Ontario’s Niagara Escarpment (ONE) Monitoring Program

Tracking environmental change within the Niagara Escarpment Biosphere Reserve

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Introduction to the Niagara Escarpment
Ontario’s Niagara Escarpment (ONE) Monitoring Program
Examples of Monitoring Projects
Monitoring Results & Key Recommendations
Preparing for the 2015 NEP Review
Niagara Escarpment World Biosphere Reserve
NEP Purpose

To maintain the Niagara Escarpment as a continuous natural environment – permit only compatible development

- includes objectives and policies for environmental protection

  e.g. Areas of Natural & Scientific Interest, Forests, Wetlands
The development of an environmental monitoring program was mandated under the 2005 NEP:

to assess & report on the effectiveness of the policies of the NEP in meeting their purpose and objectives
Uses indicators at different spatial scales (landscape level, site level) to monitor change over time

Focuses on evidence-based policy support/development/refinement through the collection & analysis of scientific data

State of Escarpment Reporting
STUDY: To evaluate the effectiveness of NEP policies in protecting Provincially Significant Life Science Areas of Natural and Scientific Interest (ANSIs).

- Provincially Significant Life Science ANSIs:
  - Represent some of Ontario’s most significant natural heritage features & landscapes
  - Are largely dependent on provincial land use policies for protection
  - Undergo periodic boundary updates
The NEP strives to protect Provincially Significant Life Science ANSIs:

i. By including them in the Escarpment Natural Area designation

ii. Through its Development Criteria (Part 2.14)

**NEP Part 2.14 – ANSIs**

Development shall be directed to locate outside of provincially and regionally significant ANSIs. Minor encroachments will be considered in relation to the specific features for which the ANSI has been identified...and whether mitigative measures can be applied to protect ANSI values. Setbacks from development shall be established...when necessary to protect ANSI values.
- GIS analysis used to determine where ANSI boundaries were reduced due to development
- Absence of development was used as an indicator of ANSI “protection”
- Development within ANSIs compared inside & outside the Niagara Escarpment Plan Area
Data Sets

Historic

- 1:50,000 NTS maps, NAD 27
- “Significant Natural Areas within the Niagara Escarpment Plan Area (Cuddy et al., 1976)
- Candidate Nature Reserves (CNRs)

Recent

- Plan-wide update: 1:10,000 OBM & airphotos via Ecological Survey of the Niagara Escarpment (Riley et al., 1996)
of the 59 Provincially Significant Life Science ANSIs in the Plan Area, **55 (93%) did not experience a boundary reduction due to development**

Where boundary reductions in the Plan Area did occur:

- New single dwellings were permitted within Escarpment Natural Area

- One skill hill expansion was approved as a "minor encroachment" within an ANSI with a less restrictive Plan designation (Escarpmment Recreation Area)
Summary of Results – INSIDE the Plan Area
Summary of Results – OUTSIDE the Plan Area

Zinkan Island Cove A-CNR

1974

Zinkan Island Cove PS LS ANSI

2006

subdivision expansion

boundary modified to exclude houses
At a landscape-level of analysis, it appears that **NEP policies have generally been working to protect Prov. Significant Life Science ANSIs**

**Key recommendations:**

- A Plan-wide update of NEP designation mapping to capture all Prov. Significant Life Science ANSIs in the Escarpment Natural Area designation
- “Minor encroachments” could be defined in the NEP to strengthen policies for ANSI protection
- Where sites can accommodate, there should be greater consideration for development entirely outside the ANSI boundary
- Repeat a similar study for Regionally Significant Life Science ANSIs
STUDY: To monitor change over time in forest biodiversity and health in core protected areas of the Biosphere Reserve.

- 5 one-hectare “control” plots
- Interior forest within Prov. Significant Life Science ANSIs & NEPOSS
- NEC-UW partnership in co-operation with other agencies (e.g. Ontario Parks)
- “Baseline data” for comparison to more disturbed sites
Data Collected Every 5 Years:

- **Trees**
  - Status (Alive/Dead), Species identification, Dbh
  - Crown Class (Dominant, Co-dominant, Intermediate, Suppressed)

- **Shrubs/Saplings & Ground Cover**
  - Species identification, stem counts
  - % cover (for ground cover only)

- **Tree Health**
  - Crown Vigour Rating
  - Stem Defects

Data collection
✓ Sugar maple-dominated, healthy forests; relatively high % of native species
✓ Historic disturbance likely effected species composition
✓ Little change in species richness other than natural succession / gap replacement
✓ Forests showing signs of maturity
✓ Presence of canopy species in the understory = forests successfully regenerating
✓ Presence of exotic invasive species in the understory is of concern
Overall, the results highlight the **successful protection of natural forest communities within core protected areas of the Biosphere Reserve.**

**Key recommendations:**

- Exotic species invasions should be immediately addressed by land managers.
- Through the park master planning process, the NEC should continue to ensure that only appropriate land use are permitted to protect core areas.
- NEP policy should continue to restrict tree cutting in ANSIs to minimize disturbance & promote natural succession to an old growth state.
- “Pressure plots” located near development could be established and compared to control plot data to increase understanding of development impacts.
It is the intention that monitoring data may inform & support NEP policy changes during 2015 review...

Possible examples:

- Life Science ANSI protection
- New development within Wooded Areas
- Parks & Open Space System
thank you...questions?

Monitoring reports available at: www.escarpment.org

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