

Sustainable Natural Area Planning



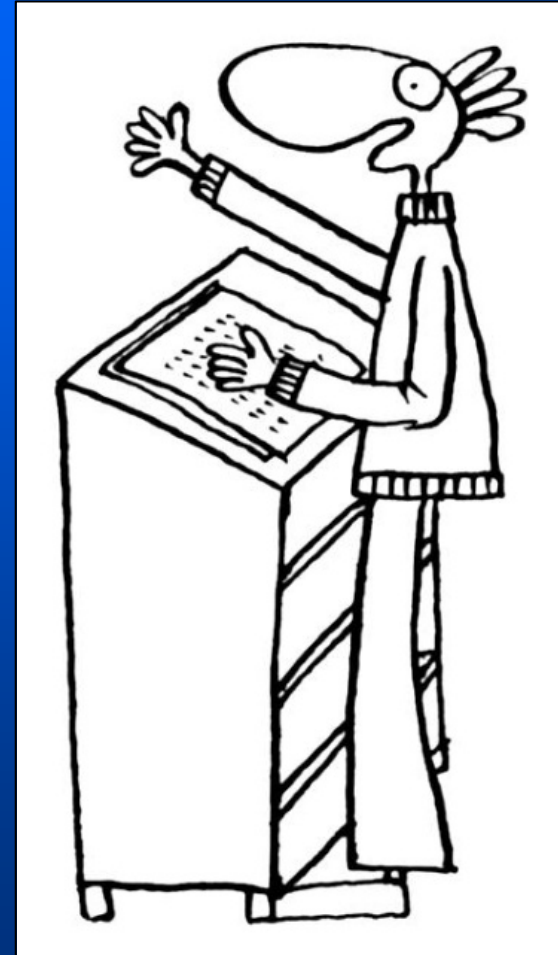
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Presentation Overview

- **What are Urban Natural Areas**
- **Benefits of Natural Areas**
- **Risks/Liability/Costs**
- **Sustainable Management Planning**
- **Framework for Criteria and Performance Indicators**
- **Policy Recommendations**
- **Timeframes/Adaptive Management**



What are Urban Natural Areas?

- Natural forest ecosystems
- Streams and waterbodies
- Street trees
- Landscaped parks
- Private green areas, gardens



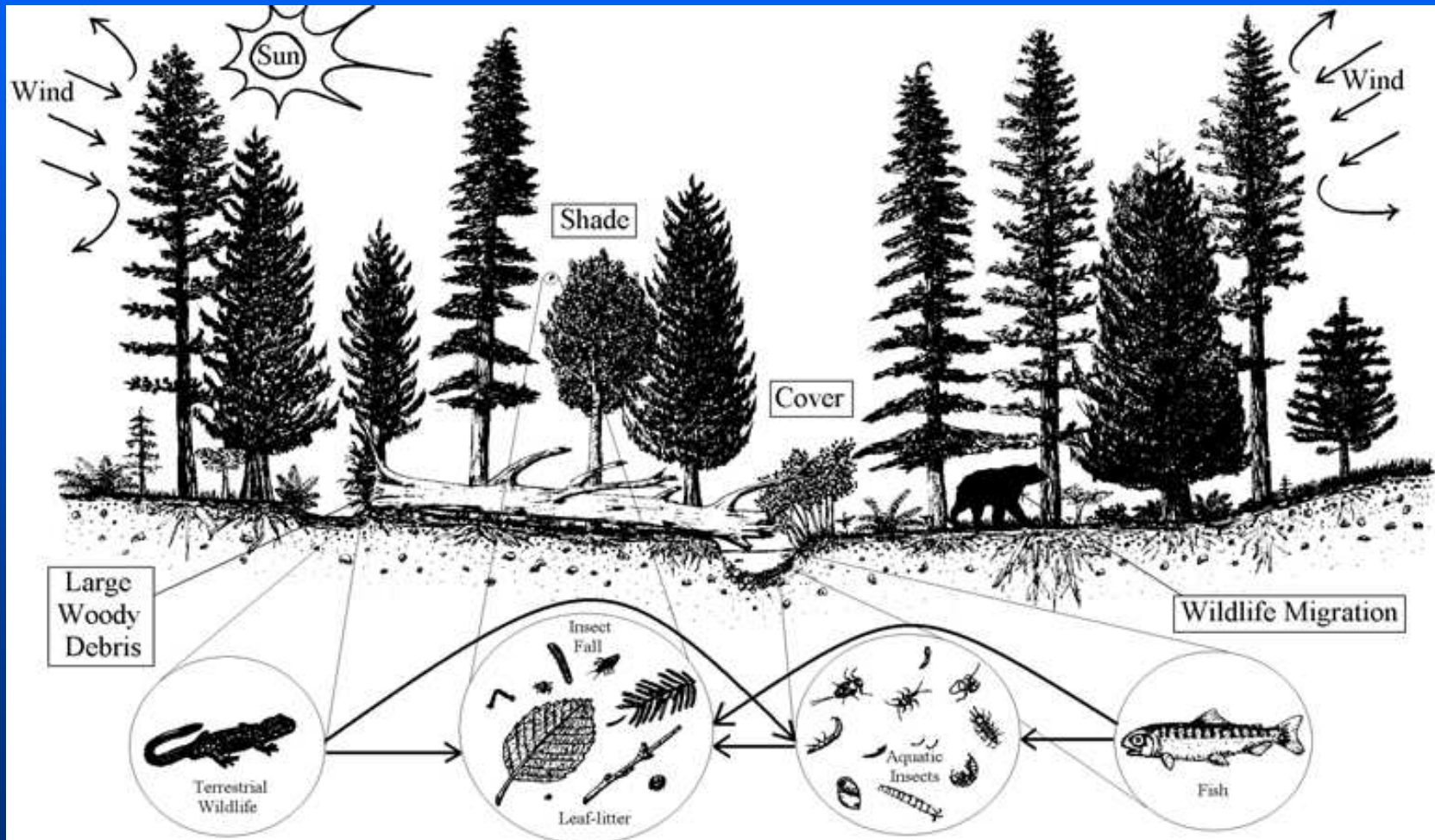
Components of Urban Natural Areas

- Trees
- Vegetation
- Soil
- Wildlife, fish
- Water Systems
- Insects and Diseases



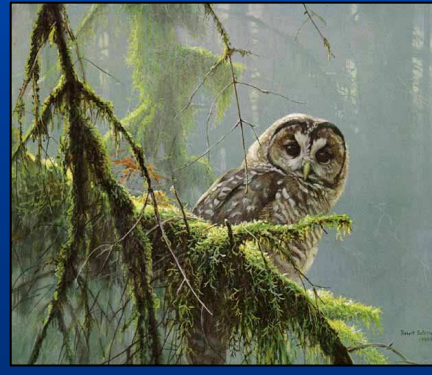
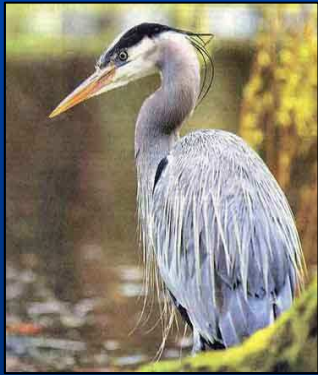
Natural Systems

In a natural environment these components are interconnected and co-dependent



Environmental Benefits

- Carbon sequestration
- Oxygen release
- Water quality
- Erosion protection and soil conservation
- Moderation of stormwater
- Noise reduction
- Absorption of pollutants, gases, dust
- Pest control
- Maintenance of biodiversity
- Provision of wildlife habitat



Economic and Social Benefits

- Energy savings through moderation of temperatures
- Increase in property values
- Stormwater management
- Increase in tourism
- Waste management
- Water quality
- Aesthetic enhancement
- Spiritual connections
- Sense of community stewardship
- Connections with the natural ecosystem
- Recreation opportunities
- Education
- Health benefits



Liability and Cost

- Tree hazards, wind throw
- Wildfire
- Wildlife/human conflict
- Public safety
- Maintenance costs
- Damage to infrastructure



Fragmented Planning

- Components of natural areas are managed through a variety of planning documents, bylaws, guidelines and policy:
 - OCP
 - Neighbourhood plans
 - Stormwater, watershed management, drainage
 - Street tree plans
 - Park/recreation plans
 - Wildlife plans
 - Environmentally Sensitive Areas plans
 - Slope stability
- Developed by different municipal departments and agencies
 - Municipal
 - Planning
 - Engineering
 - Parks
 - Department of Fisheries and Oceans
 - Ministry of Environment
 - Ministry of Forests

The Challenge

- Finding the right balance of appropriate human land use and resources and adequate effective protection for our natural areas
- Managing for natural systems and not individual components



Effective Natural Areas Planning

- Must present a clear vision for natural areas
- Establish realistic and achievable goals
- Provide a sense of ownership and community stewardship
- Provide city staff with clear, meaningful management goals and policy



Developing a Vision

Should reflect the values, ideas and input of the community while recognizing challenges associated with future population growth, land use and environmental change.



Example Vision

“The City of ----- is a vibrant, sustainable community that maintains a strong connection to its trees, forests and natural areas. As a national leader in environmental stewardship, the City manages its natural areas to protect, maintain and enhance ecological and community values. A balanced approach to achieving long-term sustainability ensures that residents continue to receive ecological, economic, aesthetic and social benefits associated with healthy ecosystems. As part of its commitment to future generations, the City encourages the responsible use of its urban forest resources while recognizing the potential challenges related to population growth, changing land use patterns, risks and liability and climate change.”

Managing Natural Systems

- **Ecosystem Health and Management**
 - Vegetation communities
 - Pests, insects and pathogens
 - Biodiversity
 - Endangered ecosystems
 - Reforestation and enhancement
 - Invasive plants, and waste dumping
- **Wildlife Management**
 - Habitat connectivity/fragmentation
 - Wildlife/human interaction
 - Species occurrence
 - Habitat enhancement
- **Forest Structure and Succession**
 - Canopy cover , age of forest and species composition
 - Successional processes
- **Riparian areas, watersheds**
- **Soils**



Management Considerations

- Wildlife and habitat
- Species at Risk
- Hazard trees
- Wildfire management
- Pests and diseases
- Public Safety
- Climate Change
- Watershed Management
- Soil Management
- Park Planning
- Ecological integrity/Biodiversity
- Recreational opportunities
- Aesthetics
- Cultural values
- Education
- Monitoring and adaptive management



Effective Natural Areas Planning

- Desired state may not be a reality in the near future
- Spatial and temporal ecosystem connections must be considered
- Consider legal boundaries of municipalities and private/public property
- Goals should be flexible, long term and updated frequently



Sustainable criteria and performance indicators

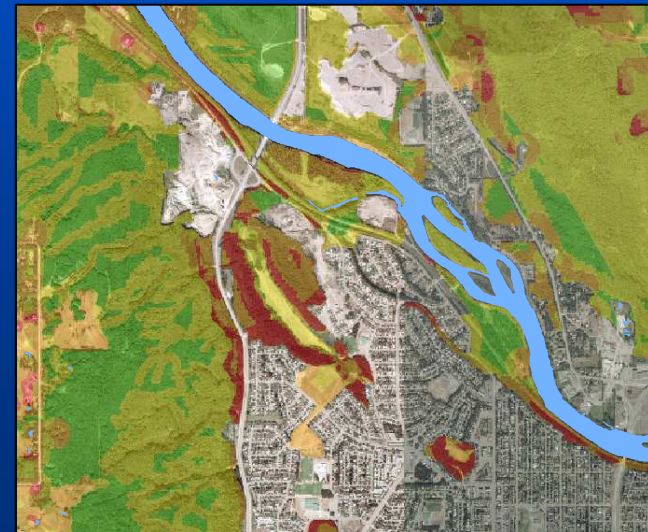
- Provides a scale of achievement objectives
- Three Categories:
 1. Natural Resources
 2. Community Framework
 3. Management Framework



Criteria - Performance Indicators

Natural Resources

Criteria	Performance indicators for Public Lands				Key Objectives
	Low	Moderate	Good	Optimal	
Canopy Cover	The existing canopy cover equals 0-25% of the potential.	The existing canopy cover equals 25-50% of the potential.	The existing canopy cover equals 50-75% of the potential.	The existing canopy cover equals 75-100% of the potential.	Achieve climate-appropriate degree of tree cover, community-wide
Age distribution of trees in the community	Any Relative DBH (RDBH) class (0-25% RDBH, 26-50% RDBH, etc.) represents more than 75% of the tree population.	Any RDBH class represents between 50% and 75% of the tree population	No RDBH class represents more than 50% of the tree population	25% of the tree population is in each of four RDBH classes.	Provide for uneven-aged distribution city-wide as well as at the neighbourhood and/or street segment level.



Criteria - Performance Indicators

Community Framework

Criteria	Performance indicators				Key Objectives
	Low	Moderate	Good	Optimal	
Public agency cooperation	Conflicting goals among departments and or agencies	Common goals but no cooperation among departments and/or agencies	Informal teams among departments and or agencies are functioning and implementing common goals on a project-specific basis	Municipal policy implemented by formal interdepartmental/ interagency working teams on ALL municipal projects	Ensure all city departments cooperate with common goals and objectives
Involvement of small private and residential land holders	Ignorance of issues	Educational materials and advice available to landholders	Clear goals for tree resource by landholders. Incentives for preservation of private trees	Landholders involved with comprehensive community tree management planning	Landholders embrace city-wide goals and objectives stated within community and resource management plans
Involvement of large private and institutional land holders	Ignorance of issues	Educational materials and advice available to landholders	Clear goals for tree resource by landholders. Incentives for preservation of private trees	Landholders develop comprehensive tree management plans (including funding)	Large private landholders embrace city-wide goals and objectives stated within specific resource management plans



Criteria - Performance Indicators

Management Framework

Criteria	Performance Indicators				Key Objectives
	Low	Moderate	Good	Optimal	
Tree Inventory	No inventory	Incomplete or sample-based inventory of publicly-owned trees	Complete inventory of publicly-owned trees	Complete inventory of publicly-owned trees included in city-wide GIS	Complete inventory of the tree resource to direct its management. This includes: age distribution, species mix, tree condition, risk assessment
Canopy Cover Inventory	No inventory	Visual assessment	Sampling of tree cover using aerial photographs or satellite imagery	Sampling of tree cover using aerial photographs or satellite imagery included in city-wide GIS	High resolution assessments of the existing and potential canopy cover for the entire community
City-wide management plan for publicly-owned trees	No plan	Existing plan limited in scope and implementation	Comprehensive plan for publicly-owned trees accepted and implemented	Comprehensive plan for ALL publicly-owned components of the urban forest accepted and implemented	Develop and implement an urban forest management plan for public property
Water resource inventory	No inventory	Incomplete or sample-based inventory of publicly-owned water resources	Complete inventory of publicly-owned water resources	Complete inventory of publicly-owned water resources included in city-wide GIS	Complete inventory of the water resource to direct its management. This includes: location, flow levels by month, water quality, risk assessment



Policy Recommendations

- **Consistent with criteria and indicators**
- **Clear and concise**
- **Prioritized**
- **Cost estimates**
- **Timeframe**
- **Responsibility**



Canopy and Tree Management

- **Objective:** Establish and maintain an ecologically healthy and aesthetically suitable inventory of specimen, street and park trees that supports a sustainable urban forest.

Policy	Recommendation	Priority	Cost	Timing
1.1	Develop a detailed inventory of canopy cover for natural areas and private lands.	1	\$25,000	year 1
1.2	Develop and maintain a detailed GIS based tree inventory of street trees and specimen trees.	1	\$40,000	year 2
1.3	Require that all new subdivision developments provide a spatial inventory of newly planted street trees.	2	In-house	year 1
1.4	Develop an inventory of plantable spaces within the urban sector.	3	\$20,000	year 5
1.5	Develop long term targets for tree cover across the City	2	In-house	year 1

Summary

- **Recognize the benefits as well as the liability associated with natural areas.**
- **Natural systems can function within an urban landscape**
- **Requires a long term sustainable and adaptive approach**
- **Policy should be realistic and reflect the criteria and performance indicators**



Questions

