J. Field Ornithol., 58(3):288–290

# INTERSPECIFIC AGGRESSION AND THE SEXUAL MONOCHROMISM OF RED-HEADED WOODPECKERS

LORI L. NICHOLS AND JEROME A. JACKSON
*Department of Biological Sciences*
*Mississippi State University*
*Mississippi State, Mississippi 39762 USA*

Abstract.—A pair of Red-headed Woodpeckers (*Melanerpes erythrocephalus*) was observed evicting a pair of Red-bellied Woodpeckers (*M. carolinus*) from their nest cavity. Although both Red-headed Woodpeckers participated in the aggressive encounter, only the male Red-bellied Woodpecker defended the cavity. Earlier similar observations suggest these sex roles are characteristic of each species. The Red-headed Woodpeckers lost the cavity to European Starlings (*Sturnus vulgaris*) three days after the successful eviction. The adaptive significance of monochromism in aggressive encounters of Red-headed Woodpeckers is discussed.

**AGRESIÓN INTERESPECÍFICA Y MONOCROMISMO SEXUAL EN EL CARPINTERO CABECIROJO (*MELANERPES ERYTHROCEPHALUS*)**

Sinopsis.—Se observó a una pareja de Carpinteros Cabecirojos (*Melanerpes erythrocephalus*) sacar a una pareja de *M. carolinus* de su cavidad. Aunque ambos Carpinteros Cabecirojos participaron en el encuentro agresivo, solo el macho de *M. carolinus* defendió su cavidad. Observaciones previas sugieren que el rol de los sexos es muy particular en cada especie. La pareja de *M. erythrocephalus* se adueño por poco tiempo de la cavidad, ya que tres días mas tarde la perdieron a mano de unos Estorninos (*Sturnus vulgaris*). Sugiero en el trabajo que el monocromismo sexual puede tener valor adaptativo en disputas interespecíficas.

On 30 April 1984, at 17:50, we observed a pair of Red-headed Woodpeckers (*Melanerpes erythrocephalus*) as they took over a nest cavity of a pair of Red-bellied Woodpeckers (*M. carolinus*). The cavity was 0.5 m from the end of a broken-off stub of a live southern red oak (*Quercus falcata*) at the edge of a large asphalt parking lot in Starkville, Mississippi. The cavity was approximately 15 m above ground in the 30 m tree and opened to the west. A second recently excavated cavity was less than a meter below the nest and had been enlarged by a Northern Flicker (*Colaptes auratus*). The nest limb was covered by bark at both cavities, but was bare near the broken tip.

The Red-bellied Woodpeckers had at least one egg, but had likely not completed their clutch. When first observed, a Red-headed Woodpecker was perched at the Red-bellied nest and the male Red-bellied dove repeatedly at it. The female Red-bellied was in the nest tree about 6 m from the nest, but remained motionless and silent. A second Red-headed appeared and chased the male Red-bellied to an adjacent tree. The first Red-headed then entered the Red-bellied nest, removed an egg, and "stored" it in a crevice at the end of the broken off stub. Both Red-headeds and both Red-bellieds remained in the area, and each time one of either species approached the nest, the other species gave chase. Only the male Red-bellied participated in nest defense, whereas both Red-headeds were actively involved.

During a lull in the chases, both Red-headeds went to the Red-bellied

egg and ate from it. Some of the contents were spilled, and we determined that it had not been incubated.

During the next hour the Red-headed Woodpeckers copulated five times on top of the nest stub or on an adjacent stub. Although the male Red-bellied Woodpecker remained in the nest tree or an adjacent one, he made no further attempts to defend the nest cavity. A Red-headed Woodpecker went to roost in the nest cavity at 19:46. The male Red-bellied remained in the open in the nest tree. The second Red-headed roosted elsewhere.

On subsequent visits to the nest tree, we saw a Red-headed at the cavity only once. Three days later the cavity was occupied by a pair of European Starlings (*Sturnus vulgaris*).

Reller (1972) found Red-headed Woodpeckers to be much more aggressive against both conspecifics and individuals of other species than were Red-bellied Woodpeckers, a sentiment agreed and expanded upon by Short (1982). This is consistent with our observations reported here and with more than 30 similar encounters Jackson has observed between these species in Kansas, Iowa, Mississippi, and South Carolina. Red-headeds almost always prevailed over Red-bellieds (1 exception in Kansas); both sexes of Red-headeds participated in the encounters; and in every case only male Red-bellieds took part.

Kilham (1978) suggested that the sexually monochromic plumage of Red-headed Woodpeckers aids in establishment and maintenance of winter territories, reasoning that if the males dominated the females, the females might be forced into inferior habitats. We suggest that the sexual monochromism may also have adaptive value in interspecific encounters. Among woodpeckers, red feathers on the head are often raised into a crest during agonistic encounters, expanding the extent and maximizing the conspicuousness of the red. We assume that such use of the red is effective only against conspecifics or other species with similar color and behavior. The lack or reduced amount of red in the plumage of many female woodpeckers may limit their success in such encounters. We feel that it is significant that female Red-bellieds typically do not participate in defense of the nest site against Red-headeds, but that the female Red-headed is typically actively involved as an aggressor in nest usurpation attempts.

By being sexually monochromic, we hypothesize that the members of a Red-headed pair may have "equal standing" as aggressors in the eyes of a male Red-bellied, and, being outnumbered and challenged by birds with such extensive red on the head, he is put at a "psychological" disadvantage. We hypothesize further that in the eyes of a female Red-bellied, both sexes of Red-headeds may be seen as males and left for her mate to chase away, since conspecific territorial defense involves males vs. males and females vs. females (Jackson, pers. obs.).

Selander and Giller (1959) describe territorial encounters between Red-bellied Woodpeckers and the similarly dichromic Golden-fronted Woodpecker (*M. aurifrons*). Their observations included territorial defense by

males against males, females against females, and one case in which a pair of Golden-fronted Woodpeckers joined forces to drive a male Red-bellied Woodpecker from their territory. In this case, however, it was a single bird that was the "invader." In the case of the Red-headed Woodpecker vs. Red-bellied Woodpecker, pairs of the former are typically involved in usurpation of the latter's cavities (Reller 1972; J. Jackson, pers. obs.; D. Ingold, pers. comm.).

Although other melanerpine woodpeckers are known for their aggressiveness, no others are so monomorphic and have such extensive red as the Red-headed, thus we feel that within this group, the adaptation discussed here is unique. However, the Red-breasted Sapsucker (*Sphyrapicus ruber*) has a similarly bright and extensive red head and is sexually monomorphic (Short 1982). Neff (*in* Bent 1939:154) describes the "outstanding features of their behavior" during the nesting season as "pugnacity and noise." He further describes behavior in winter as "quite belligerent" in efforts to drive other woodpeckers from its trees. Thus, it appears that a similar strategy—mimicry of males by females and both sexes showing so much red that it might be considered a super releaser relative to other woodpeckers—might give this species an edge in interspecific rivalry for a food source and possibly for nesting sites.

The evolution of such plumage and behavior in the Red-headeds may be related to a lesser ability to excavate their own cavities. Jackson (1976) found that the entrances of Red-headed Woodpecker cavities were generally associated with pre-existing cracks, whereas Red-bellied Woodpeckers did not need such a "head start" in excavating their cavities.

ACKNOWLEDGMENTS

We thank Ron Mumme, Lawrence Kilham, and Edward H. Burtt Jr. for helpful comments on an earlier draft of the manuscript.

LITERATURE CITED

BENT, A. C. 1939. Life histories of North American woodpeckers. U.S. Natl. Mus. Bull. 174.

JACKSON, J. A. 1976. A comparison of some aspects of the breeding ecology of Red-headed and Red-bellied woodpeckers in Kansas. Condor 78:67–76.

KILHAM, L. 1978. Sexual similarity of Red-headed Woodpeckers and possible explanations based on fall territorial behavior. Wilson Bull. 90:285.

RELLER, A. W. 1972. Aspects of behavioral ecology of Red-headed and Red-bellied woodpeckers. Am. Midl. Nat. 88:270–290.

SELANDER, R. K., AND D. R. GILLER. 1959. Interspecific relations of woodpeckers in Texas. Wilson Bull. 71:107–123.

SHORT, L. L. 1982. Woodpeckers of the world. Delaware Mus. Nat. Hist., Monogr. Ser. No. 4.

Received 15 July 1986; accepted 13 Nov. 1986.