MIDDLESEX COUNTY NATURAL HERITAGE STUDY

Natural Heritage Mapping Rules,
Significance Criteria,
And Next Steps

March 2014

OUTLINE

MAPPING DEFINITION OF A PATCH

DEFINING SIGNIFICANCE

NEXT STEPS

MAPPING DEFINITION OF A PATCH

OUTLINE

1. Mechanics of Digitizing Vegetation

2. Creation of a Natural Heritage Patch Layer

Natural Heritage Patches

Ecosystems

Groups

Communities

MECHANICS OF DIGITIZING VEGETATION

➢ South Western Ontario Ortho Photography (SWOOP 2010) used as base map.

➢ Generally followed the manual on-screen digitizing procedures of the Southern Ontario Land Resources Information System (SOLRIS) Image Interpretation Manual (OMNR 2004).

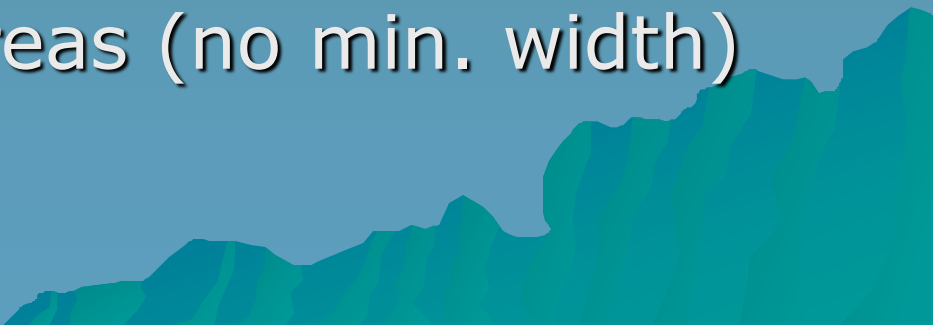➢ Reviewed and digitally refined vegetation community boundaries at 1:2,000 scale aerial photo.

CREATION OF A NATURAL HERITAGE PATCH LAYER

A. **VEGETATION COMMUNITIES**

➢ Smallest unit of homogeneous vegetation recognizable on air photos (i.e. >0.5 ha).

➢ Does not include features maintained by human activity (e.g. agriculture, aggregate, orchards).

➢ Farm lanes and buildings < 20m width do not separate vegetation communities, but roads do separate communities (not clustered*).

CREATION OF A NATURAL HERITAGE PATCH LAYER

A. **VEGETATION COMMUNITIES con't**

➢ Minimal width is 30m, except for:

- Water bodies (> 20m wide and must be touching another vegetation group)
- Major Water courses (>20 m)
- Connected hedgerows (>20 m but < 30 m)
- Open depositional areas (no min. width)

CREATION OF A NATURAL HERITAGE PATCH LAYER

A. **VEGETATION COMMUNITIES con't**

➤ 18 vegetation communities:

- 8 Woodlands and swamps (wetlands): Conifer, deciduous, mixed, and mature plantation woodlands and swamps

- 4 Thickets: Upland, wetland, young plantation and young plantation swamp thickets

- 2 Meadows: Upland meadow and meadow marsh

- 2 Water Features: Water bodies and watercourses

- 1 Hedgerows: connected hedgerows

- 1 Open depositional areas: riverine bluffs, beaches, and bars

CREATION OF A NATURAL HERITAGE PATCH LAYER

B. **VEGETATION GROUPS**

➢ Broader vegetation grouping based on similar ecological patterns and processes.

➢ Comprised of one to many vegetation communities that are less than 20 m apart.

➢ Roads and buildings less than 20m width do not separate vegetation groups (cluster analysis*)

CREATION OF A NATURAL HERITAGE PATCH LAYER

B. **VEGETATION GROUPS con't**

➢ 7 vegetation groups:

   i. <u>Woodlands (8 types of vegetation communities):</u>

- Conifer, deciduous, and mixed woodlands
- Conifer, deciduous, and mixed swamps
- Mature plantation and plantation swamps

  ii. <u>Wetlands (7 types of vegetation communities):</u>

- Conifer, deciduous, mixed and plantation swamps, wetland thickets, young plantation swamp and meadow marsh

CREATION OF A NATURAL HERITAGE PATCH LAYER

B. VEGETATION GROUPS con't

iii. Thickets (4 types of vegetation communities):
- Upland and wetland thickets
- Young plantation and young plantation swamp thickets

iv. Meadows (2 types of vegetation communities):
- Upland meadow
- Meadow marsh

CREATION OF A NATURAL HERITAGE PATCH LAYER

B. **VEGETATION GROUPS con't**

v. <u>Water features (2 types of vegetation communities):</u>

- Water bodies
- Major watercourse

vi. <u>Hedgerows (1 type of vegetation community):</u>

- Connected hedgerow

vii. <u>Depositional Areas (1 type of vegetation community):</u>

- watercourse bluff, bar, or beach

CREATION OF A NATURAL HERITAGE PATCH LAYER

c. **VEGETATION ECOSYSTEMS**

➢ Differentiated into 3 ecosystem types based on water depth and soil moisture:

    i.   Aquatic (2 types of vegetation communities):
- Water bodies and water courses

CREATION OF A NATURAL HERITAGE PATCH LAYER

c. **VEGETATION ECOSYSTEMS con't**

ii. Wetland (7 types of vegetation communities):
- Conifer, deciduous, mixed and plantation swamps, wetland thickets, young plantation swamp and meadow marsh

iii. Terrestrial (9 types of vegetation communities):
- Coniferous, Deciduous, and Mixed Woodlands, Young and Mature Plantations, upland thickets, upland meadows, connected hedgerows and depositional areas

CREATION OF A NATURAL HERITAGE PATCH LAYER

D. **VEGETATION PATCH**

➢ Comprised of one to a mosaic of many vegetation groups where the perimeter of the patch is the outside boundary of all "touching" vegetation groups.

➢ Roads and buildings less than 20m in width do not separate vegetation groups (cluster analysis*)

VEGETATION PATCH con't
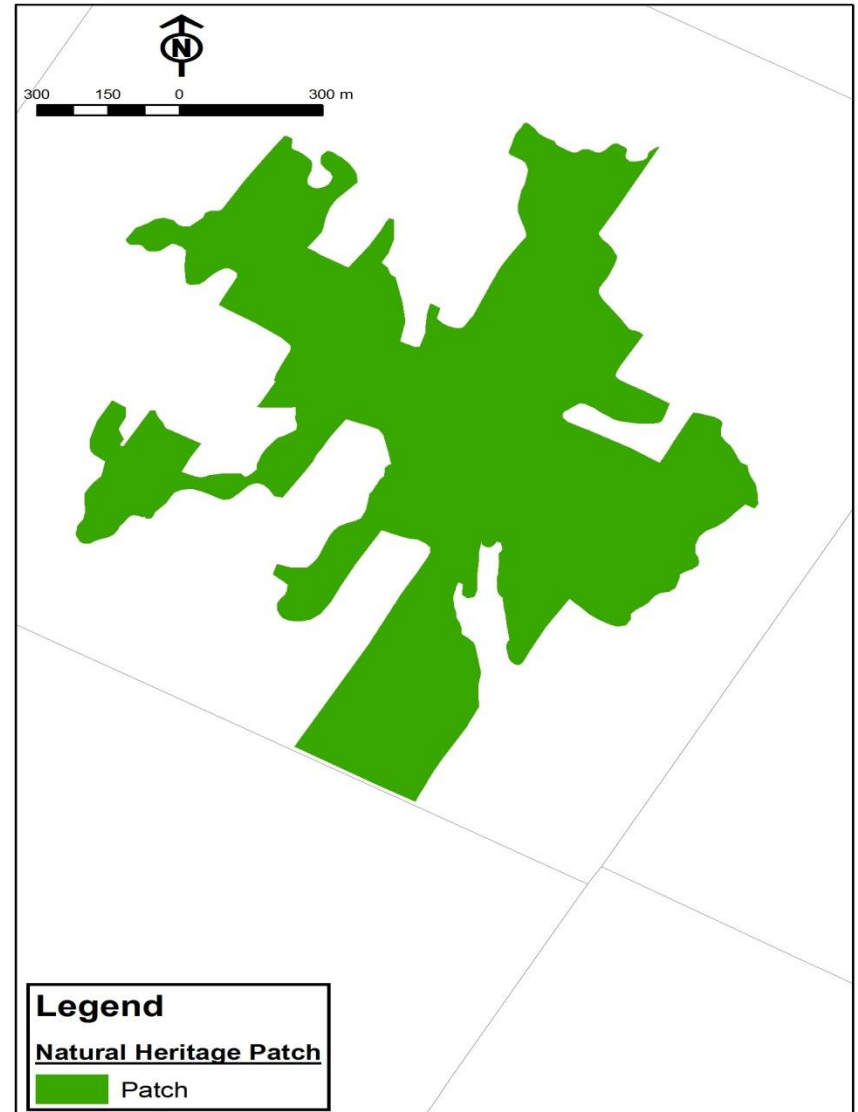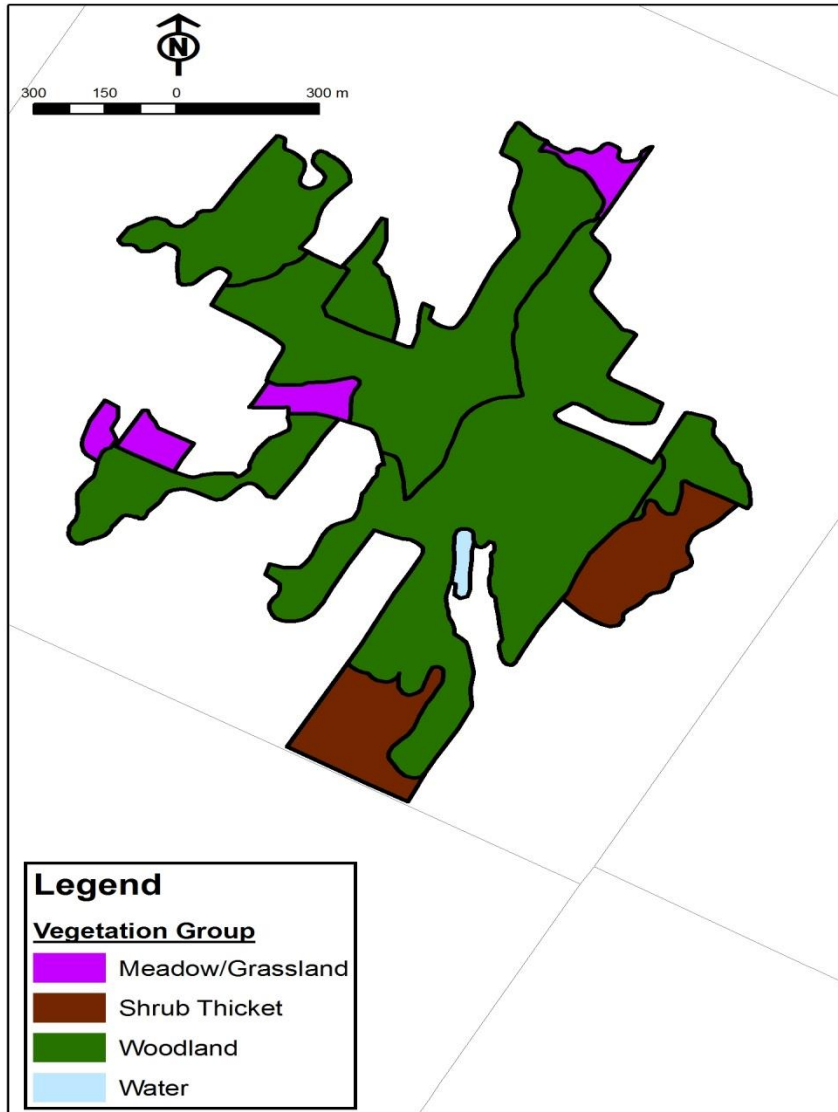
DEFINING SIGNIFICANCE

# OUTLINE

1. Criteria development and application

2. Types of criteria:
   A. 3 Location–based Vegetation Group Criteria

   B. 5 Size-based Vegetation Group Criteria

   C. 4 Mapped Patch Criteria

   D. 3 Unmapped Patch Criteria

CRITERIA DEVELOPMENT AND APPLICATION

➤ Criteria developed from scientific literature

➤ Criterion cutoffs based on scientific literature or statistical analysis

➤ Significance assigned at patch level
(i.e. entire patch identified if criterion is met by any vegetation group within the patch)

CRITERIA DEVELOPMENT AND APPLICATION
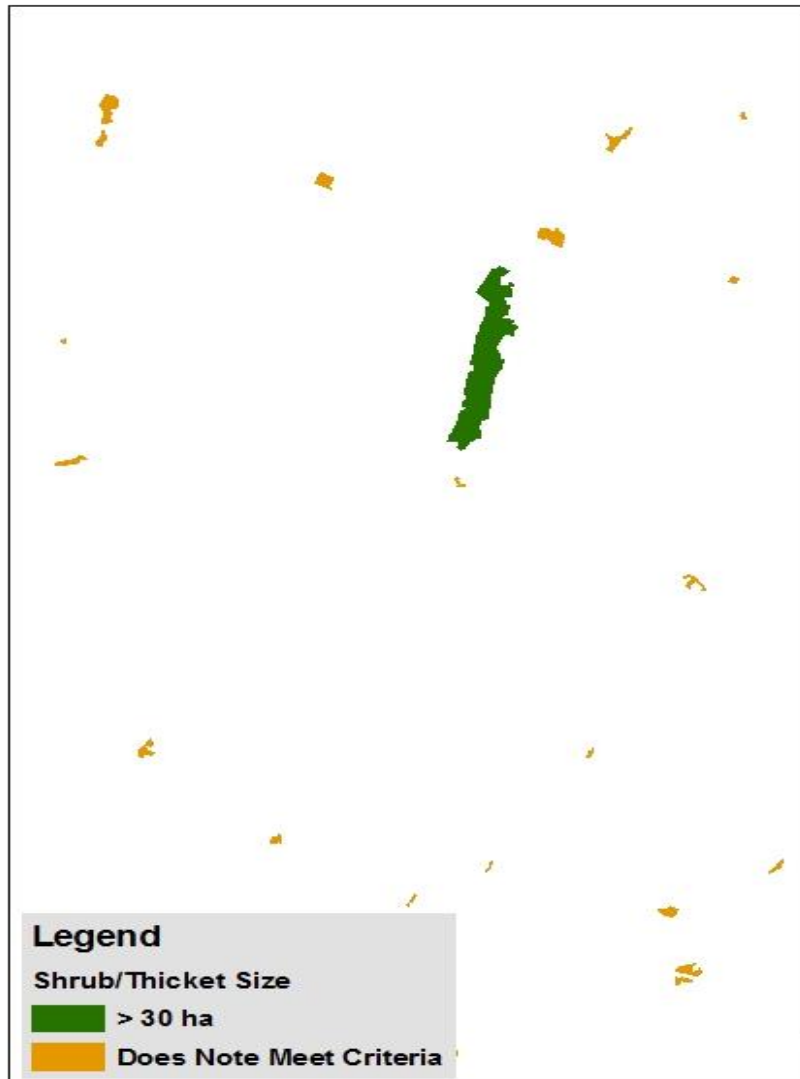
TYPES OF CRITERIA

A. THREE LOCATION–BASED VEGETATION GROUP CRITERIA

i. Within a valley land or touching top of slope

- Defined as > 100 m in width and 2 km in length; with 3:1 slope or 100m from centerline of watercourse

- Use flood plain limit, contour information and professional judgment to delineate a continuous valley feature

- Includes the area within the physical boundaries of the valley land features and natural heritage patches within 100 m of top of valley slope

ii. Within a Life Science ANSI

TYPES OF CRITERIA

A. THREE LOCATION–BASED VEGETATION GROUP CRITERIA con't

ii. Within 30 m of an open watercourse

Legend
Riparian
- Patch is within 30m of watercourse
- Does Not Meet Criteria
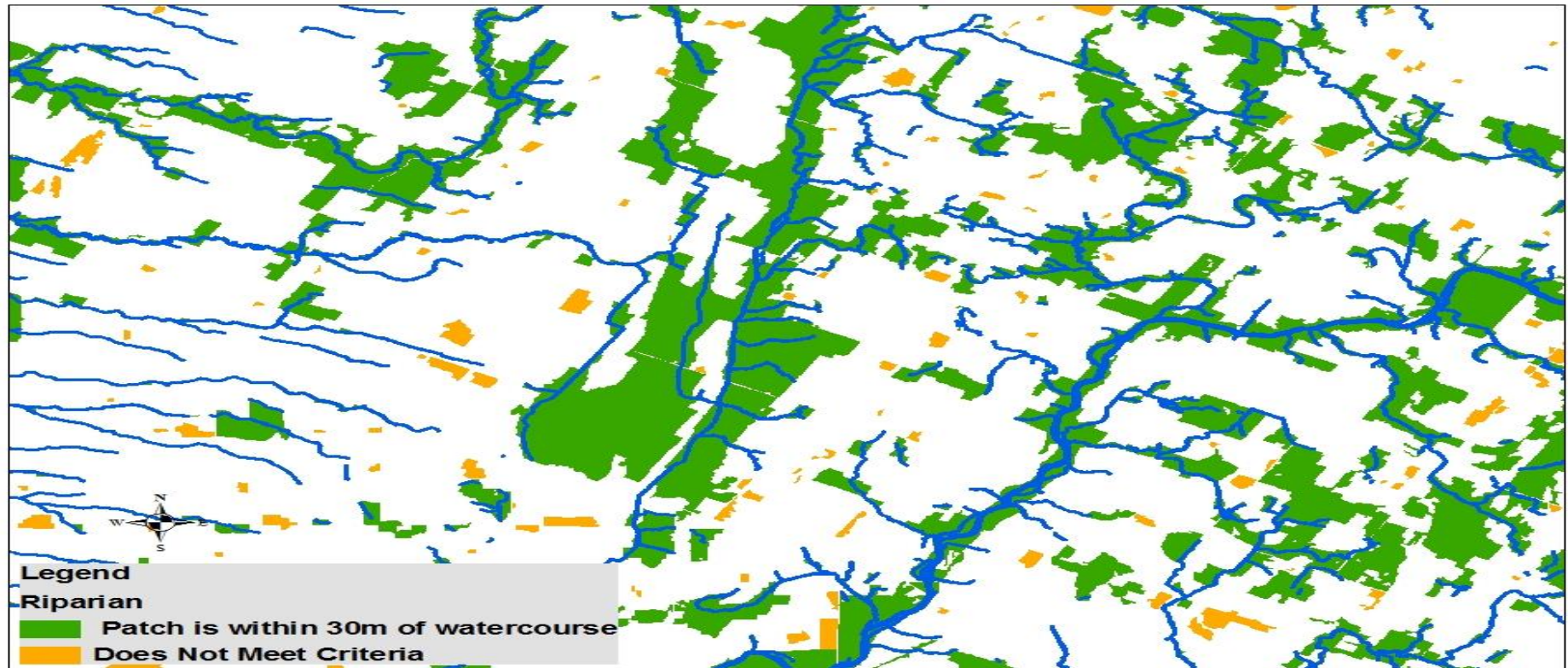
TYPES OF CRITERIA

B. FIVE SIZE-BASED VEGETATION GROUP CRITERIA

i.   Wetland veg. group > 0.5 ha

ii. Woodland veg. group > 4 ha

iii. Thicket veg. group > 2 ha

iv. Meadow veg. group > 10 ha

v.   Meadow within 100 m of a 4 ha woodland or a 2 ha thicket

NOTE: AREA OF VEGETATION GROUP
          = AREA OF CLUSTER – AREA OF ROAD

TYPES OF CRITERIA

C. FOUR MAPPED PATCH CRITERIA

i.   Contains significant vegetation group (identified in previous criteria)

ii. Greater than 100 ha

iii. Contains diverse vegetation communities (i.e. different types)

iv. Within 100 m of either:

- 0.5 ha wetland
- 4 ha woodland
- 2 ha thicket
- 10 ha meadow

TYPES OF CRITERIA

D.THREE UNMAPPED PATCH CRITERIA

i. Contains Significant Wildlife Habitat

ii. Contains Groundwater Dependent Ecosystems

iii. Contains Depositional Area

NEXT STEPS

NEXT STEPS

1. County description of natural heritage
   - Amount and types of vegetation communities, groups, ecosystems and patches

2. Run the criteria on the Middlesex County landscape and identify all patches according to:
   - Number of criteria met
   - Number of patches that meet the criterion
   - Number of patches that only meet that criterion

3. Develop recommendations for implementation and for DARs

THANK YOU!

QUESTIONS?