Great Parks of Hamilton County

# The Importance of Managing Deadwood in an Urban Forest

(for habitat trees and wildlife)

Steve Grimm
Urban Forester- Great Parks of Hamilton County
ISA Board Certified Master Arborist OH-6386BM
09/25/22

## Let's talk about Habitat trees

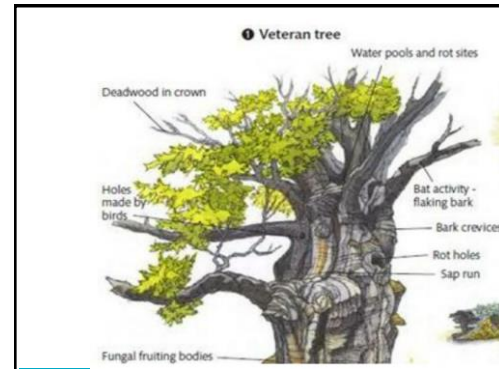
- The importance of deadwood in the UF
- Why deadwood is in limited supply in UF
- Options to conserve, retain and create wildlife habitat
- Resources & Questions



## Importance of deadwood in the UF

- Vital component of ecosystem – supports biodiversity= improved resilience
- Deadwood provides food, habitat, nutrient cycling & soil creation
- 47 tree-related microhabitats- Larrieu *et al*.(2018)





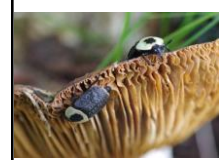


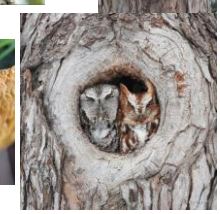




Ohio Bluebird Society

Photo by John MacGregor
Indiana Bat





Judy Semroc, Special to The Plain Dealer

Eastern screech owl

- Trees and deadwood support 1000s of different species
- Insects and invertebrates- like caterpillars, gall forming wasps and beetles
- Animals like deer & other mammals, birds, amphibians and reptiles
- Bryophytes and lichen
- Microorganisms like fungi and bacteria

## Importance- Wildlife Habitat

- It begins with the microorganisms…
- Many species use trees for food, reproduction and shelter.
- Saproxylic habitats are at the core of the biodiversity chain in arboreal systems- in turn attract birds, small reptiles and mammals

## Importance- Food

- Deadwood…fungi…beetles…other insects & birds…
- **Birch polypore (Piptoporus betulinus**)- at least 36 known beetles in the UK (102 worldwide)
- **Dryads saddle (Polyporus squamosus**) host to 246 species worldwide
- **Honey fungus (Armillaria bulbosa**) not mellea- 90 species dependent of the fruiting body

In the UK about 650 beetle species are associated with deadwood.

Pileated woodpecker

## Species

- NLEB Northern long-eared bat
- Indiana bat (Federally endangered)
- Little brown bat (State endangered)
- Tree cavities, loose bark- snags- standing dead or dying trees

THE PRIMARY THREAT TO THE NORTHERN LONG-EARED BAT IS WHITE-NOSE SYNDROME. CREDIT: MERLINTUTTLE.ORG.

https://www.batcon.org/article/northern-long-eared-bat/



## Importance of deadwood- Nutrient cycling

- Woody material broken down into useable and less complex form and nutrients are returned to the soil
- Deadwood is an important element of properly functioning forest ecosystem and plays a very important role in the maintenance of biodiversity, soil fertility, and carbon sequestration.



## Why deadwood is limited in UF

- An Urban Forest setting tends to be over sanitized for perceived risk, aesthetics and cultural norms/ expectations
- Urbanization is removing forests, and with it the naturally occurring deadwood
- 80% of Earth's natural forests have been destroyed- World Resource Institute



Beautiful, but limited.

Not all situations are appropriate, but we need to identify opportunities to conserve or create deadwood when able.



## Why this should matter to us

- Wildlife population and biodiversity decline
- 20% of world's bird populations live in cities- Cornell Lab of Ornithology
- Biodiversity- ecosystem resilience- Jenga



## Benefits of following techniques

- Educate the public and reframe the idea of what is considered normal, aesthetically pleasing and what is beneficial.
- Creating more potential habitat, sometimes saving time and money, and leading in a new direction that will become increasingly important as cities expand and forests shrink.

## Options for increasing deadwood

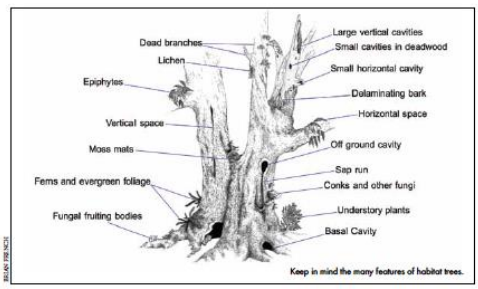
- **Conserve** existing deadwood/ trees- leave be
- **Retain** portion/ reduce size of existing deadwood or tree
- **Create** artificial cuts, crevices, cavities and perches
- Other- leave logs (Nurse log), brush piles, girdle treetops?



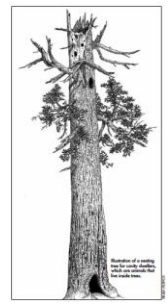
## Conserve existing deadwood/ trees

Source: Vikki Bengtsson, Bodfach Park, Wales





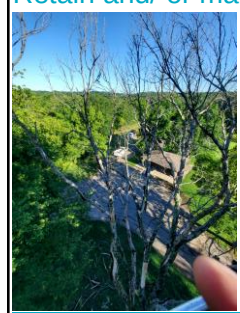






## Retain and/ or make smaller



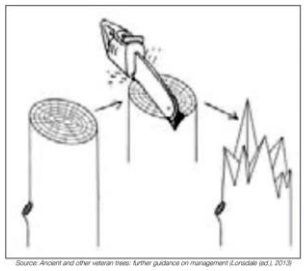
## Don't do this!

Hire a professional

Great Parks of Hamilton County greatparks.org

## Create habitat

Great Parks of Hamilton County greatparks.org



Source: Ancient and other veteran trees: further guidance on management (Lonsdale (ed.), 2013)

Source: Sean - arbtalk.co.uk

Great Parks of Hamilton County greatparks.org

Chainsaw-carved cavities better mimic the thermal properties of natural tree hollows than nest boxes

Great Parks of Hamilton County greatparks.org

## How to make a simple cavity

- How to Ma
  Jeremiah
  Expert Vic

Great Parks of Hamilton County greatparks.org

## Wildlife snags- What we are doing.

- Trees already in our inventory that may be scheduled for removal or risk mitigation, when deemed appropriate, will be made into wildlife snags instead of being fully removed.
- Decrease risk
- Increase potential habitat

Great Parks of Hamilton County greatparks.org





Figure 14: Various hole and cavity sizes will determine the different types of wildlife







## Considerations when making cavities for specific wildlife

- Height of cavity
- Proximity to water and food source
- Woods edge or interior
- Preferences of species relating to ideal temperature range, moisture, shelter and protection from predators.

- Much to learn and experiment with…

## Preference examples

**Bluebirds** 2'-50' high cavity
-facing or surrounded by open fields to feed on insects
-tree 20'-30' in front of their house- place for their young to fly or perch and watch for unwanted guests

**Swallows'** houses need to be 15 to 20 yards apart, because Tree Swallows are territorial

-orient facing away from prevailing winds



## Chickadee




**2.2 Method 2: Branch Hollows**

First a suitable branch or stub is selected. Ensure the branch diameter is no less than 150 mm for this method


Figure 15: Select a suitable branch or stub.


Figure 16: Branch diameter no less than 150mm.

Remove the excess length of the branch safely, leaving a stub of at least 300mm in length.


Figure 17: Angled cut then a face plate cut


Figure 18: Create the desired cavity



Cut a sloping section off the end of the stub. Angle the cut at approximately 30 degrees. Cut a face plate off the stub following the same angle. The face plate should be approximately 20mm minimum depth. The face plate should be angled to shed water.

Use a small chainsaw to very CAREFULLY bore into the sloping cut end of the stub. This boring cut should only be undertaken by experienced operators.


Figure 19:Creating the desired cavity

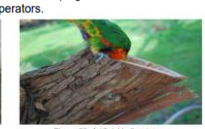


Figure 20: Artificial hollow in use

Remove the core to create a hollow. The hollow can be left open or the face plate re-attached and an entrance hole drilled.

Select a spot for the entrance and use a suitable drill to bore an entrance hole. Entrance holes can be through the face plate, in the side or from the underside. Boring large holes is a little difficult. Reattach the face plate with screws or nails. Drainage holes may also be required.


Figure 20: Drill entrance, and or drainage hole.


Figure 21: Attached faceplate.





## Habitat Creation in Trunk Wood

By chainsawing into the heartwood, habitats can be customised for numerous wildlife species. Here is an example of habitats we created for the long-tailed bat in standing trunks. (This requires good chainsaw knowledge as many of the cuts use the tip of the bar and can promote dangerous kickback.)

**LONG-TAILED BAT HABITAT:**


**1.** Cut into the trunk horizontally with two cuts at the desired height. Bore cut the face plate out.

**2.** Bore into the wood and make the chosen number of chambers. Cut the chambers into a fork-shaped pattern with the horizontal cut meeting the entrance hole (as shown in the picture). The entrance needs to be on a slope so it works as drainage. The size of the sloping entrance should be 17–21mm for long-tailed bats. Make sure the chambers are smaller than the face plate so that the hollow will be sealed.

**3.** Drill into the face plate and then screw the face plate back on to the wood.



Leave sloughing bark or create kerfs, slits and niches for bats

1000s of insects/mosquitos in one day

Human-made constructions are also an alternative. Here is a bat house made for long-tailed bats; there are endless ways to make them and numerous materials that might be used. These constructions could harbour any type of wildlife depending on construction type.



## To sign or not to sign…

- Can show that it is not just an unfinished tree
- Help educate the public




## Future

- Currently, there is little direction for arborists on how to work around urban wildlife.
- This process is about learning and experimenting for us as much as it is about educating the public.
- We can lead by example and have a lasting positive impact on the public's mind and on habitat in the urban forest.

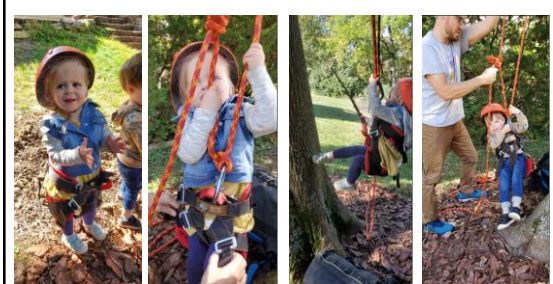


## Let's Recap

- The importance of deadwood
- Why deadwood is in limited supply
- Options to retain, increase and create
- Why this should matter to us



## For future generations…



Thank you for your time!

Great Parks of Hamilton County greatparks.org

## Resources and works cited


- https://arbtalk.co.uk/
- https://www.ancienttreeforum.co.uk/
- https://wwv.isa-arbor.com/quizbank/resources/4575/Arborist_and_Wildlife_2018_02.pdf
- Brown, T.K. 2002. Creating and Maintaining Wildlife, Insect and Fish Habitat Structures in Deadwood. USDA Forest Service General Technical Report PSW-GTR-181
- https://cdn.buglife.org.uk/2019/08/Deadwood_0.pdf
- https://envirobites.org/2021/03/03/dead-and-gone-the-loss-of-decaying-wood-communities-in-urban-forests/


Great Parks of Hamilton County greatparks.org

## Resources and works cited


- https://wwv.isa-arbor.com/quizbank/resources/4575/Arborist_and_Wildlife_2018_02.pdf
- https://www.portal.treebuzz.com/
- https://www.treefirst.org/on-dead-wood
- https://www.treenet.org/wp-content/uploads/2017/07/Habitat-Paper-Final-Pat1.pdf


Great Parks of Hamilton County greatparks.org

## Resources and works cited

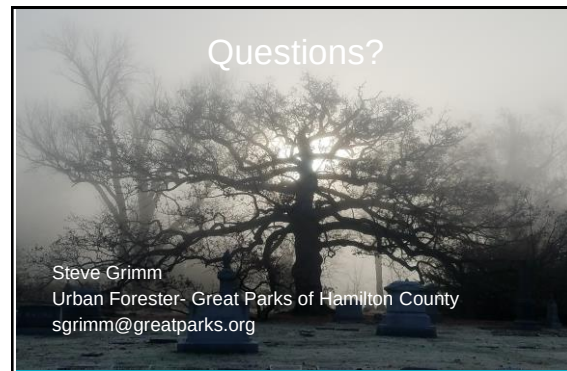

- Fay, N. 2003. Natural Fracture Pruning Techniques and Coronet Cuts. Arbor Ecology
- Griffiths, Stephen, et al. “Chainsaw-Carved Cavities Better Mimic the Thermal Properties of Natural Tree Hollows than Nest Boxes and Log Hollows.” *Forests*, vol. 9, Apr. 2018, https://doi.org/10.3390/f9050235.
- Habitat-PDF.pdf (thelivingtreecompany.co.nz)
- https://www.mdpi.com/1999-4907/9/5/235/htm


Great Parks of Hamilton County greatparks.org

## Resources and works cited


- https://u.osu.edu/obwg/batweek/
- https://www.vetcert.eu/
- David Restrepo
- Ted Green
- Neville Fay
- PNW ISA webinars
- Brian French


Great Parks of Hamilton County greatparks.org




Great Parks of Hamilton County greatparks.org