

Observations of Red-headed Woodpeckers Including New Life History Behaviors

Red-headed Woodpecker Nest Cavity Shape and Tree Sizes



Observations Text and Photography by Siah L St. Clair



The Red-headed Woodpecker Recovery project (RhWR) was organized in 2007 and is a 501(c)(3) tax-exempt non-profit organization.

Investigation and research activities about Red-headed Woodpeckers (RHWOs) at Cedar Creek Ecosystem Science Reserve began in 2008 when Cedar Creek ESR gave a permit to the RhWR to initiate those activities on site. The RhWR has continued investigation and research activities since 2008 both at Cedar Creek ESR and at other locations.

Field observation efforts for included information occurred between 2012 and 2025 in all 12 months of the year, with a combined 2,563 days and 15,438 hours by Siah St. Clair and work partner Jim Howitz. All observations were made during a succession of RHWO study and research projects. Many activities required extensive experience and expertise as well as special permits and permissions.

By conducting these observation activities new natural history behaviors of RHWOs have been documented and will be used to help reduce the decline of this species and other species impacted by the presence of RHWOs.

Unless otherwise noted, the information and photographs provided herein are based solely on observations by Siah L St. Clair, a volunteer of the Red-headed Woodpecker Recovery project.



Red-headed Woodpecker Nest Cavity Shape and Tree Sizes

Observations, Text and Photography by Siah L St. Clair

I have been observing Red-headed Woodpecker (RHWO) nests for more than a decade at Cedar Creek Ecosystem Science Reserve (Cedar Creek ESR) and watching nest camera videos of failed predation attempts at these nests. During these observations I became curious about how the nest cavity was constructed to thwart most medium to large mammal predators (e.g. Raccoons and Fishers). I have observed Raccoons and a Fisher attempting to reach into Red-headed Woodpecker nest cavities, with an adult and nestlings present in the cavity, without the predator ever once having predation success with Red-headed Woodpeckers. I also wondered when tree diameter at the nest might become a limiting factor to successfully construct the nest and to successfully use the cavity as a nest.

To answer the first question, I cut open an old fallen Red-headed Woodpecker nest tree log to expose the cavity shape. I cut the log lengthwise to expose a cross-section profile of the cavity from top to bottom. The cavity I exposed is wide at the bottom and narrow at the top with a wide sill at the entrance hole. The structure of the entrance may prohibit predators, like Raccoons, from bending their legs to reach into the cavity far enough to reach the adult and nestlings that are lying flat on the bottom of the cavity when danger is present.

Nest Cavity Shape



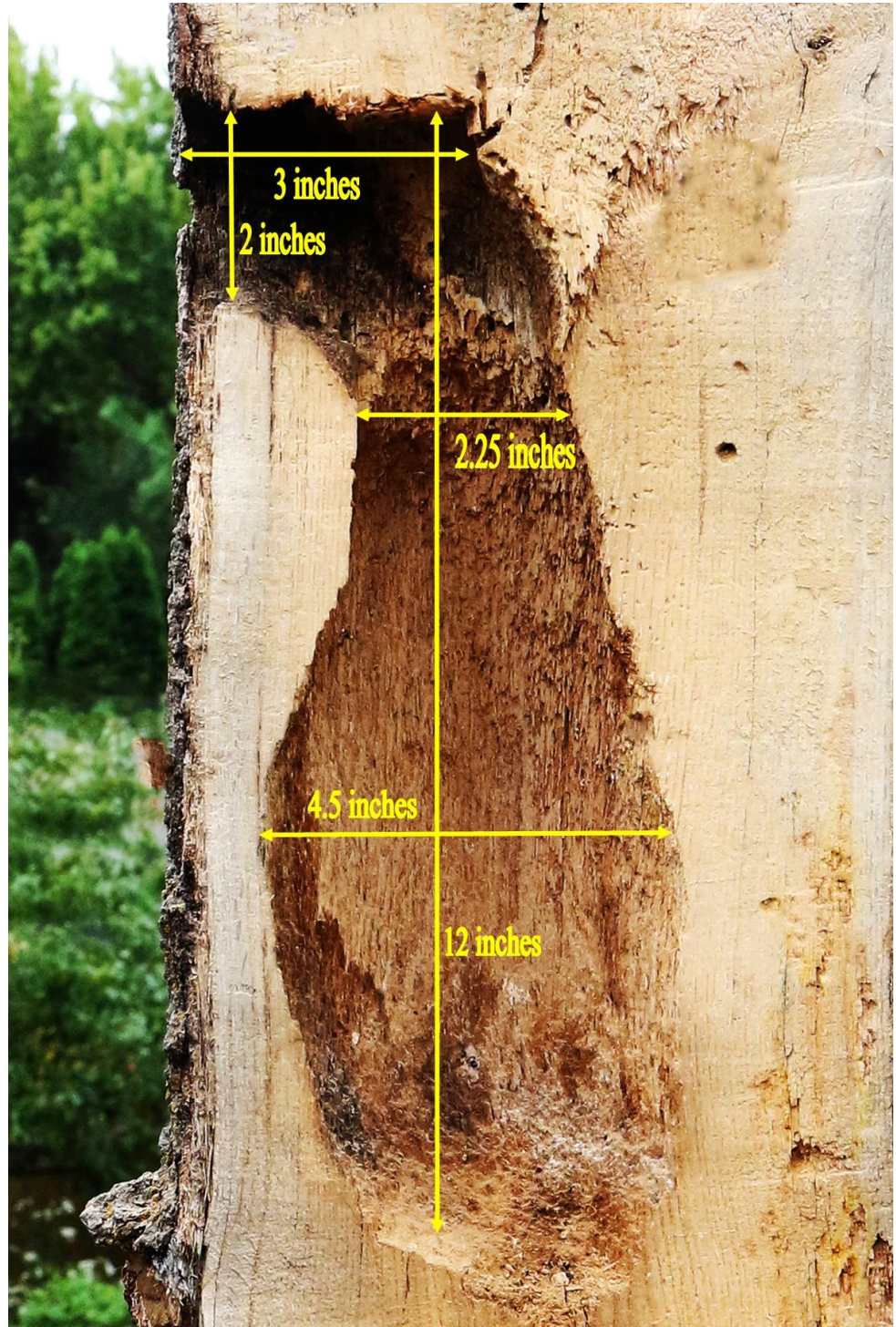
Here two pictures are placed side by side vertically to show what the inside of a Red-headed Woodpecker nest cavity looks like in proportion to the woodpecker. In an active nest there are usually about two inches of woodchips in the bottom of the nest and either eggs or nestlings present, as shown here for illustration purposes.

The presence of the wide sill at the entrance hole may contribute to the difficulty some predators have reaching far enough into the cavity to be successful. It may also be the depth of the cavity that keeps the birds and eggs inside out of the reach of predator's searching "arms." Most cavities in active use are generally 8-10 inches deep from the bottom of the entrance hole to the top of the woodchips. This depth is based on my measurements when cutting portholes (70+) into nest cavities during the egg stage to access nestlings later to attach transmitters.

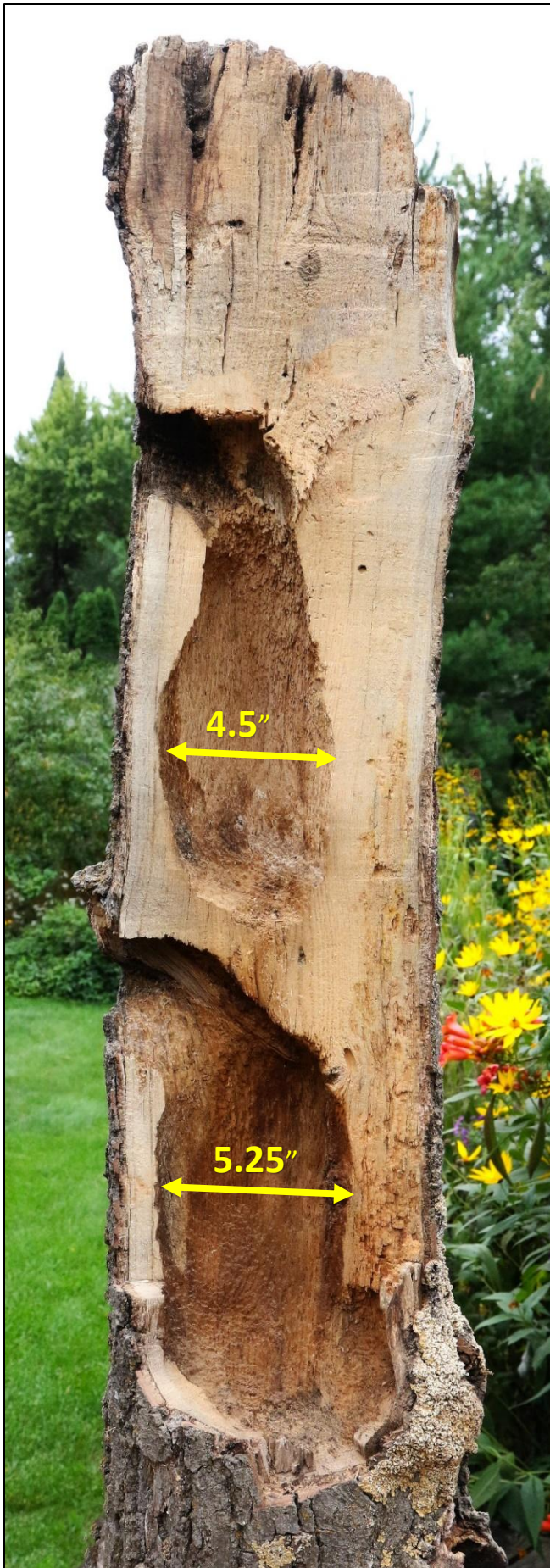
Nest Cavity Dimensions

This cavity shows generally average dimensions for a Red-headed Woodpecker nest cavity. There is a lot of variability in the width of the bottom portion of the cavity in these nests over time. With the usual wood chips present in the cavity bottom the cavity would be about 8-10 inches deep when measured from the bottom of the nest entrance hole to the top of the wood chips when eggs are present. The depth changes daily when nestlings are present as the adults remove and replace wood chips.

As Red-headed Woodpecker nestlings grow, the adults (males mostly) are continually removing fecal matter-soaked woodchips from the bottom of the nest. The males then regularly chisel with their beaks new woodchips from the inside walls of the cavity as replacement woodchips. This process of making new woodchips from the inside walls effectively slowly enlarges the cavity width.



Measurements were taken on the cut-out nest tree using a measuring tape and are given to the nearest quarter inch.



This picture shows two Red-headed Woodpecker nest cavities, one above the other, in the same tree. It is common to see multiple nest cavities in the same tree that have all been made by Red-headed Woodpeckers at Cedar Creek ESR. Only one cavity in a tree will be used as an active nest by Red-headed Woodpeckers at a time, although I have observed them use a second cavity in the same tree for a second brood.

Other species can have nests in the other cavities of a tree at the same time that the Red-headed Woodpeckers have an active nest in the tree. Species I have observed doing this are Northern Flickers, Flying Squirrels, Gray Squirrels, European Starlings, White-footed Mice, and Pileated Woodpeckers.

The bottom nest cavity here is the older one.

The cavity of the bottom nest is larger than the top nest. This may be from the woodpeckers making new woodchips from the inside walls over time to replace the soggy woodchips from the nestlings' fecal matter that the adults remove. It may be that the top nest was excavated when there was no room or soft wood left in the walls of the bottom nest to make new woodchips. The volume of the lower cavity is about 40% larger than the top cavity.

The lower cavity may have been enlarged by other animals, making it unsuitable to the Red-head pair, and they then made the new cavity above the old one.

This nest tree had fallen to the ground and was lying there for a year before I salvaged it and made this cut to expose the nest cavities. In that time other animals may have used the cavity and enlarged it.

I took this photo with the nest log standing on my deck at my house, with gardens in the background. I had made the saw cut in my garage workshop.

Tree Outside Diameter Width at Nest—What is the Limit?

The only apparent limit to Red-headed Woodpeckers excavating a cavity in a portion of a tree where the tree trunk has a very large diameter at the nest cavity is that the interior wood needs to be soft enough to excavate a cavity. As diameter becomes narrower, however, a limit is reached where the adult cannot physically sit to incubate eggs, turn around in the nest, excavate woodchips from the inside, or for nestlings to have space needed to grow. See pictures below as examples.

The pictures on the right are examples of the different diameters of tree width at the nest cavities for Red-headed Woodpeckers at Cedar Creek ESR.

1. 4 ½ inches diameter
2. 10 inches diameter
3. 30 inches diameter

The top picture (#1) is the smallest diameter of tree width at the nest that I have observed among hundreds of nests. This was on the main trunk of a very skinny dead northern pin oak with the nest about 18 feet high. It is only 4 ½ inches in diameter but this pair nested twice in this nest. At least one nest was successful.

Nest tree #2 is another dead northern pin oak tree. The diameter of the tree trunk at the nest is 10 inches. This tree had 3 successful nests in 3 different cavities over 3 years. The nests were 12-14 feet high.

Nest tree #3 is a live black cherry. The diameter of the tree just below the 2 nest holes is about 30 inches. The nests were about 40 or more feet high in this tree. This tree had at least 3 successful nests, in 2020, 2021, and 2024.

Nest trees 1 and 2 had fallen by 2020. Nest tree 3 was alive and standing in 2025.

1.



2.



3.

