

Middlesex Natural Heritage Study 2013: Update Project

Steering Committee Meeting # 1
October 3, 2012

SC Meeting # 1: Agenda

- Welcome and introductions
- Background on the MNHS and the need for an update
- Review the Final Draft of the Project Proposal
- Discussion (feedback encouraged as we move through)
- Confirmation of Next Steps and Revisions to Proposal
- Other Business


Background on the MNHS and the need for an Update

- County Perspective – Durk
- Backgrounder on NH Studies – Jeff
 - Background on MNHS 2003
 - Key concepts related to the natural heritage systems approach
 - Studies in the SW Region
- Highlights from the Huron County Natural Heritage Study Methodology – Terry

County Perspective

The Middlesex Natural Heritage Study


A Natural Heritage Study to Identify Significant Woodland Patches in Middlesex County



Prepared by:
Upper Thames River Conservation Authority
in cooperation with the Middlesex Natural Heritage Study Steering Committee

Final Draft
July 2003

AUGUST 14, 2012Page 1 of 311. B. 2 - CW ACTION

| | | |
|--|---|----------------|
|  | COMMITTEE OF THE WHOLE | |
| For meeting to be held on: August 14, 2012 | Submitted by: Durk Vanderwerff, Manager of Planning | For: Action |
| Subject: FIVE YEAR REVIEW OF THE COUNTY OFFICIAL PLAN; MIDDLESEX NATURAL HERITAGE STUDY UPDATE | | |

BACKGROUND:

The 2003 Middlesex Natural Heritage Study (MNHS) was undertaken to establish a County-wide comprehensive landscape determination of significant natural heritage features and to map those features. The MNHS was incorporated into the County Official Plan in 2006 and has served as the basis for natural heritage planning at the County and municipal levels. This report is seeking approval to contract the Upper Thames River Conservation Authority to update the MNHS, at a cost of \$22,000 plus HST, as part of the five year review of the County Official Plan.

ANALYSIS:

2003 Middlesex Natural Heritage Study

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 Natural Heritage Mapping was obtained from the Ministry of Natural Resources but was found to be outdated, inaccurate, and inconsistent.

In order to establish comprehensive and consistent natural heritage mapping the five conservation authorities, with the Upper Thames River Conservation Authority as the lead, were contracted to undertake the MNHS. The MNHS was completed in 2003 and provided a comprehensive review and inventory of natural heritage features and set a standard for the determination of significance. It provided a scientific basis to describe the natural heritage systems across the County and mapped those features.

October 3, 2012

MNHS 2003 Highlights

The Middlesex Natural Heritage Study

A Natural Heritage Study to Identify Significant Woodland Patches in Middlesex County



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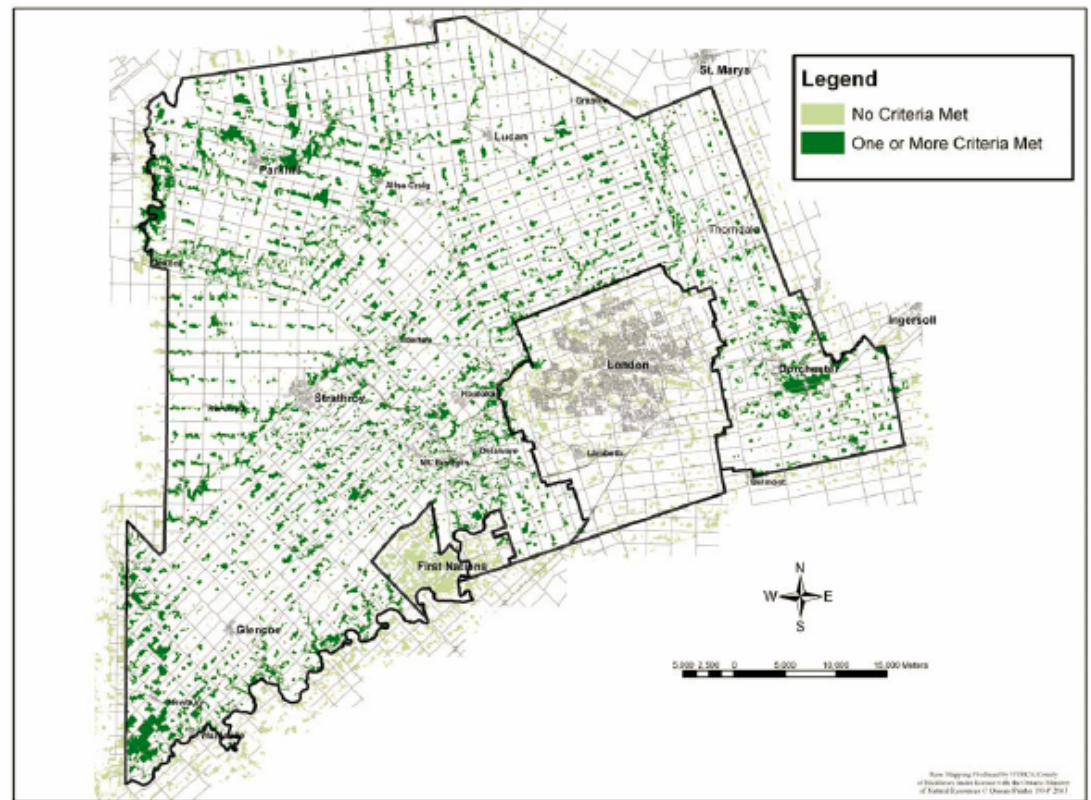


Figure 27. Woodland patches in Middlesex County that meet one or more landscape criteria.

<http://www.thamesriver.on.ca/MNHS/MNHS.htm>

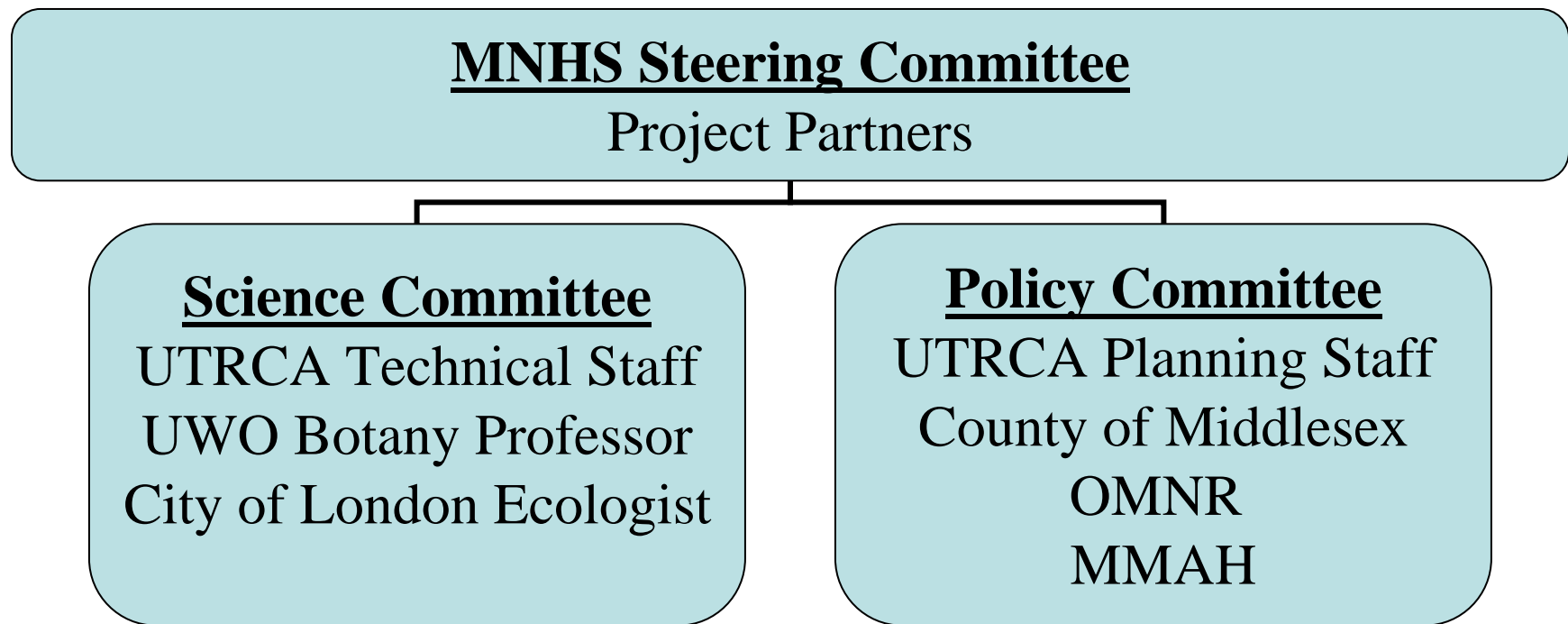
MNHS 2003: Project Partners

- Project undertaken for the County by the Conservation Authorities. UTRCA was the lead.
- Partners
 - County of Middlesex
 - Middlesex and Elgin Stewardship Committees
 - Middlesex Conservation Authorities
 - City of London
 - Carolinian Canada
 - Nature Conservancy of Canada
 - MNR and MMAH
 - Thames Talbot Land Trust
 - Natural Heritage Coalition of Thames Centre

MNHS 2003: Study Area

- Corporate County of Middlesex
- City of London
- First Nations Lands
- MNHS report and recommendations were targeted to the Corporation of the County of Middlesex

MNHS 2003:Project Structure



MNHS 2003: Field Work

- Selected 200 woodland patches in corporate boundary of Middlesex County by physiography and size.
- Contacted 556 landowners by mail. 245 responded (44%) of which 195 (35%) granted permission.
- Inventoried 68 woodland patches in 2001.
- An additional 85 patches from City of London Subwatershed Studies surveyed in 1994 were added for a total of 153 woodland patches.

MNHS 2003: Field Methods

➤ Methodology followed ELC for Southern Ontario (Lee *et al.* 1998) and included:

- presence of vegetation species
- soil texture
- disturbance intensity / extent
- basal area

MNHS 2003: Field Results

- Woodland patches cover 12.7% of the area of corporate Middlesex County.
- The majority of woodland patches are fragmented and are located on imperfectly drained soil.
- Effects of human disturbance on forest parameters was more variable than natural disturbance.

MNHS 2003: Field Results

- Overabundance of small trees in upland hardwood forests when compared with the provincial standard (OMNR 2000).
- Increase in Silver and Red Maple, Ash, Aspen, Hickory and Tamarack since 1950's (Conservation Authority report).
- Decrease in White Elm, Black Cherry, Oak and Beech since 1950's (Conservation Authority report).

MNHS 2003: Analysis of Field and Landscape Parameters

- Unable to sample every woodland patch in the County (~8,200).
- Multiple regressions were used to correlate forest health indicators (derived from field sampling) to landscape parameters.

| FOREST HEALTH INDICATORS | LANDSCAPE PARAMETERS |
|-------------------------------|----------------------------|
| Native species richness | Woodland patch area |
| Non-native species richness | Woodland patch interior |
| Total weediness | Nearest neighbour > 10 ha |
| Mean conservatism coefficient | Nearest road / railroad |
| October 3, 2012 | Nearest ANSI, ESA, wetland |

MNHS 2003: Landscape Model

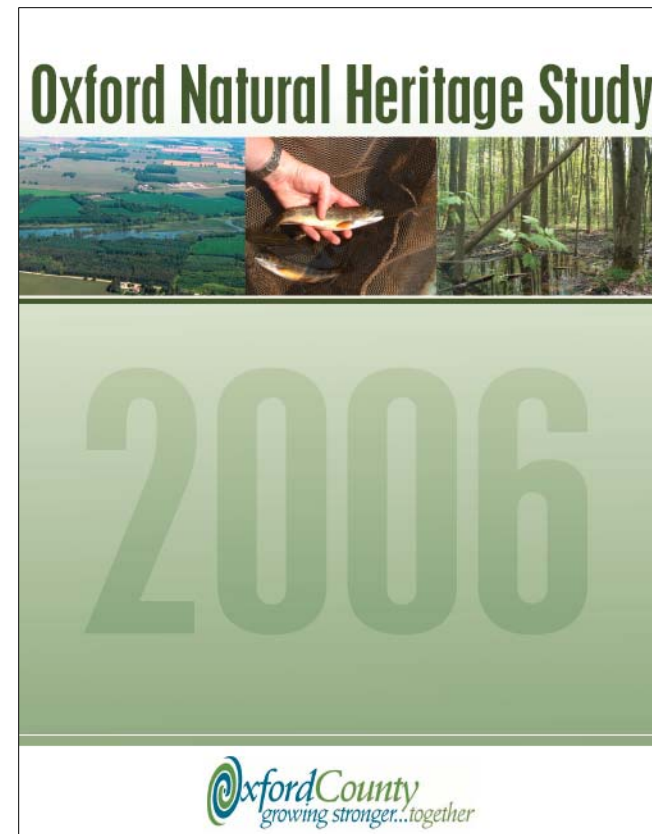
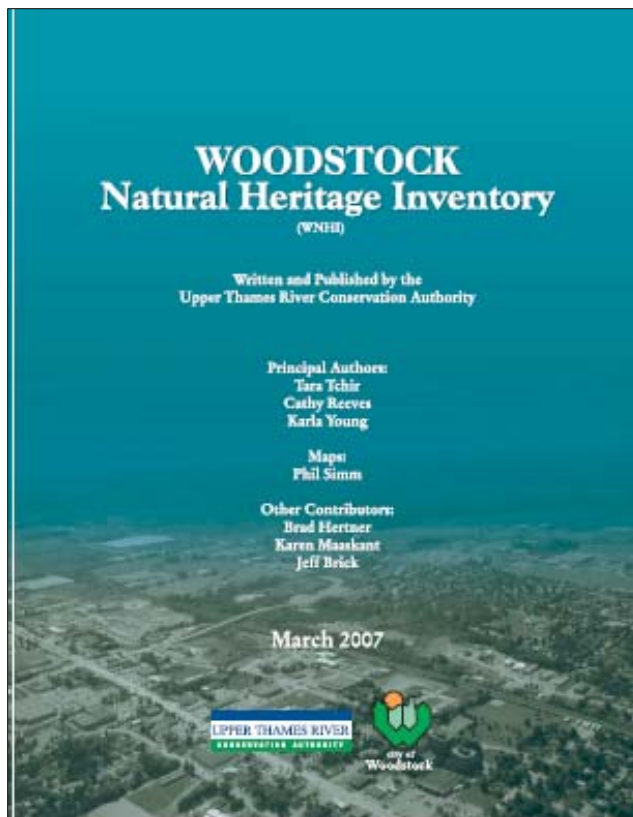
- Science Committee settled on six landscape criteria – based on data and literature
- Criteria were modeled using best available mapping (some ortho-imagery coverage + satellite imagery + contact prints)
- Recommendation that patches that meet one criteria are significant
- Planning policy discussion included in final report
- County Council accepted the final report and the current OP refers to the MNHS (2003) as the means for identification of significant woodlands

MNHS 2003: Landscape Criteria

1. Within 750m of a recognized feature (*i.e.* ANSIs, ESAs, wetlands).
2. Greater than 10ha in size or have interior area.
3. Within 100m of a large (>10ha) woodland patch.
4. Within 50m of a watercourse.
5. Within a recognized corridor (*e.g.* Big Picture, Ausable River, North Thames).
6. Located on porous soils.

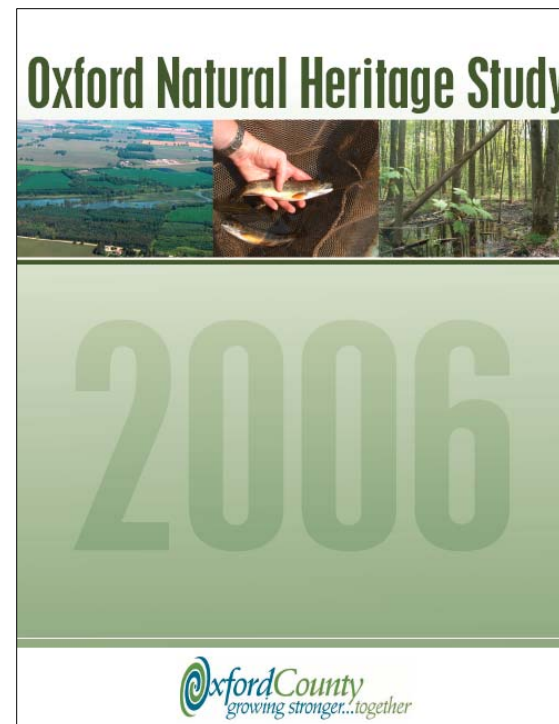
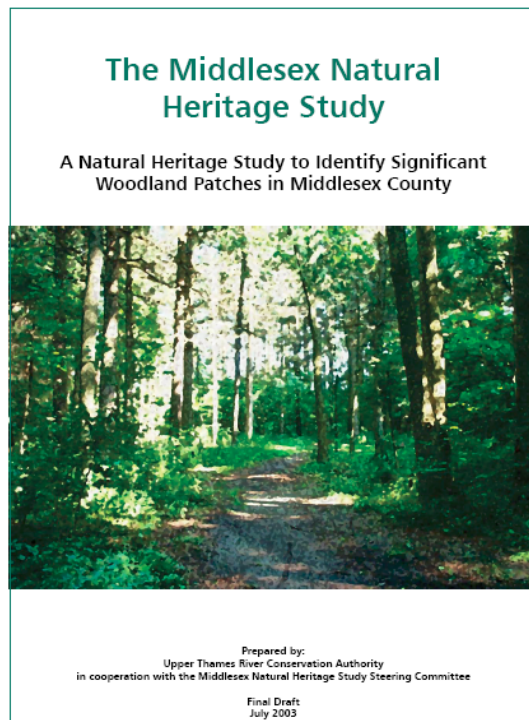
Natural Heritage Concepts

- Natural heritage inventory vs. natural heritage study



Natural Heritage Concepts

- Focus on woodlands or focus on the broader natural heritage system



Natural Heritage Concepts

- Patch protection vs. landscape approach
- Patch protection – patches are significant for the species that are found in them
- Landscape approach – patches are valued for the contribution that they make (existing or potential) due to their:
 - Size, shape, proximity or linkage

Natural Heritage Studies History

- Various Wetland Inventories, ANSI reports, County ESA Reports (generally 70's to present)
- Oxford County Terrestrial Ecosystem Study (1997)
- Middlesex Natural Heritage Study (2003)
- Oxford Natural Heritage Study (2006)

Natural Heritage Studies History

- Municipality of Kincardine (2009)
- Lambton (under way)
- Huron County (under way)
- Several others

Mapping Information

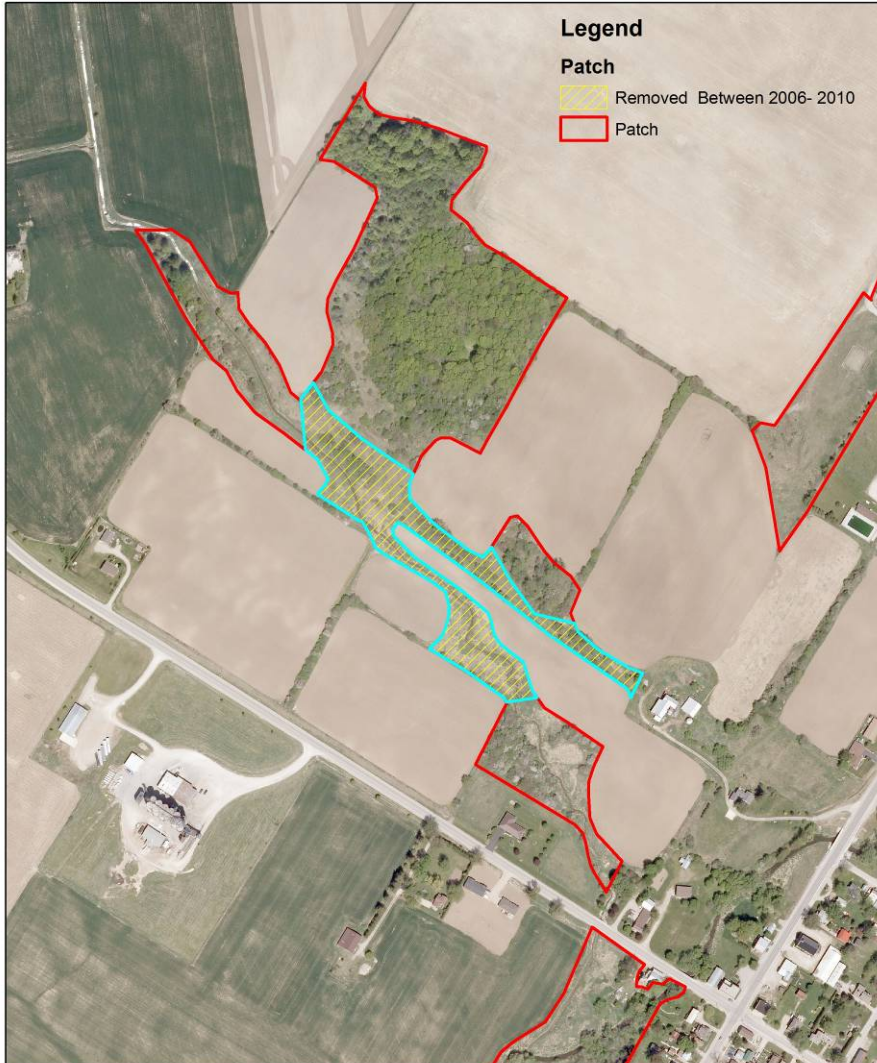
| Project | Map Base |
|--|---|
| ESA Studies (1970's) | 1:50,000 Topos |
| MNR Wetland Inventories (1984 onward) | 1:50,000 Topo + 1978 and 1989 contact prints |
| Oxford County Terrestrial Ecosystem Study (1997) | 1:50,000 Topo + 1978 and 1989 contact prints |
| Middlesex Natural Heritage Study (2003) | 1999 ortho-imagery for ABCA area 2000 ortho-imagery for UTRCA area Satellite and contact prints for balance |
| Oxford Natural Heritage Study (2006) | 2000 Ortho-imagery (gray scale) |
| Huron County Natural Heritage Study (2012) | 2006 colour ortho-imagery |
| MNHS Update (2013) | 2010 colour ortho-imagery |

Landscape Study Methodology

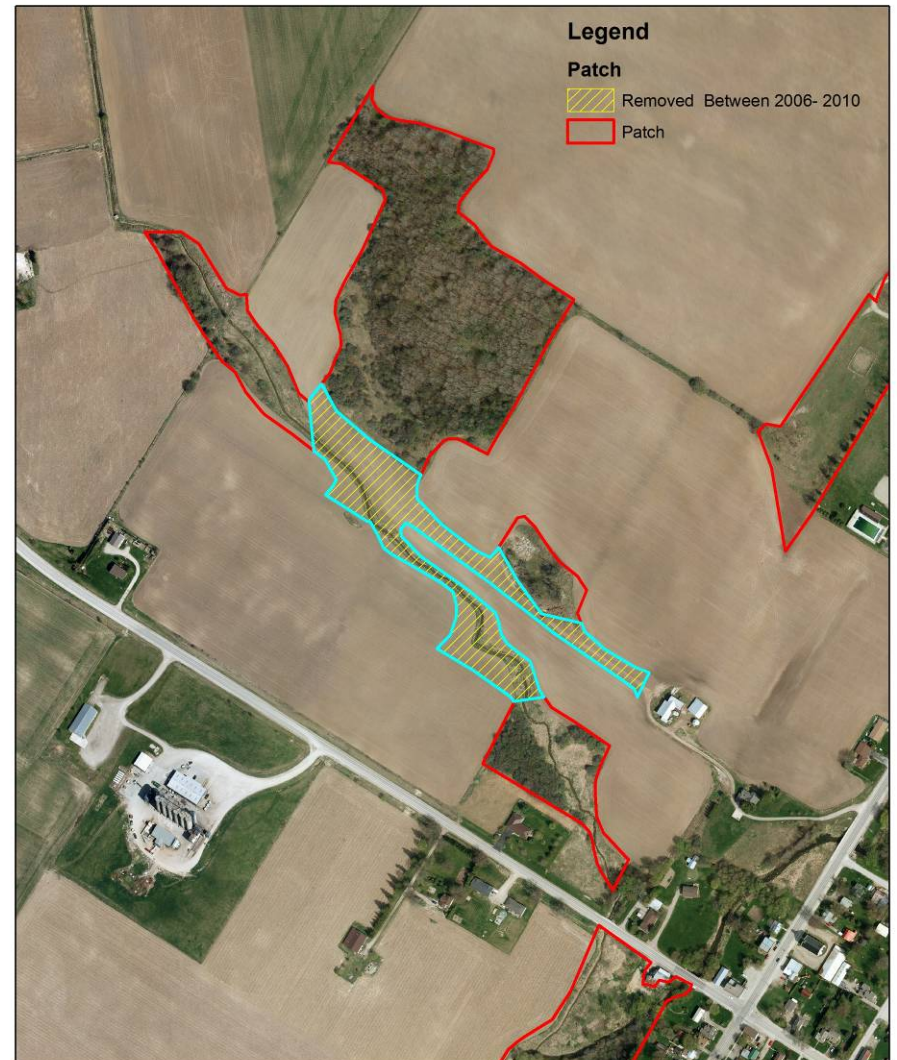
- Accurate mapping of vegetation polygons using ortho-imagery
- Landscape ecology analysis of existing vegetation inventories and the corrected vegetation information to develop landscape criteria
- Strong reliance on the landscape literature and past studies
- Use GIS to model patches that meet criteria
- Features already mapped meet a criteria

Pressure on Natural Heritage

Protecting Patch ? (2006)



Protecting Patch ? (2010)



Pressure on Natural Heritage

- Potential causes:
 - Commodity prices
 - Land prices
 - Farm consolidations
 - Land tenure
 - Others?

Lessons Learned

- Map the system rather than the features
- Protect the system rather than focusing on protecting the feature
- Land Use Planning remains a key implementation tool
- Modified approach to Environmental Impact Studies (Development Assessment Reports)

Highlights from HNHS

- County of Huron Project
- Support from the four Conservation Authorities to complete the project
- Landscape (systems) approach
- Builds on MNHS (2003), ONHS (2006) approaches
- Refinements to criteria, add Great Lakes shoreline and significant valleylands

What makes Natural Heritage Significant in Huron (Draft)

| PATCH CRITERIA | DESCRIPTION/JUSTIFICATION |
|--|--|
| Patch contains a Species at Risk (IUCN, COSEWIC, COSSARO) | There is a Species At Risk located in the patch (excludes birds because they are highly mobile). |
| Patch contains a Provincially or Locally Designated Area | Patch contains at least part of an OMNR evaluated wetland, life science ANSI or coastal wetland. |
| Patch Size is X-Large Size | Patch is greater than 100ha |
| Patch is located in a riparian watercourse area -SW | Patch located within 30m of a watercourse. |
| Patch has high biodiversity | Patch contains 15 or more vegetation community polygons |
| Patch with shoreline Characteristics | Any patch touching or within 100m of a Gully, Valley or Shore Cliff |
| Patch contains seeps | Seeps to be mapped when identified |
| WOODLAND CRITERIA | |
| Large Size – Patch contains a large size woodland. -SW | Patches that contain a woodland >4 ha will be identified. |
| Interior – Patch contains a woodland vegetation community that had 0.5 ha or more interior habitat (i.e. where interior is defined as > 100m from the woodland edge) -SW | Patch must have at least one woodland interior area that is (>0.5ha) to be significant (i.e. interior is not calculated by adding up very small pieces). |
| Proximity – Patch contains a woodland that is within 100m of a woodland greater than 4ha | Woodlands greater than 4 ha are considered large in Huron County and rely on supporting habitat. |
| WETLAND CRITERIA | |
| Wooded Swamps >4ha -SW | Patches that contain wooded wetland > 4 ha wetland will be identified. |
| Shrub/thicket Wetlands | Patches that contain a shrub/Thicket wetland >2.5 ha will be identified. |
| Meadow Wetland | Patches that contain a Meadow Wetland >10ha will be identified. |
| Marshes | Patches that contain a Marsh >10 ha will be identified. |
| Proximity – Patch contains a wetland that is within 1000m of another wetland. | All wetlands rely on supporting habitat that are within 1000m of another. |
| SHRUB CRITERIA | |
| Large Size – Patch contains a large size shrub community. | Patches that contain a shrub land >2.5 ha will be identified. |
| Interior – Patch contains a shrub vegetation community that had interior habitat (i.e. where interior is defined as > 30m from shrub edge). | Patch must have at least one shrub interior area that is of any size (>0.5ha) to be significant. |
| MEADOW CRITERIA | |
| Large Size – Patch contains a large size meadow community | Patches that contain a meadow >10ha will be identified. |

To Be Mapped

| VEGETATION GROUPS | WOODLAND | PATCH |
|---------------------------|----------|-------|
| Conifer Woodland | X | X |
| Deciduous Woodland | X | X |
| Mixed Woodland | X | X |
| Plantation Young | X | X |
| Plantation Mature | X | X |
| Conifer Wetland | X | X |
| Deciduous Wetland | X | X |
| Mixed Wetland | X | X |
| Plantation Wetland | X | X |
| Marsh / Fen | - | X |
| Upland Shrub / Thicket | - | X |
| Riparian Shrub / Thicket | - | X |
| Shrub / Thicket Wetland | - | X |
| Upland Meadow / Old Field | - | X |
| Riparian Meadow | - | X |
| Water Bodies | - | * |
| Major Water Course | - | X |
| Minor Water Course | - | - |
| Hedgerow Connected | - | X |
| Open | - | * |

Review the Final Draft of the Project Proposal

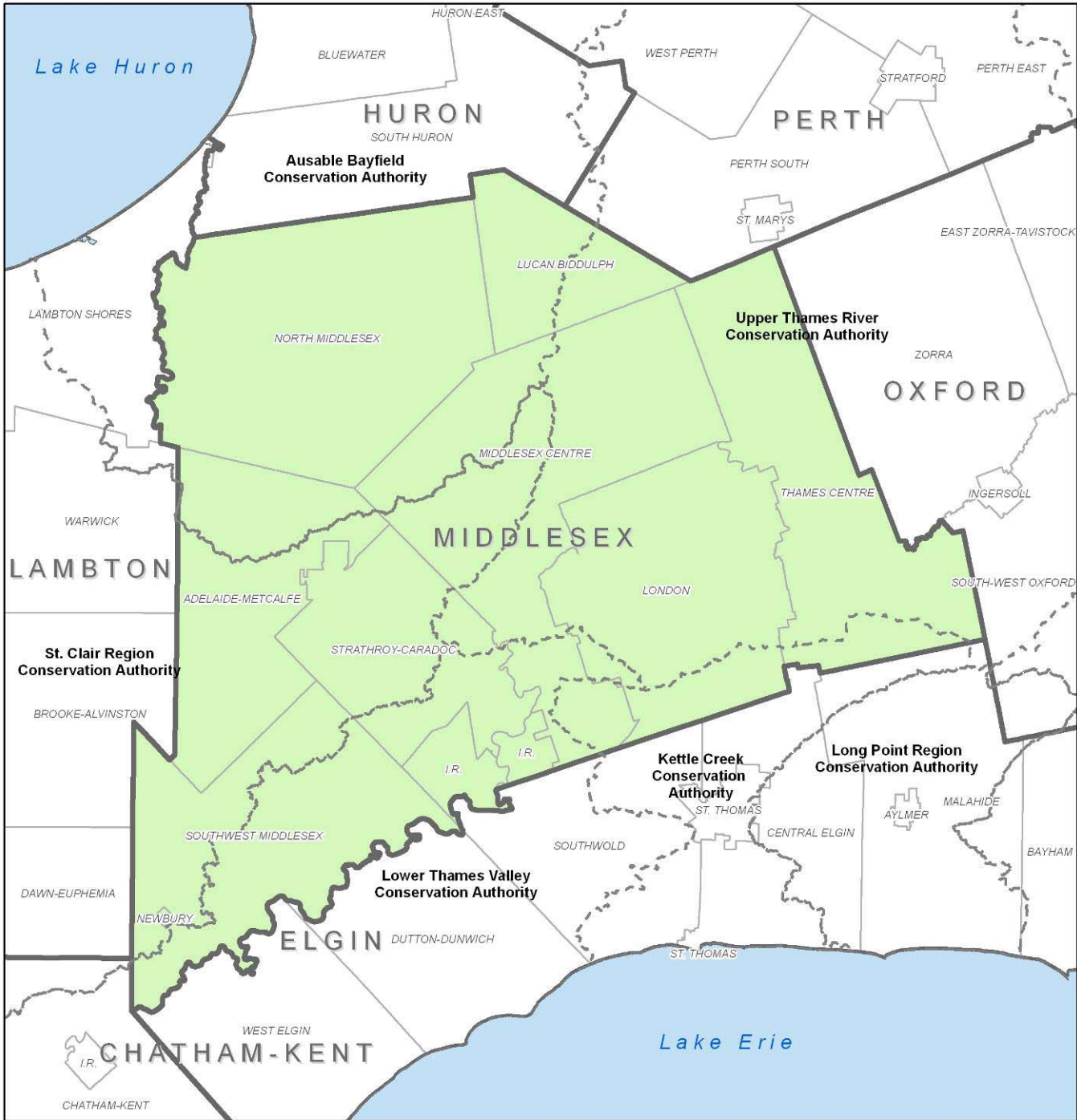
- Background
- Study Area
- Governance
- Project Work Plan
- Time Lines
- Budget

Background

- Any feedback or concerns with the background section – please submit marked up version to Jeff Brick by October 9th

Study Area

- County of Middlesex
- City of London
- Does not include First Nations Reserves



Governance: Steering Committee

- Approve the final project proposal
- Oversee the fulfillment of project time lines and deliverables
- Approve any significant changes to project methodology or timing
- Endorse final report for submission to County Council

Governance: Steering Committee

- County of Middlesex - 1
- Local Municipalities – 1 or 2
- The City of London - 1
- Ausable Bayfield Conservation Authority -1
- Kettle Creek Conservation Authority - 1
- Lower Thames Valley Conservation Authority - 1
- St. Clair Region Conservation Authority - 1
- Upper Thames River Conservation Authority - 1
- Ministry of Natural Resources -1

Governance: Technical Committee

- Participate in the development of the Landscape Criteria – mainly completed through a one day workshop where the Huron Criteria will be presented and vetted
- Some follow up anticipated and members will also be asked to review final “science methodology” section

Governance: Technical Committee

Technical experts from:

- County of Middlesex and Local Municipalities
- The City of London
- ABCA, KCCA, LTVCA, SCRCA and UTRCA
- Ministry of Natural Resources
- Carolinian Canada

Implementation

- Rely mainly on Official Plan as implementation mechanism
- Presentations to County and Local Municipalities on results
- Report can be used to support other municipal, CA and other partner initiatives
- Proposing one day implementation workshop (optional)

Work Plan: Vegetation Correction

- 2010 ortho-imagery
- Data from other sources
- Standardized vegetation correction methodology - identify interior woodland areas, vegetation types, areas of disturbance, meadow areas
- Baseline for future monitoring

Work Plan: Watercourses

- Not correcting the water layer
- Identifying features that have an associated watercourse
- Distance will be verified

Work Plan: Valleylands

- Significant Valley Lands will be identified following the Huron County Natural Heritage Study methodology

Work Plan: Data Analysis

- Lead by UTRCA Ecologist
- Past inventory information
- Consider landscape ecology literature and other studies
- Prepare information for presentation to Technical Committee as part of a one day workshop

Work Plan: Landscape Criteria

- To be developed as part of the one day workshop with the Technical Committee
- Proposed based on the data analysis and the Huron NHS methodology
- To be vetted by Technical Committee
- Methodology to be documented by Technical Lead (UTRCA Ecologist)

Work Plan: Peer Review 1

- Peer reviewer contracted to review the output of the Technical Committee (Technical Report which summarizes the data analysis and landscape criteria selected)
- Obtain report from Peer Reviewer
- Make revisions as necessary

Work Plan: Landscape Model

- Peer reviewed landscape criteria will be applied to the corrected vegetation layer to generate mapping that shows patches that meet one or more criteria

Work Plan: Supporting Tools

- Prepare tools to support implementation:
 - Patch validation methodology which provides interpretation guidance (ie. How to handle plantations, how to define a watercourse etc.)
 - EIS (DAR) Guideline document

Work Plan: Peer Review 2

- Submit Model output and implementation tools to Peer Reviewer for review and confirmation
- Obtain final report from peer reviewer
- Make revisions as necessary

Work Plan: Final Report

- Stand alone report for the MNHS (2013)
- To be compiled by UTRCA
- Includes the detailed methodology section
- Report to be presented to County Council

Work Plan: Data Delivery

- Delivery data and meta data to County, City, CAs and other partners as appropriate
- Provide training on data use
- Presentations to municipalities and others
- Optional natural heritage policy workshop

Project Time Lines

- Review timelines from proposal
- Confirm timing
- Proposed Technical Committee Workshop
 - Option 1 Wednesday October 31
 - Option 2 Wednesday October 24
 - Next Steering Committee Meeting

Project Budget: County Portion

- Middlesex County Data update to 2010 including SAR data collection = \$13,325 (Various CAs)
- Data correlation and model run – 7 days @ \$300.00 = \$2,100 (UTRCA)
- Ecology Oversight – 7 days @ 300.00 = \$2,100 (UTRCA)
- Peer Review by outside contractor = \$2,000
- Materials, supplies for printing, meetings etc. \$400 (UTRCA)
- Write final report - 7 days @ 300.00 = \$2,100 (UTRCA)
- **County Project Total Cost=\$22,025**

Project Budget: City Portion

- City of London Data update to 2010 including SAR data collection = \$,1700
- City of London model run, 1 day @ \$300.00 = \$300.00
- Peer Review Incremental Cost \$300.00
- **Project Cost to Project to add City of London = \$2,300.00**

Total Project Costs

- Middlesex County Portion - \$22,025
- City of London Portion \$2,300
- **Total = \$ 24,325**

Confirmation of Next Steps and Revisions to Proposal:

- Steering Committee and Technical Committee Representatives
- Work Plan
- Project Time Lines
- Dates for Technical Committee Workshop and Next Steering Committee Meeting

Questions and Discussion