Town of Mamaroneck New York

Tree Risk Policy/Procedure

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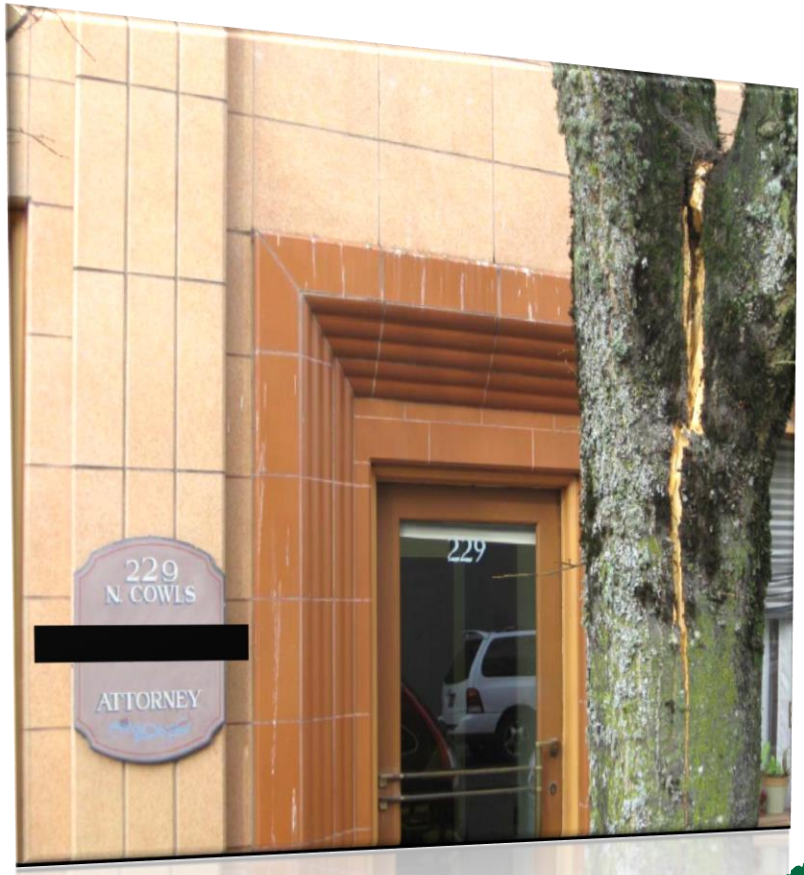
NYS Urban Forestry Council President

www.nysurbanforestrycouncil.com

Green Infrastructure Workshop



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Overview of This Presentation

- **Tree Risk Assessment** – The systematic process to identify, analyze, and evaluate tree risk (the tree level)
- **Tree Risk Management** – The application of policies, procedures, and practices used to identify, evaluate, mitigate, monitor, and communicate tree risk at a broader scale (the urban forest level)

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People involved in tree risk assessment and management

Tree Risk Manager

- Duty of care responsibility
- Defines tree risk policies
- Establishes budget
- Determines priority
- Decides the level of acceptable risk
- Chooses among mitigation options

Tree Risk Assessor

- Identifies tree and site conditions to inspect
- Evaluates and classifies the likelihood of failure
- Estimates the consequences of tree hitting a target
- Determines options for treatment or mitigation

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Facets of this issue…

Tree Risk Assessment

- Technical
- Biological
- Physical
- Managerial

Tree Risk Management

- Political/Legal
- Emotional
- Economic/ Financial

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The Importance of Tree Risk Assessment

- It is largely because of this understanding of tree ***values,*** and the growing interest in conducting inventories and assessments that the topic of tree risk assessment has gained growing interest as well.
- Tree risk assessments are typically part of the inventory and assessment process.
- An accurate assessment could mean that we actually remove <u>fewer</u> trees based on perceived risk.

Quantitative Risk Assessment

- **Risk = Probability x Consequences**
- **Since “hazardness” and “riskiness” are relative terms, we can NOT say if a tree is a hazard or a risk, but we can say that one tree is more hazardous or more of a risk than another**
- **Probability is hard to quantify for trees because they are natural structures, which is what makes this process difficult**

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American National Standard

for Tree Care Operations –

Tree, Shrub, and Other Woody Plant Management –Standard Practices (Tree Risk Assessment a. Tree Structure Assessment)

ANSI A300 (Part 9)-2011 Tree Risk Assessment
a. Tree Structure Assessment

TCIA®
VOICE OF TREE CARE

Approved American National Standard
ANSI

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The ASC A300 committee had the following members as of February 17, 2011:

Tim Johnson, Chair
(Artistic Arborist, Inc.)

Bob Rouse, Secretary
(Tree Care Industry Association, Inc.)

Organizations Represented	Name of Representative
Alliance for Community Trees	*Michael Galvin* *Alice Ewen (Alt.)*
American Nursery and Landscape Association	*Warren Quinn* *Craig J. Regelbrugge (Alt.)*
American Society of Consulting Arborists	*Jerry Pulley* *Stephen Miller (Alt.)*
American Society of Landscape Architects	*Ron Leighton*
Asplundh Tree Expert Company	*Geoff Kempter* *Peter Fengler (Alt.)*
Bartlett Tree Expert Company	*Peter Becker* *Dr. Thomas Smiley (Alt.)*
Davey Tree Expert Company	*Joseph Tommasi* *Grant Jones (Alt.)*
International Society of Arboriculture	*Bruce Hagen* *Sharon Lilly (Alt.)*
National Park Service	*Vacant (Robert DeFeo – Observer, designated voter)*
Professional Grounds Management Society	*Thomas Shaner*
Professional Land Care Network	*Bill Brinn*
Society of Municipal Arborists	*Gordon Mann* *Nolan Rundquist (Alt.)*
Tree Care Industry Association	*Dane Buell* *James McGuire (Alt.)*
USDA Forest Service	*Keith Cline* *Ed Macie (Alt.)*
Utility Arborist Association	*Matthew Simons* *William Rees (Alt.)*

Additional organizations and individuals:
Guy Meilleur-American Forests (Observer)
Peter Gerstenberger (Observer)
Sabeena Hickman (Observer)
Andy Hillman (Observer)
Myron Laible (Observer)
Beth Palys (Observer)
Richard Rathjens (Observer)
Mary Reynolds (Observer)
Richard Roux (NFPA-780 Liaison)
Don Zimar (Observer)

ASC A300 mission statement:

Mission: To develop consensus performance standards based on current research and sound practice for writing specifications to manage trees, shrubs, and other woody plants.

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92.3 arborist: An individual engaged in the profession of arboriculture who, through experience, education and related training, possesses the competence to provide for, or supervise the management of, trees and other woody plants.

92.4 arborist trainee: An individual undergoing on-the-job training to obtain the experience and the competence required to provide for, or supervise the management of, trees and woody plants. Such trainees shall be under the direct supervision of an arborist.

Who should do tree risk assessment?

93.2 General

93.2.1 Arborists assessing tree structure and failure potential shall have appropriate training and experience.

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Tree Risk Assessment Terms

- ***Hazard*** – a likely source of harm
- ***Risk***- the likelihood of an event and the possible consequences
- ***Target*** – people or property that could be injured or damaged

- ***Tree Risk*** – is evaluating by categorizing or quantifying both the likelihood of occurrence and the severity of the consequence

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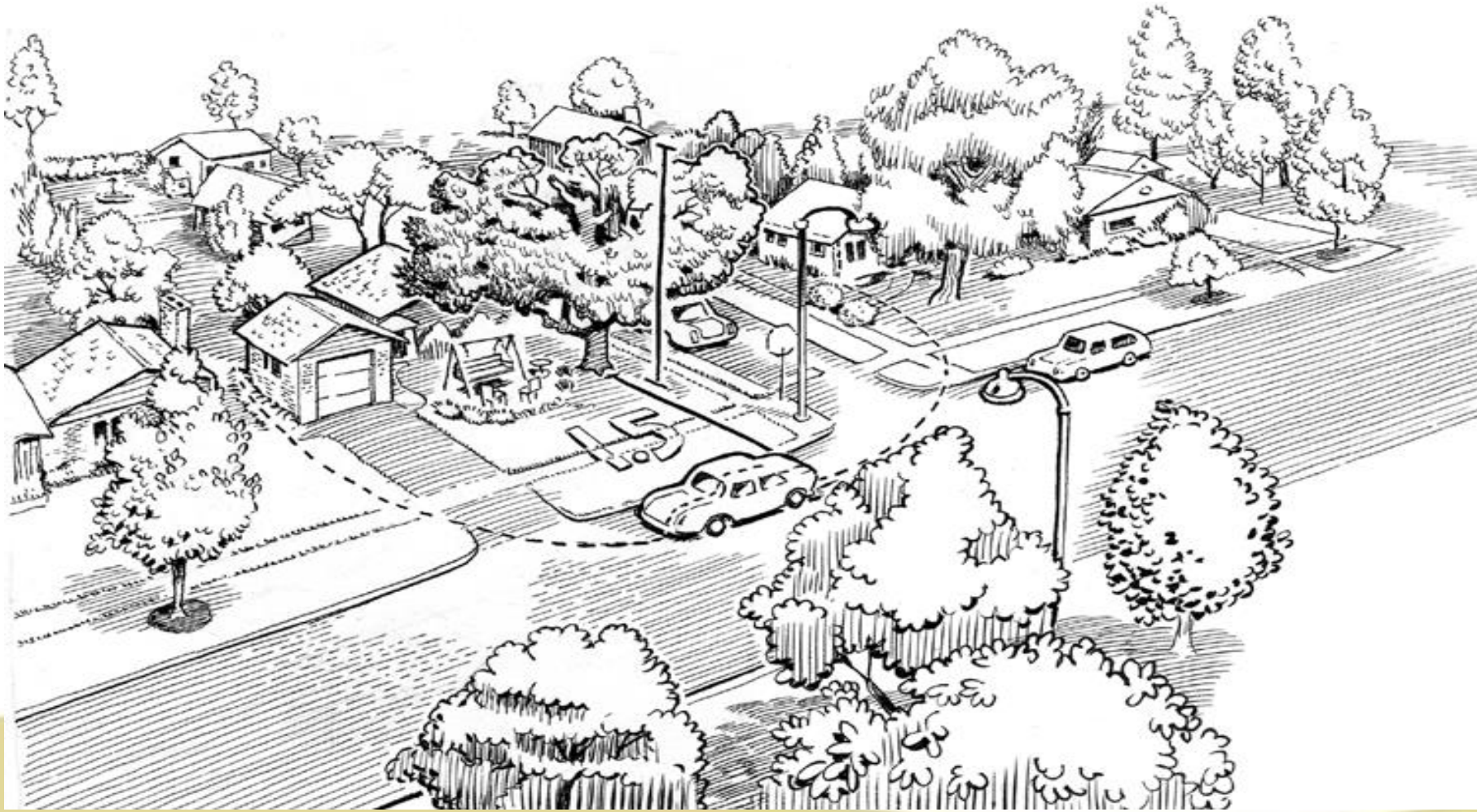
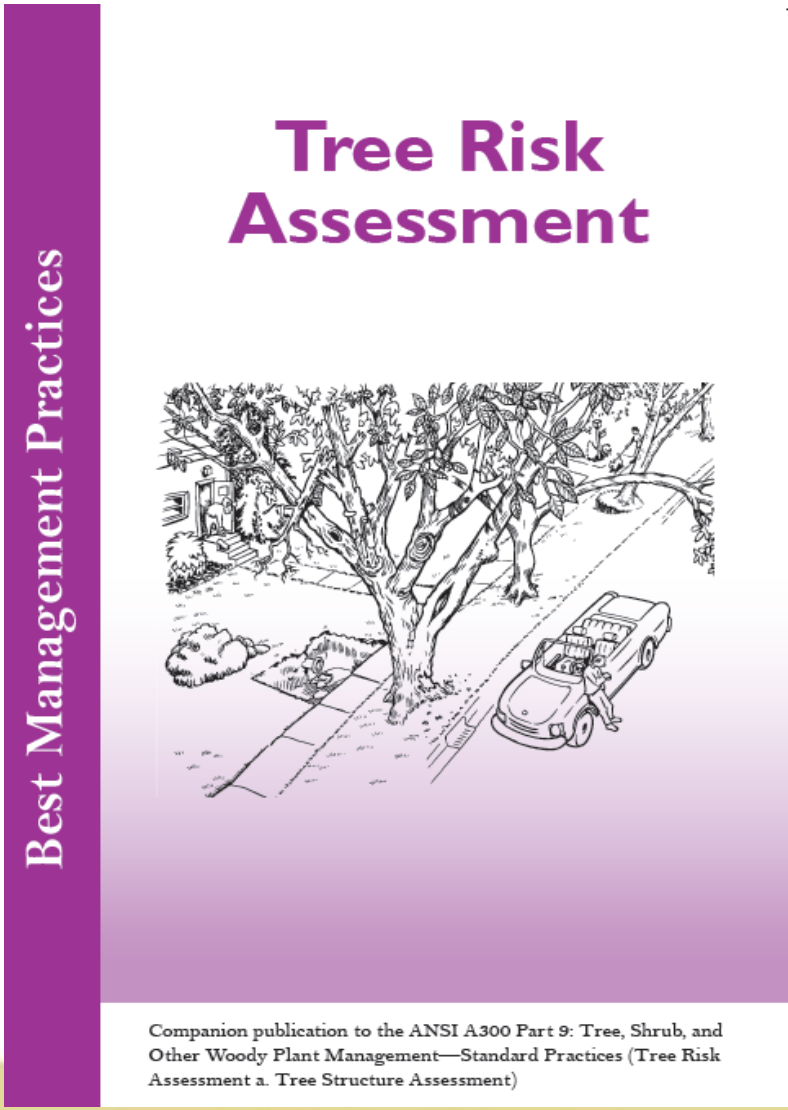
Target Zone



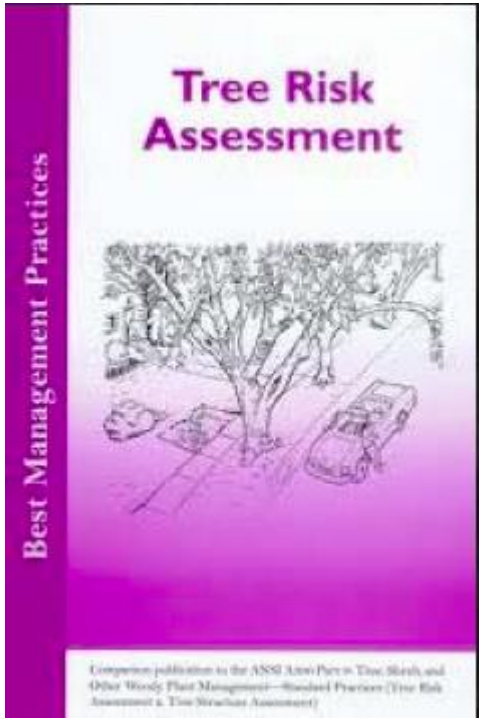
Best Management Practices

- Consensus document
- More than 75 reviewers… 13 countries
- Based largely on ISO 31010 and ANSI A300
- Primary authors:
  - Tom Smiley
  - Nelda Matheny
  - Sharon Lily
- Now available from ISA
- 10th in the BMP series



Transitioning from Hazard Tree Evaluation to Tree Risk Assessment

- Tree Risk Assessment: Best Management Practices Guide – a new publication from ISA – the International Society of Arboriculture
- We must evaluate both the hazardous condition that a tree represents, and the risk it presents



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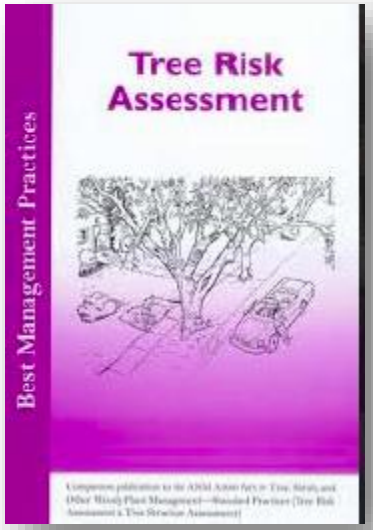
The New ISA BMP Method

- Matrix based qualitative approach
- Understand the limitations of whatever method you use
- Recognize the uncertainty associated with our limited ability to predict natural processes, weather events, and target behavior



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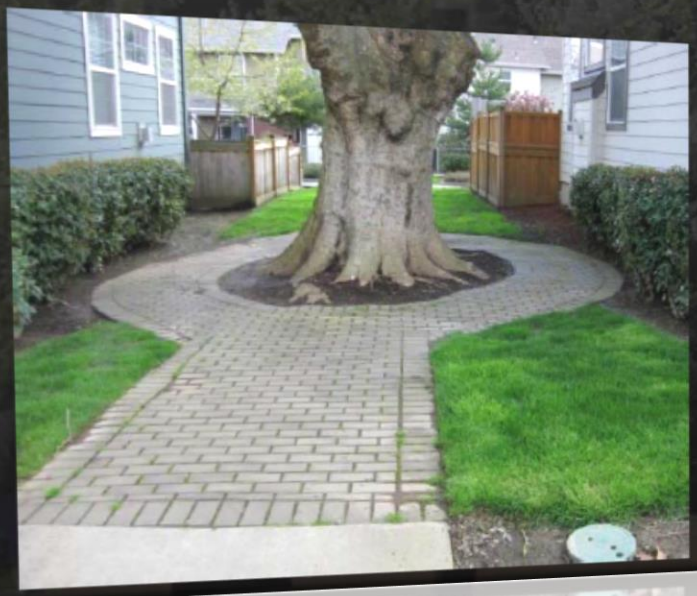
Tree Risk Assessment Levels

- Limited – Visual assessment (inspection)
- Basic – Visual Tree Assessment (VTA)
- Advanced – Internal and/or below ground detection



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Level 1 - Limited Visual Assessment

A rapid assessment of a population of trees looking for trees with serious defects.

Limited Risk Assessment

- Walk-by or drive-by
- Identifies candidates for further assessment
- Records locations that meet certain criteria
- Useful for after storms or other events that introduce change into the urban forest

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Level 2 - Basic Assessment

Visual inspection of the crown, trunk, and exposed roots from all sides.

May include:

- Binoculars
- Mallet
- Probe
- Shovel

Basic Risk Assessment

- VTA – Visual Tree Assessment
- Ground level – complete review of tree and site
- Hand tools – binoculars, mallet, probe, shovel
- Assess tree health and target
- Record observations of conditions and defects
- Determine if advanced assessment is necessary
- Recommend treatment or mitigation options

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Level 3 - Advanced Assessment

A close look for root rot, trunk decay, problems in the crown or other factors that require specialized training or equipment

Advanced Risk Assessment

- Provides detailed information about specific tree parts, defects, targets, or site conditions
- May involve aerial, internal, or below ground assessment
- May require specialized skill or equipment

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Assessing and evaluating potential targets

- People or property damaged or disrupted
- Target Zone
- Occupancy Rate

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Site Factors

The Impact of Wind and Weather

- Most tree failures occur during wind or weather events when loads (force) exceed the capacity of trees to withstand the loading
- Tree failures in the absence of wind or weather events are usually associated with serious uncorrected structural defects or conditions

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Extreme Weather

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Categorizing Tree Risk

Likelihood of Failure

- Improbable
- Possible
- Probable
- Imminent

Likelihood of Impacting a Target

- Very Low
- Low
- Medium
- High

Consequences of Failure

- Negligible
- Minor
- Significant
- Severe

Likelihood of Failure and Impact

- Very likely
- Likely
- Somewhat likely
- Unlikely

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Likelihood of *Failure* AND *Impacting a Target*

(Table 1)

Likelihood of Failure	Likelihood of Impacting Target			
	Very Low	Low	Medium	High
Imminent	Unlikely	Somewhat likely	Likely	Very likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Consequences

- **Negligible** – low-value property damage; personal injury is unlikely
- **Minor** – low- to moderate-value property damage; personal injury is unlikely
- **Significant** – moderate- to high-value property damage; people could be injured
- **Severe** – high-value property damage; one or more people could be injured or killed

Risk Rating Matrix – TABLE 2

Results of Table 1

Likelihood of Failure and Impact	Consequences of Failure			
	Negligible	*Minor*	*Significant*	*Severe*
Very Likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat Likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

Risk Levels - Recommendations

- **Extreme** - recommend that mitigation be done as soon as possible
- **High risk** - recommend mitigation measures be taken
- **Moderate** - recommend mitigation and/or retaining and monitoring
- **Low risk** - recommend retaining and monitoring as well as mitigation that does not include removal of the tree

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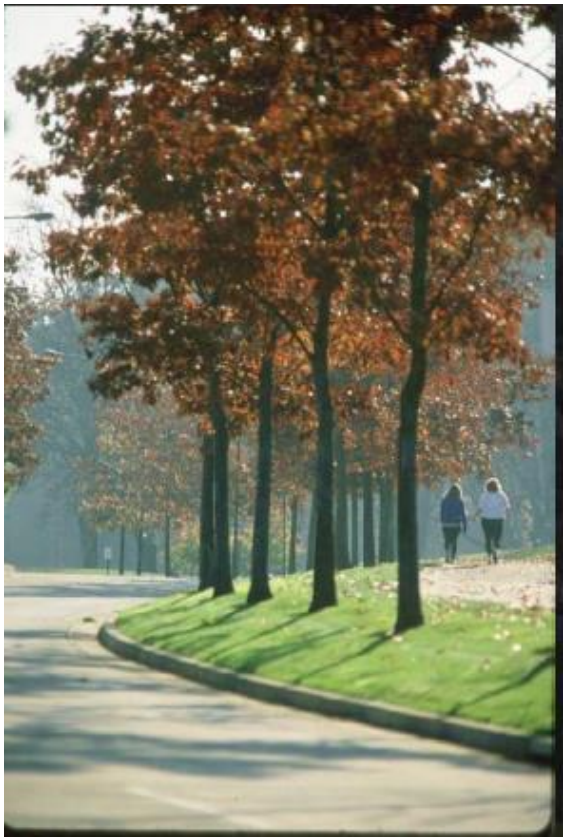
Elements of Tree Risk Management Program

- Evaluation/Assessment
- Policy
- Plan
- Evaluation



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Tree Risk Evaluation/Assessment

- Inventory trees
- Identify priorities
- Establish procedures

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Tree Risk Policy

- Tree policies need to be technically sound, financially feasible, written down, legally approved, and most importantly…defensible
- How much risk can a municipality assume?
- Cost of prevention rarely exceeds cost of repair

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Tree Risk Management Plan

- Could be a part of a municipality's overall urban forestry plan
- Could be an element of a broader risk management plan
- Should be consistent with policies

Urban Forest Management Plan

City of Binghamton, NY

August 2010

City of Binghamton
Restoring The Pride

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Comprehensive Goal #2

Binghamton's urban forest will be healthy and will not threaten the welfare of the residents and visitors.

Challenges, Goals & Objectives

Current Challenge 2A

The City does not have a program to systematically identify and mitigate tree risk.

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Elements of a Municipal Tree Risk Management Plan

- Tree Risk Policy Statement
- Resource Assessment
- Goals
- Action Plans/Outcomes
- Tree Failure Log
- Annual Risk Working Group Meeting
- Staff Training Log

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Evaluation

- Plans collect dust rather quickly
- Your policies and plans should be regularly revisited and updated
- The processes are as important as the policies and plans

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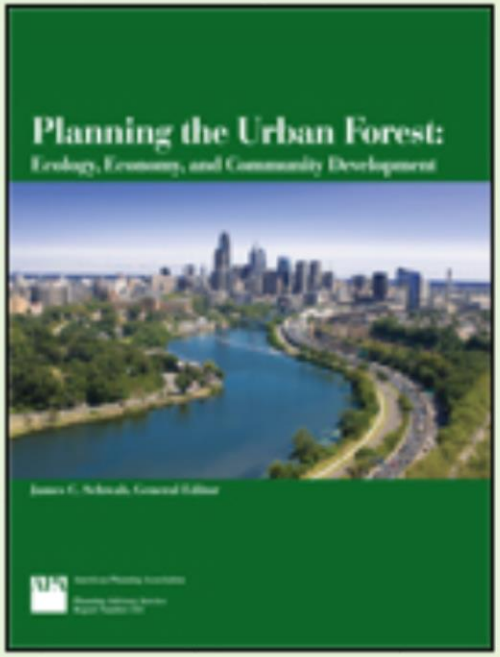
Planning the Urban Forest



The culmination of a three-year research project, *Planning the Urban Forest* is a best practices manual about integrating urban forestry into municipal planning activities.

Get Report Details

Planning the Urban Forest:

Ecology, Economy, and Community Development

James C. Schwab, General Editor

Risk Management Principles

- It is impossible to maintain trees free of risk;
- some level of risk must be accepted to experience the benefits that trees provide.

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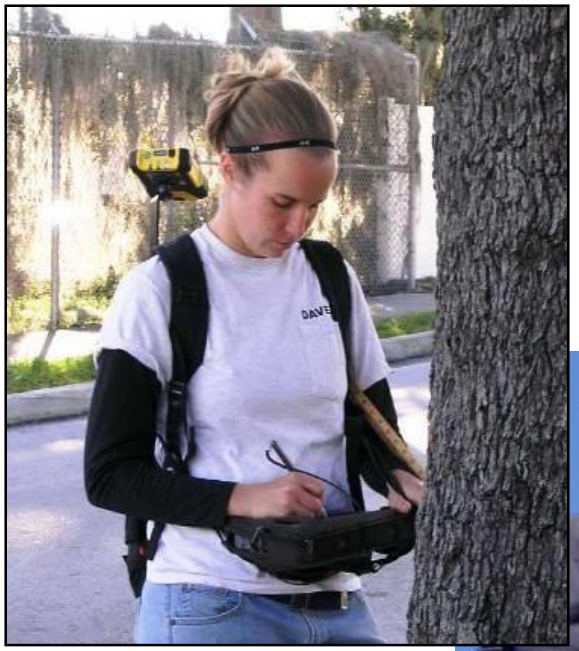
Tree Risk Assessment and Management is More Than About Trees

- It is about protecting people and property, about risk, liability, money, and safety
- Tree risk assessment helps us understand the biological and physical aspects of the tree and the site, combined with the realities of a target
- Tree risk management encompasses not only the biological and physical aspects of the tree, but the legal, political, and emotional aspects as well
- The questions cities must ask: how much risk is acceptable?

Risk Management Principles

- Some accept high risk but take reasonable steps to identify it and then mitigate




MEN
LOAFING

A healthy urban forest is a safe one…

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Summary

- You can’t save every tree any more than you can cut every one down
- Your municipality cannot afford to ignore risks
- Further assistance is available from NYSDEC and NYS Urban Forestry Council

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This project has been funded in part by a grant from the New York State Department of Environmental Conservation, Urban and Community Forestry Program through appropriations from the New York State Environmental Protection Fund

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