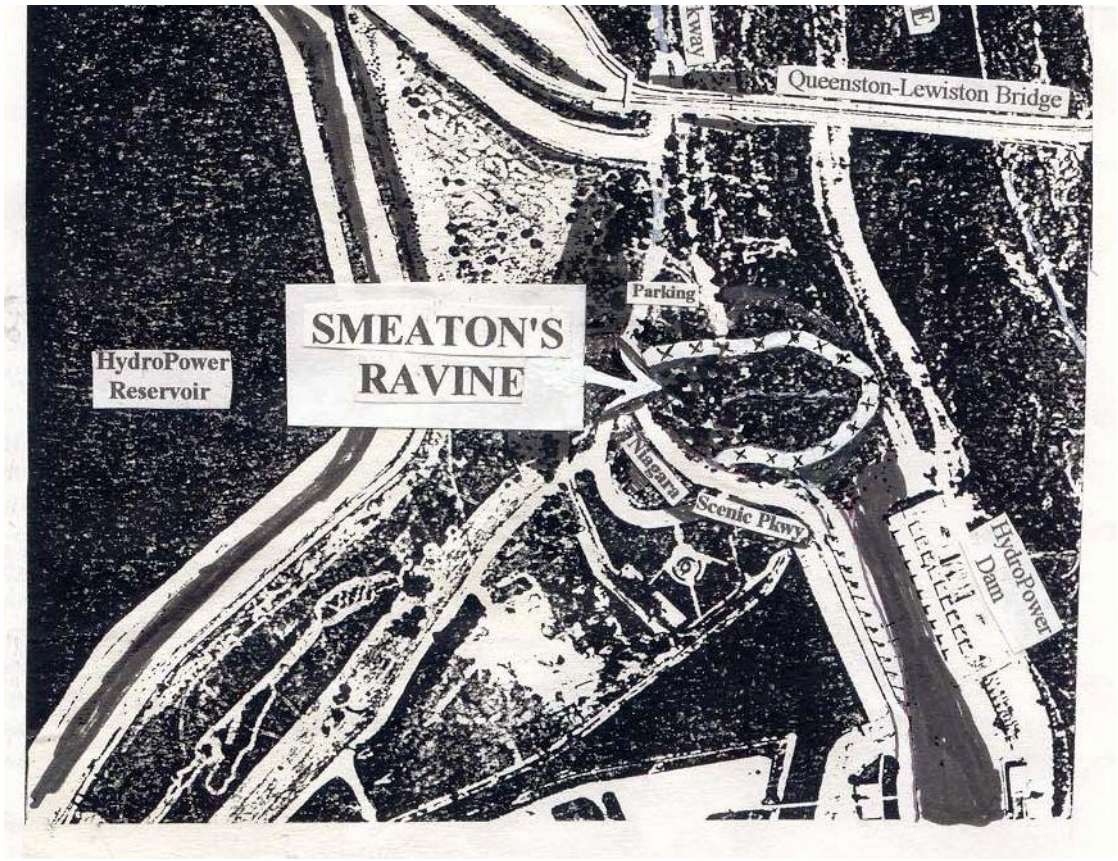
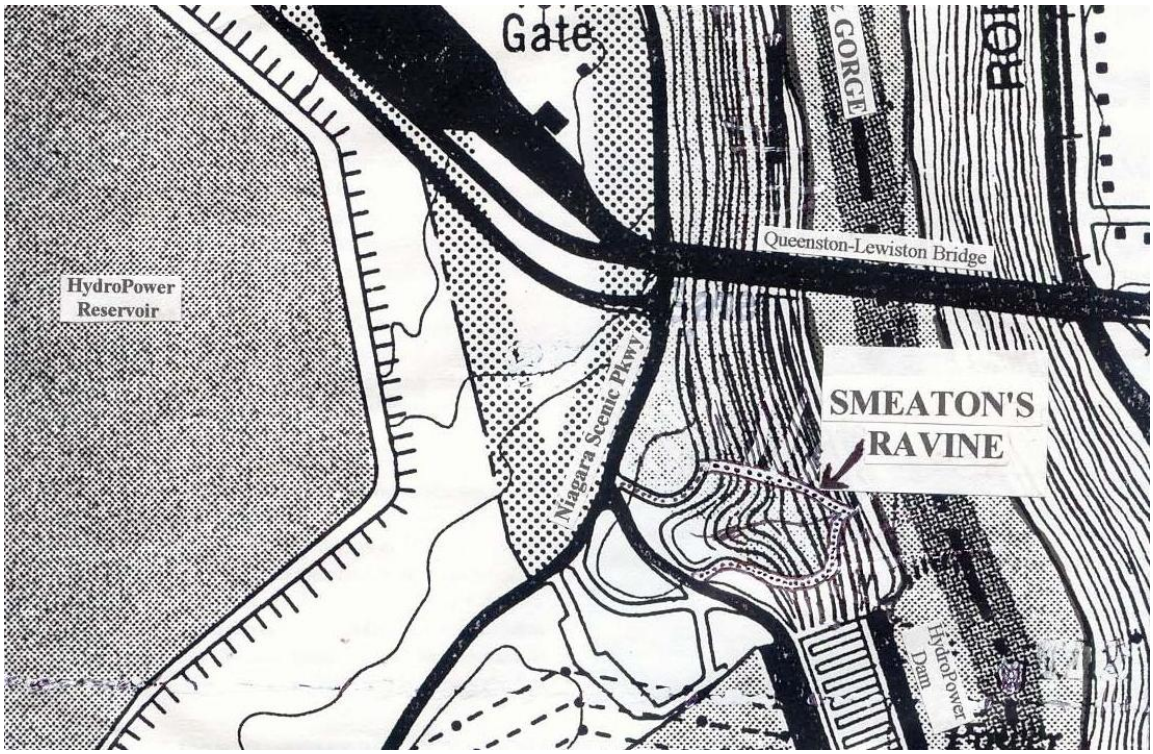
HEIGHTS of OLD GROWTH TREES of NIAGARA GLEN
Including Record-Sized Trees

Old growth Tree	Age years	Diameter Inches	Height feet	Comments
Tulip Tree	225	42	134	"The Great Glen Tulip Tree"
		36.4	134	2nd Tulip Tree at this height !
			134	3rd Tulip Tree at this height !
			130	Just S. of Red Trail
			127.2	Near above
		38.5	128	At North end of Glen
		31.2	110	"Cripps Eddy Tulip Tree"
	225		104.3	
		30.3	105.5	
	146	20	105.5	Log ring count; indicates great age for larger ones
Chinkapin Oak			100.9	Just W. of Sassafras grove, uphill
			91	At jct. of Shore & Red Trails
	150+	18	91	
Butternut		31	86.5	Just N. of Lavender Trail; big burl on E. side
		17	53.4	
Sugar Maple	225		87.6	Rocky ridge N. of Red Trail
		23	84.5	
Hop Hornbeam	225 +	19.8	56.7	Notably tall
		13.7	53.5	
No. White Cedar	300+		66.6	On Red Trail, next to Leaning Rock
Basswood		20.8	85.3	Stump ring count
Black Walnut	225	30.3	98.3	Lavender Trail
White Ash		29	84.1	Measurement by Dale Luthringer
Black Cherry	200	25.9	104.4	Fosters Flats
Beech			97.1	
Sassafras	170	16.6	74	Fallen trunk; ring count
White Oak		42.2	65.3	
Black Oak		17.2	68.6	
Quaking Aspen		29	71.3	Notably large for an Aspen, taller than any published aspen in Ontario
Downy Serviceberry		7	56.1	Extremely tall for *Amelanchier arborea*

*Height was measured with state-of-the-science Bushnell Laser Range Finder and Suunto Clinometer, using Trigonometric Calculator for extremely accurate height measurements. Readings were taken from different vantage points and with the assistance of other people to ensure maximum accuracy.


Queenston-Lewiston Bridge
Parking
SMEATON'S
RAVINE
HydroPower
Reservoir
Niagara
Scenic Pkwy
HydroPower
Dam


Gate
GORGE
Queenston-Lewiston Bridge
HydroPower
Reservoir
Niagara Scenic Pkwy
SMEATON'S
RAVINE
HydroPower
Dam

SMEATON'S RAVINE

Smeaton's Ravine is a little-known, hidden, dramatically deep gorge cut into the upper side of the Niagara Gorge, immediately south of the Queenston-Lewiston Bridge, and almost opposite the Floral Clock. Its 4 acres of several-tiered, challenging terrain revealed more than just an interesting ancient forest. Surprisingly, a waterfall emerges out of a rock layer just above where it drops off an overhanging ledge and plungess vertically 40 feet into a rock amphitheatre filled with another lush green forest.

The Old growth Forest is an unusual mix. On the slopes and ledges above the falls, ancient Northern White Cedar, Hemlock and Hop Hornbeam grow, while a stand of Old growth Chinkapin Oak, Basswood, and Northern White Cedar live on the ravine's south ridge. Below the falls, old Sugar Maple, Hemlock, Cottonwood, White Ash and White Cedar grow. A more thorough exploration of this challenging gorge is needed, since only a portion could be surveyed.

Significantly, four tree-sized individuals of Nationally Rare Red Mulberry were discovered. The largest is a two-trunked, 8.5-inch diam. tree with a remarkable height of 42 feet.

Old growth Tree Data:	Age (years) Range	Diameter Range	Comment
Hemlock	200-300+	20-28"	Inside ravine, also exposed cliffs
Cottonwood	150-160?	32"	Ravine below waterfall
Chinkapin Oak	175-250	20-24"	On ravine's upper slope ridge
No. White Cedar	180	30"	Grows in ravine woods, also on outer exposed cliffs, incl. dwarfs
Sugar Maple	150-200	20-34"	Ravine below waterfall
Hop Hornbeam	180-250	20-32"	On ravine's upper gravel slope
White Ash	150-180	24-28"	Log ring count: 18" diam.=165 yrs
Basswood	200	12"	On ravine's upper slope ridge

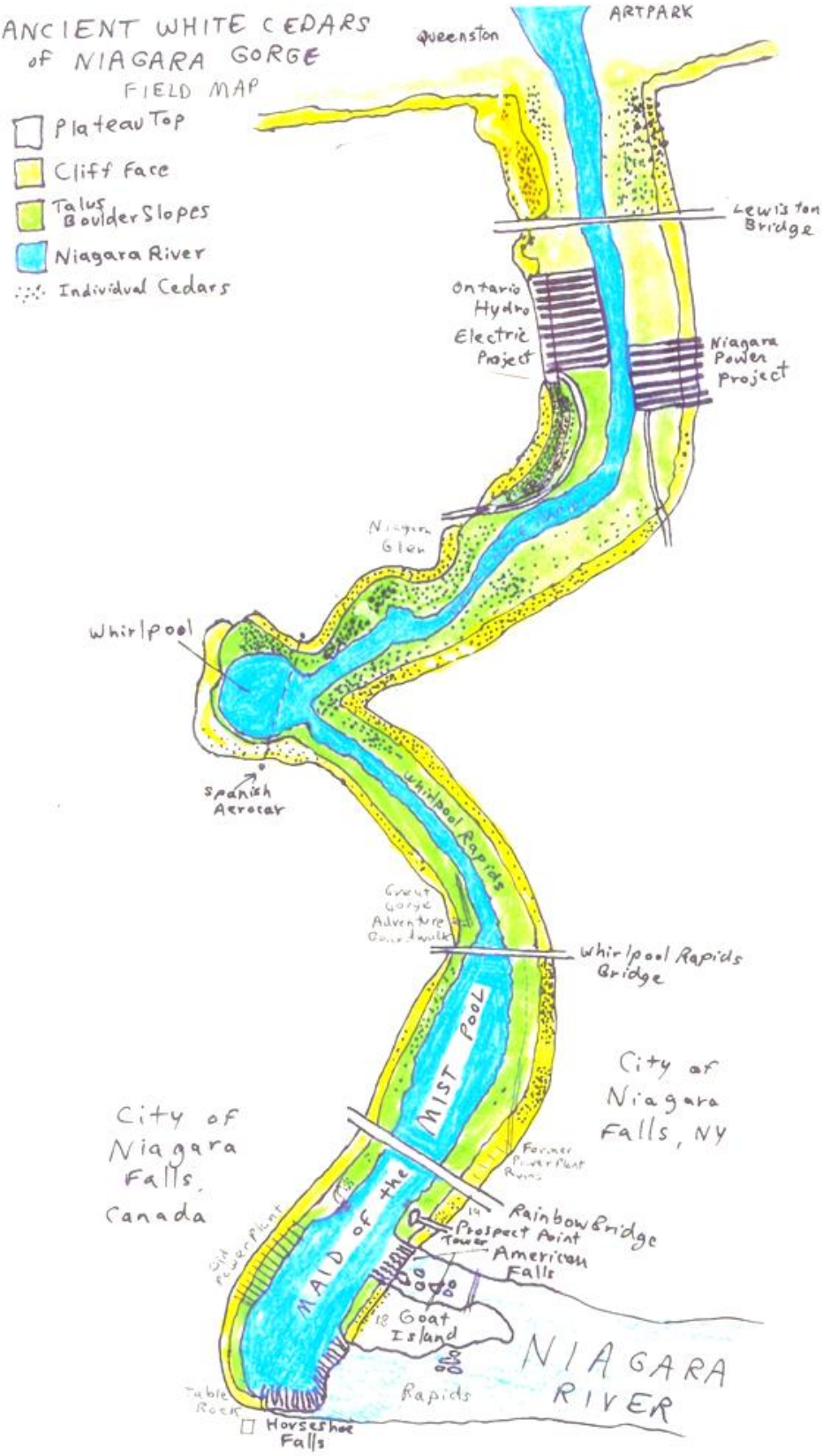
Non-Old Growth Trees: Nationally Rare Red Mulberry 8.5" Diam.=42'; and 3 others with 4", 4", 5" diameters
Staghorn Sumac, Witch Hazel, Black Cherry, Buckthorn

Other Plants: Fragrant Sumac, Round-Leaved Dogwood, Poison Ivy, River Grape, Bloodroot, Wild Ginger, Meadow Rue, True Solomons Seal, Zigzag Goldenrod

Smeaton's Ravine

Smeaton's Ravine - Red Mulberry

Smeaton's Ravine – Red Mulberry

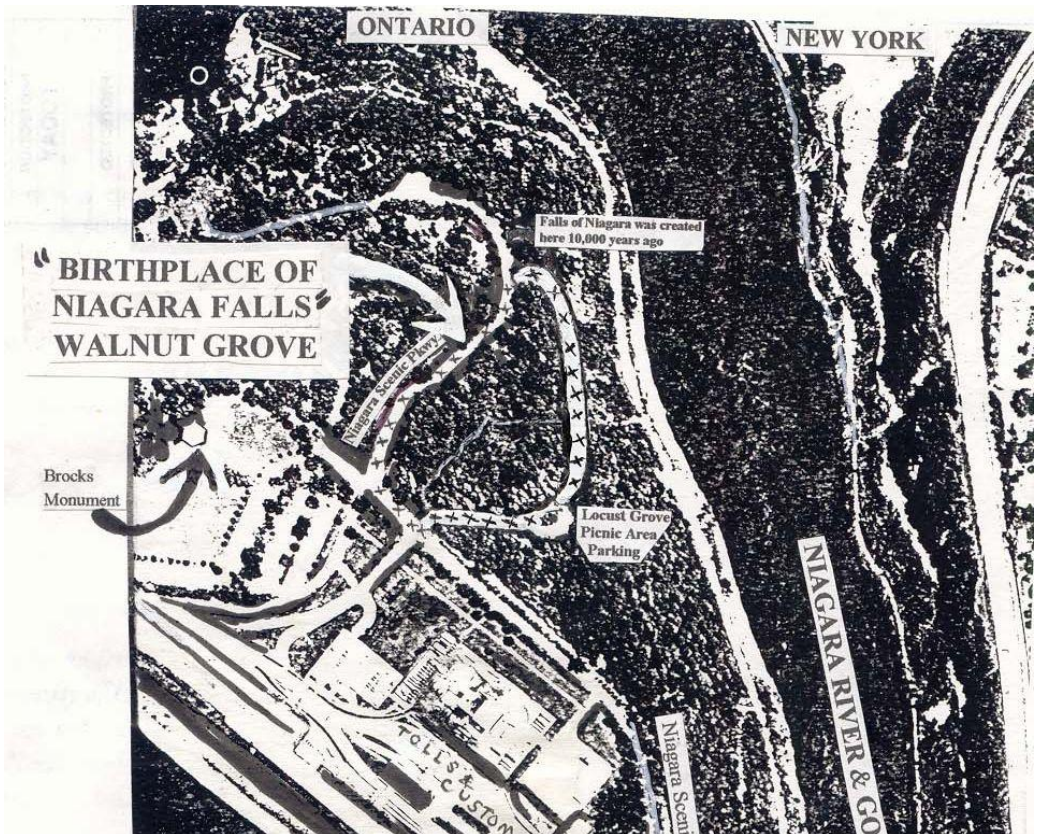

ANCIENT WHITE CEDARS of NIAGARA GORGE
FIELD MAP
Plateau Top
Cliff Face
Talus Boulder Slopes
Niagara River
Individual Cedars
Queenston
ARTPARK
Lewiston Bridge
Ontario Hydro Electric Project
Niagara Power Project
Niagara Glen
Whirlpool
Spanish Aerocar
Whirlpool Rapids
Great Gorge Adventure
Whirlpool Rapids Bridge
MIST POOL
City of Niagara Falls, NY
City of Niagara Falls, Canada
Former Power Plant Ruins
Rainbow Bridge
Prospect Point Tower
American Falls
MAID of the
Goat Island
NIAGARA RIVER
Rapids
Table Rock
Horseshoe Falls

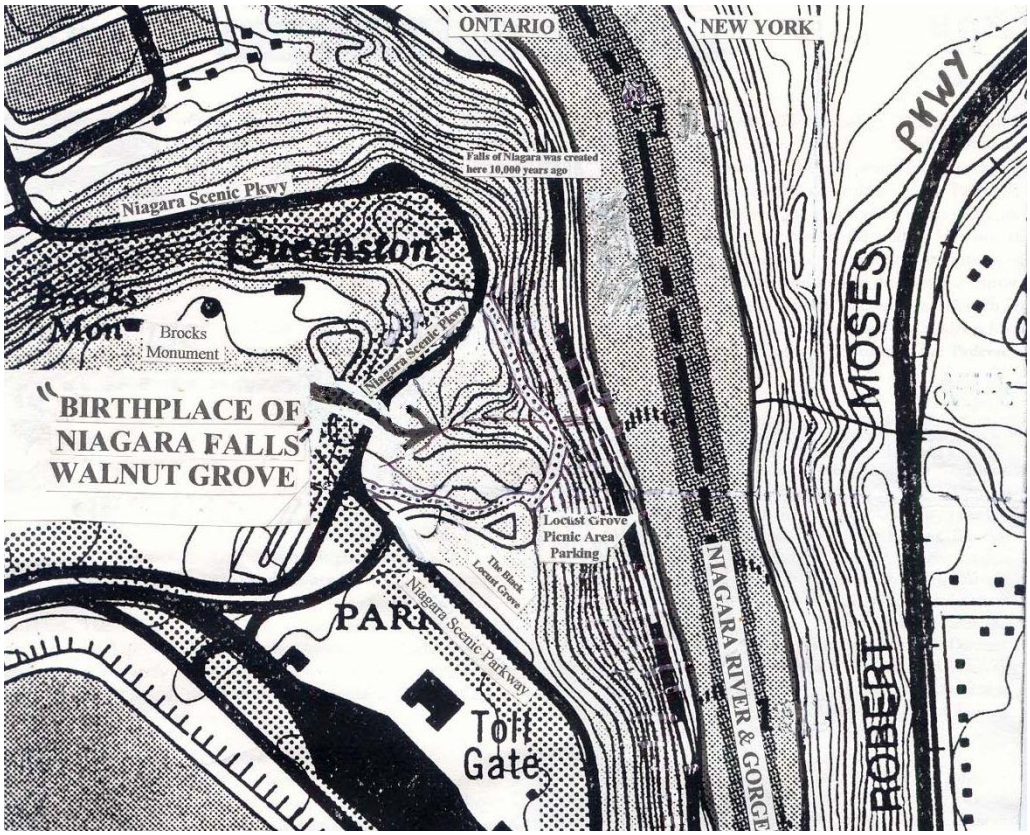
NIAGARA GORGE ANCIENT CEDARS

The Old Growth Northern White Cedars of the Niagara Gorge can safely be called a nationally significant discovery. Hundreds of ultra-ancient Cedars populate Canada's side of the Niagara Gorge. The ancient Cedars of the Niagara Escarpment attracted international attention when Dr. Doug Larson of University of Guelph showed that Cedars near Guelph to Bruce Peninsula attained ages of 500 to 1700 years old. At the time, everyone dismissed the idea that large numbers of ancient Cedars could also dwell in the Niagara Gorge. They assumed that two centuries of development, pollution, human abuse and the urban environment would have already made them "history." As this researcher has repeatedly found, however, assumptions about Old Growth are always unsound.

- **691 ancient Cedars (preliminary count) populate Ontario's side of the 7-mile long Niagara Gorge**
  - 464 ancient Cedar trunks grow out of the talus (boulder) slopes
  - 227 grow out of the vertical cliff faces (research has shown they receive NO rain water and that they have NO soil, yet they live longer than any other tree in the northern latitudes!)
  - they grow to within several 100 feet upstream of the Rainbow Bridge all the way down to the end of the Gorge on the cliffs overlooking Queenston.
  - Greatest concentration lie between the Whirlpool and Ontario HydroProject
  - New York side has similar numbers of Cedars, with more growing on cliffs, less on talus, and also 18 on Goat Island's cliffs to within 75 feet of Falls itself.
  - Visiting the Cedar groves on treacherous talus slopes is an enchanting, unforgettable experience. The contortions, gnarls, twists of the trunks are hard to fathom. Many trunks and branches fuse together, then separate again, then fuse with other trunks.
- Age of Cedars: many counts of annual rings were made of living Cedars with exposed wood caused by boulder injury, as well as partial counts of Cedar logs. **Ages of 250 to 450 years were common**.
  - the oldest Cedars were not aged, so greater ages are possible. **Ages up to 650 years** would not be surprising. Also, Cedars on talus slopes are much "younger" than the unreachable cliff-dwelling Cedars. **The talus Cedars are likely to be the oldest living things in eastern Niagara Peninsula**.
  - If Dr. Larson's research for Cedars north of Hamilton applies to Niagara Gorge's Cedars, as is expected, our **cliff Cedars are expected to reach ages of 600 years** (maybe older?). The same age is expected for the cliff Cedars on the Gorge's NY side. To put this in perspective for the U.S. side, if this is true, they would be the oldest living things in eastern U.S., other than the Deep South's bald cypress (which get to 2000+ years old).

To conduct any further research of the Gorge's ancient Cedars obviously requires a greater and longer term research commitment. Gaining access to the cliff Cedars to measure and learn their ages is a very rugged, laborious, and slow undertaking. It requires research funding support. *Unlike the Old Growth groves outside the Gorge, no further data collection is really possible until a future foundation grant becomes available.*


ONTARIO
NEW YORK
Falls of Niagara was created here 10,000 years ago
"BIRTHPLACE OF NIAGARA FALLS" WALNUT GROVE
Niagara Scenic Pkwy
Brocks Monument
Locust Grove Picnic Area Parking
NIAGARA RIVER & GO
Toll & Custom
Niagara Scen


ONTARIO
NEW YORK
Falls of Niagara was created here 10,000 years ago
Niagara Scenic Pkwy
Queenston
Brocks Mon
Brocks Monument
"BIRTHPLACE OF NIAGARA FALLS" WALNUT GROVE
Locust Grove Picnic Area Parking
The Black Locust Grove
Niagara Scenic Parkway
PARK
Toll Gate
NIAGARA RIVER & GORGE
MOSES
PKWY
ROBERT

BIRTHPLACE OF NIAGARA FALLS WALNUT GROVE

The last Old growth Forest discovered for this survey was certainly no disappointment. Finding an Old growth Forest on the rim of the Niagara Gorge near Brocks Monument -- that no one knew about -- was surprising enough. The fact that it was dominated by very large Old growth Black Walnuts was an extremely rare find, and especially surprising because it is so close to major human activity. The discovery of the one of the world's largest forest-grown Black Walnuts was an experience few forest scientists expect.

The grove is so hidden that from the outside, it does not seem possible that it contains 6 acres of towering forest, a brook ravine ending in an 80-foot waterfall, and 10 different tree species that are Old Growth and most of large size. Further, it starts only 25 feet into the woods from the Locust Grove parking area.

The Champion Black Walnut has been repeatedly and impeccably measured, and its dimensions have been compared with the most accurate records. Its dimensions:

Circumference: 17 feet, 7.5 inches (538.5 cm)
Age: 350 years (est.)
Crown Spread (aver.): 93 feet (28.3 m)
Footprint of Tree Base: 44 feet around (13.4 m)
Longest surface root projects 12 feet, 2 in. (3.7 m) from the trunk

On the north side of Locust Grove parking area is a second-growth Black Locust grove with remarkably tall Black Locusts that should be measured for height. Also, 6 Old- Growth tree species grow along the gorge rim (not in a forest): Red Oaks up to 4-feet diameter, 3-foot diameter Sugar Maples, 30-inch Bitternut Hickory, 175-year old White Ash, and an unusually large Downy Serviceberry notable for having red-scaly Old growth bark (in contrast to its usual light gray smooth bark). This is the first record of Old growth bark for this species.

Old growth Tree Data:	Age (years) Range	Diameter Range	Comment
Black Walnut	24-38	150-250	Not including Champion Walnut
Sugar Maple	150-250	20-25"	Very shaggy bark
No. Red Oak	150-215	30-42"	
Black Oak	150-232	30-37"	Log ring counts used
White Ash	160-180	24-34"	
E. Red Cedar	185-360	8-20"	Log ring counts used
White Pine	155	29"	
Black Cherry	160-250	18-24"	
N. White Cedar	200+	12"	On margin of forest on gorge side
Hop Hornbeam	230-300	9-18.5"	Champion size; log ring counts used

Non-Old Growth Trees: Bitternut Hickory, Butternut (dead), Red Elm, Black Locust, Eur. Sweet Cherry, Pagoda Dogwood . On margin of forest near edge of gorge: Sassafras, Paper Birch; Black Locust (on margin near road)

Giant Black Walnut

Giant Black Walnut – The Dark Lord

BROCKS MONUMENT (BRUCE TRAIL) SCARLET OAK GROVE

The discovery of this Old growth Forest that lies just to the west of Brocks Monument was a total surprise. The site was visited to investigate if any ancient Cedars grew on the 20 foot limestone ledges of the Niagara escarpment that drops off below this forest. The escarpment yielded no old trees but the flat plateau at the top unexpectedly yielded Old Growth oak forest plus a very significant discovery: the first confirmation of Scarlet Oak in Canada. Even more, the Scarlet Oaks grew as "big-tree" Old Growth trees. This is the first known report in the northern latitudes of large Old Growth Scarlet Oak as a dominant member of a forest.

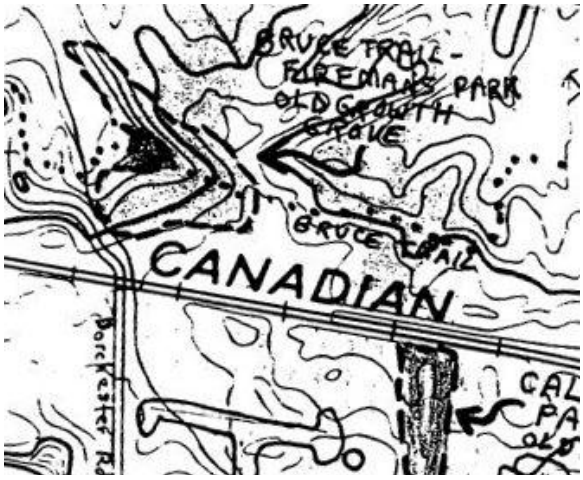
- Canada's first Scarlet Oak trees and forest
  - diameter up to 42 inches, age up to 230 years?
  - also eastern North America's first Old Growth Scarlet Oak forest in the northern latitudes

- Other remarkable cultural features:
  - The Bruce Trail begins here. It passes along the margin of the entire Old Growth stand. No one knew until now that Canada's first national trail, started in an Old growth Forest! After all these decades of 100,000s of people, including naturalists and scientists, walking the trail, no one had ever recognized it as an ancient forest.
  - Adjacent to where the Battle of Queenston was fought, which is why it is next to Brocks Monument. Also overlooks richly historic Village of Queenston, adjacent to Niagara Recreation Trail. This ancient forest itself should be considered a major "living historic monument" to add to the rich panoply of historic highlights here. Atop the escarpment, these ancient oaks, in a symbolic and poetic sense, have "stood witness" over all the historic happenings of humanity below, the battles, the growth of the village, the river commerce and boat recreation.
  - Overlooks where Niagara Falls was "born" 12,000 years ago (mouth of Niagara Gorge)

- Type of Old Growth: Mixture of original Old Growth and secondary Old growth Forest.
- Dominant Old Growth (numerous ages obtained by ring counts):
    - White oak – 160-235 yrs., up to 38 inch diam.
    - Red Oak – 150-200+ yrs, up to 43 inch diam.
    - Scarlet oak – 150-230 yrs?, up to 42 inch diam.
    - Black Oak – 150-200+ yrs.
- Other Old Growth: Red Maple – 150-185 yrs, 36 inch diam., Sugar Maple – 165 yrs, Black Walnut – 170 yrs, 36 inch diam. (incl. a remarkable one with bark shags projecting 5 inches from trunk)
- Mature trees: Beech-135 yrs, Red Elm, Black Cherry, Hop Hornbeam, Sassafras, 24 inch Butternut

BRUCE TRAIL GROVE (AT FIREMANS PARK)

This is the second Old growth Forest grove which the Bruce Trail passes through along the Niagara Escarpment just west of Niagara River (the other is the Brocks Monument Scarlet Oak Grove). A short section of the Bruce Trail runs through this grove on the east side of Dorchester Road opposite Firemans Park.



- 6-acre Secondary Old growth Trees (150 – 185 years old) Mixed With a Mature Second Growth Forest
- Contains unusual tree species, including large or old specimens:
    - **9 inch diameter very rare Flowering Dogwood, possibly 150 years old**. Highly unusual for its size and because most have died due to blight
    - Black Walnuts up to 40 inch diameter; also numerous 70-80 year old Black Walnuts
    - also mature Shumard Oak
- Most common Old growth trees: Black Cherry, scattered, up to 27 inch diameter, 150-180 year, some with striking *shaggy* bark. Woods is dominated by young to mature Black Cherry
    - Black Oak, several 150 year; one 40 inch diam. 180 years old
    - two balding White Oaks, 175 years
    - tulip tree, 180 years, 42 inch diameter; also a number of 70-100 yr old Tulip Trees
    - Beech, mature, 125 years; also Basswood

CALAJUIRO PARK GROVE

The Calajuiro Park Old growth Grove is in a small city park on the edge of a new housing development, Calajuiro Estates, on the outer zone of Niagara Falls' suburban area. It is only about 1500 feet east of the Bruce Trail (Firemans Park) Grove.

- Scattered Original Old Growth Trees within a 4 - acre Secondary Old Growth Grove
- **Although small in size, the grove is notable for the large size of its trees and for the presence of what is tentatively identified as a large Shumard Oak**
- Dominant Old Growth: 29-inch diameter, 180 year old White Oak
    - Black Oak up to 45-inch diameter, 180 years. Two ring counts obtained
    - Also Shumard Oak, 40-inch diameter, 180-years old; Tulip Tree, 150 yrs, 40-inch diameter
- Non-Old Growth: 100 year, 43 inch Cottonwood, 75 year White Pine, Sassafras, Butternut, Black Cherry, Paper Birch, Basswood
- Although the grove now appears safe from development as part of a park, it receives some urban vandalism through injury of individual trees by local youths and erosion by motor bikes.

GRAY FAMILY SHUMARD OAK GROVE

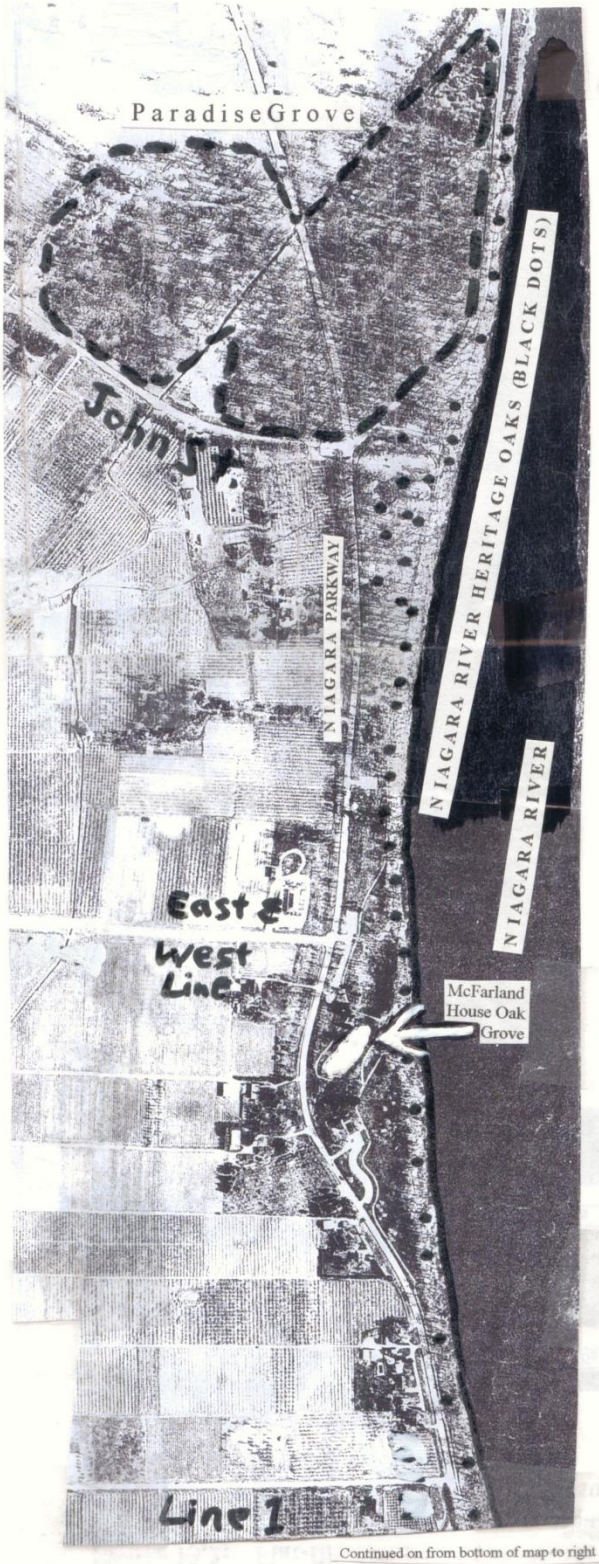
This grove contains Canada's only known Old Growth Shumard Oaks and the only Old Growth Shumard Oak grove north of the American South. It is also remarkable because of its tree and shrub diversity, one of the most notable in Ontario. *This site should be a high priority for monitoring and protection efforts.*

- 6 acres of original Old Growth mixed with mature second growth forest.
- Old Growth: Shumard Oak , several up 4 foot diameter (!), to 240 years (?) old
    - also Red Maple, to 48 inch diameter, up to 180 years, one with amazing hollow trunk
    - Red Oak up to 47 inch diameter, up to 150 years
    - Sassafras (unusual species, especially this large), to 26 inch diameter, possibly 120-150 years?
- Mature trees: Beech, Tulip Tree (120 years), Black Gum, Black Walnut, Black Oak, Swamp Oak

- Record-breaking Tree and shrub biodiversity: 34 tree species (!) in a 7-acre grove
    - 5 oak species: Shumard, Black, White, Swamp and Pin Oaks
    - 4 Maples: Black, Sugar, Red and Silver
    - 3 Ashes: Red, White and Black
    - all 3 kinds of grapes: River, Fox and Summer grapes; both Virginia Creeper species
    - both Walnuts and 2 Hickories: Black Walnut and Butternut, Shellbark and Bitternut Hickories
- Rare or highly uncommon trees: Pawpaw (abundant!)
    - native Crabapple
    - Red Mulberry,
    - Shellbark Hickory
    - Shumard Oak (Old Growth)
    - Sassafras (Old Growth)

Niagara River Heritage Oaks &
Niagara River Bluff Old Growth Forests
(also showing Paradise Grove)
(this photo shows the northern 2.5 miles of the 6.1 mile corridor of Heritage Oaks)

Niagara River Heritage Oaks shown as black dots along river shore



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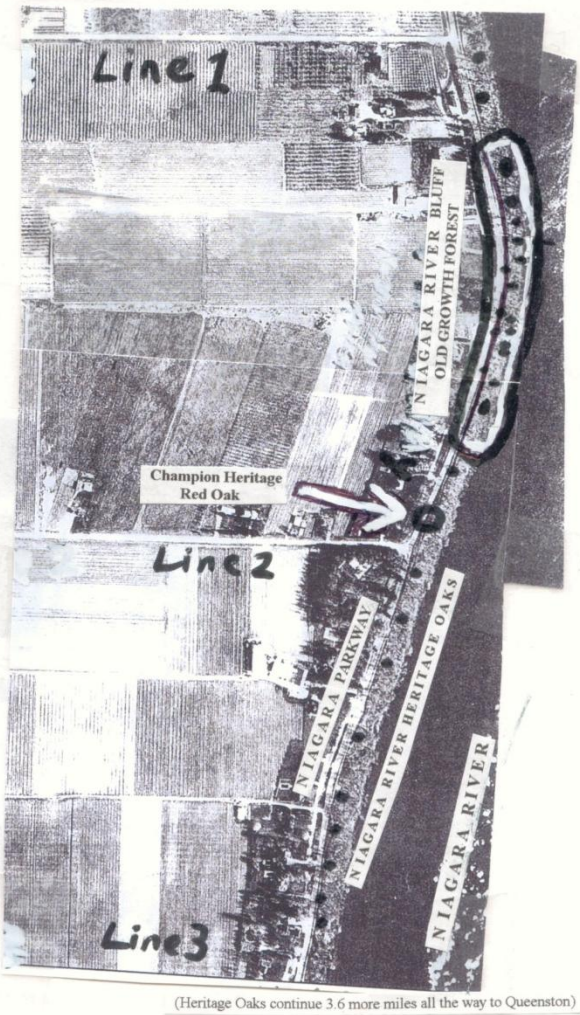


(Heritage Oaks continue 3.6 more miles all the way to Queenston)

NIAGARA RIVER HERITAGE OAKS

The Niagara River Heritage Oaks are a "necklace" or strand of historic and champion-size ancient oaks (and a few Black Walnuts) that line the bluff of the Lower Niagara River from just south of the Village of Niagara-on-the-Lake to Queenston. Preliminary counts total roughly 138 great trees connecting the Paradise Grove to the Niagara Gorge (with its ultra-ancient Cedars). All of these grand oaks (and a few other species) can be easily admired because they are within 5 to 20 feet from the Niagara River Recreation Trail that follows the bluff top route between the Niagara River and the Niagara River Scenic Parkway. This 7-mile stretch is part of the 15 mile "Niagara Bi-National Corridor of Forest Antiquity" briefly referred to earlier.

- Since they are a line of single trees, the Niagara River Heritage Oaks are not an Old growth Forest. They are classified as an "**Assemblage of Old Growth, Champion and Historic Trees."** However, they are survivors from the same original forest represented by the Paradise Grove. Further, embedded in the Heritage Oak corridor are four Old growth Forest groves, the Niagara River Bluff Woods.

- **Ages: 185 to 320 years**, with typical range of 220 to 250 years. This is based on actual ring counts. An interesting way of looking at the "combined antiquity" of this corridor of 125 or so ancient trees is to add up their ages. The **number of years that these current trees have lived totals more than 28,000 years!**

- **Size:** Some of the oaks are **among the largest trees in the Niagara Peninsula. In fact, their diameters are among the largest for their species in Ontario**. Three giants require special note:
    - The stunning **Niagara River Heritage Red Oak is 6 feet diameter, 300 years old.** (It is located on the river side of Niagara River Scenic Parkway, on the edge of the lawn, 120 to 150 feet north of Line 1 Road, almost opposite the sign "Caroline Cellars.")
    - The **"Octopus White Oak" has an especially charismatic character and is 5 feet, 4 inch diameter, about 250 years old**. It has many large boughs spreading horizontally at 5 to 8 feet from the ground. A record-breaking feature of this tree is its crown spread. Its boughs are so long, they almost reach to the river below and they hang over the lawn at the top of the bluff, a spread estimated to be 160 feet! (It is located opposite the Van de Laar Orchard Fruit Market sign, south of Service Road 66, along Niagara River Scenic Parkway. You must walk up to the edge of the lawn toward the river to see the massive trunk of the oak down the slope 50 feet into the woods.)
    - The **5.5 foot diameter, 230 year old Paradise Savannah Black Oak** grows on the lawn just south of the parking lot on the south edge of Paradise Grove, where John Street East and Ricardo Street meet Niagara Scenic Parkway. It has a massive bough projecting horizontally out and also a huge burl swelling on one side. The other large oaks in this meadow grove, also once part of the adjacent Paradise Grove ancient forest, were once part of a larger, earlier savannah community with prairie species.
    - A 52 inch diameterBlack Walnut just downhill from the slope edge below one of the great oaks

- **Rare Trees**: a 150 + year old, **14 inch diameter Flowering Dogwood (one of Canada's largest**) next to the Field House at the Brown's Point section along Niagara Scenic Parkway
    - **Canada's National Champion Sweet Pignut Hickory** (Carya ovata), also very rare
    - **Canada's National Champion Cockspur Hawthorn** (34 inch diam., 66 foot spread, 23 foot tall)
    - a single **275 year old Scarlet Oak (oldest in Canada)** projecting over the Niagara River from a parking area opposite the Paradise Grove
    - colony of very rare Smooth Sumacs, one of only two sites in Niagara Peninsula where this small tree grows

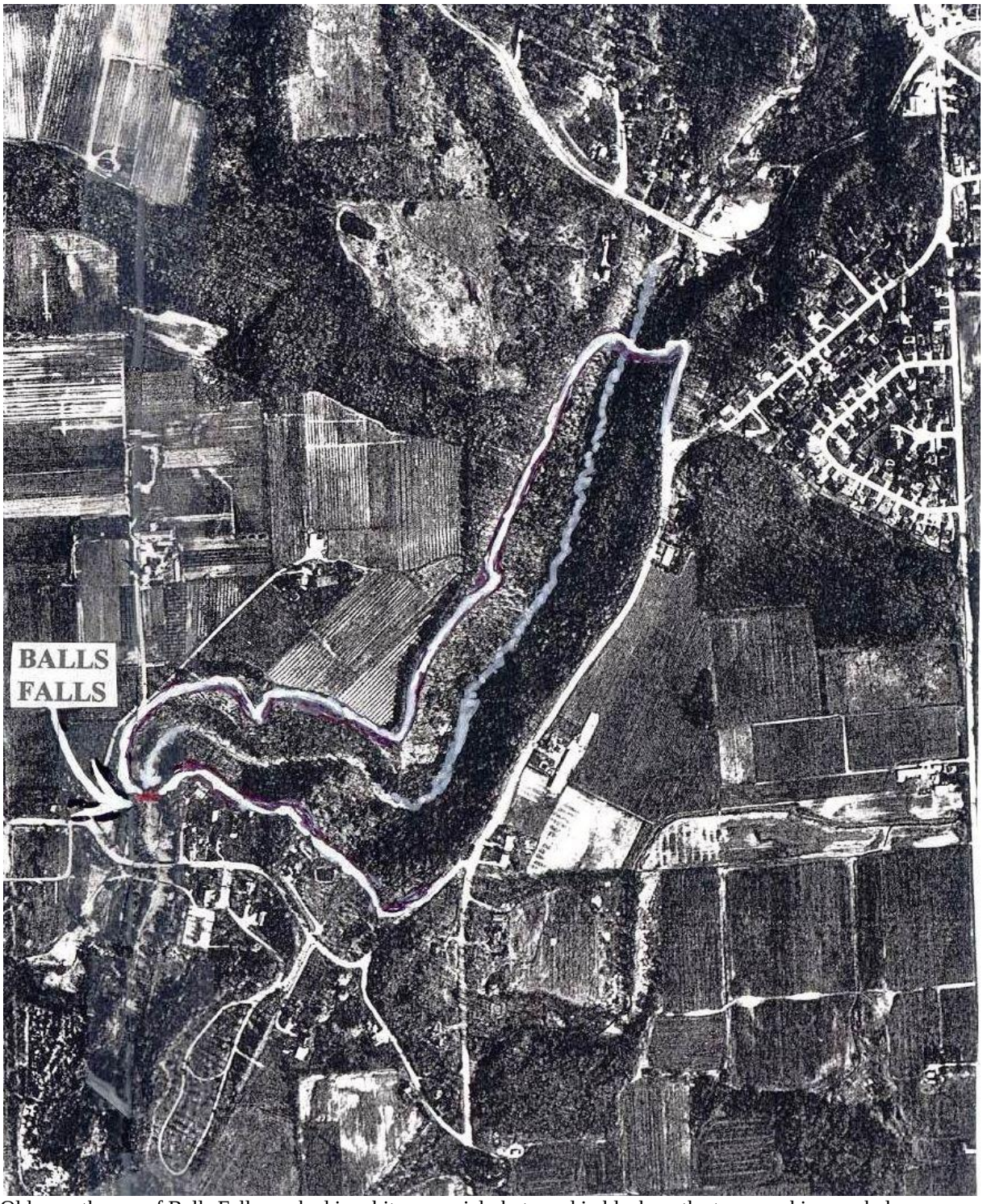
BROWNS POINT HERITAGE TREES

Along the Lower Niagara River, there is one place where high, inaccessible, dangerous bluffs do not overlook the river. About two miles north of Queenston, forested land curves away from the Niagara Scenic Parkway, blocking view of the river, and slopes gently down to the river. This area, with its own parking lot and stone historical marker, is Brown's Point. During the Phase 1 survey, this part of the shore line was overlooked for Heritage Trees, so the Phase 2 survey investigated the site.

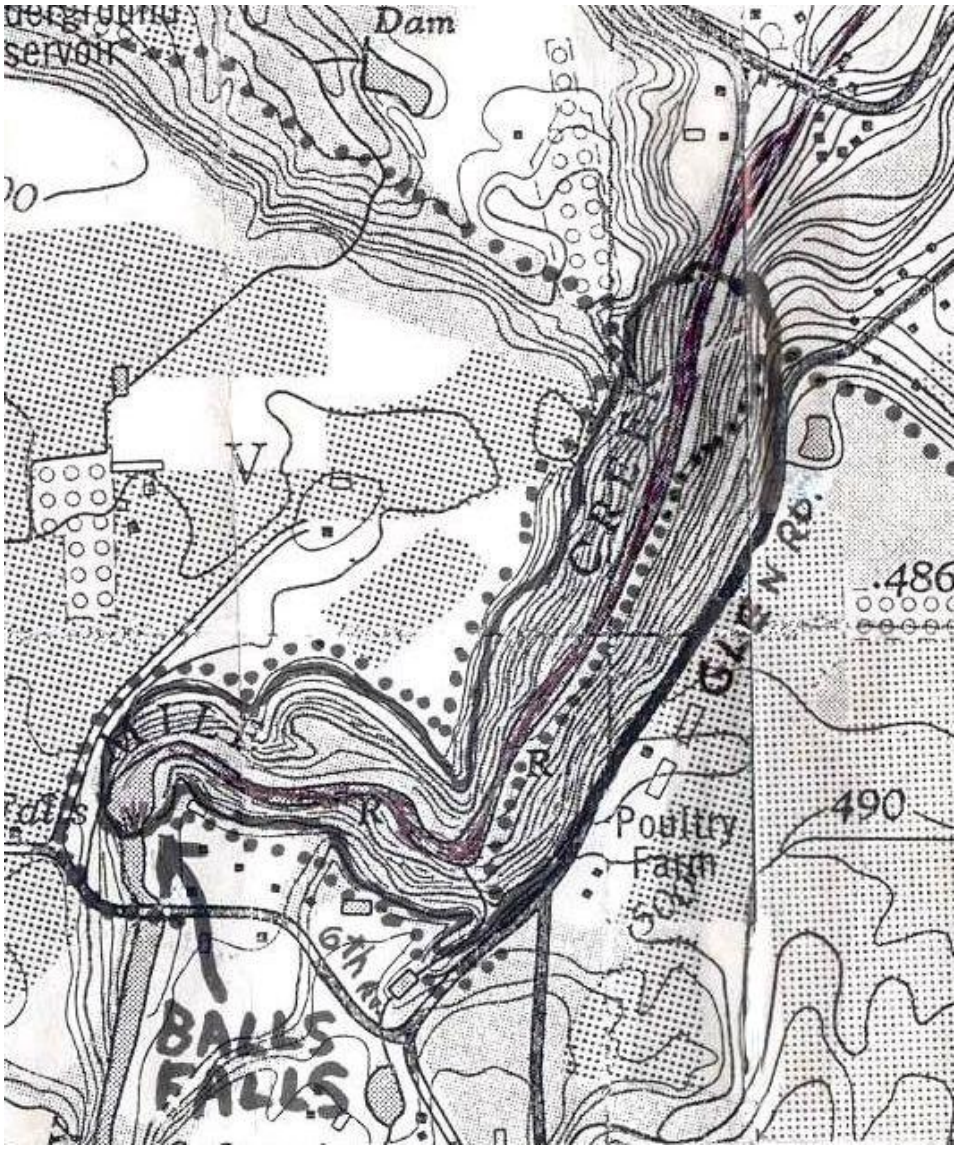
A total of 13 very large, Old growth Heritage Trees (White, Red, Black Oaks) grow along this low shore bluff of the Lower Niagara River. The "Necklace of Niagara River Heritage Oaks" now total 138.

But Brown's Point revealed something unexpected, a remarkably tall, old Second-Growth Forest which contains champion-size Black Cherry, Sweet Cherry, Pear, Black Walnut, and Black Locust. Another visit is needed when the leaves have been shed to measure the tree heights to see if there are any more surprise champions. For instance, a very tall forest-grown Pear tree (!) was found to be 66 feet tall, possibly Ontario's tallest. A towering forest-grown Sweet Cherry was 74 feet tall, also possibly Ontario's tallest. Also important to note is that this Black Oak-White Oak-Black Locust forest will become Secondary Old growth Forest in 25 years.

Old growth Tree Data:	Diam	Height	
Pear	20-28"	66 ft.	
Sweet Cherry	20-21.8"	74 ft.	
Heritage Tree Data:	Diam.	Age	
3 White Oaks on shore bluff:	30"	225 yr	
	35"	230 yr	
	32"	210 yr	
3 Black Oaks on inland side of trail:	39"	200 yr	
	30"	200 yr	
	38"	215 yr	
5 Red Oaks on inland side of trail (3 oaks) =	24"	175 yr	(3 oaks had these figures)
	30"	200 yr	
	39"	210 yr	
1 Sugar Maple:	52"	225 yr.	on W. side of parkway opposite Browns Point Grove marker and parking lot



Old growth area of Balls Falls marked in white on aerial photo and in black on the topographic map below.



BALLS FALLS GORGE

Balls Falls Historical Park and Conservation Area (1361 acres) already is well-known for its historic buildings, operational mill, its section of the Bruce Trail, its deep gorge, and of course its 88-foot and 36-foot waterfalls. Now it can add two types of Old growth Forest.

Roughly 50 acres of towering, inspiring, pristine ancient Carolinian Forest fill its spectacular gorge, while 35 Old growth Red Cedars cling to the face and rim of its cliffs over a stretch of 1500 feet. The Bruce Trail enables walkers to enjoy a major portion of this forest, both in the gorge and along the west rim. The Old Growth starts 200 feet after the Bruce Trail enters the gorge from its downstream end, revealing a sterling forest with trees displaying nearly every old growth feature, such as balding and shagging bark, stag-horn shaped crown branches, moss-covered trunks, tall branchless trunks, buttressed trunk bases, large diameters, bizarre growth forms, large commercially valuable tree species (Black Walnut, White Pine), and many logs with easily readable annual rings.

Two forest types occur here. Hemlock-Northern Hardwood (Sugar Maple, Beech, Red Oak, Yellow Birch) grows on the steep, rocky slopes. The valley bottom and stream sides grow Carolinian Forest dominated by Sugar Maple, Black Walnut,

Basswood, Red Maple. However, there is quite a bit of overlap. The west side is consistently steeper than the east side of Twelve Mile Creek.

An unusual highlight is the growth of extensive carpets of Canada Yew, in fact, the most extensive encountered by this investigator. It is fortunate that deer overpopulation, which eliminates Yew, is not a problem here.

Old growth Tree Data:	Age (years) Range	Diameter Range	Comment
Hemlock	170-330	20-30”	Many log ring counts
Sugar Maple	170-325	20-30”	One was bald to 45 feet, shaggy Log ring count = 325 yrs
Beech	170-235	20-30”	
White Ash	165-200	24-35”	
Basswood	150-180	18-20”	
White Pine	155	14”	120 feet tall; log ring count used
Black Walnut	170-210	36”	
Red Maple	150	24”	
No. Red Oak	225	36”	
Hop Hornbeam	150-225	7-14”	8” diam. log = 130 yr. (annual ring count)
Sassafras	150-165	15”	
Butternut	150-175?	18”	
Red Cedar	200-500+	5-18”	Only grow on cliff face and rim

Non-Old Growth Trees: Yellow Birch, Mountain Maple, White Mulberry, Pagoda Dogwood

Notable Herbaceous Plants: Nationally Rare Sessile Bellwort; Wild Ginger, White Baneberry, Zigzag Goldenrod, White Snakeroot, Purple-flowering Raspberry, False Solomons Seal, Marginal Wood Fern, Wood Fern, Polypody, Sharp-leaved Hepatica, Bloodroot, Cryptotaenia

Balls Falls

Balls falls – White Ash

Balls Falls – White Pine