

USDA Forest Service

URBAN FOREST CONNECTIONS

webinar series

Second Wednesdays | 1:00 – 2:15 pm ET

www.fs.fed.us/research/urban-webinars



**GREEN
CITIES
HEALTHY
COMMUNITIES**



CLIMATE CHANGE & URBAN ENVIRONMENTS: ADAPTATION THROUGH DIVERSITY

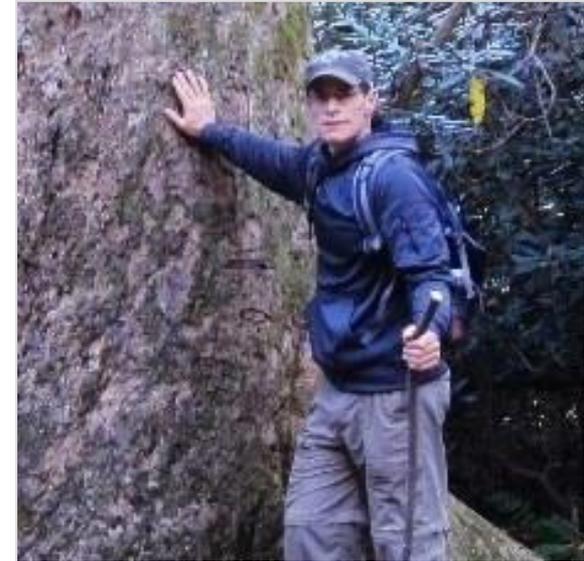


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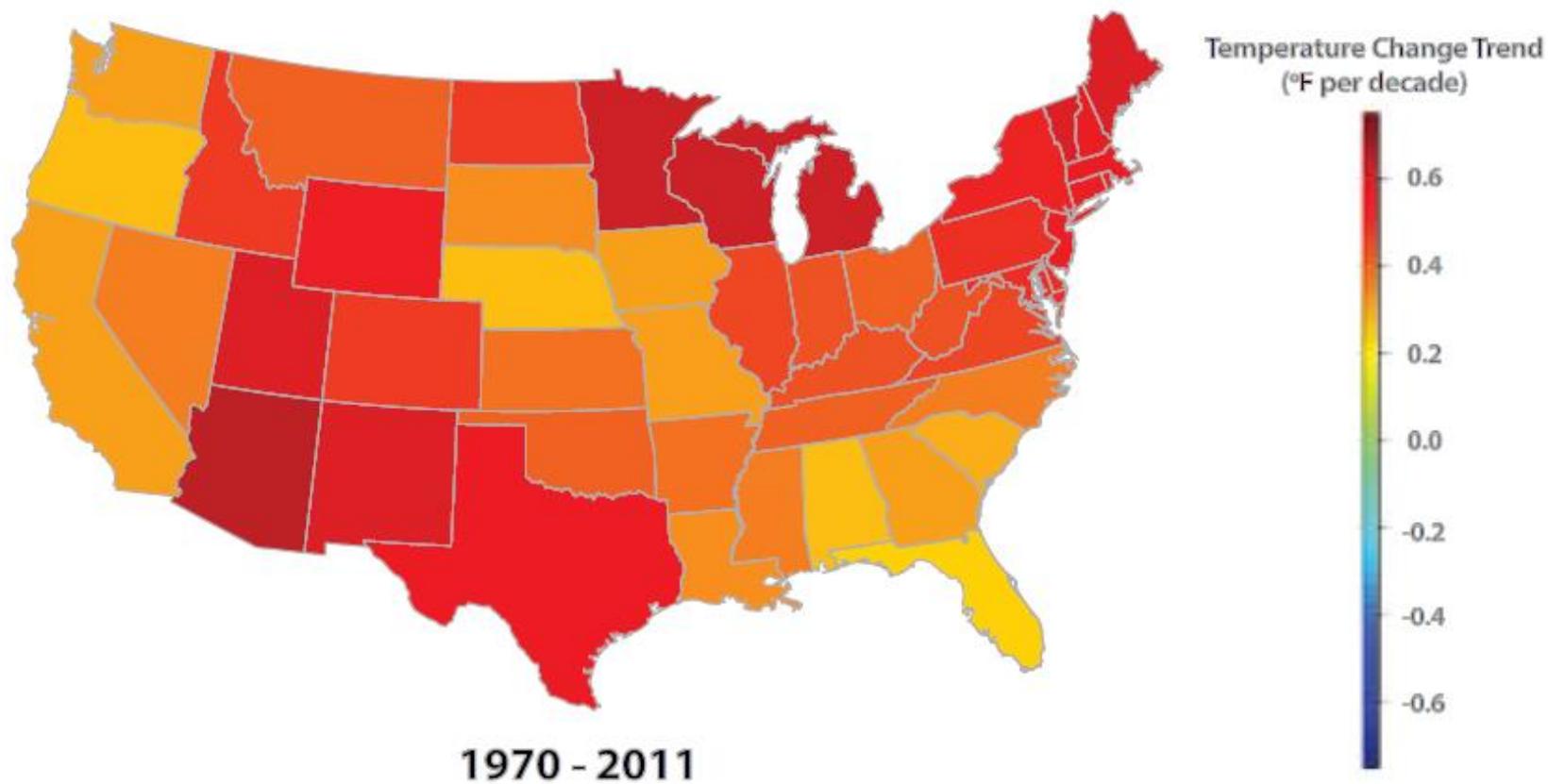
A FRAMEWORK FOR ADAPTING OUR URBAN FORESTS TO A CHANGING CLIMATE

Leslie Brandt, PhD

Climate Change Specialist

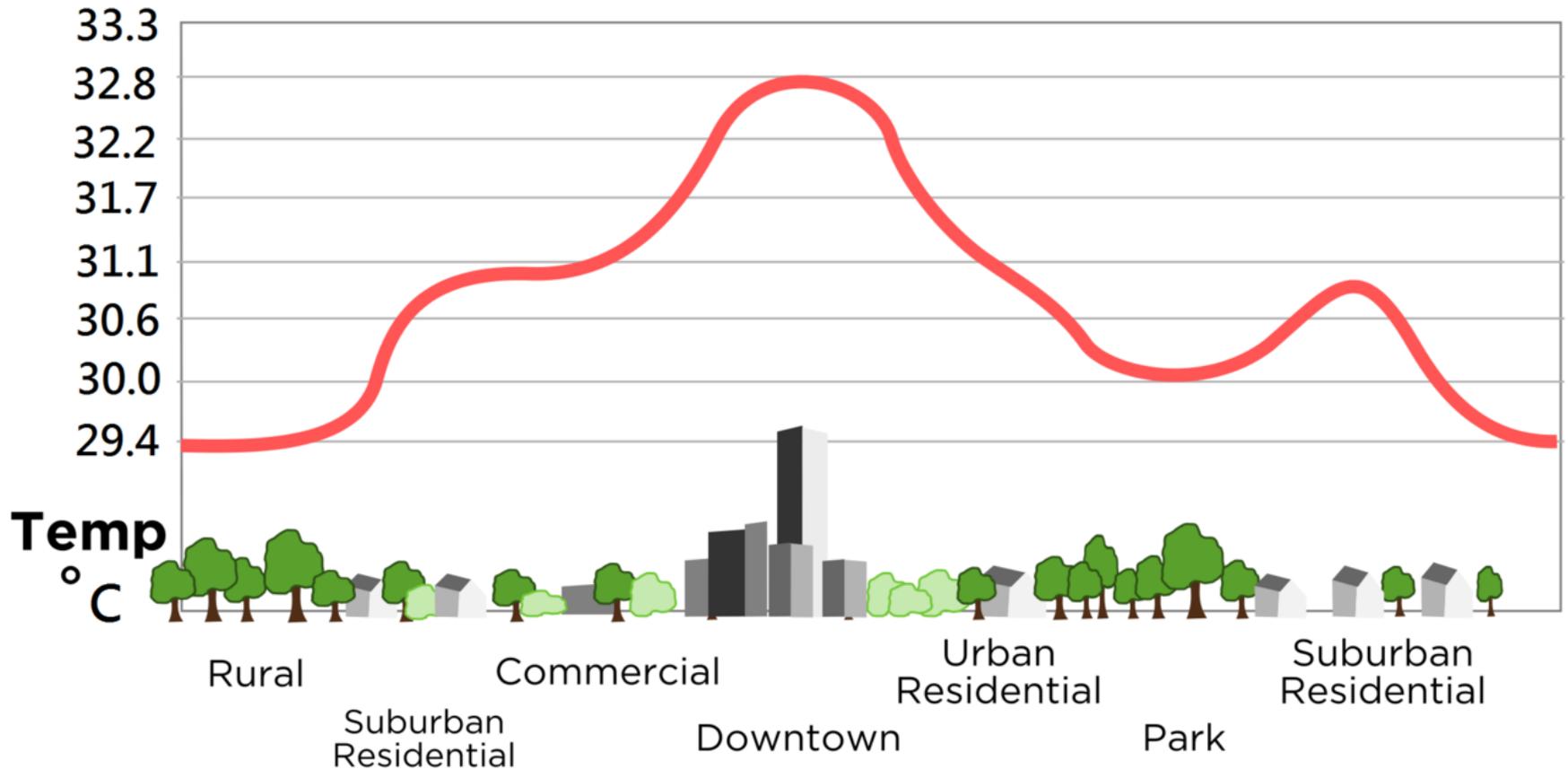


RISING TEMPS IN THE US



URBAN HEAT ISLAND EFFECT

URBAN HEAT ISLAND PROFILE

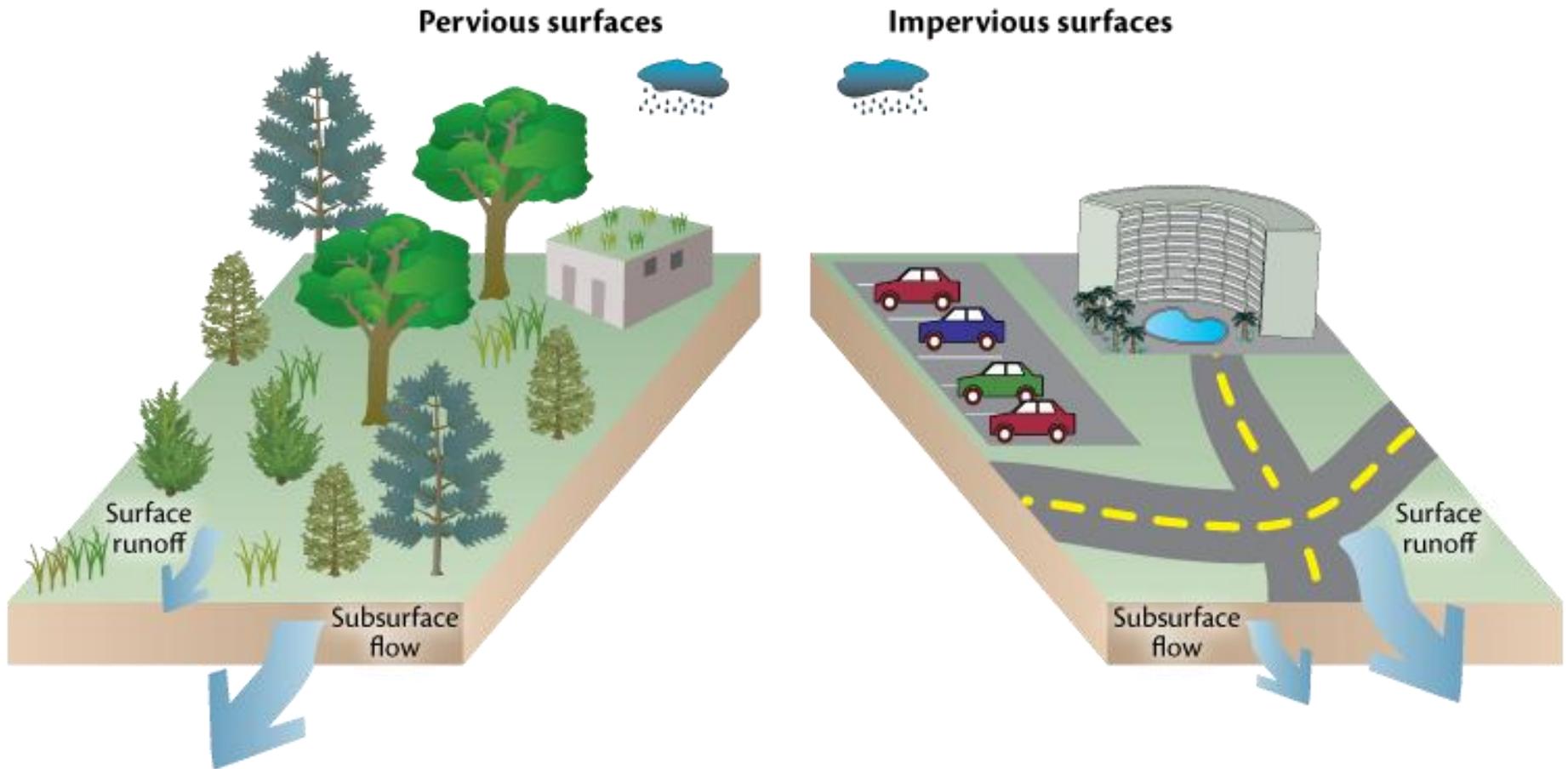


HEAVY PRECIPITATION IS INCREASING



40% more extreme rain events in the United States.

STORMWATER RUNOFF



URBAN FORESTS: A CLIMATE ADAPTATION STRATEGY?



Cities that include trees as part of their climate change/sustainability goals in climate action plans



States that have developed comprehensive Climate Action Plans, using forests to help adapt/mitigate



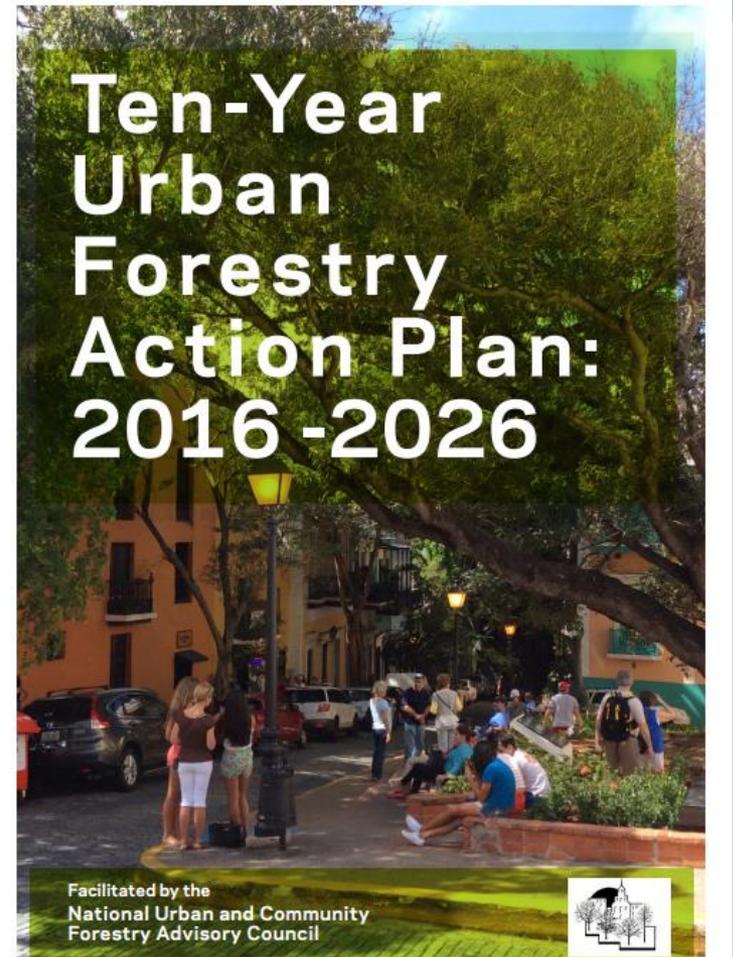
Cities that view trees as part of their overall sustainability/climate protection efforts

BUT... URBAN FORESTS FACE CLIMATE CHANGE CHALLENGES



Goal 4B:

Foster resilience, restoration, and sustainability of urban and community forests facing climate change challenges.

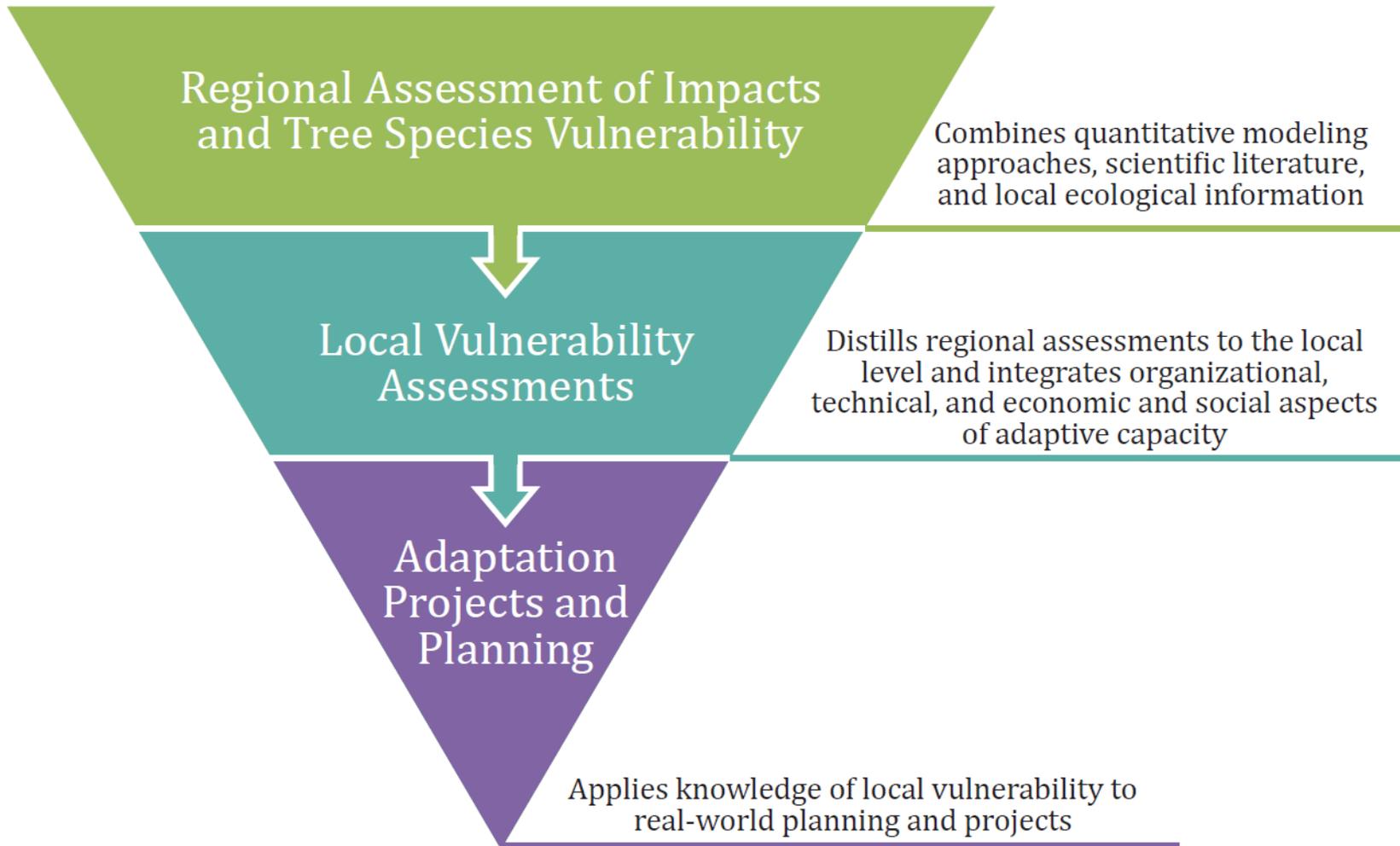


HOW?

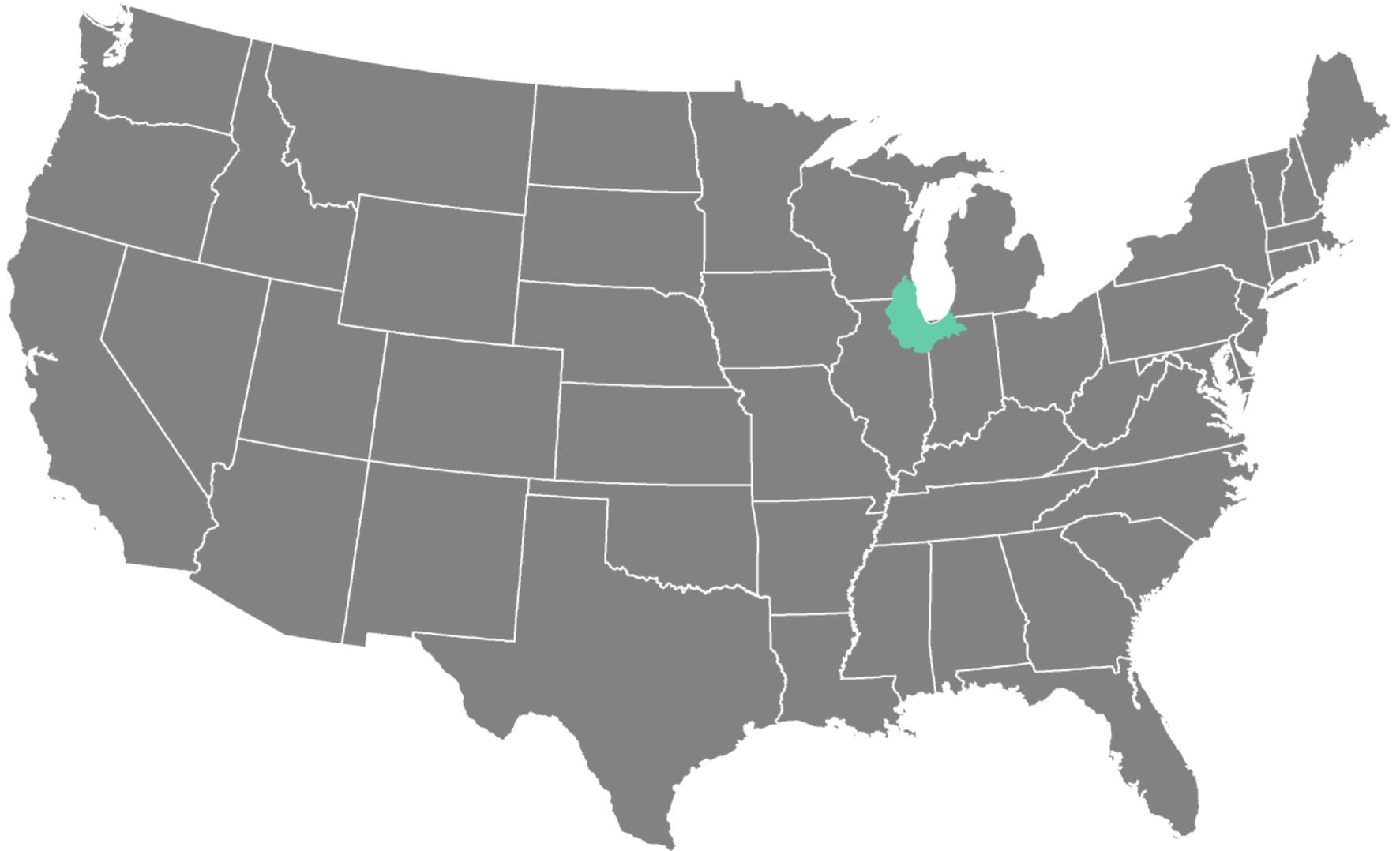


URBAN FORESTRY

CLIMATE CHANGE RESPONSE FRAMEWORK



PILOT URBAN AREA: CHICAGO WILDERNESS



KEY PARTNERS



CHICAGO
REGION
TREES
INITIATIVE

Our Trees.
Our Communities.
Our Future.



GREENING *Infrastructure*



Climate **ACTION**

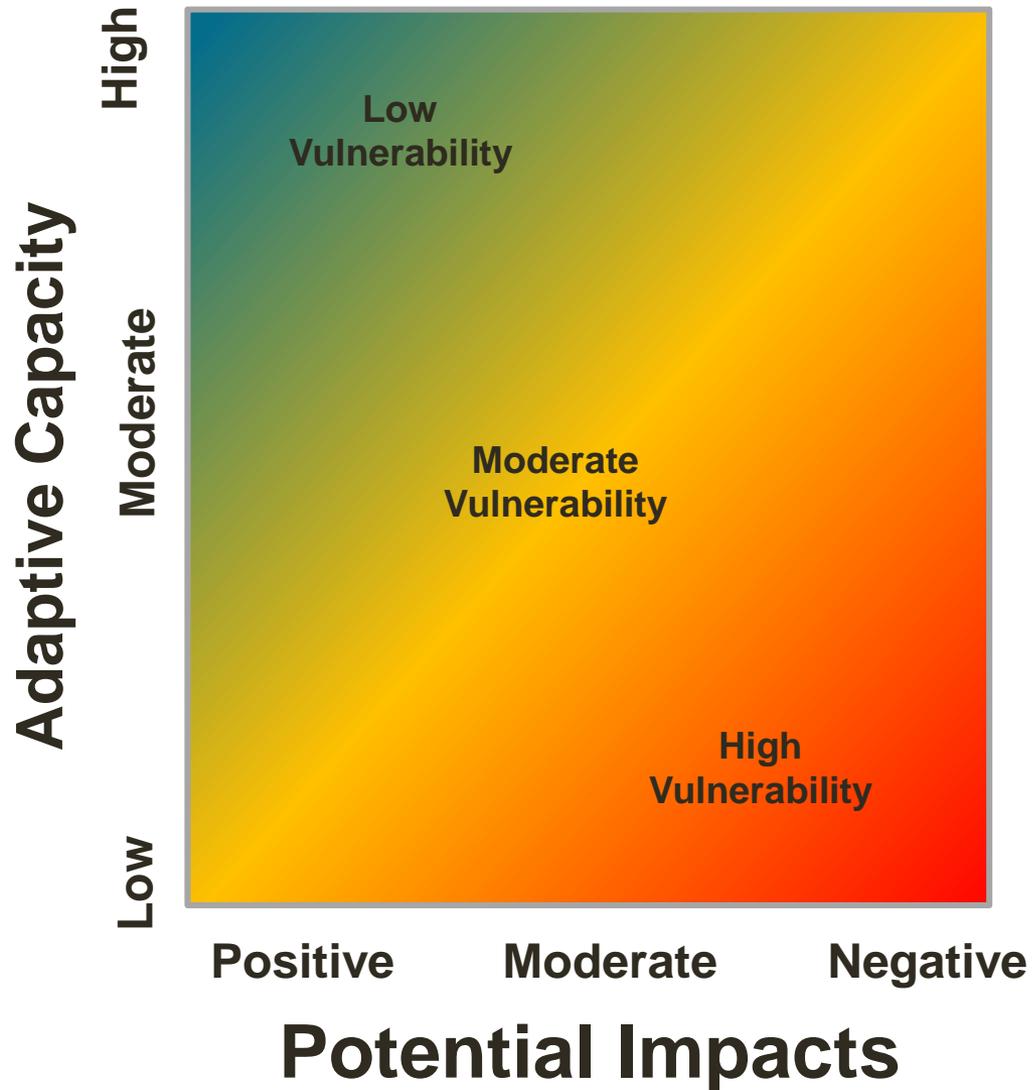


URBAN FRAMEWORK APPROACH

Regional Assessment of Impacts
and Tree Species Vulnerability

Combines quantitative modeling
approaches, scientific literature,
and local ecological information

VULNERABILITY



IMPACTS: NATIVE SPECIES

USDA United States Department of Agriculture Forest Service Northern Research Station

Forest Service Home About the Agency Contact the National Office

You are here: [Northern Research Station Home](#) / [Tools & Applications](#) / [Climate Change Atlas](#)

Climate Change Atlas

Explore the Climate Change Tree Atlas

Explore the potential habitat shifts for 134 tree species

Search for Trees & Birds:

Enter a common or scientific name

[List of Trees](#) | [List of Birds](#)

About the Climate Change Atlas

The Climate Change Atlas documents the current and possible future distribution of **134 tree species** and **147 bird species** in the Eastern United States and gives detailed information on environmental characteristics defining these distributions. Please be sure to read the **warnings, cautions and questions**.

You can also **browse and view the previous version of the Tree Atlas**.

Climate Change Atlas Videos

- [Quick Start Guide](#)
- [An Introduction to the Climate Change Atlas: How does it work?](#)
- [An Overview of the Climate Change Atlas Components](#)
- [Exploring Current Species Information](#)
- [Modeled Future Habitats](#)
- [Combined Species Outputs](#)

Featured Research

[Ecosystem vulnerability assessment and synthesis: a report from the Climate Change Response Framework Project in northern Wisconsin](#)

Combined Species Outputs

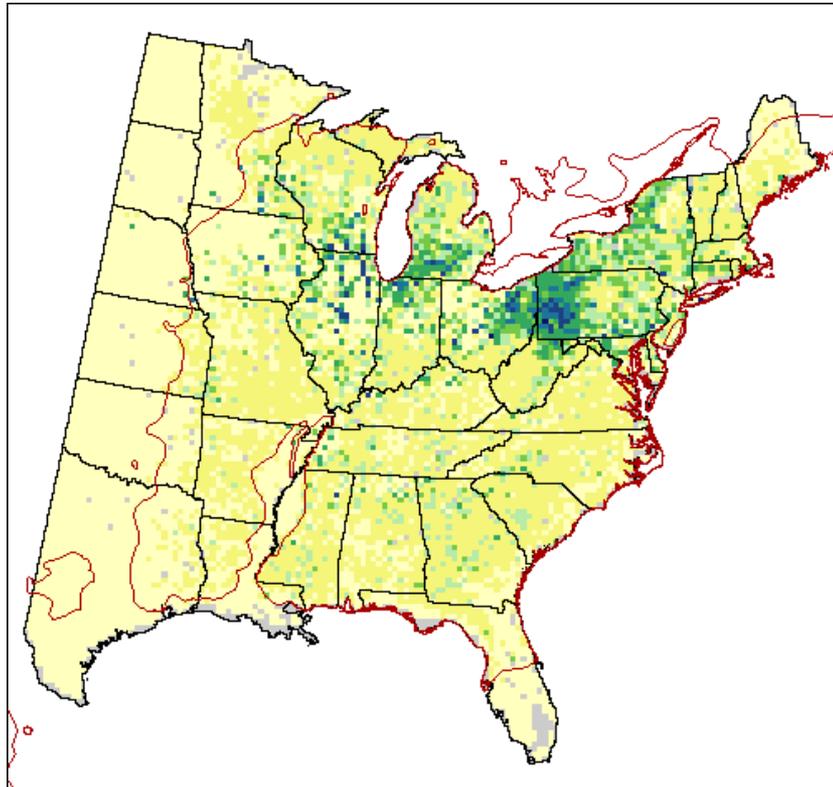
[Potential Changes by Region, State, Forest Type or National Forest and Parks](#)

[Climate Change Atlas](#) [Learn About the Models](#) [Products](#) [Get Help](#)

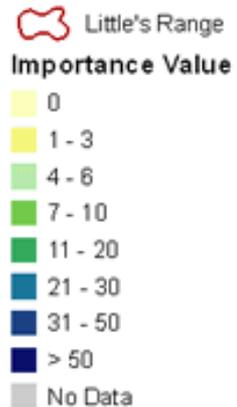
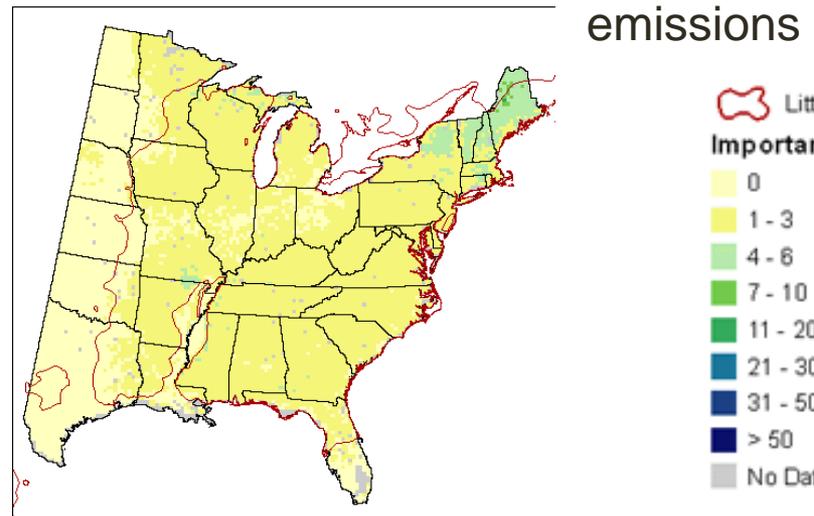
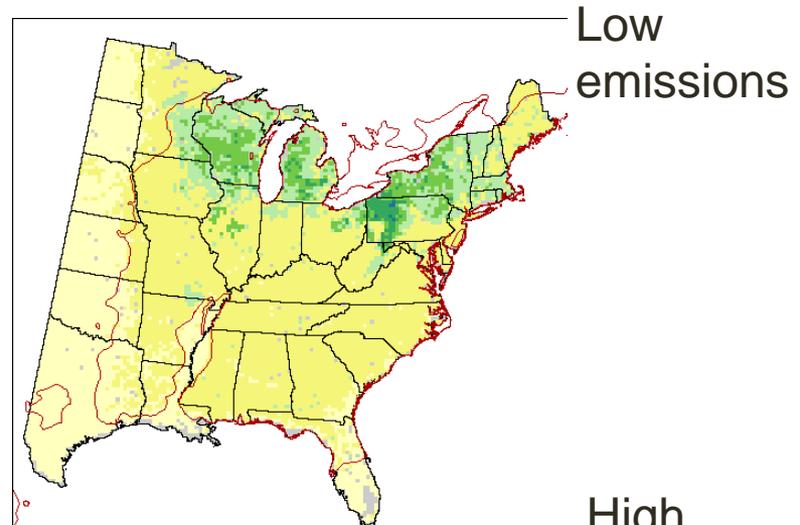
<http://www.fs.fed.us/nrs/atlas/>

IMPACTS: NATIVE SPECIES

Black Cherry : Current Habitat

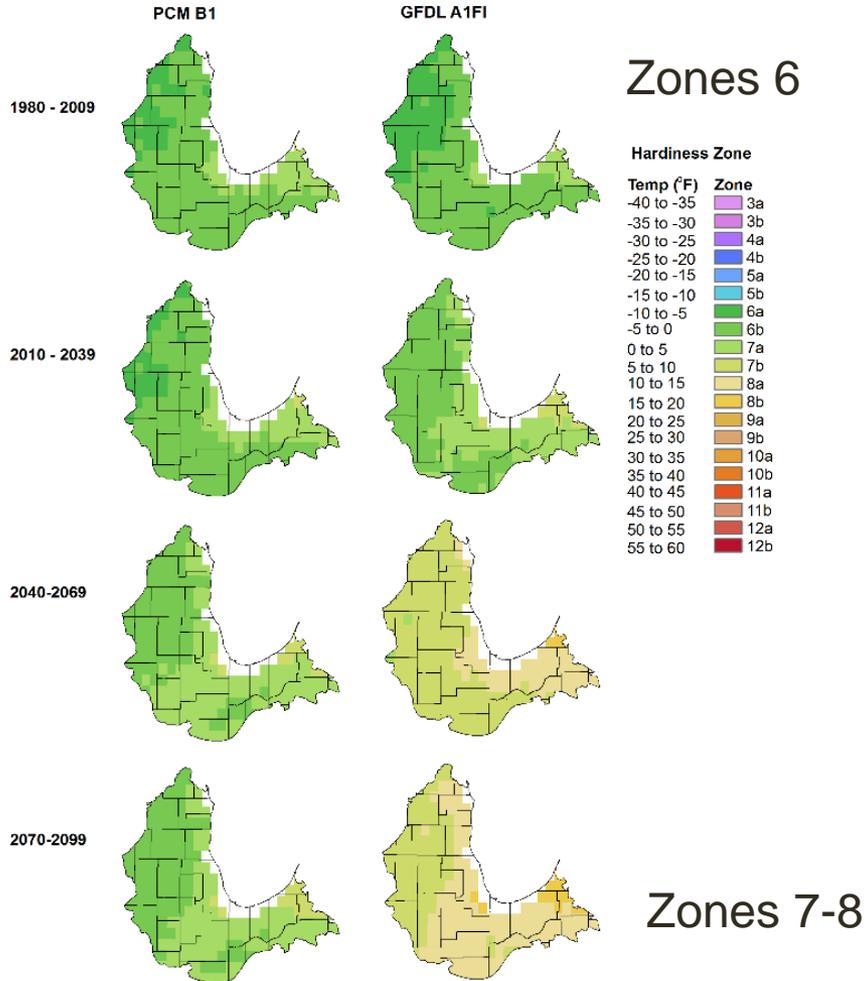


Black Cherry: Future Projected Habitat

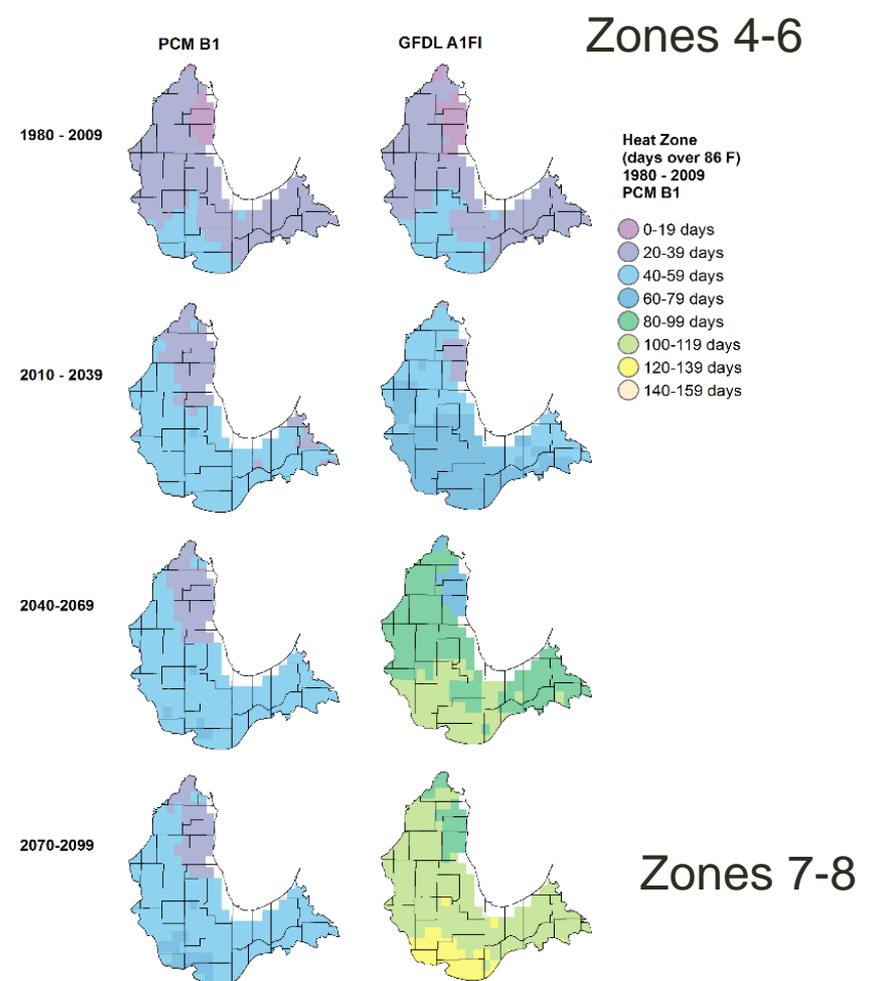


IMPACTS: NON-NATIVE SPECIES AND CULTIVARS

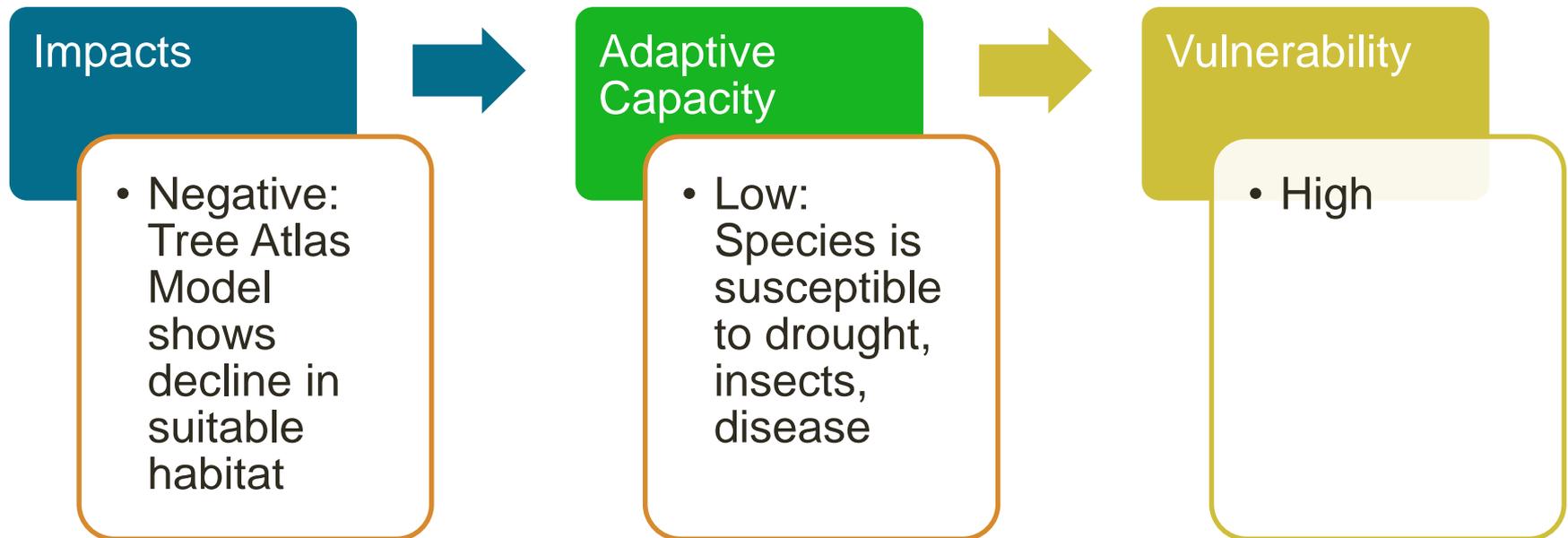
Hardiness Zone Changes



Heat Zone Changes



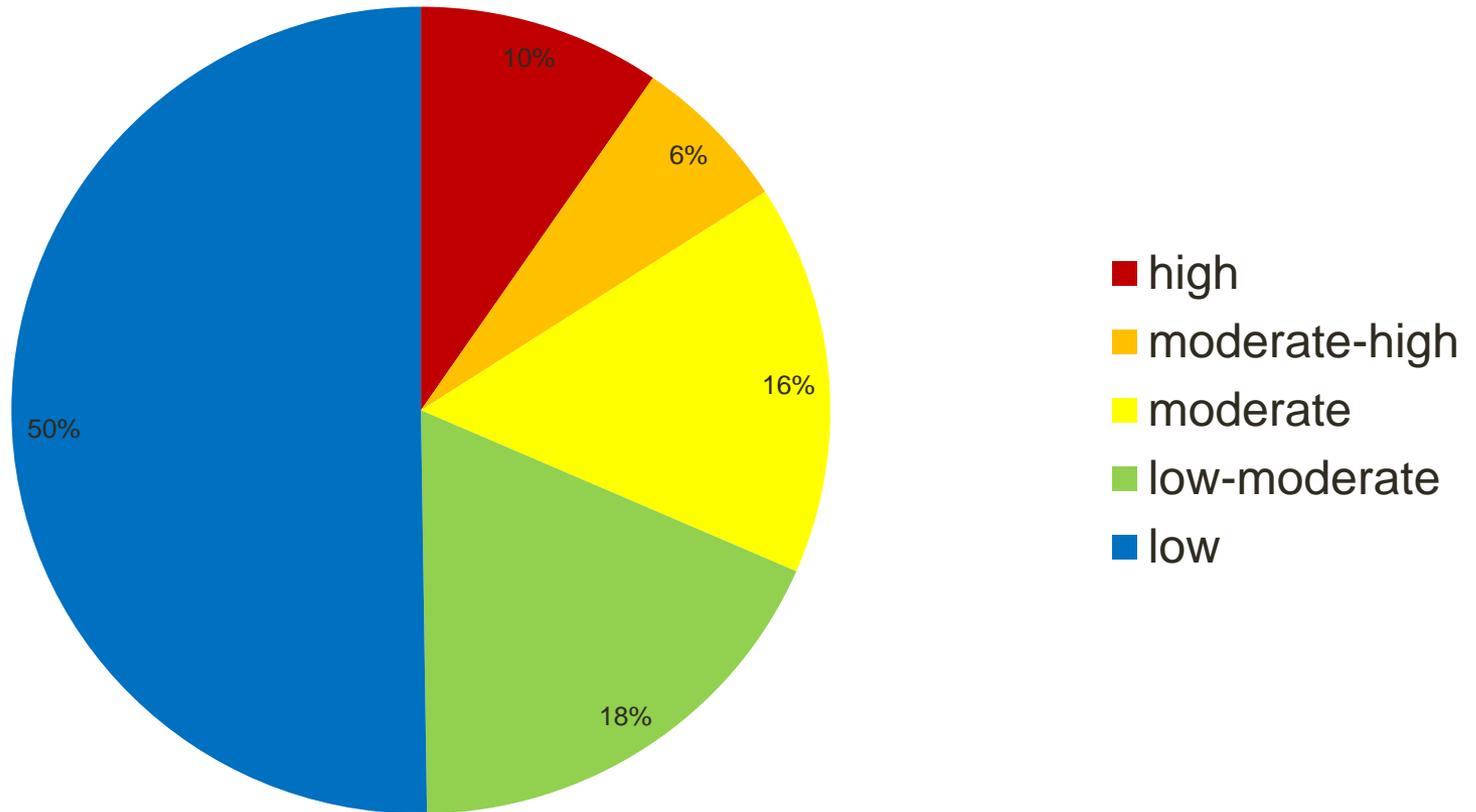
PUTTING IT TOGETHER: NATIVE SPECIES (EXAMPLE)



HOW MANY TREES ARE
VULNERABLE IN THE
CHICAGO REGION?

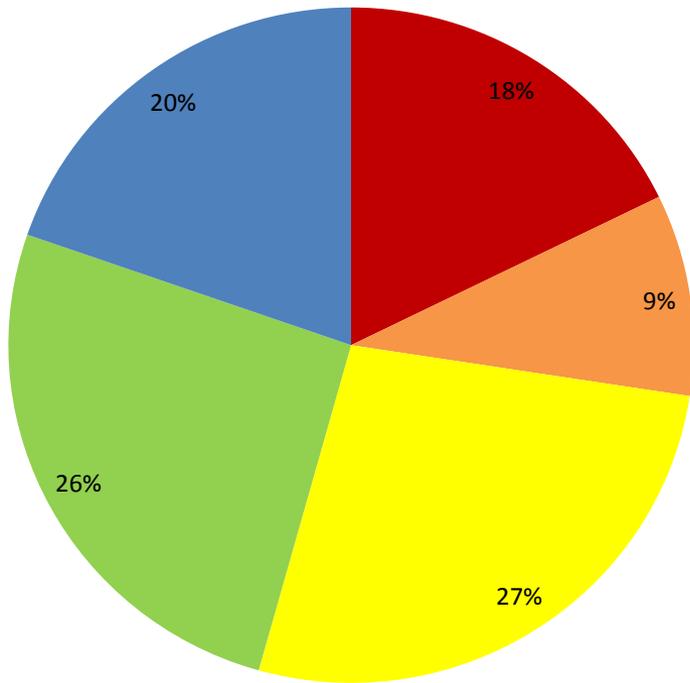
VULNERABILITY OF TREES IN CHICAGO REGION

% of Trees Inventoried

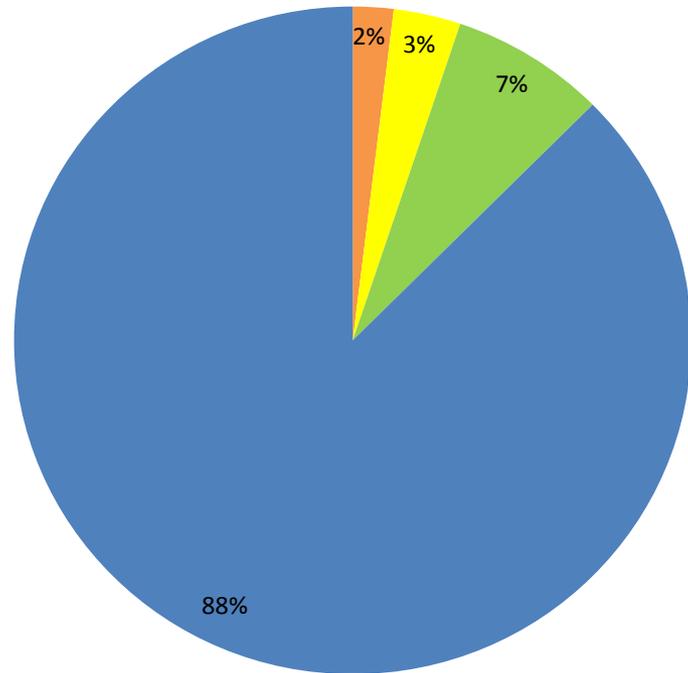


VULNERABILITY: NATIVE VS. INVASIVE SPECIES

% of Native Trees

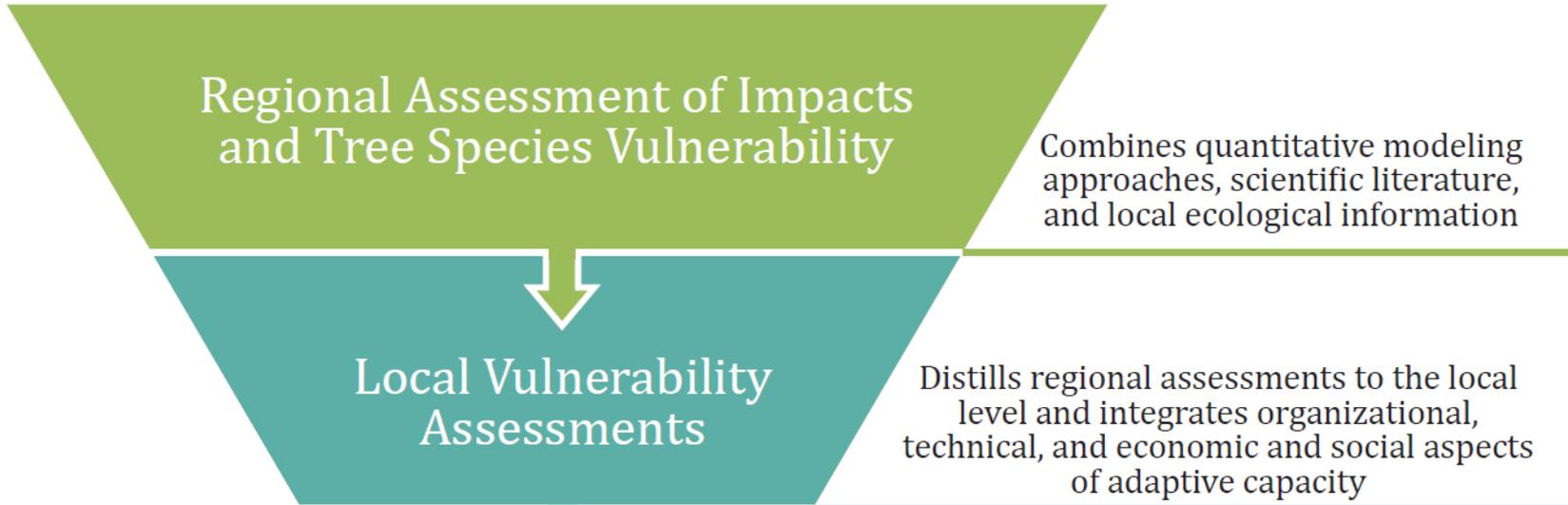


% of Invasive Species

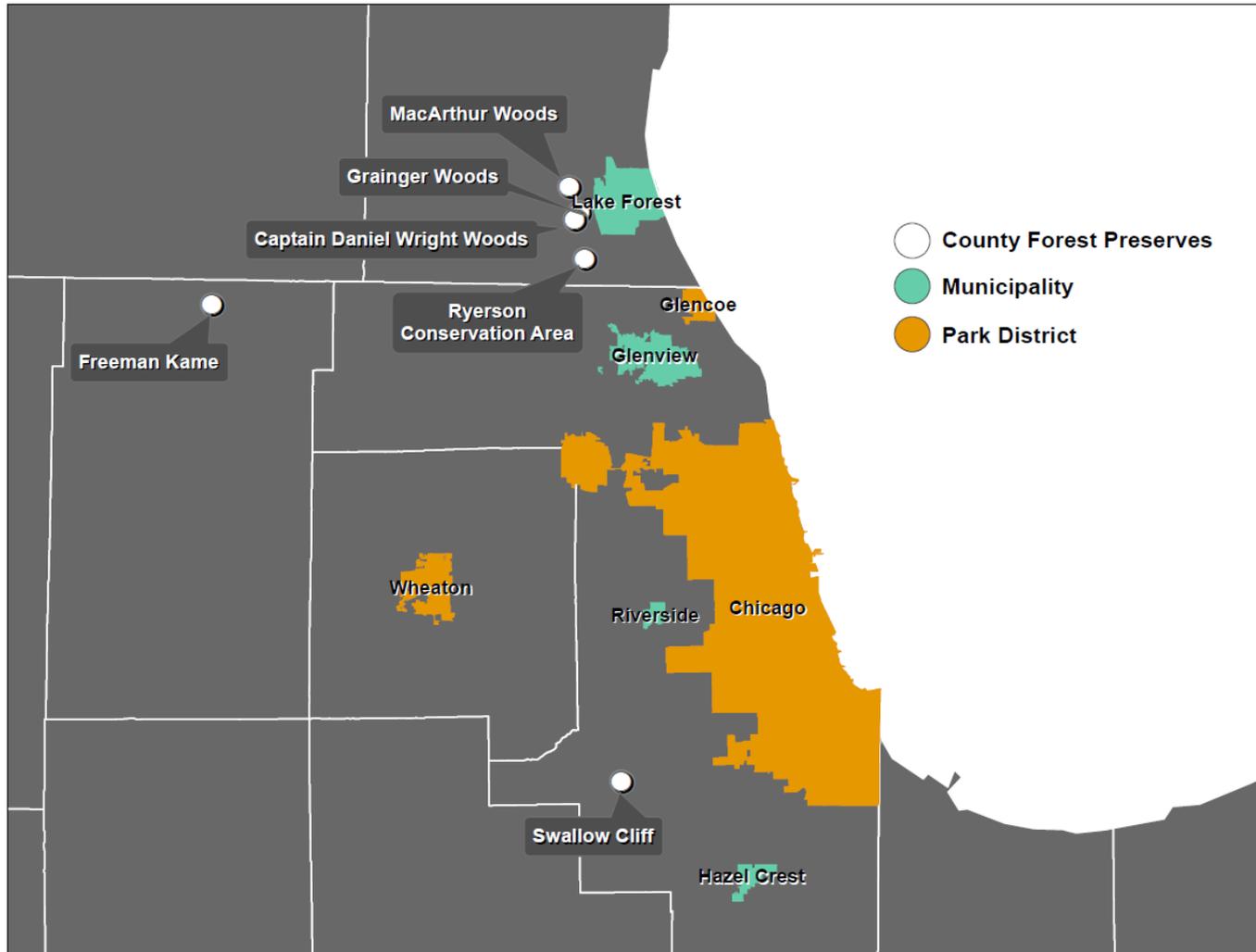


- high
- moderate-high
- moderate
- low-moderate
- low

URBAN FRAMEWORK APPROACH



PILOT COMMUNITIES



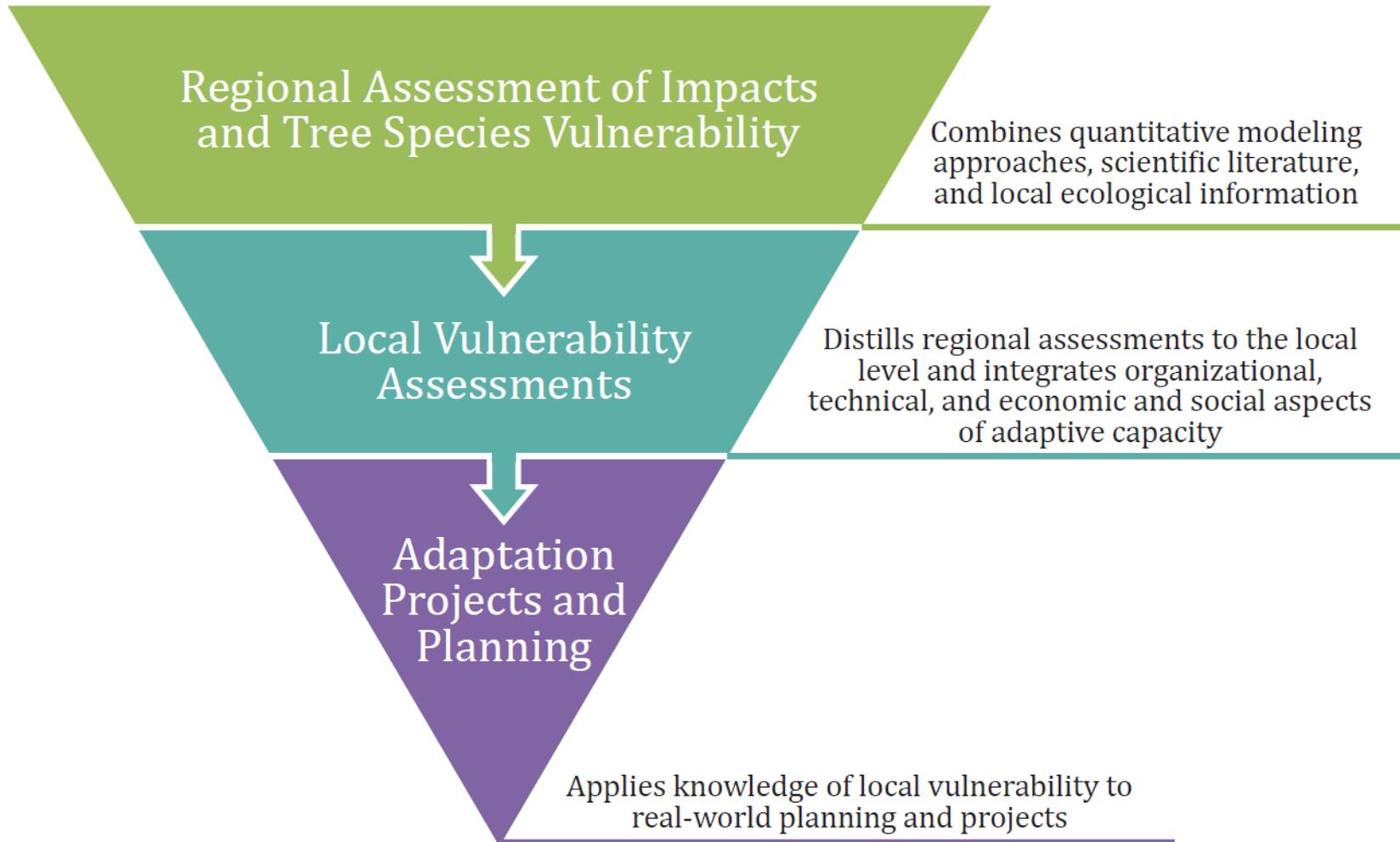
VULNERABILITY WORKSHOP

- Presentations on climate change, tree impacts
- Information on local changes in heat and hardiness zones, tree species vulnerability
- Facilitated local assessment process



Location	Impacts	Adaptive Capacity	Overall Vulnerability
Riverside	moderate	high	low-moderate
Lake Forest	moderate-negative	moderate-high	moderate
Hazel Crest	moderate-negative	low-moderate	moderate-high
Glenview	moderate-negative	high	moderate
Glencoe Parks	moderate-negative	low-moderate	moderate-high
Wheaton Parks	moderate-negative	high	moderate
Chicago Parks	moderate-negative	moderate-high	low-moderate
Southern Des Plaines River Preserves	moderate-negative	high	moderate
Freeman Kame Preserve	moderate-negative	moderate-high	moderate
Swallow Cliff Preserve	moderate-negative	low-moderate	moderate-high

URBAN FRAMEWORK APPROACH



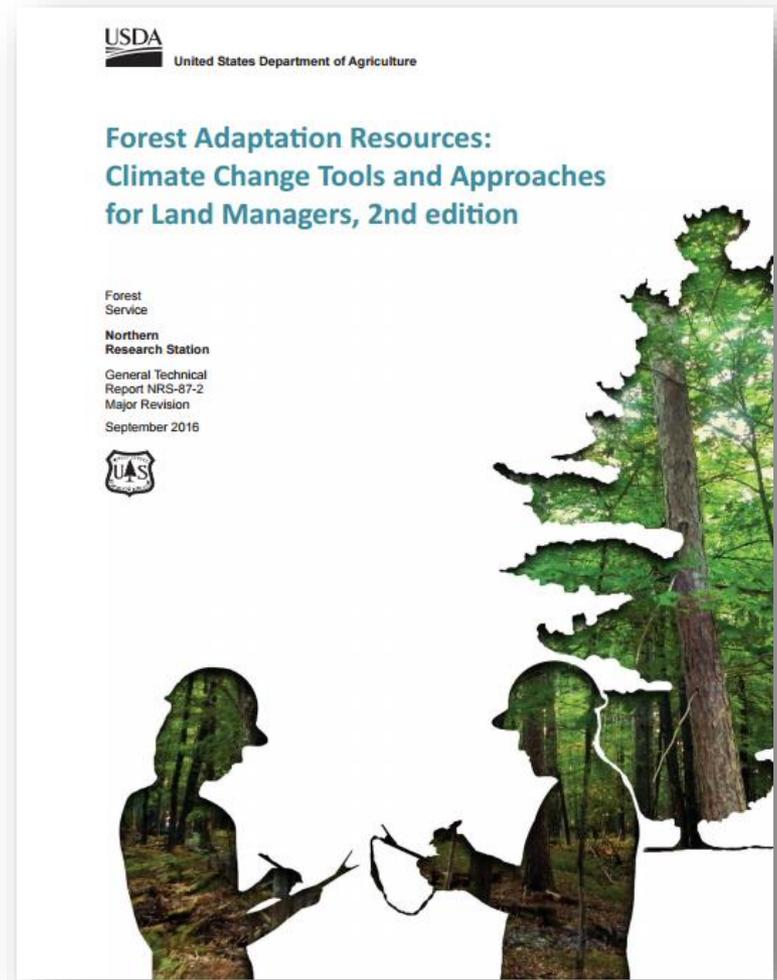
ADAPTATION WORKSHOP

- Same participants from vulnerability workshop
- Bring a real world project
- Presentations on adaptation concepts
- Facilitate participants through structured process

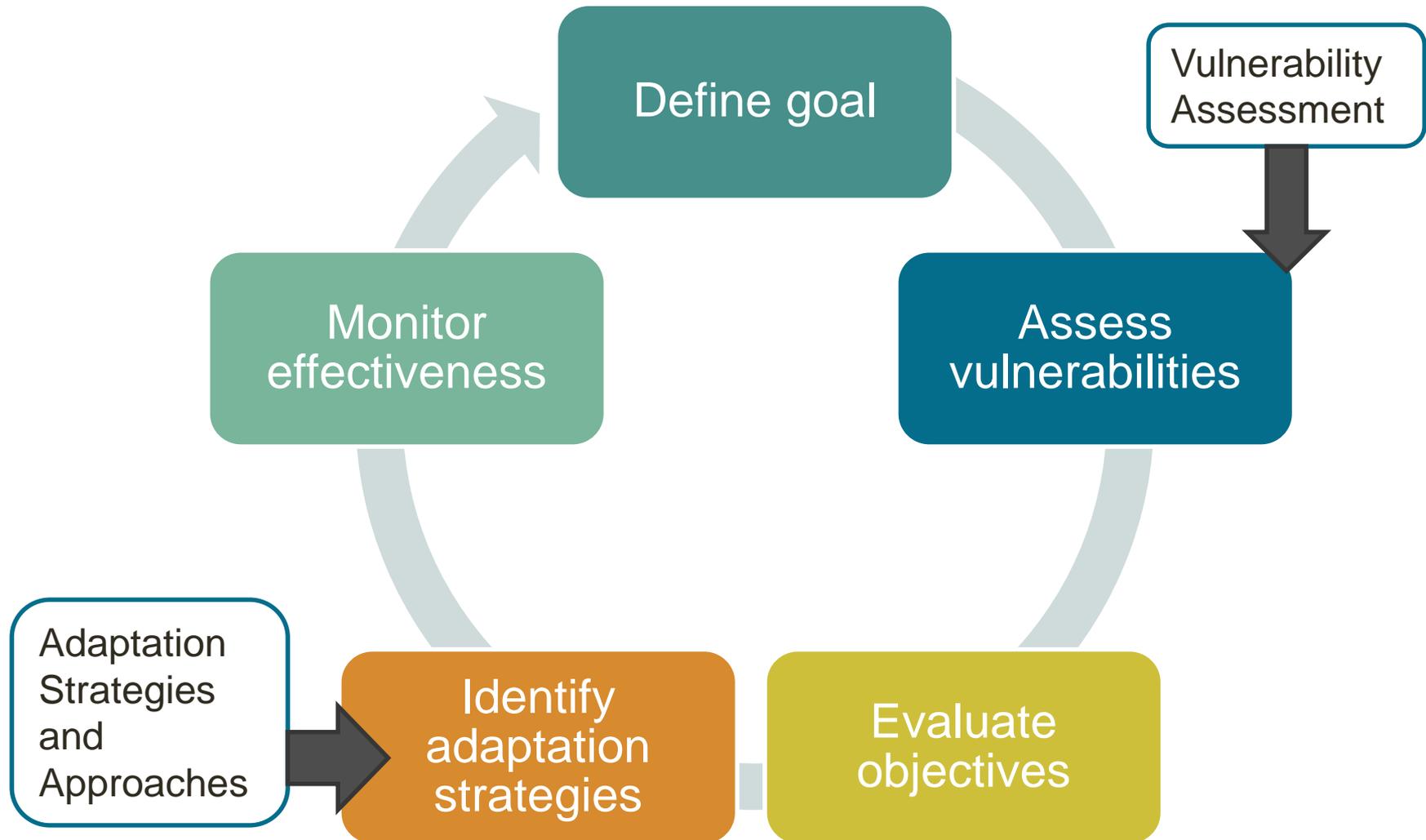


FOREST ADAPTATION RESOURCES

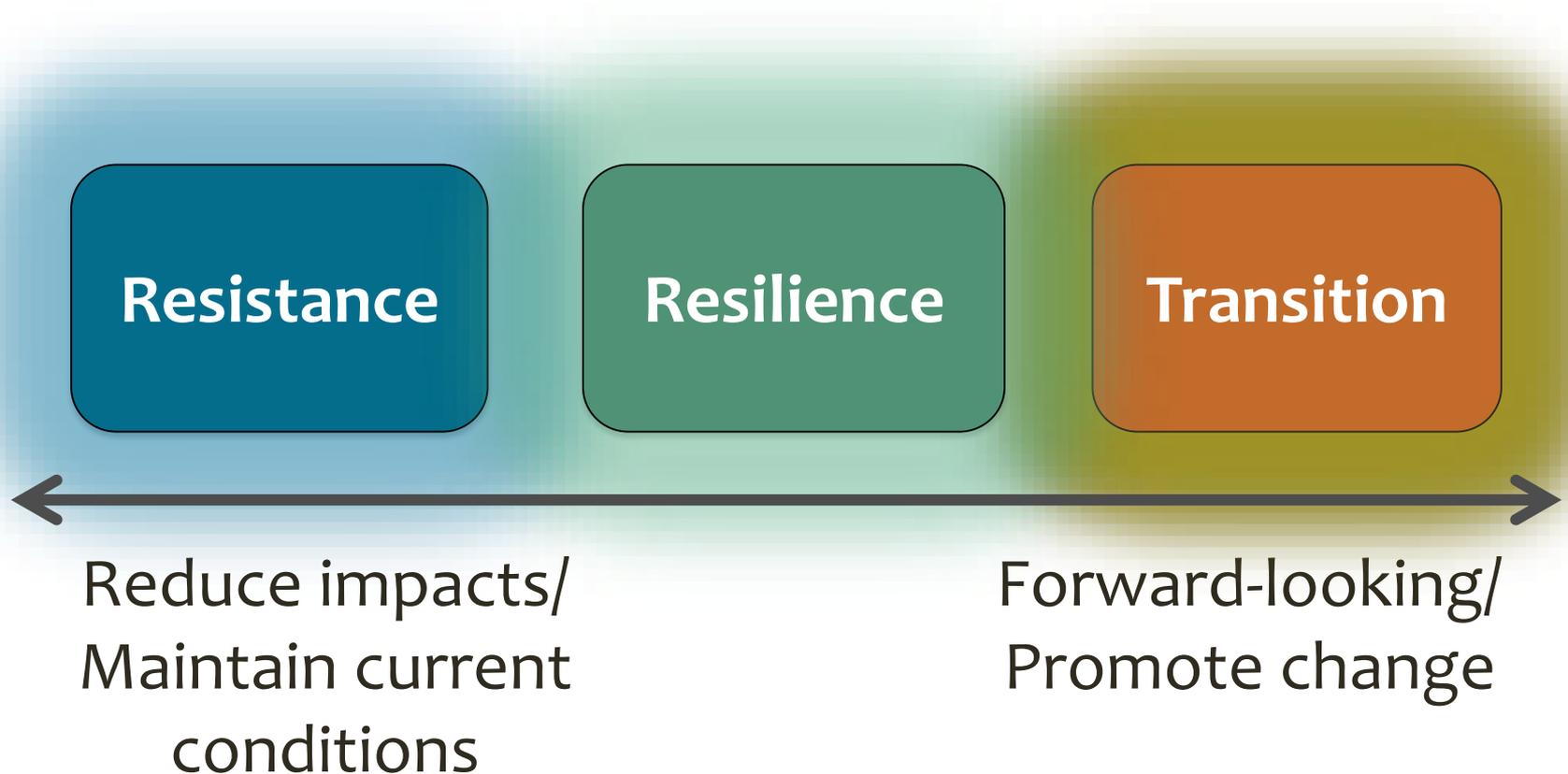
- Designed for a variety of land managers with **various goals** and **objectives**
- Tailored to **eastern forests in rural and urban areas**
- **Does not make recommendations**
- Two menus of adaptation **strategies & approaches**, including one for urban forest ecosystems



FOREST ADAPTATION RESOURCES: ADAPTATION WORKBOOK



ADAPTATION OPTIONS



Option

Adaptation Strategies Selected

Projects

Resist Change

Prevent the introductions and establishment of invasive plant species and remove existing invasives

4

Promptly remove major hazards

4

Retain biological legacies

2

Enhance Resilience

Maintain, restore, enhance native species diversity

3

Manage and restore hydrology

3

Promote diverse age structure

2

Facilitate Transitions

Select tree species to match current and future site conditions

2

Introduce species that are expected to be adapted to future conditions

2

Maintain or improve the ability of forests to resist pests & pathogens

2

PILOT OUTCOMES

- ✓ Increased knowledge of local climate change impacts.
- ✓ Structured process to incorporate climate considerations.
- ✓ Greater familiarity with adaptation concepts.
- ✓ Empowerment: everyone can do something.

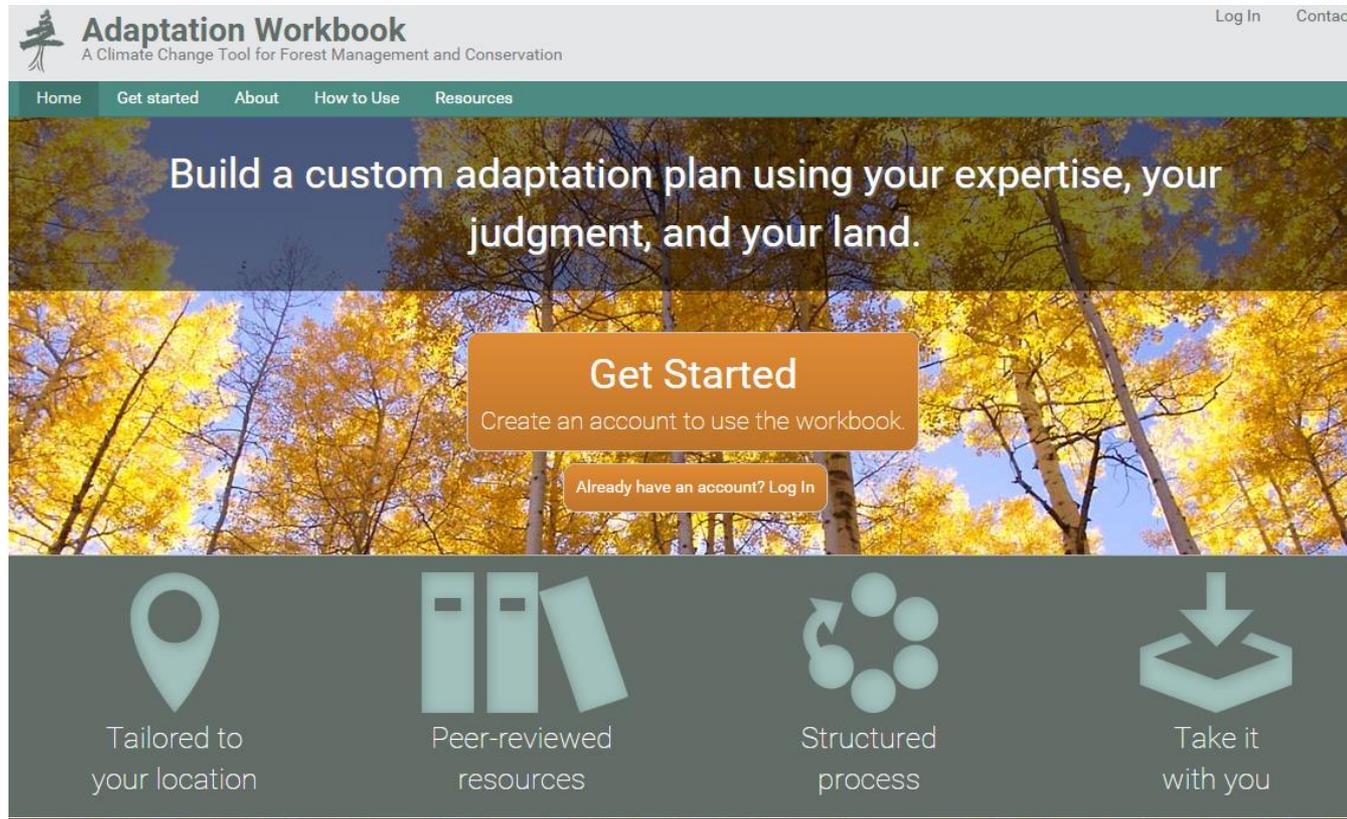
“This is a great process to go through. It breaks from the typical “Putting out fires” philosophy” –participant evaluation

“I think that the climate change topic can be intimidating and that many urban foresters will think there is nothing they can do. [We are] connecting how their current practices are actually a step in the right direction.” –participant evaluation

NEXT STEPS

- ✓ Chicago assessment-in press!
- ✓ Expand to other areas
 - Twin Cities workshop-November
 - Boston workshop-January
 - Philadelphia workshop-March
- ✓ Online Adaptation Workbook-expand to urban

ONLINE WORKBOOK: BEING UPDATED FOR URBAN FORESTERS



The screenshot shows the homepage of the Adaptation Workbook website. At the top left is the logo, a stylized tree, followed by the text "Adaptation Workbook" and "A Climate Change Tool for Forest Management and Conservation". On the top right are links for "Log In" and "Contact". Below this is a navigation bar with links for "Home", "Get started", "About", "How to Use", and "Resources". The main content area features a background image of trees with yellow autumn leaves. A large white text overlay reads "Build a custom adaptation plan using your expertise, your judgment, and your land." Below this is a prominent orange "Get Started" button with the text "Create an account to use the workbook." and a smaller "Already have an account? Log In" button. At the bottom, there is a dark grey bar with four icons and their corresponding descriptions: a location pin icon for "Tailored to your location", a book icon for "Peer-reviewed resources", a circular process icon for "Structured process", and a download icon for "Take it with you".

Adaptation Workbook
A Climate Change Tool for Forest Management and Conservation

Log In Contact

Home Get started About How to Use Resources

Build a custom adaptation plan using your expertise, your judgment, and your land.

Get Started
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Already have an account? Log In

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Take it with you

www.Adaptationworkbook.org

LEARN MORE

www.forestadaptation.org/urban

Climate Change Response Framework

Home Our Approach Projects Demos Products Partners Resources Contact

Central Appalachians

Central Hardwoods

Mid-Atlantic

New England

Northwoods

Urban

Partnerships

Vulnerability Assessment

Forest Adaptation Resources

Demonstration Projects

Urban

Urban forests will experience local climate change impacts in the coming decades. To reduce these impacts, urban forest managers will need to adapt their management, but often lack the specialized knowledge and tools to do so.

The overall goal of this effort is to ensure that urban forests will continue to provide benefits to the people that live in urban communities as the climate changes. The Urban Forestry Framework project is in the beginning stages of planning and development. We are seeking urban forestry professionals from variety of organizations, both public and private, to work toward this goal by accomplishing the following objectives:

- Engage with communities across the Northeast, Mid-Atlantic, and Midwest that are interested in adapting their urban forest management to climate change.
- Work with these communities to assess the vulnerability of their urban forests to climate change.

Chicago

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