## Social Behavior in Red-headed Woodpeckers

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## Introduction

The Red-headed Woodpecker (*Melanerpes erythrocephalus*) is an easily recognizable bird, not only for its vibrant colors but also for its gregarious nature. It is also one of the few sexually monochromatic bird species with males and females being virtually indistinguishable in the field (Smith et al. 2000). Their diet mainly consists of nuts and insects, the latter of which they obtain through flycatching (Jackson 1976). Red-headed Woodpeckers also have experienced population fluctuations, ranging from periods of great abundance in the late 1800s to periods of near extinction during the 20th century (Graber and Graber 1977; Lockwood and DeBrey 1990).

Although Red-headed Woodpeckers are easily recognizable, relatively little is known about these birds in comparison with other North American woodpecker species (Smith et al. 2000). Due to their monochromatic appearance, studies of their breeding behavior have been limited. For example, Red-headed Woodpeckers appear to be monogamous, but anecdotal observations suggest their breeding behavior may be more complex. Venables and Collopy (1989) reported Red-headed Woodpeckers with overlapping territories, and Hall (1983) observed them migrating in likely family groups. Short (1982) also noted three adult Red-headed Woodpeckers attending the same nest. Interestingly, several Melanerpes woodpeckers breed cooperatively indicating that this behavior may also occur in Red-headed Woodpeckers.

Anyone who has regularly observed Red-headed Woodpeckers also knows that they can be highly aggressive. Within a habitat, organisms occupy a certain niche or ecological role (Scheffer and van Nes 2006). When two species with similar niches are found in the same habitat, they must divide their niche to prevent competing for the same limited resources (MacArthur 1958; Root 1967). If competition occurs between two species it usually leads to exclusion of one species from the habitat (Williams and Batzli 1979). Not only do Red-headed Woodpeckers defend territories from conspecifics, but also against other members of the bark-foraging guild, and other cavity nesters (Williams and Batzli 1979). Competition is apparently intense between Red-headed and Red-bellied Woodpeckers (*Melanerpes carolinus*) due to the fact that they forage in a similar manner and have high levels of niche overlap (Williams and Batzli 1979), and there are numerous reports of aggressive interactions between them (Reller 1972; Williams 1975; Jackson 1976).

The purpose of this study was to observe a population of Red-headed Woodpeckers at Spring Lake Park in Macomb, IL to better understand their social behavior during the breeding season. Spring Lake has an unusually dense population of Red-headed Woodpeckers (Atterberry-Jones and Peer 2010), suggesting that there are extra individuals in the population that do not have territories (i.e., "floaters"), or individuals may be acting as helpers for breeding pairs. We observed two aspects of their behavior, including determining whether Redheaded Woodpeckers were breeding cooperatively, as well as examining their aggressive interactions with conspecifics and other species that may influence the presence of helpers or floaters in the population.

## Methods

The study site was the 6.75 ha campground area in Spring Lake Park, Macomb, IL. This open habitat is dominated by oak (Quercus spp.) and hickory (Carya spp.) trees, with snags and utility poles scattered throughout. Although some individuals migrated from the area during the winter, Red-headed Woodpeckers were present throughout the year.

Breeding Behavior – We captured and banded 15 Red-headed Woodpeckers. During the 2007 and 2008 breeding seasons, March through August, we recorded territories and whether they overlapped, the presence of banded and unbanded birds and whether they tended nests or defended territories, and nest-site locations.

Aggressive Behavior. Aggressive behavior was recorded in late March and April, 2007. This is the beginning of the breeding season when individuals maintain separate territories and migrating Red-headed Woodpeckers arrive from wintering locations. In 2008, research was conducted in May and June at the height of the breeding season when mating pairs defend breeding territories. The aggressive responses of Red-headed Woodpeckers to intra- and interspecific competitors