



## Habitat and Research Needs of Midwest Woodpeckers

### **Red-headed Woodpecker (*Melanerpes erythrocephalus*)**

There is little to no information on the breeding season requirements of the red-headed woodpecker. Some of the blame is probably to be laid at the feet of the birds, whose habits seem to indicate that their habitat requirements vary widely from one year to the next.

Research shows us that red-headed woodpeckers can be found in numerous habitat types, including deciduous woodlands, river bottoms, open woods, orchards, parks, agricultural land, grasslands intermixed with the occasional tree, forest edges and along the side of roads.

We do know, however, that red-headed woodpeckers, with the onset of breeding season, will move from the interior forest and occupy more areas along the forest edges. But even this has to be qualified: they will remain in interior situations if there has been a relatively recent disturbance, such as fire, wind, or disease damage, that has created open areas within the forest interior. Within these areas, these birds prefer large, tall trees with a rather open understory.

Red-headed woodpeckers are also attracted to lowland areas and swamps, especially those that have been altered by beaver activity. There was a time when these highly-recognizable birds could be found in urban situations, but due to the urban practice of pruning trees and removing all dead trees and branches, they are becoming more and more scarce in these areas.

Information regarding habitat requirements during migration is even more sketchy, but it is believed that forest edge plays an important role during these periods of the year.

During the winter months, there is a strong correlation between the presence of red-headed woodpeckers and the availability of mast from oaks, hickories, maples, ash, and beeches.

It seems almost ironic that the red-headed woodpecker is arguably the most recognizable of the woodpecker species, yet so many gaps remain in our knowledge of them. Much of this gap is the result of the lack of sexual dimorphism. That, in and of itself, poses an interesting question: Why did these birds evolve look-alike sexes in a family of birds known for their uniqueness among the sexes? But that is just the tip of the iceberg. Our inability to differentiate between the sexes means we have no information on the microhabitats used by the two sexes. We don't even know how pair bonds are formed.

Amazingly, there has never been an in-depth study of a population of red-headed woodpeckers. No major study has looked into nesting ecology and we have nothing on the growth and development of young. In fact, we have no information on:

- The daily pattern of vocalization, or the relationship, if any, between the vocalizations and behavior
- The size of the summer territory or the spacing of these territories

- The rates at which young are fed or their nesting success, or even how many broods are raised per year in the various parts of their range
- The size of hatchlings, whether the parents assist in hatching, and how the young leave the nest at fledging.
- Dispersal of first-year birds or their survival rates
- Any significant causes of mortality

Not only do we lack knowledge on the specifics of this species, but we have limited knowledge on their interactions with and effects on other species. There is some anecdotal information on interspecific competition during the breeding season, but we have no knowledge on the degree to which these interactions affect other species. We do know that red-headed woodpeckers excavate numerous cavities within their territories. Do other species, such as flying squirrels, arboreal mice, tree frogs and secondary cavity-nesting birds, utilize and even depend on these cavities and, therefore, depend on the existence of red-headed woodpeckers in a given area for their own existence?

Another thing we know is that mast production is probably the determining factor on seasonal dispersal of red-headed woodpeckers, but this has never been quantified. Therefore, forestry officials cannot manage forests for these birds or for the forests that house these birds.

Finally, we know that this species has experienced dramatic population highs and lows, but we need to understand why, especially the long-term effects of such things as land-use patterns and the silviculture practices in urban and suburban landscapes.

Clearly, we have much to learn about the red-headed woodpecker and it will take the work of amateurs and professionals alike to gain this knowledge.

### **Red-bellied Woodpecker (*Melanerpes carolinus*)**

Adaptability seems to be a hallmark of the red-bellied woodpecker. They are known to be present in dry sites as well as wet areas, as long as large diameter trees are present. They are common in oak forests as well as maple stands, bottomlands, floodplains, riparian areas, pine stands, and suburban areas. One difference between the habitat of the red-bellied woodpecker and the habitat of other woodpecker species is the tendency for red-bellies to inhabit forests of greater density in both the mid- and understories.

In the winter months, there seems to be a slight shift of these birds to more hardwood bottomland areas.

Red-bellied woodpeckers seem to require a relatively small breeding territory, possibly as small as 30 acres for one pair. And even in this area, only about a third of that territory will be actively defended.

Short-range movements have not been studied in the red-bellied woodpecker. We don't know whether or not this species is monogamous and we have no data on the sex ratios. We lack any information on the first breeding age in this species, although they are thought to breed in their first spring, but only because a pair in captivity did so.

We know nothing about the number of broods raised per year, the success of those broods, or the reproductive success of a pair of birds over their lifetime. Additionally, we have little data on the dispersal of young from the nesting territory and no information on the immature stage of this bird's life.

The area that holds the most promise for amateur birders to contribute to our knowledge of red-bellied woodpeckers lies in gathering “before and after” data in relation to habitat alterations. Along these same lines, we need to know a lot more about the metapopulation dynamics of this species in order to identify source and sink populations. Due to their “medium” home territory sizes, this could show the effects associated with increasing forest fragmentation not visible when studying species such as downy woodpeckers.

We also need more knowledge on the interactions and effects of the red-bellied woodpecker and the European starling, especially in relation to a shift in the breeding timing of red-bellied woodpeckers.

Harvest cycles in many forests are shortening. We need to know the tree-age threshold for red-bellied woodpeckers, to make sure that forests are allowed to grow to a sufficient age to allow this species nesting habitat. Should forest harvest cycles be too short, we need to know how this species might adapt to artificial snags.

### **Yellow-bellied Sapsucker (*Sphyrapicus varius*)**

The habitat requirements of yellow-bellied sapsuckers need extensive study in the Midwest. Habitat required for breeding has been studied in northern Michigan and Canada, while wintering requirements have received attention in Gulf Coast states and Mexico. Data is missing from all areas in between. All we really know is that this species can be found in a variety of habitats, including woodlands of all types, during the spring and fall migrations.

The size of a territory during the migration and over-wintering periods are unknown for this species over most of its range. The only data available shows yellow-bellied sapsuckers to be highly solitary and sedentary during the winter months.

We need information on the daily activity patterns of this species and any calling activity that might occur outside of the breeding season. There is no information on the immature stage of this bird and we know nothing about their annual or lifetime reproductive success.

We also need information on the fidelity to wintering sites over much of the eastern U.S. We know that males show a marked fidelity to breeding sites, but we lack any knowledge about migration route and wintering-site fidelity. In addition, we know almost nothing about the behavior and ecology of yellow-bellied sapsuckers outside of the nesting season. For instance, it seems that in the northern part of the wintering grounds, sap would not be available to any great extent. Do their diets shift? If so, to what? Is this lack of available food the reason for their solitary behavior during the winter?

Clearly, where the yellow-bellied sapsucker is concerned, there are many more questions than answers.

### **Downy Woodpecker (*Picooides pubescens*)**

The primary habitat for downy woodpeckers is found in open, deciduous forests, especially riparian areas. But they can also be found in coniferous forests that have a rather full deciduous understory layer. They also will readily accept life in human-altered landscapes such as city parks and residential areas. In Virginia, it has been noted that, of

the five woodpecker species found there, the downy woodpecker utilizes “the least mature” forests available.

The home territory size of downy woodpeckers is highly variable, from 2 to 12 ha. While feeding nestlings, the territory actively used by the parent birds shrinks, presumably to facilitate quicker feeding of young. But this makes one ask if food sources nearer the nest site are passed over prior to the nesting season, in effect, “saving” those resources for later use.

There is some evidence for seasonal movements among certain populations of downy woodpeckers. However, these movements are undertaken by only a small percentage of any given population. There is also some evidence in existence that these “migrations” might only be dispersals. No matter what term actually applies in any particular circumstance, it has not been well studied.

No one as yet knows how many broods are raised in the various parts of the downy woodpecker’s extensive range. Hatching and fledging rates are also unknown. While it will take highly trained individuals in the lab, molecular studies need to be done to determine the extent of relationship between the downy and the nearly-look-alike hairy woodpecker.

There is no information on the sex ratios in any population of downy woodpeckers.

No population of downy woodpeckers has ever been marked. If this could be accomplished, we should be able to answer questions such as what percentage of individuals retain mates from one year to the next, as opposed to how many bond with new mates.

There is no data on the annual or lifetime breeding success of this species. We also cannot tell how long a downy woodpecker might be expected to live.

One particular area of research could easily be conducted by teams of citizen scientists. There are numerous places where one can get the proper dimensions for the construction of artificial nestboxes. However, no data exists as to their use or their effectiveness when compared to the reproductive success of downy woodpeckers in natural cavities.

Finally, the question of migration vs. dispersal has repeatedly been asked, yet never answered.

## **Hairy Woodpecker (*Picoides villosus*)**

The hairy woodpecker is first and foremost a forest dweller. Having said that, they have been known to inhabit much smaller wooded areas, such as parks, cemeteries, and residential areas with mature trees. In these areas, however, their numbers will be much reduced from the numbers found in larger forests tracts. In terms of a preference for deciduous versus coniferous forests, the hairy woodpecker seems to make the most of whatever situation it finds itself in. They may prefer deciduous forests in areas dominated by those trees, but at the same time, show a preference for coniferous trees in areas where those species predominate.

In terms of the amount of space needed for a single territory, there is no data. There is a small amount of evidence, however, that points to a much reduced territory size during the breeding season.

Among the many questions we have about hairy woodpeckers is how they spend their days. There have been no studies that documented the daily time budget for this species. Furthermore, there is no data on sex ratios present within a population. Where breeding territories have been established, there is no information on how a nest cavity is maintained or whether they reuse the same nest cavity year after year. When we move outside of the breeding season of hairy woodpeckers, we have no data on the size of their home range.

Other knowledge gaps exist that include:

- quantitative data on the incubation period
- any data on the immature life stage of this bird
- the annual survivorship of individuals
- the annual and lifetime breeding success

A common practice of foresters to manage for woodpeckers is to clearcut an area, but leave snags standing in the middle of open areas. Numerous questions need to be answered regarding the value of this practice for hairy woodpeckers. This practice may, in fact, be detrimental to the birds, as travel through these open areas leaves them especially vulnerable to avian predators, such as Cooper's and sharp-shinned hawks, as well as Northern goshawks where the two species occupy the same areas. None of this, however, has ever been studied.

One area of research with hairy woodpeckers has been studied extensively. This area deals with the differences in foraging between the sexes. Even though this has received much study, many of those investigations have resulted in exactly opposite conclusions. This debate has to be reconciled one way or the other. It may very well turn out that different populations divide foraging areas in different ways, and it may turn out that location of the foraging area has nothing to do with it. The difference may lie in some subtle difference in the food sources themselves, such as their nutritional value or some other as yet undetermined factor.

## **Northern Flicker (*Colaptes auratus*)**

This is one species that can actually benefit from clearcut or recently burned areas as long as the stumps are left standing. During the breeding season, they show a marked preference for open, savanna-like areas, as well as the edges of more dense forests. The particular species of trees that attract flickers is highly variable; the openness of the area seems to be more important. Flickers might be attracted to swamps, riparian areas, any recently flooded area with a lot of snags, beaver ponds, and even settled areas, including large cities.

Little is known about their habitat preferences during migration, but what little evidence exists seems to point to habitats matching those of the breeding season. Even less is known about the flickers' preferences during the winter months, when a lack of ants forces the birds to undergo a shift in their diet. Swamps and berries seem to hold some importance, but the area they frequent during the winter months is quite large – as much as 250 acres for one bird.

No detailed studies on the size of this species breeding territory have been done, but both the male and female of a breeding pair are known to vigorously defend this territory.

Other areas that need further research include:

- migratory behavior
- daily vocalization patterns
- daily time budget
- defense of foraging area
- predation
- nest site selection
- time of cavity excavation
- presence of brood patches
- feeding of hatchlings
- process of fledging
- immature stage
- annual survivorship and mortality

The Northern flicker is a relatively abundant species but there has been a long-term decline that needs to be better studied. Included in these studies should be a focus on secondary-cavity users that might be affected by an increased absence of flickers.

### **Pileated Woodpecker (*Dryocopus pileatus*)**

In general, pileated woodpeckers prefer a forest area in a late successional stage. Obviously, large trees (greater than 30 cm dbh) are of utmost importance. Any area with snags that have a dbh greater than 54 cm is also a factor. There is no information on the particular species of trees that are used by pileated woodpeckers in the eastern U.S. Availability of roost sites within the territory also seems important. Only the entrance holes to these sites are excavated. This allows access to the hollow interiors of not only dead trees, but live trees as well. Anywhere from 1 to 16 entrance holes might exist in a single tree, allowing multiple avenues for escape. Again, all studies in this aspect of the pileated woodpecker come from the Pacific Northwest and may or may not have any significance to the eastern U.S.

Home range size in Oregon and Washington can be anywhere from about 250 to over a thousand ha. Studies in Missouri show much smaller territorial requirements: about 50 to 160 ha.

Extensive studies are needed on the population dynamics of pileated woodpeckers. We do not have enough information on sustainable populations' sizes or reproductive success to make sound forest management decisions, beyond the presence/absence population marker. We also need to know about the dispersal of young pileateds in order to properly manage the relative positions of individual stands.

In addition, we need to know much more about roosting and foraging sites, especially in the eastern U.S., the pileated's diet, and the habitat preferences of prey items.

In the southeastern United States, pileated woodpeckers are part of a much bigger picture. Pileateds have a marked tendency to enlarge the entrance holes of red-cockaded woodpeckers, thereby making them unsuitable for that federally endangered species.

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