Biodiversity in Rouge National Urban Park

Results and Trends: 1973-2014

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March 26, 2021

Toronto and Region Conservation Authority

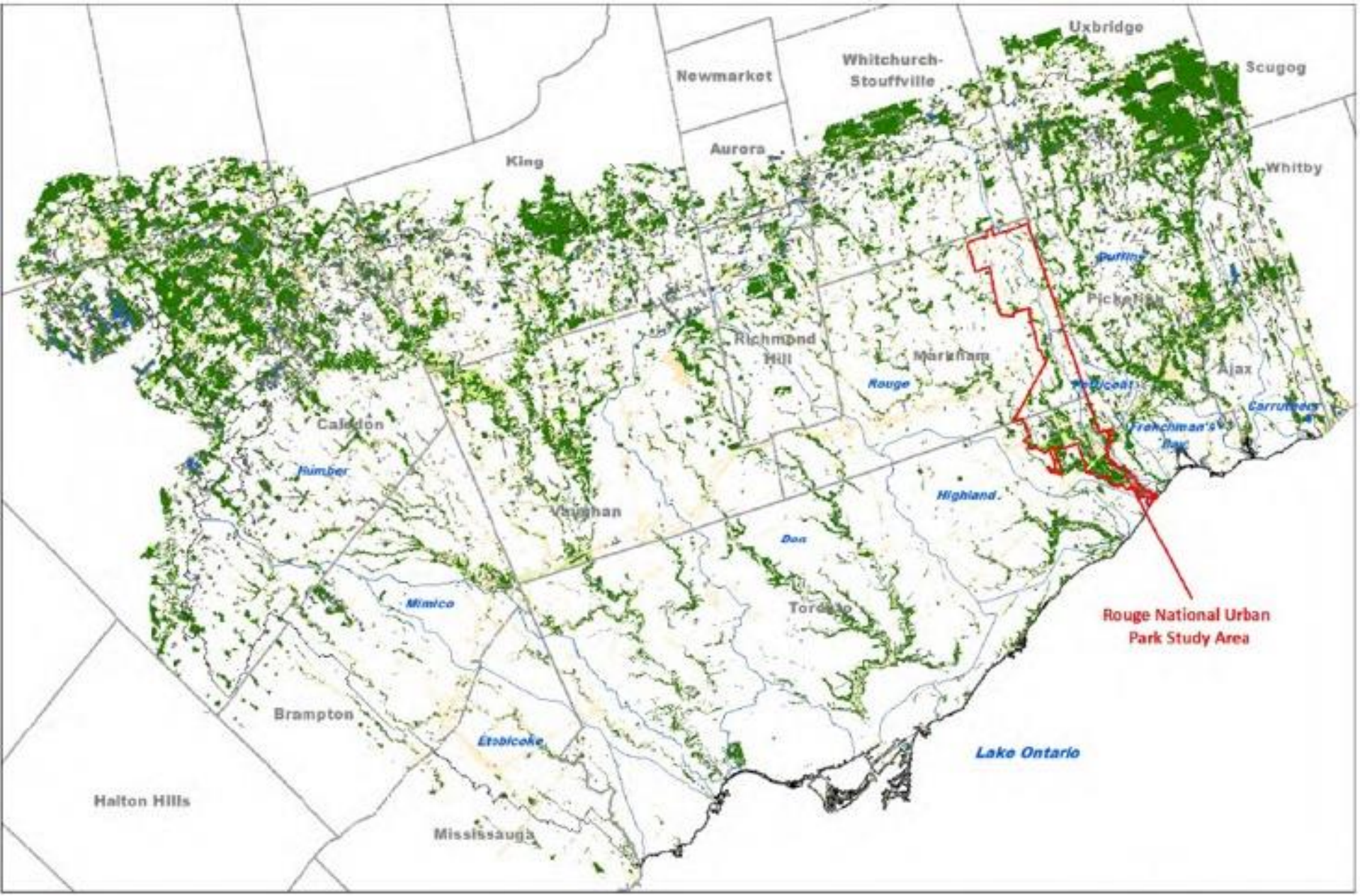
Toronto and Region Conservation Authority would like to acknowledge Parks Canada, who provided funds in 2014, as a partner in this project.

Parks Canada Parcs Canada

Outline

- The Rouge National Urban Park
- Flora and Fauna Diversity
- What has been lost
- Why this happened
- How we might respond

Overview of Rouge National Urban Park


Uxbridge
Whitchurch-
Stouffville
Newmarket
Scugog
Aurora
King
Whitby
Pickering
Richmond
Hill
Markham
Ajax
Rouge
Caledon
Humber
Vaughan
Highland
Don
Mimico
Toronto
Rouge National Urban
Park Study Area
Brampton
Etobicoke
Lake Ontario
Halton Hills
Mississauga

Features of the Park

- Roughly 2050 ha of natural cover surveyed by TRCA.
- 226 different vegetation communities
  - forest (942 ha)
  - wetland (330 ha)
  - tallgrass woodland / prairie / barren (7 ha)
  - successional, coastal, meadow

- 971 vascular plants (2001-2014)
- Half or more of total in TRCA's jurisdiction

- 155 fauna (vertebrate, breeding)
- Recognized as significant natural area since 1956

North and South of Steeles: 2014

North

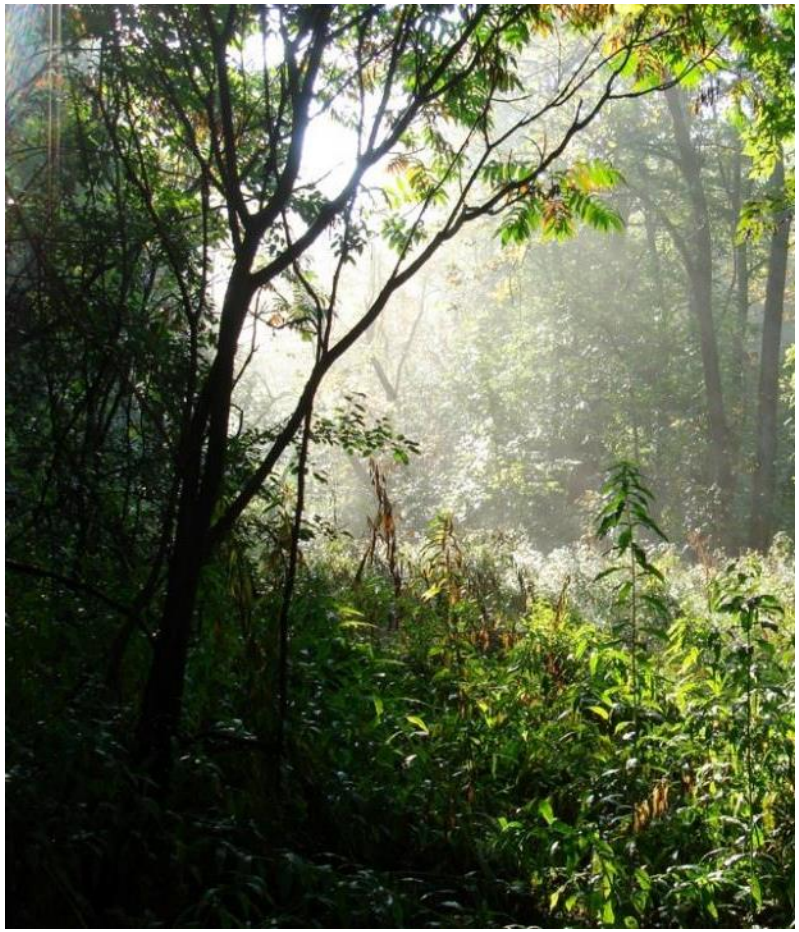
- 813 ha natural cover
- Flatter, agricultural
- 590 plant species
- 71 plant SOC

South

- 1235 ha natural cover
- Big valleys, more wild
- 936 plant species
- 233 plant SOC

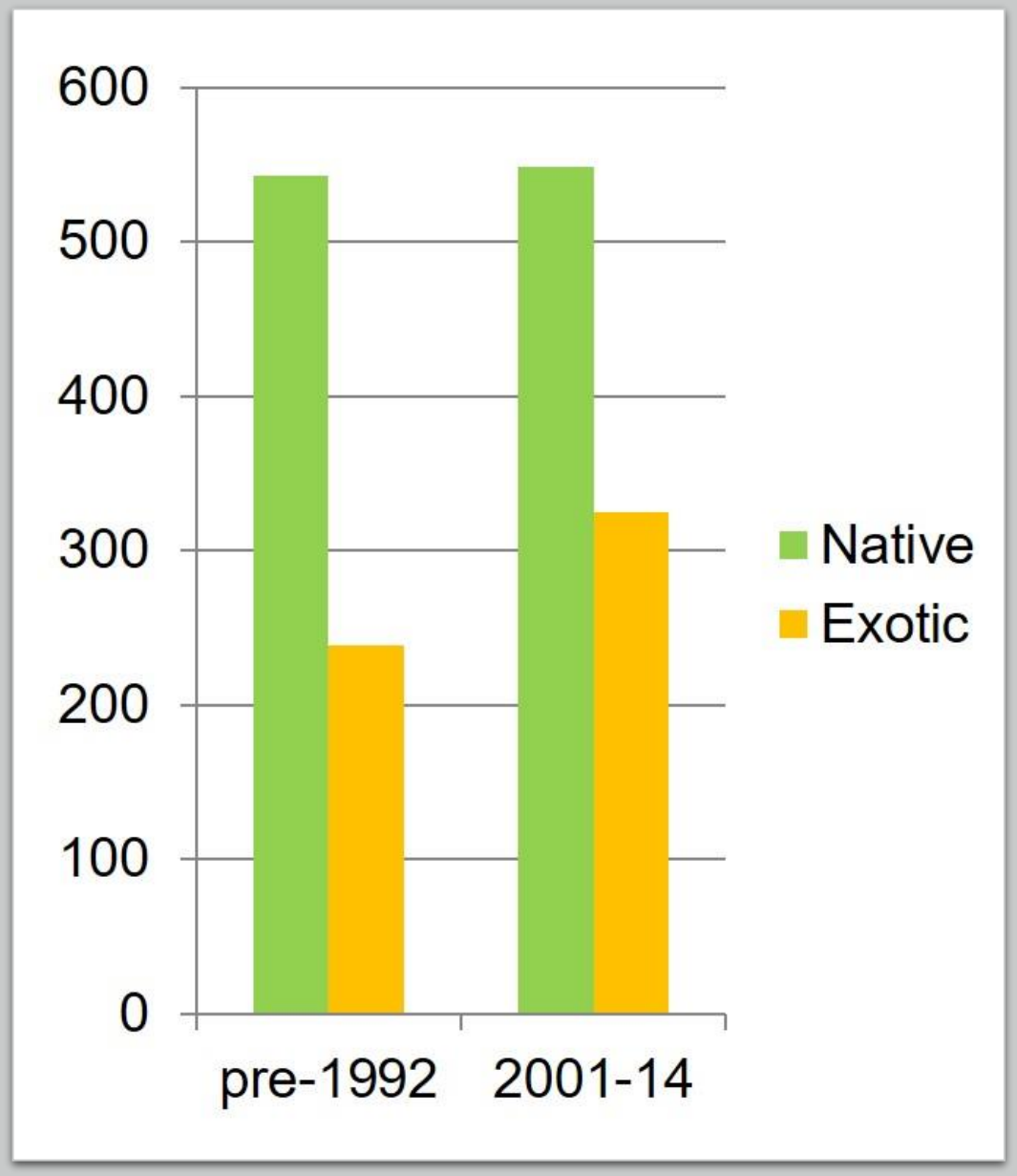
Rouge Park South

- Closer look
- 936 plant species 2001-14
- Overlap of Carolinian and Great Lakes life zones
- Forest, wetland, tallgrass woodland, successional & coastal communities (196 types)



Survey Record: Rouge Park South

- 40+ years of record corresponding to park activism and establishment
- 1973: John Riley, *Ontario Field Biologist* (publ. 1978)
- 1988-90: Steve Varga and John Riley, MNR (publ. 1991)
- 1991: James Kamstra, addendum to MNR report
- 2001-2014: TRCA natural heritage surveys including ELC and flora and fauna species
- 2009-2011 City of Toronto ESA consultant updates
- Coverage: roughly from Lake Ontario to Steeles



Plant Species Richness

- Number of native plant species **relatively stable**
- Exotic species have **increased** in prominence
- OMNR c1970-1992: 543 native species, 239 non-native (31%)
- TRCA 2001-14: 549 native species, 325 non-native (37%)

Rare and Sensitive Plant Species

Federal and Provincial Species At Risk

Scientific Name	Common Name	Status in Park
Panax quinquefolius	American ginseng	present
Juglans cinerea	butternut	present
Fraxinus nigra	black ash	present, recently designated
Trichophorum planifolium	bashful bulrush	extirpated
Liatris spicata	spike blazing-star	planted

Species At Risk

- Ginseng: collection
- Butternut: canker
- Black ash: EAB
- Bashful bulrush: general habitat degradation
- Spike blazing-star: introduced to park, possibly native population at East Point Park

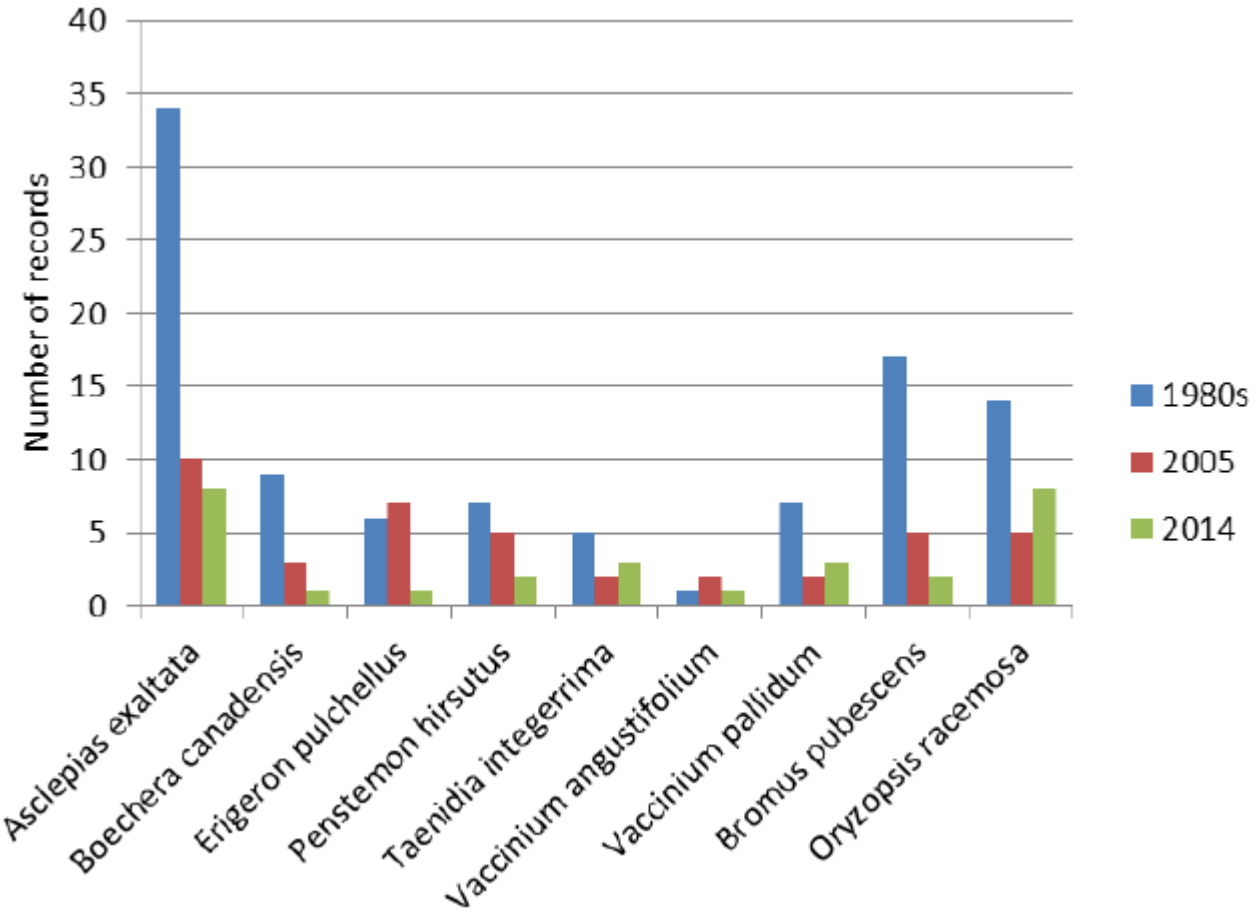
TRCA Species of Conservation Concern

- Proactive approach
- Score & rank, NatureServe
- Rarity **and** Sensitivity
- Two population criteria, two sensitivity criteria
- L(local) Rank: L1-L5 and L+
- L1 to L3: regional; L4 urban; L5 secure/tolerant; L+ exotic
- Updates every 1-2 years

Flora of Concern at Rouge Park

- 233 plant species ranked L1-L3 (2014 ranks)
- An additional 153 L4 species
- 5 species found nowhere else in TRCA
- 15 species found here and 1-2 other sites in TRCA

Population Trends for Selected Flora



Disappearing Flora

- Bashful bulrush
- 39 flora species lost between 1973-2014 in Rouge Park South
- Decline of 14%, roughly 3.5% per decade
- 14 species now 1-10 plants
- Mirrors findings in High Park, Sunnybrook, Massachusetts

Habitats Affected by Extirpations

- Tallgrass & Barren: 13 spp
- Wetlands: 12 spp
- Mature Forest: 12 spp

Examples

- Bashful bulrush most dramatic (now one site left in Canada) (2002)
- Pale vetchling (1973)
- Showy orchis (1988)
- Hobblebush (1988)
- Swamp rose (1988)
- Low bindweed (2005)

Fauna diversity

Current (2005-2014): 155 potential breeding species

- 112 birds
- 24 mammals
- 19 Herpetofauna

Habitat diversity:

- RNUP has a large diversity of habitat types of varying quality which accommodates a fauna diversity that matches some of the highest quality natural areas in the region.
- Glen Major for example has just 131 species (however, lacks the wetland component that RNUP has).

Forest habitat:

- The most obvious habitat component at RNUP are the extensive forest blocks particularly in the lower reaches.
- Forest habitat in the lower portion are extensive enough to host areas of Interior Forest which in turn provide opportunities for sensitive species such as the city's only persisting Northern Flying Squirrel population.

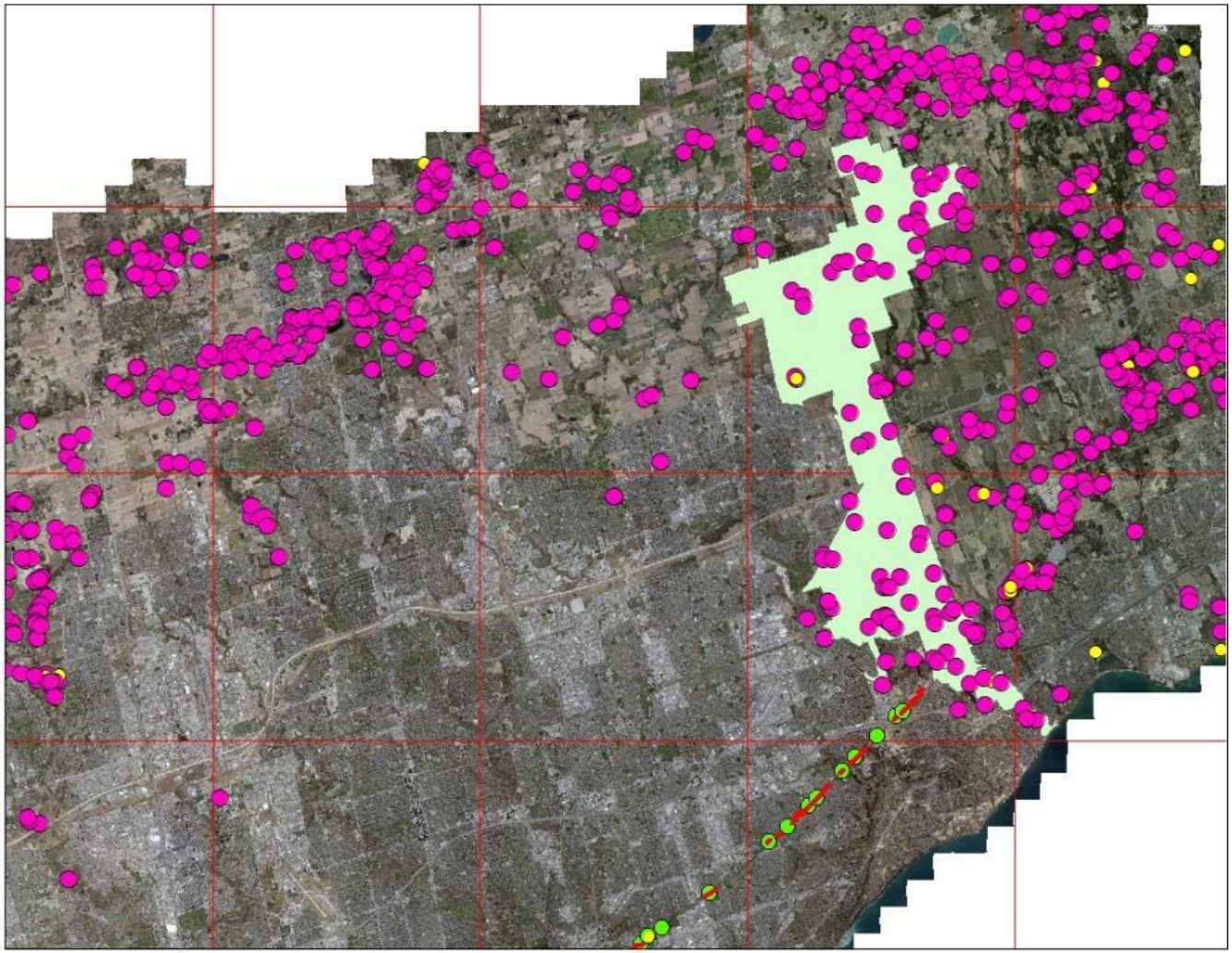
Forest Interior in lower RNUP

Ovenbird at the lower RNUP 2000-2010

Wetland habitat:

- Wetlands are a very significant element in the park, principally owing to the extensive Rouge coastal marsh, but also due to locations such as the pond at Finch and Townline and more recently the restored wetland at Reesor Road.
- These, plus various smaller wetlands provide opportunities for species such as Grey Treefrog, Wood Frog, Spotted Salamander, Eastern Newt, Sora … all of which have disappeared throughout the rest of the City.

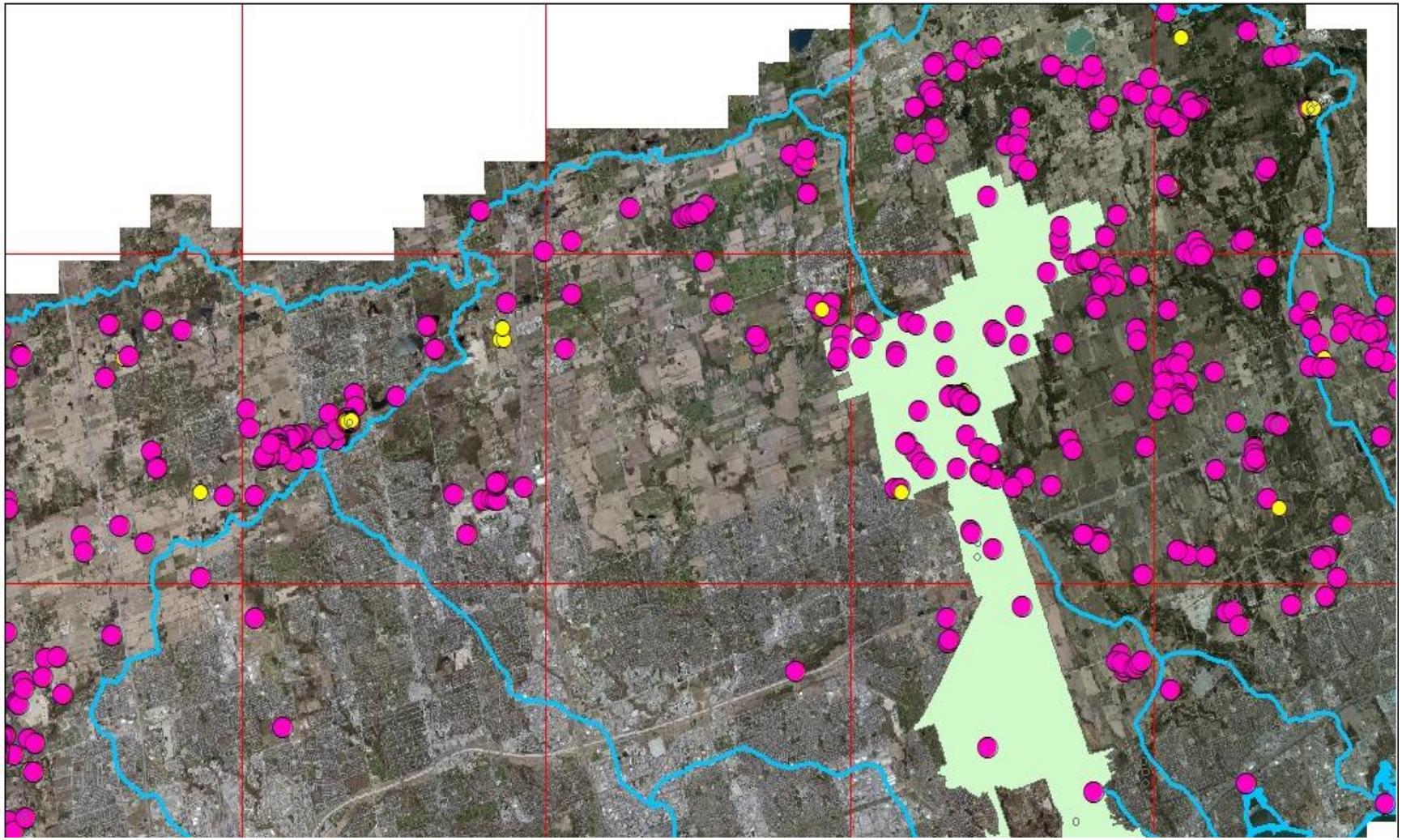
Wood Frog distribution



Meadow habitats:

- Finally, the Park provides large areas of meadow and open habitat, particularly in the northern half of the Park where there is extensive agricultural land use, beyond the City limits.

Bobolink distribution

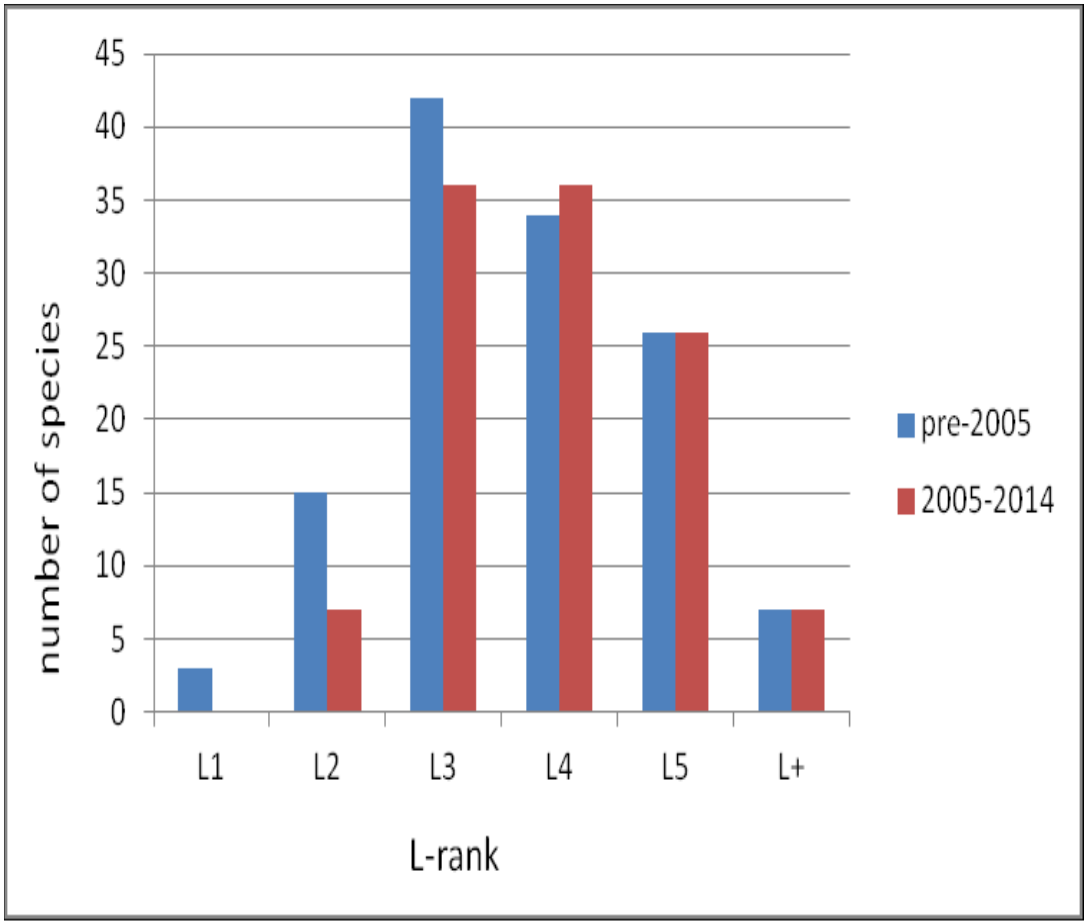


Regional L1 and L2 species:

- RNUP is providing excellent opportunities for vertebrate fauna species on the very edge of one of the busiest cities in North America
- The Park is therefore perfectly placed to ensure that urbanites are able to restore personal connections to Nature, engaging them positively with Ontario's (and Canada's) broader natural heritage.
- HOWEVER ….
- There have already been significant declines and extirpations in both species' richness and species' abundance at the Park.

Changes over time:

- The period prior to 2005 lists 175 fauna species.
- All declines have been in higher ranked, more sensitive species.

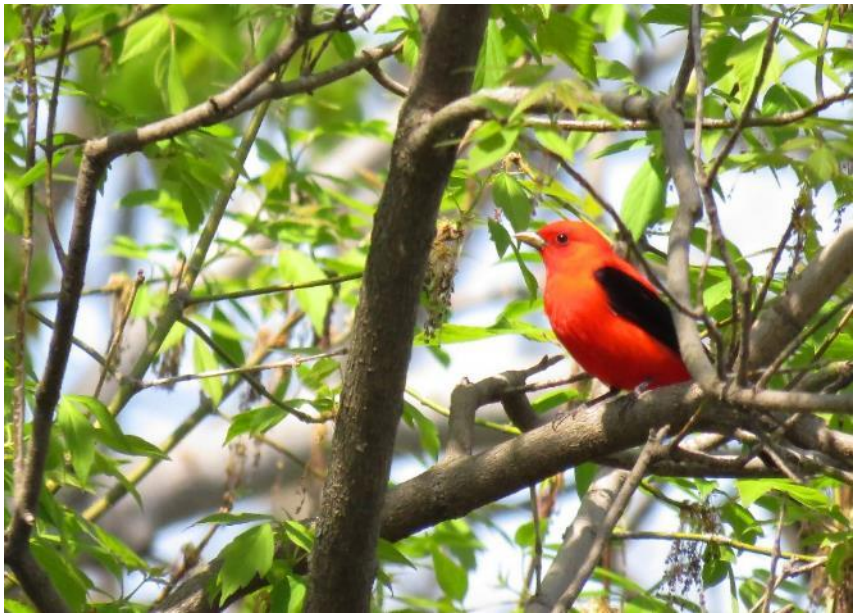


Comparison between 2100 h at RNUP (south) and Glen Major – 2005 to 2014.

SPECIES	NEST-LEVEL	RNUP	Glen Major
Black-throated Green Warbler	Canopy	0	71
Blue-winged Warbler	Ground	0	25
Mourning Warbler	Near-ground	54	29
Nashville Warbler	Ground	0	41
Ovenbird	Ground	5	188
Scarlet Tanager	Canopy	13	52
Veery	Near-ground	13	26
Wood Thrush	Mid-level	44	77

While ground-nesting Ovenbirds (L2) will always have a hard-time in heavily used forests …

… canopy-nesting Scarlet Tanagers (L3) fare better.



Significant extirpated bird species at RNUP:

Habitat Type	Species	Scientific Name	L-rank	Last Documented
Wetland	American bittern	Botaurus lentiginosus	L2	1973(OMNR)
Wetland	black tern	Chlidonias niger	LX	1990(OMNR)
Wetland	Wilson's snipe	Gallinago delicata	L2	2003 (TRCA)
Meadow	northern harrier	Circus cyaneus	L3	2003(TRCA)
Meadow	loggerhead shrike	Lanius ludovicianus	LX	1966(OMNR)
Meadow	grasshopper sparrow	Ammodramus savannarum	L2	1990(OMNR)
Forest	red-shouldered hawk	Buteo lineatus	L2	1985(OMNR)
Forest	whip-poor-will	Caprimulgas vociferus	L1	1990(OMNR)
Forest	red-headed woodpecker	Melanerpes erythrocephalus	L3	1983(OMNR)
Forest	yellow-bellied sapsucker	Sphyrapicus varius	L3	1983(OMNR)
Forest	black-and-white warbler	Mniotilta varia	L2	2003(TRCA)
Forest	black-throated blue warbler	Setophaga caerulescens	L3	1983(OMNR)
Forest	northern waterthrush	Parkesia noveboracensis	L3	2004(TRCA)
Forest	white-throated sparrow	Zonotrichia albicollis	L3	1990(OMNR)

Realistic expectations

- Two rather conflicting visions –
  - Optimizing public use
  - Protecting natural heritage
- If the habitat needs and sensitivities of certain L1 to L3 ranked species are not fully considered in management then there should be no expectation for such species to thrive. However, species' needs and sensitivities vary.

Conserving Biodiversity at Rouge National Urban Park

Causes

- Climate and edge effect
- Altered hydrology
- Trampling, encroachment
- Air pollution
- Fire suppression
- Deer (plants), subsidized predators (animals)
- Invasive plants
- Pests and diseases
- Synergistic (e.g., nitrate)

Invasive plants

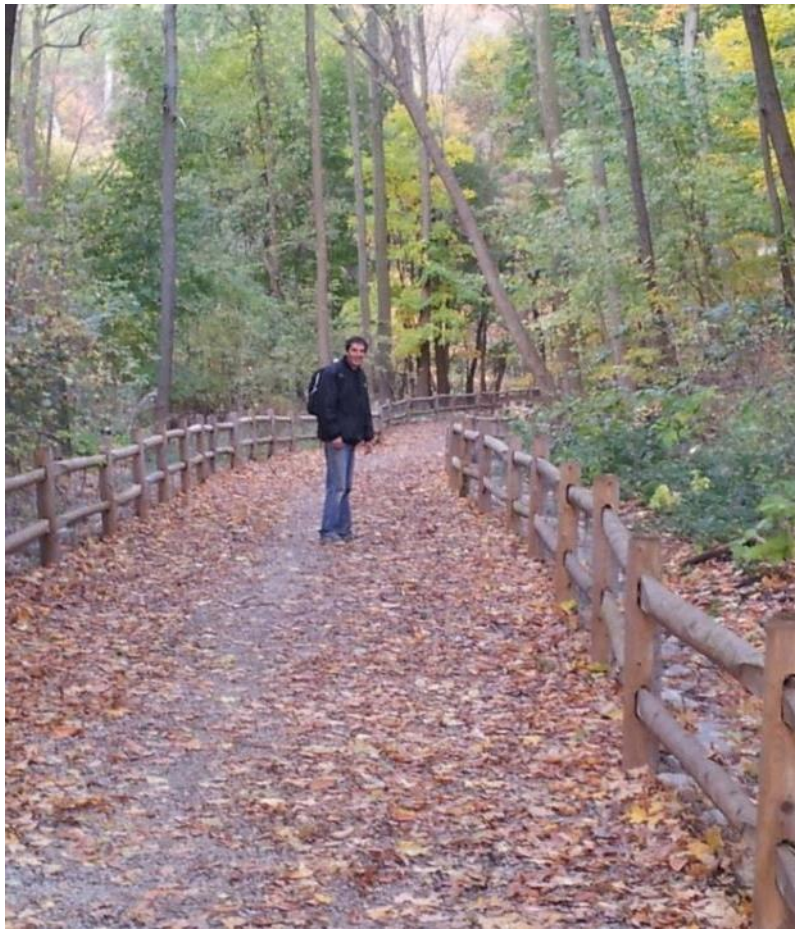
- dog-strangling vine
- common reed
- garlic mustard
- honeysuckles
- buckthorn
- oriental bittersweet
- periwinkle & other garden escapes

Pests and Diseases

- Emerald ash borer
- Butternut canker
- Dutch elm disease
- Beech bark disease
- Gypsy moth
- Hemlock woolly adelgid
- Some indication that forest structure is changing (Humber Arboretum); vine and shrub expansion
- Favours invasive plants and perhaps Lyme disease

Strategies

- Manage Use
- Urban Matrix
- Habitat Connectivity
- Invasive Control
- Multi-species Action Plan, L.I.D., Toronto Green Standard
- Monitoring

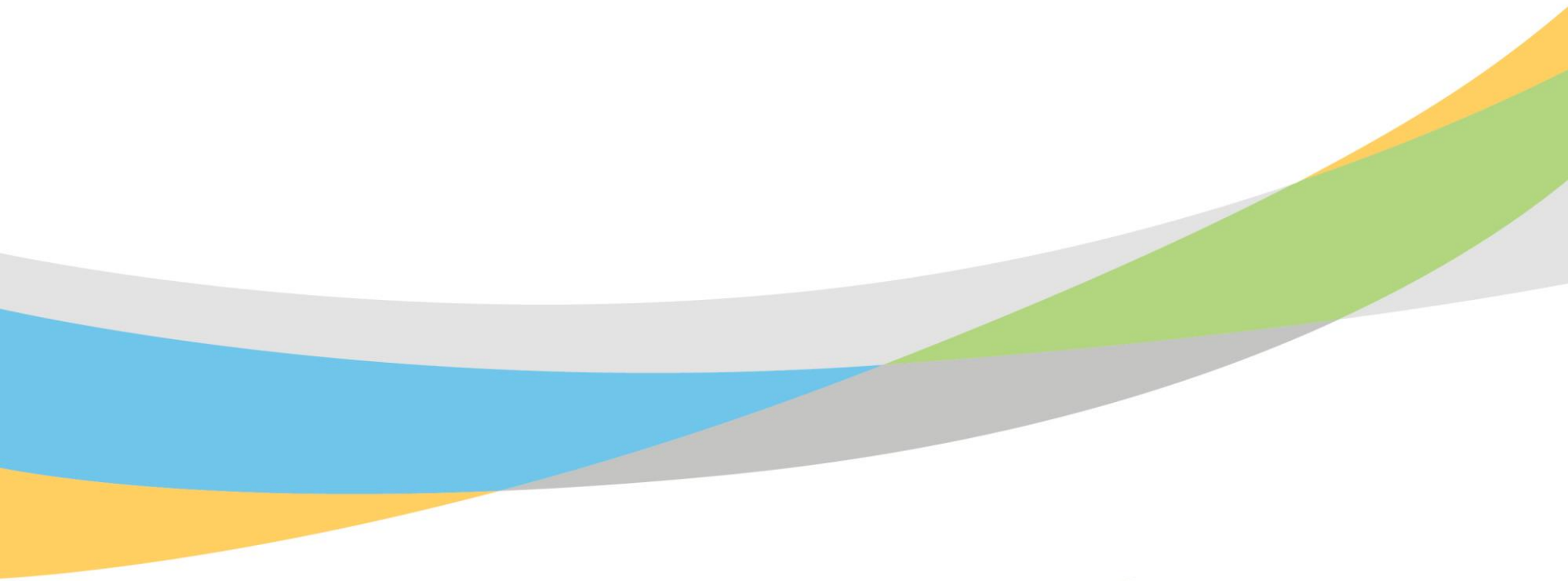


Restoration Initiatives

- Many in and near Park
- Meadoway, waterfront, moraine
- Plant strategically
- Propagate local seed sources
- Quality

Long Term View

- Patient approach yields dividends
- Modest continuous efforts
- High Park has successfully recovered plants e.g., silver-rod and wild lupine
- Federal involvement provides opportunity



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