

From the USDA Forest Service and partners

Urban Forests as Habitat for People and Wildlife

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The actions urban forest managers, ecologists, and community stewards undertake to review and comment on new development plans and to plant, remove, and otherwise manage trees in cities have implications for local wildlife habitat and biodiversity. Far too often, these influences do not receive enough attention unless threatened and endangered species are present, or if residents make it an issue. This article puts a spotlight on the impacts of urbanization on ecological communities and biodiversity, and how urban and community plans, policies, and actions can make a difference in improving the habitat function of urban trees and forests.

Native species

Urbanization has negatively impacted biodiversity globally, and the expansion of cities poses continuing threats to native species survival ([Seto et al. 2012](#)). However, while cities can appear devoid of wildlife, the impact of urbanization is not universal across species. For example, in some urban areas, native birds like American Robins and mammals like raccoons thrive. Urban areas help support the conservation of global biodiversity, and the management of greenspaces determines the availability of habitat for native species ([Lepczyk et al. 2017](#)).

Conserving and managing wildlife habitat is increasingly important and challenging as cities continue to expand and meet the needs of people ([Aronson et al. 2017](#)). Just as we need to make space for street trees in the built environment, it is important that we protect spaces like local parks, woodland preserves, and forest patches where native plants and biodiversity can thrive.

Ecosystem services and disservices

Urban wildlife populations provide essential ecosystem services and benefits for people with increasing efficacy as animal biodiversity increases ([Schwarz et al. 2017](#)). Examples of services include plant pollination and seed dispersal that help promote afforestation. Birds and mammals scavenge carrion and insect pests, such as ticks and mosquitoes that carry vector-borne diseases ([Cardinale et al. 2012](#)). Arthropods, such as spiders, feed on pests and parasites and complete decomposition and consumption of waste ([Youngsteadt et al. 2015](#)).

While it is true that people benefit from increased animal biodiversity, the perceptions of the benefits may vary from person to person ([Larson et al. 2019](#)). Additionally, urban green spaces are not always >>



Placing the right tree in the right place can help create habitat for wildlife species like squirrels. Photo by Leslie Berckes



**Collaborative and educational activities
with bird-watching groups may offer
new insights and opportunities
for urban forestry and the wildlife
that depend on our success.**

Planting native trees supports songbird populations and allows for people to enjoy the benefits of seeing and hearing songbirds, like Black-capped Chickadees. Photo by Leslie Berckes

spread equitably ([Grove et al. 2014](#)) and therefore the animal biodiversity and associated benefits may not be either ([Leong et al. 2018](#)). One person may not perceive the presence of trees and wildlife habitat as an ecosystem service, while another person might.

Research has long extolled the positive mental health benefits of hearing and seeing songbirds and of being close to nature in species-rich parks ([Hedblom et al. 2017](#)). However, disservices or hazards associated with certain animal interactions also may occur. Bears and raccoons scavenge garbage, coyotes and foxes can predate pet animals, and deer over-browse and degrade habitat. Invasive species such as Norway rats and fleas can transmit zoonotic diseases. Some specific local policies encouraging native wildlife may have unintended consequences by attracting undesirable species resulting in disservices, like attracting flocks of noisy birds who make a mess with their droppings ([Whelan et al. 2015](#)). Thus, it is important to minimize disservices associated with biodiversity in cities when creating wildlife habitat.

Habitat fragmentation

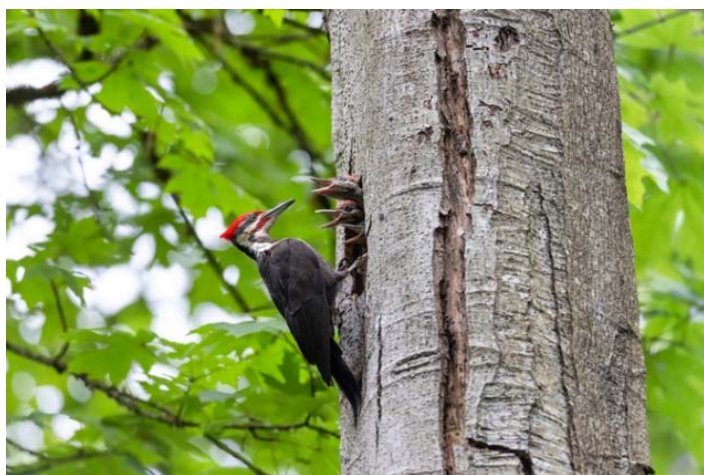
Land development can fragment natural habitats by creating built features like roads and buildings. These features act as a hindrance to biodiversity, as they are often barriers to movement and limit species survival. The presence and connectivity of large patches

of habitat are extremely important and positively related to biodiversity in urban areas ([Beninde et al. 2015](#)). Considering fragmentation when managing urban forests can help improve connectivity. Mitigating impacts of development by protecting landscape buffers, mature trees, and wildlife corridors has long been a part of the urban forestry and ecology playbook, and their continuation can benefit wildlife habitat and biodiversity in cities ([Aronson et al. 2017](#)).

Attitude adjustments

Shifting attitudes towards the positive aspects of urban wildlife and biodiversity can promote protection or restoration of more habitat and a functional urban ecosystem ([Bassett et al. 2022](#)). Understanding why people like certain wildlife species but have negative attitudes towards others can help improve planning efforts to support biodiversity. For example, negative attitudes towards wildlife can come from perceptions of some species as dangerous or as a nuisance ([Schuetz and Johnston 2019](#)). Tolerance may improve once actual risk to personal safety or property damage is mitigated ([Hunold and Mazuchowski 2020](#)).

In contrast, people can have positive attitudes towards certain species. These preferences can relate to the popularity of a species and its cultural significance, such as a species being a sports team mascot, or to >>



The Pileated Woodpecker is one of many bird species that rely on standing dead trees for insect food sources and for nesting. Licensed photo by Feng Yu/Adobe Stock



Raptors like Red-tailed Hawks provide ecosystem services and signal a healthy ecosystem. They often hunt small mammals like rodents and rabbits, helping keep populations in check. Licensed photo by David Jeffrey Ringer/Adobe Stock

the conservation status of the species ([Schuetz and Johnston 2019](#)). Managers can identify preferences in their communities and leverage positive attitudes towards a species to gain support for management decisions that promote wildlife habitat ([Schuetz and Johnston 2019](#)). The resulting urban forests can provide positive nature experiences for the public through selection of tree species that attract species of public interest, such as beloved songbirds ([Lerman et al. 2021](#)).

Landscape decisions

Having abundant and thriving urban forests is a central goal of urban foresters and ecologists, and these goals can align with wildlife habitat creation. While urban ecological research is still making strides in measuring the success of landscaping for wildlife, there are many actions foresters can take. Seeking best practices and sound plans for wildlife habitat creation are

important when considering the right tree for the right place. Modifying tree pruning schedules to benefit breeding birds and leaving dead trees for habitat can help to accommodate and foster native wildlife ([Kane et al. 2015](#)). Prioritizing planting of native trees in urban areas, as well as the number of native understory plants, can support native birds, small mammals, reptiles, and bees. Collaborative and educational activities with bird-watching groups may offer new insights and opportunities for urban forestry and the wildlife that depend on our success.

While urban forests are managed by and for people, it is important to recognize that communities of wildlife can be beneficiaries of urban forests, too. Keeping wildlife in mind when making management decisions in urban forests may yield ecological and societal benefits that gain support while bringing positive attention to the importance of our work. 🌿

Planting native understory plants can help support ground-dwelling species like rabbits. Licensed photo by Amy Buxton/Adobe Stock



New USFS Resources

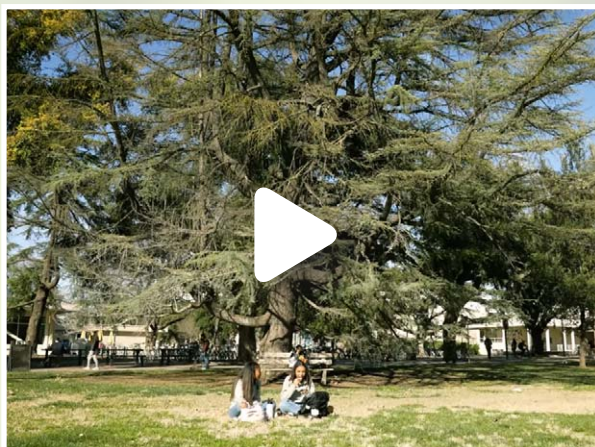
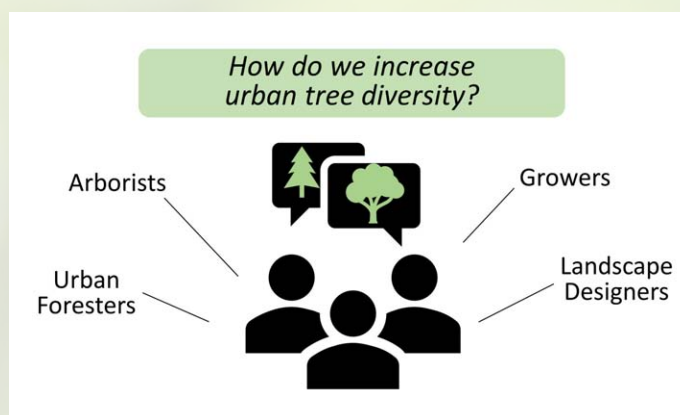


Expanding Urban Tree Species Diversity in Florida (USA): Challenges and Opportunities for Practitioners

While many practitioners and scholars understand the risks associated with low urban tree diversity, they often lack the ability to address this challenge on their own. The complex system of tree production and procurement is shaped by market pressures, nursery and site constraints, local governance, and differing professional objectives among those who grow, specify, and plant trees. To understand constraints to and opportunities for increasing urban tree diversity, researchers conducted a series of focus groups composed of nursery growers, landscape architects, and municipal tree managers. Based on these conversations, the research team proposed seven strategies that could be implemented to assist with expanding urban tree species diversity:

1. Engage in contract growing.
2. Reexamine approved species lists.
3. Incentivize the use of less common trees through relaxed development criteria.
4. Reexamine planting stock requirements.
5. Pay nurseries based on time required to produce a tree, not stock size.
6. Use an interactive database to share tree species being grown, specified, or sought after.
7. Continue research, education, and transdisciplinary collaborations to increase tree species diversity.

[Read the full study here.](#)



Article on Climate Ready Trees

From the U.S. Forest Service (USFS) partners at UC Davis (The University of California, Davis) comes [this article](#) and [the video linked here](#) on planting climate-ready trees on campus. This is part of a [20-year study on Climate Ready Trees](#) that the Forest Service is working on with UC Davis, the purpose of which is to evaluate the ability of promising but underused species to tolerate stressors of future climates. In so doing, the study partners hope to assist a shift in the palette of trees planted to species that will make urban forests healthier and more resilient.

“We share this in hopes that SMA members will get ideas about and inspiration for experimenting with new tree species in their communities,” says Phillip Rodbell, National Program Lead, Urban Sustainability Research, U.S. Forest Service.