PRESERVING ONTARIO’S HEADWATERS

A Presentation from the Ontario Headwaters Institute
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The OTF is an agency of the Government of Ontario
Contents

• Introduction to the OHI and Watersheds

• What are headwaters, and why are they important?

• Headwater Challenges, Strengths and Opportunities
Our Mission

To promote the protection and preservation of headwaters in Ontario

Areas of Activity

- Research
- Education
- Best Practices
- Time-limited special projects
Freshwater is Precious

• Saltwater 97.40 %
• Ice caps, Glaciers, & Groundwater 2.58 %
• Atmosphere, Soil, Biota, Rivers & Lakes .014 %

• Ontario has over 250,000 lakes and countless rivers
• The Great Lakes hold 18-20% of the world’s surface freshwater
What are headwaters?

Headwaters are the foundation of our watersheds

They include:

- Glaciers and snow-packs
- Lands in which water pools, collects into rivulets, and/or infiltrates into the ground
- Aquifers and groundwater; and,
- Swales, wetlands, and small streams.
Some Technical Terms

- First- and Second-order streams
- Ephemeral streams
- Intermittent streams, and
Some Technical Terms

- First- and Second-order streams
- Ephemeral streams
- Intermittent streams, and
- Headwater Drainage Areas
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- Headwater Drainage Areas
The Importance of Headwaters

• Can be 50 - 80% of the length of a watercourse

• Contribute up to 70% of mean annual flow of 2nd order streams

• Provide the majority of a stream’s sediment, nutrients & organic material, and

• Provide key breeding areas and niche habitat
Headwater Challenges

- Development
- Pollution, and
- Climate Change
Development and Pollution

• Development problems for headwaters include:
  • reducing and fragmenting natural areas,
  • permitting too much water-taking, and
  • burying small streams, which can result in both less infiltration and greater erosion.

• Pollution problems are different from heavy industrial activities or high urban populations and tend to come from agriculture, forestry, pits & quarries, and septic systems.
Climate Change

• The IPCC has identified freshwater ecosystems as the most vulnerable in a changing climate
Climate Change

- The IPCC has identified freshwater ecosystems as the most vulnerable in a changing climate.
- Although the Great Lakes get the majority of their in-flow from direct precipitation, most of the rest of Ontario’s lakes obtain the bulk of their water from thousands of small streams.
- The message is clear: we need to protect our headwaters to maintain our freshwater capital.
Headwater Strengths

- Policies and Protocols
- Stewardship Activities, &
- Best Management Practices (BMPs)
Headwater Strengths: Policies and Protocols

- Boundary Waters Treaty of 1909 and the creation of the International Joint Commission
- Hurricane Hazel, 1954, and significant expansion of Conservation Authorities
- The creation of the Ontario Water Resources Commission, 1956
- The launch of federal and provincial ministries of the environment following the 1972 UN Conference on the Human Environment,
  - The Municipal-Industrial Strategy for Abatement, etc etc…

In addition, in Land-use Planning -
- Niagara Escarpment Planning & Development Act, 1973, and
- The PPS provided protection for significant wetlands
And then in 2000, we had the Walkerton fiasco
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- Oak Ridges Moraine Conservation Act, 2001
- GL-SLRB SWRA, 2005
- Clean Water Act, 2006
- Conservation Authorities Act, 2006
- Lake Simcoe Protection Act, 2008
- Greenbelt Plan, 2005
- Growth Plan for the Greater Golden Horseshoe, 2006

In addition, Environment Canada published

- *How much Habitat is Enough*, 2005
Clean Water Act 2006

- Source Protection for Drinking Water
- Threat Matrices
- Water Budgets
- Mapping of SGRAs – Significant Groundwater Recharge Areas

Conservation Authorities Act, 2006

“‘watercourse’ means an identifiable depression in the ground in which a flow of water regularly or continuously occurs.”
Headwater Opportunities

- Provincial Policies
- Regional Policies and Protocols
- Public Stewardship, and
- Landowner BMPs (Best Management Practices)
Provincial Policy Issues

• Maintain and enhance existing water management regime while closing a few policy gaps – eg: LWRP, PTTW, the Drainage Act, PWQOs

• Apply Source Water Protection upstream - eg: Integrated Watershed Management

• Amend the PPS, the Provincial Policy Statement

• Establish Ontario goals similar to those in How Much Habitat is Enough?
Regional Policies and Protocols

- We need to embrace the new definition of a watercourse, especially for urban expansion, to protect small streams & wetlands
- We need to develop and include headwater metrics in watershed report cards
Public Stewardship

**Education**
- Increased profile for natural heritage studies, conservation, biodiversity, and ecological integrity
- Increase public education on importance of headwaters
- Link headwater health to the reduction of air emissions

**Conservations Lands**
- Increase agency land holdings while encouraging more land trusts and conservation easements

**Engagement**
- More public stewardship initiatives – eg:
  - Headwater Maps, Videos, and Educational Walks
  - Youth and Multi-culture Programs
  - Planting days, Hatchery Releases, Check Your Watershed Day, Family Fishing Days, etc
Landowner BMPs

• Respect natural heritage

• Riparian Buffers

• Septic systems and Wellhead protection

• Key Headwater Sectors:
  • Agriculture
    • Stream fencing & crossings
    • Manure Management
    • Drainage practices
  • Forestry Practices
  • Mines, Pits and Quarries
  • Other Rural Industries
In summary, headwaters:

- Safeguard the quality of nature’s filtration system and our drinking water
- Protect the quantity of surface water, groundwater, and aquifers
- Help maintain water chemistry and nutrients, and,
- Provide invaluable breeding areas and niche habitat
We must treat each and every swamp, river basin, river and tributary, forest and field with the greatest care, for all these things are the elements of a very complex system that serves to preserve water reservoirs – and that represent the river of life.

UNESCO report, 2006
Thank you

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