



Ecosystem and Ecology



Woods and Water Voyageurs National Park has two distinct but overlapping wildlife habitats- the terrestrial or forest ecosystem and the aquatic ecosystem. The diversity of the plant and animal life found at the park is a major attraction to visitors for viewing northwoods and lake species in their natural habitat.

Park Ecosystems

The glacially carved landscape is dominated by water and mantled with southern boreal forest. Four large lakes and 30 smaller ones sustain a rich aquatic community and provide a transportation network for travelers now as in the past. A mosaic of forest communities covers the land, and shelters and feeds a variety of wildlife.

Plants and animals interact with the soil, water and air as an ecosystem and the humans who have lived and been in the park are part of its ecosystem. Energy is transferred and nutrients are cycled between these parts. The soil, water and air provide plants with the

nutrients needed for growth and reproduction. Animals feed on plants or other animals. Plants and animals die and are reduced by bacteria and fungi to simple chemical compounds that can again be used by plants.

Ecosystems can range in size from a small pond to our entire planet. They can be natural or modified by humans. Animals cannot make big changes in these ecosystems, but humans can. If the changes people make in any ecosystem (to air, soil, water, plants, or animals) are not too great, the ecosystem can repair itself and return to a natural condition.

Long Ago

Before 1890, humans caused few changes in the ecosystem. Periodic fires, beaver, insects and diseases maintained a patchwork forest of mature and immature pine, spruce, aspen and birch.

The diverse vegetation supported a variety of plant-eating animals, including woodland caribou, moose, elk and white-tailed deer. These and smaller plant eaters

provided food for meat-eating predators and scavengers, such as the timber wolf, wolverine, lynx, raven and bald eagle.

Extensive beds of wild rice grew in lakes and streams. Water birds, aquatic mammals and fish were abundant. Native people lived in the area and used its resources for food, shelter and clothing.

Changes

Since 1890, the exploration and mining for gold, logging, and recreational development have brought people and changes to the park ecosystem. Loggers cut the big pines and spruce for lumber. Later, they cut smaller aspen and birch trees to make paper. For many years, people suppressed fires. Together, logging and fire suppression have increased the acreage of aspen forest and severely

decreased the acreage of pine forest.

By the early 1920's, hunting eliminated the caribou and elk and reduced the moose population. The white-tailed deer population increased as logging provided young tender shoots for food.

Dams and Water Levels

The park's major lakes (Rainy, Kabetogama, Namakan, and Sand Point) are all connected. In the early 1900's paper companies built dams at the outlets of Rainy and Namakan Lakes. Before the dams were built, the level of Rainy Lake fluctuated about four feet a year. The others fluctuated about five feet each year. From the 1940's through the year 2000, the dams operated so that Rainy Lake fluctuates about three and one-half feet per year, and the others about nine feet per year. These unnatural water level changes affected the ecosystem in many ways.

Wild rice has been all but replaced by other aquatic

plants. The nests of birds close to the water were regularly flooded. Winter drawdowns of water left beaver and muskrats without protective shelter or food and northern pike spawning areas without water. Additionally, maintaining high, stable lake levels through the summer and fall reduced the amount of wave-washed gravel for spawning walleye in all but high water years. As a result, a new rule curve for water levels was established in the year 2000, which may return lake levels to a more natural seasonal rhythm. Researchers will closely monitor the results of the changes.

A Walk Through the Woods

A walk through the woods on one of the park's many trails will give you a chance to experience the plants and animals of the park close up.

Red, white and jack pines are the three pine species found here. The cones of the jack pine require heat from a forest fire to open so the seeds can be released. When humans control forests, regeneration of the jack pine is difficult.

Taking a closer look at the trees, rocks and earth, reveals over 400 kinds of lichens living in the park. Lichens are composed of fungus and algae living together. The fungus contributes structural strength, protection and water storage. The algae produce food, some of which is used by the fungus. They are very sensitive to air pollution and indicate changes in the

environment. Their abundance in the park indicates good air quality.

Approximately 30 timber wolves roam Voyageurs National Park. They are sometimes seen crossing frozen lakes, but their tracks tell the story of their travels.

Black bears inhabit the heavily wooded upland regions of the park in search of berries, roots, ants or carrion. Black bears are common and are good swimmers. The park is home to 100- 200 black bears.

The park supports over 230 species of birds, 42 species of mammals, and 10 species of amphibians and reptiles. Over 22 species of warblers return to the forests to nest and raise their young each year.

On the Water

Travelling the waters of the park in a boat, kayak or canoe is an important way to view even more of the park's plants and animals.

Seen along the shoreline of almost all of the park's lakes, the white cedar, *Arbor vitae*, has flat scale-like leaves. Deer and snowshoe hares prefer the twigs and leaves of this tree for food during the winter. Cedar wood was once used for the framework of the voyageurs' canoe.

Cattails are common in the marshes and shallow lakes of the park. Muskrats build homes made of cattail stems. Cattail marshes provide nesting cover for many birds.

The osprey is a bird of prey some people mistake for the larger bald eagle. The osprey is often seen hovering over the water before it tucks its wings and dives toward the water. Just before it reaches the surface, it pulls its head up and enters the water feet first, catching the fish in its talons.

High in the tall, sturdy white pine trees sit the huge stick nests of bald eagles. Every year bald eagles return to the park in March to claim their nesting territory and lay 1- 3 eggs. Eaglets hatch in May and are ready to fly by early August. Bald eagles get their

white head and tail feathers when they are 4- 5 years old.

Common loons nest on shorelines throughout the park. Their eerie calls can be heard day and night. White pelicans and cormorants also fish the waters of the park.

The many lakes and wet areas of the park provide homes for thousands of beaver. This animal, like humans, can radically change its environment. It does so by building dams that create or enlarge ponds. These ponds become home to the beaver and its family and many other animals. The bark of the aspen tree is the favorite food of the beaver.

The park is home to one of the largest river otter populations in the world. River otter are active both winter and summer. Their up to twenty-five foot long slides can be seen in the snow or mud near the park's wetlands. Crayfish are a favorite food and evidence of their meals is often found on park rocks and docks.

Walleye, northern pike, sturgeon and 50 other species of fish are found in park waters. They provide sport and food for visitors and park wildlife.