

Oxbow National Wildlife Refuge  
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Sudbury, MA 01776  
978/443 4661  
978/443 2898 Fax  
<http://www.fws.gov/northeast/oxbow/>

Federal Relay Service  
for the deaf and hard-of-hearing  
1 800/877 8339

U.S. Fish & Wildlife Service  
1 800/344 WILD  
<http://www.fws.gov/>

June 2007



# Oxbow

## *National Wildlife Refuge*

*Riverside Trail  
Turnpike Trail  
Tank Road*



## Welcome



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

Oxbow National Wildlife Refuge provides habitat for many mammals, birds, reptiles, and amphibians. Resident mammals include predators such as river otter, bobcat, red fox, and fisher, as well as deer, squirrels and rabbits. Because predators are secretive, they are seldom seen, even by regular visitors. Fortunately for human wildlife observers, birds are more visible. One mammal, the beaver, makes its presence obvious through large stick lodges and stumps of gnawed-down trees.

The home for all these creatures is created by the Nashua River and adjacent wetlands, and furnished by the vegetation of the swamp and forest. You are welcome to walk the refuge trail, but remember that here human beings are visitors in the home of other creatures. Both flowers and animals must be left where they are found. Please follow the posted regulations and, through your consideration, help care for this precious place.



*Red fox*

The trail loop covers 1.9 miles and takes about an hour. On this walk you can expect to see numerous views of the Nashua River, forest and wetland habitats, a beaver pond, and beaver stumps and lodges. Bird life varies with the seasons, as do wildflowers.

The terrain is flat except for one short section. Shoes, socks, and long pants will help protect you from insects and poison ivy found on the trail in late spring and throughout the summer. In these seasons insects can be plentiful and precautions will make your walk more enjoyable. Although this trail is not accessible to wheelchairs, nearby refuges have trails that are. For information, call the headquarters of the Eastern Massachusetts National Wildlife Refuge Complex in Sudbury at 978/443 4661.

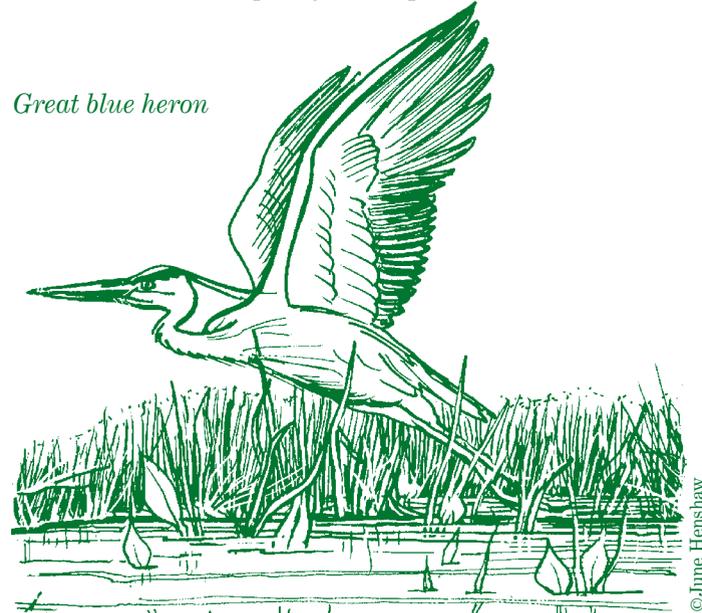
This guide follows the Riverside Trail, Turnpike Trail and parts of Tank Road, beginning at the information kiosk beside Tank Road. About 30 yards from the gate, the trail turns left onto Riverside Trail and proceeds along the right bank of the river for 0.8 miles. Stay near the river and pass by the short connectors leading back to Tank Road. Turning away from the river, the trail follows a causeway called Turnpike Trail (a raised roadbed that crosses wetlands) for 0.7 miles. It then climbs back to Tank Road and returns to its starting point after another 0.4 miles. During wet periods the trail is temporarily flooded.

## Nashua River

1

The Nashua River is a 56 mile long tributary of the Merrimack River, which it joins at Nashua, New Hampshire. At one time the Nashua River was seriously polluted, but thanks to the efforts of communities, industries along the river, the Massachusetts Department of Environmental Protection, and leadership of the Nashua River Watershed Association, water quality has improved.

*Great blue heron*



## Reading the Landscape

2

You stand between a field and the riverbank. What forces have shaped what you see? The river has played a role and the effects of human management are also visible. The old apple tree in front of you indicates past agriculture on this site. The field has received periodic mowing, which otherwise would return to forest. The community of plants and animals that live in the field increases the variety of wildlife at Oxbow NWR and adds to the biodiversity of eastern Massachusetts.

## Natural Levee

3

From this high bank you see the Nashua River flowing toward you on its way north to the Merrimack River, which carries its waters to the Atlantic Ocean.

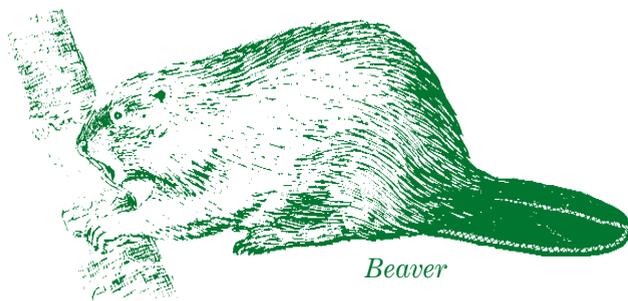
You might notice that the land immediately adjacent to the river is higher at many points than the land a few feet farther from the water. When the Nashua River floods, water spills beyond the banks and is slowed by friction with the ground. Because slow-moving water cannot carry as much soil as fast-moving water, particles settle out. When the flood subsides, it leaves the river's natural levee a bit higher than it was before.

## Riparian Forest

4

The riverside woods, or riparian habitat, receive an ample supply of water with nutritious silt, offering an excellent situation for plants that are adapted to periodic flooding. Shagbark hickory is one of the trees most easily recognized by its bark. A yellow dye is made from the inner bark of this tree. Its nuts contribute to the forest food supply.

There are often signs of beaver activity along the trail. Beavers do not always build stick lodges. In rivers and lakes they may live in tunnels dug into the bank.



*Beaver*

## Slough

5

The bay across the river is called a slough (pronounced slew). It is the footprint of an earlier course of the river. Over the centuries the Nashua River has twisted and turned in its valley. Like all streams and rivers, it scours the outside of bends while the slower-moving water leaves deposits on the inner curves. This activity creates the loops called oxbows that give their name to the refuge. Eventually the current cuts across the oxbow's neck and the abandoned channel becomes an eyebrow-shaped pond.

## Bridge Abutment

6

On both sides of the river's edge you can see mounded earth that is all that is left of the abutments of a wooden bridge that crossed the Nashua River. These are remnants of the Union Turnpike built in 1805 that ran from Harvard to Leominster. The Turnpike Trail is part of this historic turnpike.

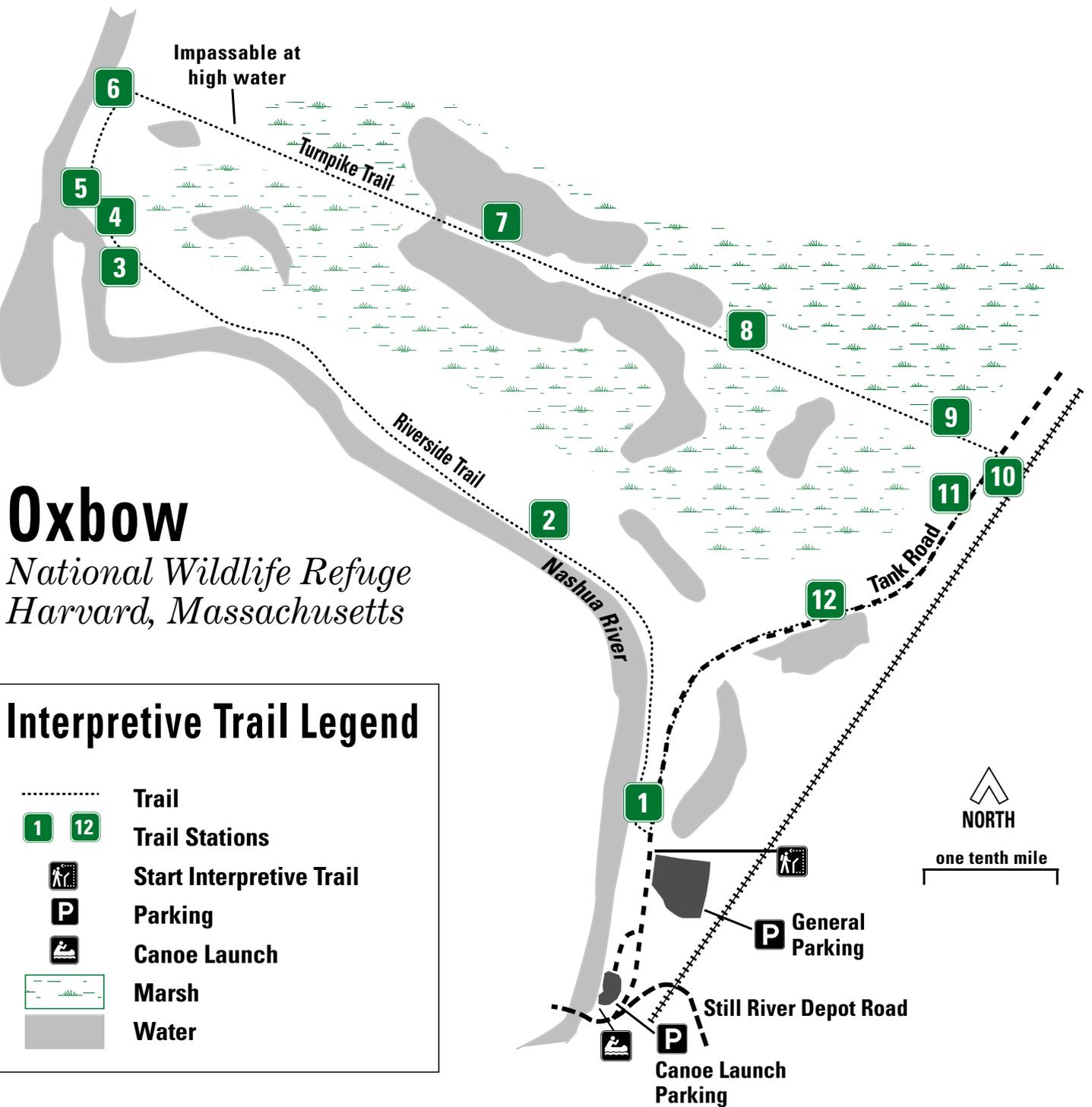
## Beaver Lodge

7

Among the many animals that spend time at Oxbow NWR, beavers are the best at advertising their presence. The stumps of trees they cut down, their dams, and their large stick lodges indicate the power beavers have to modify habitat. Beaver ponds create openings in the forest that increase the variety of plants and animals.

In the summer beavers eat aquatic vegetation. The rest of the year they eat the bark of trees. An adult beaver cuts an average of one tree every two days.





## Turnpike Trail

8

When this part of Massachusetts was first settled by the colonists, river meadows had critical importance. The thin-soiled, forested hillsides had little agricultural value in comparison with fertile, well-watered meadows. Farmers depended on hay as much as we do on petroleum. Causeways like this one were built by farmers to carry hay out of the low-lying wet meadows. The roadbed was improved over the years.



*Elderberry*

## Glacial Terrace

9

To the side of the road cut you see steep banks of sandy soil that fringe the marsh at many points. These banks formed in the final phase of the most recent ice age, as the glacier gradually melted. Sand and pebbles trapped in the glacier accumulated in steep banks where melt-water flowed alongside the huge tongue of ice occupying the bottom of the valley. Many New England river valleys have such formations which are termed kame terraces. As the trail climbs it affords a view of the marsh and swamp that make the Oxbow NWR unique wildlife habitat.



*Belted Kingfisher*



*American woodcock*

## Tank Road

10

This road is occasionally used by the U.S. Army to move equipment between Fort Devens facilities north of Route 2 and the maneuvering areas in the South Post, across the river from Oxbow NWR. The refuge itself was part of Fort Devens until 1974, when it was turned over to the U.S. Fish and Wildlife Service. The U.S. Army still maintains an active presence on their adjacent property. You may hear target practice while visiting Oxbow NWR.



*Buttonbush*

*Silky dogwood*



## Beaver Management 12

Do you see the lodge in the middle of this pond? As a result of deforestation and unregulated hunting and trapping from the 1700's through the early 1900's, beaver numbers and their habitat were significantly reduced in eastern Massachusetts and were absent or rare until the last half of the twentieth century. Abandoned farms and reforestation during the 1900's led to the re-establishment of beaver populations. Although they reproduce rather slowly compared to other rodents, their population has steadily increased and the beaver is now a common mammal in Massachusetts.

Sometimes the beaver's industrious ways bring it into conflict with human plans. The sound of flowing water relaxes us, but it makes beavers want to build a dam. Here they plugged the culvert that keeps the stream from washing over the road. To save the road without harming the beavers, a "beaver deceiver" was installed, allowing water to drain from the pond without making much noise. Hopefully, the beaver's natural tendency to stop flowing water will be averted.



*Beaver lodge*

This trail guide was primarily written by Rona Balco and Ron McAdow of the Friends of Oxbow NWR. Funding to print the brochure was also provided by the Friends of the Oxbow NWR.



*White pine*

## Turnpike Trail

11

Here at the highest point of the trail you pass through a stand of white pine trees. When left to its natural cycles, the New England forest produces enormous white pines. At 200 years of age, white pines are far taller than any of our other trees, reaching 150 feet. White pines felled by the colonists were sometimes over 400 years old and 200 feet tall. Prized for the masts of sailing ships and other naval uses, the great pines were taken before less magnificent trees.



*Dragonfly*