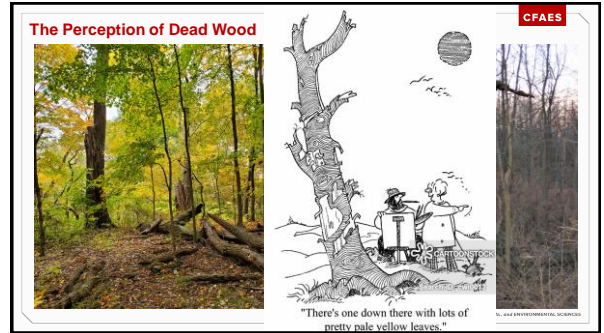




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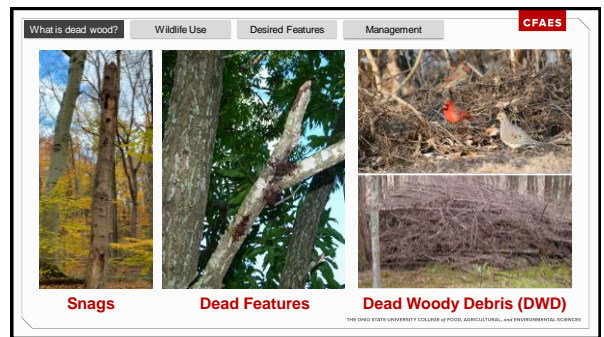
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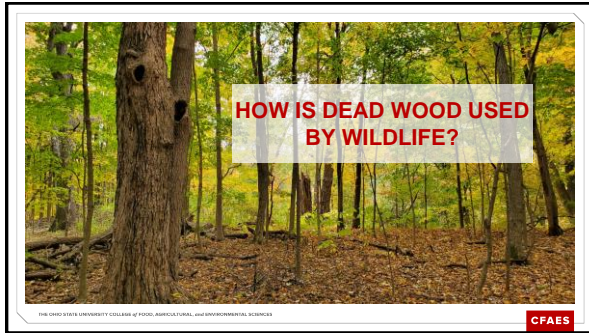
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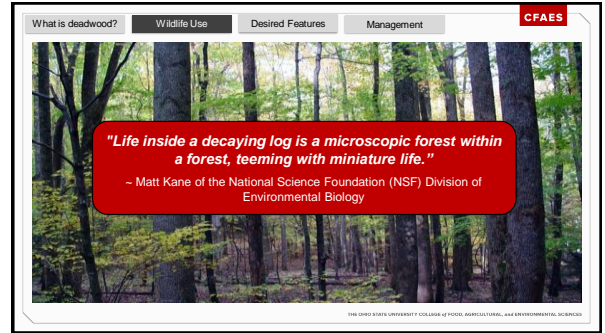
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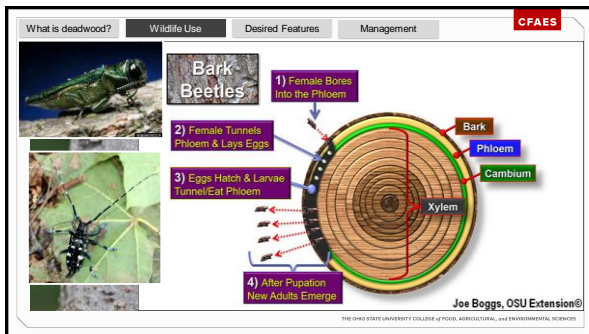
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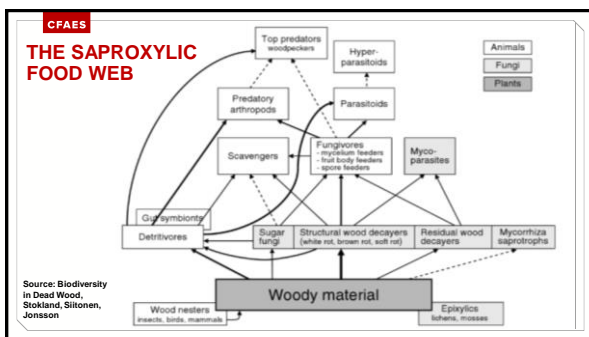
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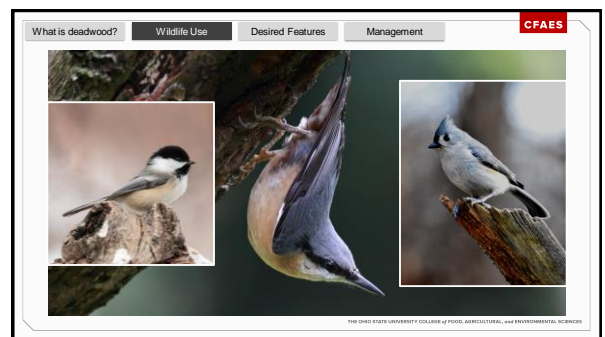
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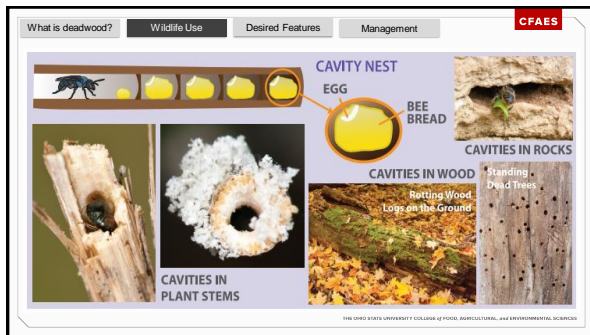
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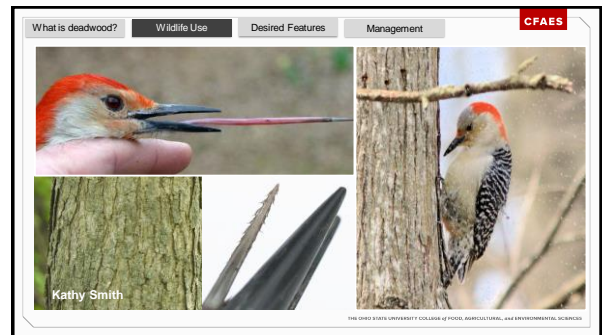
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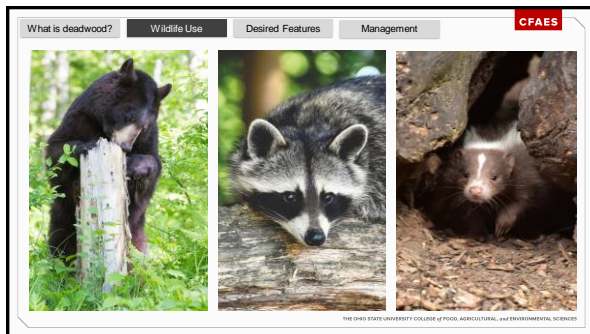
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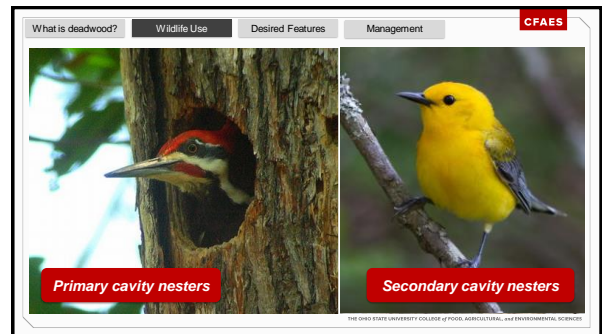
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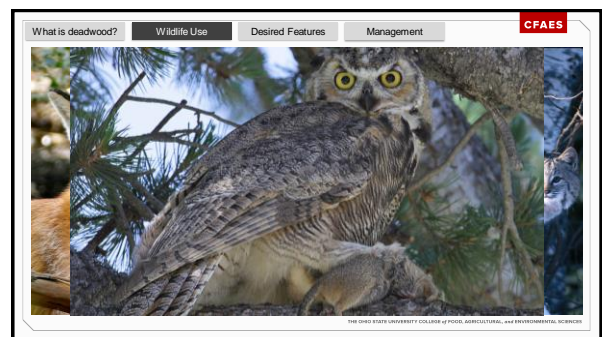
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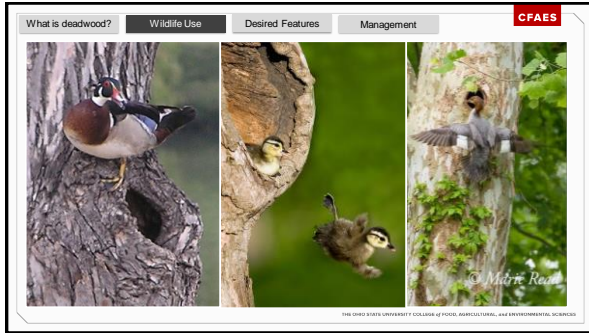
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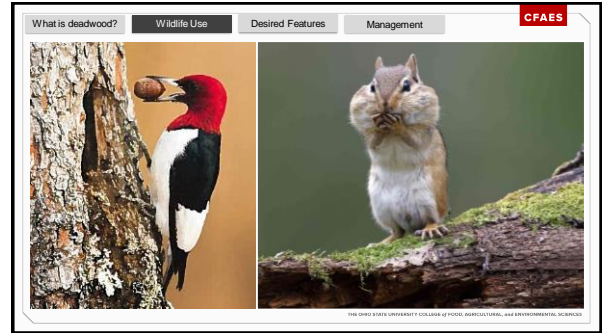
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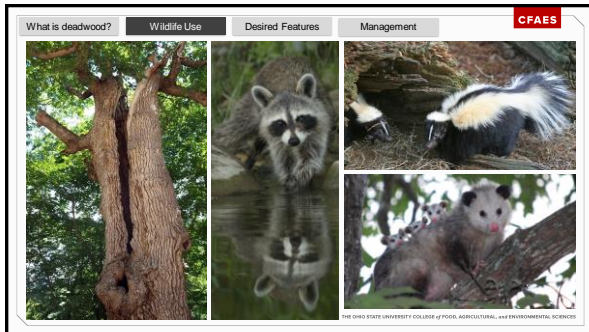
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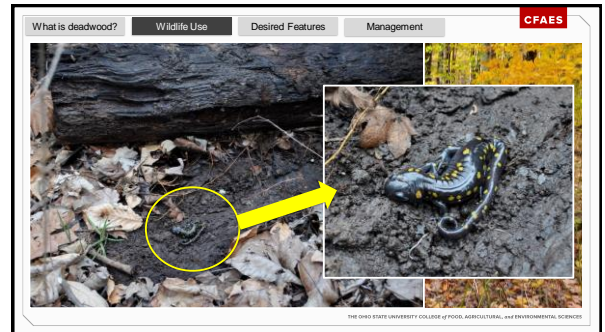
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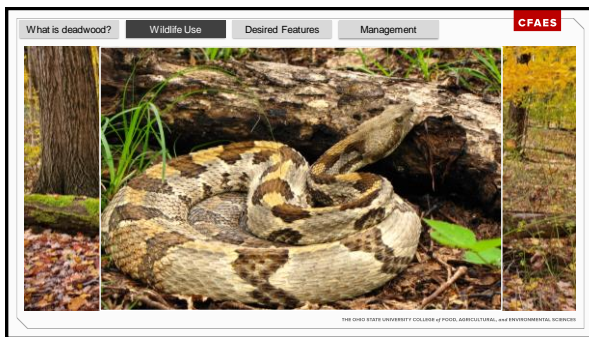
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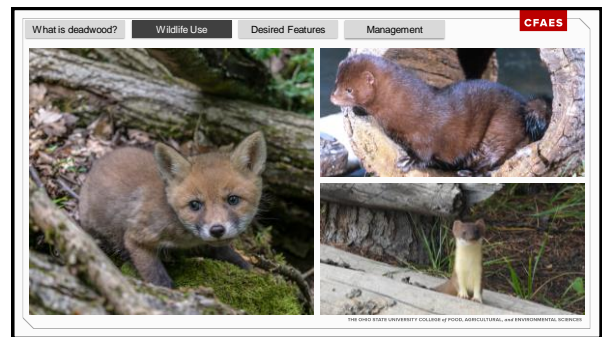
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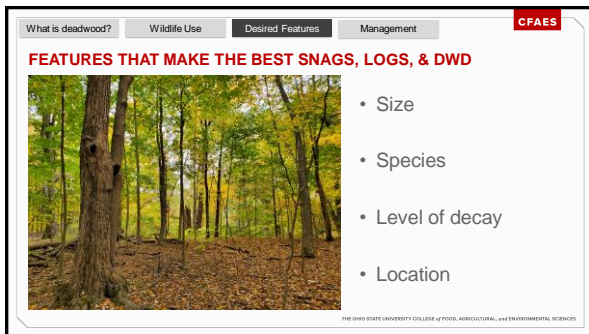
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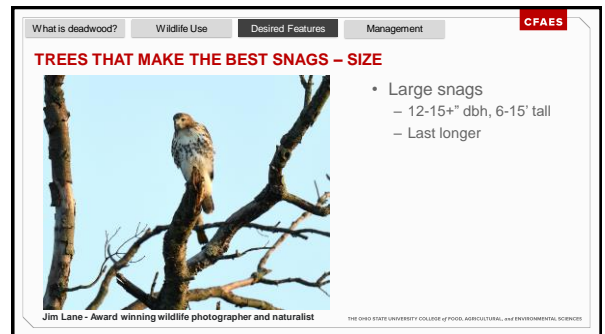
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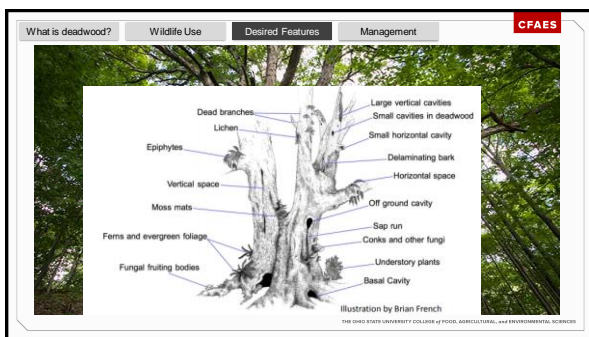
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What is deadwood? Wildlife Use **Desired Features** Management **CFAES**

TREES THAT MAKE THE BEST LOGS - SIZE




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What is deadwood? Wildlife Use **Desired Features** Management **CFAES**

TREES THAT MAKE THE BEST SNAGS - SPECIES




- Some preference among wildlife species.
- Some species decay faster than others.
- Deciduous develop larger cavities than conifers.
- Look for other desired features.

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What is deadwood? Wildlife Use **Desired Features** Management **CFAES**

TREES THAT MAKE THE BEST SNAGS - STAG OF DECAY




- Hard snags versus soft snags
- Aim for variety.
- Remember snags don't last forever.

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CFAES **Ohio's Woodpeckers**



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What is deadwood? Wildlife Use **Desired Features** Management **CFAES**

Woodpeckers and Snag use by Stage of Decay

| Species | Snag d.b.h., with bark <i>Inches</i> | Decay stages ^a | |
|------------------------|--------------------------------------------|---------------------------|-----------------------|
| | | Hard 2-3 | Soft 4-5 ^c |
| Downy woodpecker | 11+ | ○ | ● |
| Hairy woodpecker | 15+ | ○ | ● |
| Red-breasted sapsucker | 15+ | ● | ● |
| Acorn woodpecker | 17+ | ● | ● |
| Lewis woodpecker | 17+ | ● | ● |
| Northern flicker | 17+ | ● | ● |
| Pileated woodpecker | 25+ | ● | ○ |

○ = foraging preference

Mannan et al. 1980, Neilro et al. 1985, Raphael and White (1984)

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What is deadwood? Wildlife Use **Desired Features** Management **CFAES**

TREES THAT MAKE THE BEST SNAGS - STAGE OF DECAY



- Hard snags versus soft snags
- Aim for variety.
- Remember snags don't last forever.

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What is deadwood?

Wildlife Use

Desired Features

Management

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Decay Classes for Fallen Logs and Snags

| Decay class | Fallen log characteristics | | Snag characteristics | | |
|------------------|----------------------------|-------------|----------------------|---------|----------------------|
| | Leaves | Wood | Leaves | Bark | Top and height |
| 1. Recent | present | solid | present | present | intact |
| 2. Solid | absent | solid | absent | >50 % | intact |
| 3. Solid decayed | absent | solid/punky | absent | <50 % | intact |
| 4. Decayed | absent | punky | absent | absent | broken, height >50 % |
| 5. Very Decayed | absent | punky | absent | absent | <2 m |


Tyrrell and Crow 1994; Bergeron et al. 1997

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| What is deadwood? | Wildlife Use | Desired Features | Management | CFAES |
|-------------------|--------------|------------------|------------|-------|
|-------------------|--------------|------------------|------------|-------|

TREES THAT MAKE THE BEST SNAGS - LOCATION



- Location may influence level of decay and longevity
- Cluster or scatter?
- Ideal = available throughout woodlot
- Near other key resources.

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| What is deadwood? | Wildlife Use | Desired Features | Management | CFAES |
|-------------------|--------------|------------------|------------|-------|
|-------------------|--------------|------------------|------------|-------|

Locate SNAGS by Other Key Resources

- Near mast producing trees
- Along woodland edges and clearings
- Near water features
 - Vernal pools, streams, ponds




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| What is deadwood? | Wildlife Use | Desired Features | Management | CFAES |
|-------------------|--------------|------------------|------------|-------|
|-------------------|--------------|------------------|------------|-------|

Locate LOGS by Other Key Resources

- Within upland and lowland forests
- Along woodland edges and clearings
- Near water features
 - Vernal pools, streams, ponds




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| What is deadwood? | Wildlife Use | Desired Features | Management | CFAES |
|-------------------|--------------|------------------|------------|-------|
|-------------------|--------------|------------------|------------|-------|

DWD (Dead Woody Debris) in Stream Ecosystems

- >4" in diameter and 3' long
- Dictates channel formation
- Stores OM and sediment
- Provides habitat
- Increases fish production



Key in the long-term integrity or stream and river corridors.

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| What is deadwood? | Wildlife Use | Desired Features | Management | CFAES |
|-------------------|--------------|------------------|------------|-------|
|-------------------|--------------|------------------|------------|-------|



MANAGEMENT RECOMMENDATIONS

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What is deadwood? Wildlife Use Desired Features Management CFAES

SNAG RECOMMENDATIONS:

- Large snags 12"+ dbh
- Small snags at least 3" dbh
- Both conifers and deciduous make good snags
 - Deciduous often develop more/larger cavities
- Variety of hard and soft snags
- Plan for the future – snags don't last forever
 - Retain trees and shrubs next to a snag to help protect it from weather
- Consider location if interested in attracting certain species

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LOG RECOMMENDATIONS:

- Large logs - 6" and larger in diameter, at least 1' long
 - Logs longer 1x3' will last longer
- Consider location if interested in attracting certain species
- Maintain continued supply to streams
 - Larger and wider riparian buffers
 - Do not remove LWD (large woody debris) from streams
 - Do not remove dead/dying trees from riparian buffers


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BRUSH PILE RECOMMENDATIONS:

~Brush Pile Home~



Adapted from The Audubon Society's "A Guide for Brushpile."

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BRUSH PILE RECOMMENDATIONS:

Pennsylvania Game Commission

Building Brushpiles for Wildlife



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BRUSH PILE RECOMMENDATIONS:

- Create a log cabin-style base with 4-6" diameter trees
- Build up with smaller branches
- Size: 3-6' tall and ~10" x 10" wide
- ~300' apart, ~2-3/acre
- Place near areas where other forest mgt is taking place
 - Thinning

~Brush Pile Home~




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What is deadwood? Wildlife Use Desired Features Management CFAES

A Quick Note on Wildlife Conflict...



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HOW MANY AND HOW MUCH??

General snag goal: 4 - 6 per acre (at least), 1 large 20"+ dbh

General log goal: 4 downed logs per acre, at least one 20" x 20' long

There is no known optimum number, so if your goal is primarily to attract wildlife, then leave them all!

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What is deadwood? Wildlife Use Desired Features Management CFAES

AND REMEMBER...

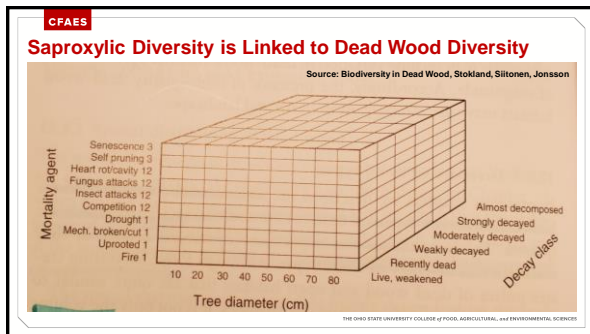
Diversity is key!

Allowing a variety of tree sizes and ages to die naturally will provide a continuous source of replacement snags and logs.

→ Key to a diverse saproxylic community!

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What is deadwood? Wildlife Use Desired Features Management CFAES

DIVERSITY IS KEY

Silviculture - the art and science of growing trees

Morticulture
The method of producing dead wood, both in volume and variety, for ecosystem function.

Possible strategy: Retain large trees greater than 24" dbh, releasing crowns to accelerate growth of larger trees, girdle/fell trees to create snags and logs

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What is deadwood? Wildlife Use Desired Features Management CFAES

POTENTIAL SNAG CANDIDATES

- Meeting other objectives
 - Shade tree in an area you want sun
 - Structural issues
 - Stand that needs thinned out
 - Promoting growth of crop trees
- Signs of a future snag
 - Sap runs, splits in trunk, dead main limbs, fungi on the bark evidence of animal use (woodpecker holes)
- A tree that doesn't meet other management objectives



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What is deadwood? Wildlife Use Desired Features Management CFAES

METHODS FOR CREATING SNAGS

- Girdling, frilling, herbicide use
 - Tree species and size of girdle
 - Herbicide use increases effectiveness

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FOR MORE INFORMATION ON THESE TECHNIQUES

Extension FactSheet F-45-97

Controlling Undesirable Trees, Shrubs, and Vines in Your Woodland

Rebecca E. Bergman
Assistant Professor of Forestry
Biology, Ecology & Forestry

Axe Girdle

Axe Frill

woodlandstewards.osu.edu


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What is deadwood? Wildlife Use Desired Features Management CFAES

METHODS FOR CREATING SNAGS

- Girdling, frilling, herbicide use
 - Tree species and size of girdle
 - Herbicide use increases effectiveness
- Basal bark spray to deaden small trees and shrubs (<4-6" diameter)
- Other methods likely require professional help
 - Topping tree/removing many large branches



Drawings by Jennifer Rees

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What is deadwood? Wildlife Use Desired Features Management CFAES

MONITOR SNAGS FOR SAFETY RISKS



- 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
- Don't be afraid to seek professional help with removing a dead tree!


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What is deadwood? Wildlife Use Desired Features Management CFAES

LET'S NOT FORGET ABOUT NEST BOXES

- Nest boxes mimic tree cavities
 - Red, fox, gray squirrels
 - Flying squirrels
 - Screech and barn owls
 - Woodpeckers
 - Downy winter use
 - Possibly Northern flickers
 - Bats
 - Wood ducks, mergansers
 - Range of songbirds
 - Mice and chipmunks



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LET'S NOT FORGET ABOUT NEST BOXES

DIVISION OF WILDLIFE

NEST BOX PLANS

wildohio.gov

Ohio Bat Working Group
Communication and collaboration between bat-minded people.

Home Annual Meeting Bat Boxes Consulting with Bats Education Resources Get Involved [RESEARCH RESOURCES](#) About

Habitat Management
Are you interested in managing for bats on your property? Check out the below resources on forest management, bat houses, and wildlife management.

Forest Management for Bats

- Managing Habitat for Bats – A Guide for Landowners and Managers in Ohio
- Forest Management & Bats
- Developing Forest Management Practices for Wildlife-Adapted Bats
- Relationships of Three Species of Bats Inhabiting by White House Spruce in Forest Canopies and Management

Before management plans, practices and land managers should have a management plan in place.

Contact a resource resource professionals help in the creation of the plan and objectives. These professionals perform a site visit with the resource and offer advice on best management practices, as well as information on opportunities for future assistance to help achieve management goals.

u.osu.edu/obwg

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WHO CAN HELP:

- Arborists/Tree Care Companies
- ODNR, State Foresters
 - Assist with long-term goals for private woodlands
 - forestry.ohiodnr.gov
- Consulting Foresters
 - osafdirectory.com
- Don't forget chainsaw safety!




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WHO CAN HELP:

- Cost-share assistance:
 - Environmental Quality Incentives Program (EQUIP)
 - Practice 649 – Creating Wildlife Structures
- Natural Resources Conservation Service (NRCS)
- Soil & Water Conservation District Office (SWCD)/wildlife specialists
- ODNR, Division of Wildlife private lands biologists



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Environmental Quality Incentives Program – Some Ideas to Think About

| | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WOODLAND <ul style="list-style-type: none"> • Openings, permanent and temporary • Early successional cover, thinning • Edge feathering • Structures • Planting • Vernal pools | WETLAND <ul style="list-style-type: none"> • Development of new wetlands • Vernal pools • Enhancement of existing • Invasive plant control • Establishment of buffers |
| NATIVE GRASSLAND <ul style="list-style-type: none"> • Seeding of new diverse covers • Forgone income • Management/renovation of existing stands <ul style="list-style-type: none"> – Burning – Invasive control • Early successional management | CROPLAND <ul style="list-style-type: none"> • Pollinator habitat • Permanent cover next to fields • Forgone income or management/monitoring payments |

Webinar on NRCS programs for forests & wildlife: go.osu.edu/costshare

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More Info on Dead Wood




woodlandstewards.osu.edu

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Marne Titchenell, Extension Wildlife Program Specialist, titchenell.4@osu.edu

"These tiniest life forms—insects, fungi and bacteria—are reservoirs of diversity that recycle our biosphere."

– Matt Kane of the National Science Foundation (NSF) Division of Environmental Biology



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