

Study identifies nest-cavity predators

Woodpecker nests in British Columbia are examined

By Eric L. Walters

Why have cavity-nesting species evolved the habit of nesting in tree holes? Many observers have suggested that cavities in trees afford the inhabitant a refuge from predators.

Cavity-nesting birds come in many shapes and sizes, ranging from Wood Ducks and Pileated Woodpeckers to Pygmy Nuthatches and Carolina Chickadees. To investigate one element of the effectiveness of a cavity-nesting lifestyle, Ted Miller and I conducted a five-year study of the effect of predation on six species of woodpeckers at Hat Creek in south-central British Columbia. The birds chosen for the study were Downy Woodpecker, Hairy Woodpecker, Red-naped Sapsucker, Williamson's Sapsucker, Pileated Woodpecker and Northern Flicker.

All of these species are either primary or facultative excavators that nest within cavities. Primary cavity nesters create their own cavity by excavating a hole in a tree while facultative excavators may excavate a cavity or they may simply use a pre-existing cavity. By contrast, secondary cavity nesters do not excavate but, instead, rely on other species to do the work for them. The species chosen for this study also all vary in the entrance diameter of their cavities.

The Downy Woodpecker, Hairy Woodpecker, Red-naped Sapsucker, Williamson's Sapsucker, and Pileated



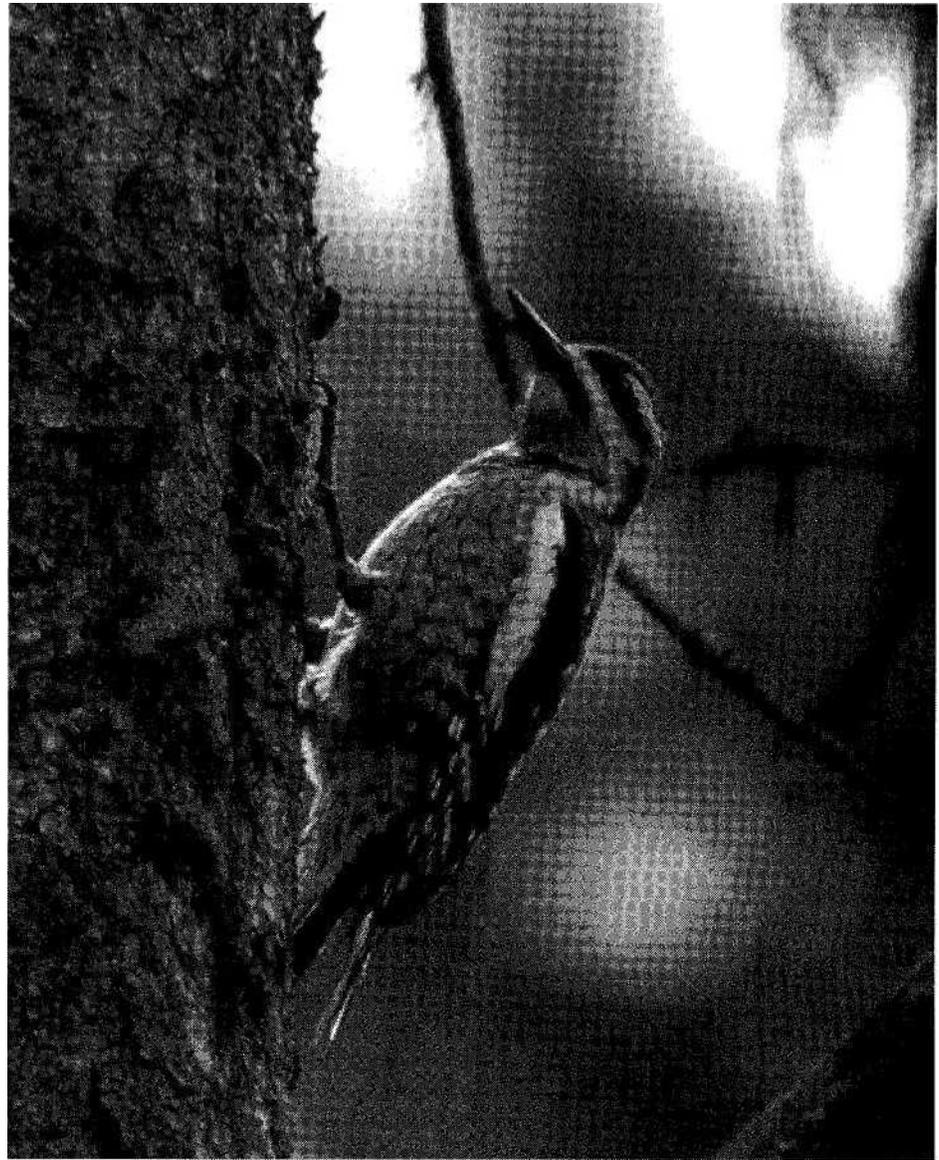
A freshly fledged Downy Woodpecker. This bird survived the predators that hunted near its Minnesota nesting cavity. Note the incomplete head feathers.

Woodpecker excavated their cavities in living quaking aspen trees. There was a propensity for Northern Flickers, a weak cavity excavator, to build their nests in softer trees (i.e., those that were dead or heavily infected with heart rot) or to enlarge cavities made by smaller woodpeckers in previous years.

We discovered that several types of predators were responsible for nest losses in Red-naped Sapsuckers, Northern Flickers, Hairy Woodpeckers, and Williamson's Sapsuckers. From a total of 239 nests monitored during the study, we found 23 cases of nest predation. Determining the predator responsible was relatively easy in some cases (some of the predation events were directly observed) and extremely difficult in others.

For example, we observed four nests where a black bear had clearly depredated the nest and eight others where the attempt was unsuccessful. Associated with this type of predation were bear claw marks on the trunk as the bear climbed up to the nest and claw and teeth marks around the hole as the bear attempted to rip open the cavity. In fact, about 40 percent of nest trees in the study area yielded older bear claw marks on the trunk where bears had climbed up to the nest entrance, compared with only four percent of trees without cavities. Clearly, bears are able to detect which trees harbor nest cavities, even nests higher than 48 feet (15 meters).

We observed a Deer Mouse in a Northern Flicker nest. The mouse had climbed to the cavity and had smashed and eaten the contents of six eggs. We suspected similar predation in two other nests. As far as I am aware, Deer Mice have been recorded from only one other cavity-nesting species - Prothonotary Warblers --- and never from woodpecker nests. House Wrens were observed usurping Red-naped Sapsucker nests by throwing the eggs to the ground or filling the cavity with



This Red-naped Sapsucker was photographed in Glacier National Park in early May, as nest sites were being chosen and pairs formed.

(Photographs by Jun Williams)

sticks while the sapsucker chicks were still in the cavity. We found a dead adult sapsucker in a *Cooper's Hawk* nest.

Not all of our predation events were easily attributed to a specific predator. In 12 cases, we observed half-eaten adults or chicks in or at the base of the cavity. These predation events took place at night and were discovered early the next morning. In some cases, small hairs were found at the cavity entrance; no tooth marks ever were

present.

We attribute these nest losses to weasels. Hairs found at the entrances seem consistent with a weasel, based upon our examination of museum specimens. The predator must be formidable in order to attack and kill adult male (the sex that roosts with eggs or chicks) woodpeckers in cavities at night. Cavity entrances to sapsucker nests are only about 1.5 inches (4 cm) wide so the predator would have to be small to gain access.

Furthermore, we found that nest trees where we found predation that we attribute to weasels tended to be in two distinct parts of our study area, and similar predation events in those areas were observed from year to year. Research by others has shown that members of the weasel family can learn the location of nest sites and tend to visit those sites from year to year.

Other likely predation candidates include red squirrels or northern flying squirrels. However, we had several nest trees where squirrels and sapsuckers lived in different cavities on the same tree without predation.

Secondary cavity nesters face an even greater predator challenge because cavities they choose usually have larger cavity openings. Many of these secondary cavity nesters (e.g. Great Crested Flycatchers) will flush from the cavity if a predator approaches, even at night. Conversely, many of the primary cavity nesters tend to hunker down in the cavity or use their bill to attack predators attempting to enter the nest. Weak cavity nesters like Northern Flickers also tend to flush easily. It has been my experience that the larger the cavity opening, the more likely it is that the occupant will flee.

Through the use of recent technological advancements, remote cameras can now be placed at nest entrances to record predation events. Using this technology, it may then finally be possible to conclusively determine the culprits of predation events where little evidence is left, especially for those predators that attack at night.

(Eric L. Walters can be reached at the Department of Biological Science, Florida State University, Tallahassee, FL 2306-1100, ewalters@bio.fsu.edu. More details on this study can be found in Walters, E.L, and E. H. Miller. 2001. Predation on nesting woodpeckers in British Columbia. Canadian Field-Naturalist 115(3)413-419.)

2005 convention site: Asheville, North Carolina

NABS 2005 convention will be in Asheville, North Carolina. The dates are May 19 to 22. The host hotel is the Great Snzokics Holiday Inn Sun Spree Resort (One Holiday Inn Drive, Asheville, NC 28806, 8001733-3211).

This hotel is undergoing a complete renovation and its name will change to the Crowne Plaza in April, 2005. Reservations can be made at a discounted rate of \$89 by mentioning NABS 2005.

The host organization, the North Carolina Bluebird Society, is working hard to make this a convention of great speakers, good workshops, and a chance to be active during your stay.

The Biltmore Estate is the major attraction of Asheville. This house is advertised as the largest home in the United States and has been featured in several movies. It is surrounded by gardens, park area and farmlands. Its bluebird trail has been maintained for at least 15 years.

One Biltmore tour will include the North Carolina Arboretum with five theme gardens of Southern Appalachian heritage. A second tour will visit the Biltmore and the Folk Art Center featuring locally made items.

The third tour, North Carolina Mountains, will take in some of the magic of the mountains and the "cradle of forestry". It was George Vanderbilt who initiated the work that became the U.S. Forest Service.

Views of the mountains can be enjoyed from almost everywhere in the Asheville area. Two interstate highways bring you here from north, south, east or west. The city has an airport 20 minutes away. Charlotte, N.C., is within two

hours driving time, Greenville, S.C., within one hour.

The people of Asheville are actively preserving their downtown area. A Trolley 'four shows you some of the historic sites of Asheville.

Information concerning NABS 2005 along with a registration form can be found on www.nahluehirdsociety.org and www.ncbluebird.cozn. The latter links to www.exploreasheville.com.

Inquiries for additional information should be directed to Helen Munro (hsmunrofac.net, 910/673-6936), Chuck Bliss (chliss@triad.rr.com, 336/625-5423) or Bill Abbey (336/766-5857; 3626 Tanglebrook Trail, Clemmons, NC 27012).

Oct. 31

is next deadline
for Bluebird

The deadline for the Winter 2005 issue of Bluebird will be Oct. 31, 2004. Earlier submissions always are appreciated. The editor prefers to receive material by e-mail (no attachments, please) at two-jays.att.net. Postal address is Jim Williams, 345 Ferndale Road N, Wayzata, MN 55391. Include a self-addressed stamped envelope if you wish return of manuscripts or photographs. Letters to the editor are welcome. Letters may be edited for length and content.



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On the Cover: A Violet-green Swallow near its nesting cavity in the Rocky Mountains at Estes Park, Colorado. Story and more photos on pages 10 and 11.

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