



2018 Perth Natural Heritage Systems Study and 2019 Update Report

Perth County
Council Meeting
August 1st, 2019

Prepared by the UTRCA



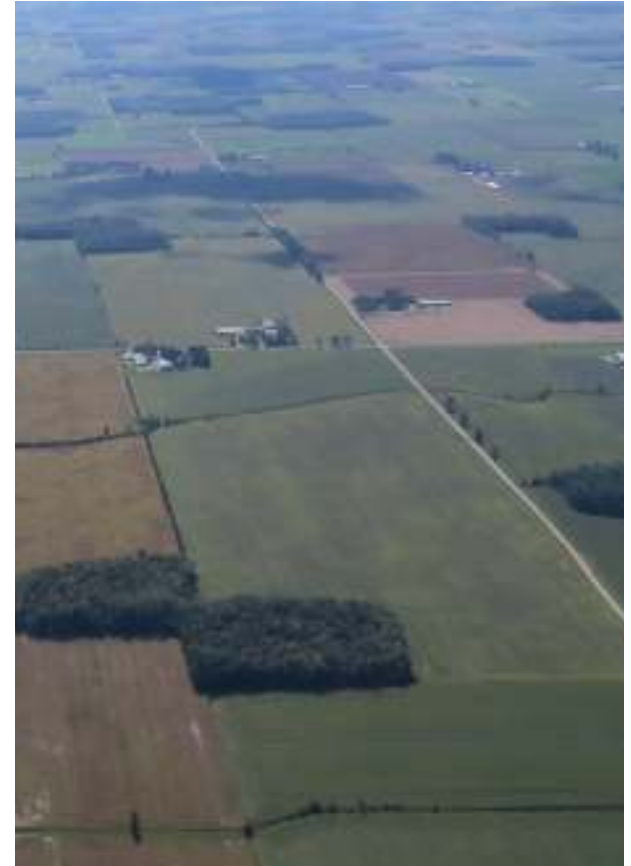
Need for the Perth NHSS

- The Provincial Policy Statement (PPS), 2005 focused on significant wetlands, woodlands, valleylands, wildlife habitat and areas of natural and scientific interest and broader natural heritage systems. The Natural Heritage Reference Manual (NHRM) provided direction on how to identify systems.
- The PPS, 2014 requires that Natural Heritage Systems be identified
- In 2017, Perth County, City and Stratford and Town of St. Marys contracted the UTRCA to complete the PNHSS using 2010 aerial photography, to help inform the Official Plan updates
- UTRCA completed NHSS's for Middlesex, Oxford and Huron Counties, with other Conservation Authorities and partners



Need for the Perth NHSS

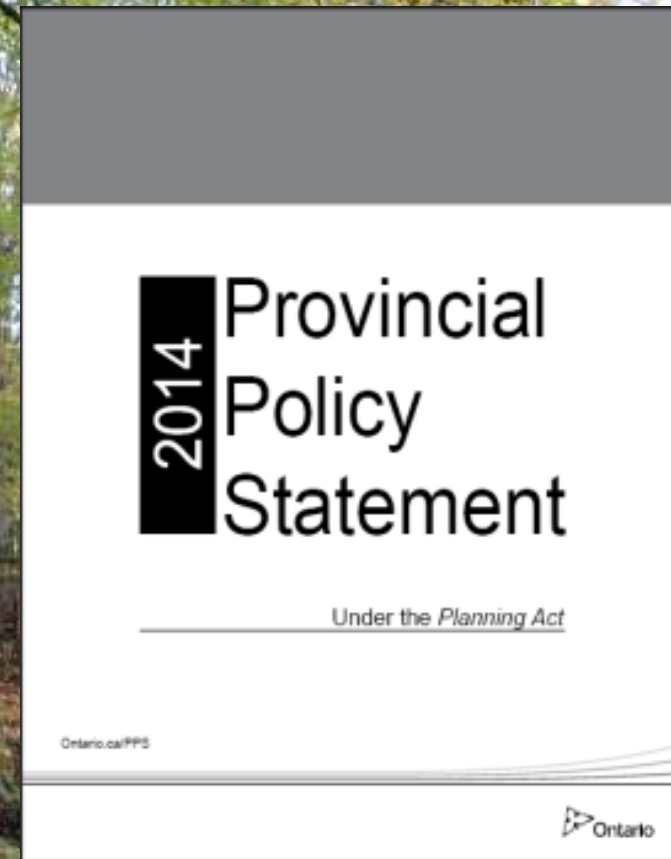
- In 2018 the County of Perth contracted the UTRCA to update the vegetation mapping using 2015 SWOOP (South Western Ontario Ortho-imagery Project) photography
- In 2019 the County of Perth contracted the UTRCA to re-run the PNHSS model using the updated vegetation data from the 2015 imagery, and to write an Update Report to summarize the results
- The URCA cost-shared this report as it helps to serve the goals of the UTRCA's strategic plan, specifically action related to natural heritage protection and restoration



The 2014 PPS

2.1.3 *Natural heritage systems* shall be identified in Ecoregions 6E & 7E¹, recognizing that *natural heritage systems* will vary in size and form in *settlement areas, rural areas, and prime agricultural areas*.

Natural heritage system: means a system made up of *natural heritage features and areas*, and linkages intended to provide connectivity (at the regional or site level) and support natural processes which are necessary to maintain biological and geological diversity, natural functions, viable populations of indigenous species, and ecosystems. These systems can include *natural heritage features and areas*, federal and provincial parks and conservation reserves, other natural heritage features, lands that have been restored or have the potential to be restored to a natural state, areas that support hydrologic functions, and working landscapes that enable ecological functions to continue. The Province has a recommended approach for identifying *natural heritage systems*, but municipal approaches that achieve or exceed the same objective may also be used.



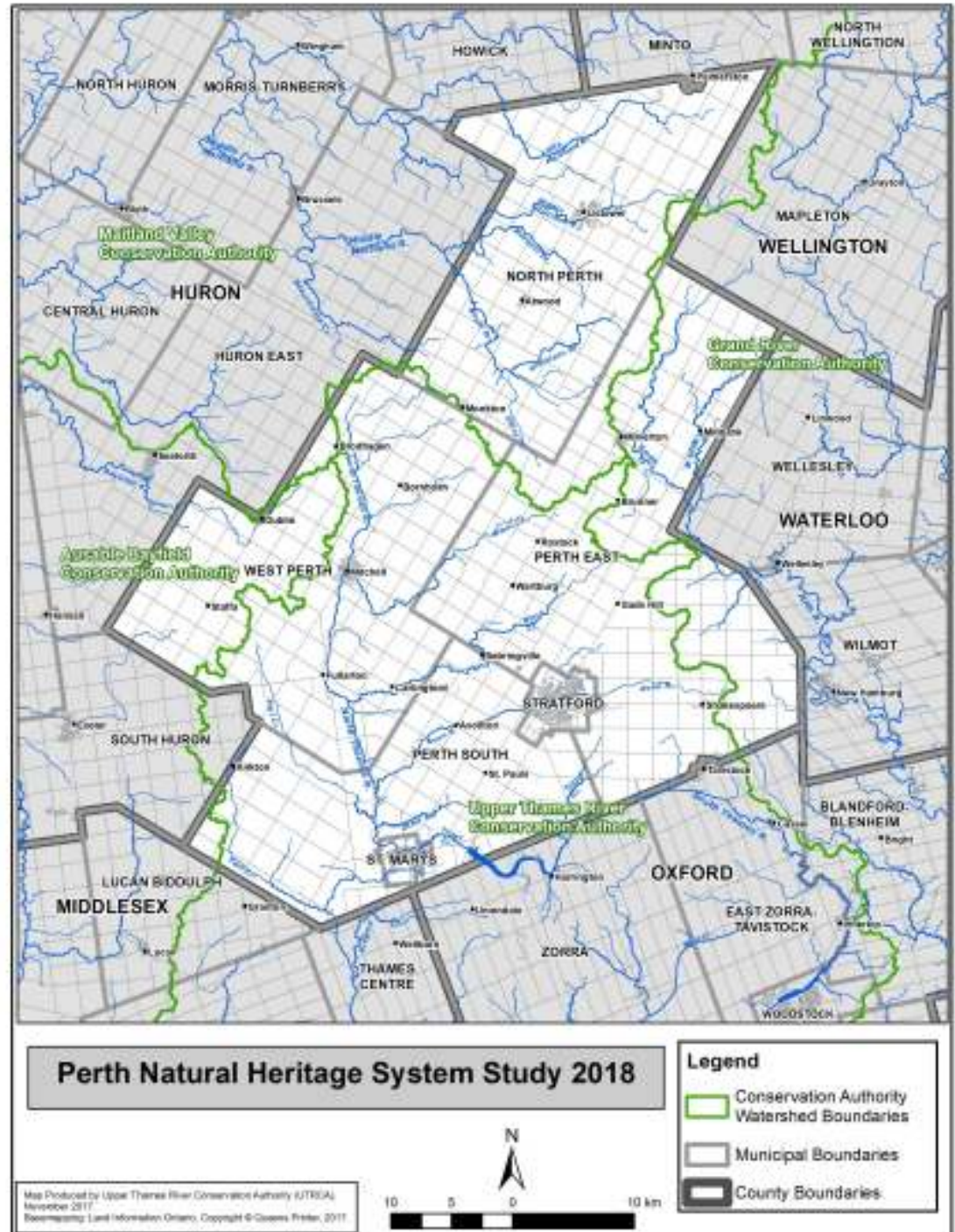
Study Approach

- The PNHSS evaluates and identifies the **existing** ecologically important and significant terrestrial resources of the county using scientific methods and Geographic Information Systems (GIS) mapping and modeling.
- It is at the landscape level and not the on-site field level.
- It does not evaluate aquatic habitats.



Study Area

- Study area includes all of geographic Perth County including member municipalities, City of Stratford and Town of St. Marys
- Buffer zone of 1000 m around outside
- Includes four Conservation Authority jurisdictions
 - Maitland Valley
 - Grand River
 - Ausable Bayfield
 - Upper Thames River



Study Methodology

Step 1. Using 2010 (and 2015) aerial photography from SWOOP (Southern Ontario Ortho-imagery Project), accurately map and attribute all **Vegetation Community** polygons (≥ 0.5 ha, ≥ 30 m wide)

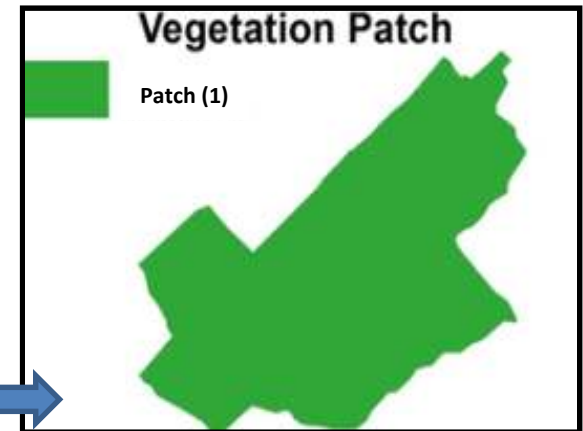
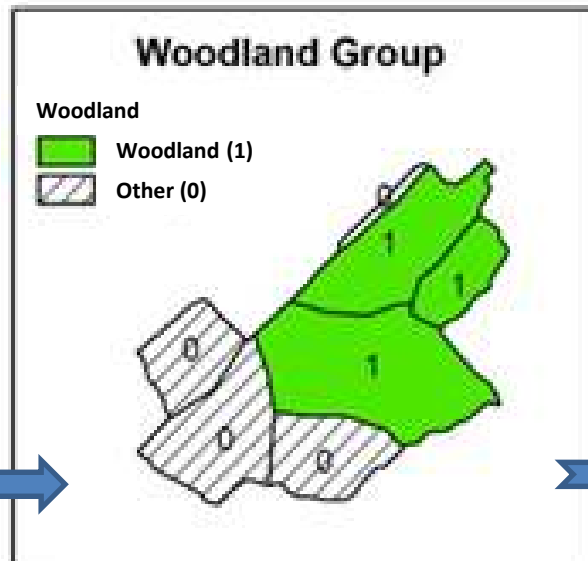
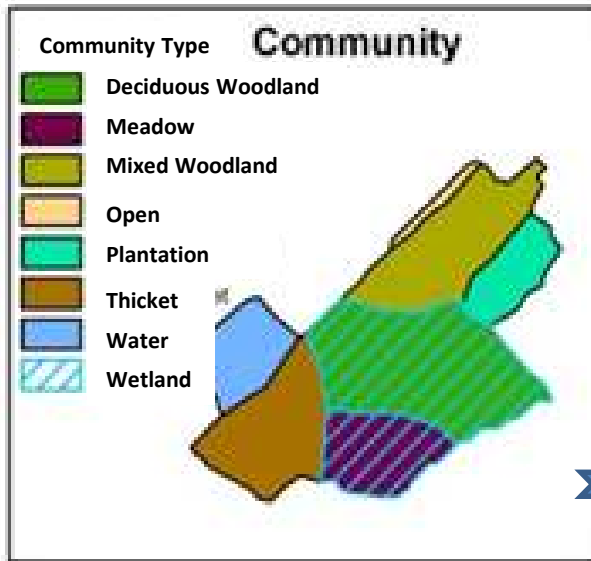
- e.g., deciduous woodland, deciduous swamp, upland thicket, upland meadow,
- Note: This is a human interpretation exercise, but can be field verified, if needed

Step 2. Merge **Vegetation Communities** into:

- Vegetation Groups
 - e.g., Woodland, Wetland, Thicket
- Vegetation Patches



Step 2 - Vegetation Layers



Vegetation Community

- Smallest unit (≥ 0.5 ha)
- 17 types

Vegetation Group

- 6 types
- Woodland, Thicket, Meadow, Water Feature, Connected Vegetation Feature, Wetland

Vegetation Patch

- Forms from all adjacent Communities and Groups

Methodology - Criteria

Step 3. Confirm the set of Ecologically Important criteria that are based on landscape ecology literature and past studies.

There are 15 unique criteria, 12 of which were mapped in this study

- Numbers 13-15 are not currently mapped and would be applied through the completion of an Environmental Impact Study (EIS) if a change of landuse is proposed

There are 4 types of criteria:

- Proximity to features (connectivity)
- Presence of unique features
- Size
- Diversity

#	Ecologically Important + Significant Criteria
1	Within Significant Valleylands
2	Within an ANSI
3	Within 30m of an Open Watercourse
4	All Wetlands
5	Woodland Size ≥ 1 ha
6	Woodland Proximity
7	Thicket Size ≥ 2 ha
8	Meadow Size ≥ 5 ha
9	Meadow Proximity
10	Patches with Veg Groups that meet criteria
11	Diversity of Veg Communities, Groups or Ecosystems
12	Proximity to EI Patches
13*	Significant Wildlife Habitat
14*	Groundwater Dependent Wetlands
15*	Bluff or Depositional Area

Woodland Size Cutoff



- A 1 ha woodland size cutoff was chosen for the PNHSS to maintain the current level of protection established in the Perth OP.
- The PPS states planning authorities can go above the minimum standards.

Perth County Official Plan # 47,

Section 11.5.5 Significant Woodlands

“In determining what constitutes a significant woodland, the County recognizes the scarcity of this important feature and has moved beyond the 4.0 hectare woodlot size criterion as recommended by the Ministry of Natural Resources from the implementation guidelines of the Provincial Policy Statements in an effort to protect as much of the woodland area as possible. Accordingly, woodland areas that are 1.0 hectare or larger in size are designated ‘Natural Resources’ in this Plan. This 1.0 hectare criterion shall be applied based on contiguous woodland area and not on the basis of property ownership.”

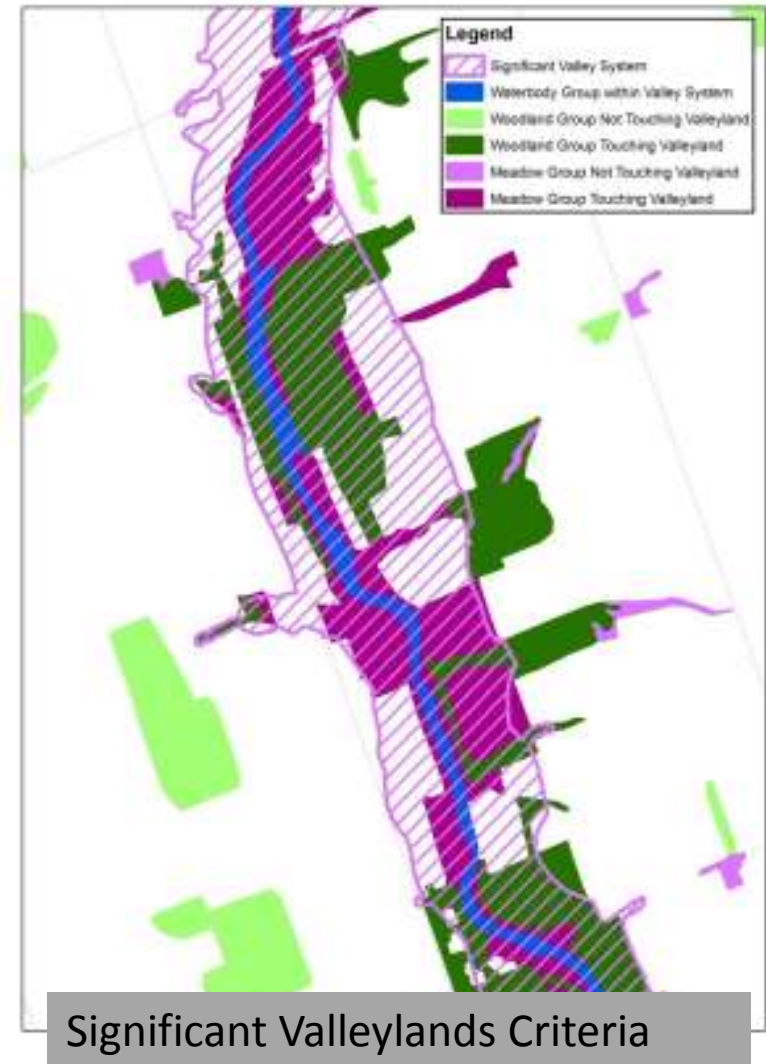
Study Methodology

Step 4. Use the GIS to apply the criteria to the *Vegetation Groups and Patches*

Step 5. Produce maps showing all patches that meet one or more criteria and are Ecologically Important or Significant

Note: Patches that meet one or more criteria are Ecologically Important

- ✓ This methodology was peer reviewed for the MNHSS 2014.
- ✓ The 2018 PNHSS report contains a full explanation of all mapping rules and criteria.



Ecologically Important vs. Significant

Ecologically Important & Significant

Many natural heritage features identified as Ecologically Important also meet the definition of Significant as per the PPS 2014 and MNRF criteria:

- Significant Woodlands
- Significant Valleylands
- Provincially Significant Wetlands
- Provincial Life Science ANSIs
- Water bodies and Major Watercourses

Ecologically Important

Some natural heritage features identified as Ecologically Important do not meet the definition of Significant:

- Regional Life Science ANSIs
- Other Evaluated Wetlands (Local)
- Unevaluated Wetlands
- Meadows
- Thickets

PNHSS does not have criteria for:

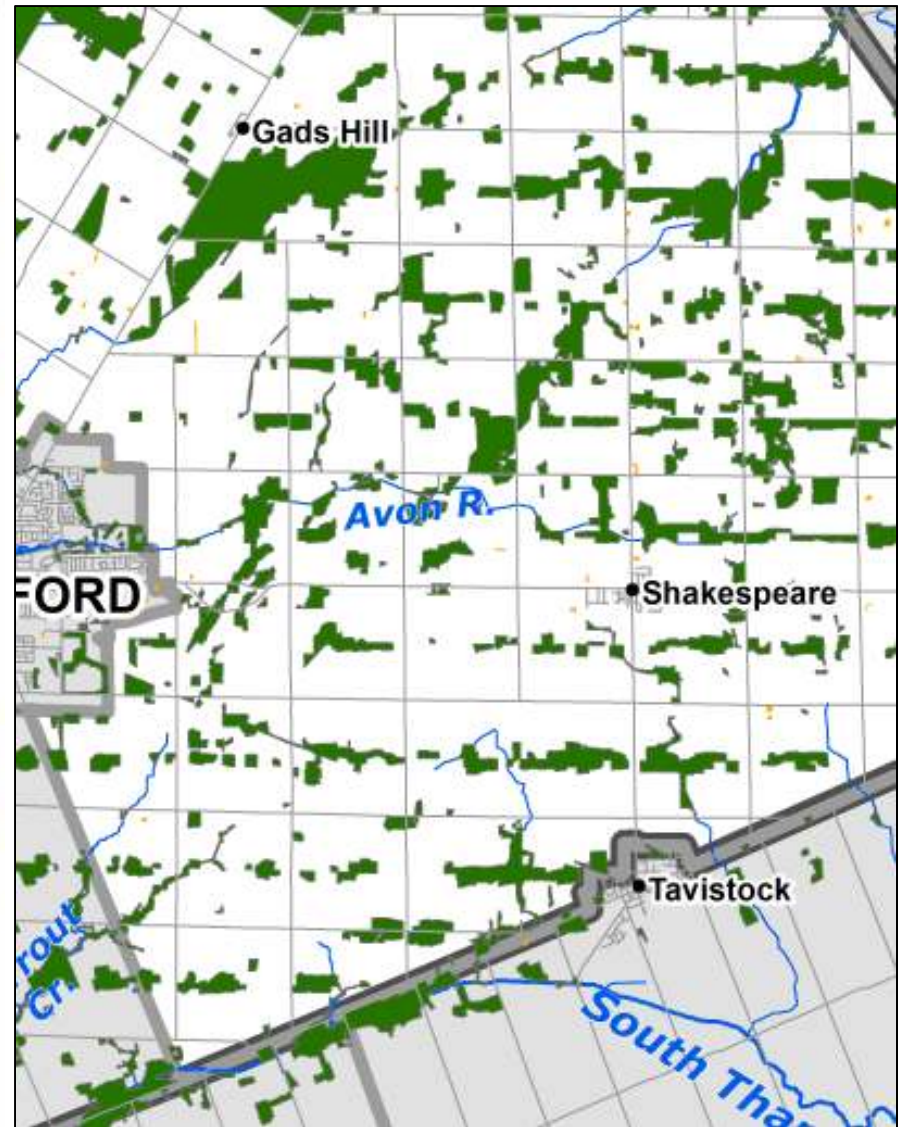
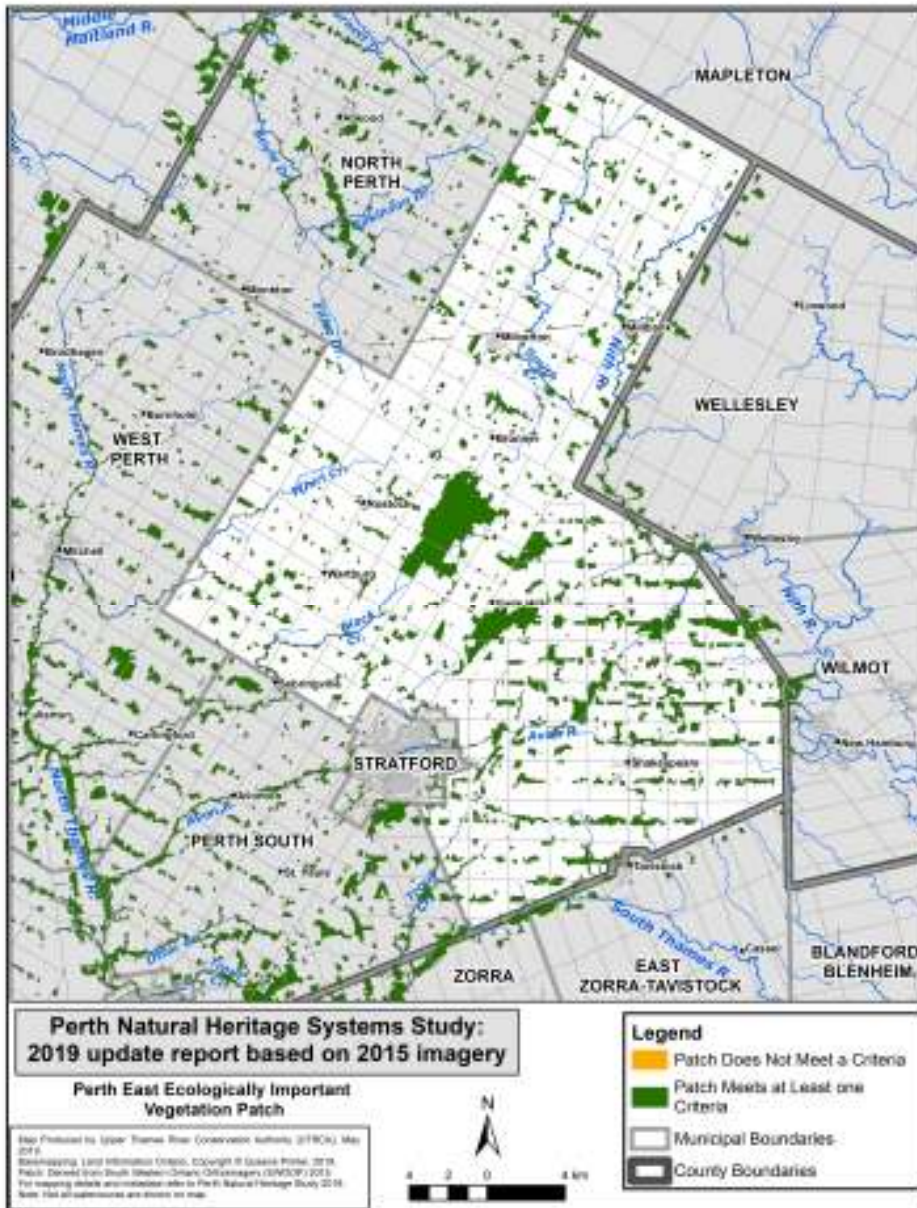
- Provincial Earth Science ANSIs, Fish Habitat, and Habitat of Endangered & Threatened Species

Results by Municipality (2015 photography)

Municipality	Area of all Patches (ha)	Area of patches that are Ecologically Important (EI)	% of Patch Area that is EI	% of Municipality that is EI
Stratford	213	204	95.8%	7.17%
North Perth	5,420	5,383	99.3%	10.91%
West Perth	5,287	5,250	99.3%	9.06%
St. Marys	228	228	99.8%	17.46%
Perth East	8,449	8,396	99.4%	11.78%
Perth South	5,213	5,170	99.4%	13.11%
Perth County	24,810	24,640	99.3%	11.09% (11.06% in 2010)

See Full Report and Update Report for additional details

Example of Mapping Results



Examples of Results for Other Counties

Ecologically Important	Perth (≥1 ha woodland)	Oxford (≥4 ha woodland)	Middlesex (≥4 ha woodland)
% of Number of Patches	91.0%	80.5%	78.5%
% of Patch Area	99.3%	97.8%	98.9%
% of County	11.1%	16.2%	19.7%

- Perth's results are similar to other counties, where over 97% of the patch area is captured by the criteria.
- Oxford and Middlesex reflect 2010 photography

2010 to 2015 Gains and Losses

Gains and Losses (2010 to 2015 Photography)

Vegetation Group	Gain or Newly Defined (ha)	Loss (ha)	Difference (ha)
Woodland	24	123	-99
Thicket	57	21	+36
Meadow	284	326	-42
Water	30	9	+21
TOTAL	395	479	-84
Wetland	0	30	-30

Newly Defined areas are the result of:

- new land retirement (e.g., fallow fields defined as meadow),
- new tree planting sites (meadow),
- new aggregate ponds (water), or
- the new photography allowed it to be picked up

Loss (absent) in vegetation cover

- 123 ha woodland loss, mostly a little here, a little there
- Woodland losses may or may not have been permitted by Woodland Conservation Bylaw



Succession resulted in an increase in over 200 ha of woodland that succeeded from thicket and meadow types, notably along the North Thames River.

Implementation & Recommendations



- The PNHSS provides a scientifically based analysis of the Perth County landscape
- The study can be implemented through various means (regulatory and non-regulatory) including:
 - land use planning (incorporation in OP)
 - Forest Conservation By-Laws
 - stewardship programming
 - education and monitoring
- Recommend updating the mapping/modelling as new ortho-imagery becomes available to monitor change over time



Questions and Discussion

Thank You

Cathy Quinlan and Terry Chapman

www.thamesriver.on.ca

