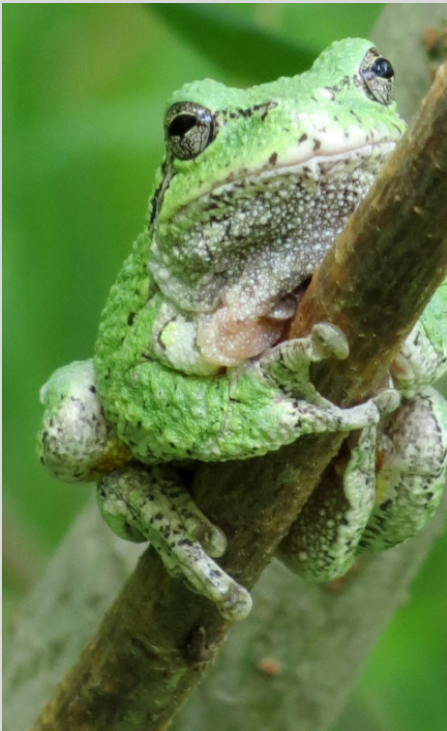


Natural Heritage Systems Planning

Michael Wynia, MCIP, RPP

SBA Skelton Brumwell
& Associates Inc.
ENGINEERING PLANNING ENVIRONMENTAL CONSULTANTS

What?



Why?



How?

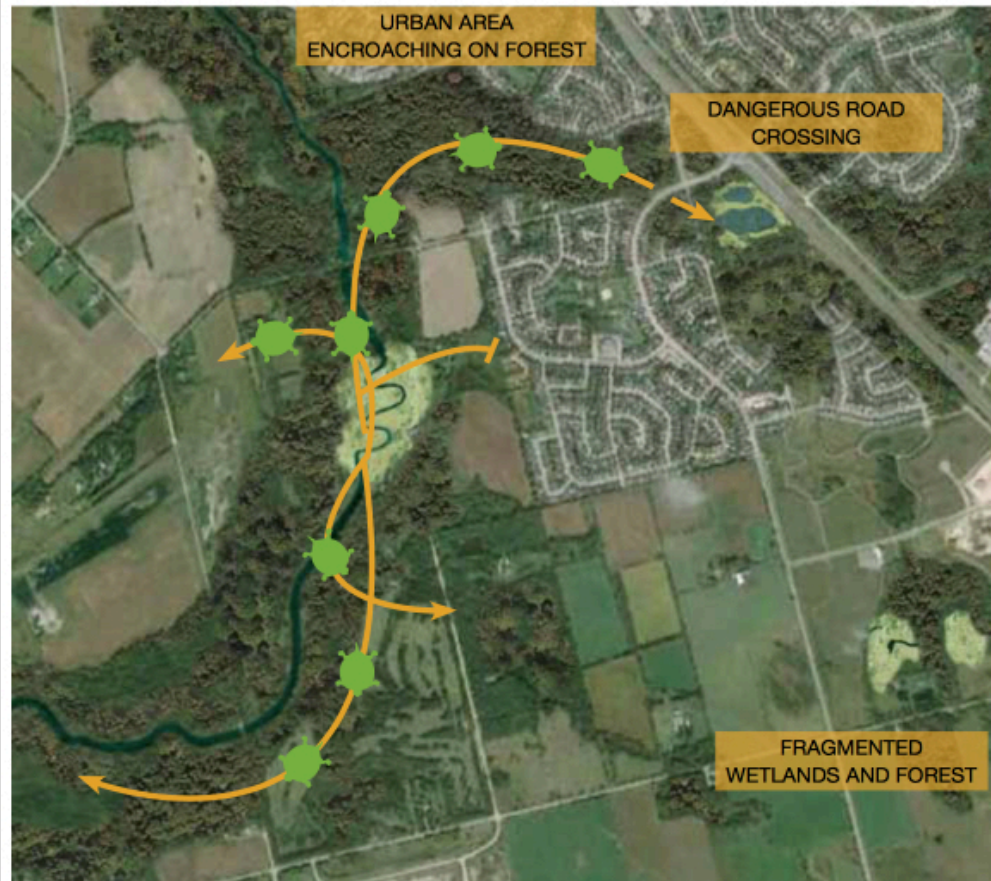
Photos: Michael Wynia

WHAT?

Natural heritage systems planning

- goes beyond a features-based approach to natural heritage planning
- recognizes the inadequacy of protecting a particular woodland, river, wetland or natural area in isolation
- premised on identifying Greenways
- spatially and functionally interconnected systems of core natural features, corridors and buffers

Slow and steady: The Blanding's vital journey



Throughout the year Blanding's turtles rely on different natural areas including wetlands, rivers, forests and fields. For example, females emerge from wetlands in the spring in search of a suitable area to lay their eggs. Habitat fragmentation and destruction from developments pose a major threat to the Blanding's turtle.



Ron Erwin

WHY?

Natural heritage systems provide numerous benefits and are an essential component of healthy communities.

Health Benefits of Nature

In 2010, Dr. Frances (Ming) Kuo reviewed and summarized the evidence from around the world on the connection between human health and access to the natural world. She described the findings as "remarkable" in their strength, consistency and convergence: the health benefits of being connected with nature are real.²⁰ For example, the social health benefits of "green" environments include:

- Stronger neighbourhood social ties;
- Greater sense of community;
- More mutual trust and willingness to help others;
- More positive social interaction; and
- Greater shared use of space.

The mental health benefits of access to nature include:

- Better cognitive functioning;
- More effective "life functioning";
- More self-discipline and impulse control;
- Greater resilience to stress; and
- Greater mental health overall.

The physical health benefits of access to nature include:

- Enhanced recovery from surgery;
- Higher levels of physical activity;
- Improved immune system functioning; and
- Improved health status and independent living skills among older adults.

In contrast, Dr. Kuo also looked at the costs of not having access to nature. It's an impressive – and alarming – list:

- Higher rates of aggression, violence and crime;
- More loneliness and sadness;
- More stress and anxiety;
- Higher rates of clinical depression;
- Exacerbated attention deficit hyperactivity disorder (ADHD);
- Higher rates of childhood obesity;
- Higher rates of disease (15 out of 24 categories); and
- Higher rates of mortality in younger and older adults.

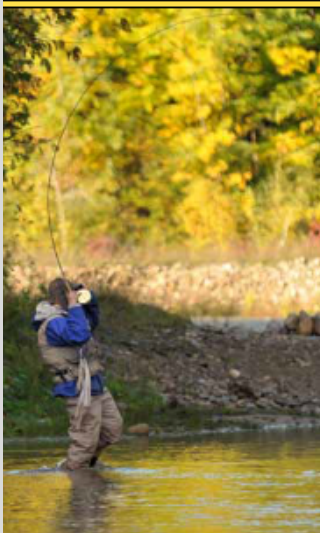
Left top: Hiking in Ancaster; left middle: never too early to get outside; left bottom; fishing in Clearview; above: meditating in Halton's Limehouse Conservation Area



Bobcat



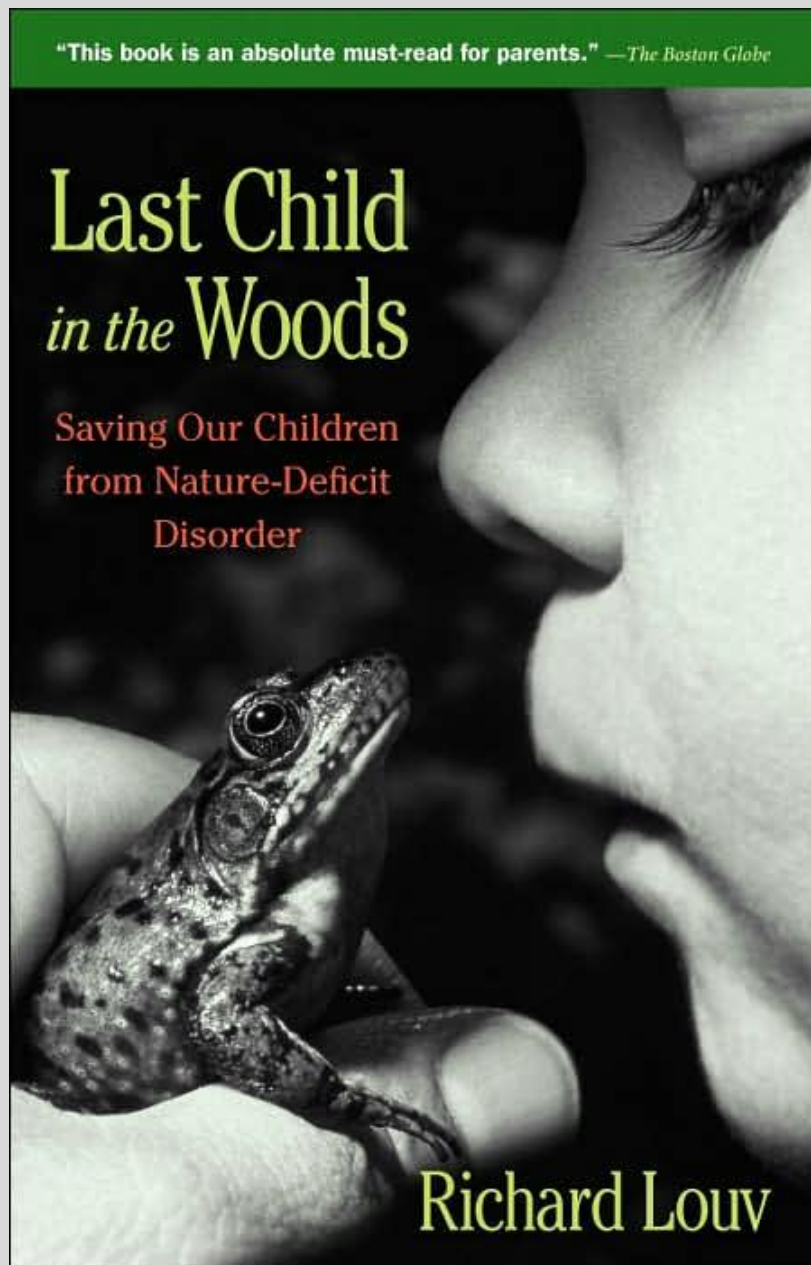
Sharon Drummond



Dennis Dallen



Gord Spence



NATURE-DEFICIT DISORDER

“Nature-deficit disorder describes the human costs of alienation from nature, among them: diminished use of the senses, attention difficulties, and higher rates of physical and emotional illnesses.”



Photo: Michael Wynia

Social Benefits

- Stronger neighbourhood social ties
- Greater sense of community
- More mutual trust and willingness to help
- More positive social interaction
- Greater shared use of space



Photo: Michael Wynia

Mental Health Benefits

- Better cognitive function
- More effective “life functioning”
- More self-discipline and impulse control
- Greater resilience to stress
- Greater overall mental health



Physical Health Benefits

- Enhanced recovery from surgery
- Higher levels of physical activity
- Improved immune system functioning
- Improved health status
- Improved independent living skills in older adults

Investments in Natural Heritage Systems Pay Off



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Business Tax Season

Toronto's July storm cost insurers \$850M

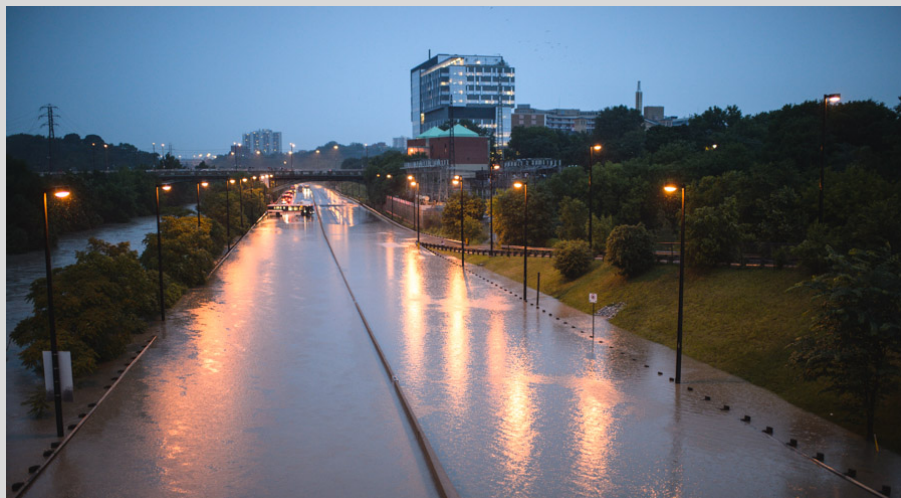
Insurance damage costs expected to go higher, industry group warns

CBC News Posted: Aug 14, 2013 11:18 AM ET | Last Updated: Aug 14, 2013 11:01 PM ET

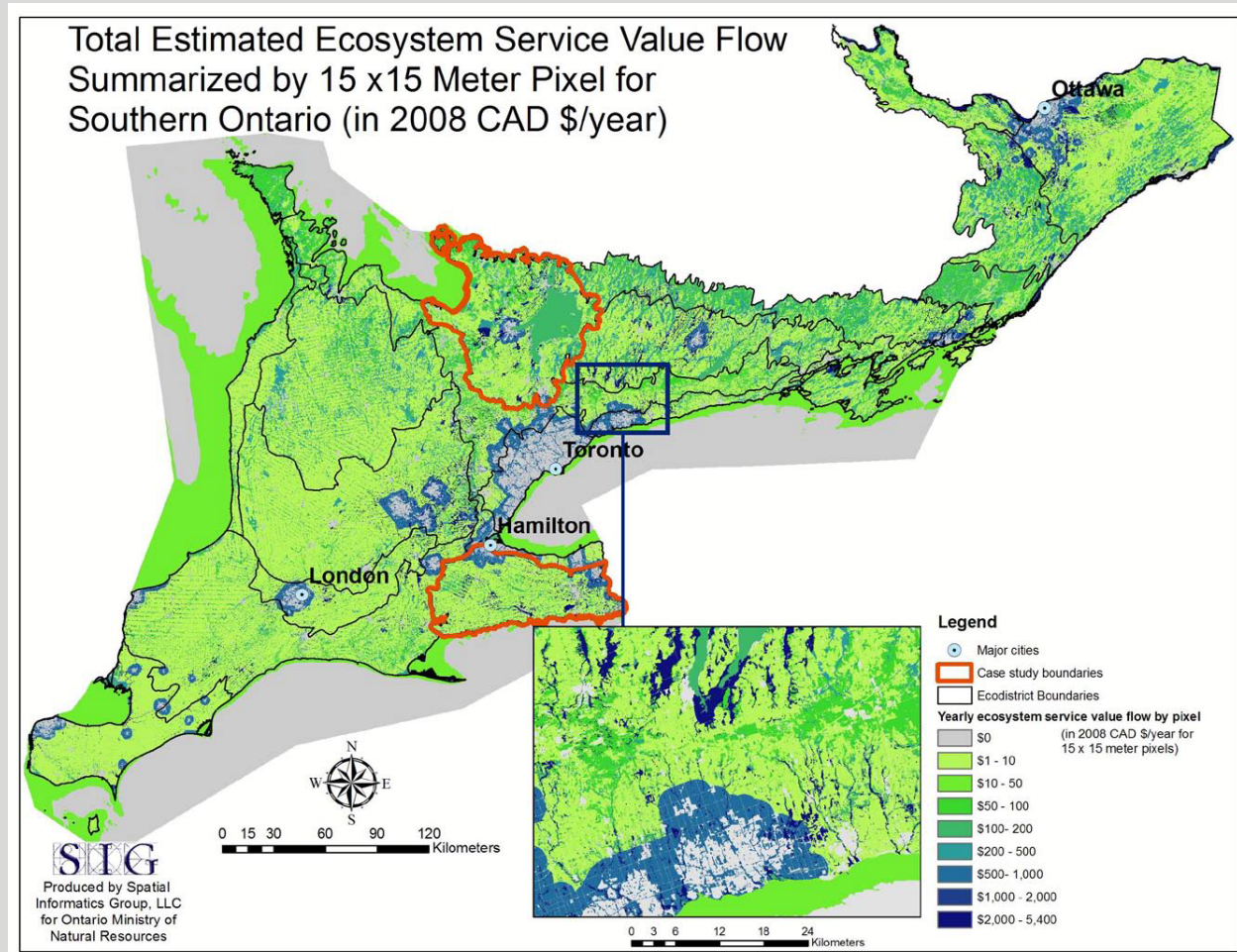
The July 8 flooding that resulted from a severe thunderstorm in the GTA region was the most expensive natural disaster in Ontario history, the Insurance Bureau of Canada says.

In a report today, it issued a preliminary estimate of insured property damage, pegging it at more than \$850 million, but that number could rise as more claims are processed. Its press release hints that the industry may agree to raise premiums in the form of a surcharge to the Ontario...

Flood claims hit \$850M 2:36



Ecosystem Services of Southern and Eastern Ontario



Over **\$84 Billion** (2008) in nature's benefits provided every year!

Biggest contributors of Nature's benefits (Per Hectare)

Urban Forests

=\$25,843

Suburban Forests

=\$14,777

Urban/Suburban Rivers

=\$236,392

Urban Wetlands

=\$161,420



Photo: Michael Wynia

**“Nature’s goods and services
are the ultimate foundations
of life and health.”**

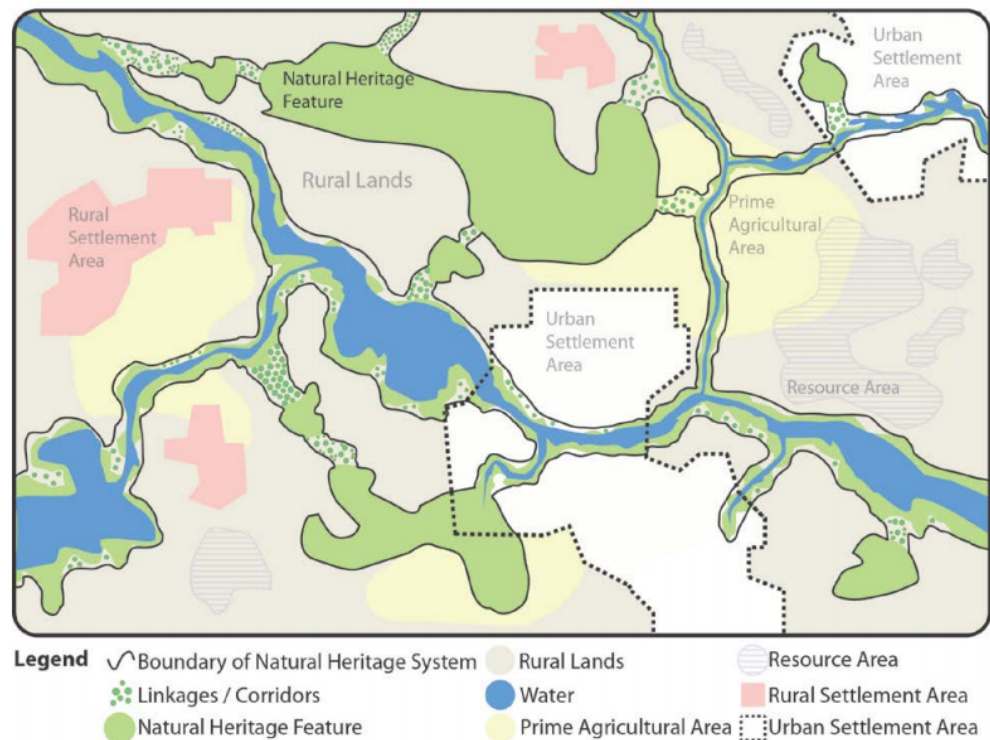
**(World Health Organization,
2005)**

Planning for Nature's Benefit(s)

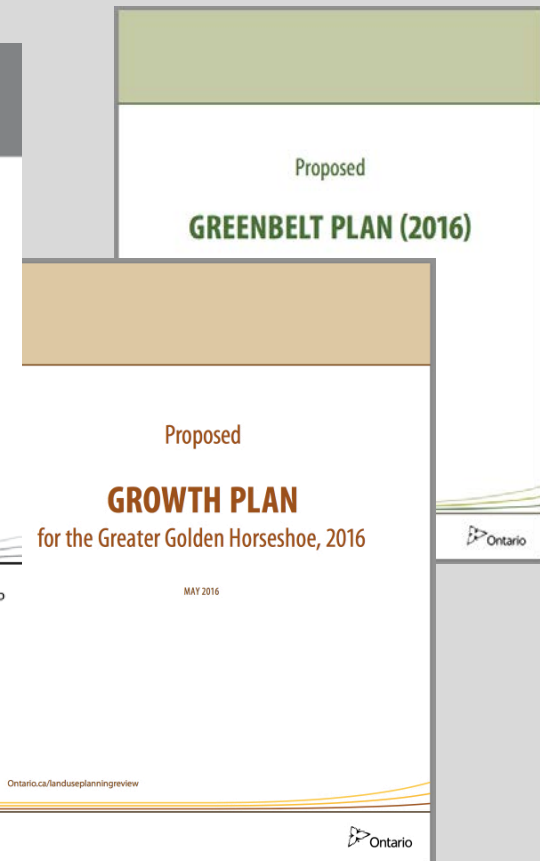
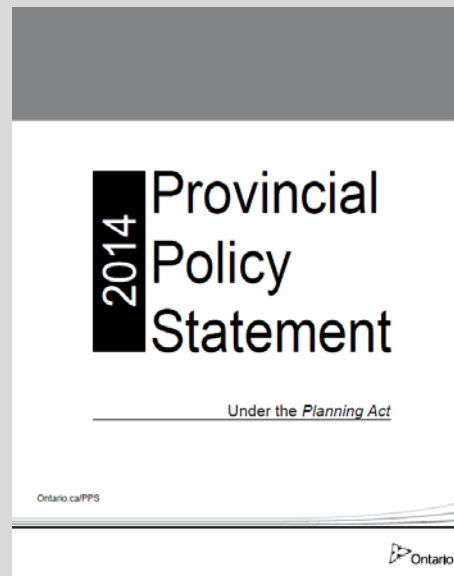
HOW?

- Plan for nature's own sake
- Plan for the benefits nature provides us

Figure 2 – Natural Heritage System



What has changed?



Climate Change

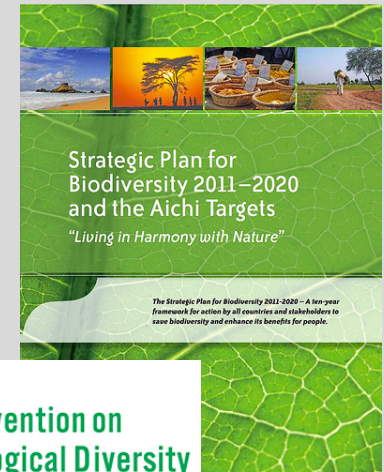
Biodiversity Losses

Ecosystem Services

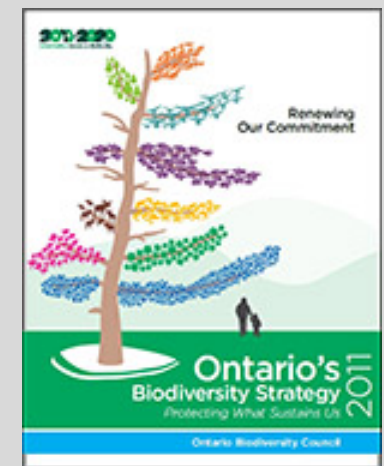
Green Infrastructure

International and Provincial Targets

*“By 2020, at least 17% of terrestrial and aquatic systems are conserved through **well-connected networks** of protected areas and other effective area-based conservation measures”*



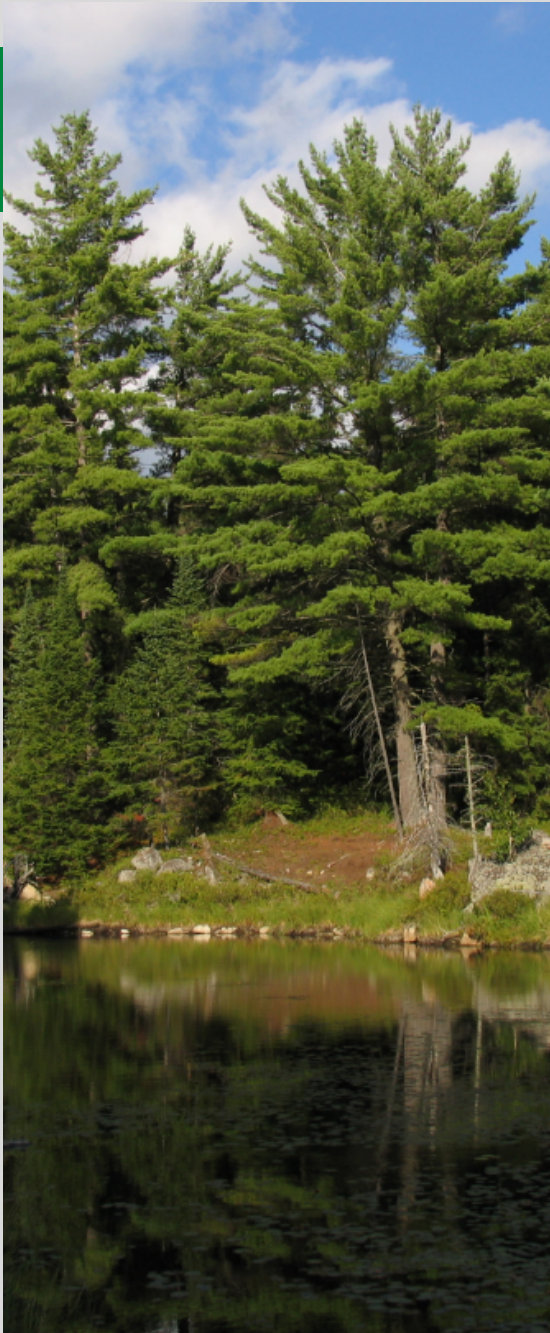
“By 2015, natural heritage system plans and biodiversity conservation strategies are developed and implemented at the municipal and landscape level”



The PPS

A **new section** has been added to the PPS dealing with natural heritage systems:

2.1.3 *Natural heritage systems* shall be identified in Ecoregions 6E & 7E, recognizing that *natural heritage systems* will vary in size and form in *settlement areas*, *rural areas*, and *prime agricultural areas*.

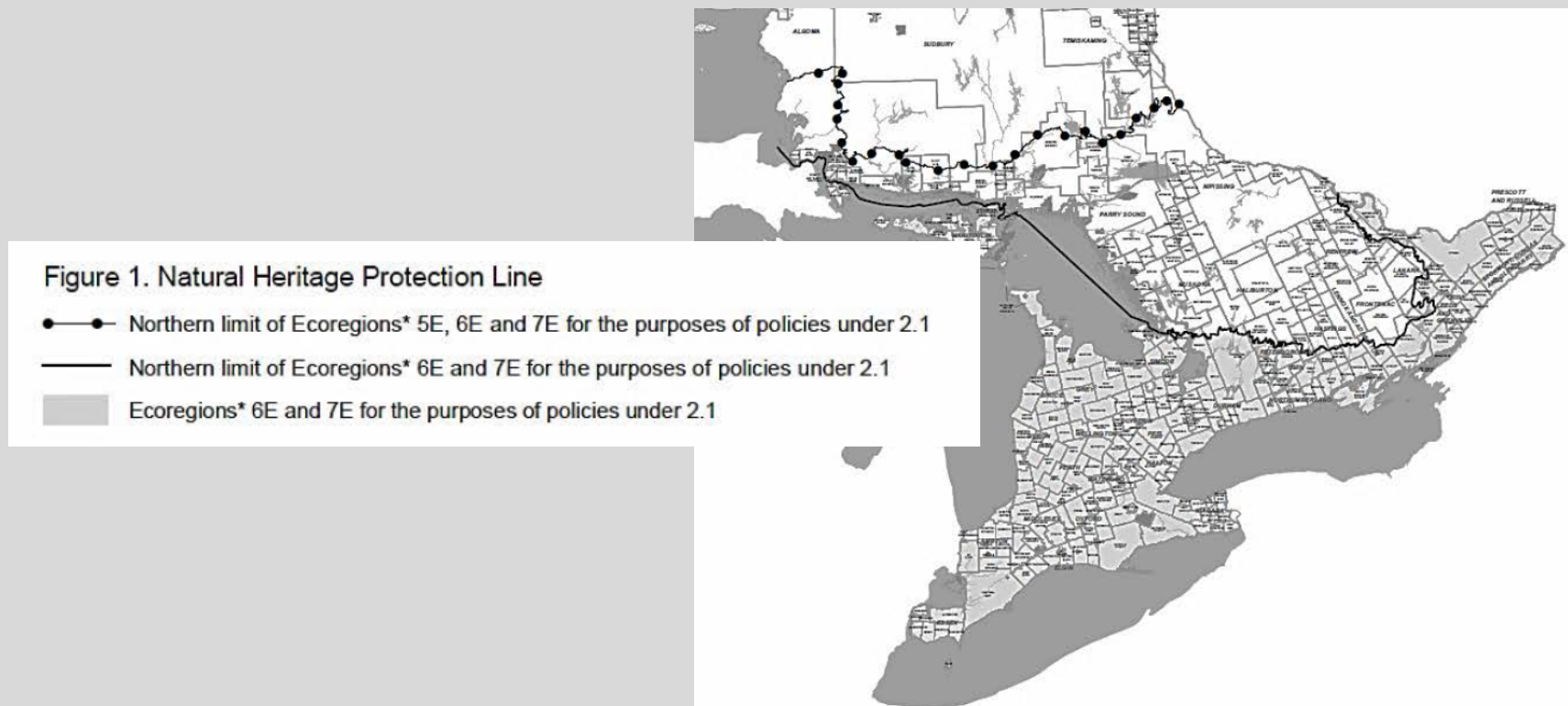


Natural heritage systems are also subject to a **new definition**:

Natural heritage systems: means a system made up of *natural heritage features and areas*, ~~linked by~~ **and linkages intended to provide connectivity (at the regional or site level) and support natural processes** ~~natural corridors~~ which are necessary to maintain biological and geological diversity, natural functions, viable populations of indigenous species, and ecosystems. These systems can include ***natural heritage features and areas***, federal and provincial parks and conservation reserves, other natural heritage features, lands that have been restored **or have** ~~and areas with~~ the potential to be restored to a natural state, **areas that support hydrologic functions, and working landscapes that enable ecological functions to continue.** The Province has a recommended approach for identifying *natural heritage systems*, but municipal approaches that achieve or exceed the same objective may also be used.

Natural heritage systems were previously incorporated in regard to maintenance of ecological function and diversity.

Now they “**shall be identified**” in Ecoregions 6E and 7E.



This means that *natural heritage systems*:

- shall be identified (2.1.3); and
- should be maintained, restored or, where feasible, improved (2.1.2).



Photo: Michael Wynia

Photo: Michael Wynia



The identification of natural heritage systems will depend on context.

Natural heritage systems will consist of different elements and look different in settlement areas, versus rural areas, versus prime agricultural areas.

In settlement areas, natural heritage systems are likely to include valley systems, parklands and other open space, trails, natural areas etc.



Photo: Michael Wynia

In prime agricultural areas, natural heritage systems may include active agricultural uses in recognition of the inter-relationships between agriculture and natural systems.



Photo: Michael Wynia

In rural areas there may be extensive natural areas, trails and interaction with farmland.



Photo: Michael Wynia

The new definition of *natural heritage systems* recognizes that linkages are an intrinsic component of the system.



Photo: Michael Wynia

Eco-region 5E

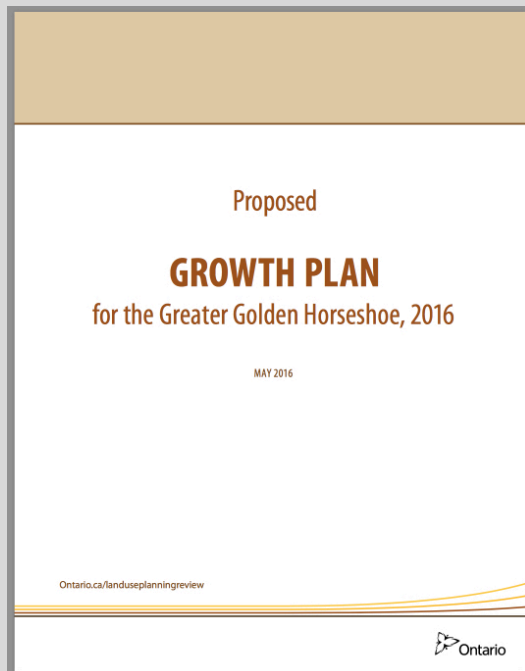


2.1.1 Natural features and areas shall be protected for the long-term.

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 groundwater features.

..and protection of significant wetlands and coastal wetlands.

New Policy Initiatives



Significant changes to Section 4 are proposed to provide policies for the identification and protection of “natural heritage systems”, “water resource systems” and an “agricultural system” that are generally aligned with the protections in the Greenbelt Plan.

Explanatory Text

Proposed changes/additions to this Section of the Growth Plan would include:

- New policy would require municipalities to identify and protect a “water resource system”, including both “key hydrologic features” and “key hydrologic areas”; municipalities would undertake “watershed planning” as a basis for identifying and protecting the “water resource system”;
- New policy would require municipalities to incorporate a “natural heritage system” as mapped by the province in their official plans including “key natural heritage features” and their connectivity and diversity, and to apply appropriate policies;
- New policies to incorporate Greenbelt-level protections for “natural heritage systems”, “key natural heritage features”, “key hydrologic features” and “key hydrologic areas” outside “settlement areas”, while allowing some flexibility in order to accommodate growth;
- New policies for “mineral aggregate operations” within the “natural heritage system” would be similar to those for the Protected Countryside in the current Greenbelt Plan;

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Photo: Michael Wynia

4.2.1 Water Resource **Systems**

Municipalities, partnering with conservation authorities as appropriate, will ensure that *watershed planning* is undertaken to provide for a **comprehensive, integrated and** long-term approach for the protection, improvement or restoration of the *quality and quantity of water* within a *watershed*.



Photo: Michael Wynia

Based on watershed planning, water resource **systems** will be identified, and the appropriate designations and policies will be applied in official plans to provide for the long-term protection of key hydrologic features, key hydrologic areas and their functions.

Water Resource System

A system consisting of *ground water features* and areas and *surface water features* (including shoreline areas), and *hydrologic functions*, which provide the water resources necessary to sustain *healthy aquatic and terrestrial ecosystems* and human water consumption. The *water resource system* will comprise *key hydrologic features* and *key hydrologic areas*.



Photo: Michael Wynia



Photo: Michael Wynia

4.2.2 Natural Heritage **Systems**

A comprehensive, **integrated and long-term approach** will be implemented to maintain, restore or enhance the diversity and **connectivity** of natural heritage features and areas in a given area, and their long-term ecological functions.



Photo: Michael Wynia

Official plans will incorporate a natural heritage system as mapped by the Province, and will apply appropriate designations and policies to maintain, restore or improve the diversity and connectivity of the system and the long-term ecological or hydrologic functions of the features and areas as set out in the policies in this subsection and the policies in subsections 4.2.3 and 4.2.4.



Photo: Michael Wynia

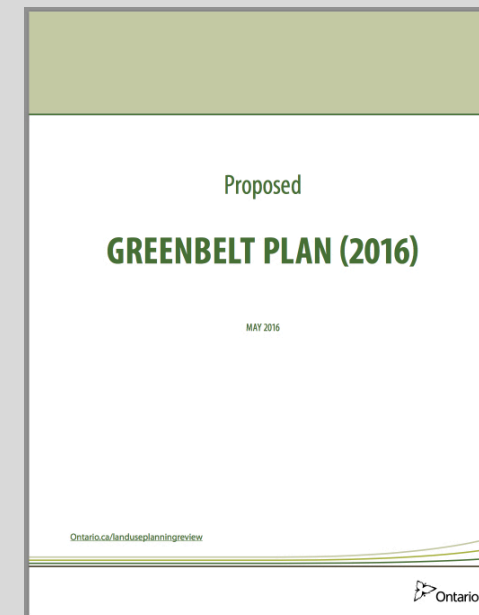
In implementing policy 4.2.2.2, **a municipality may refine the boundaries of the natural heritage system** in a manner that is consistent with this Plan as well as the upper-tier official plan, where applicable.

New Policy Initiatives

Consistent Approach

The **Natural Heritage System** includes core areas and linkage areas of the Protected Countryside with the highest concentration of the most sensitive and/or *significant* natural features and functions. These areas need to be managed as a connected and integrated natural heritage system given the functional inter-relationships between them, and the fact this system builds upon the natural systems contained in the NEP and the ORMCP (see Schedule 4) and will connect with the Natural Heritage System that will be identified through the Growth Plan. Together, these systems will comprise and function as a connected natural heritage system.

The **Water Resource System** is made up of both ground and surface water features and areas and their associated functions, which provide the water resources necessary to sustain healthy aquatic and terrestrial ecosystems and human water consumption. The ORMCP and NEP include very significant elements of, and are fundamental to, the Water Resource System. The areas to which these plans apply contain primary recharge, headwater and discharge areas, together with major drinking water aquifers, within the Greenbelt.



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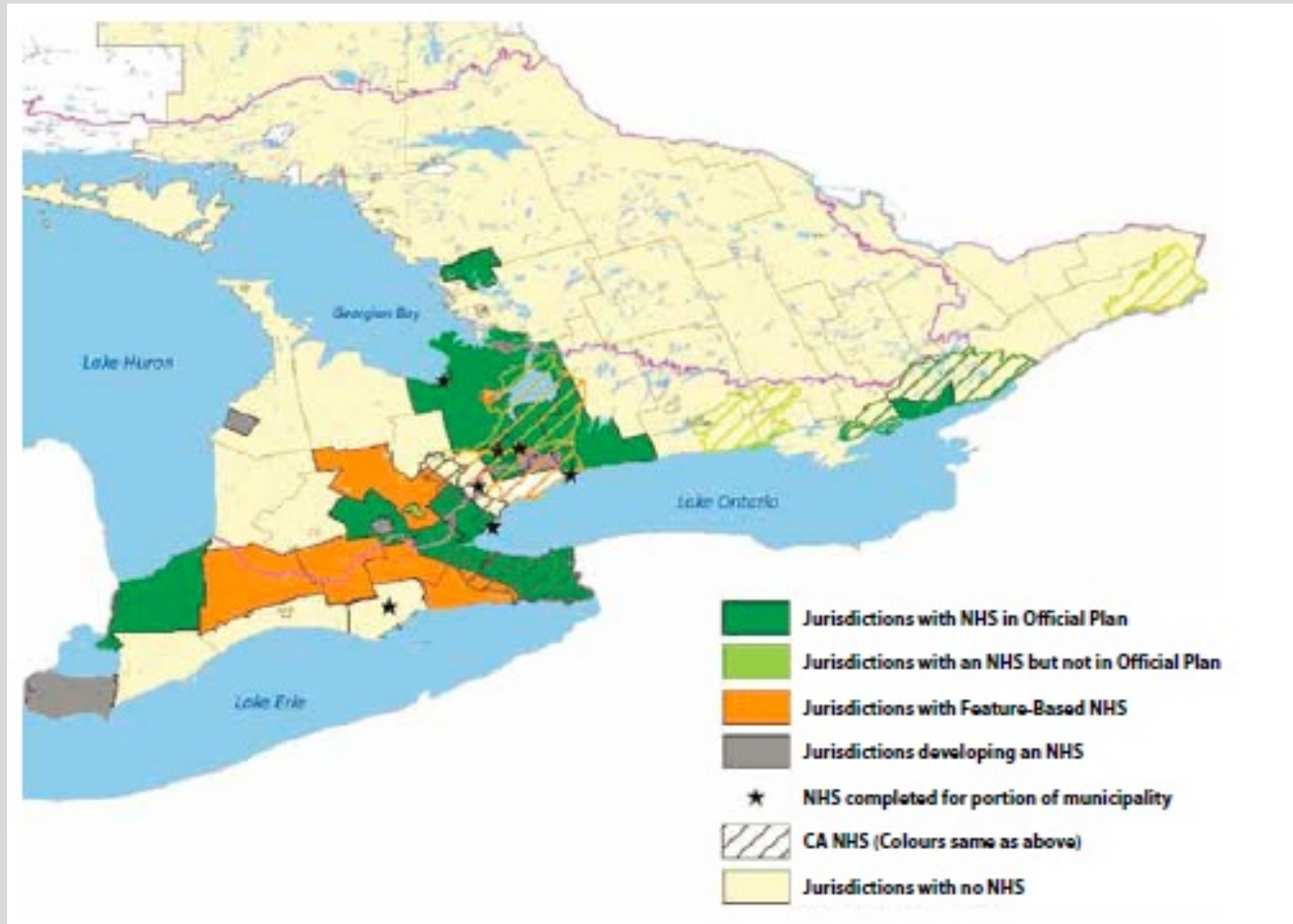
Growth Plan for Northern Ontario, 2011

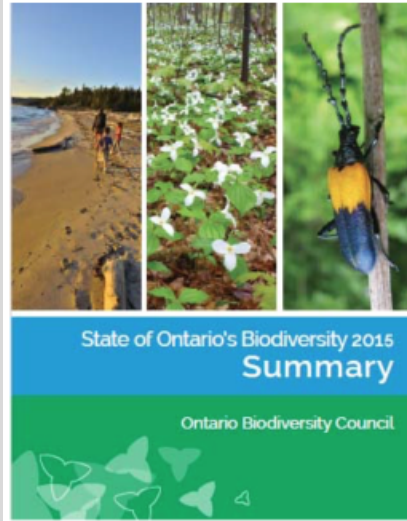
6.3.5 The Province will work with the federal government, municipalities and others to include **measures to protect** and preserve air quality, water quality and quantity, and **natural heritage** in planning **for climate change impacts and environmental sustainability**.

6.4.1 Planning and decision-making by the Province and municipalities should consider opportunities for fostering a **culture of conservation** and demonstrating **environmental leadership** by adopting **sustainability practices**.



Natural Heritage Systems across Ontario





The State of Ontario's Biodiversity Summary 2016 indicated that, in 2013, only 30% of municipality's had a natural heritage system in their official plan.

12. By 2015, natural heritage systems plans and biodiversity conservation strategies are developed and implemented at the municipal and landscape levels.

LITTLE PROGRESS – Municipal natural heritage system planning has increased, but in 2013 natural heritage systems were identified in less than 30% of municipal plans.



Photo: Michael Wynia

How?

Some provincial guidance on the identification of natural heritage systems can be found in:





Photo: Michael Wynia

The Province has a methodology for identifying natural heritage systems – but municipal approaches which achieve the same objectives can also be utilized.



Photo: Michael Wynia

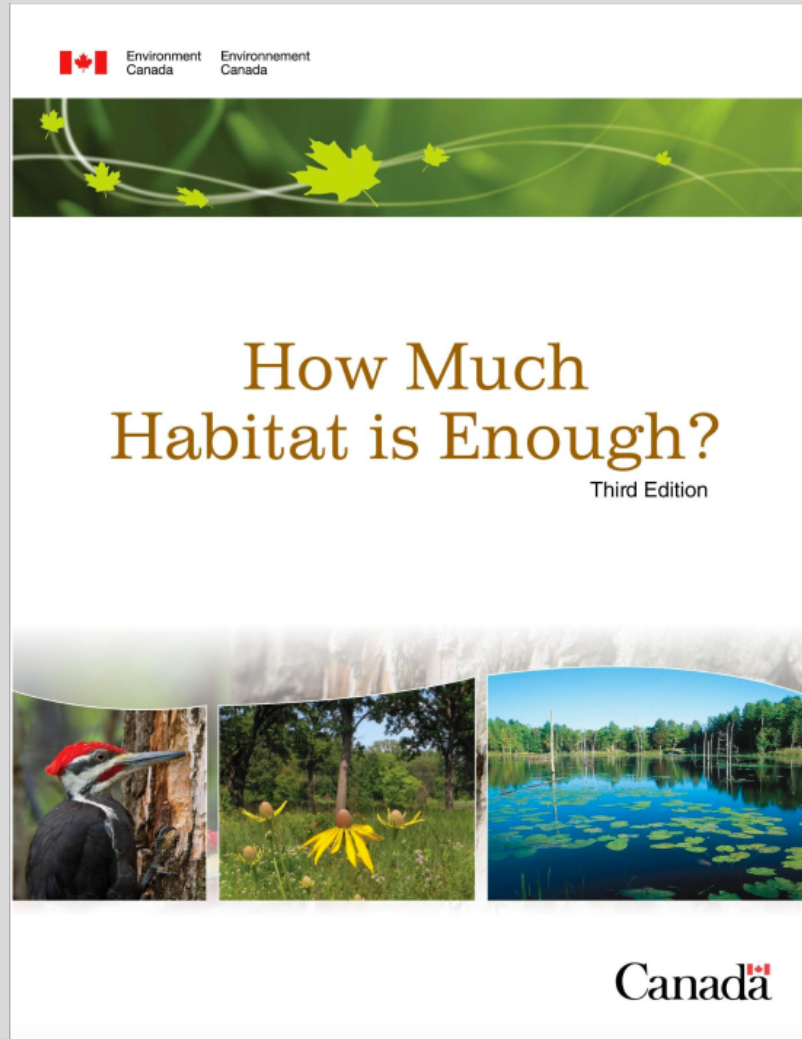
While the Provincial Policy Statement provides a broad framework and basis for natural heritage systems, the municipal Official Plan provides the detail that is required to comprehensively integrate that framework into land use planning policies and decisions.

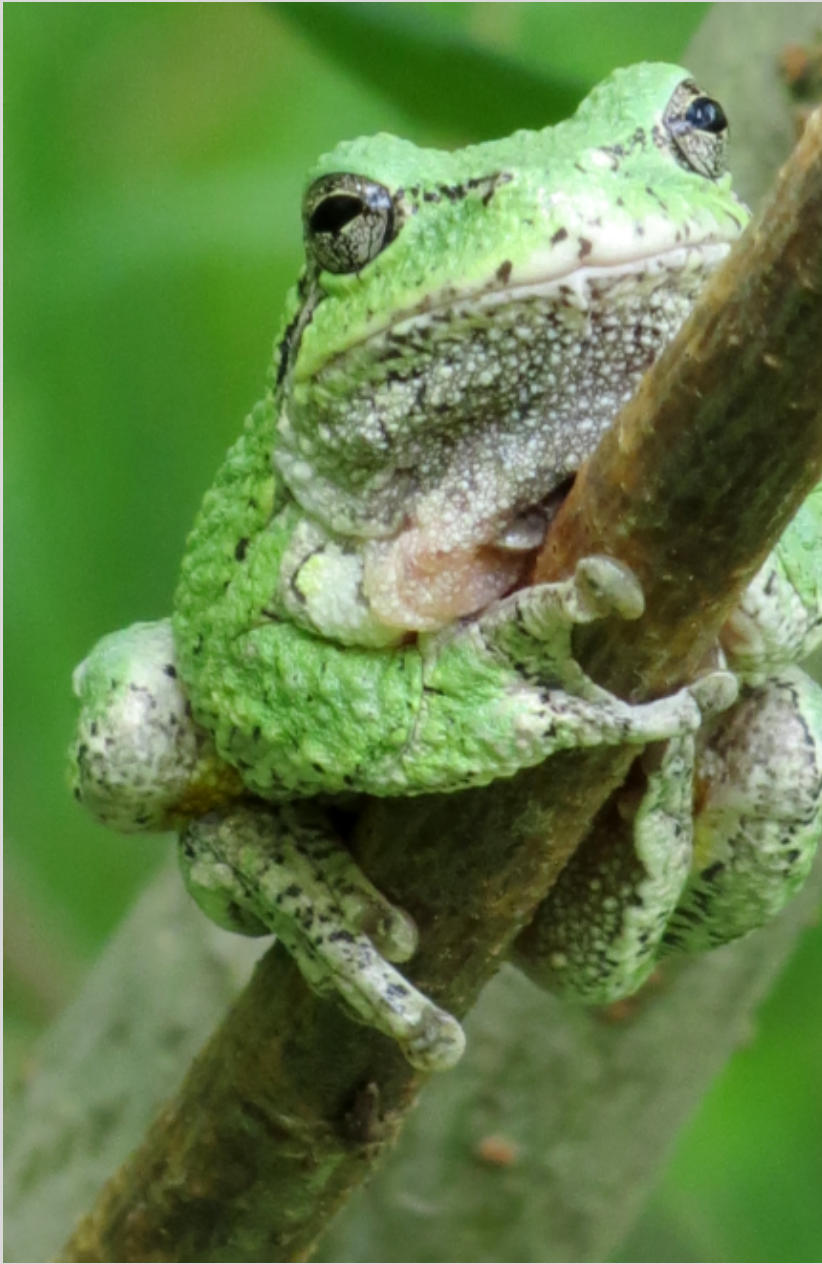
Effective municipal policies are essential to natural heritage systems planning

Best-Practices Manual



How Much Habitat is Enough?





Thank you for your time.

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