Greenspace Alliance AGM

May 29, 2014

Eric Jones

Ottawa Tree Canopy Project

Estimating tree canopy cover within Ottawa's urban boundary using open data, open source tools, and citizen volunteers

What led to this initiative?

1. Lack of information on Ottawa's tree canopy :

- Target: 30%   (2003 Official Plan)
- 28% canopy cover for whole of Ottawa (Official Plan)
- 27 % of the urban area (City Green study)
- 17% in the urban area (Committee report)

What led to this initiative?

2. Availability of data

- City of Ottawa air photos (2005, 2011; license free)
- City of Ottawa boundary (Open Data Initiative)
- Ward boundaries (Open Data Initiative)
- Neighbourhood boundaries (Ottawa Neighbourhood Study)

What led to this initiative?

3. Availability of free and open source GIS software
    (+ expertise: Regie Alam)

    - Data setup and preparation
    - Data analysis
    - Map generation
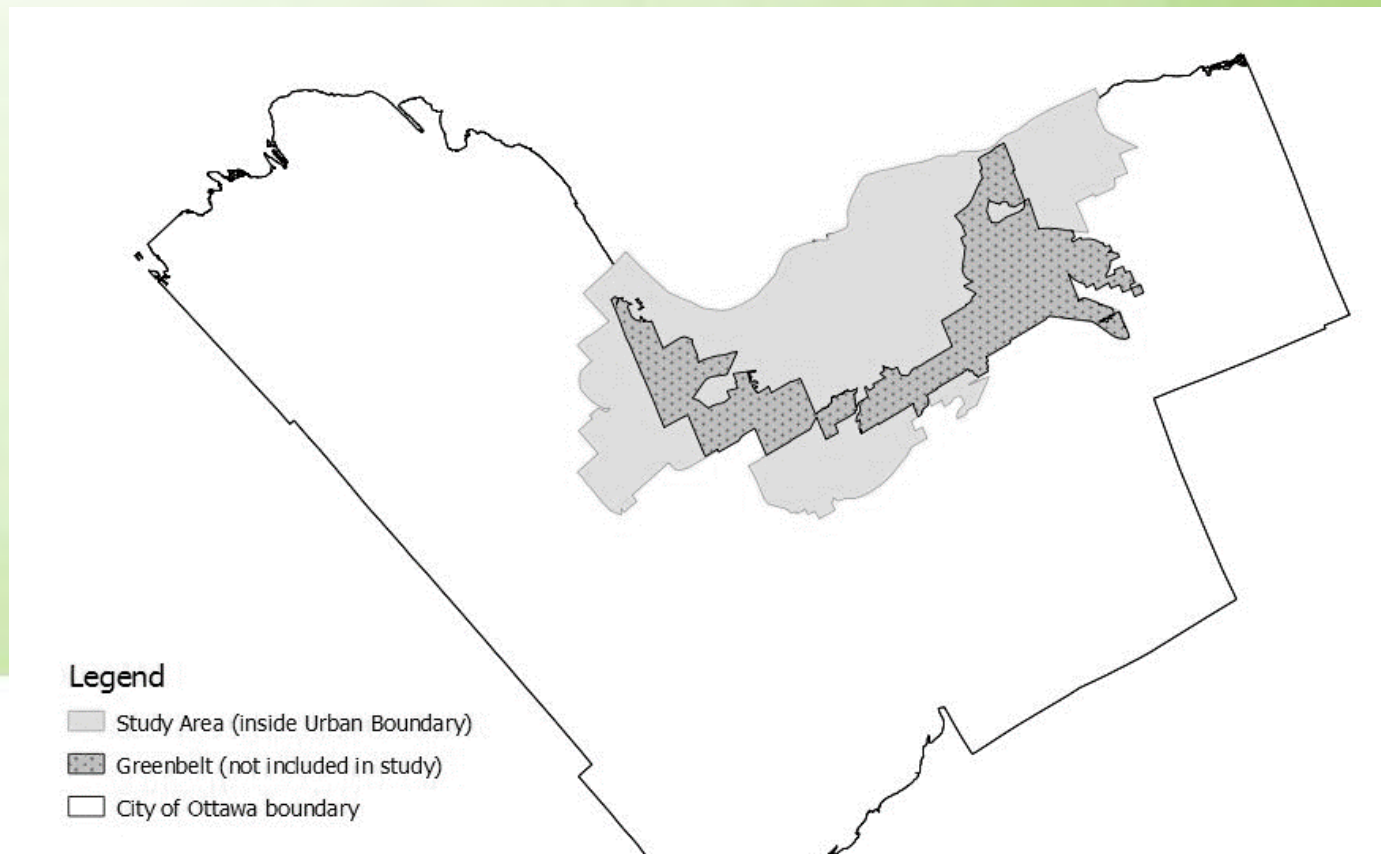
What led to this initiative?

4. The Big Question:

What is the value of Urban Forest?

Rapid change is occurring

Methodology

1.) Data Preparation:

Use software to cut urban area from the rest of City of Ottawa (not including greenbelt)

Legend

Study Area (inside Urban Boundary)

Greenbelt (not included in study)

City of Ottawa boundary

Methodology

Overlay points over study area (within urban area)
- regular grid
- 100 m spacing (over 40,000 points)

Methodology

2. Train volunteers:

- 19 volunteers
- training workshop

Classification code:

Class	Landcover
1	Tree
2	Other Vegetation
3	Impervious Surface
4	Bare Soil
5	Water

Methodology

- Data provided through DVDs or the internet

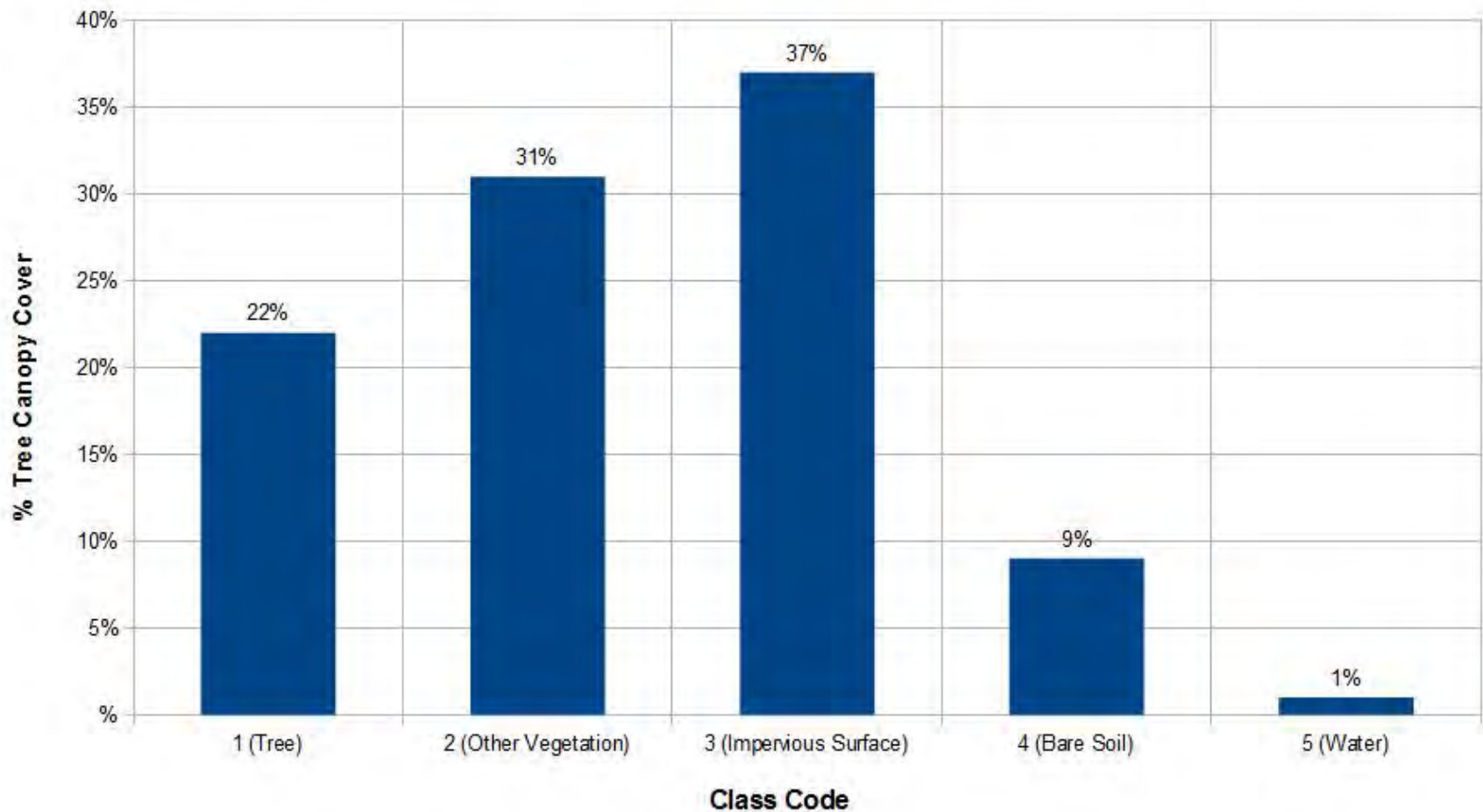- Volunteers work at home, send results back

Methodology

3. Data analysis:

- Calculate % area for trees and other land cover

- Quality Assessment (5% of points)

Class	Landcover
1	Tree
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Results – urban Ottawa

Percent Tree Canopy Cover Over the Whole Study Area (within urban boundary)

Results - Quality Assessment

		Reference Data (QA)					
		1	**2**	**3**	**4**	**5**	
	1	419	30	12	0	0	461
Classified Data	**2**	59	452	63	53	0	627
(ClassCode)	**3**	26	15	719	6	0	766
	4	2	22	14	152	0	190
	5	1	0	0	0	13	14
		507	519	808	211	13	2058

Results – ward tree cover

| Ward Number	Ward Name	Percentage
19	Cumberland	9%
14	Somerset	13%
6	Stittsville	13%
3	Barrhaven	15%
23	Kanata South	16%
12	Rideau-Vanier	19%
11	Beacon Hill-Cyrville	20%
2	Innes	22%
22	Gloucester-South Nepean	22%
16	River	22%
17	Capital	22%
1	Orleans	23%
4	Kanata North	23%
18	Alta Vista	24%
9	Knoxdale-Merivale	24%
8	College	25%
13	Rideau-Rockcliffe	26%
15	Kitchissippi	29%
10	Gloucester-Southgate	30%
7	Bay	35%

Heat map (wards):

class code 1 (Trees)
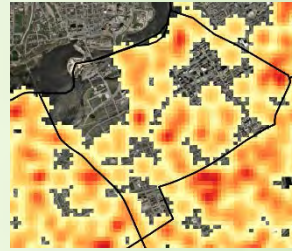
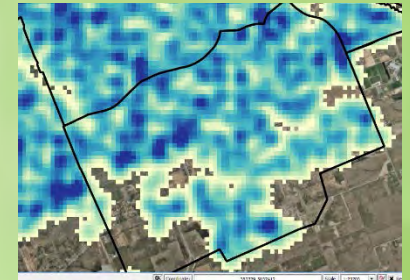Somerset
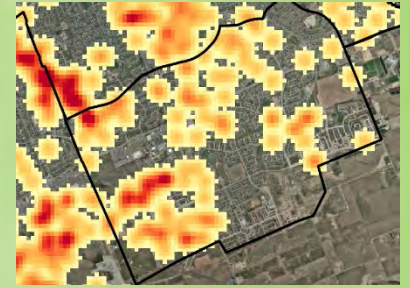
Cumberland
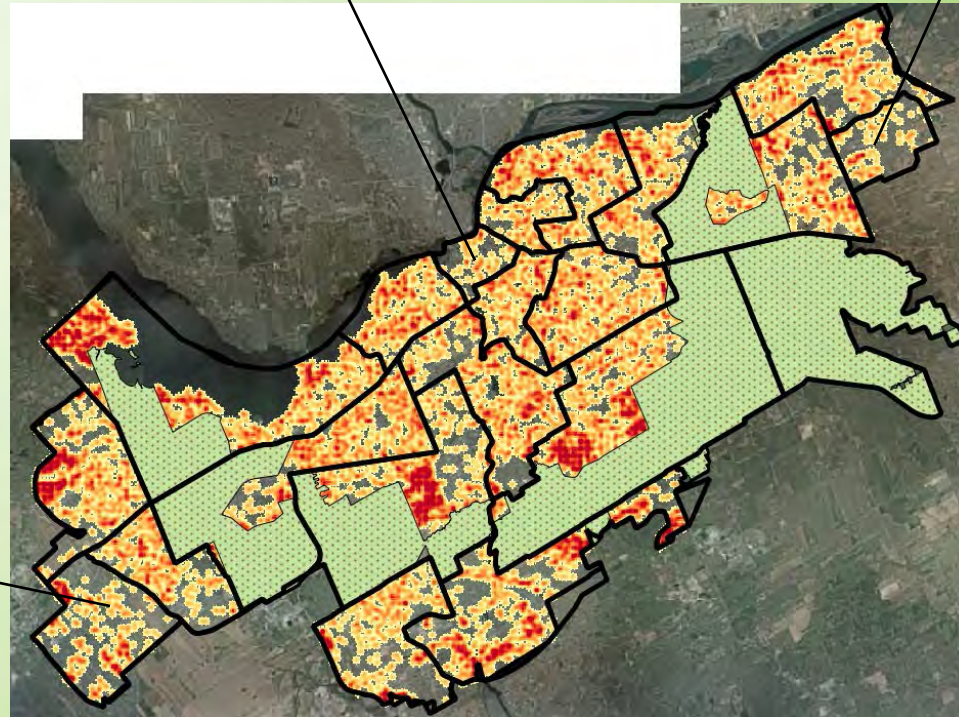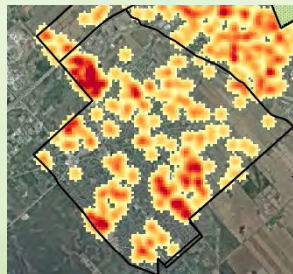
Stittsville
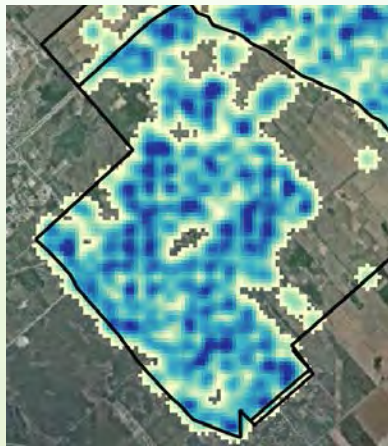
Heat map (wards):

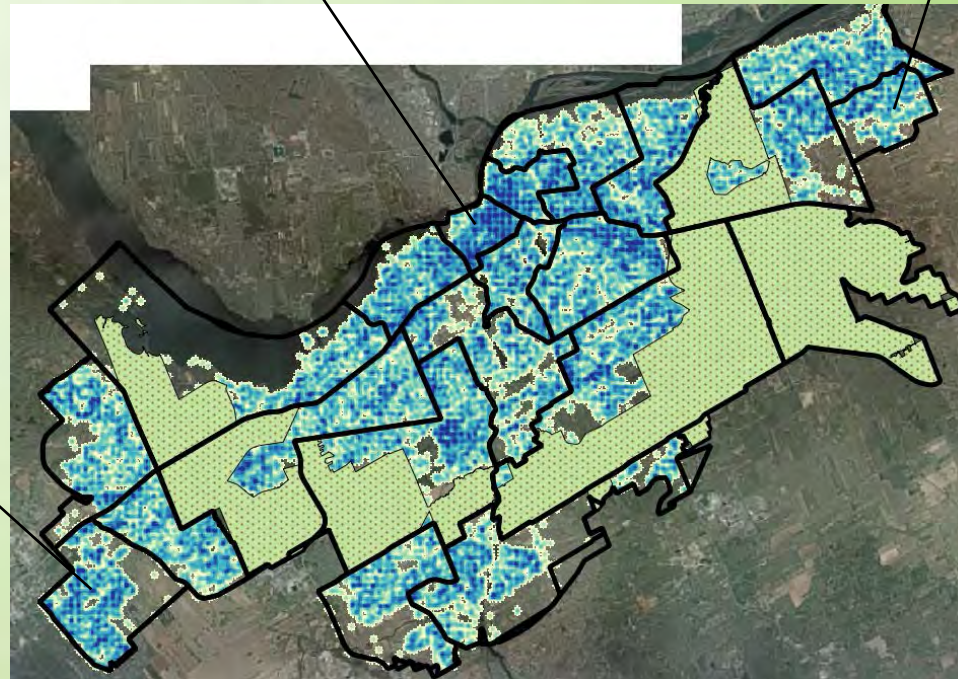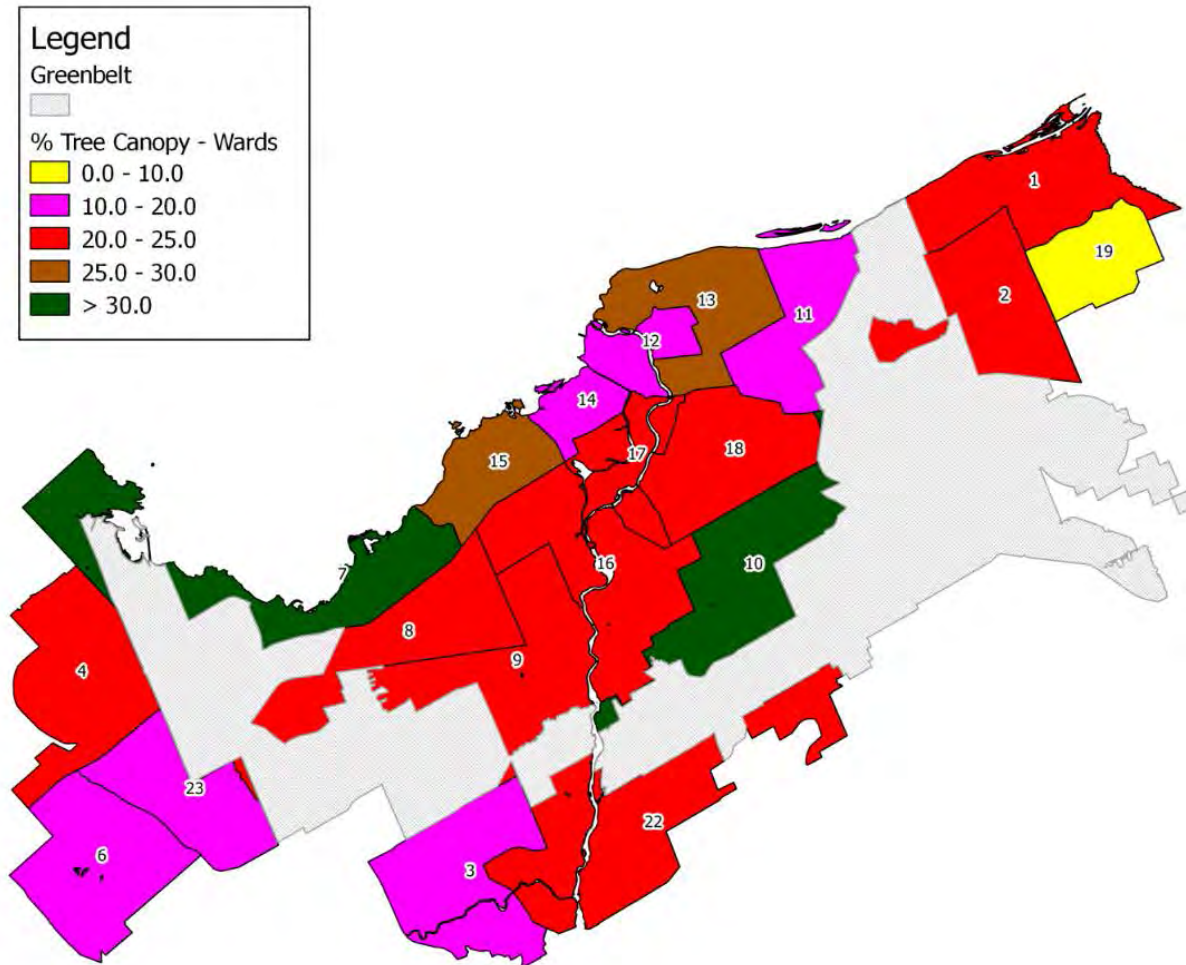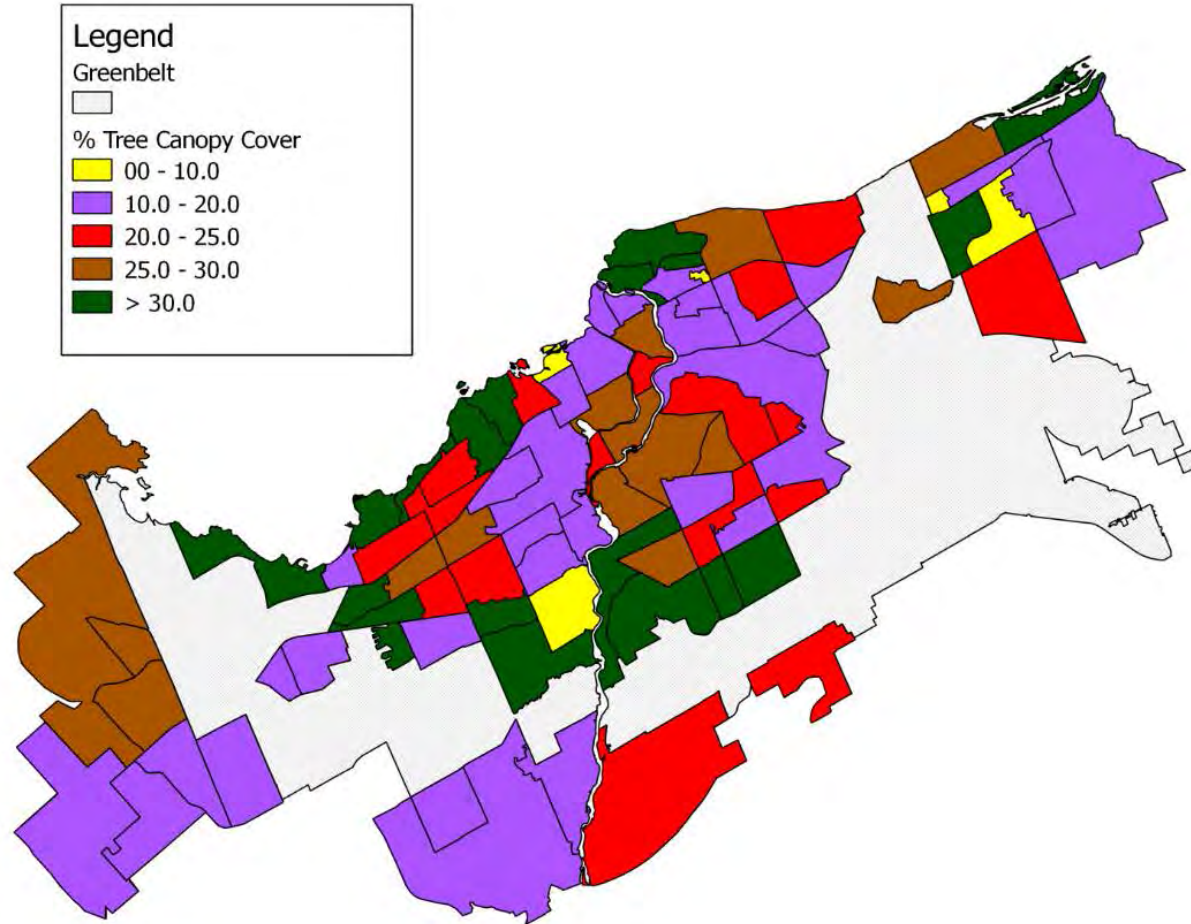class code 3
(Impervious surface)
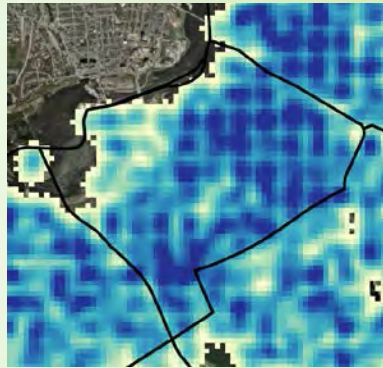
Somerset

Cumberland

Stittsville

Results – map of wards
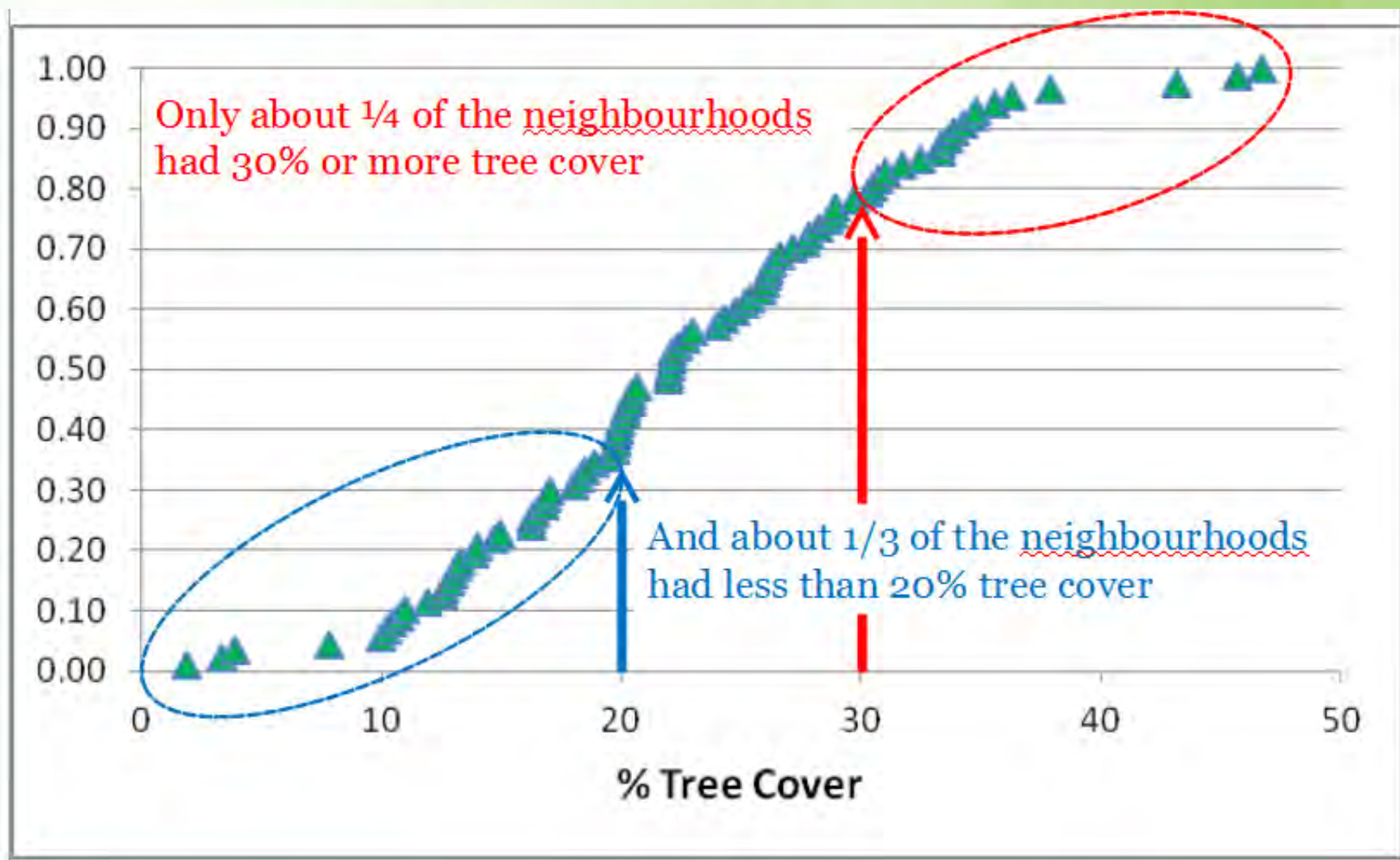
Results – map of neighbourhoods

Neighbourhoods

Neighbourhood	% Tree Canopy Cover
Orleans Industrial	2%
Lebreton Development	3%
Orleans Village - Chateauneuf	4%
Hunt Club South Industrial	8%
Notre-Dame Cemetery	10%
Borden Farm - Stewart Farm - Parkwood Hills - Fisher Glen	10%
West Centertown	10%
Chapman Mills - Rideau Crest - Davidson Heights	11%
Bridlewood - Emerald Meadows	11%
Byward Market	12%
Orleans Avalon - Notting Gate - Fallingbrook - Gardenway South	13%
Stittsville	13%
Carlington	13%
Bells Corners West	13%
Woodvale - Craig Henry - Manordale - Estates of Arlington Woods	13%
Greenboro East	13%
Vanier South	14%
Cityview - Skyline - Fisher Heights	14%
Stittsville - Basswood	15%
Vanier North	15%
Pineview	16%
New Barrhaven - Stonebridge	16%
Beacon Hill South - Cardinal Heights	16%
Orleans Queenswood Heights	17%
Centretown	17%
Carleton Heights - Rideauview	17%
Lowertown	18%
Bayshore	18%
Orleans Central	18%
Cummings	19%
East Industrial	19%

#		%
34	Overbrook - McArthur	20%
35	Glen Cairn - Kanata South Business Park	20%
36	Ledbury - Heron Gate - Ridgemont - Elmwood	20%
37	Civic Hospital-Central Park	20%
38	Bells Corners East	20%
39	Hawthorne Meadows - Sheffield Glen	20%
40	Whitehaven - Queensway Terrace North	20%
41	Centrepointe	20%
42	South Keys - Heron Gate - Greenboro West	20%
43	Carlingwood West - Glabar Park - McKellar Heights	21%
44	Carson Grove - Carson Meadows	22%
45	Carleton University	22%
46	Ottawa East	22%
47	Hintonburg - Mechanicsville	22%
48	Orleans Chapel Hill South	22%
49	Elmvale - Eastway - Riverview - Riverview Park West	22%
50	Laurentian	23%
51	Hunt Club Park	23%
52	Rothwell Heights - Beacon Hill North	24%
53	Crestview - Meadowlands	24%
54	Riverside South - Leitrim	25%
55	Playfair Park - Lynda Park - Guildwood Estates	25%
56	Sandy Hill - Ottawa East	25%
57	Billings Bridge - Alta Vista	26%
58	Katimavik - Hazeldean	26%
59	Ottawa South	26%
60	Blackburn Hamlet	26%
61	Beaverbrook	26%
62	CFB Rockcliffe-NRC	27%
63	Glebe - Dows Lake	27%
64	Hunt Club East - Western Community	28%
65	Iris	28%
66	Kanata Lakes - Marchwood Lakeside - Morgan's Grant - Kanata North Business Park	28%

Neighbourhoods (cont'd)

67	Orleans North West	29%
68	Riverside Park	29%
69	Braemar Park - Bel Air Heights - Copeland Park	30%
70	Trend-Arlington	30%
71	Orleans Chapel Hill	31%
72	Hunt Club - Ottawa Airport	31%
73	Island Park	31%
74	Lindenlea - New Edinburgh	32%
75	Qualicum - Redwood Park	32%
76	Crystal Bay ´?¢ Lakeview Park	33%
77	Woodroffe - Lincoln Heights	33%
78	Briar Green - Leslie Park	34%
79	Hunt Club Woods - Quintarra - Revelstoke	34%
80	Tanglewood	34%
81	Orleans Chatelaine Village	35%
82	Beechwood Cemetery	35%
83	Rockcliffe - Manor Park	36%
84	Westboro	36%
85	Britannia Village	38%
86	Hunt Club Upper -Blossom Park - Timbermill	43%
87	Merivale Gardens - Grenfell Glen - Pineglen - Country Place	46%
88	Emerald Woods - Sawmill Creek	47%

Range of Tree Cover in the City

Only about ¼ of the neighbourhoods had 30% or more tree cover

And about 1/3 of the neighbourhoods had less than 20% tree cover

% Tree Cover

Advantages of this method

1. Relatively low cost and fast

2. Crowd sourcing (volunteers)

3. Method is repeatable since grid points are geo-referenced - possible to look at change over time

4. Excellent educational tool

5. Can provide additional analyses

Other volunteer mapping projects

Individual tree mapping:
   Stonebridge Community
   Old Ottawa South
   Experimental Farm

City mapping projects

Tree canopy cover of Rural Area of the City of Ottawa using satellite remote sensing techniques
- Landsat 8 data

City using "LIDAR" data to map street trees

Adapt model to measure value of urban forest
Tree-Eco (US Forest Service)

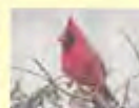# Friends of the Farm

Example of Urban Forest/Greenspace

Friends of the Farm

Planned Activities

- Record GPS
- ID benefits
- Create maps

Become a Member
Devenez membre

Newsletters

Become a Volunteer

Volunteer Activities

Young Volunteers

Collections

Events

Boutique

Photo Gallery

Volunteer Spotlight

WELCOME TO THE FRIENDS OF THE FARM
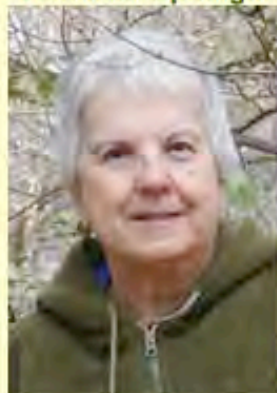
25 Years for the Friends
- Summer 2013 newsletter

150 Years of Confederation
Help us celebrate Canada's 150th birthday in 2017!
(A call for ideas)

Overall Goal

Measure the value of Urban Forest/Greenspace—
to show that it is a "need-to-have"
not just a "nice-to-have"

Thanks to:

Regie Alam

Ottawa Forests and Greenspace Advisory Committee (OFGAC), 2012

Friends of the Central Experimental Farm