Managing Trees and Public Spaces for Wildlife

Marne Titchenell, Extension Program Specialist – Wildlife
School of Environment & Natural Resources

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Urban Green Space

- Defined piece of land with vegetation in urban area
  - Parks, gardens, **urban forest, urban forest patches**

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Urban Green Space

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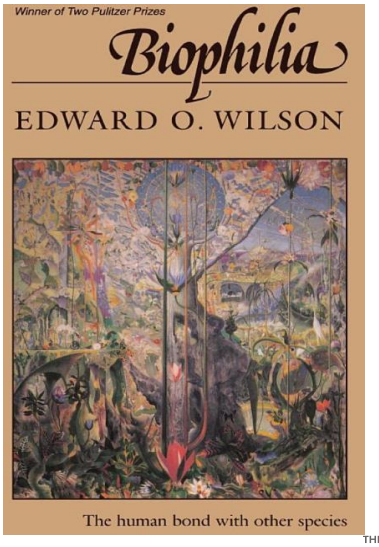
Connecting with Nature



Biophilia is defined as the innate human instinct to connect with nature and other living beings.

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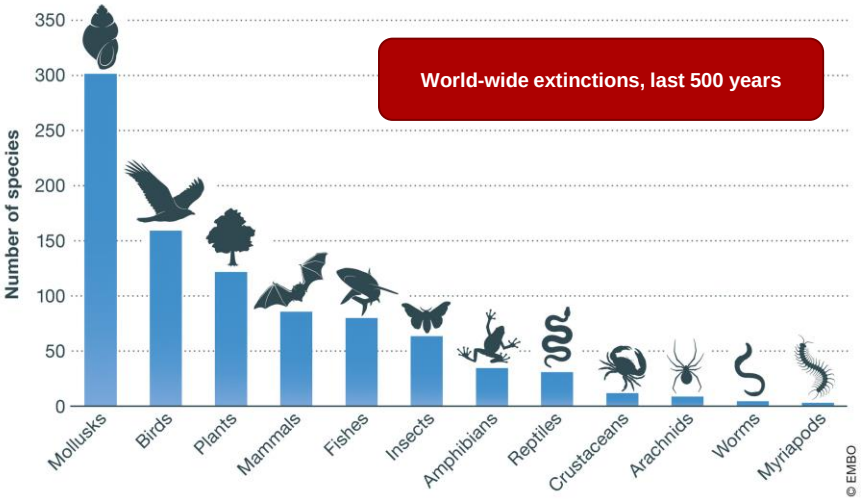
The Loss of Biodiversity



World-wide extinctions, last 500 years

Rull,, V. *EMBO Reports. 2022*

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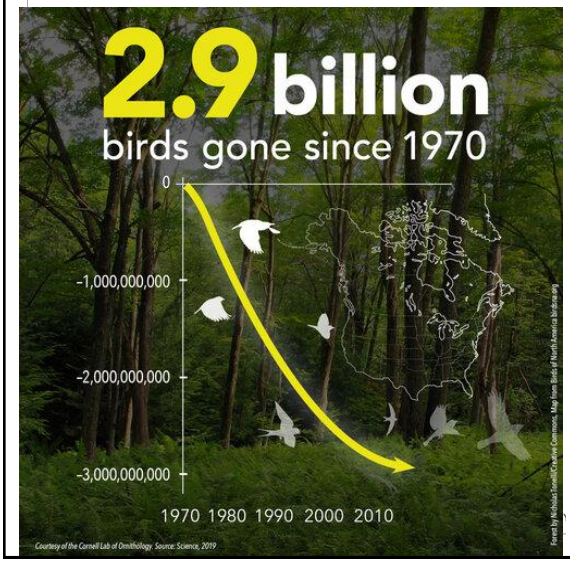
Reference: www.3billionbirds.org



1 in 4 birds

- 3 in 4 Meadowlarks
  - 53% loss of grassland birds
- 2 in 5 Baltimore Orioles
  - 28% loss of migratory species
- 2 in 5 Barn Swallows
  - 32% loss of aerial insectivores

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Wildlife Population Declines

Many native bee pollinators are at risk.

Monarch butterflies are now a candidate for listing under the ESA.

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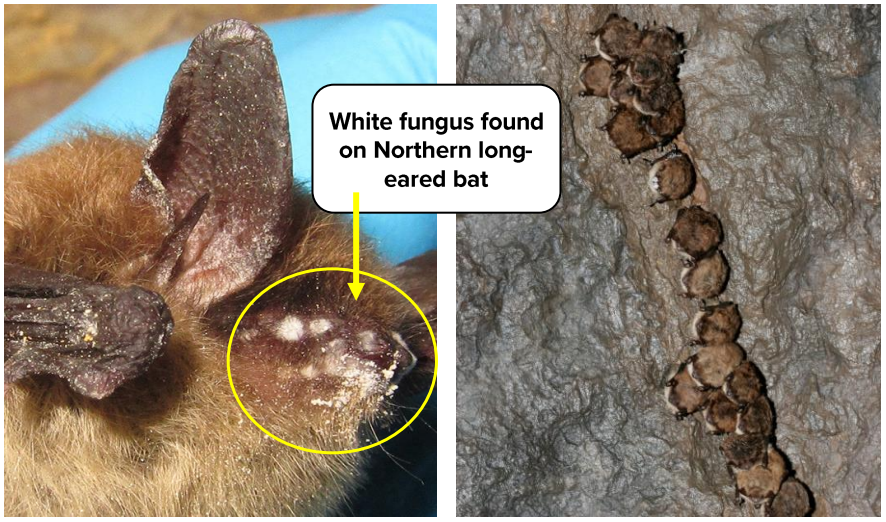
Bats and White-nose Syndrome



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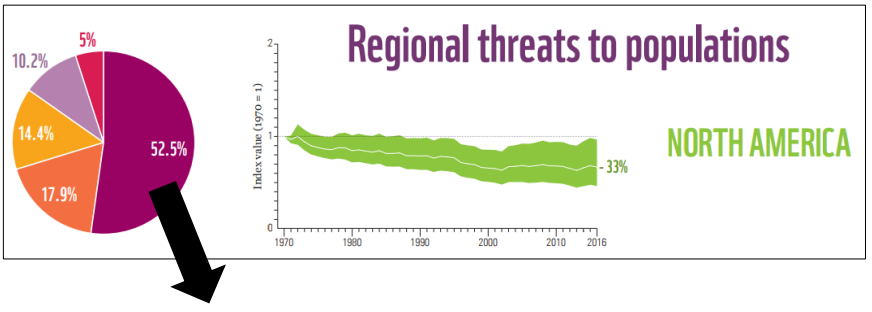
Habitat Loss and Degradation



Changes in land and sea use, including habitat loss and degradation

Species overexploitation

Invasive species and disease

Source: *World Wildlife Federation* Living Planet Report

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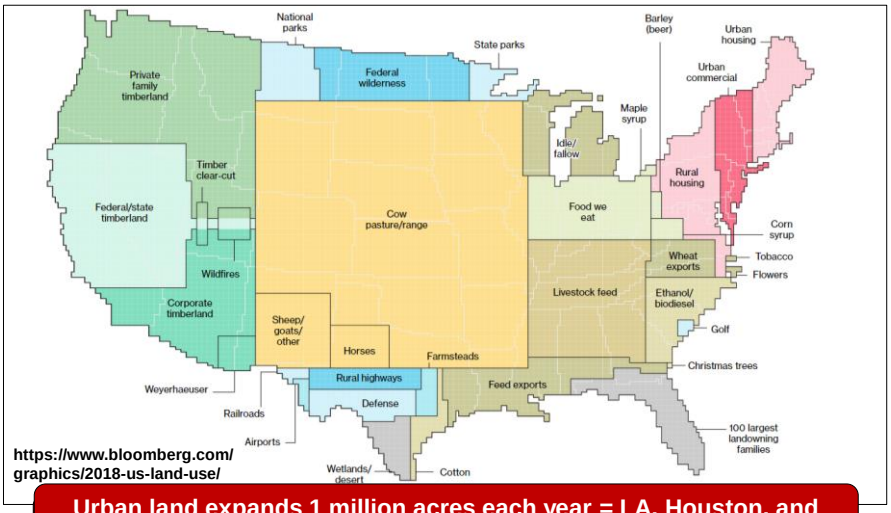
Land Use Categories



https://www.bloomberg.com/graphics/2018-us-land-use/

Urban land expands 1 million acres each year = LA, Houston, and Phoenix.

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Connecting with Nature

Nonconsumptive uses of wildlife have been gaining in popularity.

Understanding how people want to enjoy wildlife is key for public support and potential buy-in toward habitat management initiatives.

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Connecting with Nature

There is a burgeoning public interest in ecological landscaping and gardening to support pollinators, birds, and other urban wildlife that is fueling an active plant movement. (Baker et al. 2020).

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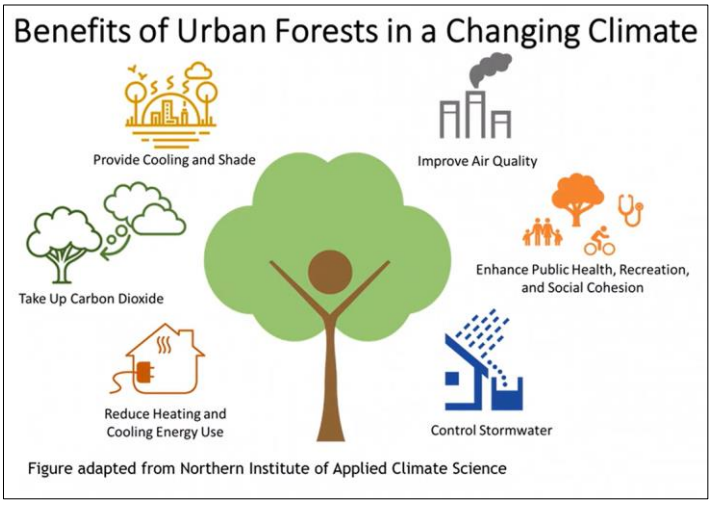
Ecosystem Services of Green Spaces



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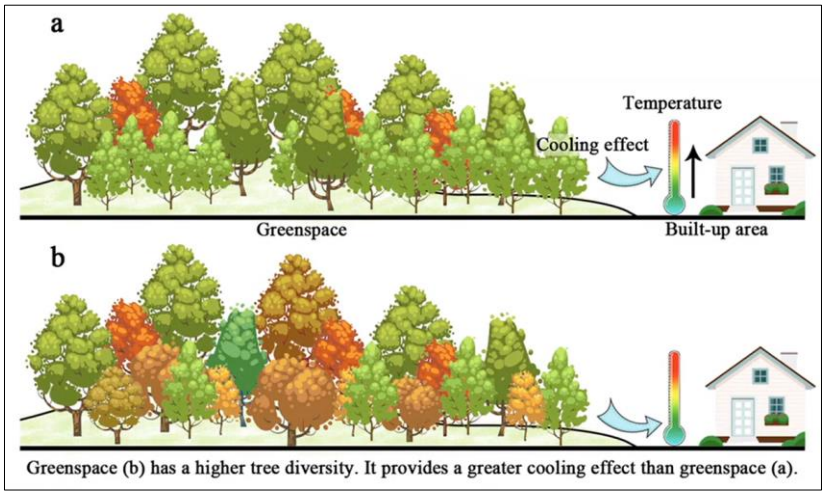

Greenspace (b) has a higher tree diversity. It provides a greater cooling effect than greenspace (a).

Wang et al. Science of The Total Environment, Volume 770, 2021.

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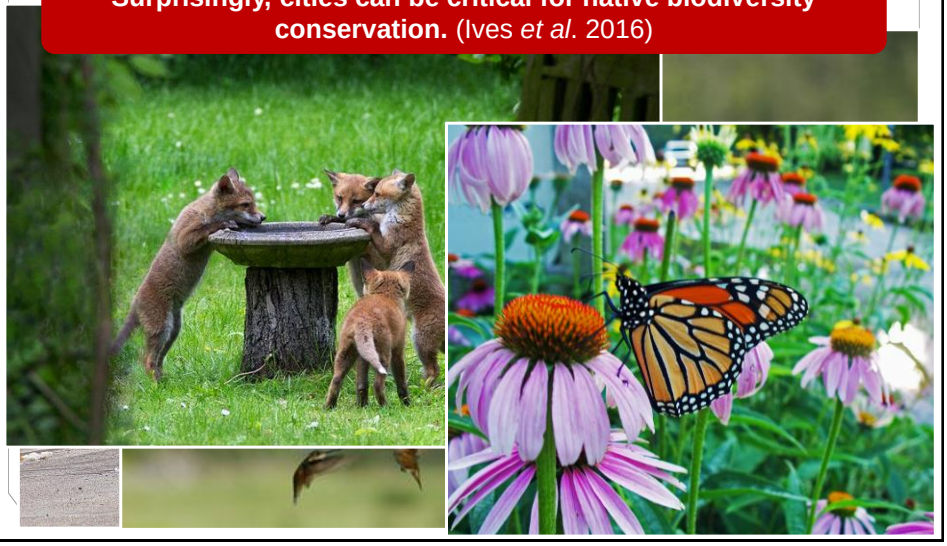
Urban Wildlife

Surprisingly, cities can be critical for native biodiversity conservation. (Ives *et al*. 2016)



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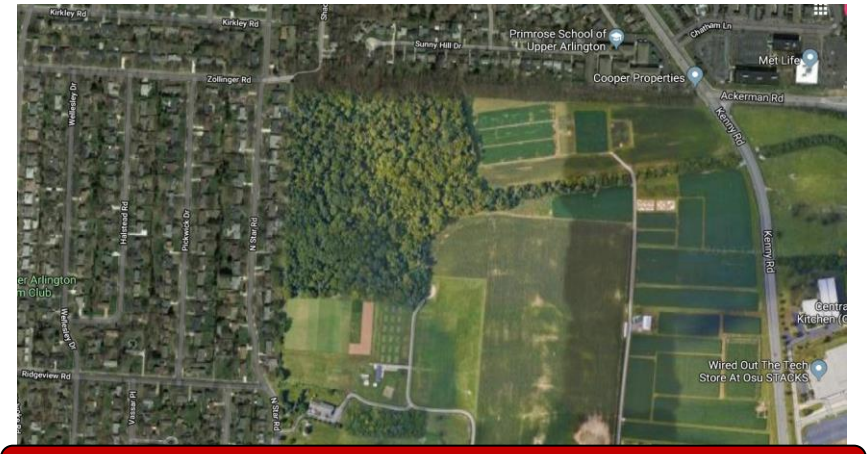
Woodland Patches in Urban Areas



Small patches of mature upland forest in urban areas used by several species of Neotropical migrant birds *(Rodewald and Matthews 2012).*

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A solitary leafcutter bee building her nest.

Both bee abundance and richness increased in neighborhoods with higher human population density. (Lowenstein et al. 2014)

Suggests a positive relationship between people and bees.

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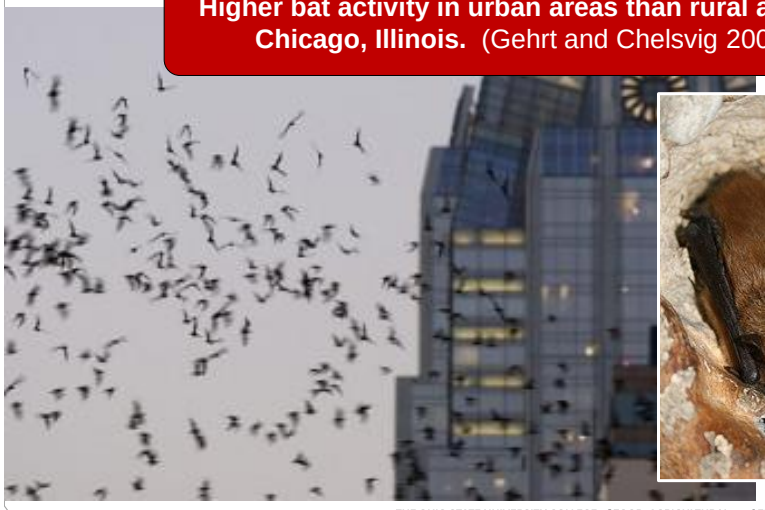
Bats and Urban Areas

Higher bat activity in urban areas than rural areas in Chicago, Illinois. (Gehrt and Chelsvig 2004).



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Where Do You Start?

Must provide habitat **throughout the year**, and accounting for **changing needs**.

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What Habitat Means to Wildlife:

FOOD

COVER

WATER

SPACE

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Plant Diversity

The retention of native vegetation is an effective strategy to conserve urban biodiversity (*Aronson et al. 2014*).

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Provide Plants that Support Healthy Ecosystems

Bush honeysuckle (Lonicera spp.)
- Tartarian (*L. tatarica*)
- Amur (*L. maacki*),
- Morrow *(L. morrowi*)
- Bella (*L.* x *bella*)

- Diversity is key!
- Aim for a majority of native in targeted areas
  - *More research needed on value of non-native plants*
- Avoid known non-native, invasive plants
  - Be smart *for* the wildlife

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Alternative to Non-native, Invasive Plants

from Ohio Invasive Plant Council

Asian Bush Honeysuckles: Amur, Morrow, and Tatarian (Lonicera maackii, Lonicera morrowii, and Lonicera tatarica)
- Form dense populations in the understory of woods
- Leaf out early and hold leaves late in the fall
- Seeds from red berries are dispersed by birds and deer

Recommended Alternatives:
* bottlebrush buckeye (Aesculus parviflora)*-US
* black chokeberry (Aronia melanocarpa)-OH
* summersweet clethra (Clethra alnifolia & CVs)-US
* common winterberry (Ilex verticillata & CVs)*-OH

www.oipc.info/plants-to-replace.html

Great Lakes Region - https://woodyinvasives.org/

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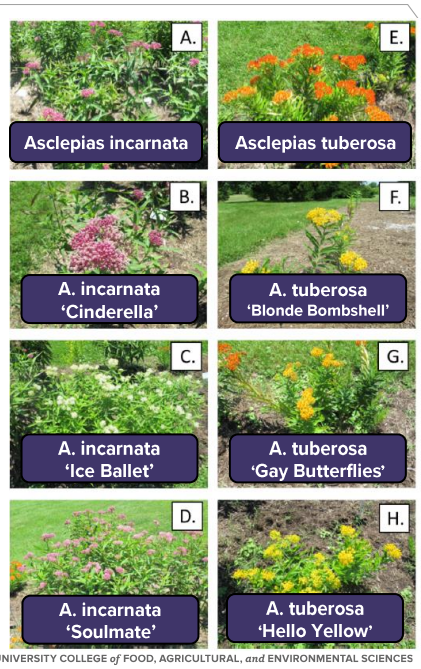
Native Plant Cultivars (Nativars)

- Cultivated forms selected for modified flowers or foliage, compactness, or other ornamental characteristics.
- Some support pollinators, and some do not.
  - ***Baker et al. 2020 –milkweed cultivars support monarchs***
- More research is needed on a case-by-case basis (*Ricker et al. 2019*)



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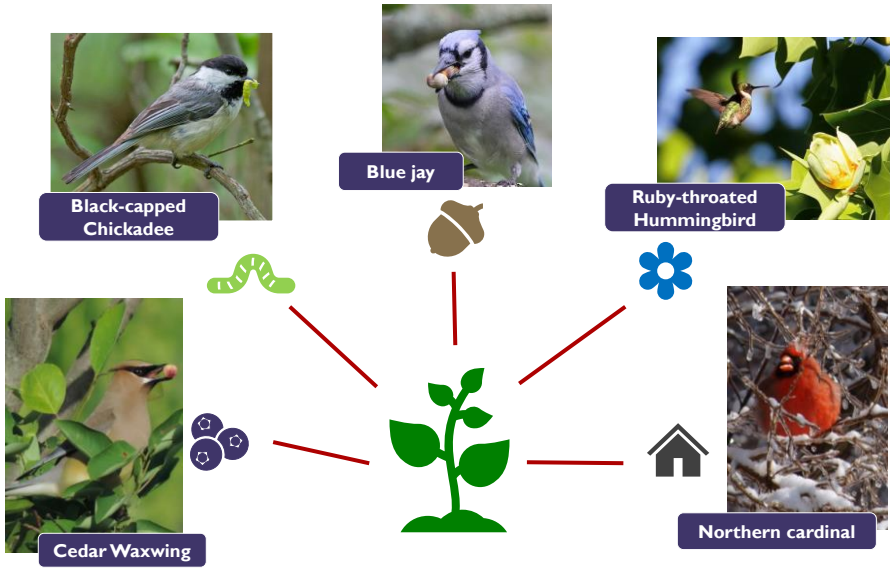
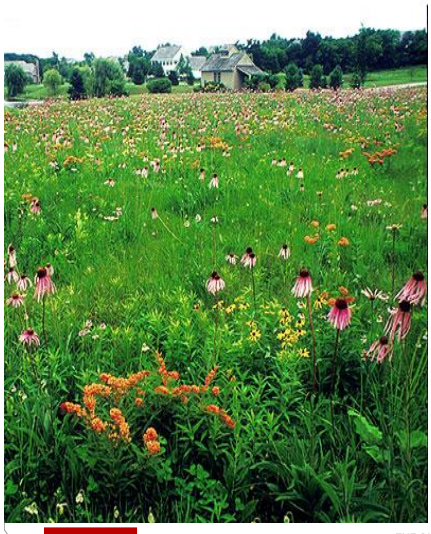
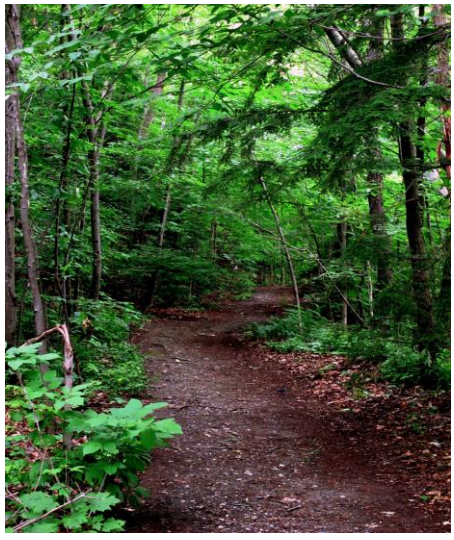
Plants provide habitat for birds.



When We Think of Pollinators…





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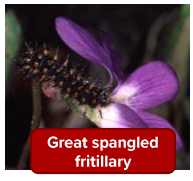
Butterfly Host Plants



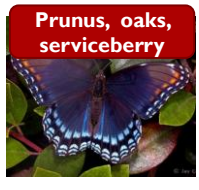
Great spangled fritillary

Violets

E. Tiger swallowtail

Prunus, birch

Red-spotted Purple



Prunus, oaks, serviceberry

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Choose Caterpillar-Loving Plants

Black-capped Chickadee

go.osu.edu/livinglandscape

Oaks, willow, cherry, plum, birch, maple, hickory…

Goldenrods, asters, sunflowers, wild strawberries…

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Nectar, Pollen, and Host Plants

AND BIRD-FRIENDLY

- Serviceberry
- Eastern redbud
- Maple
- Cherry, Plum
- Sumac
- Hackberry
- Viburnum
- Oak
- Willow
- Birch
- Yellow-poplar
- Crabapple
- Red buckeye
- Dogwood
- Sassafras
- Winterberry (Ilex)
- Hawthorn
- Buckeye
- Basswood
- Black gum

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Pollinator Plantings Near Woods

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Diversity and Pest Outbreaks

Landscapes with high native plant diversity are more stable (i.e. less pest outbreaks).

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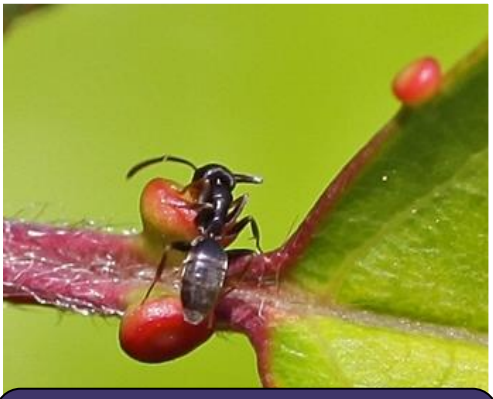
Plants for Insect Predators



"Nectar is the currency used by plants to pay insects and other animals to do their bidding."
~Joe Boggs

Extrafloral nectar

- Milkweed *(Asclepias)*
- Sunflower *(Helianthus)*
- **Hawthorn *(Crataegus)***
- **Apple *(Malus)***
- **Plum, cherry *(Prunus)***
- **Willow *(Salix)***
- **Elderberry *(Sambucus)***
- **Viburnum *(Viburnum)***
- Hibiscus *(Hibiscus)*
- Pumpkin/Squash *(Cucurbita)*
- Jewelweed *(Impatiens carpensis)*

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Plants for Insect Predators

Annuals

- **Dill *(Anethum graveolens)***
- Coriander *(Coriandrym sativum)*
- Sweet alyssum *(Lobularia maritima)*

Perennials

- Asters *(Aster)*
- **Lobelia *(Lobelia)***
- Lupine *(Lupinus)*
- Bergamot *(Monarda)*
- Giant Hyssop *(Agastache)*
- Ironweed *(Vernonia)*
- Goldenrod *(Solidago)*

Extrafloral nectar

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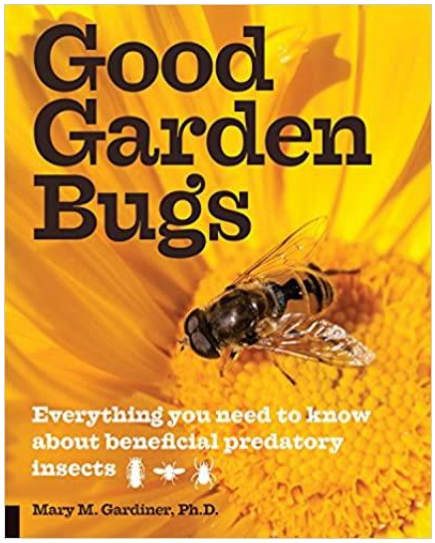
More Info on Insect Predators:



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Top Nut and Seed Producers

Trees	Herbaceous
Oak	Coneflowers
Hickory	**Asters**
Beech	Sunflowers
Maple	Thistles
Birch	Goldenrod
Spruce	Bergamot
Pine	Ironweed
Fir	Golden alexanders

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Top Berries for Birds

- Serviceberry (*Amelanchier*)
- Dogwoods (*Cornus*)
- Elderberry (*Sambucus*)
- Black/Raspberries (*Rubus*)
- **Cherries, plums** (*Prunus*)
- Crabapple (*Malus*)
- ***Viburnum***
- Blackgum *(Nyssa sylvatica)*
- Blueberries (*Vaccinium*)
- Spicebush (*Lindera benzoin*)
- E. Red Cedar (*Juniper virginiana*)
- Chokeberry (*Aronia*)
- **Hawthorn** (*Crataegus*)
- Sumac (*Rhus*)
- Holly (*Ilex*)
- Sassafras *(Asimina triloba)*
- Hackberry *(Celtis occidentalis)*

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Don't forget about woodland vines…

- Retention of woodland vines can be compatible with other management objectives.

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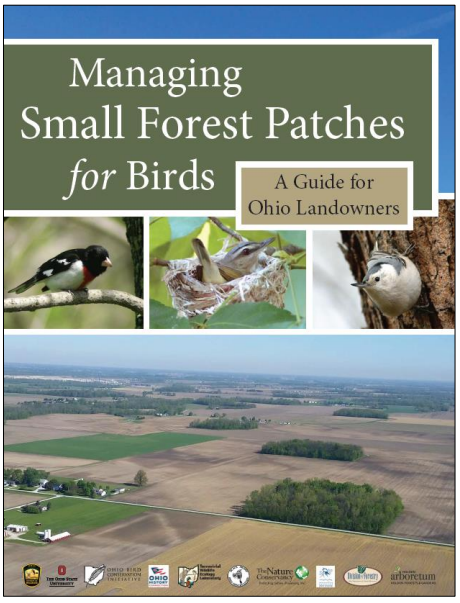

Publication by the Ohio Bird Conservation Initiative

obcinet.org

go.osu.edu/smallpatches

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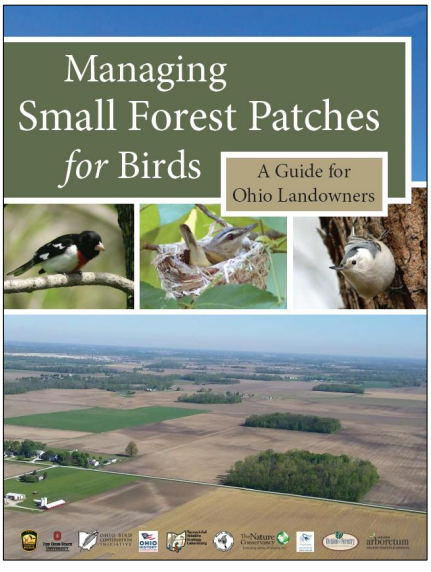

Recommended practices:

- Manage for a diversity of tree species
- Remove and control invasive species
- Enhance vertical structure within the patch
- Reduce hard edges
- Enhance connectivity between patches
- Create/maintain dead wood resources
  - Snags, logs, brush piles

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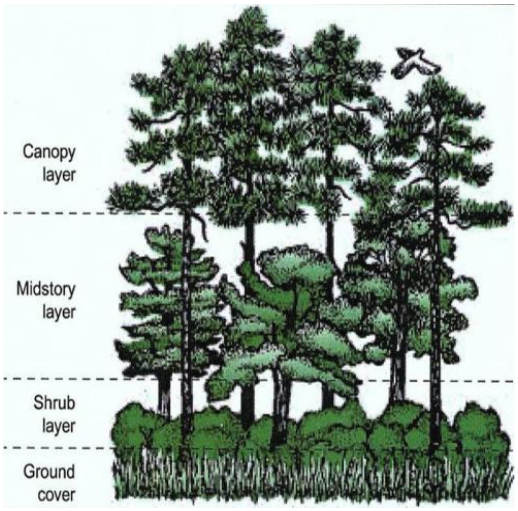
Managing Small Forest Patches for Birds



- Enhance vertical structure within the patch
  - Uneven-aged stand
  - Understory and shrub layers
- Birds partition habitat vertically to avoid competition for resources

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Enhancing Vertical Structure

- Open up the canopy to encourage regeneration
- Must control invasives species FIRST
- Small canopy gaps
  - 1-2 ac for patches >20 ac
- Crop tree release
  - Also allows for the creation of snags

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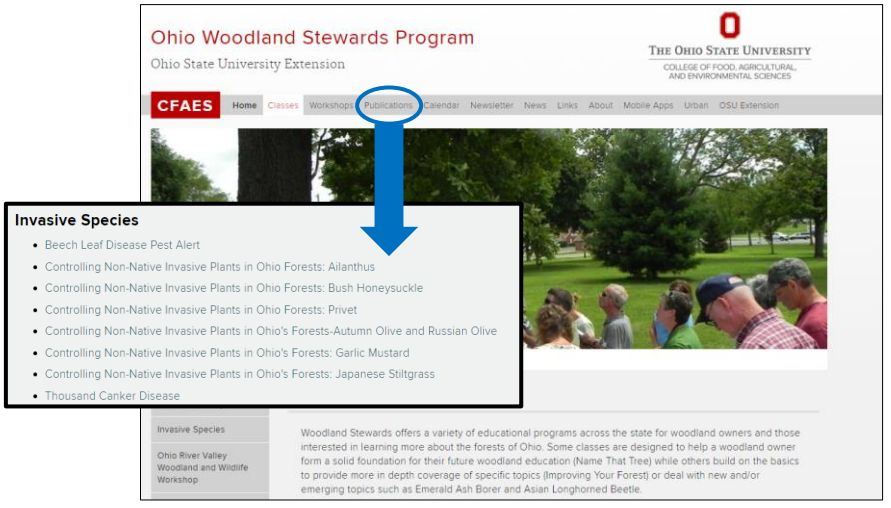
The Ohio Woodland Stewards Program

woodlandstewards.osu.edu



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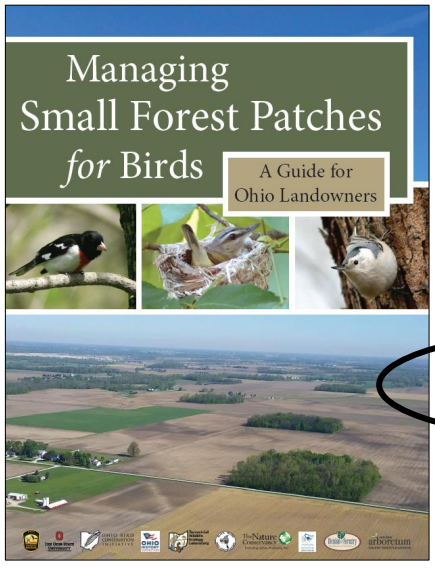

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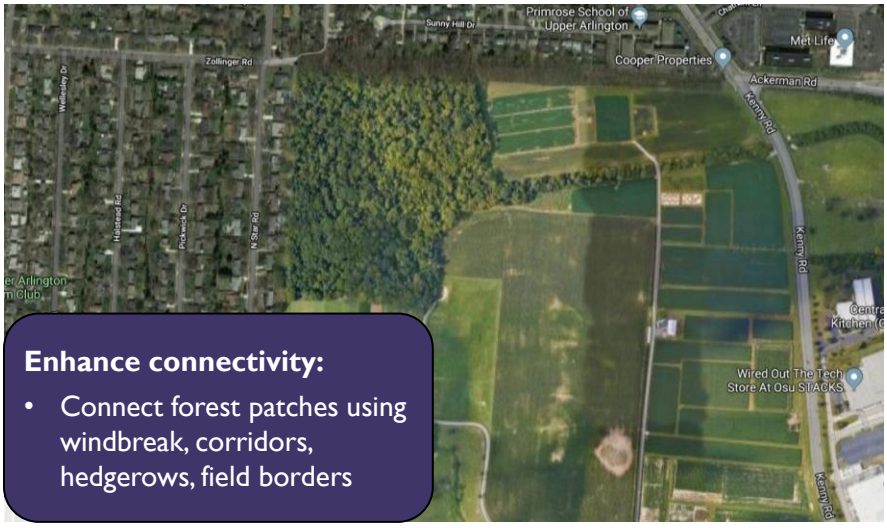
Landscape Considerations



Enhance connectivity:

- Connect forest patches using windbreak, corridors, hedgerows, field borders

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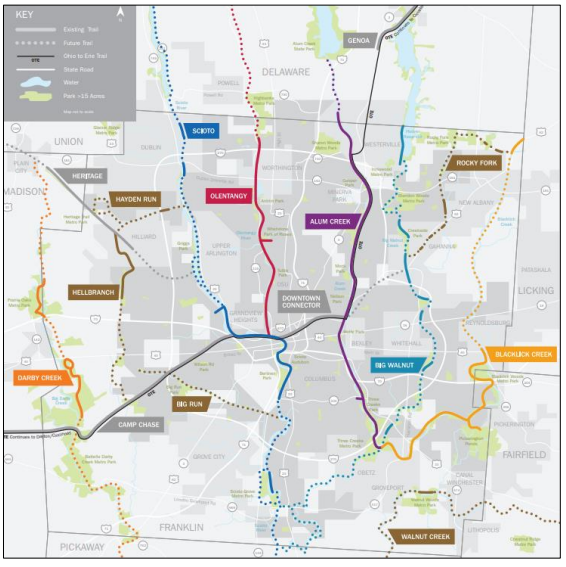
Central Ohio Greenways



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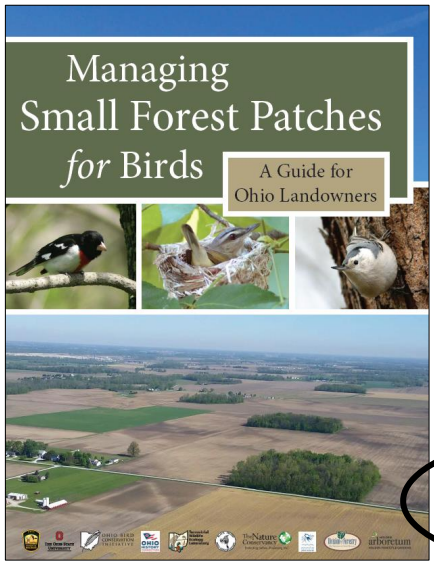

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The Importance of Dead Wood

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Snags

Dead Features

Dead Woody Debris (DWD)

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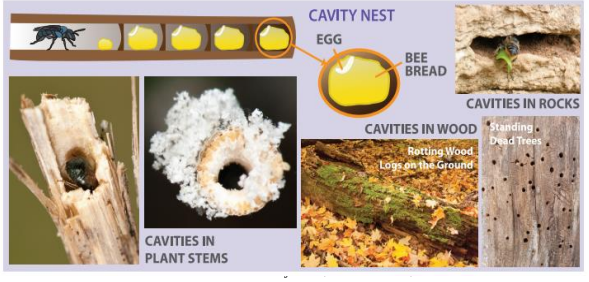
The Importance of Dead Wood



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The Importance of Dead Wood

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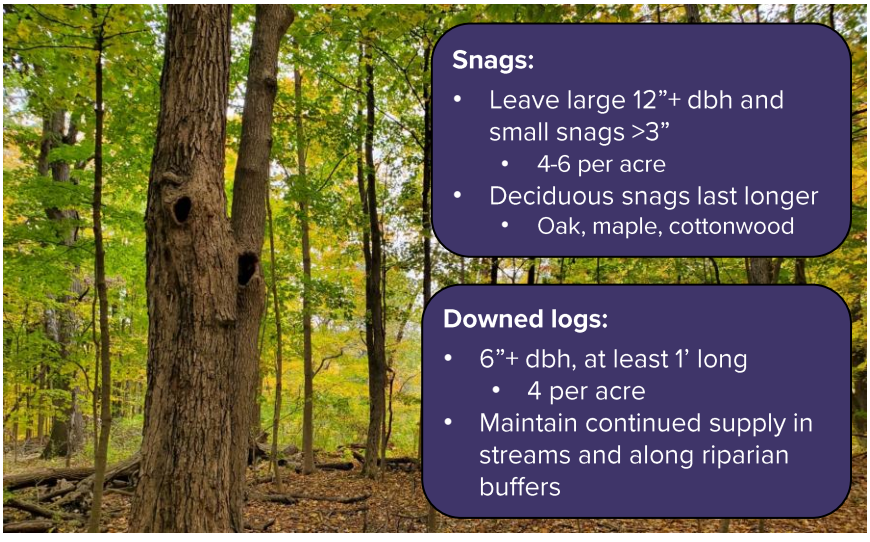
Dead Wood Recommendations:



Snags:

- Leave large 12"+ dbh and small snags >3"
  - 4-6 per acre
- Deciduous snags last longer
  - Oak, maple, cottonwood

Downed logs:

- 6"+ dbh, at least 1' long
  - 4 per acre
- Maintain continued supply in streams and along riparian buffers

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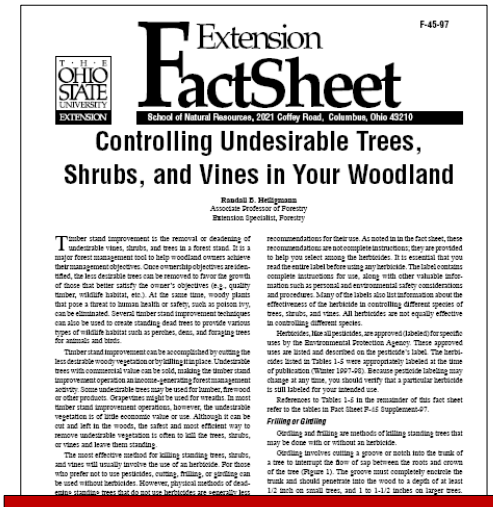
Creating Snags



F-45-97

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Extension FactSheet

School of Natural Resources, 2021 Coffey Road, Columbus, Ohio 43210

Controlling Undesirable Trees, Shrubs, and Vines in Your Woodland

Randall B. Heiligmann
Associate Professor of Forestry
Extension Specialist, Forestry

Timber stand improvement is the removal or deadening of undesirable vines, shrubs, and trees in a forest stand. It is a major forest management tool to help woodland owners achieve their management objectives. Once ownership objectives are identified, the less desirable trees can be removed to favor the growth of those that better satisfy the owner's objectives (e.g., quality timber, wildlife habitat, etc.). At the same time, woody plants that pose a threat to human health or safety, such as poison ivy, can be eliminated. Several timber stand improvement techniques can also be used to create standing dead trees to provide various types of wildlife habitat such as perches, dens, and foraging trees for animals and birds.

Timber stand improvement can be accomplished by cutting the less desirable woody vegetation or by killing it in place. Undesirable trees with commercial value can be sold, making the timber stand improvement operation an income-generating forest management activity. Some undesirable trees may be used for lumber, fire wood or other products. Grapevines might be used for wreaths. In most timber stand improvement operations, however, the undesirable vegetation is of little economic value or use. Although it can be cut and left in the woods, the safest and most efficient way to remove undesirable vegetation is often to kill the trees, shrubs, or vines and leave them standing.

The most effective method for killing standing trees, shrubs, and vines will usually involve the use of an herbicide. For those who prefer not to use pesticides, cutting, frilling, or girdling can be used without herbicides. However, physical methods of deadening standing trees that do not use herbicides are generally less

recommendations for their use. As noted in in the fact sheet, these recommendations are not complete instructions; they are provided to help you select among the herbicides. It is essential that you read the entire label before using any herbicide. The label contains complete instructions for use, along with other valuable information such as personal and environmental safety considerations and procedures. Many of the labels also list information about the effectiveness of the herbicide in controlling different species of trees, shrubs, and vines. All herbicides are not equally effective in controlling different species.

Herbicides, like all pesticides, are approved (labeled) for specific uses by the Environmental Protection Agency. These approved uses are listed and described on the pesticide's label. The herbicides listed in Tables 1-3 were appropriately labeled at the time of publication (Winter 1997-98). Because pesticide labeling may change at any time, you should verify that a particular herbicide is still labeled for your intended use.

References to Tables 1-4 in the remainder of this fact sheet refer to the tables in Fact Sheet F-45 Supplement-97.

Frilling or Girdling

Girdling and frilling are methods of killing standing trees that may be done with or without an herbicide.

Girdling involves cutting a groove or notch into the trunk of a tree to interrupt the flow of sap between the roots and crown of the tree (Figure 1). The groove must completely encircle the trunk and should penetrate into the wood to a depth of at least 1/2 inch on small trees, and 1 to 1-1/2 inches on larger trees.

woodlandstewards.osu.edu

- Snags can pose a risk to people and structures – they need to be managed
  - Monitor them over the years and remove as needed
  - Factor in potential future threats when creating snags

CFAES

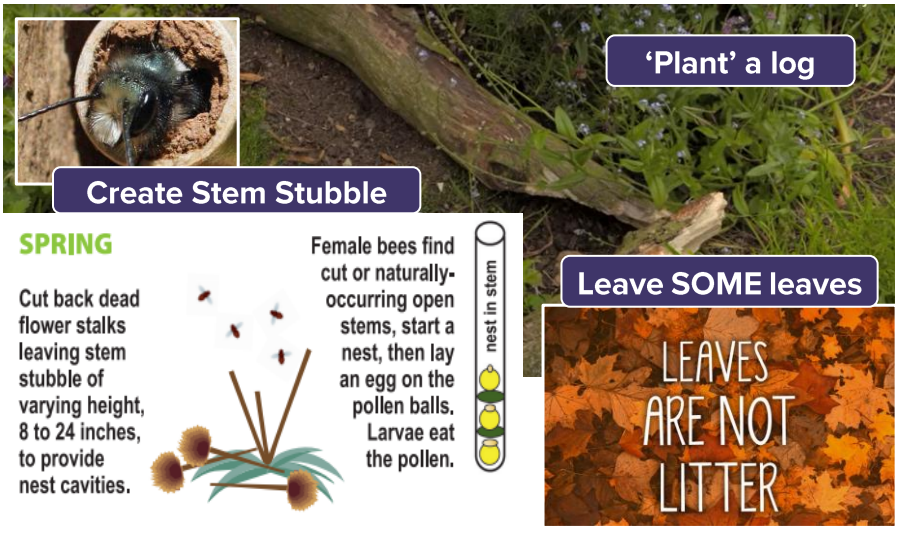
"Bringing the Snag into the Urban Forest"

go.osu.edu/urbansnag

Brian French, ISA Certified Arborist, Oregon

CFAES

Nesting and Overwinter Habitat for Pollinators and Other Beneficial Insects



SPRING

Cut back dead flower stalks leaving stem stubble of varying height, 8 to 24 inches, to provide nest cavities.

Female bees find cut or naturally-occurring open stems, start a nest, then lay an egg on the pollen balls. Larvae eat the pollen.

Graphics and content: Colleen Satyshur, Elaine Evans, Heather Holm, Sarah Foltz-Jordan

CFAES

Native, Solitary Bee Nursery

CFAES

Great Resource:

- Linked at **u.osu.edu/wildside**

CFAES

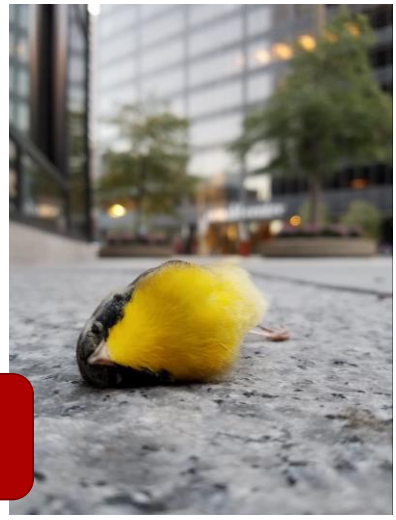
Forest Management for Birds, Bats, Pollinators, and other Wildlife

- Managing for **healthy, diverse** forest patches will benefit pollinators, bats, and birds
  - Invasive species management
  - Woodland vine management
  - Promote fruit bearing trees and shrubs
  - Enhancing vertical structure
  - Snag creation/retention
  - Downed woody debris
- Enhancing connectivity across the landscape

CFAES

1 Urban Areas are Ecosystems

- Urban ecosystems are unique
  - Unknown wildlife patterns and behaviors
  - We are still learning



Ohiolightsout.org

CFAES

Let's Keep our Birds Safe!

- Feather Friendly window dots

abcbirds.org/glass-collisions

Up to 1 billion birds die after hitting windows in the U.S. each year, and almost 50% of these hit home windows.

CFAES

2 Humans Decide the Fate of Wildlife

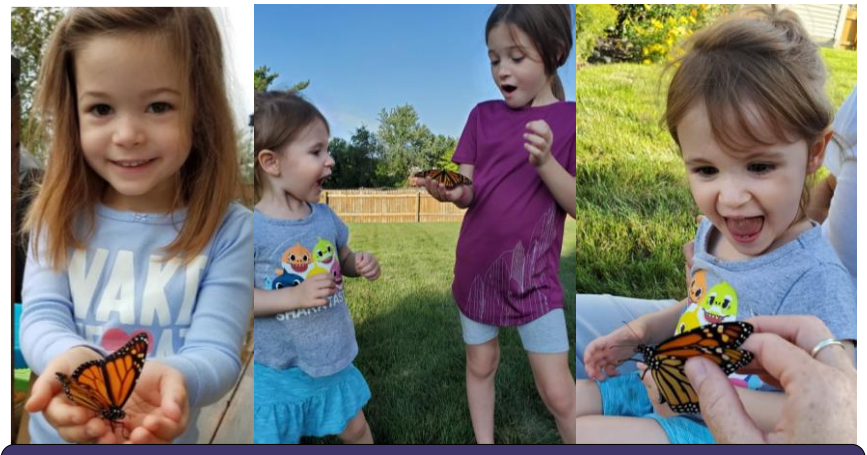
Too much conflict can lead to backlash against wildlife and habitat conservation.

u.osu.edu/wildside

'Dealing with Wildlife Conflict in the Garden'

CFAES

3 Green Spaces have Power!



Community green spaces are where many people gain first-hand experience with wildlife.

CFAES

So, Let's Talk About Them!

- USDA Forest Service's Urban Field Stations
  - **Grants available!! www.fs.usda.gov/managing-land/urban-forests**
  - *Inventory, monitoring, and research*
  - *Creating a community program*
  - *Broaden community engagement*
- Volunteer Groups are Superstars!

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u.osu.edu/wildside

'Managing Trees and Public Spaces for Wildlife – Take Two!'

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