ENHANCING

# URBAN FOREST RESILIENCY

SLELO PRISM

JULY 23RD, 2022 RELEAF CONFERENCE



Acknowledgments for support of SLELO PRISM: NYS DEC, the NYS Environmental Protection Fund, The Nature Conservancy.

Robert Smith Megan Pistolese-Shaw with SLELO PRISM

**PRESENTED BY:** 



SLELO is Hosted by: The Nature Conservancy

#### Where We Work:

Oneida Oswego Jefferson Lewis St. Lawrence

#### What We Do:

Collaborate with our partners to protect our lands and waters from the impacts of invasive species.



# CONNECT WITH US



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www.sleloinvasvies.org www.swallowwortcollaborative.org



# Sustainability Initiative

**Urban Forest** 



#### Introduction

- **Urban Forests and Invasive Species** •
  - Host for invasive species ٠
    - EAB ٠
    - Spotted Lanternfly ٠
    - Asian Longhorned Beetle ٠
  - Source of invasive species ٠
    - Black Locust ٠
    - Norway Maple ٠
    - Tree-of-Heaven ٠









#### History of Tree Planting, Invasive Species, and the Urban Forest

- Early 20th century American elm planted in large numbers
- 1930's Dutch Elm Disease arrives
- 1970's 40 million elm trees had died
- Many replaced with maples and ashes
- 2002 emerald ash borer (EAB) discovered in southeastern Michigan
- Killed 10's of millions of ash trees across 30 states









## Urban Forest Sustainability Initiative

- Urban Forest Sustainability Guide
- Presentation about the program
- \$5,000 reimbursement for purchase of non-invasive trees
- Urban forest resources on the SLELO PRISM website



## **Urban Forest Sustainability Initiative**



## <u>Agenda</u>

Benefits of the Urban Forest

Urban Forest Sustainability

Urban Forest Resiliency Plan

Pocket Parks











## Benefits of the Urban Forest

- ✓ Improve Air Quality
- ✓ Reduce Greenhouse Gases
- ✓ Reduce Stormwater Runoff
- ✓ Reduce Heating/Cooling Expenses
- ✓ Improves Aesthetics and Property Values
- ✓ Provide Food and Shelter for Wildlife



# Developing a Sustainable Urban Forest (i.e. increasing resiliency)

#### **Components**

- ✓ Tree Ordinance and Tree Board
- ✓ Urban Forest (Tree) Management Plan
- ✓ Tree City USA
- ✓ ReLeaf Program
- Community/Citizen Science, Education, and Outreach
- ✓ Pocket Parks
- ✓ Urban Forest Resiliency Plan







# What is an Urban Forest Resiliency Plan?

- ✓ A Proactive Strategy for Urban Forest Resilience to Invasive Pests, Pathogens, and Climate Change
- ✓ Main Components:
  - ✓ Urban Forest Resiliency Assessment considers:
    - ✓ Invasive pest and pathogen risks
    - ✓ Climate change risks
    - ✓ Response and cost
  - ✓ **Maintaining Urban Forest Health** considers:
    - ✓ Right tree, Right place
    - ✓ Increasing resiliency to invasive pest and pathogen
    - $\checkmark\,$  Increasing resiliency to climate change





#### Creating an Urban Forest Resiliency Assessment

**<u>Risks to Consider</u>** Invasive Pests and Pathogens

Present Risks



**Future Risks** 





# Creating an Urban Forest Resiliency Assessment Risks to Consider Climate Change

- ✓ Predicted to increase 3-8°F by 2100 (1901-2011 increase of 2.4°F)
- ✓ Greater winter precipitation and longer summer droughts
- ✓ Negative impact on many northern tree species
- ✓ Which trees will do well and which will do poorly?



# Creating an Urban Forest Resiliency Assessment

#### ✓ Document Risks

- ✓ List tree species in your urban forest
- ✓ Determine the current and potential risks for each tree species
- ✓ Estimate financial cost for:
  - ✓ tree removal, replacement, or pesticide treatment
  - ✓ lost ecosystem services (iTree (itreetools.org))
- ✓ Summarize results in resiliency assessment plan







#### **<u>Right Tree, Right Place</u>**

- ✓ Healthy Trees = Resilient Trees
- Tree species are adapted to the conditions where they naturally occur
- ✓ Match location with tree suitability
- $\checkmark~$  Ultimately saves the municipality money and time







#### Pest and Pathogen Resilience

- ✓ Have an early detection/rapid response team
- ✓ Increase species and age diversity
- ✓ Select less vulnerable tree species
  - ✓ Good Resource: Potter et al. (Global Ecology and Conservation)









2004 © Peter M. Dz

#### Pest and Pathogen Resilience

- New York tree species rated highest for insect and disease vulnerability (low resilience):
  - ✓ white ash, green ash, black ash (*Fraxinus* spp.)
  - ✓ eastern hemlock (*Tsuga canadensis*)
  - ✓ Butternut (Juglans cinerea)









#### Pest and Pathogen Resilience

- New York tree species rated low for insect and disease vulnerability (high resilience):
  - ✓ Pitch Pine (*Pinus rigida*)
  - ✓ River Birch (*Betula nigra*)
  - ✓ Blackgum (Nyssa sylvatica)









# Sources for Tree Pest and Pathogen Vulnerability







#### **Climate Change Resilience**

- ✓ Increase Species Diversity
- ✓ Increase Age Diversity
- ✓ Plant Climate Change Adaptable Trees
- ✓ Good Resources:
  - ✓ USDA Forest Service Climate Change Atlas
  - ✓ Potter, Crane, and Hargrove (New Forests)







## Maintaining Urban Forest Health Increase Species Diversity with Natives

- Supports Local Wildlife (NYS DEC)
- Low Maintenance (NYS DEC)
- Unlikely to be invasive or overly competitive with other native plants (U.S. Forest Service)



Bur Oak



Photo by Jane S. Richardson







#### Maintaining Urban Forest Health Avoid Selecting Invasive Tree Species

- iMapInvasives Website (NY Natural Heritage Program)
- Includes species such as:
  - Tree-of-Heaven
  - Norway Maple
  - Black Locust



Bur Oak

ellow Poplar



# The Benefit of Pocket Parks

- ✓ A pocket park is:
  - ✓ usually ¼ acre or less in size
  - $\checkmark$  serves the same function as a city park
  - ✓ many benefits







# The Benefit of Pocket Parks

- ✓ The benefits of these parks may include:
  - ✓ Improving the overall ecology of cities through decreased driving to bigger parks
  - Reduced pollution, traffic, and consumption of resources such as oil
  - ✓ Renovation of run-down areas
  - ✓ Habitat for some animals, particularly birds
  - ✓ Increased amount of permeable surface (reduce runoff)
  - ✓ Increased physical activity and lowered stress
  - ✓ Reduction in criminal activity
  - Increase in ecosystem services associated with trees in the urban environment







# **Thank You!**



**Please Visit The SLELO PRISM Website** For **Urban Forest Sustainability Guide and** Additional Urban Forest Sustainability Resources www.sleloinvasives.org/urbanforestsustainability/ robert.l.smith@tnc.org



Danny Schissle





# Take the Pledge. Get The Tools. Earn The Badge. iPledgeToProtect.org

LUGE TO PROTECT

RESOURCEFULLY

RESPONSIBIL

Megan Pistolese-Shaw ReLeaf Conference 2022

# What is the Pledge to Protect?





# Who is it for?







www.iPledgeToProtect.org

# BECOME A PROTECTOR

#### www.iPledgeToProtect.org

- Simple Actions You Can Take to Protect Your Lands & Waters from Invasive Species
- Bragging Rights.
- Collectable Virtual Badges.
- Access to a Social Media Toolbox.
- Prizes!

WHAT

YOU'LL

GET





Take the Pledge. Get the Tools. Earn the Badge





Forests Protector's Badge



Water Protector's Badge

Garden Protector's Badge





# **Community Protector Toolbox Resources**

- Simple Steps to Protect Urban Forests
- Invasives to Watch For
- Identification/Management
- Regional and State-wide Community Science Opportunities
- Best Management Practices
- Cool apps
- Many Helpful Resources



## Volunteer For Nature







# Adopt a Tree Program Species of Interest

**Spotted Lanternfly** 

Asian Longhorned Beetle

Volunteer For Nature

**Emerald Ash Borer** 



Hemlock Woolly Adelgid

# Signs of an EAB Infestation

Shoots growing out of trunk

Loss of leaves in tree crown

#### Woodpecker damage

C Tree photos by, Mike DeMarco

## Signs of Spotted Lanternfly Presence

Egg masses laid in rows covered with a waxy mud-like substance. Massive honeydew build up under plants, sometimes with black sooty mold. Sap oozing from tree trunks, appears wet and may smell.









# Signs of Asian Long-Horned Beetle

November-April White woolly Masses at the base of needles May-October Black/brown insect about the size of a sesame seed with white hairs.

Weakened crown coverage and greyish cast

VS

Healthy Hemlock

Lack of new foliage in spring

Signs of a Hemlock Woolly Adelgid Infestation

Unhealthy

Hemlock



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INVASIVE SPECIES MANAGEMENT SAINT LAWRENCE EASTERN LAKE ONTARIO

"Teaming Up To Stop The Spread of Invasive Species"

www.sleloinvasives.org