

Missisquoi
National Wildlife Refuge
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September 2002



CELEBRATING A
CENTURY
of CONSERVATION

U.S. Fish & Wildlife Service

Missisquoi

*National
Wildlife Refuge*

*Black Creek &
Maquam Creek
Nature Trails*



Welcome and Enjoy Your Visit



This goose, designed by J.N. "Ding" Darling, has become the symbol of the National Wildlife Refuge System.

Welcome to Missisquoi National Wildlife Refuge! The refuge was established in 1943 for the purpose of preserving and protecting habitat for migratory birds. The 6,592-acre refuge consists of quiet waters and wetlands, which provide important feeding, resting and breeding areas for migratory birds, especially waterfowl, and upland areas that are a mix of open fields and hardwood forest.

This booklet is designed as a self-guiding tour of the nature trails. These trails were constructed by the Missisquoi Youth Conservation Corps, an organization designed to give young people gainful employment while learning and doing something for the environment. They are designed with an emphasis upon the interaction of organisms within an ecosystem. They total approximately 1½ miles in length and take about two hours to walk at a leisurely pace. The trails will lead you through open fields and floodplain forests. The most common trees and shrubs along the trails are alder, buttonbush, silver maple, gray birch, ash and swamp white oak. You may see red fox, white-tailed deer, an assortment of birds, beautiful native wildflowers and a wide variety of other wildlife species.

Hints for Enjoying Your Walk

- **Take your binoculars.** Most wildlife is wary of humans. Binoculars will help you get a close-up view without creating a disturbance.
- **Bring your field guides.** Wildlife and wildflower identification books will help you learn the identities of some of the more common native flora and fauna. Inquire at the refuge office for loaner guides.

- **Start early and stay late.** You are more likely to see wildlife activity if you take the walk early in the morning or late in the afternoon.
- **Observe carefully.** Remember, animals blend in with their surroundings. Walk slowly and look closely. Animals are unpredictable and not always seen.
- **Bring along insect repellent.** Biting insects can be a nuisance during the summer months.
- **Stay on established trail.** This helps prevent accidents and lessens environmental damage.

- **Watch for Poison ivy.** It has three leaflets, is shiny, and is sometimes tinged red. It can be found as a woody vine covering the ground or clinging to trees. Although it is a nuisance to man, its berries are a valuable food source for many birds.



Poison ivy

- **Dress appropriately.** Much of the trail is wet from April through June so shin-height boots are recommended. During these wet periods, traces of deer, raccoon and fox are often very visible.

- **WATCH YOUR STEP.** There are exposed tree roots and holes made by tunneling mammals on both trails.

Some Important Rules

- Collecting of any kind and disturbing or feeding wildlife is against the law. Feeding wildlife is dangerous and strictly prohibited.
- The nature trails are open to walking only. No biking is allowed on trails.

- The refuge is open to managed hunts during certain times of the year. A refuge hunt permit is required. A safety zone is established around the trails.
- Dogs must be kept and controlled on a leash no longer than 10 feet.
- Don't litter. Litter is ugly and no one wants to look at it. But there's another reason not to litter: animals may eat the garbage left on the ground, whether it is edible or not. Since most human litter is from food and food wrappings, the garbage smells like something to eat. Animals will try to do so, but often become ill and die.

Points of Interest on the Trail

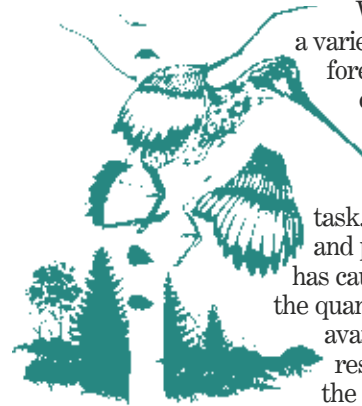
The fields leading to the nature trail provide nesting habitat for small mammals such as mice and voles, and for birds such as the red-winged blackbird, field sparrow and bobolink. Hay is cut by local farmers after July 15 when most birds have completed nesting and brood rearing. Cutting the fields maintains the grassland habitat and is just one way that we manage for wildlife on the refuge.

Bluebird houses have been erected in the fields to allow Vermont's native bluebird populations to increase in numbers. The combined effects of reduced nesting cavities and competition with imported European house sparrows and starlings since the late 1800s caused an estimated 90% decline in the number of our native bluebirds. The establishment of properly spaced nest boxes around the countryside has enabled bluebird populations to increase.

Brush piles along the fields and trail are used as shelters by chipmunks, rabbits and occasionally fox.

The "edge effect" or transition area where one plant community changes to another is extremely important to wildlife because of the increased diversity and density of important food and cover plants that occur there. These narrow borders are found between forests and fields, croplands and grasslands, and brush and woodlands.

Forest openings have been created in an effort to provide habitat for woodcock. Just beyond the railroad tracks behind the woodcock interpretive sign you can see where an area was clearcut and is now an early growth forest.



Woodcock
© Beauregard

Woodcock, grouse, deer and a variety of songbirds require forest habitat that is periodically disturbed so new vegetation can grow. In the past, farm abandonment and wildfires accomplished this task. Now, increased urbanization and poor forest management has caused continued decline in the quantity and quality of habitat available for woodcock. As a result, woodcock numbers in the East have been shrinking.

Without intervention, this decline will continue. The creation and maintenance of habitat for woodcock is another example of how refuge habitat is managed for wildlife.

Vernal pools along the field and woods edges provide pairing and feeding areas for waterfowl and are important habitat for reptiles and amphibians, especially frogs.

The swamp white oak trees along the creeks have been protected with wire netting to keep beavers from cutting them down. When the bark is chewed completely around the tree, the tree becomes "girdled." This means the conducting tissue is cut and very little water will reach the leaves,

causing the tree to die. The acorns from these trees are valuable food for many animals including the wood duck, white-tailed deer, squirrels and chipmunks. Beavers must occasionally be trapped in this area in order to protect these trees.

Maquam Creek Trail

There are active beaver houses along Maquam Creek. The beaver lodge is a mud-and-stick igloo that is never finished but is continually added to or repaired as long as it is occupied. A beaver cuts down about 200 trees a year. They prefer the bark of aspen to that of any other kind of tree. They also dig out and feed upon the roots of cattails.



Beaver

You may see piles of mud along both trails. These piles are constructed by beaver, and are called “scent mounds.” Beavers erect these mounds in order to establish a territory for themselves.

The little pathways from the woods to the water are “beaver runs.” Such runs are useful to beavers when they need to transport branches and small logs to the water. Beavers also use these for quick and direct access to the water to escape from danger.

Abandoned beaver lodges are sometimes used by other animals such as mink, otter and raccoons. Ducks also use the lodges as nesting and loafing sites.

Artificial nesting boxes have been successful along both Black and Maquam Creeks for producing wood ducks.

Over 200 species of birds use the refuge for nesting, resting and feeding. The yellow warbler, song sparrow, great crested flycatcher, yellow-



Wood duck

throated warbler and wood duck are a few you might see along the trail.

The marsh area on the left nearing the Point is good for waterfowl observation, particularly mallards, black ducks, wood ducks, and ringnecks. The last 50 yards or so of the trail are excellent for wildlife observation but are occasionally wet.

Near Lookout Point, osprey may be sighted as an artificial osprey nesting platform has been erected on the refuge close by. This large, fish-eating hawk constructs a bulky nest of sticks, usually in a dead tree along the shore of a lake or near water. Osprey were a familiar sight along waterways in North America, but high levels of pesticides, seeping into the water from croplands and absorbed by the fish, have seriously depleted the North American population. Due to reduced pesticide levels and placement of artificial nesting platforms, the osprey, an endangered species in VT, is staging a comeback.

Black Creek Trail

Sedges, moss, wildflowers and ferns carpet the trails. The moist, shaded trails provide perfect habitat for the sensitive, royal, cinnamon and interrupted ferns thriving here. Ferns reproduce by spores rather than seeds. Spores appear on the underside of fern fronds or sometimes along their margins, on particular leaflets, as in the interrupted fern, or on separate or fertile fronds as in the sensitive fern and the cinnamon fern.



Royal fern

The seeds, tubers and rootstocks of some of the aquatic plants along the creeks such as arrowhead, water lily, burreed, cattails, and pickerelweed provide valuable food for waterfowl,



Water lily

songbirds and mammals. These plants also provide escape cover for broods of waterfowl. Pickerel and bass are two of the fish that use the weedy plants found underwater as a place to spawn.

Some of the more common wildflowers on the trail are the tall meadow rue, meadowsweet, Canada lily, bluets, blue flag, turtlehead and bellwort.

You may notice several large jelly-like masses on submerged tree branches called bryozoan colonies. Bryozoan colonies are permanently massed together. The single units of this colony each have hair-like tentacles called “cilia.” The cilia wave back and forth in the water, directing the food particles into the



Bryozoan colonies

bryozoan’s mouth. The foods eaten by these minute organisms are microscopic algae, and single-celled animals and plants.

During the summer months portions of the creeks appear to be a green floating mat. This mat consists of many tiny floating plants called duckweed and provides a valuable food source for waterfowl. These plants also provide habitat for many insects and crustaceans that are important foods for ducks and other animals.

Dead trees serve as feeding stations for many woodpeckers. The larger woodpeckers create large holes in these snags and the cavities serve as natural sites for duck and song bird nests or homes for raccoons and

squirrels. The value of a few dead trees to wildlife is often unrecognized by people, since most consider them eyesores and cut them down.

U.S. Fish and Wildlife Service

Missisquoi is one of more than 530 refuges in the National Wildlife Refuge System administered by the U.S. Fish and Wildlife Service. The National Wildlife Refuge System is a network of lands and waters managed specifically for the protection of wildlife and wildlife habitat and represents the most comprehensive wildlife resource management program in the world.

The Service also manages national fish hatcheries, and provides federal leadership in habitat protection, technical assistance, and the conservation and protection of migratory birds, certain marine mammals and threatened and endangered species.

The Missisquoi National Wildlife Refuge staff encourages you to make future visits to the nature trail and experience other areas of the refuge such as the trails located on Tabor Rd. and the Mac’s Bend road alongside the river. There is always something different to see. Also, think about visiting one of the other national wildlife refuges around the country. Information about the refuge system is available at the headquarters office.

For further information, please contact:

Refuge Manager
Missisquoi National Wildlife Refuge
371 North River St.
Swanton, VT 05488-8148
Telephone: 802/868-4781

Birds You May See

Kingfisher



Red-wing blackbird



Downy woodpecker

Red-winged blackbird
Kingfisher
Great blue heron
Osprey
Bald Eagle
Wood duck
Mallard

Black tern
Yellow warbler
Goldfinch
Chickadee
Downy

woodpecker
Hairy woodpecker
Piliated woodpecker
Northern Harrier

Catbird
Tree swallow
Cardinal
Blue jay



Mallard



Gold finch



Osprey

© June Henshaw



Blue jay

Common Wildlife Tracks

White-tailed deer
Fox squirrel
Raccoon
Red fox
Cottontail rabbit
Skunk
Muskrat
Beaver
Coyote
Great blue heron



White-tailed deer



Racoon



Beaver



Great blue heron

Black Creek and Maquam Creek Trails

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