the plants and animals on the refuge are protected. Collecting flowers, rocks, or any other natural objects is not allowed. Students can take pictures, drawings, rubbings, and memories.
- Replace what you pick up. If students want to pick up a stick or a rock to look at it, they should put it back where and how they found it. Help students relate to this by asking them how they would feel if someone came into their room and turned their bed upside-down or emptied their closet.
- Walk and talk quietly. The students will see and hear more if they are moving quietly. They will also disturb less wildlife. Silence can allow you to listen to nature.
- Never run or chase any animals you see. You could injure the animal or yourself. Chasing an animal forces it to burn energy that it needs for survival. Also, the animals are protected by law. Be respectful and quiet when watching an animal.
- Clean up your trash. Do not leave trash anywhere on the refuge. Pick up litter that you see. Recycle at designated places. Help keep the refuge clean.
- Stay with your group. For safety reasons, students should stay with their group at all times.
- Touch and taste only if given permission. Some plants are poisonous. Students should only taste something if they are directed by an adult to do so.

- Do not do extra experiments. You could cause injury. Just as in the classroom, some students have the tendency to design their own experiments that can be dangerous to themselves and/or harmful to plants and animals. Out of respect for the plants and animals on the refuge, students should follow the directions given by their leader.

- Clean equipment. Return things how you found them.

Refuge Activities

Junior Waterfowl Hunter Training Program

The Missisquoi National Wildlife Refuge Junior Waterfowl Hunter Training Program is offered to young hunters who want to learn more about the sport of waterfowl hunting and experience a high quality waterfowl hunt. The program is offered to youngsters 12 to 15 years of age who have an adult waterfowl hunter to serve as a mentor.

The Junior Waterfowl Hunter Training Program is a joint educational effort of the U.S. Fish and Wildlife Service at Missisquoi National Wildlife Refuge, the Vermont Fish and Wildlife Department, the Vermont Chapter of Ducks Unlimited, and volunteers to teach young hunters about waterfowl hunting. The program instructs beginning hunters in the knowledge and skills necessary to become responsible, respected individuals who strive to learn all they can about the species being hunted and to become knowledgeable in firearms safety, hunter ethics and techniques, and wildlife conservation. Registration is required. The training takes place at the end of August and is limited to 50 enrollees.

Junior Duck Stamp Contest

The Junior Duck Stamp Conservation and Design Program is a national program administered by the U.S. Fish and Wildlife Service. It is an active, arts curriculum designed to teach wetland and waterfowl conservation to students in kindergarten through high school. This program links scientific and wildlife principles into a hands-on art project.

Each spring students submit their artwork, according to contest design guidelines, to the coordination site for their state contest. Missisquoi National Wildlife Refuge coordinates the contest in Vermont. The Junior Duck Stamp Contest begins each spring when students submit their work to a state contest. Students are judged in four groups according to grade level: K-3, 4-6, 7-9, and 10-12. The "Best of Show" artwork for each state goes to the national contest where the single winning entry is used to create a Junior Duck Stamp for the following year. The stamps are sold by the U.S. Postal Service and the proceeds support conservation education.

and awards and scholarships for the students, teachers, and schools that participate in the program. To learn more and obtain an application form visit: <http://www.fws.gov/juniorduck> or contact Eileen Nunez at eileen_nunez@fws.gov.

Kids Fishing Derby

Community youngsters are invited to come to the refuge with their fishing poles, tackle boxes, and bait to take part in the Annual Missisquoi National Wildlife Refuge Fishing Derby for Kids, presented by Wal-Mart and Zebco from 8:00am – 1:00pm on the first Saturday in June.

Every child fishing at the derby will receive a free goody bag full of fun stuff provided by the event's local and national sponsors. In addition to the fishing, the day will also feature presentations about the (1) National Wildlife Refuge System & Missisquoi National Wildlife Refuge, and (2) Safety, Ethics & Regulations. The day also features a complimentary lunch, prize drawings, and fun contests, including the Zebco Kids Casting Contest. Youngsters, ages 15 years and younger must pre-register by calling the refuge office at 868-4781. All children must be accompanied by a parent or guardian.

Project WILD/ Aquatic WILD

Project WILD/ Aquatic WILD were designed to be instructional resources for educators who want to introduce students to hands-on activities that encourage problem-solving and decision-making skills about the environment they share with wildlife. Free 1-day workshops for educators of kindergarten through high school students can be arranged for school districts. Following completion of the workshop, educators will receive Project Wild/Aquatic Wild K-12 Curriculum & Activity Guides.

Guided Nature Programs

Interactive, experiential learning programs have been developed which are carried out at the Refuge with the guidance of Refuge staff, including: (more under development)

(1) Get a Clue with Macro Invertebrates

Learning Objectives:

- Predict the environmental quality of a water sample based on the presence of certain organisms.
- Identify macro invertebrates found in a water sample.
- Demonstrate an understanding that all living things are affected by the environment. Four weeks advance notice preferred. Curriculum outline, objectives and the relationship to State Grade Expectations are provided for Grades 3-4 and Grades 5-6.

Some Refuge Resources

Fact Sheets

The Refuge has a large number of fact sheets such as the life histories of white-tailed deer, wood turtle, black bear, wild turkey, common loon, beaver, birds, amphibians, bobcat, muskrat, fisher, Eastern coyote, salmon, osprey and peregrine falcon.

Binoculars

- 20 sets of student binoculars and bird identification field guides

Birdsong Identiflyer

Birdsong Identiflyer was designed to help in the enjoyment of birds and learn their songs. Listen to the birdsong of your choice on a small handheld recorder by pushing a button that corresponds to the bird's name and picture. 2 available

Field Guide Lending Library

The refuge has a wide variety of field guides related to birds, tracks, plants and animals.

Butterfly Nets (6)

Microscopes (2)

Dip nets

Observation jars

Puzzles

- Extra large Floor Puzzle: BUGS for ages 3 and up. 24 pieces
- Small size Magnetic Bug Puzzle for ages 4 and up. 9 pieces.

Bingo

- For 2-6 players, ages 3-adult. (1) Nature bingo (2) Bird bingo (3) Bug bingo (4) Butterfly bingo

Skulls and Fur:

- Raccoon, muskrat, fox, beaver.

Ranger Rick's Naturescope

Ranger Rick's Naturescope is a creative education series filled with great ideas and activities. The series is dedicated to inspiring in children an understanding and appreciation of the natural world while developing the skills they will need to make responsible decisions about the environment. Naturescope is produced by the National Wildlife Federation and is targeted to the following grades: K-2, 3-5, 6-8.

Issues include:

- Incredible Insects, Wild about Weather, Birds! Birds! Birds!, Discovering Deserts, Astronomy Adventures, Amazing Mammals I and II, Geology: The Active Earth, Endangered Species, Diving into Oceans, Rain Forests: Tropical Treasures, Pollution: Problems and Solutions

Issue Pacs

Grades 4-7. Issue Pacs are educational units developed by the U.S. Fish & Wildlife Service. They provide factual information as well as activities and posters about wildlife and habitat. Some topics include: Migratory Birds, Wetlands, Conservation, Hunting and Wildlife Management, Rivers and Streams, Urban Areas, Endangered Species, Estuaries and Tidal Marshes.

Connections To Interesting Web Sites

- For kids and teachers: <http://www.fws.gov/r5soc/kidlinks.htm>

Video Library

The Missisquoi National Wildlife Refuge maintains a film library on a wide variety of subjects concerning wildlife, plants, conservation, global awareness and native American cultural heritage. Each video in the library is available on loan, free of charge to Vermont schools, organizations or individuals. For a complete listing of materials visit our web site www.fws.gov/northeast/missisquoi or call the Refuge office at 802/868 4781. When ordering videos please observe the following procedures:

1. Call, write or e-mail to reserve videos at least two weeks in advance. Please specify the date of showing to ensure its arrival.
2. Identify the video titles that you would like so that we may check on the availability of your request.
3. Videos will be shipped from The Missisquoi National Wildlife Refuge by USPS.
4. Videos can be loaned for up to two weeks.

A Sampling Of Our Educational Videos And Learning Packages Follow:

A Home For Pearl

VHS, 70 minutes total, Grades 4-7, 1990

This film follows three children as they learn about wildlife and wildlife habitat requirements with the help of a wildlife rehabilitation center. It is divided into four parts (robin, rabbit, barn owl, bald eagle) and particularly features children who live in an urban or suburban environment.

Evaluation exercises are included.

Wild About Life!

VHS, 54 minutes total, Middle and High School

Wild About Life! is designed to introduce middle and high school students to the important concept of biodiversity. It is divided into four parts:

1. Biodiversity Rules!-14 minutes.
 2. Long Journeys Home (migration and loss of habitat)-12 minutes.
 3. Predators and People-11 minutes.
 4. Joining Forces for Nature-14 minutes.
- The segments are designed so that each part of the video can be viewed as a separate unit. Supplementary activities and objectives are provided in the teachers' guide to enhance the video's educational value.

Wild Things: Electronic Field Trips

Grades 4-8, 60 minutes each

The Wild Things: Electronic Field Trip series are tapes of live, interactive learning broadcasts that connect students with professionals in the National Wildlife Refuge System. They follow students on various field trips to refuges across the country. The series includes web-based content and teachers' manuals with objectives, activities, and correlations to the National Science Education Standards.

- 2004 (DVD) Endangered Species
- 2003 (VHS) The Impact of Humans on Habitat
- 2002 (VHS) Habitat
- 2001 (VHS) Invasive Species
- 2000 (VHS) Wetlands
- 1999 (VHS) Watersheds
- 1998 (VHS) Shorebirds

Climate Change, Wildlife, And Wildlands: Toolkit

This toolkit for teachers and interpreters was developed by the U.S. Environmental Protection Agency to provide information on climate change and its potential impacts on wildlife, national parks and wildlife refuges. It includes a short video, CD-ROM with four case studies, a hand-held global warming wheel, and a set of 12 trail cards that highlight the potential effects of climate change on individual wildlife species and ecosystems.

Rachel Carson: Instilling a Sense of Wonder Education Kit

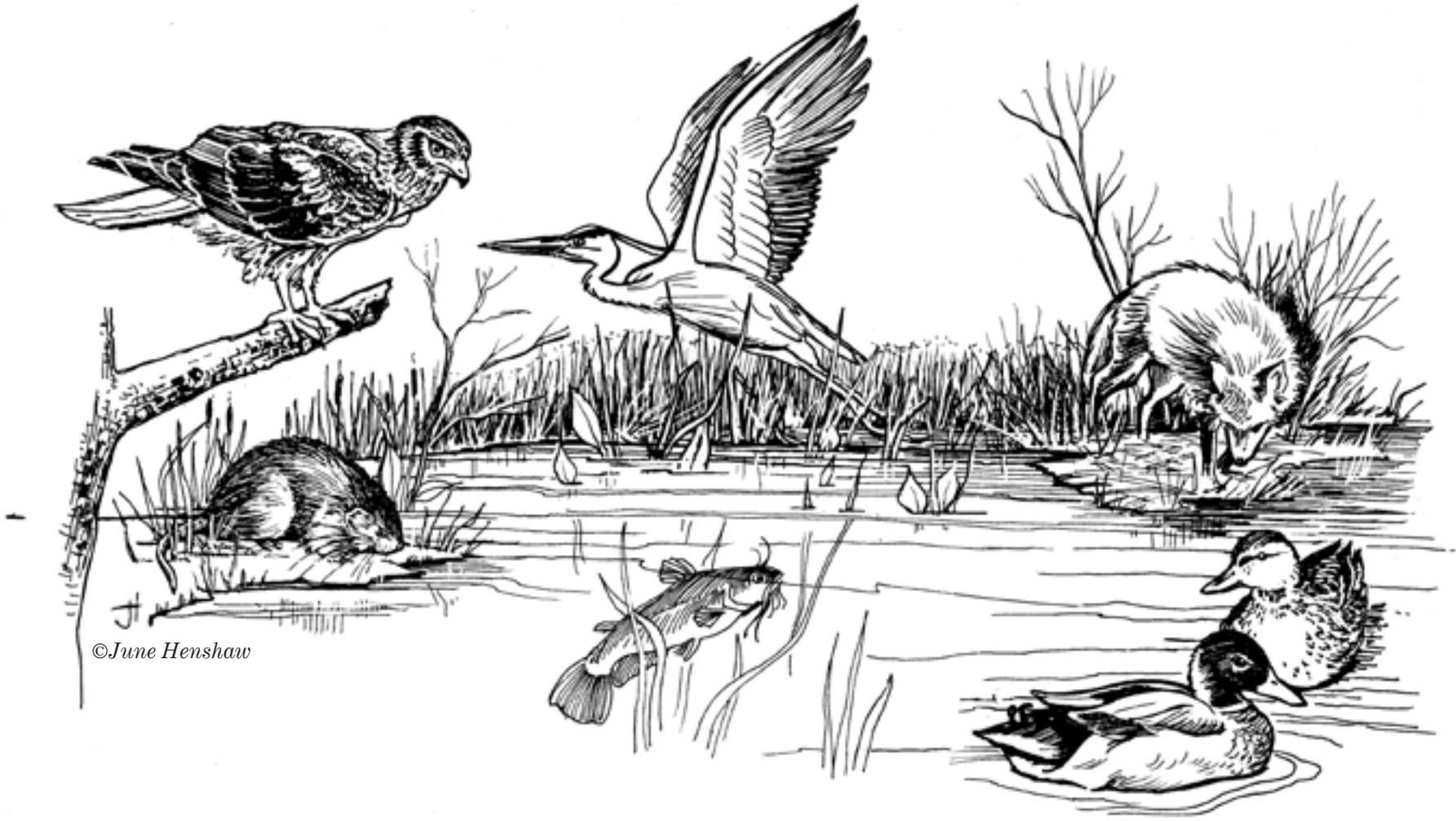
The Rachel Carson Centennial Education Kit includes a number of items to assist in the development of programs recognizing the 100th birthday of Rachel Carson in 2007. Among items included in the kit is the book, "Sharing Nature with Children", which provides great ideas for exploring the outdoors with children, small magnifying hand lenses (25), and a CD which provides lessons and activities for possible activities.

3-2-1 Contact

VHS, Middle School, 30 minutes each

Includes various science topics such as:

- Down the Drain (water quality)
- Bottom of the Barrel (oil)
- Rotten Truth (garbage)
- Get Busy: How Kids Can Save the Planet (kids and environmental issues)



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