

**Vegetation Status
Sifton Bog
Environmentally Significant Area
1886 – 2008**

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Bradwill Ecological Consulting**

Topics

Data consolidation

Crawford (1926) + Judd (1955)
+ Proctor & Redfern (1979) + McLeod (1992)
+ BioLogic (1998) + Bradwill (2008)

Digitized Vegetation Community Maps

Floristic Analyses

FQA + FQI + WI
guilds + physiognomic groups
Control vs Effect Plots

Ecological Integrity + Health

process of succession since 1850

Implications

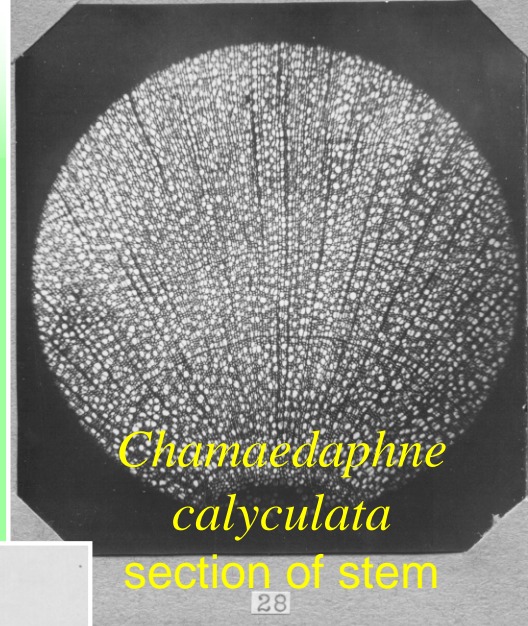
future work



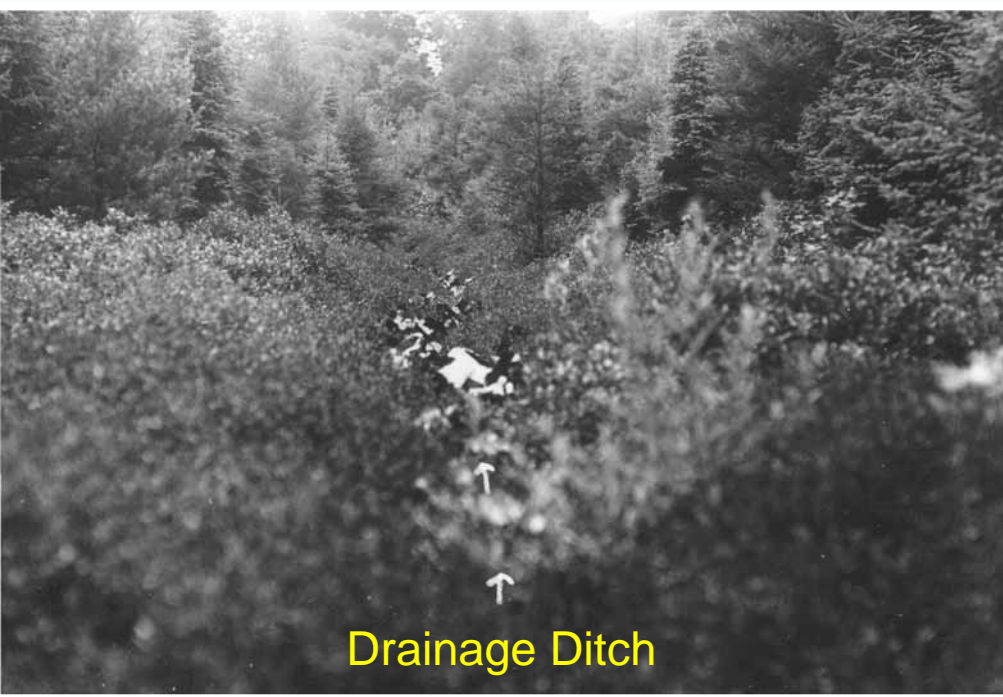
Data consolidation

Crawford (1926)

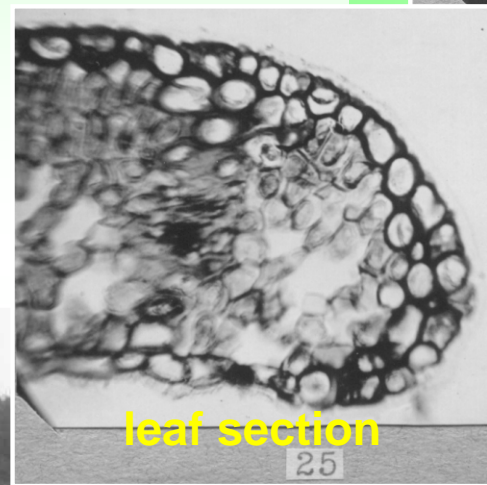
“Some Studies on the Byron Bog with special reference to *Chamaedaphne calyculata*” (Leatherleaf)
census of plants in five (5) zones
[floating, sedge, shrub, tamarack-spruce, deciduous tree]



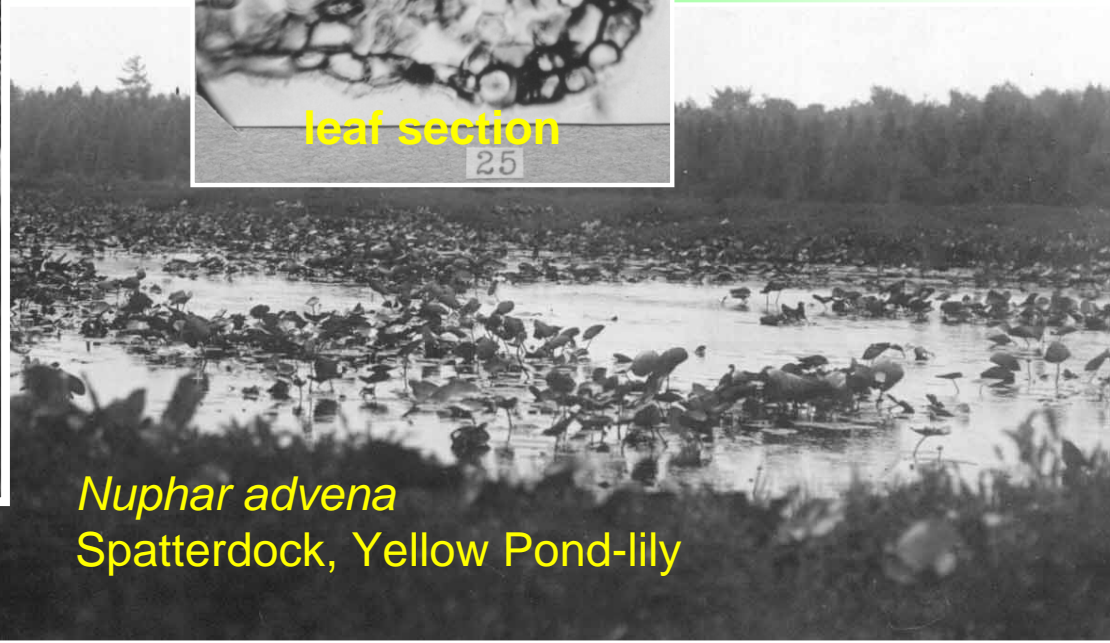
Chamaedaphne calyculata
section of stem
28



Drainage Ditch

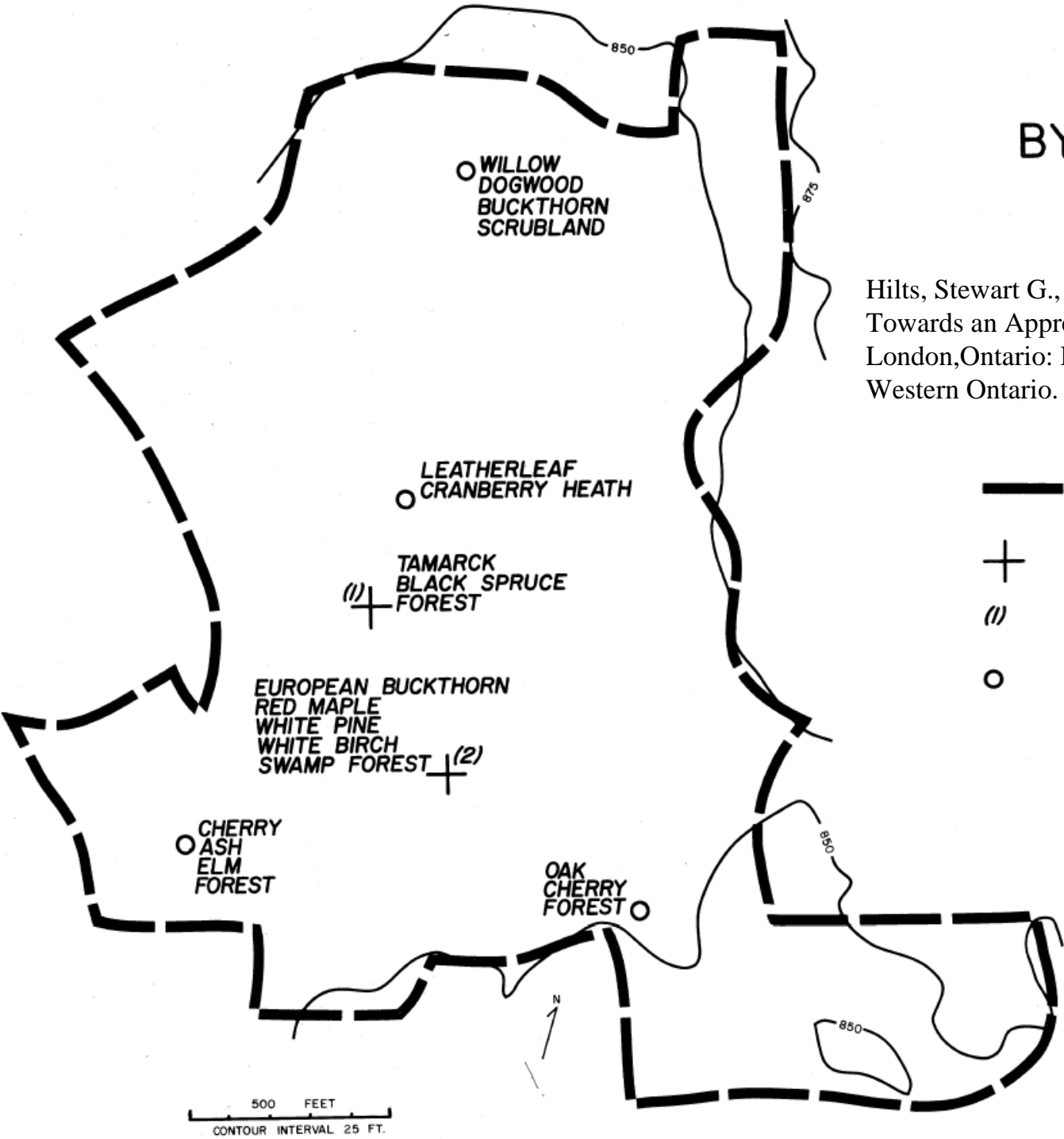


leaf section
25



Nuphar advena
Spatterdock, Yellow Pond-lily

London Ecological Site Survey, 1977



BYRON BOG

Hilts, Stewart G., editor. 1977. Natural Areas in London, Ontario: Towards an Appreciation. London Ecological Site Survey. London, Ontario: Department of Geography, The University of Western Ontario.

- Site Boundary
- +** Quadrat Location
- (1)** Quadrat Number
- Subjective Description

MAP (B)I

Data consolidation

Judd (1957) “Studies of the Byron Bog”
Canadian Entomologist 89(5)

Proctor & Redfern (1979)
“Environmental Appraisal of Proposed
Development Adjacent to Sifton Bog”

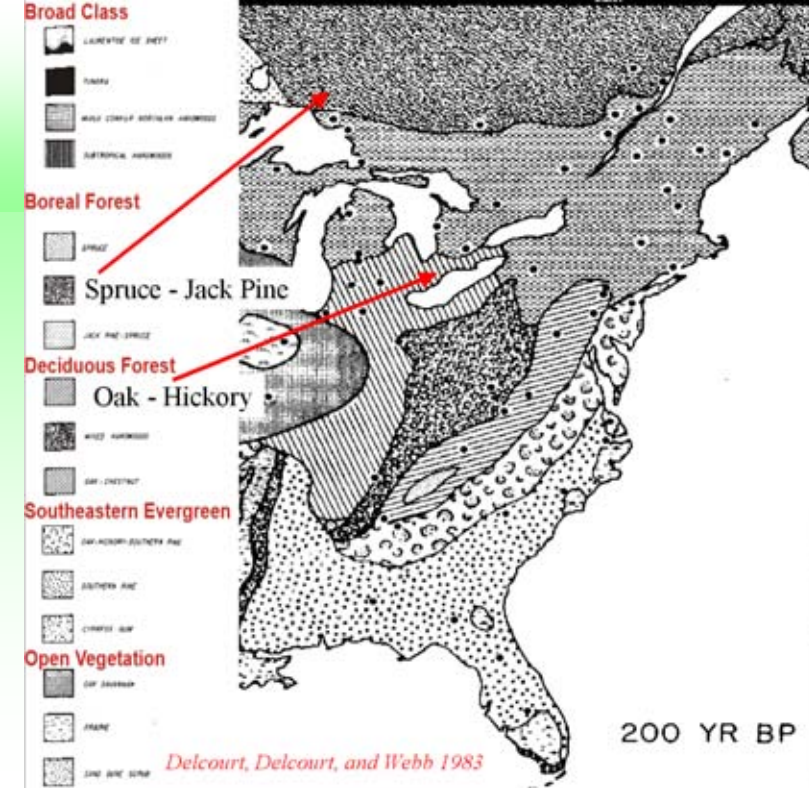
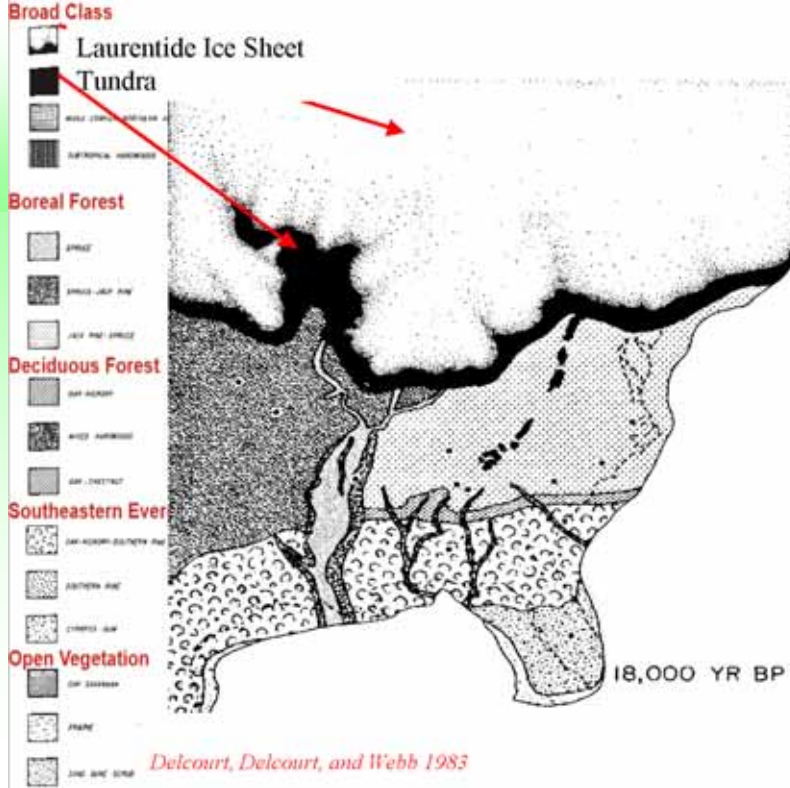
McLeod (1992)
“Integrated Resource Management Study”

**“settlement” of bog
and advance of
Leatherleaf
(*Chamaedaphne
calyculata*)**

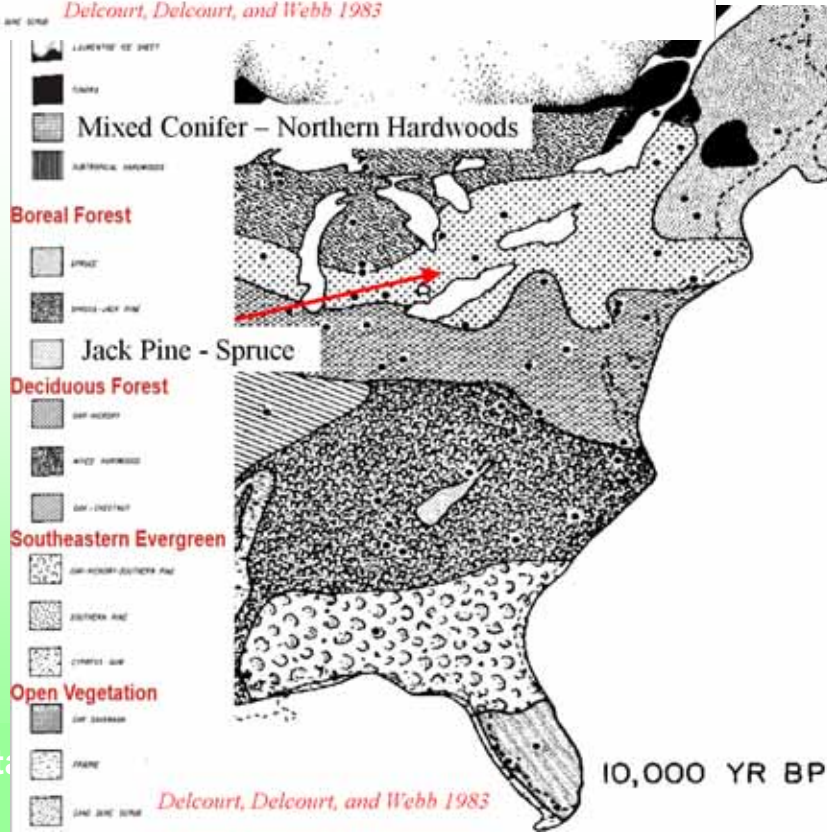
**hydrogeology and
biology**

**Life Science
Inventory**

18 000 YBP
Advance
ofglaciation
pushed Tundra
and Boreal
regions to this
region



10 000 YBP
Jack Pine-
Spruce
associations
with retreat of
glaciation



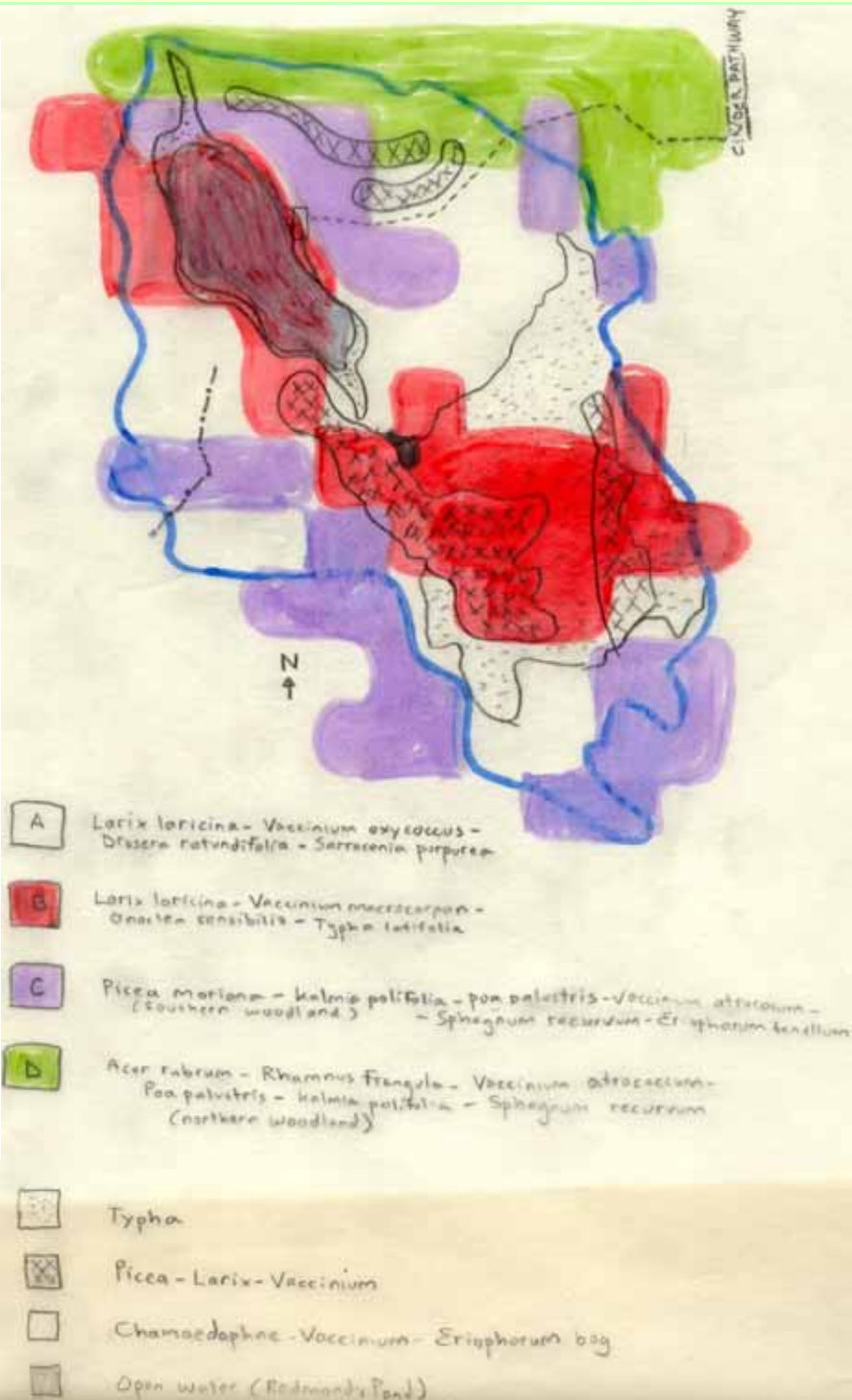
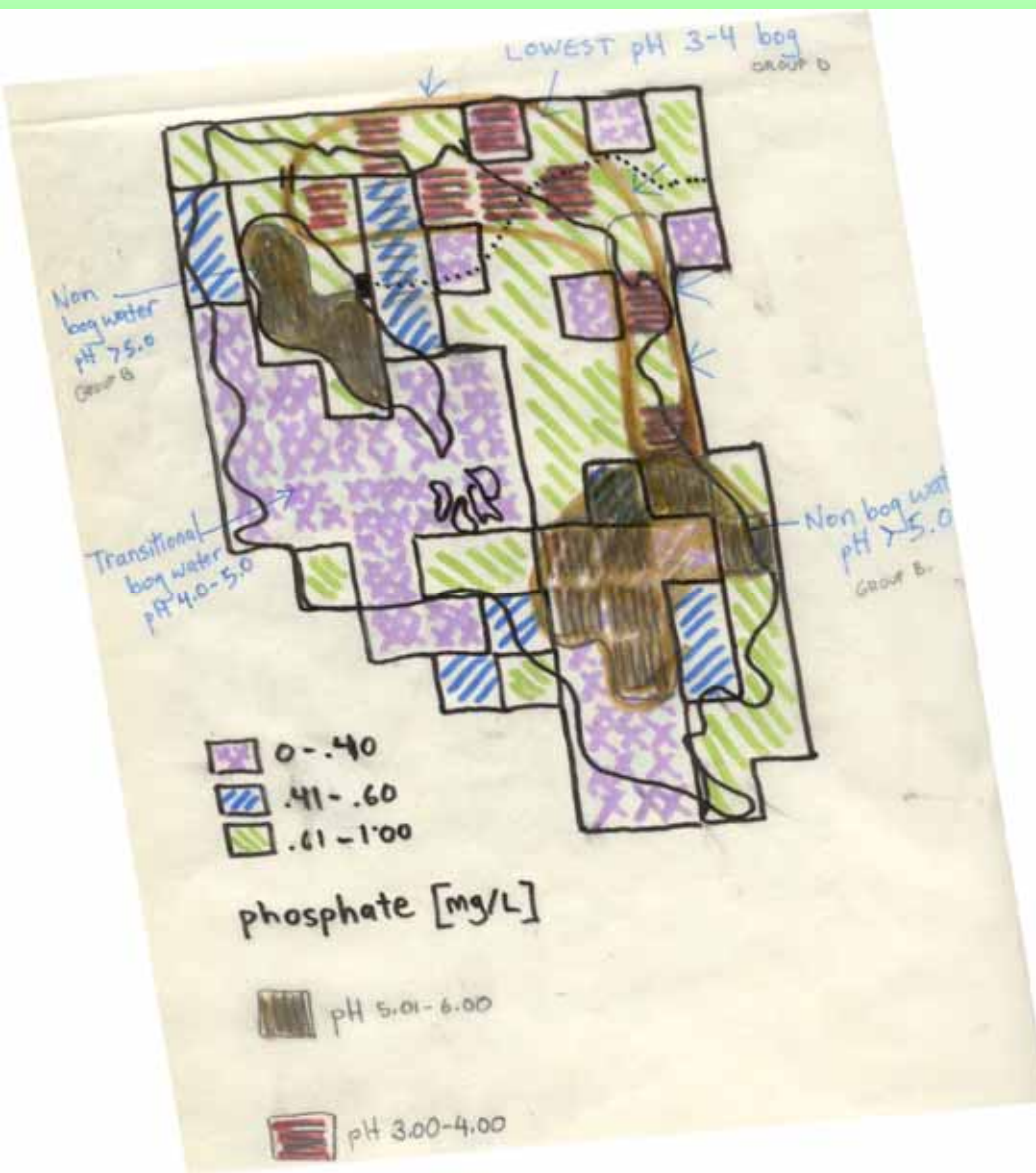
200 YBP
Oak-Hickory deciduous forests
dominated pre-European
settlement

Johnson (2008) “ A Dendrochronological Study”

Larix laricina 129 y [90 cores]
Picea mariana 78 y [22 cores]



Plant Associations and pH (Wu 1989)



Wu, Quiang. 1989. Quantitative Analyses on the Vegetation of Byron Bog. MSc Thesis. London, Canada: Department of Plant Sciences. The University of Western Ontario.

BioLogic (1998) "Pre-Development Monitoring"

established Control and Effect Plots

13 plots (10 m x 10 m)

monitoring protocol

BACI design

(Before and After,

Control [least affected] and

Impacts [most likely affected by surface flows])

3a Bog

Low Shrub: Floating mat or sphagnum lawn:
Leatherleaf-Cranberry

3b Bog: Tall Shrub: Highbush Blueberry -
Hackberry - Willow

3c Bog

Treed: Black Spruce Tamarack

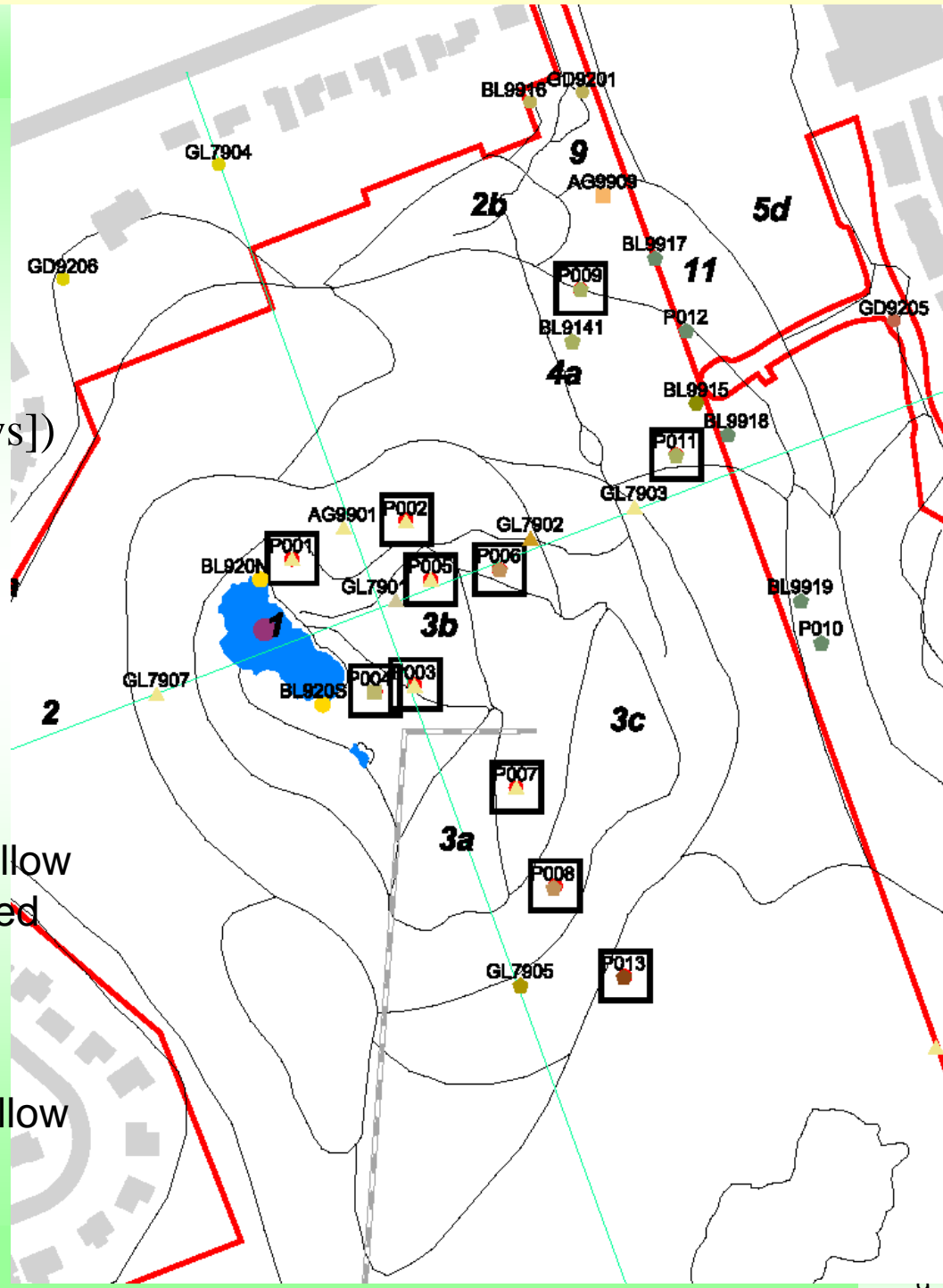
4a Swamp Tall Shrub: Glossy Buckthorn-Willow

4c Swamp Conifer-Deciduous. Tamarack-Red
Maple-White Birch

4d Swamp Conifer-Deciduous: Silver

Maple/Red Maple-White Pine

4f Swamp Deciduous: Silver/Red Maple-Willow



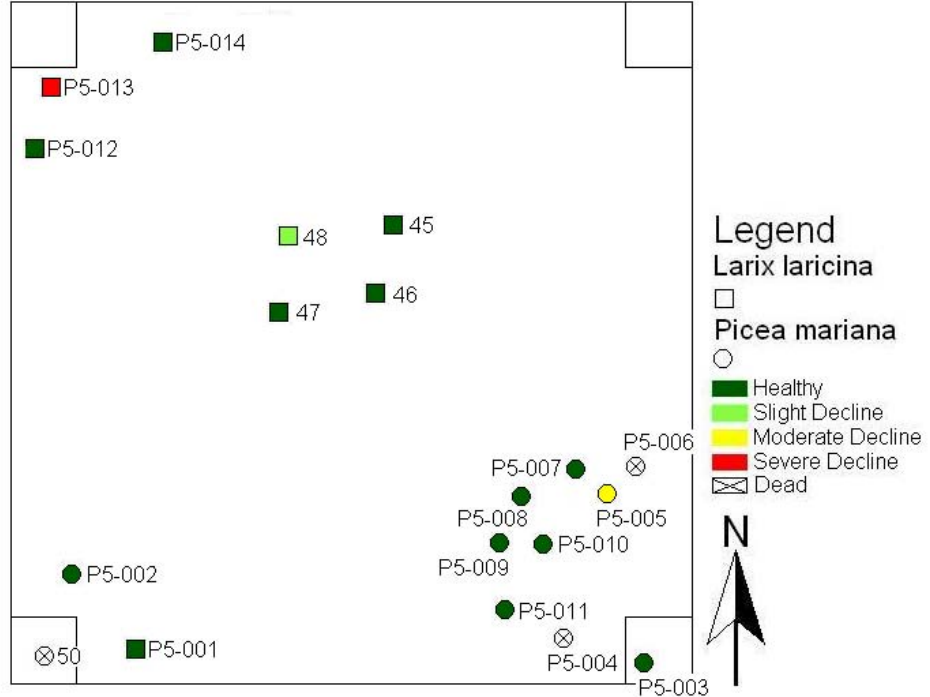
Bradwill (2008) repeated monitoring protocol

Within this plot 14 trees required new tags.



* No tree tags
⊗ dead tree

Plot 5



Floristic Quality Comparisons for 2000 and 2008

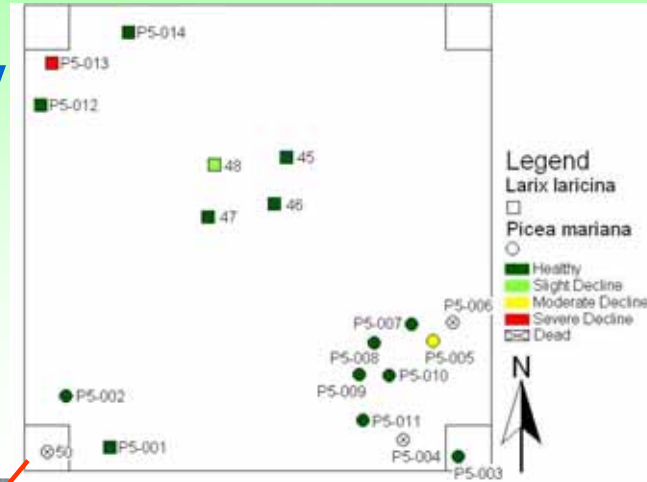
Plot	2000			2008			
	n	MCC	FQI	n	MCC	FQI	
Organic Shallow Marsh Ecosite (MAM)							
P004	11	7.80	25.87	13	8.09	29.17	↑
Low Shrub Bog							
P001	12	7.58	26.26	18	7.88	33.41	↑
P003	14	7.93	29.67	21	7.26	33.28	↑
		7.76	27.97		7.57	33.35	↑
Tall Shrub Bog							
P005	15	8.13	31.49	14	8.33	31.18	↔
Black Spruce -Tamarack Treed Bog							
P002	10	7.66	22.98	15	6.80	26.34	↑
P007	16	7.40	28.70	18	7.67	32.53	↑
		7.53	25.84		7.23	29.44	↑
Mixed Coniferous-Deciduous Swamp							
P006	6	8.00	17.89	11	6.38	21.14	↑
P008	15	8.21	30.70	14	7.36	27.55	↓
		8.11	24.30		6.87	24.35	↔
Mixed Deciduous-Coniferous Swamp							
P013	7	5.17	12.70	13	5.60	20.19	↑

??
 Is FQI ↑ due to positive change in environment or due to increased sampling effort (greater number of species recorded in 2008)

1 m x 1 m quadrat

> 100 Buckthorn seedlings per sq m

Most trees healthy

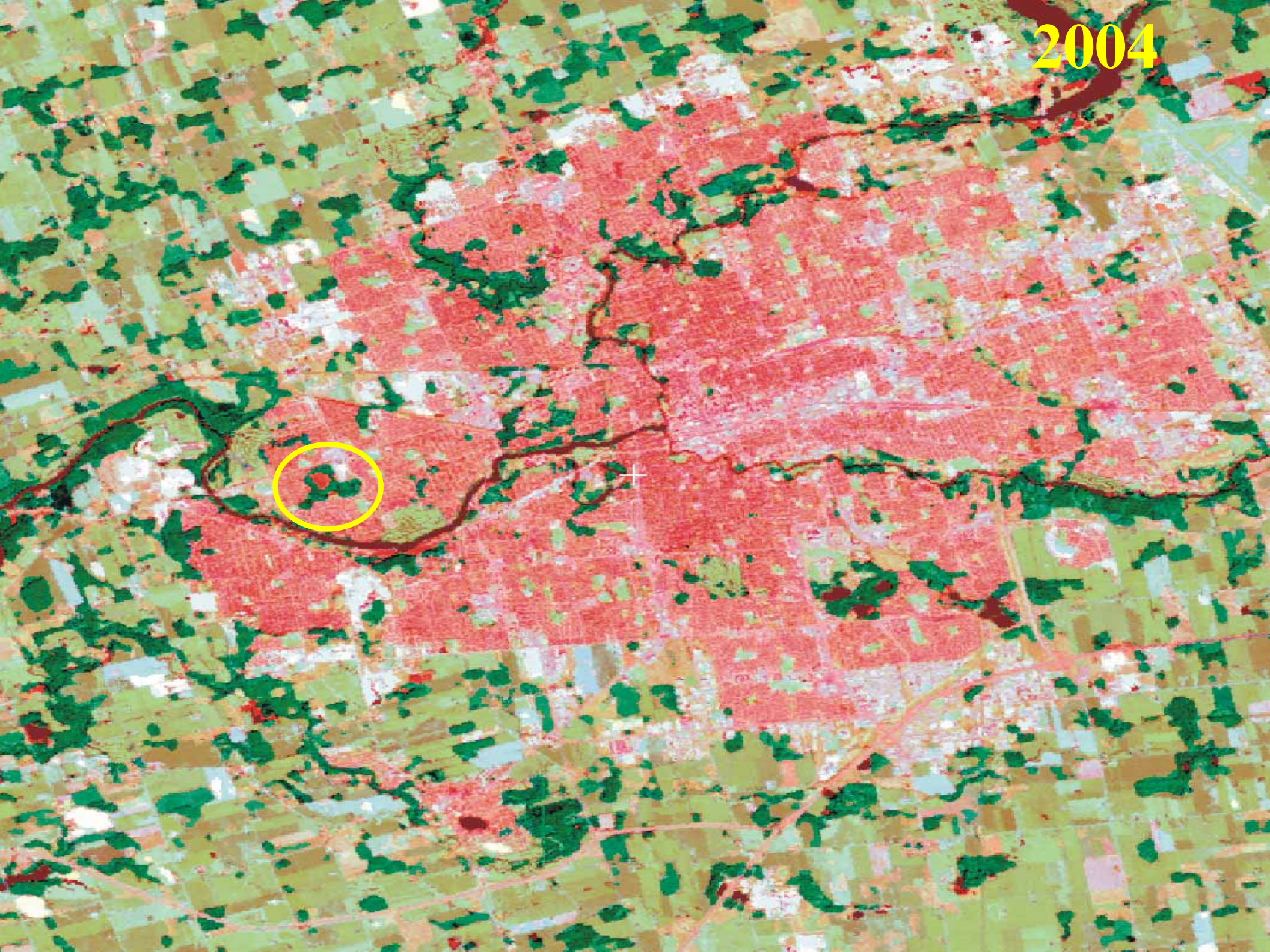


1950



1413-80
18

2004

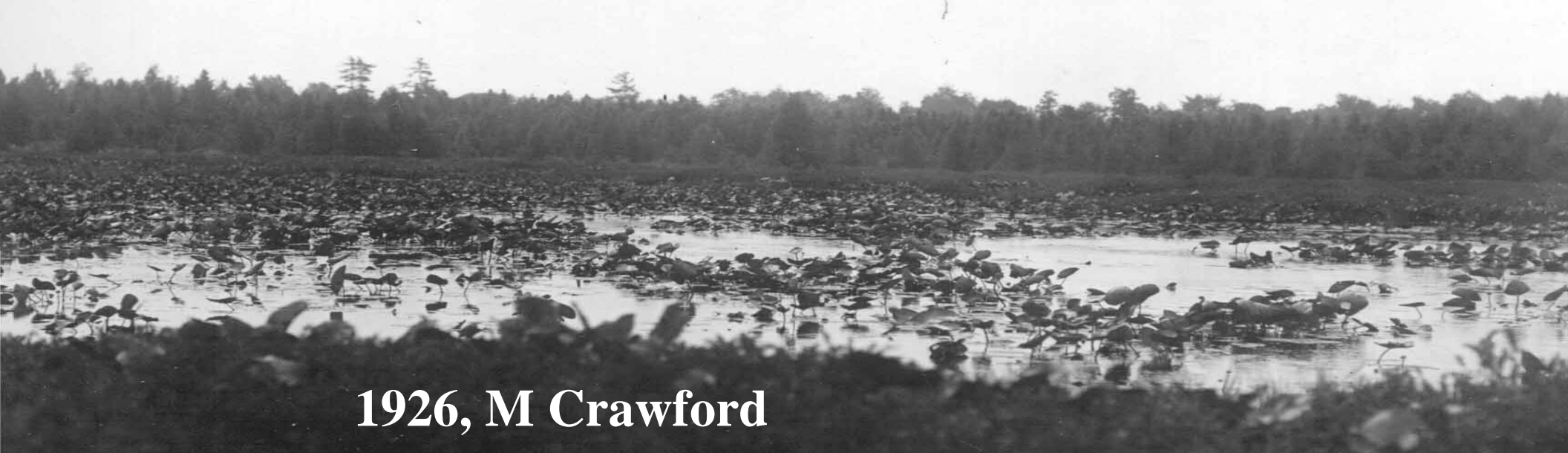


Changes in Land Use and Vegetation Communities

Surrounding lands changed
from agriculture
to residential or commercial

Hydrology of bog affected by
cinder pathway,
opening and closing of Kirk Drain,
fire on bog mat,
evapostranspiration by trees and shrubs





1926, M Crawford



Redmonds Pond, 2006

Two Findings

- 1a. Hydrology drives plant distribution
- 1b. Sphagnum is a hydrogeobiochemical engineer that drives hydrology and everything else
2. Buckthorn dominates substantial areas

Two Actions

- 1a. Manage the water balance
(inputs and outputs)
- 1b. Monitor Sphagnum
(distribution and abundance)
2. Reduce Buckthorn abundance

