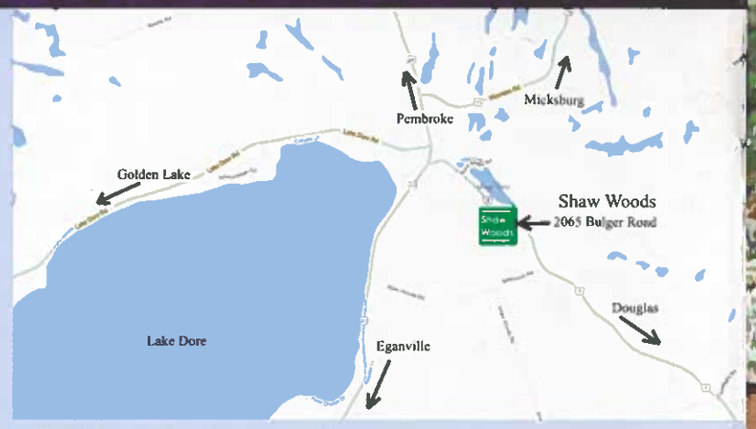
Shaw Woods
Outdoor Education Centre

2065 Bulger Road
Eganville, Ontario
www.shawwoods.ca
shawwoods.edu@gmail.ca

From Ottawa, take Highway 17 west to Cobden. Turn left at Main Street (which becomes Eganville Road/County Road 8) and continue for 12.3 kilometres to a stop sign. Turn right onto Bulger Road and watch for the parking lot at 2065 Bulger Rd.



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Trail Guides • History • Educational Programs

WELCOME
to the Shaw Woods Outdoor Education Centre

It is our pleasure to welcome you to one of the finest old-growth forest reserves in Eastern Canada. In this publication you will find two of the most popular trail guides to the Shaw Woods, along with a short history and detailed information on the local flora, fauna and wildlife.

John Shaw purchased this land in 1847, and it was only because of the Shaw family's pioneering forestry practices and commitment to environmental stewardship that this land was allowed to remain unchanged. A natural wonder, with trees eight hundred years old.

Whether you are here for a day long hike or just a family picnic, we welcome you and thank you for your support. Since we receive no government funding, your donation at our Trailhead boxes or on-line is most appreciated. Charitable tax receipts are available.

For information on booking school visits, group tours or volunteer opportunities, please visit our website: shawwoods.ca

Again, we wish to thank you for your support, and hope you enjoy your day in the Shaw Woods.

FROM THE BOARD OF DIRECTORS

SUSTAINING SPONSOR

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THE SHAWS OF LAKE DORE

John Shaw, originally from Inverness, Scotland, his wife, the former Barbara Thompson, and their two-year-old son John II arrived here by canoe from Bytown (Ottawa) in 1847. Barbara was a niece of Ann Crichton, wife of the Hon. Thomas McKay, who built many locks along the Rideau Canal and his home, Rideau Hall, now home to Canada's Governors General. John Shaw was McKay's miller and he and Barbara were married at Rideau Hall.

Upper Canada was quite a remote destination in those days with only a few families living in the united townships of Wilberforce, Grattan and Frazer (sic). Drawn by the potential water power of the Snake River, a sawmill and three-storey

The old Shaw homestead, circa 1850.

One of the grist stones at the Shaw Dam.

Aerial view: Shaw's Pond on right, Lake Dore on left.

Mission Statement

To foster an ethic of responsible environmental stewardship by providing educational programming and self-directed learning to educational groups, community organizations and the public at large. In conjunction with the foregoing, to teach sustainable forestry practices which manage the social, economic and ecological values provided by forests. We support the concept of maintaining undisturbed forest areas as living examples of old growth forest available for the study and appreciation of their unique cultural and scientific values.

gristmill were quickly established. By 1851 seven people were employed and the young enterprise had begun a long history, making it now the longest established family-owned lumber business in Canada. Fifth generation John Shaw V and Dana Shaw carry on the business today.

The Shaw's first house was a simple 1-½-storey log structure. A mixed farm produced a variety of products to be sold or traded for help running the mills across the road. Several of the Shaws served as postmaster for the Lake Dore hamlet. John Shaw II, known as "Honest John", was at one time reeve and treasurer of Wilberforce Township and served on County Council in 1880. Local farmers from miles around would draw logs to be sawn and grain to be milled. In 19th-century Renfrew County, it was not uncommon to carry 35 kg. bags of grain for many miles and return home later that day with the ground

John and Barbara Shaw

flour. You can see two of the original grist stones, shipped from Scotland and used in the mill, at the Shaws Pond dam site.

Several "day books" from this time period tabulate the business's local commerce, and every year (or two) the accounts would be settled. Trading of goods and services, such as with the "Desjardins Steam Carriage, Sleigh and Waggon Factory," was established. The Shaws provided sawn basswood lumber, a lightweight and easily worked component for sleighs and carriages, and the Pembroke company supplied manufactured items for the Lake Dore company's operations. At year's end the party with accounts receivable had the dollar amount listed with the antiquated accounting term 'favor'.

Antique saw blade, relic of the lumbering days.

Field trip in the majestic ancient forest.

In 1942 the company, now operated by Herb and Len Shaw, sons of John II, relocated to Pembroke to be closer to business interests. Their stately frame home, with its impressive stone fences and gardens was removed when the Bulger Road was widened. In the early 1950's the farm fields were reforested with pine by Herb's sons, John and Donald Shaw.

In the 1970's the National Museum of Natural Sciences and the Nature Conservancy of Canada became interested in the property's natural heritage value and, in partnership with the Shaw family, established the Shaw Woods Nature Preserve. With uncommon plant species, centuries-old trees and animals as diverse as lynx and bald eagle, the woods have welcomed visitors from far and wide for decades. Over the years many scientific journals have contained reference to research conducted here, taking special advantage of the virtually untouched living laboratory. Currently, Algonquin College, the University of Guelph and the Great Lakes Forestry Centre all have field research projects here.

Red pine plantation marked for thinning.

Students lunch in the Pine Pavillion.

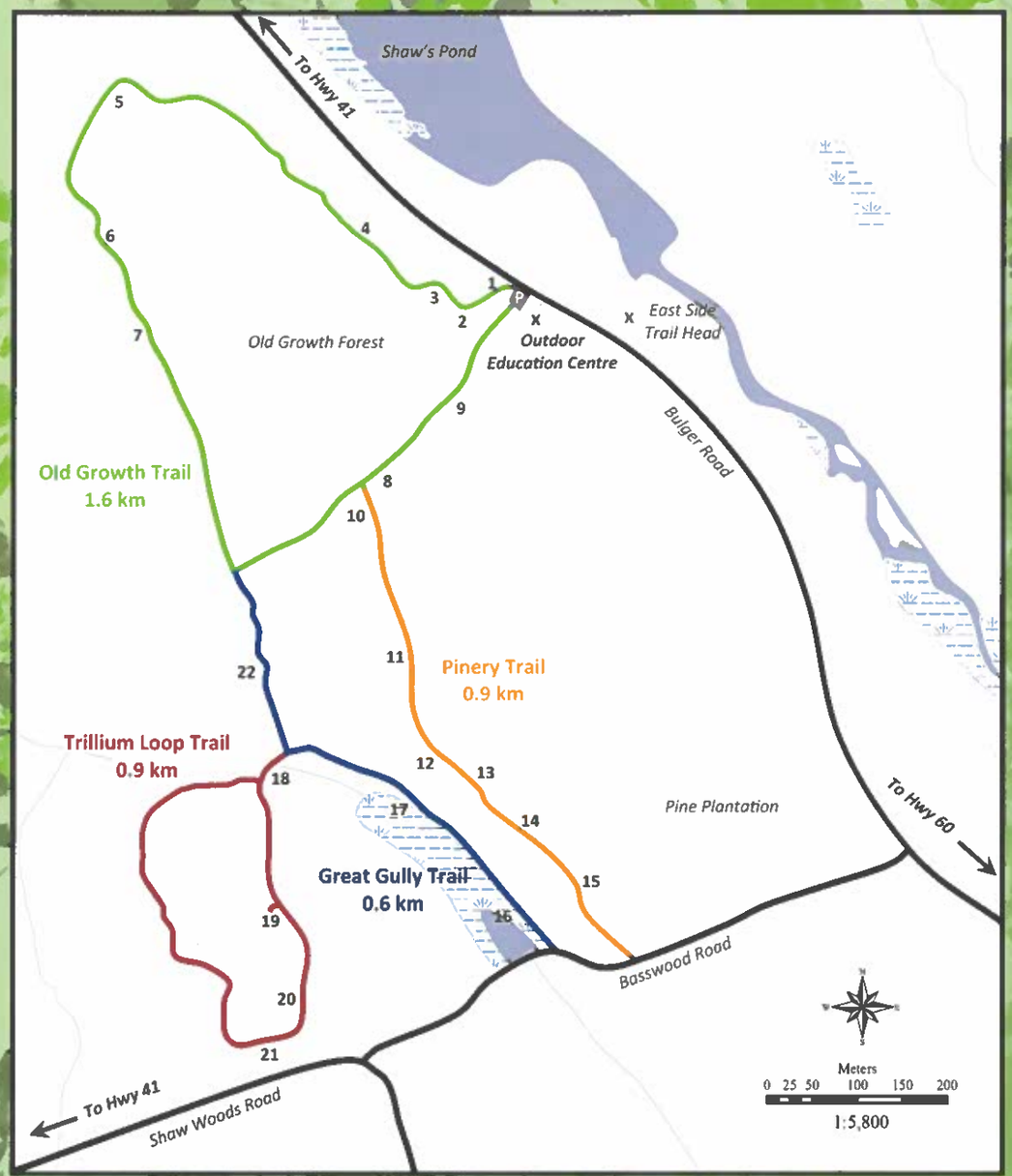
Hands-on experiential education.

Recently, a local not-for-profit charitable organization (SWOEC) was formed to provide for enhanced interpretive and educational opportunities. Their mandate is to foster an ethic of responsible environmental stewardship and highlight sound forest management practice (a legacy of the Shaw owners down through the years), while at the same time respecting and protecting reserves such as this one for generations to come. We hope you enjoy your visit.

— by Grant Dobson and Mernie James, with Lana Shaw, Lisa Shaw-Verhoek and Lisbeth Shaw-Cullen

WEST TRAIL MAP

You are about to step into a rare and ancient forest.
We hope you enjoy your journey back in time!



WEST TRAIL

1 A RARE AND ANCIENT FOREST

In many ways, this forest is not unlike what the first European explorers to eastern North America would have encountered. Some clues to recognizing this as an 'Old Growth Forest' are obvious while others are more subtle. See how many of these characteristics you can identify on your walk:

- High-branched, large diameter trees
- Pit and mound topography
- Lack of pioneer tree species
- Multi-layered canopy
- Nurse logs and cavity trees
- Absence of sawn stumps

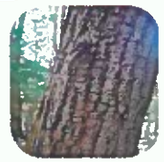
2 CHANGING OF THE GUARD

Shade-tolerant hardwoods are not all created equal. The concept of a 'climax' forest of sugar maple, hemlock and beech in perpetual harmony is a short-term reality. As the forest conditions change, so does the blend and abundance of each of these species. The cycle of deer populations might favour beech regeneration for a period of time. Then, a tip-up tree might create some moist, rich micro-sites for hemlock to germinate. And the right amount of light on the forest floor might favour sugar maple for a number of years.

3 INTERIOR VS. EDGE IN FORESTS

You are now 100 metres into forest, the minimum distance from the forest edge required by many of our songbirds to situate a successful nest. For these species, the edge environment offers too much light and wind. Many birds need large forested areas because they prefer to live in the deep woods. Small woodlots may only provide edge conditions. During the breeding season, interior forest birds avoid competition from those species that prefer the edge environment. Deep forest also provides better cover from predators and nest robbers such as raccoons and squirrels. They also avoid the brown-headed cowbird — a parasitic bird of open areas which lays its eggs in the nests of other birds.

4 OF WOODPECKERS AND HUMMINGBIRDS



This orderly pattern of small holes in the bark is a hallmark of eastern hemlock trees. They are in fact 'sap wells' carefully chiseled out and regularly maintained as a food source by the yellow-bellied sapsucker, and also relied upon by many other species including butterflies and wasps. Interestingly, the arrival of the ruby-throated hummingbird from Central America coincides with the return of the sapsucker. Unlike Central America, there are few suitable red tubular flowers for a hummingbird in our late-April woods, so the sugary sap makes for a fine alternative.

5 HEMLOCK CATHEDRAL

This small but magnificent hemlock grove contains some of Shaw Woods' most senior citizens, many 30 meters tall and well over 200 years old. While you will also find them mixed with sugar maple and beech, they often form exclusive communities such as this. Heavy shade and fallen needles that release acids and aluminum are enough to inhibit the growth of most other plants beneath them. Hemlock saplings can survive decades — even centuries — with only 5 % light, waiting for their chance in the sun. Hemlock bark was once in high demand for its tannin, used in the production of leather. There was no equal for the wooden floors built in early shanties and stables throughout the Ottawa Valley. Further back in time, Aboriginal peoples used the needles, bark and roots in naturopathic remedies.

6 ROOMS FOR RENT

The cavity tree before you is one of the most desirable bits of real estate in a forest. here in the Shaw Woods, there are many such trees and they are a vital source of food, shelter and safety for some 50 species of wildlife. The most prominent excavations on this tree are feeding cavities carved out by the resident pileated, hairy and downy woodpeckers. Larger hollows are environmental ageing processes and these cavities provide prime real estate for fishers, raccoons, porcupines, and the pine marten, to name a few. During your walk, try to spot den and roost cavities in all shapes and sizes and try to guess who calls them home – perhaps a flying squirrel, deer mouse, nuthatch, weasel or saw-whet owl?

7 PORCUPINES AND FISHERS

This beech tree has been girdled by one of our more commonly observed woodland animals. A connoisseur of many kinds of bark and twigs, the porcupine can be especially destructive in young evergreen forests. In winter, watch for its tracks plowed into the snow between hollow den trees and the relative warmth of the nearby hemlock grove. You may also observe another set of tracks close by. The fisher is the porcupine's chief predator . It deftly avoids its prey's formidable weaponry and has the unique ability to expel any quills that do make contact to avoid infection.

8 GLACIAL ERRATICS

This is one of many glacial erratics torn off the granitic bedrock of the Dore Scarp which skirts the eastern shore of Shaw's Pond. With the pressures exerted by a 2-km tall ice sheet slowly pushing a path south, this erratic arrived here about 11, 000 years ago during the last glacial period. At some point since being released by the ice it has sheared in half. Take note of the colonization pattern of mosses and lichens on the rock surfaces.

9 PITS AND MOUNDS

This pit and mound formed when a large wind-thrown tree became uprooted. The resulting variation in micro- topography has dramatic affects on the soil temperature and moisture and creates niche microsites allowing diverse flora to develop. The ephemeral pool of water that forms temporarily each spring provides essential habitat for frogs, toads and also most species of salamanders. Since it eventually dries up later in the summer , it cannot sustain fish which would have otherwise consumed the amphibian eggs. Watch for signs of pits and mounds of various ages. This land feature can last for 500- 1000 years and is another good indicator of an 'Old Growth Forest'. Also, consider why they might be uncommon in a managed forest.

10 INVADERS OF THE CRAWLY KIND

All the earthworms in the Shaw Woods were brought here from Asia and Europe. Without earthworms, fallen leaves decompose slowly creating a spongy layer of organic 'duff'. This layer is essential for many woodland plants and wildflowers which provide habitat for ground-dwelling animals and also help prevent soil erosion. When they are present, earthworms rapidly consume the leaf litter that creates the duff layer and thereby cause remarkable ecosystem-wide changes.

WEST TRAIL

11 A GRACEFUL EXIT

The majestic white pines at this location will not last. From a forestry perspective, the white pine on this site is not the 'climax' state — tolerant hardwoods are. White pine, although long-living, requires fire to prepare a seed bed, to reduce competing vegetation and to thin the overstory trees in order to stimulate seed production. Fire is a natural disturbance agent on dry sandy sites and typically occurs with enough frequency to keep those locations in pine. This site is richer and does not favour a fire return interval of sufficient frequency to retain pine indefinitely. So enjoy the white pine while they are here but, by the next century, their numbers will be greatly reduced and replaced by the young hardwoods coming in around you.

12 WHERE DID ALL THE WATER GO?

Ten thousand years ago, Lake Dore was twice its present size and the Great Gully below you was a raging river draining this ancient version of the lake. The Great Gully is also evidence that an ice sheet once blocked the lower elevations around the lake including the current outlet into the Snake River. During that time, the landscape here would have looked remarkably different. From your current vantage point, try to imagine a shrub tundra similar to what you would find today on the Hudson Bay coastline. Over the following thousand years or so, an open forest of jack pine, black spruce, balsam fir and poplar would have gradually replaced the shrub tundra. The temperate forest that we see today did not arrive until much later .

13 HOMESTEAD TO FOREST

The early-succession forest around you was once farmland. Settled by John and Barbara Shaw in 1847, it was part of a diversified operation including grist and sawmills which ran on waterpower from the Snake River. By 1851, there were seven employees and the farm had 15 acres under cultivation and 15 acres cleared for pasture. Census records tell us that they also had "one bull and seven pigs". Active farming in this section ceased in the 1940s. But keep an eye out for some of the original stone fences.

14 FORESTS FOR THE FUTURE

This site has newly planted red pine working their way through the thick ground vegetation. Although this area could have been left for nature to slowly fill in, reforestation efforts can greatly accelerate the process of natural forest regeneration. Red pine is often chosen as an intermediate crop on the path from an old farm field towards a robust and diverse natural forest. It is a popular choice for plantations because it grows quickly in the open and has few pests.

15 PLANTATIONS WITH BENEFITS

A well-managed plantation provides many benefits and is usually thinned on 10 to 20 year intervals. Thinning promotes a vigorous understory of shrubs for wildlife such as red elderberry, which is seen in abundance here, as well as for future tree species to shoot up into the space provided. Within a few generations, this continuous forest cover system will transform the land from a field to a healthy diverse forest.

16 WETLAND AS PANTRY

For Aboriginal people living along the Snake River watershed, the wetlands represented a rich food resource, both for animals that could be hunted and plants that could be gathered. The elderberry seen to your right served as both food and medicine. The arrowhead growing further out into the marsh was collected barefoot for its tasty potato-shaped tubers. The common cattail spreading out in front of you was like our modern day grocery store. Flour was made from pollen, the young stems were eaten like asparagus and the cooked rhizomes provided over 30% dietary starch and sugars.

17 CEDAR SWAMPS

In lowland areas such as this site where there is good alkaline organic soil and the ground water is close to the surface, one will often find a forested wetland dominated by eastern white cedar trees that can be up to 500 years old. Cedar lowland swamps provide excellent shelter for a variety of wildlife. In winter, the evergreen canopy intercepts much of the snowfall, reducing snow depth on the ground and providing valuable shelter from the wind- chill effects of the winter wind. In the summer, the effect is reversed and the shade and proximity of the groundwater provides a cool refuge from the heat. Cedar is also called arborvitae or 'tree of life' from the experience of 16th century French explorer Jacques Cartier who learned from the Aboriginal peoples how to use cedar to supplement dietary vitamin C and thereby treat scurvy.

18 CANOPY STRUCTURE IS FOR THE BIRDS

Many bird species can co-exist in a forest because they each make use of different parts of the ecosystem. Scarlet tanagers live in the tall treetops and can be hard for us to see even though the males are so brightly coloured.

Red-eyed Vireos tend to reside in the mid-canopy with the females nesting lower down and the males not helping much but singing incessantly. Meanwhile, wood thrushes nest in a dense understory of young trees and shrubs although males perch higher up to sing. The ovenbird builds its enclosed, oven-like nest on the ground. Standing decaying and dead trees are excavated by woodpeckers at various heights. And tangles of fallen trees and logs appeal to winter wrens. The vertical canopy structure and the living, dying, and dead trees in this old forest provide a variety of habitats representing homes and workplaces for a diverse bird community.

WEST TRAIL

19 MAPLE SUGARING

Technology may have changed since Aboriginal people first used elm or birch-bark vessels for sap collection and red hot stones to reduce the volume by 40 times. But for the most part, the end product is much as it has always been. Maple sugar was a staple food during the early days of settlement as refined sugar was both expensive and hard to obtain. By the 1880s, the expansion of local commerce allowed the production to shift from sugar to syrup. At the end of this 20 -metre side trail you will see the site of the original fireplace and pan used by the Shaw family to produce syrup up until the early 1940s.

20 PARASITES AMONG US

One of the more unusual plants to be found in abundance along this section of trail is beechdrops. You should be able to easily spot the 15-45 cm tall stems with small pinkish flowers from late summer onwards. Note that this plant lacks leaves! It is one of a handful of parasitic or saprophytic plants including Indian pipe, pine drops and pinesap which grow along the various trails here in the Shaw Woods. In this instance, beechdrops are parasitic on the roots of adjacent beech trees and thus have no need for chlorophyll, a big benefit on a shady forest floor. Some other parasitic plants, such as Indian pipe, are parasitic on mycorrhizal fungi that grow on the roots of certain plants.

21 COLOUR IN TRILLIUMS

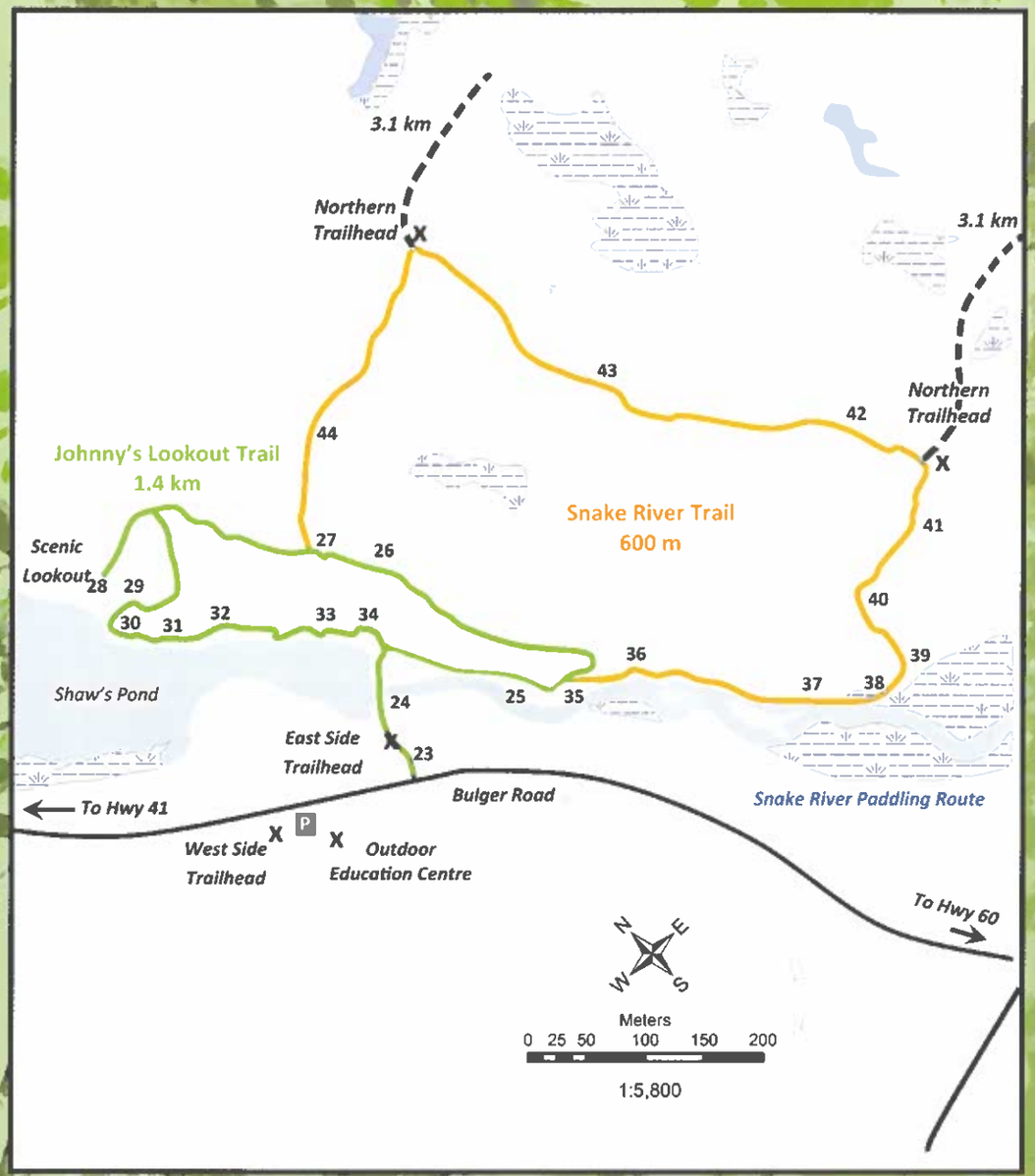
Perhaps nothing represents our spring woods better than the spectacle of broad swathes of flowering trilliums. You can observe two species in the Shaw Woods. The most abundant is the white trillium (Trillium grandiflora). It prefers rich, neutral soils and sometimes takes on a pinkish hue as the petals mature. Look for the red trillium (Trillium erectum) in damper and more acidic conditions. Curiously enough, it can occasionally have a white colour variation. One of the easiest ways to identify the red trillium is the very broad leaves which almost touch. So keep an eye out - what may appear to be a white trillium at first glance may actually be red!

22 DISTURBANCE AND REGENERATION

You have now entered into a much younger forest community. Notice the sudden presence of largetooth aspen and white birch, which are shade-intolerant trees and good indicators of the age of this stand. In the absence of fire, wind is a primary agent of change in this forest. Some years ago, a microburst swept along this hillside, and the resulting open sunlight conditions allowed these pioneer species to become established. Many are now reaching maturity and over the next few decades sugar maple and beech will gradually succeed in this area. Such disturbance and regeneration events are a normal and important part of the cycle of life in every forest ecosystem new and old alike.

EAST TRAIL MAP

Welcome to the Shaw Woods East. These trails will take you along the Snake River, Dore Scarp and Shaws Pond.



EAST TRAIL

WELCOME TO THE SHAW WOODS EAST

These trails will take you along the Snake River, Dore Scarp and Shaws Pond. From the scenic lookout in times of low water, it is still possible to see the river channel as it was before the dam was built in the eighteenth century to create the millpond. The landscapes and diversity of life forms found here stand in sharp contrast to the hardwood forest spreading out before you to the southwest. Pre-1900 forest fire regimes and more recent logging has influenced the forests growing today. However, as you will soon learn, there are numerous connections linking the natural, geological, and human histories of the land along both sides of the waterway. We hope you enjoy your journey back in time!

23 STONE GROUND

This shallow canal once directed water from the millpond to a three-story gristmill erected by John Shaw, a miller from Inverness, Scotland. John arrived here in 1847 by canoe from Bytown with his wife Barbara Thompson (niece of the Hon. Thomas McKay who built Rideau Hall and the locks of the Rideau canal) and their two-year-old son, John II. John Shaw also served as an early postmaster for the Lake Dore hamlet. Two of the original 450-kg grist stones can be seen just ahead near the dam. Imagine the many challenges that must have been overcome to bring them here all the way from Scotland. In this sparsely populated district, early settlers would leave home at dawn, walk up to 20 km with a 30-kg bag of grain on their back and return by nightfall with the ground flour.

24 SAWING LOGS WITH WATER

Adjacent to this dam was the water-powered sawmill which, by 1851, produced 93,000 board-feet of lumber per year. Primarily during the winter, local farmers would draw logs to the mill to be sawn into lumber or cut into shingles. Recording the flourishing commerce of a young business, two of the surviving "day books" had a page dedicated to each customer. These books were used in tabulating and settling the accounts every year or two. Trading and bartering of goods and services was common. For example, the local carriage and sleigh maker would receive basswood lumber (which is lightweight and easily worked) in exchange for manufactured items for the mill's forest operations.

25 OLD-GROWTH PINE

This fallen giant may not have reached the venerable four- century mark nor the species maximum height of 68 metres, but it is nonetheless an impressive example of the species' potential. White pine could be called the 'Ever-ready of Trees' for its ability to continue a youthful vigour into old age. However, note the evidence of interior deterioration typically found in over-mature white pine and indicative of what eventually happens to "Old Growth" trees. Small stands and scattered individual patriarchs such as this one, were certainly components of seventeenth-century upland landscapes. But the lower, moister soils a few kilometres east would have been largely dominated by white pine. Red pine is quite often found in association with white pine but is notably rare at the Shaw Woods. It prefers drier, sandy soils where a hotter fire regime perpetuated its competitive advantage.

26 THE HABITAT MAKERS

With the many dams downstream along the Snake River, it is easy to visualize how beavers create habitat for a wide range of wetland species, from ducks to duckweed. The pileated woodpecker, whose telltale feeding cavities can be seen in this snag, plays the same role. While foraging for insects over their large home range, a pair of birds will inadvertently provide shelter for numerous other bird species and mammals. Man has also altered wildlife habitats for a very long time. Native peoples used fire to enhance the production of fruit and nut bushes and to create lush, vegetative growth that would boost the populations of game animals for hunting.

27 WINDOW TO THE PAST

Notice how different this pine tree looks from the tall, straight ones growing along the river bank. Within the first few decades of it's life, it was attacked by a small brown beetle called the white pine weevil. We know this because of the telltale forked trunk and contorted shape (limiting its value as lumber) that can result from a single attack to the terminal leader. And since this insect generally only persists under open, sunny conditions (hence the common term "pasture pine") we can also conclude that there was a very different landscape present here at the turn of the nineteenth century.

28 A VERTICAL OLD GROWTH

The white cedar clinging to the cliff below you are much older than their small stature suggests, and are well adapted to this unique and particularly harsh environment. Most tree species collect water and nutrients like upside down funnels with water pouring in from the wide-ranging roots, mixing and flowing together up the trunk. However, white cedar has sectored hydraulic pathways: separate roots are dedicated to specific sections of the trunk and branches. If a rock dislodges and tears out a root, only the portion of the trunk connected to that specific root will die. White cedar can potentially live several thousand years. One of the most sacred herbals of the Algonquin people, it is aptly named Arborvitae — "The Tree of Life".

29 A MICROCLIMATE TAKES SHAPE

As the Wisconsin glacier swept across the rock above you, it sheared off and transported the glacial erratics you can see across Shaws Pond along the Old Growth trail. Some years later during the northward retreat of the glacier, great volumes of meltwater carved the small gulley that encloses the main trail uphill from here. Today, this granite escarpment with its southwest orientation and resulting warm, dry microclimate, supports species with a more southerly affiliation. Most at home in the limy soils near Lake Ontario, eastern red cedar (Juniperus virginiana) is present. New Jersey tea (Ceanothus americanus) is another shrub well suited to the coarse soils of this dry, open cliff top. Its dried leaves were once used as a tea substitute during the American revolution.

30 WARM IN WINTER

An absolutely amazing and critical property of water is that it not only expands and floats when it freezes but that its highest density is at 4°C. As a result, our large bodies of water have a protective ice cover in the winter months with a relatively warm water layer of 4°C being insulated on the bottom. This environmental condition favours the chemical and biological processes necessary for the winter survival of many aquatic and semi-aquatic life forms from giant water bugs to painted turtles.

EAST TRAIL

31 BACK FROM THE BRINK

The enormous stick nest visible high up in a white pine across Shaws Pond belongs to our resident bald eagles. It is a constant hub of activity as the parents tend to a pair of eggs in the spring and then provide for the young eaglets through mid-summer when they make their first tentative flights. Juvenile birds do not attain the characteristic white head until 4 or 5 years of age. The adult birds share the parenting duties and are thought to mate for life. With a wingspan up to 2.4 m and an average weight of 5 kg, these impressive birds can live up to 28 years in the wild. Once endangered with extinction, the majestic bald eagle has been nesting here since 2009.

32 SHAWS POND

The relatively quiet freshwaters of Shaws Pond provide excellent habitat for a large number and variety of aquatic insects and plant species. Such ponds act as a natural sink for local nutrient sources in its catchment area. The

variation in soils, vegetation, shade, water depth and temperature provides a multitude of microhabitats. Aquatic insects flourish in such environments and they contribute to a complex food web, playing an essential role in converting nutrient sources and making them available to other life forms. The aquatic insects include midges, beetles, flies and dragonflies, which become prey for other larger insects, amphibians and birds. Watch for very large bullfrogs or birds such as the eastern phoebe and the great-crested flycatcher.

33 LIFE IS WHAT YOU MAKE IT

High above you along the Dore Scarp stand several large white pine seemingly growing straight out of the granitic bedrock. These trees survive by snaking their roots into solution hollows — small indentations in the rock that trap bits of soil and moisture. A symbiotic web of mycorrhizal fungi infiltrate the tree roots and convert air-borne nitrogen into components that the tree can assimilate. Though not as ideal a site for white pine as along the pond's edge, here there are far fewer competitors for that critical patch of the sun's vital energy.

34 DORE SCARP

About 450-500 million years ago, during the Paleozoic era, when life on earth was beginning to rapidly diversify, major catastrophic events shaped the landscape around you. The earth's crust moved downwards about a kilometre between the Mattawa and Petawawa faults. The dropped-down block of bedrock, tens of kilometers wide, formed a rift valley known as the Ottawa-Bonnechere Graben. It contains three minor breaks. One of them, the Dore Scarp, is seen here, extending from Lake Dore to beyond Renfrew. Note the different ecosystem here than that of the old growth forest to the west.

35 GREAT MASTER OF THE SKIES

White pine played an important role in the history of the Ottawa Valley. Beginning in 1806, with the harvesting of trees for sailing ship masts, the square timber trade opened up the region to European settlement. By the mid-nineteenth century, water-powered mills such as the Shaw Mill were beginning to use smaller logs. Here you can see a small example of the dense pine stands that built North America. Note the height, the proximity between trees and the branching pattern. The thick lower bark and lack of lower branches reduces the potential for fire to ladder-up and spread through the canopy. All of these factors combine to achieve the highest basal area (most volume of wood per area) of all our native trees.

36 DOWN WOODY DEBRIS

Down woody debris (DWD) is all the woody material that accumulates on the forest floor. Many forest animals use DWD for escape routes, to stash food under, or to elevate themselves above the brush. Bark and fine twigs comprise the bulk of some important elements like calcium that need to be recycled through decomposition. Nature tends to place DWD in a messy arrangement that functions much better than man's 'cleaned up' forests. Some of the old logs in the Shaw Woods have been on the forest floor for over 100 years.

37 CRIMSON ALONG THE RIVERBANK

Growing in abundance along moist streams and riverbanks such as this one, the cardinal flower's late-summer burst of intense crimson is always striking. The flower's stamen and stigma extend outward in such a position as to touch the top of a ruby-throated hummingbird's head (whom it depends on for pollination) as it feeds on the plant's rich nectar. Lobelia cardinalis is a copious seed producer , yielding up to 5000 tiny seeds per stem. Being so small, the seed cannot expend a lot of energy in struggling up through layers of fallen leaves or soil. So it pins its success on a light-sensitive pigment called phytochrome which activates germination, perhaps many years later and only when exposed to open sunlight. It is said that this 2-4 foot herbaceous perennial was named after the red robes worn by the cardinals of the Catholic Church.

38 CONSERVATION SUCCESS STORY

The wood duck was nearly hunted to extinction in the early twentieth century and its resurgence is a notable conservation success story. Eating seeds, nuts, fruit and insects, and characterized by strong claws that easily grip tree branches, it has been described by many as the world's most beautiful duck. A high-quality wetland habitat for this species consists of standing live and dead trees, stands of grass and cattails, tangles of brush, plenty of aquatic invertebrates and extensive surrounding stands of mature oak. The limiting factor at many sites, including here, is often a lack of suitable natural tree cavities for nesting. Nesting boxes such as this one are readily adopted and the clutch of 10-14 eggs is less vulnerable to raccoon predation. Interestingly, offspring born in cavities will look for them first, but offspring from nest boxes are more likely to select these for their own brood. By understanding these breeding dynamics, we can be strategic in box placement to increase the population up to a threshold capacity of one pair per acre of suitable habitat.

39 RIVER AS HIGHWAY

Rivers were once key transportation routes and the archaeological evidence suggests that the Snake River has linked people living along the shores of Lake Dore with the rest of the Ottawa River watershed for thousand of years. During the "Beaver Wars" of the 17th century, Iroquois raiding parties spread north along many area rivers. Standing at this peaceful vantage point we can only muse if this remained a safe haven. We do know that during the time of the Fenian Raids (1865-1871), Frank LaRonde, a local man of Algonquin heritage and perhaps the original River Keeper, kept silent vigil against American invasion. The stone turret where he steadied his musket still stands above the river's bank just upstream from Osceola.

40 MASTING CYCLE

Masting is a reproductive mechanism where trees produce an abundance of seed in one year and then little or nothing during the next year. This boom or bust strategy provides more food than seed predators can consume during the bumper year leaving surplus seed to remain on the forest floor to germinate. The squirrels, mice, and birds ramp up their reproduction, and then starve the following bust year when the trees shut down one of their primary food sources.

41 VERNAL POOLS

Vernal pools are a class of woodland pools that fill with meltwater in the spring and dry out by late summer or fall. Such pools are typically small, shallow, isolated from streams, and are characterized by alternating periods of flooding and drying. Once dry, they can be recognized as ground depressions having little-or-no ground vegetation. Since vernal pools are isolated and typically have a dry period, they rarely support fish. This provides a unique habitat for a diversity of invertebrates and vertebrates. Vernal pools are often critical breeding and nursery habitats for wood frogs, spring peepers, and yellow-spotted and blue- spotted salamanders. Shrubs such as red-osier dogwood often grow along the margins and provide excellent locations for salamanders to attach their eggs.

42 OAK ESTABLISHMENT STRATEGY

Red oak has an unusual reproductive strategy. Germinating from an acorn, the seedling rapidly puts down a large tap root. Investing in roots means there are few resources to grow a shoot tall enough to stand above its competitors and gather sunlight. Instead, the oak depends on ground fire or browsing by deer and moose to reduce competing saplings. Using the food reserves in its larger root system, red oak then shoots up taller than before and gets the jump on any nearby competitors.

43 A FOREST REGENERATES

Since this section of land was purchased in the early 1970s, it has been undergoing a natural succession process much different from the exploitive forestry management practices of the past. The northern temperate forest regenerating here is characterized by a combination of three biotic components that are unique in all the world's forests: wood warblers, spring ephemerals and salamanders, which arrived and evolved together from residual populations south of the glacier's reach. They have successfully adapted to living under this particular forest canopy over the past few thousand years.

44 FIRE-FORMED WOODLAND

On your walk along this trail, you may have noticed the occasional charred stump, such as this one. Given the age of this pine stand, it is very likely you are looking at surviving evidence of the great fire that swept through the Micksburg area in August of 1881. As devastating as it was for farm families, it created ideal conditions for the stand regeneration you see here today. White pine requires either natural or human-created disturbances to reproduce and it is unable to reproduce under the shade of a closed canopy.

— Part of the photographic and narrative material in this publication is excerpted from earlier Trail Guides, produced under the direction of former Board Chair Grant Dobson.

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VOLUNTEERS ARE THE BACKBONE of the Shaw Woods Outdoor Education Centre

With thousands of visitors coming to the Shaw Woods every year, volunteers are crucial to the successful running of our many programs. All of our committees — trails, finance, risk management, building and site, education and executive — are staffed completely by volunteers.

What's more, the board of directors for the Shaw Woods is a "working" volunteer board, which means board members not only advise, they help build and maintain the infrastructure, conduct tours, write grant proposals and vigorously promote the Shaw Woods.

Because of the emphasis we place on outdoor education, its no surprise a number of our volunteers are retired educators. This is most fortunate, because they bring well over a hundred years of teaching and curriculum experience to the Shaw Woods.

Highlighting sustainable forestry practices is a major part of our mission statement. Representatives from both the forest industry and Renfrew County's forestry department also volunteer at the centre.

Our nature trails have been "adopted" by volunteers who routinely patrol them and assure that necessary maintenance is performed.

Other volunteers bring financial, management and strategic planning skills to the Board of Directors.

To all of you, from everyone in Renfrew County and everyone who loves the Shaw Woods, we wish to extend a heartfelt thank you.