

Lake States Fire Science Consortium

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FIRE & BLACK-BACKED WOODPECKERS IN UPPER MICHIGAN

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On April 29, 2007 a prescribed fire turned wildfire in the Ottawa National Forest of Upper Michigan burned approximately 998 acres of a predominantly mixed-pine forest. This study was conducted to determine the nesting densities and nesting phenology of Black-backed Woodpeckers (*Picoides arcticus*, BBWO), an uncommon fire-dependent species of the coniferous northern and western United States. Work was conducted by surveying a 230-acre plot during the second post-fire breeding season.

From January 2008 to December 2009, systematic sampling surveys were conducted weekly to find BBWO nests by using the behavior of each BBWO observed during the surveys. The researchers documented nest and tree characteristics for each BBWO nest they found as well as nest phenology information, including date of excavation and nestling activity.

Twenty active BBWO nests were found within the study area from March to July of 2008 - 30% (6) of these nests were in a 47-acre subset of the study area which had a density of 0.13 nests/acre, while the nest density for the 230-acre study area was 0.09 nests/acre. Nestling activity began on June 4th and estimated fledging dates ranged from June 16th to July 1st. There was an 85% nest success rate based on observations of young close to fledging at the nest entrances.

Nest heights ranged from 28.0 inches to 27.3 feet above the ground. Nest entrances were randomly distributed and not related to compass direction. Tree diameter at breast height (dbh) ranged from 6.5 to 16.0 inches and 90% of the nests were in jack pine (*Pinus banksiana*). Of the nests found, 70% were in trees killed by the fire, while



MANAGEMENT IMPLICATIONS

- 1) Burned coniferous forests provide breeding habitat for Black-backed Woodpeckers due to an abundance of prey.
- 2) Burned, mature jack pine forests support higher densities of nesting Black-backed Woodpeckers than burned, mixed-pine forests.
- 3) Salvage logging adjacent to suitable habitat may constrain breeding habitat.

Want to learn more?

Greg Corace at Seney National Wildlife Refuge (greg_corace@fws.gov; 906-586-9851 x14).

Youngman, J. A., and Z. G. Gayk. 2011. High density nesting of Black-backed Woodpeckers (*Picoides arcticus*) in a post-fire Great Lakes jack pine forest. *The Wilson Ornithological Society* 123:381-386

20% were in trees recently dead before the fire, and 10% were in trees dead long before the fire (Figure 1).

This fire provided a novel opportunity to study a fire-dependent bird species that is understudied in Upper Michigan and elsewhere in the northern Lake States. Compared to pre-fire BBWO nest densities, this study showed higher BBWO nest densities in the study area post-fire.

This study supports previous research from the western United States that showed BBWO occur at higher densities in burned forests, likely due to the high post-fire abundance of wood-boring beetle larvae. BBWO also foraged outside the study area, indicating that their foraging range could include burned mixed-pine and mature unburned jack pine stands adjacent to the study area.

Previously observed post-fire BBWO nest densities in Quebec were only half of those observed in this study. This could be due to differences in forest composition (mixed-pine vs. spruce (*Picea*)), or the fact that BBWO nesting densities were higher in exclusively burned jack pine stands than in mixed-pine stands. Jack pine may provide a richer prey base than spruce, leading to higher nesting densities of BBWO in this study area.

The high densities of BBWO nests could have been due to artificial constraints from salvage logging that occurred just prior to the 2008 breeding season. A clear cut of 39.5 acres of the initial 86.5-acre mature jack pine stand likely limited BBWO breeding habitat and constrained them in high densities to the 47-acre plot. Further studies are necessary, however, to demonstrate patterns in BBWO nesting densities related to fire activity and forest composition.

Related information:

Hansen, A. J., S.J. Spies, J.L. Swanson, and J.L. Ohmann. 1991. Conserving biodiversity in managed forests: Lessons from natural forests. *BioScience* 41:382-392.

Nappi, A., and P. Drapeau. 2009. Reproductive success of the Black-backed Woodpecker (*Picoides arcticus*) in burned boreal forests: are burns source habitats? *Biological Conservation* 142:1381-1391.

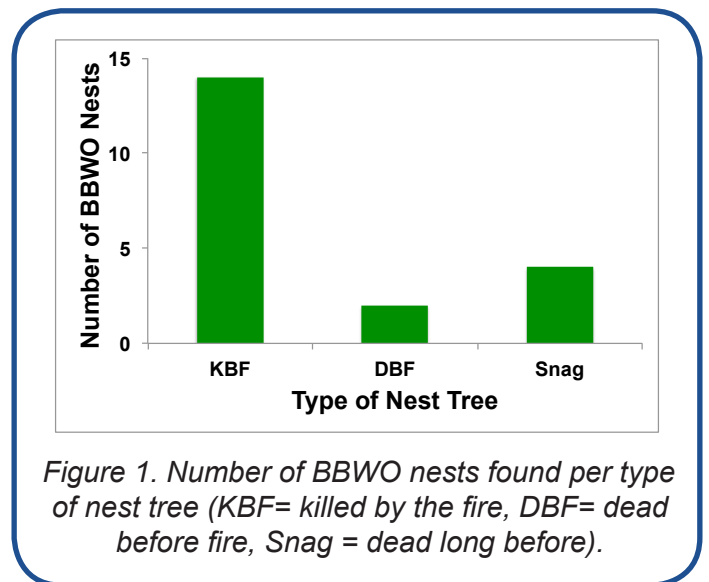


Figure 1. Number of BBWO nests found per type of nest tree (KBF= killed by the fire, DBF= dead before fire, Snag = dead long before).