

# **Growing Greener: Eco-Structure For Climate Resilience**

## **Chapter 5: National Wildlife Federation's Programs For Resilient Communities**



Credit: Flickr user Yinghai

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This guide was developed by Kara E. Reeve, Manager of National Wildlife Federation's Climate-Smart Communities Program, with support from additional NWF staff including Ian Evans, Patty Glick, Laura Hickey, Ryan Kingston, and Jennifer Murk. Information about NWF's Climate-Smart Communities Program can be found here: [www.nwf.org/climate-smart-communities](http://www.nwf.org/climate-smart-communities).

## Introduction

Whether you live in the city overlooking a park, grew up with a backyard tree house, or have hiked in a national forest, you undoubtedly know exactly what poet Joyce Kilmer was feeling when he wrote, "I think that I shall never see a poem as lovely as a tree." Trees are a vital part of our natural world, health, economy, and culture.

The ecological benefits of healthy trees, including the habitat, shelter, and food they provide for many birds and small wildlife, are widely known.

However, people living in urban areas may not immediately consider the ways in which healthy urban forests are **critical infrastructure** for *human* communities, too.



Credit: Charlie Archambault

For starters, trees are central components of green infrastructure, which is natural and cost-effective approach that many communities are using to reduce flooding, manage stormwater, improve water quality, and even reduce urban heat. Green infrastructure includes a mix of landscape features including tree canopies, open space, parks, and wetlands, as well as low impact development (LID) approaches, such as rain gardens, green roofs, and permeable paving. Additionally, planting and fostering healthy trees helps reduce carbon pollution because as trees grow, they absorb carbon dioxide from the air and store carbon in their trunks, roots, and foliage. Furthermore, communities are already experiencing the effects of climate change, including extreme flooding, heat waves, and drought, and green infrastructure can provide critical, natural protection from these impacts now and into the future.

Green infrastructure not only provides resilience to climate change, but can also help communities be more resilient to economic shocks since designing, installing, and maintaining green infrastructure projects, like green roofs and rain gardens, can lead new local job opportunities. Additionally, green infrastructure often costs less to install and maintain when compared to conventional "grey" infrastructure, such as building underground storage tanks to manage stormwater, and buildings with vegetated roofs benefit from lower heating and cooler costs.<sup>1</sup> Green infrastructure also improves the health and quality of life for residents by improving access to green spaces, connecting people with nature, and by providing recreational opportunities.

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<sup>1</sup>US EPA. *Reducing Urban Heat Islands: Compendium of Strategies*. Chapter on Green Roofs. URL: <http://www.epa.gov/heatisland/resources/pdf/GreenRoofsCompendium.pdf> (accessed 2 May 2013).

NWF partnered with King County, Washington, to help develop an on-line tool for landowners, called Urban and Community Forestry CPR - Climate Preparedness and Response (CPR).<sup>2</sup> Using CPR, landowners can view their own property using a Geographic Information System (GIS) tool. Once a property has been identified, the tool also quantifies and explains existing land and forest characteristics (e.g., total forest carbon stored at a particular site). Additionally, the website provides customized management recommendations through a Forest Health Assessment survey.

This guide is designed to help local governments, organizations, and others replicate the website and tool for their own communities, while also learning about the ways in which green infrastructure can provide natural protection from the impacts of climate change. The first section of this guide provides an overview of the ways in which climate change is impacting urban areas, and also describes how nature-based approaches, like enhancing and protecting the urban tree canopy, can help communities build resilience to climate impacts. The next section includes a case study of the King County Forest CPR development process, guidance for selecting data sources for the tool, and lessons learned from the King County project. Next, since climate change is impacting the survivability of urban trees, this guide also provides recommendations for integrating climate change considerations into the planning for and management of urban forests. This guide also includes a chapter about managing for pests in a changing climate, while the next section profiles National Wildlife Federation programs and resources that are designed to build healthy, resilient communities, including NWF's Certified Wildlife Habitat<sup>®</sup> program. The last sections include regionally-specific resources and information to help enhance forestry health and subsequently increase the amount of carbon that urban trees are able to sequester.

We have developed this guide to encourage cities and towns to recognize trees as critical, functional infrastructure —“**eco-structure**”—that is just as important as buildings and roads. We know that trees can survive and thrive in urban areas, while benefiting the humans that live there — we just need to place a premium on our trees and other green infrastructure and envision a greener, healthier future.

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<sup>2</sup> Forestry CPR can be accessed here: <http://gismaps.kingcounty.gov/ForestryCPR/>

## 5. National Wildlife Federation's Programs For Resilient Communities

Eco-structure provides many benefits for communities. For example, the shade and cooling effects provided by trees can reduce the need for energy-intensive air conditioning in buildings, resulting in not only lower energy costs, but also a reduction in GHG emissions. Incorporating water-smart practices, like using native vegetation that is more drought-tolerant or requires less watering, can help reduce water usage and the costs and energy associated with pumping and delivering water, while also providing critical wildlife habitat in urbanized areas. Along with the Certified Wildlife Habitat® program mentioned previously, National Wildlife Federation has a variety of programs that will complement and help support landowner and community efforts to support eco-structure while increasing resilience to the impacts of climate change. Consider utilizing one of these programs after learning how to enhance your forest's health through the Forestry CPR tool.

### *Climate-Smart Communities*

The National Wildlife Federation's Climate-Smart Communities program helps U.S. cities and towns prepare for the impacts of a changing climate by using nature-based approaches that provide natural protection, while also connecting people with nature through urban wildlife habitats.

- Climate change is intensifying existing stresses on wildlife and their habitats and amplifying natural hazards that threaten people and property.
- Climate-Smart Communities work with, and not against, nature to prepare for heat waves, drought, wildfires, water shortages, flooding, sea level rise, wind storms, tornados, hurricanes, economic losses, and more.
- NWF is actively promoting the use of non-structural, nature-based approaches to prepare for extreme weather, like living shorelines.

For more information, go to [www.nwf.org/climate-smart-communities](http://www.nwf.org/climate-smart-communities)

### *Habitat Stewards Training*

Since 1994 [NWF's Habitat Stewards volunteer program](#) has been helping individuals, families and organizations create spaces that are friendly to wildlife. Across the country Habitat Stewards serve their community by:

- Mapping and conducting inventories of potential habitat
- Designing habitats and recommending appropriate plants
- Educating others about the effects of climate change, urban sprawl, deforestation and pollution on wildlife
- Mentoring novice gardeners and landowners on gardening skills, helping them gain an appreciation for nature, and helping them become better environmental stewards

Consider reaching out to a Habitat Steward in your community should you need help implementing the recommendations you received through the Forestry CPR tool. You can find a Habitat Steward near you by emailing [habitatstewards@nwf.org](mailto:habitatstewards@nwf.org).

### *Trees for Wildlife*

NWF's Trees for Wildlife program educates youth about the role of trees in our environment and how individuals can take action to plant trees. The program also provides stewardship for sustaining trees at local and national scales. Trees for Wildlife also explores the unique connection wildlife have with trees and the essential role for habitat trees play for wildlife.

The Trees for Wildlife program can support your efforts to make your land more climate resilient by providing access to tree kits, tree care guides, and additional information about the value of trees in our environment.

The Forestry CPR tool can supplement the resources that schools and youth groups participating in the Trees for Wildlife program are using. Participants can use recommendations from the website to help them determine which trees to plant on site, and how to support the health of the trees they plant by creating a healthy habitat that is climate resilient.



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The Trees for Wildlife program provides self-guided materials, including:

- Age-appropriate and downloadable activities
- Native tree seedlings shipped directly to homes for planting
- Incentives (patches, pins, etc)
- Educational Resources to support further projects

### *Eco-Schools USA*

NWF's Eco-Schools USA program helps educators across the country integrate sustainable principles throughout their schools and curriculum. It strives to model environmentally sound practices, provide support for greening the curriculum and enhance science and academic achievement. Additionally, it

works to foster a greater sense of environmental stewardship among youth. Schools participating in the program follow a seven-step framework, and focus their efforts on a variety of environmental pathways (or focus areas).

The Forestry CPR tool can provide guidance and site-specific recommendations to schools that decide to focus on pathways aimed at greening school grounds or reducing climate pollution.

Examples of how the tool can support pathway-specific efforts include:

- Climate Change Pathway – Schools can evaluate the health of the school property, and evaluate how effective it will be over time at sequestering carbon.
- Biodiversity Pathway – Schools can use Forestry CPR recommendations to help increase the biodiversity of habitat found on school property.
- School Grounds Pathway – Schools can use the Forestry CPR recommendations to help them create healthy habitat on-site that will be resilient to the impacts of climate change, and act as outdoor research laboratories for students' learning.