

FORESTRY TEACHER TRAINING



Nebraska Envirothon 2021

FORESTRY IN NEBRASKA

- Forestry in Nebraska is unique, after all this is the Home of Arbor Day!
- There are many aspects to Nebraska's forests and trees:
 - Rural Forestry – learn about our natural forests and woodlands and how to quantify and qualify them
 - Community Forestry – learn the benefits of trees in our communities
 - Forest Health – learn that invasive pests and environmental conditions are having detrimental affects
 - Conservation Education – learn about the dynamic ecosystem characterized by the interaction of plants and animals





RURAL FORESTRY

**Rachel Allison
Southwest District Forester
Nebraska Forest Service**

KEY WORDS FOR RURAL FORESTRY

- Phloem, xylem, cambium, sapwood, heartwood
- Photosynthesis, respiration, chlorophyll
- Deciduous, conifer, softwood, hardwood
- Pinnate, compound, alternate, opposite
- Basal area, stocking, density, merchantable, board feet
- Increment borer, prism, clinometer, Biltmore stick
- Silviculture, inventory plots, clearcut, shelterwood
- Windbreaks, density or porosity, windward or leeward



MANAGING FORESTS AND WOODLANDS

- Nearly three percent of Nebraska's land base is forested which provides people with protection, shelter, shade, lumber, wood as fuel and many other benefits
- Maintaining these forests, requires the following activities for management:
 - Identify the tree and plant species, tree density, and age class in the forests
 - Use tools which provide measurements of wood volume
 - Determine the optimal silvicultural (thinning and harvesting) practices
- Background knowledge is helpful:
 - tree anatomy and how trees grow
 - the forest ecosystem, and the interaction of plants and animals



NEBRASKA'S FORESTS AND THEIR TREES

- Natural forests type:
 - ponderosa pine
 - hardwood
 - riparian
- Planted windbreaks like forests also provide value in open areas to protect soil and water, provide wildlife habitat, in addition to benefits for people



REFRESHER TOPICS

○ Anatomy & Physiology

- How does a tree absorb water & nutrients?
- What process does a tree use to produce oxygen?
- What are the layers which form the inner wood and outer bark?

○ Tree Identification

- How do conifer needles differ?
- How are hardwoods distinguished?

○ Forest Resources

- What are the different forest types in Nebraska?
- What is the most common product made from cottonwood lumber?

○ Forest Management

- What is silviculture?
- What is site index?





COMMUNITY FORESTRY

**Graham Herbst
Community Forester Eastern Nebraska
Nebraska Forest Service**

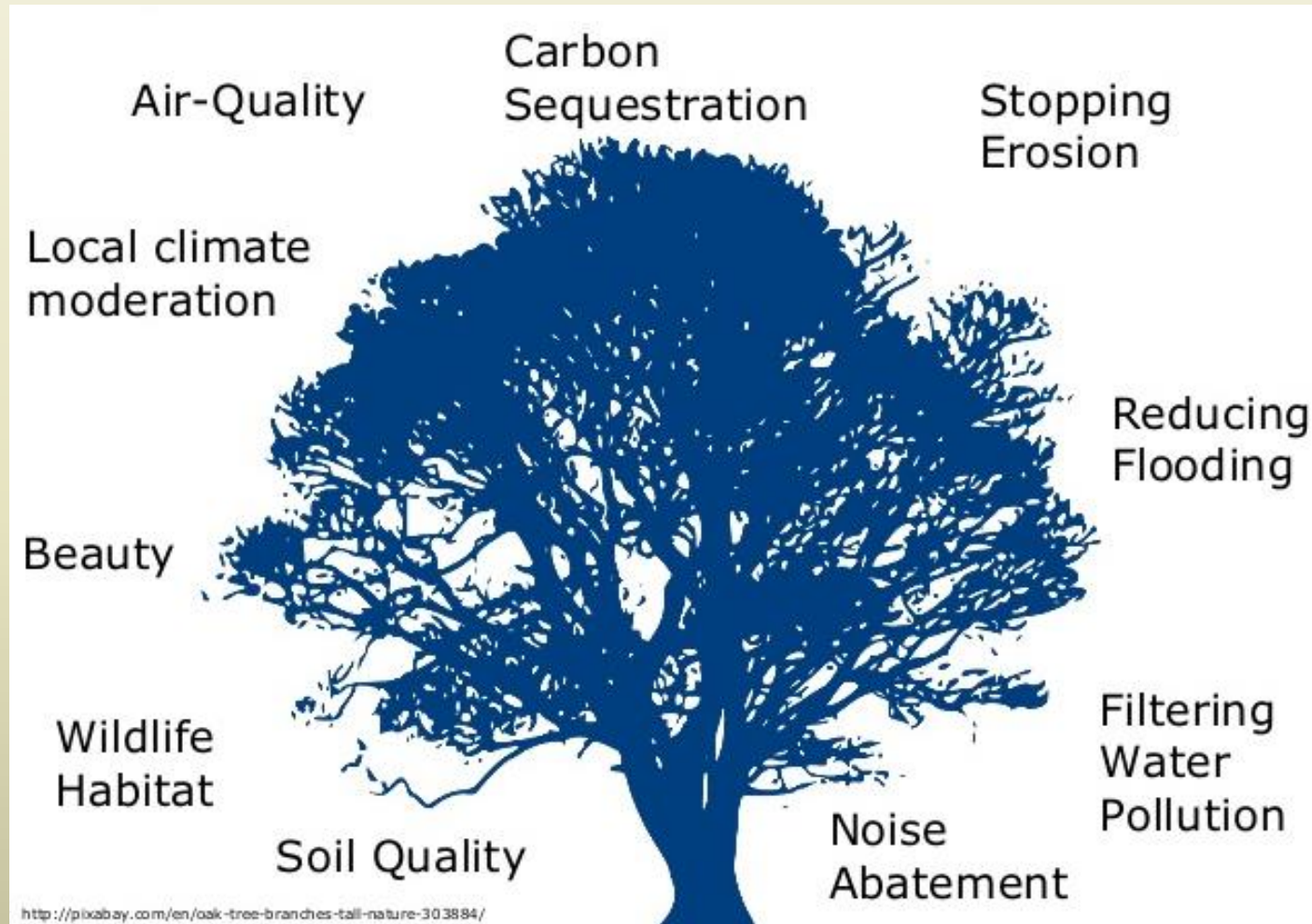
URBAN FORESTRY IN NEBRASKA



Graham Herbst

Community Forester- Eastern NE

TREE BENEFITS



Walkability



Air Quality

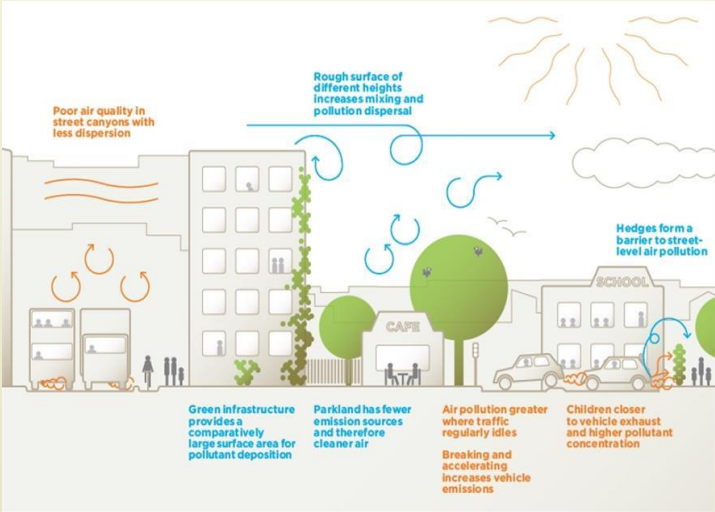
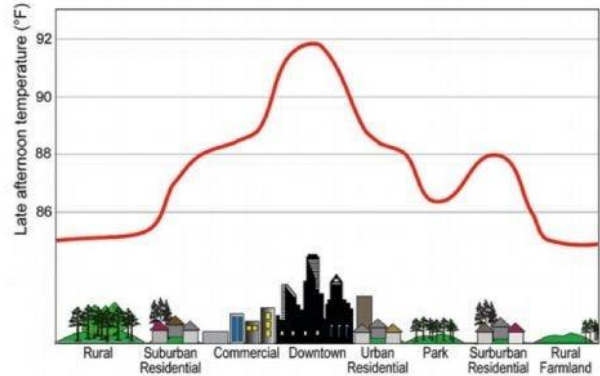


Figure 2. Urban heat island temperature profile.⁵



Urban Heat Island

Green Views



TREES ARE CITY INFRASTRUCTURE!



Connecting trees and people





FOREST HEALTH

David Olson
Forest Health Specialist
Nebraska Forest Service

IMPACTS TO TREES

- Insects
 - Pest or not?
 - Types of insects by feeding style
- Fungi
 - Common fungal issues
- Abiotic impacts
 - Land changes, environmental impacts, etc



NATIVE VS NON NATIVE VS INVASIVE

- Know common native tree species
 - Ie. Bur oak, cottonwood, silver maple, ponderosa pine, red cedar, etc. (For Nebraska)
- Know common invasive/non-native plants/trees
 - Ie. Scots pine, tree of heaven, russian mulberry, russian olive, etc.



HISTORICAL IMPACTS

- Historical pests of grand scale
 - Emerald Ash Borer
 - Dutch Elm Disease
 - Chestnut Blight
 - Gypsy Moth
 - Etc.



HELPFUL LINKS

- Insect ID – bugguide.net
- Bugwood.org
- NFS forest health publications





FORESTRY CURRICULUM

**Jack Hilgert
Conservation Education Assistant
Nebraska Forest Service**

RESOURCES

- Tree ID – Trees of Nebraska, UNL EC publication, <https://nfs.unl.edu/documents/TreesofNebraska.pdf>
- Internet sites –
 - Forestry study guide -- <https://www.nrdnet.org/nebraska-envirothon>
 - Project Learning Tree Activity Guides -- <https://www.plt.org>
 - Nebraska Forest Service -- <https://nfs.unl.edu>
 - Nebraska Statewide Arboretum, Inc. -- <https://plantnebraska.org>
 - Arbor Day Foundation -- <https://www.arborday.org/programs/tree-campus-k-12/learning-hub.cfm>
- And, don't forget to ask your local district forester for help with forestry books and practical help with using the forestry tools and answering questions.
<https://nfs.unl.edu/foresters>



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