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SIMULTANEOUS USE OF NEST TREES BY BREEDING RED-HEADED AND RED-BELLIED WOODPECKERS AND EUROPEAN STARLINGS[1]

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The simultaneous use of nest trees by various woodpecker species is common (Bent 1939, Hoyt 1957, Lawrence 1967, Reller 1972, Short 1979), and Gutzwiller and Anderson (1986) found that even when suitable nest cavities were abundant, woodpeckers occasionally nested in the same trees with European Starlings (*Sturnus vulgaris*). Red-headed Woodpeckers (*Melanerpes erythrocephalus*), Red-bellied Woodpeckers (*M. carolinus*), and European Starlings compete intensely at times for nest cavities (Ingold 1989), indicating that such cavities are a contested resource. In spite of this, I occasionally observed European Starlings nesting simultaneously in the same tree or utility pole with either Red-headed or Red-bellied Woodpeckers. In addition, although *M. erythrocephalus* and *M. carolinus* occupy fairly distinct ecological niches (Reller 1972, Jackson 1976, Kilham 1977, Short 1982), I observed three instances in which these species nested in the same tree at the same time. In this note, I describe instances in which these species nested simultaneously in the same tree, and discuss circumstances which may have contributed to their coexistence.

METHODS

From mid-March through late August 1984–1987 I located active Red-headed and Red-bellied woodpecker nest sites in the city of Starkville and on the Mississippi State University campus in Oktibbeha County, Mississippi. Each nest was monitored for a minimum of 30 min weekly to determine the nesting status and detect interactions among starlings and woodpeckers. An interaction was considered to have occurred when two species became aware of each other's presence and responded in some manner. Interactions included vocalizations, aggressive pursuit flights, and/or attacks at the nest cavity (cf. Ingold 1989). I examined those cavities that could be reached once a week to confirm nest occupancy and status.

RESULTS

Of 118 Red-headed Woodpecker nest cavities in which eggs were laid, 12 (10%) occurred in trees and four (3%) occurred in utility poles in which starlings nested simultaneously. In all instances, starlings arrived first at the nest sites and initiated egg laying in old woodpecker cavities before Red-headed Woodpeckers arrived. At three of the 16 Red-headed Woodpecker nests, adults were feeding 1-week-old nestlings, and at seven other nests, adult Red-headed Woodpeckers had begun laying eggs before starling nestlings had fledged. At the remaining six nests, adult Red-headed Woodpeckers had initiated or completed nest excavation, but had not begun egg laying, before the starlings had fledged their young.

At these sites I observed a total of 21 starling/Red-headed Woodpecker interactions. Nineteen of these (91%) involved Red-headed Woodpeckers that had not begun egg laying. Only two interactions took place when both species were incubating eggs or feeding nestlings in the same tree or pole simultaneously. None of the Red-headed Woodpeckers or starling pairs abandoned their nests, and all of the starling pairs fledged young. Eleven of the 16 Red-headed Woodpeckers nesting attempts (69%) fledged young. Three of the five unsuccessful attempts were due to the loss of a cavity limb or tree as a result of wind or human intervention.

Of 61 Red-bellied Woodpecker nest cavities in which eggs were laid, only one (2%) occurred in a tree in which starlings were nesting. By the first week of May 1987, a Red-bellied Woodpecker pair was feeding newly hatched nestlings in a cavity 1 m below a starling nest with nestlings about 8 days old. By the third week of May both the starling and the Red-bellied Woodpeckers pair were still feeding nestlings, and I observed no interactions between them. When young from the starling nest fledged, the adults abandoned the site. The Red-bellied Woodpecker pair, meanwhile, fledged two successive broods.

Red-headed and Red-bellied woodpeckers nested simultaneously in the same tree on three occasions. At two trees, the Red-bellied Woodpeckers were feeding 15- to 20-day-old nestlings by the time the Red-headed Woodpeckers were laying eggs. At the third site, the Red-bellied Woodpecker nestlings fledged just prior to the initiation of Red-headed Woodpecker egg laying. I observed 33 Red-headed/Red-bellied woodpecker interactions at two of these locations. Eleven (33%) occurred before the Red-headed Woodpecker pairs had initiated egg laying, while 22 (67%) took place when both species were incubating or feeding nestlings. At both locations Red-bellied Woodpeckers fledged young from single broods, while Red-headed Woodpeckers fledged young from two broods at one site and none at the second.

Starlings appeared at the third location in addition

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to the nesting Red-bellied and Red-headed woodpeckers. By mid-March 1986 a Red-bellied Woodpecker pair excavated a cavity in this tree which was promptly usurped by starlings. The starling pair eventually initiated egg laying in the usurped cavity, while Red-bellied Woodpeckers, although seen frequently in the area during subsequent visits, did not seem inclined to excavate a new cavity. Neither member of the Red-bellied Woodpecker pair in question was color-banded. It was thus impossible to state with certainty that the pair seen during subsequent visits was the pair that excavated the initial cavity. However, because the Red-bellied Woodpeckers observed in this study were nest-site tenacious and strongly territorial, it seems likely that it was the same pair. By 22 April, a Red-bellied Woodpecker pair had completed excavation of a new cavity 1.5 m above the original cavity, which was at that time occupied by two 7- to 9-day-old starling nestlings. By 1 May the Red-bellied Woodpecker pair had abandoned their nesting effort in the upper cavity, and 3 days later the starling nestlings fledged from the low cavity. On 13 May I observed a Red-headed Woodpecker pair excavating in the upper cavity but did not see either Red-bellied Woodpeckers or starlings in the immediate area. By 21 May, however, Red-bellied Woodpeckers not only reoccupied the original low cavity, but were feeding nestlings about 5 days old. At this time the Red-headed Woodpecker pair was incubating three eggs in the upper cavity. By 30 May, however, the Red-bellied Woodpecker nestlings, which should have been about 14 days old, were missing from the low cavity and probably died, while the Red-headed Woodpeckers had abandoned their nesting effort in the upper cavity. No subsequent nesting efforts by any of the three species occurred at this location for the remainder of the season. After the usurpation of the initial Red-bellied Woodpecker cavity by starlings in mid-March, I did not observe a single interaction between any of these three pairs at this location despite the proximity of their nests and the failure of the woodpeckers to nest successfully.

DISCUSSION

In this study Red-headed Woodpeckers and starlings occasionally nested simultaneously in the same tree or pole, whereas Red-bellied Woodpeckers and starlings, and Red-bellied and Red-headed woodpeckers rarely nested in the same tree. Although freshly excavated woodpecker cavities were not abundant, some trees and utility poles possessed numerous old cavities. Such "island" trees or poles made it possible for some Red-headed Woodpeckers and starlings to nest simultaneously in the same substrate (cf. Gutzwiller and Anderson 1986). In such instances, interactions between the two species were uncommon, which Ingold (1989) attributes, in part, to minimal overlap in their nesting phenologies. Once starlings secured old woodpecker cavities for nesting, they generally ignored later nestings of Red-headed Woodpeckers either in old cavities or freshly excavated ones a few meters away. Within-tree abundance of cavities may have also helped to minimize starling/woodpecker interactions where several suitable nest cavities were available.

Starlings are intense competitors with Red-bellied Woodpeckers for freshly excavated cavities, partly because their nesting phenologies overlap considerably (Ingold 1989). As a result, these species seldom nest in the same tree simultaneously. Typically, when starlings in search of a nest cavity locate a tree with a freshly excavated Red-bellied Woodpecker cavity, they usurp or attempt to usurp it (cf. Ingold 1989). In the single instance in which these species nested together, a starling pair apparently usurped the Red-bellied Woodpeckers' initial cavity, after which the Red-bellied Woodpeckers excavated a second cavity about a meter away.

In the course of their evolution, it is likely that Red-headed and Red-bellied woodpeckers responded to each others' presence by evolving nest-site preferences that minimized competition. At the present time, due to the advent of starlings and a decrease in nest sites as a result of man's alterations of the environment, nesting in shared trees by combinations of these species (most notably starlings and Red-headed Woodpeckers) may become increasingly prevalent. It is conceivable that one or both of the *Melanerpes* species may be extirpated from the shared portions of their current ranges. Most vulnerable perhaps are Red-bellied Woodpeckers which are inferior competitors in encounters with Red-headed Woodpeckers and starlings (Ingold 1989).

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