

	COMMITTEE OF THE WHOLE	
For meeting to be held on: October 14, 2014	Submitted by: Durk Vanderwerff, Manager of Planning	For: Action
Subject: <div style="text-align: center;">MIDDLESEX NATURAL HERITAGE SYSTEMS STUDY</div>		

BACKGROUND:

At the July 22, 2014 meeting, Council was provided an update on the Middlesex Natural Heritage System Study (MNHSS) including a summary of the preliminary findings. The Final Draft of the Study is now complete and attached. This report provides a brief summary of the Study and recommends and that the MNHSS be endorsed in principle and be used as the basis for public and stakeholder consultation.

ANALYSIS:History

As part of the County's original 1997 Official Plan, natural heritage mapping was compiled, primarily from the Ministry of Natural Resources, to delineate those areas that may be sensitive or inappropriate for development. This mapping was found to be outdated, inaccurate, and inconsistent.

The 2003 Middlesex Natural Heritage Study (2003 MNHS) was undertaken to establish a County-wide comprehensive landscape determination of significant natural heritage features based primarily on wetlands and woodlands mapping. The 2003 MNHS was incorporated into the County Official Plan and has served as the basis for natural heritage planning at the County and municipal levels.

The 2003 MNHS has been an effective document; however, it was recognized that an update would be beneficial to make use of the more recent and better quality aerial photography and to have regard for the changing natural heritage science including the updated Provincial Natural Heritage Reference Manual and the more recent natural heritage studies completed for Oxford and Huron counties.

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Planning Policy Context

The settlement of southwestern Ontario resulted in the removal of most natural heritage coverage such that the remaining features tend to exist in unconnected patches across the landscape.

Natural heritage planning has traditionally been addressed at the time of a planning approval whereby the nearby woodlots or wetlands are investigated to determine if the development would have an impact on those features. This approach generally ignored the connections between individual patches.

In recent years, land use planning has moved towards a 'systems approach' to natural heritage planning where the connections between patches are considered in addition to the content of individual patches. In this regard, the 2014 Provincial Policy Statement (2014 PPS) now requires municipalities to identify natural heritage systems. The key PPS policies include:

2.0 Wise Use and Management of Resources

Ontario's long-term prosperity, environmental health, and social well-being depend on conserving biodiversity, protecting the health of the Great Lakes, and protecting natural heritage, water, agricultural, mineral and cultural heritage and archaeological resources for their economic, environmental and social benefits.

Accordingly:

2.1 Natural Heritage

2.1.1 Natural features and areas shall be protected for the long term.

2.1.2 The diversity and connectivity of natural features in an area, and the long-term ecological function and biodiversity of natural heritage systems, should be maintained, restored or, where possible, improved, recognizing linkages between and among natural heritage features and areas, surface water features and ground water features.

2.1.3 Natural heritage systems shall be identified in Ecoregions 6E & 7E1 [Middlesex County is within these ecoregions], recognizing that natural heritage systems will vary in size and form in settlement areas, rural areas, and prime agricultural areas.

2014 PPS Excerpt

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The 2014 PPS goes on to provide detailed policy direction concerning natural heritage matters to be addressed when development is being evaluated within or near the natural heritage system. Importantly for Middlesex County, the 2014 PPS also recognizes the importance of and seeks to protect agriculture. Section 2.1.9 notes that *“Nothing in [the natural heritage policies above] is intended to limit the ability of agricultural uses to continue.”*

Natural heritage planning is not intended to, and should not; impact the ability of agricultural uses to continue. The MNHSS recognizes that agriculture is the dominant land use in the County and that working agricultural fields can provide linkages between natural heritage patches. This can be described as a ‘porous’ landscape where, for example, wildlife move between isolated patches through agricultural fields.

It is at the time of a potential land use change that the impact of the change on the system should be considered. As noted in the MNHSS, *“...if agricultural land is proposed to be converted to urban development, the system linkages that would have been provided in the working agricultural landscape may be disrupted or eliminated by the post development urban landscape.”*

MNHSS Process / Findings

The five local conservation authorities, with the Upper Thames River as the lead, completed the MNHSS on behalf of the County. The MNHSS process was overseen by a Steering Committee and assisted by a Technical Advisory Committee with expertise in ecology, biology, mapping and planning.

The process included detailed and comprehensive mapping using Geographic Information Systems (GIS) based on current aerial photography. This mapping was undertaken at the Vegetation Community level, being the smallest mapped natural heritage feature at half of a hectare in area. 18 Vegetation Community types are found within Middlesex.

Vegetation Groups are the next level of mapping unit that puts together the similar Vegetation Communities for analysis purposes. For example, there are eight Vegetation Communities that make-up the Woodland Vegetation Group. In total, there are eight Vegetation Groups. Finally, Vegetation Groups are then assembled into three Vegetation Ecosystems.

The mapping revealed that 20 percent of Middlesex is naturally vegetated. Not surprisingly, woodlands are by far the largest component; however, there are also significant amounts of meadows, often found along the major watercourses where water and ice scour limit the regeneration of woodlands. The results of the mapping exercise are summarized in Tables One and Two.

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Table One: Number and Area of the 18 Vegetation Community Types				
Vegetation Community	Number of Vegetation Communities	Area of Vegetation Communities (ha)	% Area of all Vegetation Communities (66,955 ha)	% Area of Middlesex Land Base (333,330 ha)
Deciduous Woodland	4928	38413	57.3	11.5
Mixed Woodland	622	3252	4.9	1.0
Coniferous Woodland	364	632	0.9	0.2
Mature Plantation	492	1326	2.0	0.4
Deciduous Swamp	1961	7843	11.7	2.4
Mixed Swamp	189	1299	1.9	0.4
Coniferous Swamp	17	47	0.1	0.0
Plantation Swamp	17	6	0.0	0.0
Upland Thicket	1182	2369	3.5	0.7
Wetland Thicket	175	333	0.5	0.1
Young Plantation	299	532	0.8	0.2
Young Plantation Swamp	3	1	0.0	0.0
Upland Meadow	3507	7727	11.5	2.3
Meadow Marsh	510	759	1.1	0.2
Water Body	535	1169	1.8	0.4
Major Watercourse	119	1150	1.8	0.3
Connected Vegetation Feature	125	97	0.1	0.0
Watercourse Bluff and Depositional Areas *	Not mapped	--	--	--
TOTAL	15,045	66,955	100.0	20.1

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Table Two: Number and Area of Vegetation Groups			
Vegetation Group	# of Groups	Area (ha)	% Area of Middlesex Land Base (333,330 ha)
Woodland	4,123	52,748	15.8%
Thicket	1,365	3,205	1.0%
Meadow	3,040	8,319	2.5%
Water Feature	284	2,205	0.7%
Connected Veg. Feature	124	97	<0.1%
Watercourse Bluff + Depositional Area	0	0	Not mapped
Total	8,936	66,574	20.1%
Wetland Group (part of the total above)	1,916	11,729	3.5%

After the completion of the mapping exercise, the next step was to establish if the identified Vegetation Communities and Groups were candidates to be considered 'significant' within Middlesex through the use of 'significance criteria'. As an illustration, vegetation within valley lands provides many natural heritage benefits such that any Vegetation Communities found within a Significant Valley System could be considered significant. The Technical Advisory Committee was instrumental in identifying and developing the Significance Criteria that were most applicable to Middlesex.

The significance criteria and their rationale for inclusion are outlined below:

1. Significant Valley System: vegetation on valley lands prevents erosion, improves water holding capacity that ensures regeneration of vegetation, and encourages wildlife movement.
2. Area of Natural and Scientific Interest: recognized significant areas are a logical foundation on which to design a natural heritage system.
3. Open Watercourse: relationship between water course and vegetation is interactive whereby vegetation along watercourses improves water quality through reduction in soil erosion and input of nutrients; while the watercourse attracts animals and acts as a corridor.

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4. Wetlands: important wetland functions are to maintain the hydrological regime of the surrounding area by dampening water peaks; reduce the potential for erosion; and provide critical breeding and overwintering habitat for reptiles and amphibians.
5. Woodland Size: woodland habitat size is one of the most important measures for sustaining stable, diverse and viable populations of wildlife species.
6. Woodland Proximity: woodlands in proximity to other woodlands, regardless of size, are important from an animal and plant dispersal perspective.
7. Thicket Size: larger thickets are better to enhance the long-term survival of a variety of wildlife.
8. Meadow Size: larger meadows are better to enhance the long-term survival of a variety of wildlife, especially grassland birds.
9. Meadow Proximity: meadow habitat (especially related to butterflies) must be considered in context with the surrounding habitats.
10. Significant Vegetation Group: Vegetation Patches that contain significant Vegetation Groups provide increased opportunities for the movement of species, etc, over a landscape.
11. Diversity: vegetation Patches that contain a diversity of Vegetation Communities, Ecosystems or Groups is a measure of habitat and species diversity.
12. Proximity: landscapes that include natural areas linked to the regional landscape by a network of smaller interacting natural areas and corridors, offers the highest probability of maintaining overall ecological integrity.
13. Significant Wildlife Habitat: according to the PPS, wildlife habitat is considered significant where it is ecologically important in terms of features, functions, representation or amount.
14. Groundwater Ecosystem: Groundwater Dependent Ecosystem ecosystems require access to groundwater to maintain their communities of plants and animals, ecological processes and ecosystem services.
15. Bluff or Depositional Area: Steep slopes, areas of erosion and beaches (depositional areas) can create unique natural features for specialized assemblages of plants and animals.

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The Study included a peer review component whereby information was taken to an outside consulting ecologist (Brent Tegler PhD, Ecologist, North-South Environmental Inc.) to review and provide input at two stages of the process before the document was finalized. This took the form of written reviews and meetings where the authors were questioned (and at times challenged) to explain / justify / elaborate on decisions and positions. I believe that the use of a peer review during the process significantly strengthened the Study outputs.

Table Three: Results of Modeling Significance Criteria for all Patches

Number of Patches			Area of Patches				
# Patches in study area	# Patches that are significant	% of Patches that are significant	Study Area (ha)	Area of all patches (ha)	Area of patches that are significant (ha)	% of patch area that is significant	% of study area land base that is significant
3,502	2,749	78.5%	333,330	66,887	65,666	98.2%	19.7%

The MNHSS concluded that 20.1% of the County is in natural cover and that 98% of this natural cover (by land area) meets one or more criteria resulting in 19.7% of the County being significant natural heritage.

Implementation

This report recommends and that the MNHSS be endorsed in principle and be used as the basis for public and stakeholder consultation. The MNHSS would provide the base science that would support natural heritage planning within the County; however, this would need to be brought into the County Official Plan, through a public amendment process.

In addition to the statutory components of a potential official plan amendment, the MNHSS should also be subject to a public and stakeholder consultation that could include agricultural groups, the woodlot owner's association, environmental groups, the development industry, municipalities, etc. In addition, the consultation should include a workshop for municipal officials to understand the Study and the resultant policy implications.

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RECOMMENDATION

That the October 6, 2014 Final Draft of the Middlesex Natural Heritage System Study be endorsed in principle and be used as the basis for public and stakeholder consultation.

Attachments:

Attachment One – 2014 Middlesex Natural Heritage Systems Study Final Draft

Attachment Two – July 22, 2014 UTRCA presentation to County Council

Attachment Three – 2003 Middlesex Natural Heritage Study