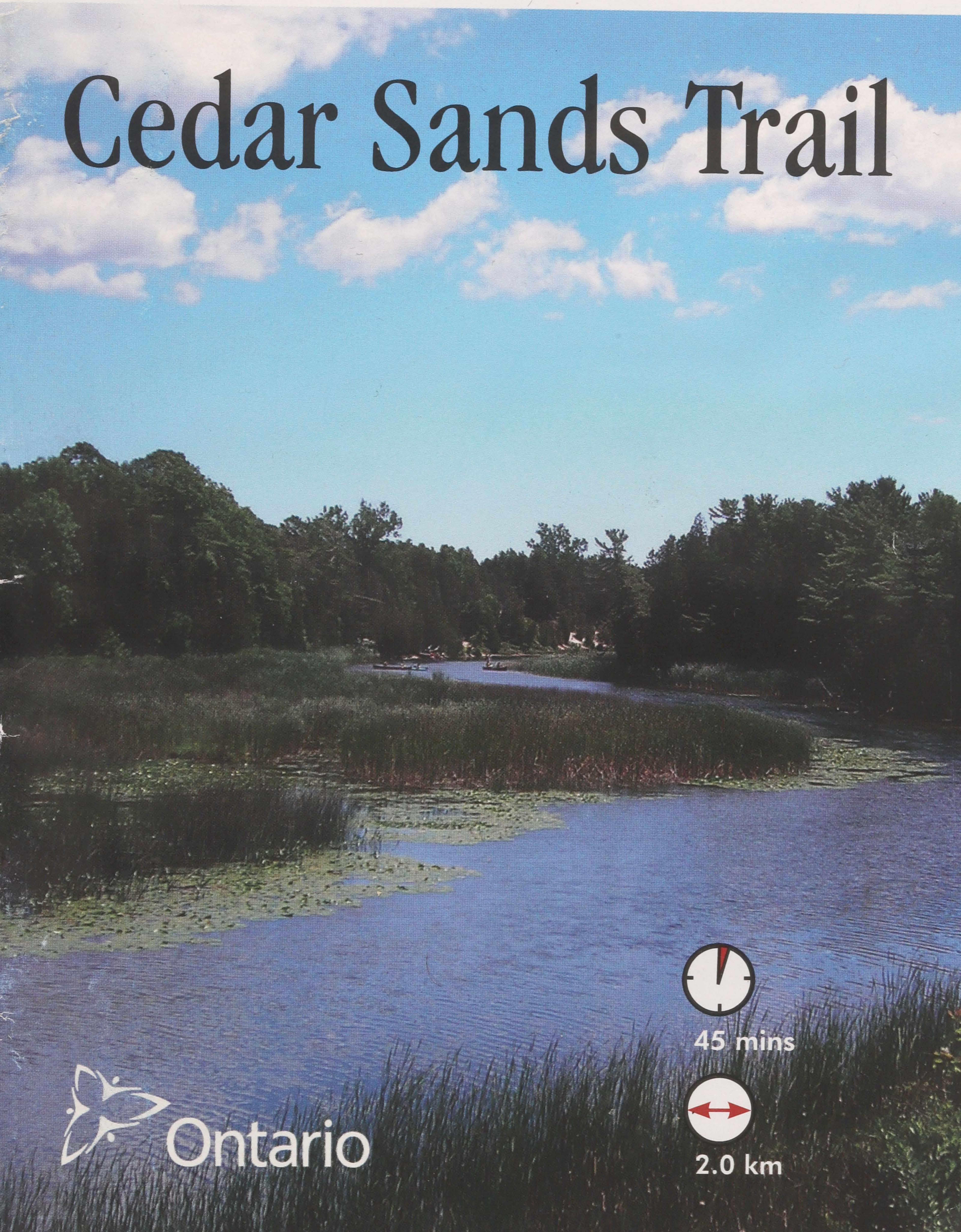




Sandbanks

Cedar Sands Trail



45 mins

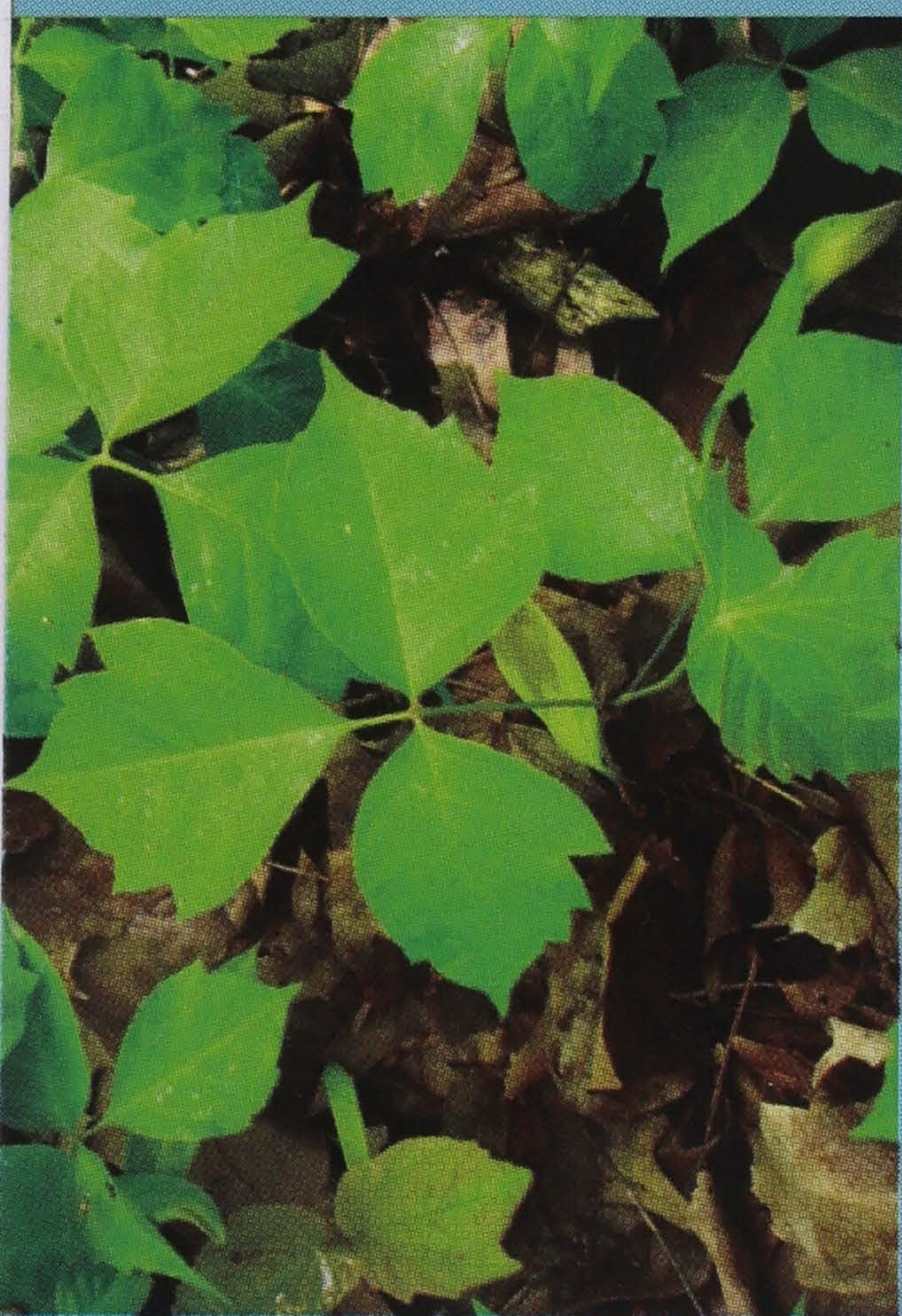
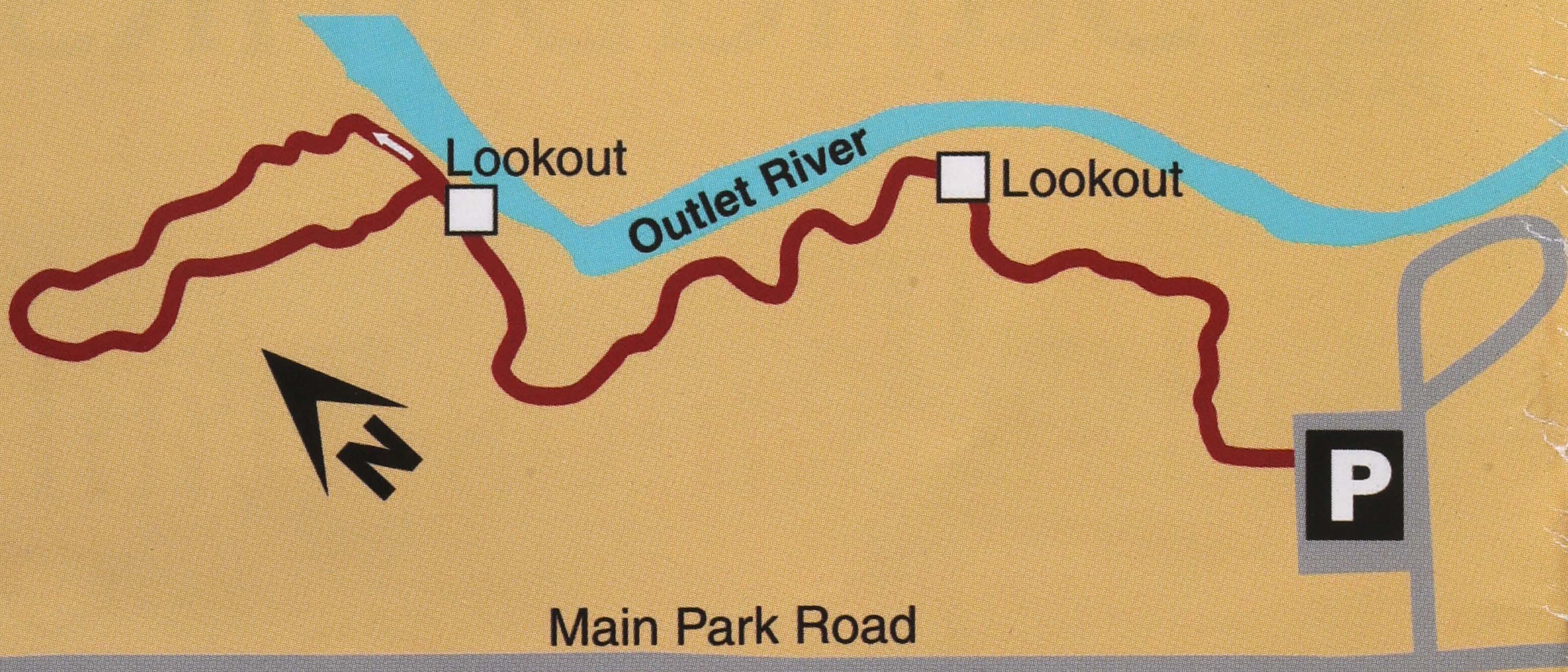


2.0 km



Ontario

Cedar Sands Trail



Poison Ivy

Poison Ivy - Leaflets Three, Let it Be

Poison Ivy is a common native plant of Sandbanks. It helps to stabilize the sand and is food for many wildlife species. Poison Ivy contains an oil that may produce an allergic reaction in humans, usually a mild to severe rash. The oil can be contracted directly, or indirectly by touching clothes or pets that have been in contact with the plant. Learn to identify Poison Ivy and avoid it! If contact is suspected, wash with a strong soap as soon as possible.

Identification

- Three leaflets - middle leaflet has longer stem than two side leaflets
- Smooth plant (no hairs, thorns or prickles)
- Variable leaf edges - smooth to jagged
- Green in summer, red in fall
- Clusters of green berries turn dull white in fall
- Height 2cm to 1 m (1" to 3')

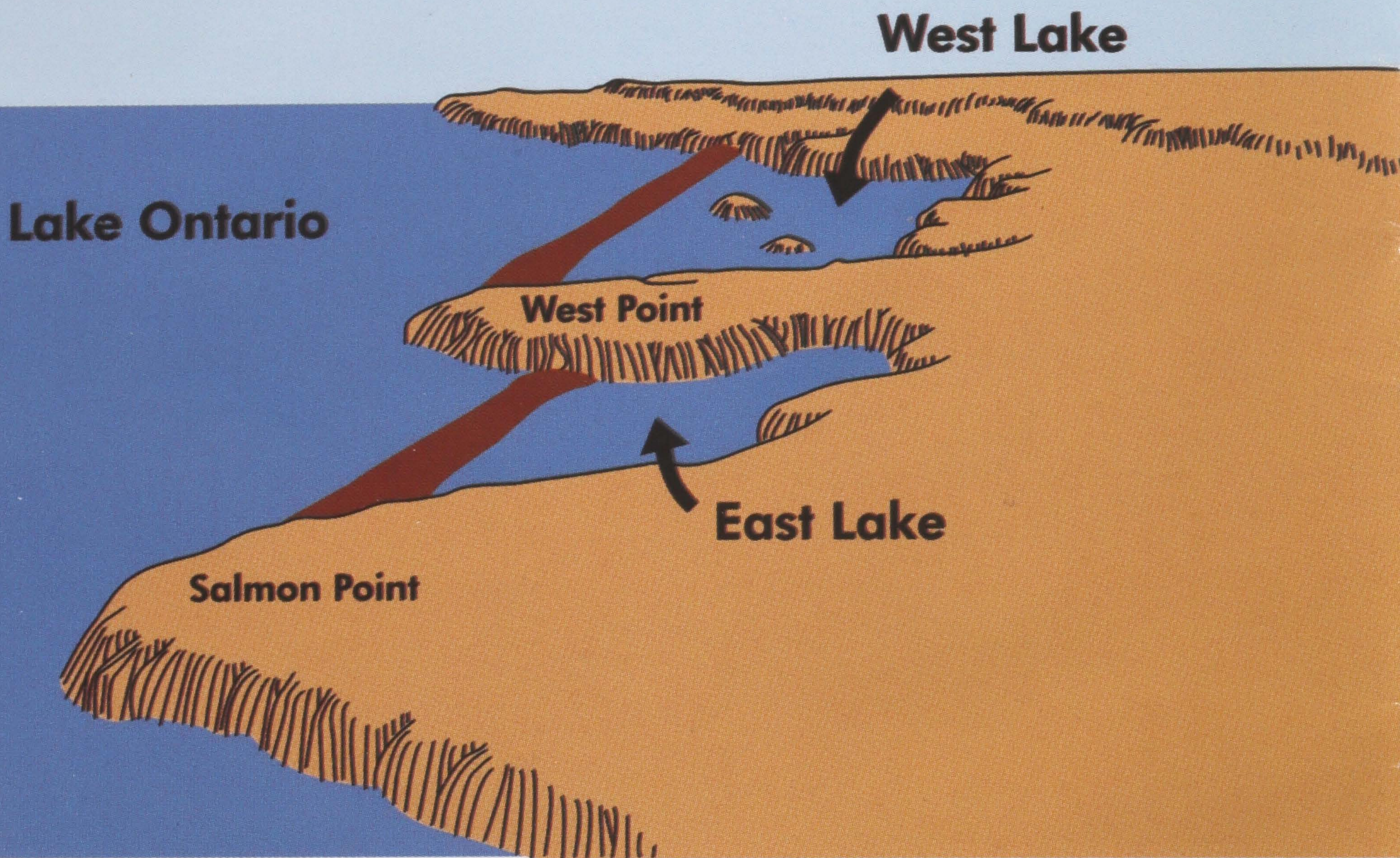
Welcome to the Cedar Sands Trail



Welcome to the Cedar Sands Trail. For the next hour or so the trail will lead you through open dunes, cedar forests and river edges of the East Lake Bar. In this sandy environment moisture requirements, nutrient demands and successional stages define the plant communities.

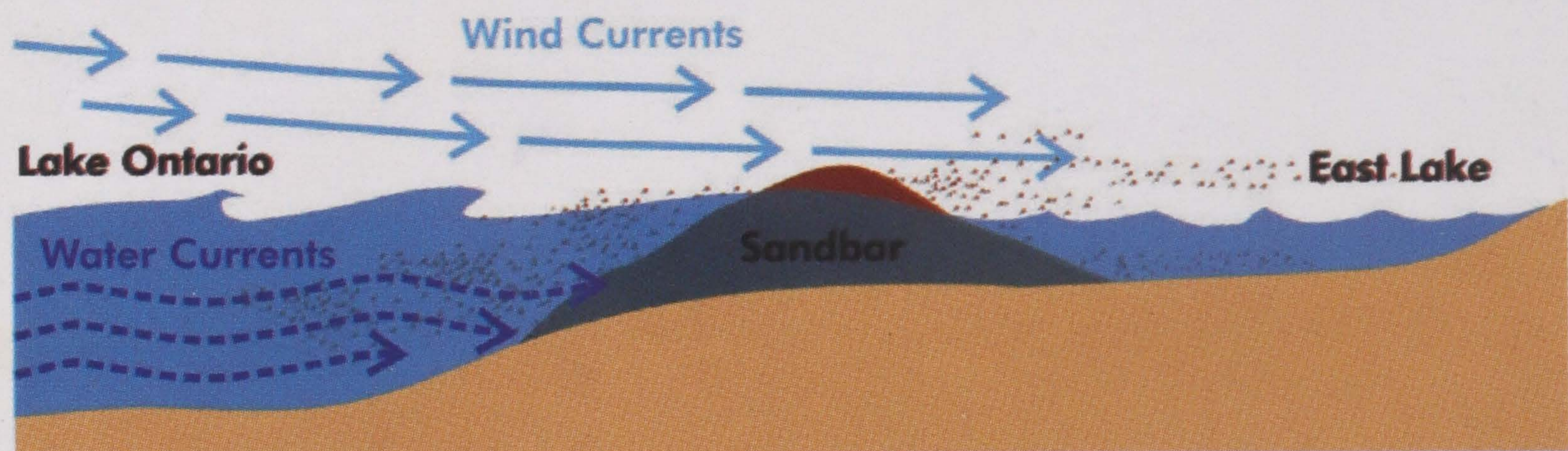
The trail is approximately two kilometres long and winds its way through a section of freshwater bar. Stairs and boardwalks provide easy access across the dunes and through wetter sections and lessen the impact of trail use on this sensitive environment. Numbered posts along the way correspond to stops in this guide. Enjoy your walk and please stay on the trail!

1. East Lake Bar



The East Lake Bar is one of two barriers found within Sandbanks Provincial Park. These bars are part of the largest freshwater baymouth barrier system in the world. The meltwater of glaciers that receded about 15,000 years ago brought the sand that makes up these bars. As the great sheets of ice retreated north, they dropped their loads of scoured rock, gravel and sand. These were reworked by rushing waters, the lighter sediments being carried to and deposited in what is now Lake Ontario. At that time East and West Lakes were bays of Lake Ontario. Gradually sand was brought to shore by the waves and currents of the lake and deposited at the mouth of the bays. As more sand was brought ashore, the bars grew until they effectively cut off the bays, creating East and West Lakes.

Although water can percolate through the bar, a more substantial drainage outlet is required, thus the presence of the Outlet River and the channel at Wellington Harbour.



As the bars grew out of the water, wind played a role in the development, as it does today. Sand initially comes ashore on the beach, where it is picked up and moved inland by prevailing winds. As sand is trapped, it is piled into dunes. In time plants become established and help to hold the sand in place. As more sand comes ashore, the bar builds and a series of dunes are formed. The foredunes remain close to the beach and catch the incoming sand while the back dunes become more stable. It is the communities of these back dunes that will be explored along the Cedar Sands Trail.

Although the East Lake Bar has avoided the catastrophic events of recent history that so affected the West Lake Bar, it is still a sensitive area. The plant communities that have become established are important in holding the sand in place. Removal of or damage to these plant communities could expose the underlying sand to the devastating effects of the wind.

As you move along the trail, notice the areas of exposed sand and the few plants that survive there.

2. Dune Top



Cottonwood

Here we are at the top of a dune that runs perpendicular to prevailing south-westerly winds.

This section of dune is in an early stage of plant succession. Sand is a very difficult place for plants to grow: it has few organics, doesn't hold water well, gets very hot in summer and strong winds move it around in all months. Plants that grow here must be specially adapted. Early pioneer species such as wormwood and Star-flowered Solomon's Seal, more prevalent in the open sandy spots on the climb up, continue to exist here. The fine white hairs on the wormwood leaf help reflect heat from the plant's surface and conserve moisture. Note how dead this plant looks at its base; sand can pile up without affecting the green growth. The Solomon's Seal has coarse leaves that conserve moisture. Growing

by underground stems allows the plants to share moisture and nutrients and also help to hold the sand. Once the sand is stable, Poison Ivy and Riverbank Grape move in. Water is still a priority, so both have leaves with thick waxy cuticles to prevent excessive moisture loss. Grapevines sprawl over the dunes, while Poison Ivy spreads on vine-like runners that are not so obvious.

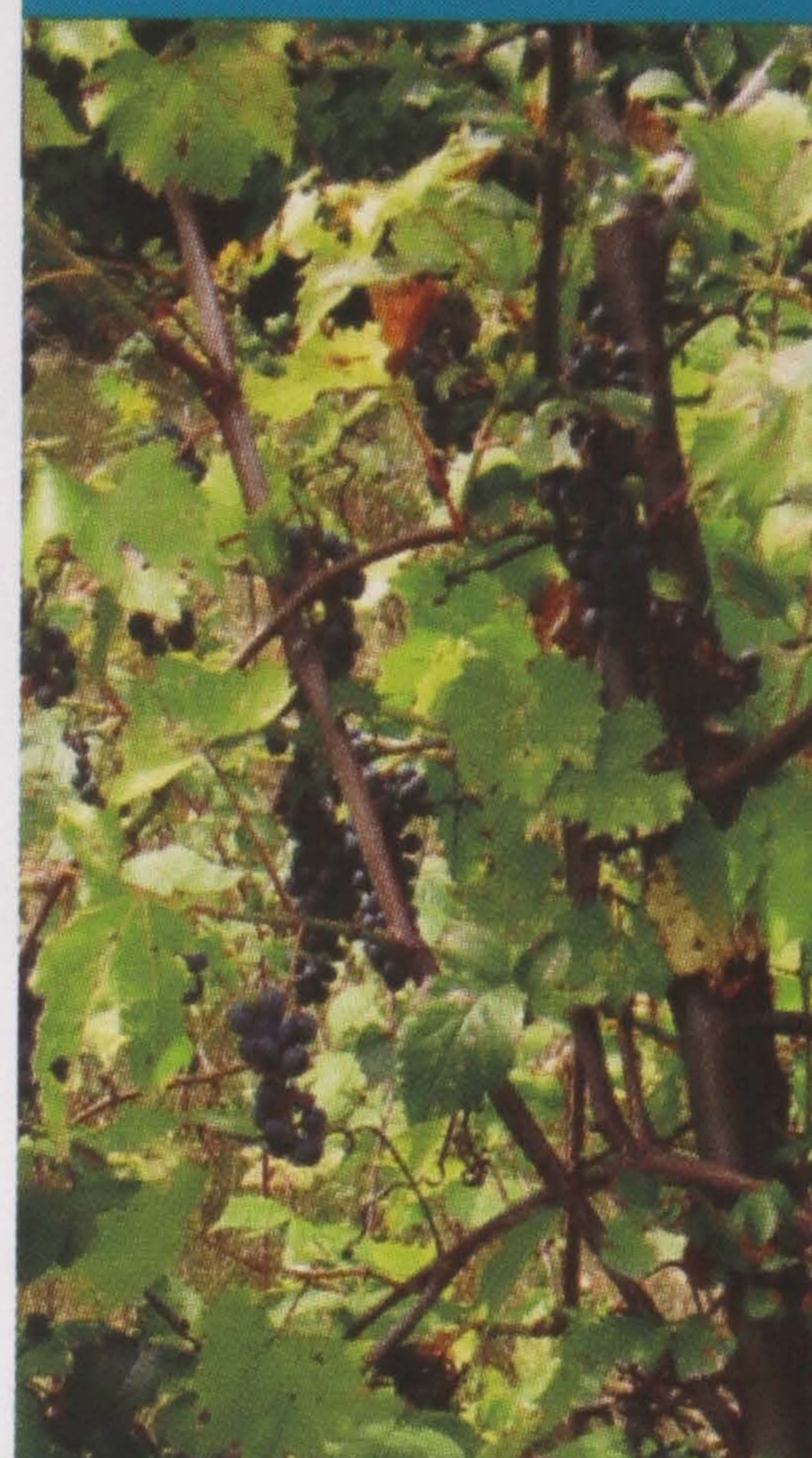
Every fall, these pioneer plants drop their leaves and as they break down, organics are added. As well as adding nutrients, the organics help to hold moisture, creating conditions suitable for grasses and Common Juniper. The presence of these plants indicates an early stage of succession.

The scattered deciduous trees are Eastern Cottonwoods. These fast growing trees are early invaders of the dune system; the seedlings require lots of sunshine to sustain their fast growth. To gather moisture the roots are usually shallow and wide spreading but they can go deep to reach the water table far below. Cottonwood gets its name from the white fuzz that surrounds the seeds, allowing the wind to carry them away from the parent's shade. So many seeds are produced, that it often looks like it's snowing in June!

As we move to the next stop, notice the differences in temperature, humidity and shade and the changes in vegetation.



Star-flowered
Solomon's Seal



Riverbank Grape



Wormwood

3. Cool and Damp



Eastern White Cedar

One step into this treed haven and the temperature difference is obvious - it's immediately darker, cooler and damper. Although the forest floor is littered with dead leaves and pine needles, the soil underneath is sand. At the base of the dune, the water table is not far below the surface and the area is protected from moving sand by the dune that was just crossed.

Here, we are in an Eastern White Cedar forest. Flattened leaves or scales that cover the twigs are diagnostic of these trees. Cedars have shallow, spreading roots and do best in damp, non-acidic areas. Their presence indicates lime in the sand. The underlying bedrock in this area is limestone; particles have been broken down and added to the sand not only by the ancient glaciers but also by the wave action of Lake Ontario.

These cedars are well established and their canopy lets very little sunlight penetrate to the forest floor.

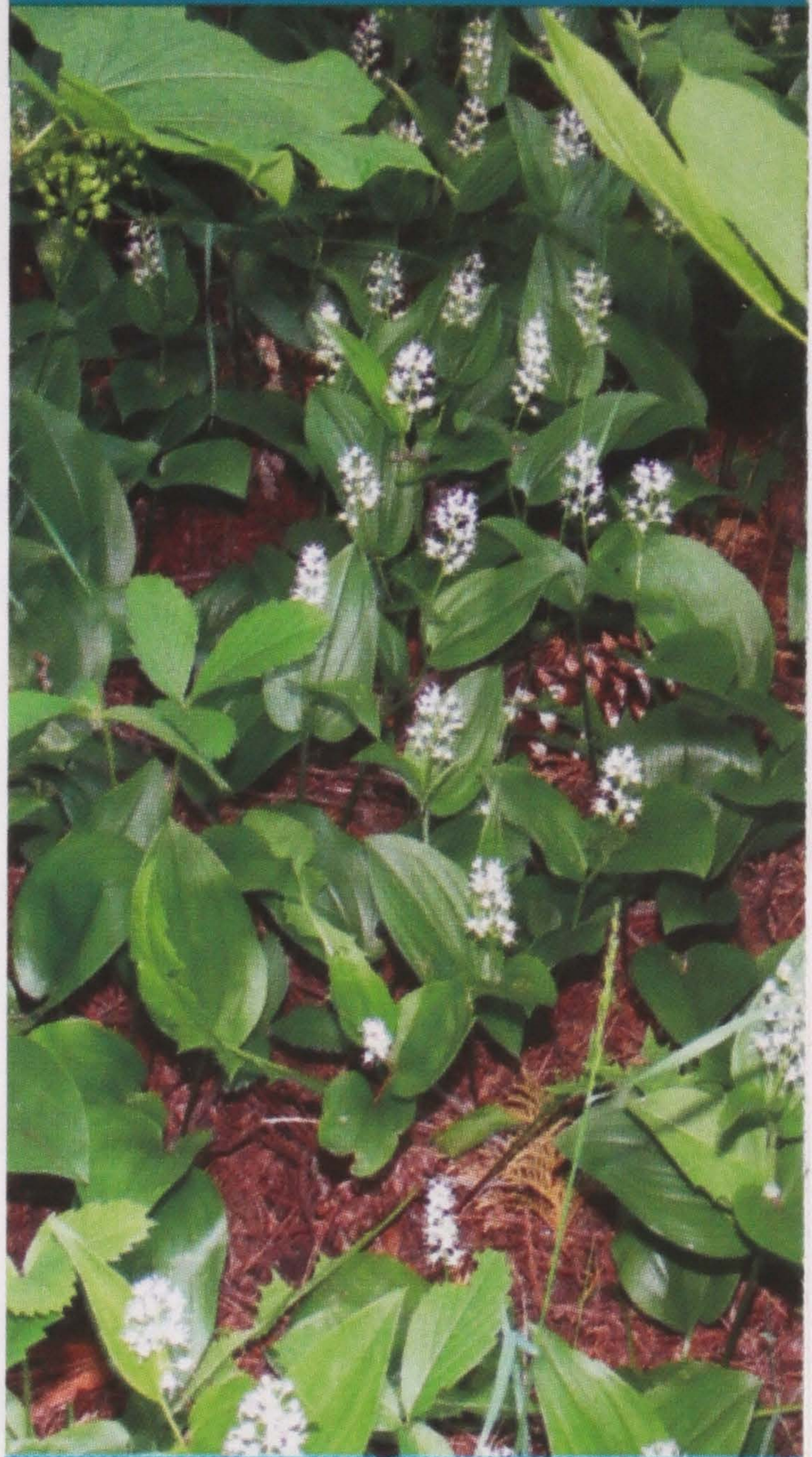
The plants that do survive must exist with little direct sunshine. One common plant is Wild Sarsaparilla - a Poison Ivy look-a-like, but note that the leaflets emerge from a central stem to divide into three and that some leaves have three leaflets while others have five. Another common understory plant is Canada Mayflower, its rounded, deeply-veined leaves emerging just out of the leaf litter. A closer look at these plants will reveal that many are not flowering or producing fruit. Seed production requires a lot of energy, so many of these plants exist for several years in the shade, gathering and saving resources until they have enough energy to flower.

Look around this site. Is there an area where the undergrowth is thicker? Look around the base of a White Birch. As birch trees are deciduous, the leaves do not fully open until late May. The plants below enjoy the extra spring sunshine and grow more luxuriantly than neighbours under the evergreen cedars.

The dampness of this area comes not only from the extra shade but also from the proximity to the Outlet River. Can you hear or see anything that would suggest that a river is nearby?



Sarsaparilla



Canada Mayflower

4. The River's Edge



Marsh Fern

Although the river can't be seen at this point, the plants growing here indicate its proximity. This area is damper than the forest and standing water varies annually and seasonally. The amount of water is dependent on the water levels of Lake Ontario in high water years; there is good reason for the boardwalk. Spring runoff and fall rains raise the water level while the summer heat reduces it.

Looking out, can you see that the cattails at the river's edge give way to sedges and Marsh Ferns, which give way to shrubs of dogwood and willow to become the edge of the White Cedar forest? Each band of vegetation illustrates a different moisture regime, the cattails being in the wettest and the forest in the driest. These bands of vegetation will move over time. The

vegetation dies back annually and dead leaves are broken down and added to the soil. As the soil builds up, it becomes drier. Gradually the cattail edge will die out, to be replaced first by sedges and ferns, then by dogwoods and willows. Eventually the clearing will become part of the cedar forest.

To insure that at least some of the plant remains in suitable growing conditions, the Marsh Fern, once established, can grow by underground runners. This fern seldom grows in standing water, but likes moist conditions in spring and fall. The leaflets on the lance-shaped leaves are twice cut so it lacks the really lacy look of some other ferns. In mid-summer, the fertile leaves produce brown powdery spots on the underside of the uppermost leaflets. These contain the spores, genetically identical to the parent plant. If these spores land in a suitable spot, they will develop into minute heart-shaped plants that produce the sex organs. Water is required for male cells to swim to female cells and only then will a new fern be produced. This is such a risky business that most ferns are necessarily long lived.

This area is a drier section of the river's edge. As you continue, look for other vegetation changes that relate to soil moisture.

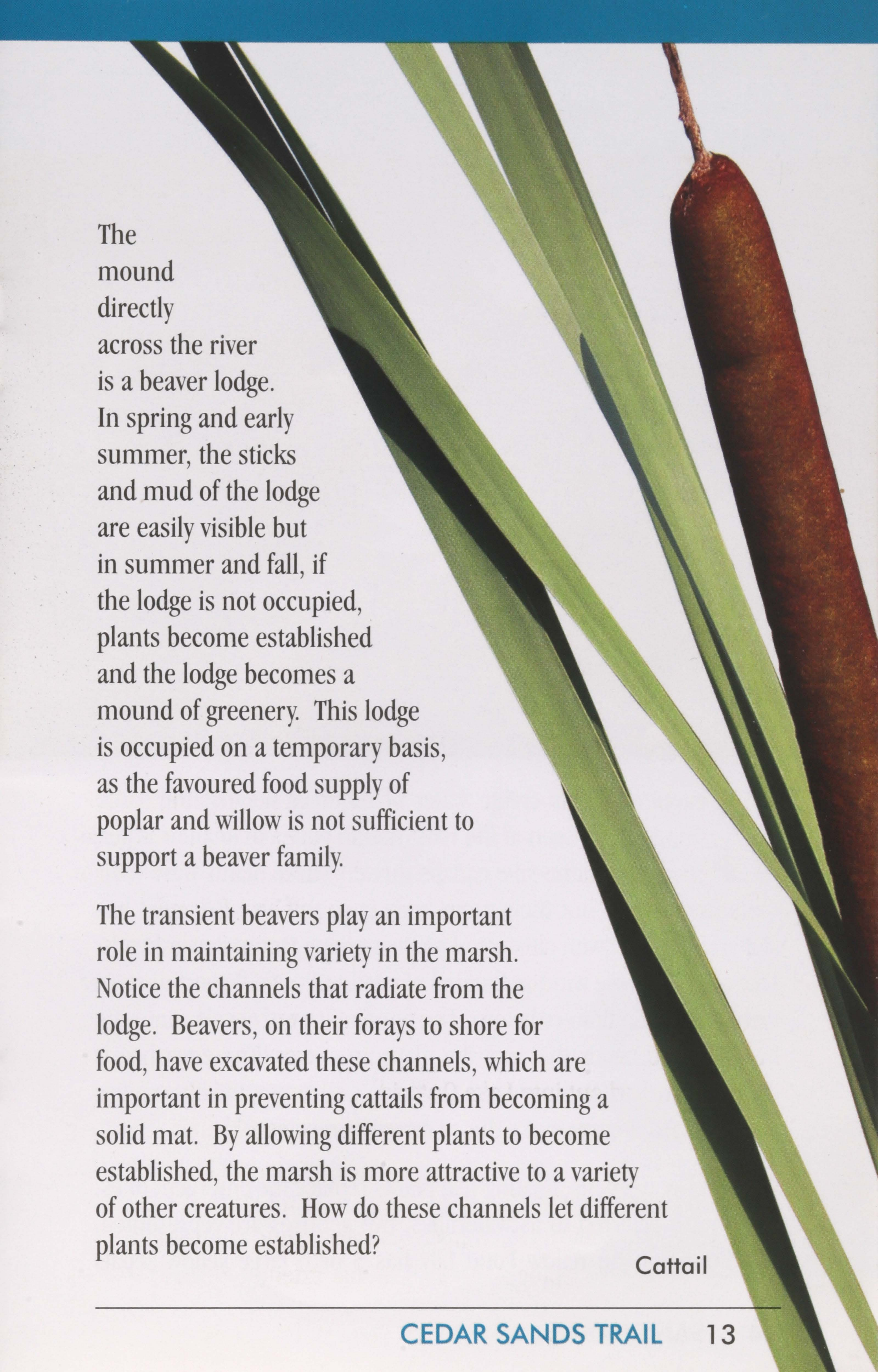
5. Connecting Lakes



Beaver

The Outlet River provides a totally different set of conditions for plant growth. The river runs from East Lake to Lake Ontario and its character varies seasonally. East Lake is so much smaller than Lake Ontario, that spring runoff and fall rains raise its water level much faster than that of Lake Ontario, producing a strong current. In the summer and winter when conditions are dry, the river flow slows and its mouth fills with sand, moved by the wave action of Lake Ontario. When the river flow increases, the sand is pushed out into Lake Ontario.

If you look across the river, you will see a cattail marsh. The cattails in the deeper water are floating, their roots attached to the more solid mass closer to shore. Over time, the cattails will try to fill in the river, but the currents of the spring and fall prevent this, loosening and sweeping away clumps that extend too far.



The mound directly across the river is a beaver lodge. In spring and early summer, the sticks and mud of the lodge are easily visible but in summer and fall, if the lodge is not occupied, plants become established and the lodge becomes a mound of greenery. This lodge is occupied on a temporary basis, as the favoured food supply of poplar and willow is not sufficient to support a beaver family.

The transient beavers play an important role in maintaining variety in the marsh. Notice the channels that radiate from the lodge. Beavers, on their forays to shore for food, have excavated these channels, which are important in preventing cattails from becoming a solid mat. By allowing different plants to become established, the marsh is more attractive to a variety of other creatures. How do these channels let different plants become established?

Cattail

6. River in Succession



Fragrant Waterlily

Beaver channels create water of different depths; the same thing can be seen at the river/marsh edge. In shallow water, emergent plants like cattails thrive. These plants have their roots underwater but their main body is in the air. Bur-reed has stiff green leaves, with clusters of whitish-green, round flower heads. Like cattails, these wind-pollinated plants hold male flowers at stem tips and female flowers below. The female flowers develop into the bur-like seed heads that give the plant its name. The erect heart-shaped leaves are Pickerelweed. In the late summer, the blue spikes of two-lipped flowers make this plant easily recognizable.

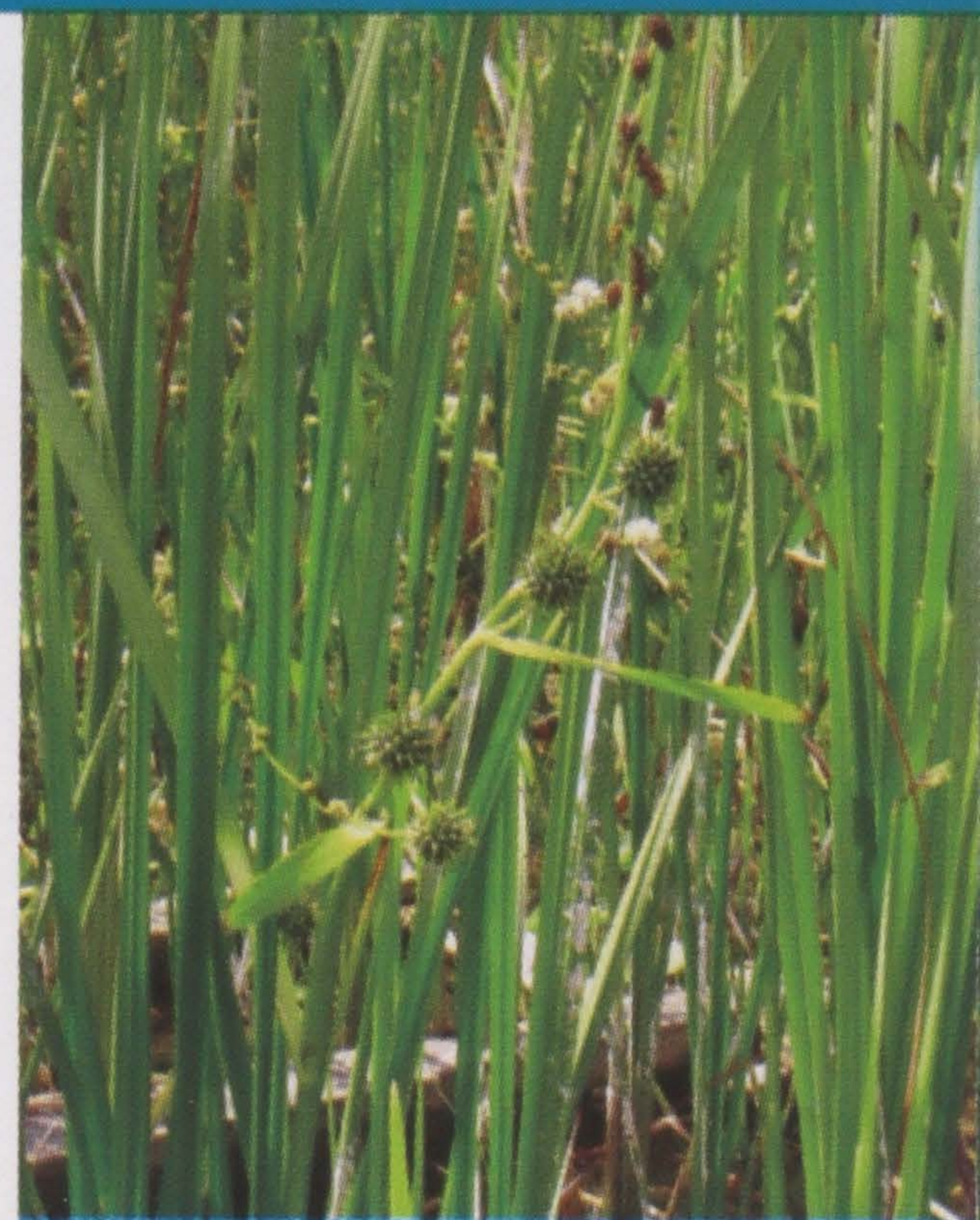
As the water deepens, floating-leaf plants replace the emergent ones. Commonly referred to as waterlilies, two genres are represented. The flower of the Yellow Pond Lily has 5 or 6 large yellow sepals

and numerous petals resembling stamens. It is held above the water's surface by a robust stalk and the seedpods develop there. The leaves are oval. The flower of the Fragrant Waterlily has numerous white petals held on a delicate stalk amongst its round leaves. These flowers open in the morning and close by mid-afternoon. Once pollination is complete, the stem coils, drawing the developing seedpod below the water's surface.

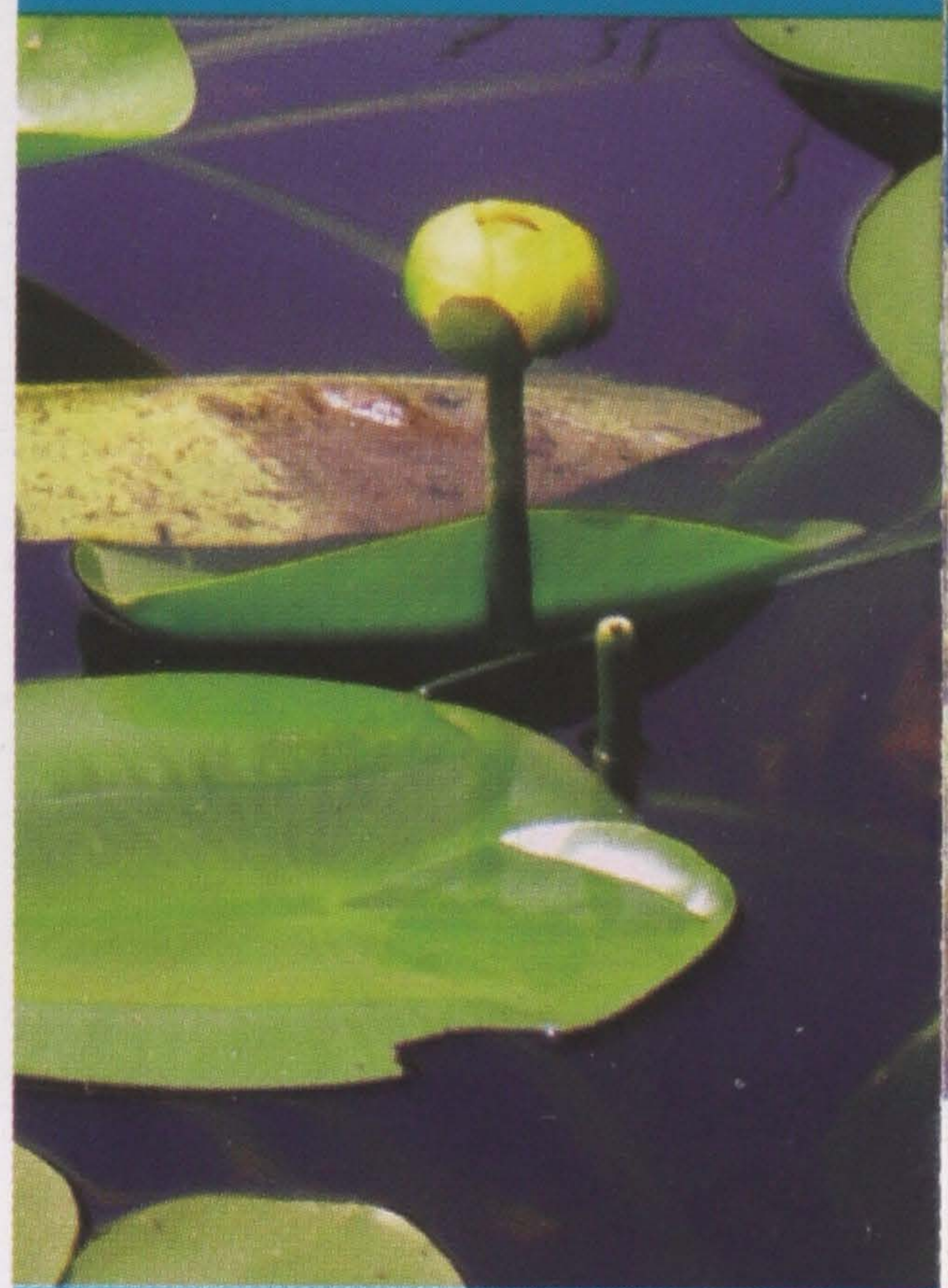
Further from shore, the water deepens more. Waterlilies struggle to reach the water's surface and are replaced by a large assortment of "submergents". Although these plants live below the water's surface, their flowers must reach the air for pollination to occur. In late summer, the tiny non-descript flower heads of these plants poke above the surface, attracting insects to complete their life cycle.

All these plants contribute to the richness of life in the river. Algae growing on the plants feed microscopic creatures and snails. Aquatic insects hide in the vegetation as they wait for prey to travel within easy snatching distance and fish of all sizes dart in and out as they search for food and avoid being eaten themselves.

As we move along to the next stop, think about the interactions that are occurring underwater and think of what interactions occur between land and water.



Bur-reed



Yellow Waterlily



Pickerelweed

7. River and Land



Midland Painted Turtle

Look downstream. Can you see any interactions between river and land? The river provides water for the forest and fallen leaves provide nutrients to the river. At the edge of the Outlet River, the occasional tree falls and topples in. It will take years to break down and release its nutrients, but in the interim the fallen tree adds structure. The shade and cover provide ideal lurking sites for large predators like Large-mouth Bass and Northern Pike. The fallen trees are also ideal sunning sites for other river residents.



Large-mouth
Bass

Five species of turtles can be found at Sandbanks. The nocturnal Stinkpot or Musk Turtle and the notorious Snapping Turtle are rarely seen out of the water except during the June egg-laying season. The more terrestrial Blanding's Turtle, easily recognized by its yellow throat, prefers to haul itself onto vegetation at the river's edge. Those that are most commonly seen on the logs and fallen trees are the Midland Painted Turtle and Map Turtle. The Painted Turtle displays red colouration on its neck, legs and shell edges and has a smooth, round black carapace. The Map Turtle - so named for the apparent "contours" on its carapace when young - has a more serrated shell. Although the serrations disappear as Map Turtles age, the rear edge of the shell remains jagged and they never show any red markings. No one really knows why turtles bask. Some think it has something to do with fungal control, but those that don't bask don't fall afoul of these conditions. Some believe that because turtles are ectothermic, like other reptiles, they gather heat to speed egg development, but it is not just females that bask. Others believe that by absorbing heat, they are faster swimmers in their search for food once they return to cooler waters.

Fallen trees are an integral part of the Outlet River but they play an important role in the forest too. How do fallen trees help the forest?

8. Life After Death



Dogwood

When a tree falls in the forest, the results are similar to one falling in the water, but with one big difference. Can you see what it is? In the forest, trees compete for sunlight; those that grow tallest with the biggest crown grab the most sun. By doing this they ensure their survival, but prevent life-giving sunlight from reaching the forest floor. When a tree falls, sunshine pours through. The seeds and plants of the forest floor spring into action and flourish. At this stop dogwood, Balsam Fir, Chokecherry, American Yew and Red-berried Elder are competing for precious light. By the nature of their growth habits, the dogwood, yew and elder will never attain great height. They will thrive and add structure to the forest until the taller growing Balsam Fir and Chokecherry cut off their sunlight.

When a tree falls, the slow process of decay begins. Leaching will take nutrients to the roots of other plants. Fungi will attack the hard cellulose walls. Insects will move in.

Once the decay process starts, the wood holds more moisture than the surrounding earth. It is at this stage that it will become the favourite haunt of salamanders whose skin, like most amphibians, must remain moist. Two

species of salamanders can be found here. The Blue-spotted is mottled blue and black. Typical of amphibians, this salamander must return to water to lay eggs and allow its tadpole-like larvae to develop. The Red-backed Salamander is a woodland salamander and two colour morphs can be found; the “lead back” is entirely grey and lacks the bright red dorsal stripe of the “red-back”. Instead of returning to water, eggs are laid in narrow crevices of rotting logs or under rocks. The female guards the eggs for the two months they take to develop into two-centimetre salamanders. The gilled larval stage occurs entirely within the egg.

Salamanders are nocturnal carnivores feeding on worms, slugs and insects and are more common than their secretive nature leads us to believe. If you look for salamanders, remember to roll the logs gently back to their original position so as not to disturb their home.

As important as a fallen tree is in the forest, the standing trees are more so and provide homes to many of Sandbanks’ creatures. Watch and listen for any signs of wildlife.



Red-backed
Salamander

9. Denizens of the Forest



Red Squirrel

As you walked the trail, you may have heard the chattering and scolding of the Red Squirrel. Although they will eat almost anything from mushrooms and insects to bird eggs, their favourite food is pine cones. Heaps of shucked pine cone scales indicate preferred feeding stations. Each squirrel has a territory that it defends against others, except during mating season. The size of the territory depends on the availability of food. Red Squirrels can make their home almost anywhere, using a woodpecker hole, a crow's nest or a nest of their own making. Look up and see if you can spot any squirrel nests as you continue along the trail.

Not all the nests are those of squirrels. Green Herons have made the thin stick platforms. About the size of a crow, this heron has a

bluish-green back, chestnut neck and in the breeding season, bright orange legs. Although it feeds along the Outlet River, it nests in the nearby cedars. The male selects the nest site and initiates the building. Once paired, he will bring sticks but she finishes the nest. When walking the trail, listen for the loud “skyow” or “skewk” that sounds like the shaking of sheet metal - this will alert you to their presence. When the herons are finished with the nest, a Red Squirrel may add shredded cedar bark to convert it to a nest for itself.

Red Squirrels sometimes take over woodpecker holes. The large oval holes in some of the cedars are the workings of Sandbanks’ largest woodpecker, the Pileated. The favourite food of these crow-sized birds is Carpenter Ants. Look carefully in the holes and you will see the ant tunnels. Fungus initially softened the heartwood, giving the ants wood that could easily be manipulated into their intricate chambers. Woodpeckers, hearing the ants at work inside, gain access with their chisel-like beaks. Once in, the woodpecker can extend its tongue, five times the length of its beak, to reach the ants living within. The exposed softened wood can then be easily excavated by Red Squirrels.

As you proceed along the trail, look for these signs of wildlife and also notice how the terrain changes once again.



Red Squirrel Midden



Green Heron

10. Out of the Panne and into...



Boneset

Did you notice that once you climbed down the stairs the area seemed to level out, becoming almost flat? This low-lying area between the dunes was once an open panne. When the dune system was newly formed, the only run-off received would have been from the open sands. Low nutrient levels and fluctuating water levels would have resulted in a flora similar to that of today's West Lake pannes. As vegetation became established on the dunes, the run-off contained more nutrients. On top of this, the plants originally established in the panne have grown and died back each year, recycling their nutrients and adding organics. Over time the

soil increased not only in depth but in richness as well. Those species first established, were slowly out-competed and replaced by plants that grew more quickly in richer conditions. Look closely at the mixture of vegetation along the boardwalk. Rushes and horsetails that once grew in profusion are still present but are few in number. The bulk of the vegetation is that of species like Boneset, Blue Flag and Beggar's Ticks that prefer a damp, more nutrient-rich soil. Shrubs like Meadowsweet and dogwood are gaining hold. Eventually, this low-lying area will completely fill in and become a slightly damper area of the cedar forest. Although this is an area in transition, it still fills with water every spring. When the area was more extensive, Wood and Western Chorus Frogs would have congregated to lay eggs in early spring. Now it dries before the tadpoles have a chance to complete their transformation. Each spring, the water is still teeming with algae and aquatic insects that thrive in an area free from large predators. As you move along the trail, take note of other sections that were once part of a more extensive panne and the clearings where still more changes are occurring.



Blue Flag

11. The Best of Both Worlds



White-tailed Deer

The contrasts between dark forest and light open dune are clearly visible here. But look closely. Can you see young White and Red Cedars and Balsam Fir? These trees started from seeds that germinated when conditions were to their liking. If all goes well, these trees will continue to grow and eventually become part of the forest.

All trees produce seeds, but like the plants of the forest floor, it requires a lot of energy. Each seed contains enough stores to germinate and grow until it can produce food of its own - no wonder seeds are the food of choice for so many creatures! If trees produced a few seeds every year then the chances of some escaping predation would be minimal. So trees have gambled on a system to foil would-be seedeaters. In some years they produce

no or very few seeds and spend their time gathering energy. They may do this for a number of years. When enough energy is stored, they flower and produce seeds profusely. By doing this, the chance that some seeds will escape detection and land in an area of suitable growing conditions is increased. In this way, trees try to insure the continued survival of their species. In some years, the White Cedar and Balsam Fir are laden with cones and Red Cedars look blue because of the number of berry-like drupes.



Eastern Cottontail

Edges such as this are important habitats for many animal species that enjoy the best of both worlds. The succulent new growth of the dune plants provides an ample food supply, while nearby trees provide safe havens for creatures such as Cottontail Rabbits and White-tailed Deer. Garter Snakes can absorb the sun in the open dunes and return to the forest to hunt for worms, frogs and insects. Birds, like Northern Cardinals and Chipping Sparrows, can search for seeds and insects in the grasses while using the cedars' thick leafy growth to hide their nests. There are many others that reap the benefits of both worlds and all help increase the diversity of life found here.



Common
Garter Snake

12. As You Return



The Cedar Sands Trail traverses many habitats of the East Lake Bar. The bar is made of sand brought by the actions of glaciers and resulting meltwaters. Sand is a difficult place for plants to grow and the plant communities are defined by their proximity to the water table and the amount of nutrients available. In the Outlet River, the different floras are defined by water depth. There is a natural tendency for the river to fill in but the activities of beaver and the seasonal variations in flow prevent this. The resultant variety of water depths allows the river to be one of the richest environments on the bar. Each community along the trail

is slowly changing as the plants grow and die, altering surrounding conditions. One plant community gives way to another, defining the wildlife found there. No matter what the community, the area is built on sand. Any event that exposes the sands to the wind could have devastating effects and drastically alter the appearance of this bar. You have only to look at the recent history of the West Lake Bar to see that it is far too easy to revert to open sands and let the whole process start anew.

As you return along the trail, look at these areas again and imagine what they might look like in another 10 years, 50 years, and even 500 years!



The Friends of Sandbanks Park

The Friends of Sandbanks Park is an incorporated, non-profit, charitable organization. It is part of a growing network of independent cooperating associations dedicated to protecting and preserving the natural and cultural history of provincial parks through interpretation, education, and scientific and historic research. A volunteer Board of Directors with varied interests and areas of expertise coordinates the activities of The Friends, and operates with Ontario Parks in the development of the park's interpretive programs and facilities.

Statement of Purpose

To further the public's awareness, education and understanding of the geological, historical & archaeological and biological resources of Sandbanks Provincial Park by:

- Undertaking specific projects and initiatives such as providing educational & interpretive publications, maps, audio-visual materials and other appropriate items related to Sandbanks Provincial Park
- Encouraging and supporting further research of Sandbanks Provincial Park's natural and historical resources with a view to disseminating this information to the public as well as to protect and restore these natural resources
- Supplementing and enhancing existing park educational/interpretive and recreational programs
- Stimulating community interest and understanding of Sandbanks Provincial Park to help ensure the protection of its natural and cultural resources

