

# Attempted Conspecific Cavity Usurpation by Red-headed Woodpeckers (*Melanerpes erythrocephalus*)

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When breeding resources are scarce, intense competition for nest sites among cavity-nesting birds can result in agonistic encounters and cavity usurpation. Red-headed Woodpeckers (*Melanerpes erythrocephalus*) are known to usurp nest cavities from interspecific competitors, but the incidence of conspecific cavity usurpation remains unreported. We describe an attempted conspecific nest usurpation and depredation by a Red-headed Woodpecker in mixed-oak (*Quercus*) woodlands in northern New York State.

Key Words: intraspecific competition; nest cavity; Red-headed Woodpecker; *Melanerpes erythrocephalus*; usurpation; New York

## Introduction

Cavity-nesting birds are often limited by the availability of suitable nest cavities, and competition over nest sites can be fierce, sometimes resulting in aggression and agonistic interactions (Jackson 1976; Kronland 2007). In some circumstances, certain cavity-nesting species will usurp nest cavities from inter- or intraspecific competitors, presumably because some benefit is incurred to the usurping individual or pair (Lindell 1996). Usurpation of nest cavities may increase individual fitness because cavity excavation is energetically expensive and can take several weeks to complete (Jackson 1976). Usurpation can also occur when abundance of suitable cavities is limited (Lindell 1996).

Red-headed Woodpeckers (*Melanerpes erythrocephalus*) are one such species that is known to forcibly usurp the nest cavities of interspecific competitors. Red-headed Woodpeckers have been documented usurping cavities from Red-bellied Woodpeckers (*Melanerpes carolinus*) (Ingold 1989), Northern Flickers (*Colaptes auratus*) (Kronland 2007), Hairy Woodpeckers (*Picoides villosus*) (Kronland 2007), Downy Woodpeckers (*Picoides pubescens*) (Schwab and Monnie 1959), and Mountain Bluebirds (*Sialia currucoides*) (Kronland 2007). However, whether Red-headed Woodpeckers will usurp, or attempt to usurp, conspecific nest cavities has not been reported or evaluated. Here, we describe an attempted conspecific nest usurpation by a Red-headed Woodpecker.

## Study Area and Methods

All field observations were conducted on Fort Drum Military Installation, east of Watertown, New York (44°00'N, 75°49'W). The study area consists of a portion of approximately 1000 ha of the Installation composed of oak (*Quercus* spp.) woodlands where a small population of Red-headed Woodpeckers (9–15 adult pairs) regularly breeds. The study area is dominated by Northern Red Oaks (*Quercus rubra*) and White Oaks

(*Quercus alba*). A reduced number of Red Pines (*Pinus resinosa*) and Eastern White Pines (*Pinus strobus*) are also present.

We monitored this breeding population during two breeding seasons, from May to August in 2012 and 2013, by surveying the study area for breeding territories and nest cavities and subsequently monitoring reproductive success (protocol following Dudley and Saab 2003). Breeding pairs of Red-headed Woodpeckers are highly territorial, and we used this behaviour to spot-map individual territory boundaries (Atterberry-Jones and Peer 2010).

## Results

During routine nest checks on 19 May 2013, at approximately 0745, we detected a territorial dispute between three individual Red-headed Woodpeckers near the nest tree of a known territorial pair. We had observed the territorial pair on more than four occasions in a 14.0 ha oak-dominated forest stand, and we identified their nest tree on 14 May 2013. The territorial pair was one of the first breeding territories to be established on the study area in 2013, and at least one of the individuals likely over-wintered on Fort Drum during 2012–2013. The nest tree was a Northern Red Oak snag located 60 m from the forest stand edge, and the nest cavity was in a dead limb 9.5 m from the ground and was roughly 90° horizontal facing 025°N.

Although none of the Red-headed Woodpeckers observed were individually marked, it was easy to differentiate between the territorial pair and the third individual because (1) the territorial pair would frequently engage in mating behaviour (chatter vocalizations and copulations) (Jackson 1976) at the nest cavity in between disputes and (2) the intruding individual would perch singly on tree limbs 10–40 m from the nest tree after being driven away from the nest cavity. We could not determine the sex of the individuals because Red-headed Woodpeckers are monomorphic. We made all

observations using 8× binoculars while seated ~30 m from the nest tree, and remained motionless to ensure that our presence did not influence the birds' behaviour.

From 0750 to 0935, we observed the intruding individual repeatedly attack the territorial pair and attempt to enter the nest cavity. The intruder would typically remain perched on a nearby tree and then attack the nest tree at ~2 minute intervals, often directing its attack at the nest cavity. The territorial pair would defend the nest cavity by consistently chasing the intruder away from the nest tree and frequently alarm calling; both territorial individuals participated in nest defense. On seven occasions, the intruder managed to land on or near (within 1 m of) the nest cavity, and in one instance was able to momentarily enter the cavity before being quickly evicted by a territorial individual.

This behaviour was markedly different from the behaviour that is typically observed during territorial disputes between neighbouring Red-headed Woodpecker pairs. These disputes often consist of brief agonistic encounters that occur near territory boundaries (Kilham 1958; Smith *et al.* 2000; JLB, personal observation). In this instance, the intruder targeted the territorial pair's nest cavity and made numerous repeated attempts to attack and enter the nest over an extended period of time (>1.5 hours). Furthermore, the entire altercation occurred well within the territory boundary (identified by spot mapping) of the territorial pair and not near the periphery, where most territorial disputes typically occur.

At 0935, the intruding individual was last seen being chased by a territorial individual away from the nest tree and was not observed again in the territory for 10 minutes. At 0945, after we had determined that the altercation had concluded, we inspected the nest cavity with a wireless peeper camera (Luneau and Noel 2010) to examine the nest contents and found the nest contained six intact eggs. The pair was eventually successful in fledging three young, on 23 June 2013, and the pair initiated a second brood on 1 July 2013.

## Discussion

Based on our observations, we hypothesize there are only two possible behavioural explanations for the observed altercation: (1) the intruding individual was attempting to usurp the territorial pair's nest cavity and territory or (2) the intruder was attempting to depredate the nest contents but not usurp the cavity and territory. As mentioned above, this altercation differed markedly from typical Red-headed Woodpecker territorial disputes observed in this study and described elsewhere (Kilham 1958; Reller 1972; Jackson 1976). Typical territorial disputes are often brief agonistic encounters. Therefore, the observed altercation was likely an attempted nest usurpation or predation, particularly because the territorial pair's nest contained eggs that were being incubated.

We could not ascertain the origins of the intruding individual, but we suspect that it was not from a neighbouring territorial pair. At the time of the altercation, there were only two other known Red-headed Woodpecker territories in the study area (based on intensive surveys), and both were incubating their own clutches at the time in nests located in separate forest stands >500 m away. We therefore believe the intruder was likely a recently arrived migrant, as 19 May is near the average arrival date of migratory Red-headed Woodpeckers in Fort Drum (JSB, unpublished data) and several new breeding territories were established in the study area a few days following the altercation.

Red-headed Woodpeckers are considered "weak" excavators, and cavity excavation in this species can take more than two weeks to complete (Jackson 1976). Furthermore, Red-headed Woodpecker pairs that usurp interspecific cavities nest on average six days earlier than pairs that excavate their own cavities (Kronland 2007). It is therefore possible that, upon arrival in the breeding grounds, the intruding individual attempted to usurp the nest cavity and territory to circumvent the time required to establish a territory and excavate a cavity.

Red-headed Woodpeckers are considered an aggressive species that is behaviourally dominant over many other cavity-nesting birds (Kilham 1958; Reller 1972), and Red-headed Woodpeckers are known to engage in interspecific cavity usurpation and predation (Kronland 2007). In a study of Red-headed Woodpecker cavity usurpation in southeastern Montana, Kronland (2007) described the incidence of interspecific cavity usurpation, estimating that over 20% of Red-headed Woodpecker nest cavities were secured by usurpation, but did not describe any incidence of conspecific cavity usurpation. Given their tenacity in usurping interspecific nest cavities (Schwab and Monnie 1959; Ingold 1989; Kronland 2007), it would not be surprising if Red-headed Woodpeckers usurp and depredate conspecific nests as well.

Interestingly, the territorial pair later initiated a second brood in the same nest cavity upon successfully fledging the first brood. Although it is unlikely that the attempted cavity usurpation and decision to initiate a second brood are related, we report it here because, to our knowledge, there have been no previous reports of double-broods by Red-headed Woodpeckers at northern latitudes. Double-broodedness is common in the southern portion of the Red-headed Woodpecker's range (Ingold 1987), and apparently also occurs in the northeastern United States despite inherently shorter breeding seasons.

The Red-headed Woodpecker has experienced a substantial range-wide population decline in recent decades. There are few estimates of reproductive success, and the factors influencing nest survival are poorly understood (Smith *et al.* 2000). The incidence of conspecific cavity usurpation or depredation by Red-

headed Woodpeckers is currently unreported, and it warrants further investigation to elucidate its influence on local reproductive success and population dynamics, particularly within small populations and populations with patchy distributions.

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