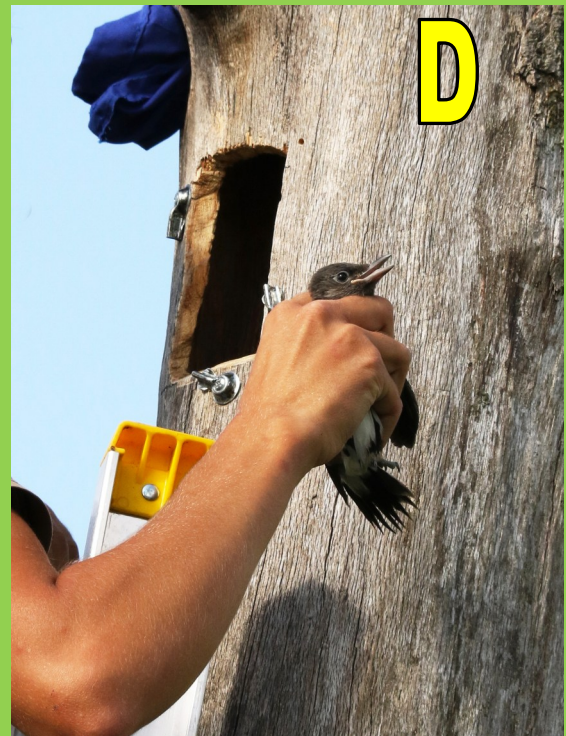


Red-headed Woodpecker Nest Cavity Porthole Installation





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 Porthole Installation

Text and Photography by Siah L. St. Clair

In January of 2017 the Red-headed Woodpecker Recovery Project initiated and funded research work on Red-headed Woodpeckers (RHWOs) to expand the research the Project had been conducting for almost 10 previous years at Cedar Creek Ecosystem Science Reserve (Cedar Creek ESR). We specifically wanted to learn more about where the woodpeckers went during the winters they migrated, what was causing high brood reduction in almost all nests, and other aspects of their life history and habitat requirements.

A part of this expanded research required placing transmitters on Red-headed Woodpecker nestlings a few days before they fledged. The goal was to be able to document where fledglings went immediately after leaving the nest, their travels long term, and to record survival rates. The challenge was to determine a method to access the nestlings while they were still in the nest to place transmitters on them. To come up with a way to do this I cut sections out of a few nest trees with cavities that had fallen to the ground. I took them home and after some trials, came up with a method to accomplish this need.

Since the nest holes were too small for a human hand to reach into, a larger hole was needed that left the cavity intact and did not alarm the adults into abandoning the nest. I had observed coworker Jim Howitz use a Dremel tool to cut an opening into a RHWO nest, but the Dremel tool was inefficient and difficult to use on thick, hard wood at cavities. Using different tools, I came up with a method involving cutting a porthole into the nest that could be closed until the nestlings were at the correct age to have transmitters attached. The porthole would need to be cut into the cavity while there were eggs in the nest since the blade of a reciprocating saw could easily injure nestlings. Trial runs at creating portholes in old fallen nest cavities showed that this method would be quick, safe, and efficient. I determined what the smallest size a porthole could be (about 4" x 4") to allow hand access, how to quickly re-attach the porthole cover, and how to seal it against bad weather. I also worked a system out so we would be at the nest tree for only 30-45 minutes, so parent birds could return to the eggs as quickly as possible.



**30 to 40
days later**



A nest cavity porthole is a hole that is cut into an active Red-headed Woodpecker nest cavity with eggs. The hole can be closed and allows future access to the cavity to place transmitters on nearly grown nestlings. I installed over 70 of these portholes over a nine-year period with no abandonment issues.

Here is a sequential list for the process to install a porthole in an active Red-headed Woodpecker nest cavity.

Preparation

1. Determine that the nest is active and has eggs present with no nestlings.
2. Prepare all materials and tools so they are at hand before approaching the nest tree.
3. Take ladder, materials and tools to tree base.
4. Set up ladder directly under the nest hole with top rung 1 foot below nest hole.
5. Climb ladder and look in the nest hole to determine the direction of the nest cavity to determine where best the porthole can be placed. Cavities often turn left or right inside the tree. Also look for external cracks in the tree that may impact porthole location. Do not locate the porthole with an existing crack within the porthole.
6. Move the ladder, if necessary, to be directly under the porthole location.
7. When you are in place on the ladder, secure safety strap on tree and connect carabiner to your climbing harness.
8. Make sure the tool rope is free and falling open to the foot of the ladder.

Measurement

9. Take ping pong ball measuring tool from waist bag and slowly lower into nest hole. When the ball stops dropping pinch off the attached string at the bottom of the nest entrance hole and remove ball from cavity. (I came up with this method of measuring cavity depth to not damage the eggs.)
10. Use tape measure to measure length from pinched off string point to bottom of ping pong ball. (usually 7-11 inches) This is the distance from the top of the eggs inside the nest to the bottom of the nest hole.
11. On the outside of the tree measure the distance from the bottom of the nest entrance hole to the top of the eggs and draw a horizontal line here with the black marker in your waist bag.
12. Now draw a second line 1.5 to 2 inches above the egg line. This will be the bottom of the porthole.
13. Using the area with the thinnest part of the tree to the cavity inside, draw a rectangle about 4" high by 4" wide, using the second line on the tree as the bottom of the rectangle. Do not make it bigger.

Creating the Porthole

14. Have your helper at the ladder bottom attach the drill to the tool rope and pull the drill up to you. It should already have the drill bit attached that you will use to drill the two holes for the porthole.
15. Drill two holes, one each at opposite diagonal corners of the rectangle drawn on the tree. Make sure to hold the drill at a slight angle so the holes going in are angled slightly towards to center of the porthole.
16. Lower the drill down to your helper on the ground and have the helper attach the reciprocating saw to the tool rope. Pull the saw up.
17. Insert the saw blade into one of the drilled holes. You will be able to cut along the two lines that extend from this hole, one at a time. Remember to hold the saw at a slight angle so the cut will be angled towards the center of the porthole.
18. Repeat this from the other drilled hole.
19. The porthole cover should now be cut free from the tree and can be set aside.
20. If the porthole is open enough for you to get a hand in place a soft cloth over the eggs.
21. If the porthole has "wings" on the inside areas that prevent you from getting your hand in, put a piece of cloth over the eggs and cut the "wings" back far enough to get your hand in. Gently remove any pieces of the "wings" that fell into the nest.
22. Lower the saw down to your helper and have the drill sent back up.

23. Using one of the half-turn buttons and the marker, place marks at each spot where a half-turn button will be placed to close up the porthole. See pictures.
24. Put the small drill bit into the drill and drill pilot holes at each mark for the half-turn buttons.
25. Put the Phillips driver bit into the drill and attach the half-turn buttons loosely using the small screws and the drill and the pilot holes.
26. Take the window insulation strip and place it around two sides of the porthole cover and cut the insulation there. Remove the insulation backing strip and “glue” the strip to the cover sides. The porthole should fit snugly after you do this. Make changes at this point to get the porthole to fit snugly.
27. Remove the cloth from the nest.
28. Put the porthole in place and tighten the half-turn button screws snugly using the drill. Do not tighten too much as you usually only have a hand screwdriver to loosen them when eventually removing the nestlings in 4 or 5 weeks.
29. Cut a couple of small pieces of window insulation and push them into the two drill holes at the corners of the port hole.
30. Lower the drill and remove safety carabiners and tree strap. The porthole is complete.
31. Remove all gear and ladder from the nest area as quickly as possible. Watch from a distance to see when an adult returns to the nest.

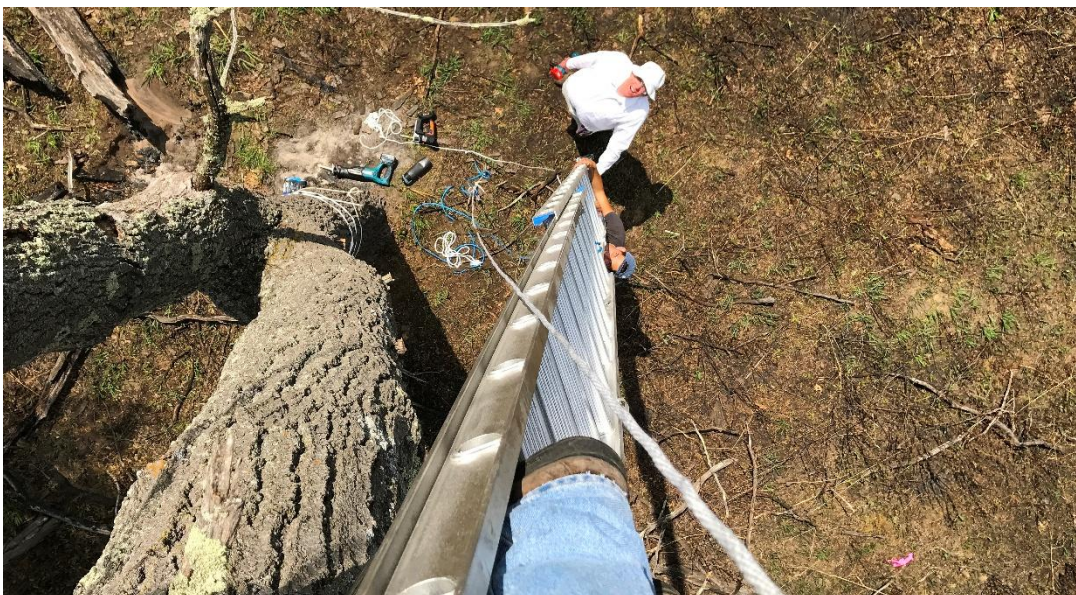
Tools and Materials Needed

1. Ladders: We used 24’ and 32’ aluminum extension ladders, or a step ladder if nest was lower.
2. Saws—In the beginning I used a large reciprocating saw. It was heavy and powerful but hard to use on delicate decayed tree wood. I replaced it with a WORX Wx550L reciprocating jig saw with a smaller blade. It has worked very well. It accepts the bigger blades, which are sometimes needed.
3. Drill: I use a Dewalt 12V cordless drill. It or any other battery powered drill will work.
4. Climbing harness: I purchased a climbing harness at an outdoor store. It has leg and waist belts with a belt that has extra carabiner attachment loops. These are needed for the waist bag and for the rope that drops down to the helper on the ground.
5. Tree safety strap: I purchased a deer hunting stand wide safety strap that is excellent for this work. It attaches around the tree and has a secure carabiner loop.
6. Five to six heavy duty carabiners. Do not go light weight on these. Sometimes you need two or three in a chain to give yourself working distance from the tree.
7. Ping pong ball, small screw eye, and 20” string to measure nest egg depth. See picture.
8. Half-turn buttons 4-6 per porthole. See picture.
9. 1 1/4th and 1 5/8th Phillips head drywall screws to attach half-turn buttons.
10. 3/32 drill bit for pilot holes for screws for half-turn buttons.
11. Phillips screwdriver bit for drill.
12. Silicone rubber window seal tape insulation (3/8th X 3/8th) with flat sticky side. See picture.
13. 5/16 drill bit for porthole corners.
14. T-shank 4” jig saw wood cutting blades and 5” reciprocating/Sawzall woodcutting blades. Thick hard trees need the bigger blades. The saw mentioned in #2 above can take both blade types.
15. Tape measure, permanent black marking pen, pieces of soft cloth, pair of scissors.
16. Clothesline-type rope: 30 feet—to use to pull tools, etc., up from ground. Tie loops on each end.
17. Bag attached to safety harness for tools, drill bits, scissors, measuring tape, and other items.

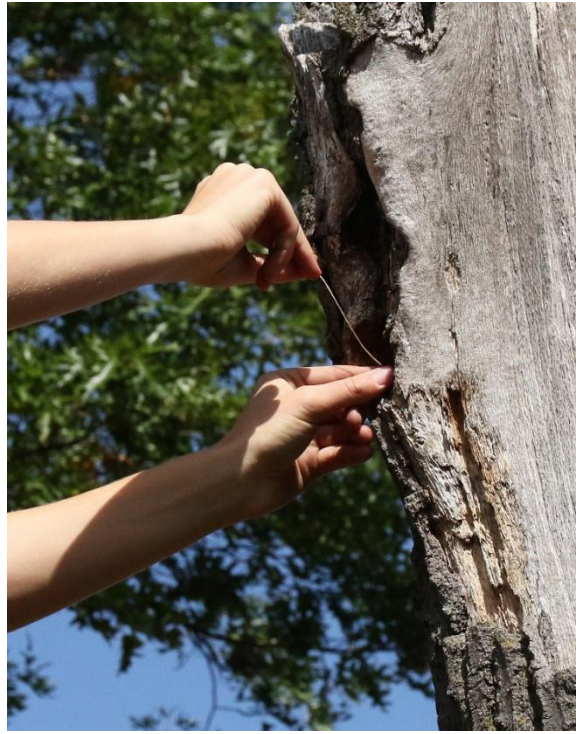
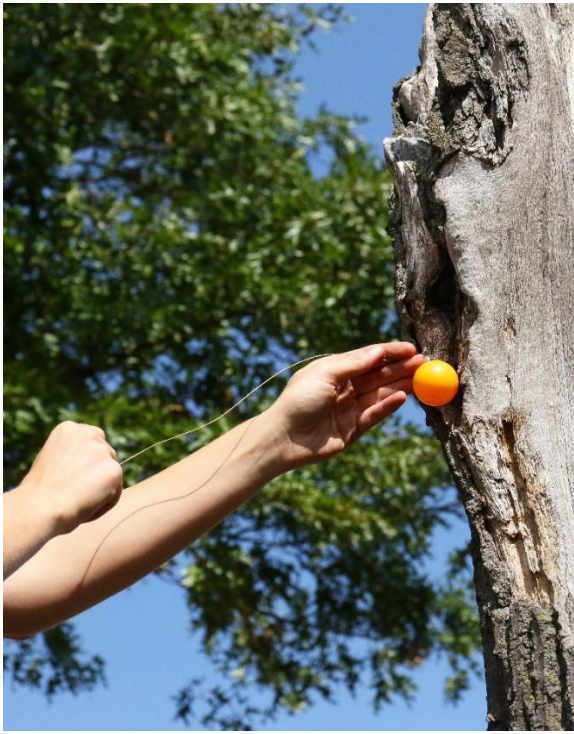
Pictures of Porthole Installation Actions



These 2 pictures show ladder placement for porthole making with the author at the top of the ladder with safety harness, tool bag by leg and drill with ground rope attached in the picture on the right. Left phone picture by Jessie Beck and right phone picture by Jim Howitz.



View looking down with helper and tools on the ground, and tool rope hanging from author at top of ladder.



These two pictures show the ping pong ball cavity measuring tool that I improvised. The ball is put into the cavity and slowly let down until it stops at the eggs. The right picture shows pinching off the string spot with your fingers when the ball has stopped.



The distance from the pinched off string to the bottom of the ball is measured, transferred to the outside of the tree and marked with a black marker as a line. This marks the top of the eggs in the nest.



The bottom of the picture at left above has a line showing the position of the top of the eggs in the nest. Two inches above that line a 4-inch rectangle has been drawn as the outline for the porthole. Note that the left edge of the rectangle runs along an existing crack in the tree. At the rectangle corners A and B holes were drilled at a slight inward angle. In the picture at right above the porthole has been cut out using the reciprocating saw, again at a slight angle, making the porthole slightly smaller on the inside. The drilled holes were used to place the saw blade into the tree. Cutting at a slight angle is done so the porthole will not fall into the nest cavity.



In these pictures the half-turn buttons have been installed loosely, the window insulation placed on the two sides of the porthole cover (see insulation), and then the cover is placed on and the screws tightened.



If the tree trunk is thick between the cavity and the outside of the tree there may be “wings” of wood because of the angle cut. This may not allow a hand to enter the nest. In this case gently place a soft cloth over the eggs inside the nest and use the saw to cut the sides back enough to allow your hand inside the cavity. Once this is done leave the cloth cover on the eggs while you attach the half-turn buttons and the insulation to the porthole cover. Remove the cloth from the eggs and look for any large chips of wood that may have fallen into the nest. Remove them gently, attach the porthole cover and tighten the screws. The porthole is now complete.



After a porthole has been completed, remove ladder, tools, ropes, and other gear, from the area around the nest as quickly and safely as possible. From a distance, 200+ feet, watch to see that the adults return to the nest. The male seems to return first, usually 5 to 20 minutes after we have left. I have not observed a nest yet that has not had an adult return within 30 minutes after installation of a porthole. After some inspection of the nest, an adult will enter and continue incubating, assuming they were incubating already. Red-headed Woodpeckers appear to not begin incubating until a day or so before the last egg is laid.



Adult parent Red-headed Woodpeckers are not bothered by the presence of a porthole in their nest. They are busy.



Thirty to 40 days after a porthole is placed into a Red-headed Woodpecker nest cavity the nestlings are ready to be removed and have transmitters harnessed onto them. They are then returned to the nest. These nestlings usually will fledge within the next one to four days. Following the transmitter beeps is a challenging but rewarding work activity.

These portholes have been very successful with over 70 that I have installed through 2025 with no nest abandonment or other issues.