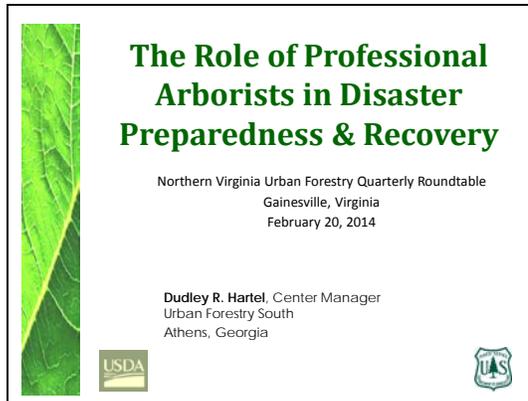


Slide 1



Northern Virginia Urban Forestry Quarterly Roundtable,
Gainesville, Virginia - February 20, 2014

The Role of Professional Arborists in Disaster Preparedness & Recovery

This presentation is designed for arborists and urban foresters; consulting, commercial, utility, and municipal. The presentation will discuss the risk management role that arborists can play in disaster planning & preparedness and recovery efforts of the Urban Forest Strike Teams (UFST).

Some ideas, concepts, and slides presented are attributed to **Rachel Barker** (formally with Central Alabama Regional Planning and Development Commission) who is now a utility arborist with **ArborMetrics Solutions** (transmission and distribution vegetation management services) based on work she did from 2010-2013. This included the Vegetation Risk Management Plan (VRMP) and the Urban Tree Risk Index (UTRI) GIS tool.

The discussion on UFST has been heavily influenced by the work of **Paul Revell (U&CF Coordinator, Virginia Department of Forestry)** over the past 6 years in the development of the UFST disaster recovery process.

Dudley Hartel – Center Manager of Urban Forestry South in Athens, Georgia. Urban Forestry South is the Southern Region's urban & community forestry Technology Transfer Center which supports U&CF programs through state agencies and municipalities.

This entire presentation with my notes is available for download from www.UrbanForestrySouth.org.

- Role of Professional Arborists in Disaster Preparedness and Recovery (NOVA 20Feb14).pdf

In the 'search site' box (base of page header on the right) type **NOVA** for a list of downloads related to my presentations at this conference.

In addition to the presentation there will be two handouts:

- 2014 Urban Tree Risk Resources (14Jan14).pdf
- 2013 Disaster Resources for Urban Foresters (13May13).pdf

The current version of this presentation is:
2014 Role of Professional Arborists in Disaster Preparedness and Recovery (**NOVA 20Feb14 v1.0**).pptx

Slide 2



Presentation – Part 1

- **Professional Arborists – Role, Tools, & Training**
 - ✓ Arborist as “resource” to disaster professionals
 - ✓ Develop, adopt, and use ANSI specs and BMPs
 - ✓ ISA Tree Risk Assessment Qualification (TRAQ)
- **Disaster Planning & Preparedness**
 - ✓ Spatial Relationships & Disasters
 - ✓ Tree Health & Tree Risk
 - ✓ Community Resilience
 - ✓ Urban Tree Risk Management – Prioritized
 - ✓ Urban Tree Canopy and Disasters - Focus

2

Today’s presentation has two components:

- arborists and disaster preparedness (based on managing tree risk), and
- arborists support and participation in the Urban Forest Strike Team

In the first part of the presentation we will look at the role arborists can play in disaster planning and preparedness. We’ll begin by looking at the unique qualifications that arborists can bring to the disaster planning table...

- The arborist as THE “tree resource” in collaboration with other planning & disaster professionals
- The necessity to adopt, develop, and use appropriate ANSI A300 Standards and arboricultural BMPs
- Tree risk assessment training – TRAQ (ISA PNW TRACE is now equivalent)

Following that, the presentation will focus on UF management practices that influence the impact that disasters have on a community and its urban forest.

We’ll discuss a comprehensive approach to urban forest risk management and prioritizing preparedness assessments and mitigation.

We will briefly look at...

- The spatial relationship of trees, people, and property – as it applies to disaster planning & preparedness
- Tree (wood) strength, tree condition, and risk – growing healthy trees
- The strength of the community – your role as part of local resilience to storms & disaster.
-
- A comprehensive urban tree risk management program (Pokorny 2003)
- Using urban tree canopy (UTC) as a tool to focus on disasters – Urban Tree Risk Index (UTRI)

Slide 3



Professional Resource

- **Education**
 - ✓ Tree related background
- **Experience**
 - ✓ Work history – accomplishments
- **Certification & Community**
 - ✓ Certified Arborist (ISA, state, or other professional status)
- **Position**
 - ✓ State, county, municipal, consulting, commercial, utility, corporate

3

How do we get to this “state” where others would solicit or welcome our input?

- Education in forestry, urban forestry, arboriculture, or other related profession
- Not just our work history, but significant accomplishments; specialties
- Attainment of certification by a state or ISA, and the professional “communities” (e.g. state arborist associations, SMA, ISA Chapter) in which we participate.
- Our professional position where we have performed and earned respect (the “go to” person) based on the above and dependability, initiative, and ideas.

Take advantage of what we have accomplished to further your program and your community.

Slide 4



Focus on the Basics

- **Healthy UF management program & healthy trees**
 - ✓ Implement “key” program components
 - ✓ May NOT be a comprehensive approach
- **Manage tree risk**
 - ✓ Adopt, train, and use a “standard”
 - ✓ Prioritize, assess, and mitigate
 - ✓ May NOT be a comprehensive Urban Tree Risk Management

4

To be effective...

- arborists need to focus on urban forestry & arboricultural basics that can positively affect disaster outcomes,

because...

- disaster planning & preparedness for your community is a huge task, and
- involvement of a range of professionals is critical.

Healthy trees and identification and mitigation of tree risk are the essential components related to disaster preparedness.

Slide 5



Professional Capability & Capacity

- **Suite of Tree Care Standards - Healthy Trees**
 - ✓ ANSI A300 Standards
 - ✓ International Society of Arboriculture (ISA) – BMPs or local, adopted standards
- **Tree Risk Assessment – ID & Mitigate**
 - ✓ ANSI A300 Tree Risk Standards (2010/11)
 - ✓ International Society of Arboriculture (ISA) – BMP for Tree Risk Assessment (2011)
 - ✓ TRACE – PNW ISA Chapter (2009)
 - ✓ ISA Tree Risk Assessment Qualification (TRAQ 2013)

5

Professional capability & capacity – Our primary professional contribution is the effective and efficient management of the urban tree resources based on the current standards.

Preparing ourselves...

- ANSI A300 Standards – planting and others result in (long-term) health trees
- ISA BMP for Risk Assessment
- TRACE
- ISA Tree Risk Assessment Qualification (credentials)

Slide 6



ANSI Standards

- American National Standards Institute (ANSI)
- Development of American National Standards (ANS) by accrediting the procedures of standards developing organizations
- Tree Care industry Association (TCIA)
 - ANSI A300 standards are voluntary industry consensus standards (arboriculture)
 - ANSI A300 Standards are divided into multiple parts, each focusing on a specific aspect of woody plant management
- www.TCIA.org



6

ANSI (American National Standards Institute) accredits organizations to develop voluntary standards for their industry or profession.

TCIA is the accrediting organization for arboriculture and organizes the (ANSI Standards Committee) ASC A300 committee with representatives from a broad and diverse group of industrial and governmental organizations.

Slide 7



Arboriculture Standards

- **Part 1: Pruning (2008)** ★
- **Part 2: Soil Management (2011)** ★
- **Part 3: Supplemental Support Systems (2013)**
- **Part 4: Lightning Protection Systems (2008 Public Review)**
- **Part 5: Management (2012)** ★
- **Part 6: Planting & Transplanting (2012)** ★
- **Part 7: Integrated Vegetation Management (2012)**
- **Part 8: Root Management**
- **Part 9: Tree Risk Management (2011)** ★
- **Part 10: Integrated Pest Management**
- **Part 11: Urban Forest Products**



7

Developed and current (green text), under development (blue text), and being revised (red text).

Visit: <http://www.tcia.org/business/ansi-a300-standards> for descriptions and status

Of greatest importance, day-to-day, are Parts 1, 2, 6, & 9.

Disaster Preparedness Impact:

- Immediate – 9 – Tree Risk
- Short-term – 1 (mature tree and young tree structural) – Tree Risk
- Longer-term – 1 (young tree structural), 2 & 6 - Tree Health

From <http://tcia.org/business/ansi-a300-standards/current-projects> (12Feb2014)

Slide 8



UF BMPs & Disaster Planning

BMP development & adoption

- internal to your municipality or organization
- professional organization developed (i.e. TCIA, ISA)
- borrowed & tailored to your situation

From these sources build your manual of accepted practices



8

Every community (and urban forest manager) should have a basic set of specifications developed from the standards.

Slide 9



Urban Forestry BMPs & Disaster Planning (Longer-term View)

BMP short list should match your tree/forest health objectives

- site evaluation requirements/techniques
- key species selection criteria
- minimum acceptable tree standards
- tree planting specifications
- first year care – mulch, water, remove stakes
- young tree care – structural pruning cycle(s)
- tree risk management

9

The essential BMPs and specifications to develop form the standards and professional resources.

Slide 10



Arborist Role–Summary

- **Professional knowledge**
- **Using that knowledge & experience**
 - ✓ Tree health
 - ✓ Tree risk
- **Adopt BMPs from current standards**
 - ✓ Use & adopt exiting professional BMPs
 - ✓ Write your own based on ANSI A300

10

The first half of this relationship.

Professional arborists bring...

- knowledge to improve tree health and reduce tree risk, to...
- provide information to emergency management that can better prepare communities for disasters and storms.
- Develop and work form standards and their BMPs

Another role is collaboration with community planning & emergency management; this is often where we fall short.

Now we'll look at specific tools and resources that may help us with collaboration.

Slide 11



Questions, Comments & Discussion ???



11

A brief pause for questions, comments, and discussion!

Slide 12



Managing Urban Forests

Healthy trees present fewer problems

- sites – evaluate (improve)
- species
- tree quality
- planting
- 1st growing season care (watering, protection)
- young tree care (structural pruning)
- mature tree care (including risk)

12

Getting to healthy trees...

If the objective of the urban forest management program is to optimize tree benefits:

- highest productivity (biomass, shade, stormwater capacity, air pollution)
- lowest investment

Several components:

- site selection & evaluation
- species selection
- tree selection at the nursery (i.e. standards)
- proper planting
- first year care – primarily watering & protection (elapsed time through this step is about 18 months)
- young tree care - structural pruning & protection (add another 3 years for each pruning cycle planned – e.g. 3 prunings will add 9 years)
- mature tree care – including risk management

A comprehensive urban forest management program includes cradle-to-grave operations.

Slide 13



Definition

- Urban Tree Risk Management... is the comprehensive framework for communicating, assessing, monitoring risk, and mitigating hazards associated with that risk based on the community's prioritization.

13

Urban Tree Risk Management defined (drh 2012)...

- comprehensive “framework” (i.e. steps to follow, the recipe)
- communication of risk (to managers, public)
- tree risk assessment by qualified, trained, and experienced arborists or urban foresters (ISA BMP & TRAQ)
- monitoring risk (i.e. temporal, repetitive, observant)
- evaluating hazards (to your threshold) and mitigating those hazards (prioritization)

Slide 14



Managing Urban Forests

Urban Tree Risk Management

Communities deal with risk & their identified hazards in several ways:

1. Risk Avoidance
 - a) Ignore
 - b) Reduce exposure
2. **Risk Management**

Your community decides how to manage trees to reduce undesirable consequences.

14

Cities that choose risk avoidance either ignore those risks (i.e. “act of god”), or will eliminate all risk in the area of interest by removing trees.

Others will manage tree risk so that benefits of the trees can be retained with some acceptable level of risk that is within the community’s threshold of concern.

It is **NOT** necessary to practice risk avoidance in order to manage your urban forest, be better prepared for disasters, and maintain UF ecosystem services.

An urban tree risk management program is the key and one that we, as professionals, should be able to develop and implement.

Slide 15



Storms, Trees, & Conflict

- Risk in the disaster context is a spatial issue
 - ✓ Critical facilities
 - Hospitals
 - Public safety
 - Water & sewer
 - Communications
 - ✓ Transportation (emergency response)
 - ✓ Population centers (response & recovery)

15

Applying our arboricultural background and interest to benefit our community viz a viz disasters.

Slide 16



Why Manage Tree Risk

- Eliminate urban forestry “feast and famine”...



16

Take care of trees (i.e. management) on your own schedule...

- Budget implications
- Workforce scheduling implications

Slide 17



Why Manage Tree Risk

- Sustain environmental services...



1

Even without property or personal damage, storm damage affects environmental services.
The reason we plan for and manage urban trees.

Slide 18



Why Manage Tree Risk

- To avoid consequences...



18

Assess and mitigate to avoid consequences...

- Damage (to property)
- Interruption (of services like electricity, emergency response, water, communications)
- Injury (or death) to people

This is the risk connection to disaster.

Slide 19



Risk Mitigation Results

- Reduced claims as they relate to trees by 72%
- Reduced work order complaints and/or request for services by over 55%
- Reduced 911 and overtime expenditures for tree cleanup by over 69%

Five year period 2001-2006
 Columbus, Georgia (R. Barker)

19

Measured results from an aggressive tree risk management program in Columbus, Georgia (from Rachel Barker).

Slide 20



Collaboration Opportunities

- **Comprehensive Plan**
 - ✓ Natural resource inventory & strategies
- **Hazard Mitigation Plan**
 - ✓ Vegetative Risk Management Plan (VRMP)
- **Emergency Response Plan and Exercises**
 - ✓ Tree risk & debris management mock-exercises
- **Debris Management Plan**
 - ✓ 30% of debris is woody vegetation
- **UF Management Plan**
 - ✓ Tree Risk Management Plan
 - ✓ Mitigation

20

Black are more general community plans; red are disaster related plans; blue are plans that can benefit or require arborist/emergency management collaboration.

These are some of the plans that are often developed and are listed here from the general to the more detailed (i.e. more detailed at the bottom of the list)

There are plenty of opportunities for collaboration between Urban Foresters and Emergency Managers .

The two professions can work hand in hand developing the Vegetative Risk Management Plan and implementing risk management specifically geared toward disaster preparedness.

Slide 21



Landscape-Scale Assessments Tree Risk & Emergency Management

- **County (or regional) Scale**
 - Generalized approach to tree risk assessment
- **Working with Emergency Management**
 - Reduce information to issues of interest
 - Planning/Mitigation
 - Woody debris (how much, where)
 - Response (immediate needs)
 - Recovery (cleanup & replanting)
 - Prioritization of effort (big picture)

21

In this portion of the presentation, I will discuss how we can use a landscape scale assessment of tree risk to develop information useful to local emergency managers – Vegetation Management.

As discussed earlier, we are specifically developing a regional (planning) approach to emergency management support that includes input from professional urban foresters.

In working with EM, we focus on the primary AOI for emergency planning.

These include:

- planning/mitigation
- potential debris (not volume but an index)
- information that will support response (debris removal)
- recovery

Slide 22



Urban Tree Canopy

Disaster Mitigation, Response & Recovery

- Right-of-way debris management
 - ✓ vegetated areas around roads and sidewalks
- Urban tree risk management
- Debris estimation
- Priority planting areas

Comprehensive Management Plans

- Local
- Regional
- State
- Urban Forest

22

Why UTC ?

A relatively simple measurement component to view your potential for storm related risk is urban tree canopy.

- Urban Tree Risk Management – Identifying and reducing tree risk prior to storms, estimating your level of risk (including debris)

Useful for a variety of planning efforts in your community.

- Comprehensive Management Plans – Local plans are essential, and regional plans come into play when local capacity is exceeded (e.g. state mutual aid programs).
- Urban Forest Management Plans – Provide canopy baselines and monitoring of management components, goal, objectives, and strategies.

Slide 23



UTRI Model

- GIS to model tree risk zones
 - Tree layer (canopy) [potential failure]
 - Transportation layer [target zone]
 - Facility layer [target zone]
 - Population density [target]
- Process
 - Assemble data
 - Vector to Raster
 - Summation of assigned values

23

UTRI is a component (GIS model) of the Vegetative Risk Management Plan that uses tree canopy and other readily available data to develop a prioritization scheme for ANSI A300 Level 1 assessments.

GIS models work with layers, and we assembled readily available data from local, regional, state & national sources.

The UTRI model does not use a tree risk rating system like that needed for a comprehensive risk management program. However, the GIS layers function as surrogates for rating street segments as “potential” areas of concern, inspection, and subsequent prioritized mitigation.

UTC provides the locations of possible risk trees.

The transportation layer (since our analysis is primarily response oriented) and the facility layers establish the “target zones” when trees are present.

Population density is a surrogate for (target) occupancy; that is, the higher the population density the more frequently people (as pedestrians, vehicle operators, or in some type of gathering

–think park, school) will be in proximity to the trees (before, during and after a disaster).

For any area, you use data available; as the scale becomes more “local” the data should become more detailed and has a finer resolution; and also should be more current:

- canopy
- block tree counts
- individual trees (locations)

process is the summation of individual layers into a composite rating (for each street segment). Simple!

Slide 24



GIS Model Approach

The UTRI (Urban Tree Risk Index) Tool

- **Field verification worksheet:** Provides a form for verification, assessment and mitigation listed by priority (very high, high, moderate, and low)
- **Identifies tree management needs:** To reduce risk; such as routine pruning in high tree density areas vulnerable to damage
- **Mitigation:** Identify areas prior to events for mitigation and where corrective actions should be implemented on an expedited basis – i.e. specific street segments
- **Inspection frequencies:** Identify zones for setting tree and vegetation inspection frequencies & schedules

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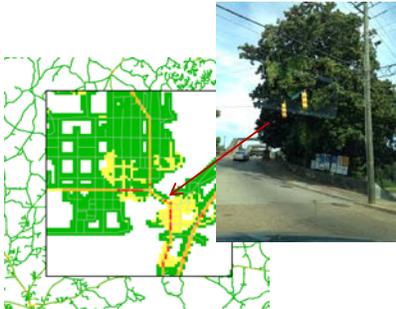
How the UTRI GIS model is implemented:

- The model assessment (via GIS layers) locates the areas of “concern” (potential risk)
- Specific site level inspections identify needs – field verification
- Principal management actions are tree pruning and removal
- Mitigation is prioritized based on UTRI rating
- The street segments with UTRI rating also establish the reinspection frequency and scheduling

Slide 25



UTRI – Wetumpka, Alabama



25

The downtown Wetumpka area with site verification photo on the south end of the bridge.

The red “dot” in the final UTRI index layer from GIS prompts a “drive-by” (a Level 1 tree risk inspection under ANSI A300 Part 9) to verify,

Some “drive-bys” result in Level 2 inspections, Some Level 2’s lead to mitigation.

UTRI is used to quickly locate the street segments of greatest concern for failure during disasters.

Slide 26



Resources: Tree Risk Management

- ANSI A300 (Part 9)-2011 Tree Risk Assessment; a. Tree Structure Assessment, Tree Care Industry Association, Inc., Londonderry, NH [<http://bit.ly/U904tl>]
- Best Management Practices: Tree Risk Assessment (2011), Smiley, E.T., and N. Matheny, S. Lilly, International Society of Arboriculture, Champaign, IL [<http://bit.ly/PMCiml>]
- Tree Risk Assessment - Manual (2013), Dunster, J. and E.T. Smiley, N. Matheny, and S. Lilly, International Society of Arboriculture, Champaign, IL (i.e. TRAQ)
- Primer on Risk Analysis: Decision Making Under Uncertainty (Chapter 1) – CRC Press - Charles Yoe - 2012



26

Use current arboricultural standards and BMPs when developing your urban tree risk management plan...

See handouts provided for this presentation.

Slide 27



Resources: Tree Risk Management

- Urban Tree Risk Management: A Community Guide to Program Design and Implementation, NA-TP-03-03, J.D. Pokorny (Coordinating Author), 2003, St. Paul, MN [<http://1.usa.gov/OHL8QV>]
- Storms Over The Urban Forest: Planning, Responding, and Regreening--A Community Guide to Natural Disaster Relief
- Vegetation Risk Management Plan (VRMP) Template – (GIS/UTRI approach)
- Urban Forestry Emergency Operations Planning Guide for Storm Response (Hawaii)
- Community Forest Storm Mitigation Planning for Georgia Communities



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Resources:

- Urban Tree Risk Management: A Community Guide to Program Design and Implementation
<http://www.urbanforestrysouth.org/resources/library/ttresources/urban-tree-risk-management-a-community-guide-to-program-design-and-implementation/?searchterm=community%20guide%20pokorny>

[An] illustrated, easy to read training manual for community leaders, administrators, city foresters, parks and public works staff, and private tree care practitioners. The manual is designed to assist communities with the design, adoption and implementation of tree risk management programs, and train field staff to detect, assess, and correct hazardous defects in urban trees. A team of experts in urban forestry, plant pathology and forest health collaborated to produce this manual. Consulting arborists, city foresters, and educators provided extensive review to ensure the information applies to communities of varying sizes and budgets. Examples of tree defects, risk rating systems, and species selection were chosen to depict tree species and conditions that occur in the Northeastern U.S." [from the Preface]

- Storms Over The Urban Forest: Planning, Responding, and Regreening--A Community Guide to Natural Disaster Relief
<http://www.urbanforestrysouth.org/resources/library/ttresources/storms-over-the-urban-forest-planning-responding-and-regreening-a-community-guide-to-natural-disaster-relief/?searchterm=storms%20over%20the%20urban>

Natural disasters that can occur in the United States include floods, hurricanes, tornadoes, and related high-velocity winds, as well as ice storms. Preparing for these natural disasters, which strike urban forests in

large cities and small communities, should involve the cooperative effort of a wide array of municipal agencies, private arboricultural companies, utilities, and volunteers. Principles and methods determining how to mitigate or minimize the impact of natural disasters are critical in determining the capability of communities to respond. Similarly, replanting the uprooted urban forest also requires a closely coordinated effort of key civic leaders, elected officials, community foresters, and managers of municipal agencies. This manual is intended to assist community leaders and governmental agencies to prepare for natural disasters, respond appropriately when these natural disasters occur, and recover from the subsequent loss of vegetation." (from the Executive Summary, Second Edition)

- Vegetation Risk Management Plan Template - with Attachment
<http://www.urbanforestrysouth.org/resources/library/ttresources/vegetation-risk-management-plan-template-with-attachment/view>
<http://www.urbanforestrysouth.org/resources/library/ttresources/vrmp-and-utri-links-for-documents-archived-webinars>

The Vegetation Risk Management Plan (VRMP) is developed as a tool to help increase public safety after a storm event, maintain optimum urban tree canopy, promote tree health, provide for effective emergency and arboricultural management, and decrease emergency management costs.

Following this plan will decrease emergency management costs, reduce the likelihood of damage from trees, reduce tree debris, and reduce the overall impact of major storms on the urban forest. Trees and the debris accumulated from their destruction is the number one cost to emergency management. The VRMP is a proactive approach to identifying and mitigating trees that are in need of pruning, removal, or inspection. This plan will establish a schedule for areas that are most prone to limit or block access to critical infrastructure located on or associated with major transportation routes, including areas with the highest population.

- Urban Forestry Emergency Operations Planning Guide for Storm Response
www.smarttreespacific.org
<http://www.urbanforestrysouth.org/resources/library/ttresources/urban-forestry-emergency-operations-planning-guide-for-storm-response>

Section 1: provides urban forestry professionals concrete approaches when preparing for natural disasters that impact the urban forest.

Section 2: describes the process used to develop the guide and includes information about the survey, the interviews, the expert meeting and next steps.

- Community Forest Storm Mitigation Planning for Georgia Communities
<http://www.urbanforestrysouth.org/resources/library/tresources/community-forest-storm-mitigation-planning-for-georgia-communities/?searchterm=Community%20Forest%20Storm%20Mitigation%20Planning%20for%20Georgia%20Communities>
<http://www.gatrees.org/community-forests/management/trees-storm-safety/>

Workbook and template to guide community planning and preparation for urban tree mitigation prior to natural disasters. "This Community Forest Storm Mitigation Planning Workbook and the accompanying Community Forest Storm Mitigation Plan Template are intended as tools for Georgia communities to use in assessing their community forest storm readiness, mitigating tree risk and reducing tree-related storm damage, and developing a community forest storm mitigation plan. The workbook guides you through filling in the template, which serves as a basic framework for developing your Community Forest Storm Mitigation plan." [Workbook Introduction]

Slide 28



Storm Preparation

- Manage trees to avoid problems
 - ✓ Arboricultural standards (ANSI)
 - ✓ BMPs (ISA, Gilman, Coder, etc.)
 - ✓ Written specifications (that are followed)
- Urban Forest Management System, can be...
 - ✓ Ad-hoc (but not a plan & reasoning!)
 - ✓ Comprehensive
- Urban Tree Risk Management, can be...
 - ✓ Ad-hoc (but not haphazard!)
 - ✓ Comprehensive

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When preparing for storms and disasters...

- Standards, BMPs, and written specifications are an essential component of an (your) urban forest management system.
- Management can be at a level of sophistication (ad-hoc vs. comprehensive) that is appropriate for your community (capacity, budgets).
- Ad-hoc does NOT imply a "putting out fires" approach (see extra slides 34-36), but a less formal use of ANSI A300 Part 9, ISA BMPs, and our professional capability (TRAQ).

From the arboricultural side, urban tree risk management is the additional component that "rounds out" your storm preparedness portfolio.

Slide 29



Disaster Planning–Summary

- **Tree risk prioritization based on...**
 - ✓ critical facilities
 - ✓ routes
 - ✓ population density
- **Tree risk assessment & mitigation - critical**
- **UTC can be used effectively to focus mitigation efforts**
- **Arborists & their collaboration contribute to community resilience - VRMP**
- **Mitigation must be prioritized – UTRI**

29

The first half of this relationship.

- Professional arborists

The second half of this relationship.

- when planning & preparing for disasters, critical facilities, routes, and population density determine priorities...
- while tree health is a primary concern of urban forest managers & arborists, tree risk assessment & mitigation is the most important short-term contribution to disaster preparedness
- professional arborists contribute to community resilience with other professionals, and community characteristics (social, cultural, economic, education)
- tree risk mitigation should be prioritized unless budgets are unlimited!
- urban tree canopy (UTC) can be used to locate priority areas

Slide 30



Questions, Comments & Discussion ???



30

A brief pause for questions, comments, and discussion!

Three major components to disaster preparedness...

- Urban forest/tree management for strong trees
- Strong communities that includes professional capacity
- Comprehensive management

Tree ordinances can play a role also. (protecting tree space)

Slide 31



Professional Roles & Disaster

- **Municipal Arborists...**
 - ✓ define & implement comprehensive UF management
 - ✓ adopt professional standards (especially risk)
 - ✓ engage local emergency managers
 - ✓ setup pre-storm contracts
- **Commercial Arborists**
 - ✓ adopt professional standards (especially risk)
 - ✓ participate in community planning for disaster management
 - ✓ implement pre-storm contracts with your municipality/county
- **Consulting Arborists**
 - ✓ adopt professional standards (especially risk)
 - ✓ participate in community planning for disaster management
 - ✓ TRAQ credentials
 - ✓ add comprehensive Urban Tree Risk Management & tree risk to your practice
- **State Agency Arborist/Urban Foresters**
 - ✓ adopt & promote professional standards (especially risk)
 - ✓ participate in state, and regional planning for disaster management
 - ✓ promote comprehensive Urban Tree Risk Management

31

What are specific roles for professional arborists...

Slide 32



Presentation – Part 2

- **Urban Forest Strike Team (UFST) Overview**
 - Basic concept & objectives
- **UFST History - Short**
- **UFST Status**
 - Risk Assessment & Capacity
- **Deployment Model**
 - Local Capacity, Mutual Aid, & EMAC
- **Future Directions**
- **2014 Activity**
 - Training
 - TRAQ for Team Leaders

32

In this presentation we will cover a general introduction to the Urban Forest Strike Team program that started in the Southern US in 2007.

I will cover...

- Basic concept & objectives
- General history of the program
- Current status
- Our current deployment model – it is evolving
- And non-disaster activity planned in 2014 – and opportunities for arborists

Slide 33



Urban Forest Strike Teams

Concept:

- Patterned after the Incident Command System (now NIMS)
- Deployed as a stand-alone resource

Objectives:

- Maintain viable trees in the urban forest
- Provide professional capacity where needed

33

Our operational model was the Incident Command System (ICS , stand-alone resource *i.e. without logistics, and other disaster response support)

Our initial objectives were two-fold:

- provide professional capacity as/where needed – effective & efficient
- maintain viable trees in the community's urban forest

Slide 34



Urban Forest Strike Teams

Key components:

- Assist communities with response and recovery efforts following a storm event
- Develop an in-state and regional capacity to respond to disasters
- Develop response protocol based on and compatible with ICS
- Professional arborists, trained for risk assessment and deployment through EMAC and/or in-state mutual aid

34

Urban Forest Strike Teams (UFST) – Overview elements. An evolution since 2007.

Slide 35



Urban Forest Strike Team

- Virginia & North Carolina (2007)
 - ✓ Extension of U&CF program
- Participation
 - ✓ State/Commonwealth Forestry Agencies
 - ✓ Municipal/Consulting Arborists
 - ✓ Northeastern Area – Tree Wardens
 - ✓ Others

35

UFST (Urban Forest Strike Team) is a disaster response and recovery project initiated by the U&CF programs in Virginia and North Carolina in 2007 and supported by the Southern Group of State Foresters (USDA FS Region 8). The UFST concept has been implemented by the northeastern and mid-western states (USDA FS Northeastern Area) and the regional programs are operated as a single program with shared resources.

Urban Forest Strike Teams (UFST) are composed of state forestry agency certified arborists and urban foresters trained to make urban tree risk and damage assessments following natural disasters. In many states, municipal and consulting arborists have participated. The concept has been adopted by the Northeastern Area (USDA FS) and in that region extension foresters and tree wardens are also trained in UFST techniques. UFST equipment, methodology, and training workshops are now coordinated between the two regions.

Slide 36



UFST Responses

- Tulsa (OK) – Ice Storm (2008)
- Baton Rouge (LA) – Hurricane Gustav (2008)
- Galveston (TX) – Hurricane Ike (2008)
- Fayetteville (AR) – Ice Storm (2009)
- Mayfield (KY) – Ice Storm (2009)
- Joplin (MO) – Tornado (2011)
- Newborn (GA) – Spring Tornado (2011)
- Norfolk (VA) – Hurricane Irene (2011)
- Greenville (NC) – Hurricane Irene (2011)
- Springfield (MA) – Summer Tornado (2011)
- Manchester (NH) – October Snow Storm (2012)

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Where we have helped communities following natural disasters...

Ice, wind, and snow!

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UFST Training

- Kinston, NC (2007)
- Providence, VA (2008)
- Brooksville, FL (2009)
- Leominster, MA (2009)
- Little Rock, AR (2010)
- Tulsa, OK (2011)
- Joplin, MO (2011)
- Lewes, DE (2011)
- Forsyth, GA (2012)
- Detroit, MI (2012)
- Springfield, MA (2013)
- Raleigh, NC (2013)
- Chicago, IL (May 2014)
- Washington, DC (June 2014)

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UFST training events (and year) have been held throughout the eastern US.

In addition, a webinar series was developed and used in 2011. I'll mention other training opportunities in the "UFST Future Directions" section.

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UFST Status - Participation

- Southern Group of State Foresters
- NASF Urban & Community Forestry
- USDA Forest Service
 - ✓ Region 8
 - ✓ Northeastern Area (NA)
- Massachusetts Tree Wardens
- Virginia Emergency Management

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Primary participation includes:

- Southern Group of State Foresters (southern UFST Advisory Committee)
- National Association of State Foresters (NASF) Urban & Community Forestry Committee
- USDA Forest Service
 - ✓ Athens, Georgia
 - ✓ Durham, New Hampshire
 - ✓ St. Paul, Minnesota
- Massachusetts Tree Wardens & Foresters Association
- Virginia Emergency Management (VDEM) – Debris Manager and EMAC Coordinator

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UFST Capacity

- Region 8 (Southern)
 - ✓ Team Leaders – 29
 - ✓ Task Specialist - 113
- Northeastern Area
 - ✓ Team Leaders – 6
 - ✓ Task Specialists - 107
- Western
 - ✓ Team Leaders – 0
 - ✓ Task Specialists - 1

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Our current capacity summarized...

In addition, we have at least 12 Team Leaders and U&CF Coordinators that have participated as UFST Training Instructors

Slide 40



Questions, Comments & Discussion ???



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A brief pause for questions, comments, and discussion!

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UFST Organization - ICS

- Hierarchical structure
- Support functions
 - ✓ GIS
 - ✓ communications
- Span of control (Team Leader, Ass't TL)
 - ✓ scalable
- Safety
- Transfer of control
- Code of Ethics

ICS Background - Organizationally modeled after the Incident Command System (ICS)

The Incident Command System (ICS) provides a functional structure for actively managing any type of incident faced by responders. ICS is a time-tested systematic process of planning, logistics, operations, finance, and command functions. (Ries 2012 – NUCFAC)

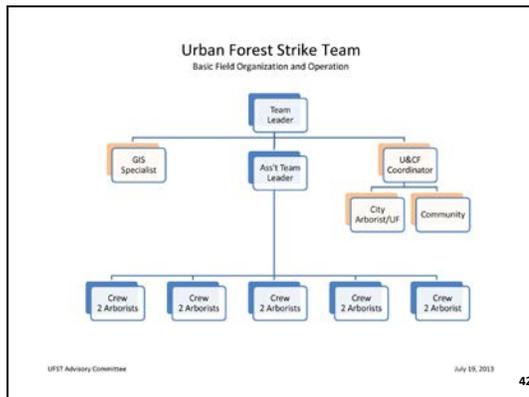
UFST & ICS:

- Original discussion in 2007 was to formally enter the ICS through the National Interagency Fire Center (NWCG position task book)
- Initially developed task books

Adopted:

- Organizational structure (hierarchy)
- Allow for support functions like GSI and communications
- Span of control (TL and Assistant TL)
- Strong safety element
- Transfer of control when responses requires successive teams
- Code of Ethics

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ICS-like structure of UFST.

Role of the state U&CF Coordinator is crucial.

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UFST – Critical Components

- Organizationally modeled after ICS
- Certified Arborists
- Professional response focusing on the tree resource, risk, and public safety
- UFST responses initiated by the state U&CF
- Uses a mix of state, local, and private arborists
- Operating throughout the Eastern US

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Critical Components and Requirements

- Organizationally modeled after the Incident Command System (ICS)
 - ✓ ICS experience & training required
 - ✓ Certified Arborists
- UFST responses initiated by the State Forester and state U&CF Coordinator
- Primarily trains and uses state forestry agency arborists in Region 8; municipal & private in NA
- Operating in eastern US; Texas to Florida and Maine and Missouri

Slide 44



Why Certified Arborists

- Familiar with working with local communities
- Experienced and knowledgeable about professional standards
- Familiar with tree risk evaluation protocol



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Urban Forest Strike Teams (UFST)

Critical role for experienced and trained arborists.

Slide 45



Why be concerned about trees following a Storm?

- Residual trees may pose a threat to public safety



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Urban Forest Strike Teams (UFST)

Residual tree risk following a disaster that can be assessed by Certified Arborists

Slide 46



Why be concerned about trees following a Storm?



- There are significant costs in dealing with residual trees after a storm



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Urban Forest Strike Teams (UFST)

Strike team members can help a community reduce immediate and long-term costs

Slide 47



Urban Forest Strike Teams

What do they do:

- Risk evaluation of public trees remaining following initial ground debris clean-up
- Data for FEMA Public Assistance (PA)



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Urban Forest Strike Teams (UFST)

Slide 48



Urban Forest Strike Teams

Community benefit:

- Communities that lack the capacity or professional expertise will benefit during the immediate response phase of the disaster
- Trained, experienced, Certified Arborists will be assisting communities with decisions that affect their urban forest



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Urban Forest Strike Teams (UFST)

Slide 49



Urban Forest Strike Teams

Community benefit:

- Tree risk management information can be obtained in a timely manner for response & recovery
- With the project based on the ICS, communities are familiar with the disaster assistance process
- Assistance can be provided at the stage of disaster response most suitable for the community



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Urban Forest Strike Teams (UFST)

Slide 50



Urban Forest Strike Teams

Community benefit:

- Good public relations opportunity
- UFST members viewed positively in communities where dispatched
- UFST members viewed as unbiased experts here to help



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Urban Forest Strike Teams (UFST)

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Questions, Comments, and Discussion ???



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UFST Future Directions

- eLearning
 - ✓ CFE Portal (TAMU)
 - ✓ Interactive Tools
- MOAs – Virginia Department of Forestry (VDOF)
 - ✓ State foresters
 - ✓ Local communities
 - ✓ State EM & EMAC Coordinator
- Mock Exercises
 - ✓ VDOF and VDEM (2012)
- EMAC
 - ✓ Interstate Mobilization & Deployment
 - ✓ Liability & insurance
 - ✓ Reimbursement

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Currently UFST is pursuing the following:

- Enhancement of training opportunities with eLearning and on-line interactive tools
- Providing “mock disaster” exercises in conjunction with state EM
- Stronger partnership development with state MOAs
- Participation with EMAC through state EMAC Coordinators
- Continued talks with FEMA
 - ✓ UFST role
 - ✓ Debris standards (e.g. root plate disturbance)
- www.UFST.org improvements (2013)

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UFST -2014

- MOAs
 - ✓ State foresters
 - ✓ Local communities
 - ✓ State EM & EMAC Coordinator
- Mock Exercises
 - ✓ Two additional States (NC, AR)
- EMAC
 - ✓ Resource Capability Package descriptions
- Workshops
 - ✓ Chicago, IL – Task Specialists
 - ✓ Washington DC – Task Specialists & Team Leaders
 - ✓ TRAQ for Team Leaders – Raleigh in February
 - ✓ TRAQ for Task Specialists (In planning)

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Resource Capability Package descriptions (based on VDOF & VDEM)

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Professional Roles & UFST

- **Municipal Arborists...**
 - ✓ become knowledgeable of UFST program & benefit to your community – contact your state U&CF Coordinator
 - ✓ understand your role in requesting resources through your local & state EM
 - ✓ participate as Task Specialist - build local capacity
- **Consulting & Commercial Arborists**
 - ✓ become knowledgeable of UFST program
 - ✓ participate as Task Specialist as “temp” participant through EMAC
- **State Agency Arborist/Urban Foresters**
 - ✓ participate as Task Specialist & Team Leader
 - ✓ work with communities to develop UFST capacity
 - ✓ engage state EM – debris & EMAC
 - ✓ investigate agency ability to hire “temp” employees to extend your state capacity with commercial & consulting arborist for regional EMAC deployment

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What are specific roles for professional arborists in the UFST...

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UFST Summary

- **UFST has a 6 year history of...**
 - continued development & improvement (e.g. standards)
 - support (internally & externally)
 - successful mobilization & deployment
- **Organizational based on the Incident Command System (ICS)**
 - hierarchy
 - span of control & transfer of command
 - safety
- **Current capacity provides comfortable margin for response**
- **Continued advances in training**
 - Initial
 - Continuing education
- **Continued focus on...**
 - Professional driven response (resources & risk)
 - "Grass roots" response (state U&CF initiates)
 - Assessing risk & FEMA debris to supplement local capacity
- **Currently working toward state EM integration**

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A summary:

- UFST has successful six year history: development, support, and deployments
- Solidly based on the ICS that early trainees were familiar with (wildfire)
- Our current capacity gives us some assurance that we can adequately respond to natural disasters to supplement local capacity
- We continue to improve training opportunities
- Our primary focus continues to be:
 - ✓ Responses are driven by arboricultural professionals
 - Which includes an emphasis on retaining tree canopy
 - ✓ Responses are initiated at the local level through the state/commonwealth U&CF program (i.e. U&CF Coordinator and State Forester)
 - ✓ Task Specialists assess tree risk and FEMA debris classification and make recommendations accordingly
 - Risk assessment specifications to ANSI A300 standard and ISA BMP are being developed
 - Public safety is the overriding concern
 - Community recovery is an important component (functional tree canopy, disaster clean-up to normalcy)

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Search term:
"NOVA" to locate presentation and hand-outs



Please feel free to contact me with questions or comments.

This entire presentation with my notes is available for download from www.UrbanForestrySouth.org.

- Role of Professional Arborists in Disaster Preparedness and Recovery (NOVA 20Feb14).pdf

In the 'search site' box (base of page header on the right) type **NOVA** for a list of downloads related to my presentations at this conference.

In addition to the presentation there will be two handouts:

- 2014 Urban Tree Risk Resources (14Jan14).pdf
- 2013 Disaster Resources for Urban Foresters (13May13).pdf

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Standards vs Specifications

- Standards are **performance standards**
- NOT** used as job **specifications**
- Job specifications** should be clearly stated and detailed and contain measurable criteria
- Writing specifications can be simple or complex
 - written in a format that suits your company/job
 - specifications consist of two sections
 - general
 - detailed
- ANSI A300 Part 9 Section 1.2 Purpose**
 - “for developing written specifications”**
- Used by:
 - federal, state, municipal, and private entities

Extra, discussion slides follow...

The “standard” clearly identifies the performance standards used to develop arboricultural specifications specific to your job or contract and appropriate for all levels of ownership and consulting.

You should not say “Perform a tree risk assessment to the **ANSI A300 (Part 9)-2011 Tree Risk** standard” in an RFP, RFB, proposal, or quotation for professional services.

See Section 1.2 Purpose “for developing written specifications.”

Developing and consistently using a risk specification based on the ANSI A300 Standard will:

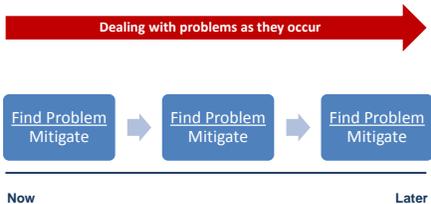
- reduce misunderstandings related to the scope of the risk evaluation for a tree owner
- clearly define the qualifications of the arborists
- clearly define the assessment techniques to be used
- provide better contract compliance
- reduce the chance for misinterpretation of results (i.e. the written reports)
- help arborists become more consistent with their risk assessments and with colleagues assessments over time

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Fairly Common UF Workflow

Dealing with problems as they occur



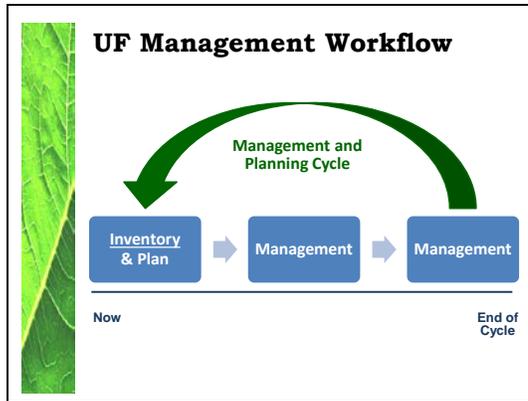
Now Later

A common approach to urban forest management (workflow or timeline):

- deal with problems as they arise (i.e. “putting out fires”)

May be appropriate for very small management areas or ownerships, or as the tree resource changes over time (i.e. there are ways to rationalize this approach!).

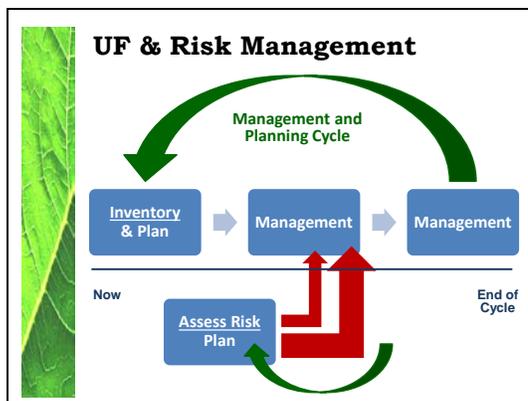
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A recommended urban forest management workflow (or timeline):

- inventory the resource of interest (i.e. entire city, a park)
- develop a management plan
 - ✓ with short-term action plan for a specific time period (i.e. cycle)
 - ✓ plan will have long-term goals, objectives, and strategies
- manage your urban tree resource over the management/planning cycle
 - ✓ tree planting
 - ✓ mulching
 - ✓ young tree pruning
 - ✓ pruning mid-aged to mature trees
 - ✓ removals (for a variety of reasons; problems (i.e. risk), construction, redesign)
 - ✓ special areas or purposes (riparian areas, parks, watershed protection, carbon, pedestrian amenities)
- implies,,, goals, objectives, strategy, priorities (and budgets)

Slide 60



An urban forest management workflow (or timeline) that adds Urban Tree Risk Management:

- inventory the resource of interest (i.e. entire city, a park)
- develop a management plan
 - ✓ with short-term action plan for a specific time period (i.e. cycle)
 - ✓ plan will have long-term goals, objectives, and strategies
- manage your urban tree resource over the management/planning cycle
 - ✓ tree planting
 - ✓ mulching
 - ✓ young tree pruning
 - ✓ pruning mid-aged to mature trees
 - ✓ removals (for a variety of reasons; problems (i.e. risk), construction, redesign)
 - ✓ risk mitigation
 - ✓ special areas or purposes (riparian areas, parks, watershed protection, carbon, pedestrian amenities)
- inventory and develop a separate risk management plan
 - ✓ this feeds into your management cycle
 - ✓ the risk management cycle may be shorter than your urban forest management cycle

Slide 61



Definitions

- ❑ Risk Assessment... is the systematic process to identify, analyze, and evaluate tree risk.

... is the process of inspecting and evaluating the structural condition of trees and the harm that could occur when a failure occurs.

- ❑ Tree Risk Evaluation... Is the process of comparing the assessed risk against a given risk criteria to determine the significance of the risk (a key concept is "threshold").

Risk assessment is the "next" step after the urban tree risk management framework "sets the stage"...

Assessment and evaluation (from ISA BMP: Tree Risk Assessment)...

- Systematic process
 - Identify
 - Analyze
 - Evaluate
- There are standards (i.e. ANSI A300 Part 9) that should be followed when developing this assessment process

Evaluation (from ISA BMP: Tree Risk Assessment)...

- Comparing the assessed risk to your experience and/or expectations (i.e. risk threshold; how much harm is acceptable to you)

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Definitions

- ❑ Risk... is the combination of the likelihood of an event and the severity of the potential consequences.

In the context of trees, risk is the likelihood of a conflict or tree failure occurring and affecting a target, and the severity of the associated consequences – injury, damage, disruption.

Risk (from ISA BMP: Tree Risk Assessment)...

- Probabilities involved
- An event
- Consequences (harm) with some level of severity (or concern)

Conflict... e.g. tree obstructs stop sign visibility at intersection, or tree limbs/branches touching power distribution lines

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Definitions

- ❑ Hazard... Is a likely source of harm (or the consequence).

In relation to trees, a hazard is the tree part(s) identified as a likely source of harm.

Hazard (from ISA BMP: Tree Risk Assessment)...

- What is the likely source (e.g. limb, branch, whole tree) of the assessed harm (i.e. consequence)

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Current standards for tree risk assessment and management are based on ISO 31010 components:

- Communication and consultation
- Risk assessment
- Monitoring and review

For arboriculture these include:

- ANSI A300 (Part 9)-2011 Tree Risk Assessment; a. Tree Structure Assessment, Tree Care Industry Association, Inc., Londonderry, NH
- Best Management Practices: Tree Risk Assessment (2011), Smiley, E.T., and N. Matheny, S. Lilly, International Society of Arboriculture, Champaign, IL
- Tree Risk Assessment - Manual (2013), Dunster, J. and E.T. Smiley, N. Matheny, and S. Lilly, International Society of Arboriculture, Champaign, IL (i.e. TRAQ)

The ANSI A300, Part Tree Risk Standard also standardizes the language of risk used by risk management professions; see Primer on Risk Analysis: Decision Making Under Uncertainty (Chapter 1) – Charles Yoe .