



Trees, Native Species & Land Management

Trees and native species are a vital part of a community's green infrastructure. How can local governments do more to promote reforestation and sustainable land-use practices?

The Issues

The natural and societal benefits of trees, including urban trees, are numerous. Trees

provide [vital ecosystem services](#) that result in cleaner air, storm water retention, transpiration, erosion prevention, carbon storage, and wildlife habitat. Trees form a natural shield from ultra-violet rays of the sun. The shade and natural cooling from urban trees have the secondary benefit of reducing heat island effects and saving energy. Trees also improve community aesthetics and raise property values. And of course, trees can provide food and the valuable raw material of wood.

Healthy green open spaces are critical to the overall health of the urban landscape. This includes the use of native plant species that thrive in our local soils, supporting native wildlife and insect species. Healthy soils are

the most overlooked resource and are the most critical element to support healthy ecosystem services. Healthy soils, especially in urban environments, provide support for plant life, store a vast amount of carbon, and clean storm water, allowing it to recharge our critical aquifer. Healthy soil is a complex living system that requires hundreds (and sometimes thousands) of years to form. Living soils include not only a mix of silt, sand, and clay, but also organic matter, along with a complex mix of fungal mycorrhiza, beneficial bacteria, and millions of other organisms. Living soil provides the food we eat, sustains plants that provide the oxygen we breathe, and ensures clean water that we drink. Unfortunately, urban development destroys this system by paving over soil with buildings, roads, and parking lots. This living system can be destroyed with just a single pass of a piece of earth moving equipment, through compaction of the soil. Healthy open spaces, including sustainable urban farms, are a critical part of our urban ecosystem and are rarely considered in zoning codes or development practices. In many cases, the introduction of healthy native landscapes is prohibited in many codes, such as weed ordinances.

Interconnected systems of green spaces are critical for a healthy urban environment. These green spaces and interconnecting natural corridors contain living soils and complex landscapes that provide cooling shade trees, refuge from the built environment, and a natural habitat for wildlife and insects to move around and through. A fragmented and non-planned network of open space does not provide the same benefit to a community or its wildlife. Without natural corridors connecting green spaces, wildlife is at risk of wandering onto roads and into residential areas, seeking food and

refuge. That is dangerous to both humans and wildlife. Planned, interconnected green space networks and corridors provide important benefits not just to the ecosystem but also to the economy. They entice economic development with places for recreation and garner higher land values along their boundaries.

The use of native vegetation in urban landscapes, including native tree and shrub species, helps to expand planned open space networks and the benefits they provide. Native vegetation is critical to wildlife and insect species, which help to keep our ecosystem in balance. Native insects, for example, require specific plant species to lay eggs and to use as food sources in order to develop into adults. These same insects are critical to pollinating the plants that provide us with fruits and vegetables. Landscapes containing a great diversity of species, including plants, animals, and insects, retain a balance where no individual species becomes dominant or out of control. The introduction of non-native plant species results in problems affecting our local ecosystems. Many introduced, or non-native, species provide no benefit to local wildlife or insect populations. In most cases, they are introduced species that our native insects cannot use for food, so they are not damaged or consumed by beneficial insects. This allows the non-native species to become invasive and take over landscapes, choking out or out-competing native species. The result is a less diverse ecosystem or, in a worst-case scenario, mono-culture landscapes. Our urban landscapes need to reflect - or at least contain - elements of our native landscapes to ensure overall environmental health.

Trees face a lot of threats these days, especially urban trees. Recall the Emerald Ash Borer – an invasive beetle species whose lifecycle was destructive to ash trees. A newer threat comes from the [Asian Longhorned Beetle \(ALB\)](#) – an invasive insect that threatens a wider variety of hardwood trees. The Asian Longhorned Beetle is already found in Ohio. Invasive tree species, particularly [the Bradford pear](#), are at best a nuisance, but are also seen to be crowding out native trees in eastern forests. Additional stresses for urban trees include ongoing development and the resulting alterations in hydrologic patterns, soil compaction, and road salt. Many of the benefits that trees provide, as listed above, do not occur until a tree reaches approximately 20 years of age. Unfortunately, the average lifespan of an urban tree is only 8 years.

Over the last few years, many communities in the Miami Valley have faced a significant loss of tree cover due to insect infestations, natural disasters, and trees reaching the end of their lifecycle. This has resulted in a decrease of tree cover in our Region. Conditions vary from community to community, but in a forested state like Ohio, achieving a tree canopy cover of [between 40 to 60 percent is attainable](#). Few, if any, Miami Valley communities meet such a target. Additionally, research has found that lower income neighborhoods are [likely to have less tree canopy cover](#) than wealthier neighborhoods. Developing a tree plan to achieve greater, equitable canopy cover from healthy and diverse tree populations (i.e. tree species of varying ages) can provide a benefit to your community for generations.

Community Education & Outreach

- Educate residents about the benefits of trees, native plants, and biological diversity. Sources of information include the [Cox Arboretum](#), the Ohio Native Plant Society – Miami Valley/Dayton Chapter, Tree City USA, and the Ohio Department of Natural Resources [Urban Forestry Program](#). A good way to engage residents is to sponsor training programs such as those offered by Five Rivers MetroParks or the Ohio State University Extension, including Master Gardener training and the Ohio Certified Volunteer Naturalist program. In general, it is important to emphasize education of private property owners because there is a lot more private land than public land in the Miami Valley.
- Use the U.S. Department of Agriculture’s Asian longhorned beetle [Tree Check](#) materials to educate your residents about the ALB and how to detect it. Protect the trees in your community.
- The Marianist Environmental Education Center ([MEEC](#)) also provides workshops for the public.
- Inform residents of annual native plant sales at MEEC and Aullwood Audubon.
- Educate residents about the importance of maintaining soil quality. County Soil and Water Conservation Districts have resources.

What Communities can do

Internal operations

- The maintenance of urban trees requires knowledge and skill, so employ or develop a relationship with a qualified arborist and provide adequate training and budgets for existing staff. The Ohio Division of Forestry offers a [Tree Commission Academy](#) for training.
- Assess your community's tree canopy, since an accurate inventory is needed for good management. A field-based tree inventory can also be useful. More information about types of urban forest assessments can be [found here](#). **BYG**
- Develop a municipal tree planting program funded at a level to maintain and restore the tree canopy. The City of Hamilton has an excellent example of [online mapping of tree plantings](#). Make sure to follow best practices to plant the right trees in the right places in the right way so they survive. Also take projected climate changes into account when selecting tree species. **BYG**
- Become a [Tree City USA](#) — If your community has not already done so, become a Tree City USA by meeting the four standards of sound urban forestry management: maintaining a tree board or department, having a community tree ordinance, spending at least \$2 per capita on urban forestry, and celebrating Arbor Day. While meeting these minimum standards does not guarantee a sustainable urban forest, it sends a message about the importance of trees, even in times of tight budgets.
- Include storm preparedness in municipal emergency response plans, so you can deal with tree damage and wood waste reutilization in a safe and sustainable manner.

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Local contacts

- Regional Land Trusts:
 - [Tecumseh Land Trust](#), Krista Magaw, Krista@tecumsehlandtrust.org, 937.767.9490
 - [Three Valley Conservation Trust](#), Randy Evans, revans@3vct.org, 513.524.2150
 - [B-W Greenway Community Land Trust](#), Matthew Lawson, 937.867.5212, ExecDirector@bwgreenway.org
 - [Beaver Creek Wetlands Association](#), Blythe Hazellief, 937.320.9042, director@beavercreekwetlands.org
 - Regional Park Districts
 - [Darke County Park District](#), 937.548.0165
 - [Five Rivers MetroParks](#), 937.275.7275
 - [Greene County Parks & Trails](#), 937.562.6440
 - [Miami County Park District](#), 937.335.6273
 - [Preble County Park District](#), 937.962.5561
 - Ohio Department of Natural Resources, Urban Forestry Program, Wendi Van Buren, Wendi.VanBuren@dnr.state.oh.us, 614.670.2653
- Make the commitment to public education and sustainable pollinator habitat and become a "[Bee City USA](#)" community. Vandalia and Wright-Patterson AFB are both certified Bee Cities.
 - Use native plants on city, county, and township grounds to set a good example for sustainable landscaping. Many garden centers are offering more native species these days, and a list of Ohio native plant nurseries is [here](#). County Soil & Water Conservation Districts offer workshops on using native plants to create backyard habitats.
 - Due to the mounting scientific evidence of the health risks of common pesticides, stop using lawn care pesticides on city-owned

land. Policies have been enacted in Yellow Springs, Cuyahoga County, and the City of Cleveland Heights. Staff training about healthy landscaping methods is offered by [Beyond Pesticides Ohio](#).

Ordinances and policies

- Tree protection ordinance — Municipal tree ordinances can address trees on public land (such as street trees), trees on private land (tree preservation and landscape planting requirements), and the ways that trees impact views or impact solar access. A guide is [here](#). Also note that there is an emerging trend to focus less on the protection of individual trees today and more on ensuring a healthy percent of tree cover in the future.
- Tree and woodland protection in developing areas — Communities with development occurring on wooded sites have different tree protection needs than urban communities. The [Ohio Balanced Growth Program](#) offers strategies for protecting blocks of trees in these areas and long-term strategies for ensuring adequate tree cover.
- Permitting native and edible plants - To remove legal barriers to residents growing food or beneficial native plants, ordinances should be modified to allow such uses. In Cleveland Heights, for example, the updated landscaping ordinance (see Chapt. 1166) is modeled on a typical nuisance ordinance, but distinguishes native plantings and other alternatives to turf grass, and defines edible landscaping as a substitute for lawns. The ordinance requires a plan, setbacks, and maintenance of native landscaping to address the nuisance concerns that typically accompany alternatives to turf. In addition, the Ohio Balanced Growth

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Resources

- [Miami Valley Data Commons](#)
- [Aullwood Audubon](#)
- [Trees and Storm Water](#) Guide
- [Cleveland Tree Plan](#)
- [Cuyahoga County Urban Tree Canopy Assessment](#)
- [Holden Arboretum Community Forestry Program](#)
- [International Society of Arboriculture](#)
- [iTree tools](#)
- [Ohio Urban Forestry Program](#)
- [Pesticide-free policy/ordinance](#)
- [Soil health](#)
- [Sustainable Sites Initiative](#)
- [Technical Guides to Urban/Community Forestry](#)
- [Tree City USA - The Arbor Day Foundation](#)
- [Urban forestry toolkit for local governments](#)
- [Bringing Nature Home](#)
- [White-tailed deer management](#)
- [Integrated Pest Management](#)

Program offers guidance on natural areas establishment and management.

- Pesticide ban - More cities and institutions are stopping the use of pesticides for lawn care purposes, especially in locations where children play. Here are the ordinances of [Cleveland Heights](#) and [Cuyahoga County](#).
- Complete and green streets — See Transportation chapter.
- Stream setbacks — See Water Quality chapter.
- Green infrastructure and storm water — See Water Quality chapter.
- Urban garden zoning — See Food chapter.

Broader collaboration

To improve the ecological functioning and beauty of the regional landscape, all communities in the Miami Valley can:

- Support regional reforestation efforts.
 - Participate in multi-community greenspace planning and trail planning efforts.
 - Work with land protection organizations — such as Tecumseh Land Trust, Three Valley Conservation Trust, B-W Greenway Community Land Trust, Trust for Public Land, and the region's many Park Districts — to protect parcels of high-quality greenspace.
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