Articles

Yellow-throated and Solitary Vireos in Ontario: 1. Introduction and Behaviour of Unmated Males

by
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Introduction

I began studying Yellow-throated Vireos (*Vireo flavifrons*) in the summer of 1966 as I pursued graduate studies at the University of Toronto. The project expanded to include the comparative behaviour of Solitary Vireos (*V. solitarius*) in 1969 (James 1973). One or both of these species were the objects of varying amounts of field work until 1979. Several papers were published detailing some of the behaviour of these vireos and others are in preparation, but many observations pertaining to aspects of their life histories have remained in field notes.

My interest in Yellow-throated Vireos was recently rekindled when asked to coauthor the life history account for the Birds of North America project (Rodewald and James, in prep.). But, even those accounts are limited in what can be included. Several articles should nicely complement and expand upon aspects of the lives of these vireos.

At first glance, Solitary and Yellow-throated Vireos might seem very different. However, they are similar in size and bill proportions and both have prominent "spectacles" and wing bars. If one added a lot more yellowish coloration to a Solitary Vireo it would be relatively easy to transform it to the other species. Both species have always been considered closely related, were placed together in systematic listings, and even placed in a separate subgenus (*Lanivireo*) by themselves (Hamilton 1958, American Ornithologists' Union 1957). In studying these two species, it became very apparent that many aspects of their life histories and behaviour were similar. It seems appropriate to consider them together here.

Yellow-throated Vireos occupy the deciduous forests of eastern North America, reaching their northern limits in southern Ontario. They are by no means common in Ontario, and are unfamiliar to many. They are found mainly where extensive areas of deciduous forest remain, such as along the Niagara Escarpment or near the southern edges of the Precambrian Shield (James 1987). The observations on this species come largely from Ontario; some additional field work was done in northwestern Pennsylvania, with minor observations elsewhere in eastern North America.

Solitary Vireos nest across Canada and in the highlands of eastern and western North America, south into Central America. It is the only vireo to make considerable use of coniferous forests (Hamilton 1962) in Canada and elsewhere, but is also found in mixed coniferous/deciduous forests, and even pure deciduous woodland in some places to the south of us (James 1979). In Ontario, they nest through much of the Boreal and Great Lakes/St.

Lawrence forests, with relatively few south of the Muskoka/Haliburton latitude.

Because of habitat and distributional differences, there is little chance of contact between the two species here. In the eastern United States, there is considerably more opportunity for them to be found nesting close together, possibly even in adjacent territories. Most, however, are still separated by elevational differences or habitat preferences (James 1979).

Most observations on Solitary Vireos were made in Muskoka District, Ontario, but I also observed them in Pennsylvania, Virginia, Saskatchewan, Alberta, and British Columbia, as well as a few times in other places in northern Ontario, Arizona, Texas, and Belize.

Spring arrival

Although reported as early as late April in Ontario, most Yellow-throated Vireos arrive in the last two thirds of May. As population densities are typically low, some males may still be wandering in search of a mate through much or even all of June. Despite moving farther north to nest, Solitary Vireos arrive one to two weeks earlier on average than their southern neighbours. Early arrivals may appear by about mid April, with large numbers by early May. Most seem to have paired and started nesting within a relatively short period during the second two weeks of May. A few may not find mates until early June.

In both species, males arrive and settle in an area before they find a mate. However, some females follow close behind, such that some pairs are mated with nests well under way before other males have arrived and settled on a territory.

Territories

Unmated males of either species, usually not encumbered by close neighbours, may wander as far as 0.8 km over several days and easily to half that distance on any one day. Probably they would not range nearly as far if population densities were high. They generally stay in the tops of the tallest trees, singing persistently while foraging. Five to ten minutes may pass before they fly to another tree. Once mated, they seldom seem to range more than 100 m from a nest, if surrounded by appropriate habitat. They will range farther if habitat is more linear or irregular.

Solitary Vireos usually seem very aptly named, for there can be considerable distance between pairs and seldom any rivalry between pairs. But Yellow-throated Vireos were much the same and because of the low densities, I seldom saw territorial disputes in either species. At the approach of a neighbouring male, there may be no chasing at all, only continued or resumed singing until the other moves away. But if any bird comes close to a nest, it will be chased away quickly. Chases are typically silent and the chasing bird has its body feathers well spread out to the sides between actual chases (see Figure 1). At least a few notes of song or other calls will invariably be heard from the territory defender when the chase is over.

Once nesting is under way among all birds, territorial defense is almost nonexistent. The ranging over larger areas when unmated, followed by a decrease in area used after pairing, further lessens conflict in an already sparse population with much apparently suitable habitat unsettled.

In one instance involving Solitary Vireos, I observed a mated pair of birds defending a territory. This pair, with an already completed nest, was drawn to the edge of their territory by a singing bird that I had been watching as an unmated male. After the pair chased the male out, another silent bird was seen being chased by both members of this pair. This silent bird soon flew over to the territory where the unmated male was singing, and I shortly observed that male displaying to this silent bird, and after a brief interval, commencing nest building activities, accompanied by this now obviously female bird. This indicates rather clearly, not only that both members of a pair may defend the territory, but also that monogamy is definitely the mating system here, as previously indicated for both these species (Verner and Willson 1969).

Behaviour of unmated males

Unmated males of both species tend to sing continually throughout the day at a fairly rapid rate of about one song every two seconds (James 1978). The persistence and speed of singing will wane gradually if they remain unmated

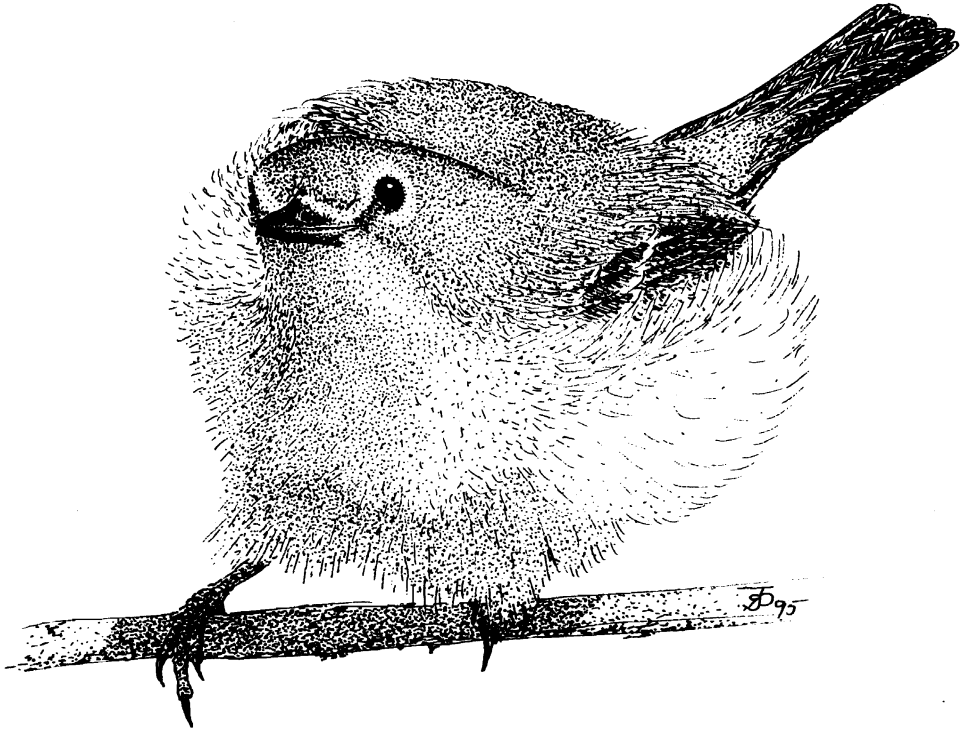

Figure 1: Drawn from a slide of a Yellow-throated Vireo responding to a tape recording of its own song, this shows the body feathers ruffled all around, causing the bird to appear much larger. This I have referred to elsewhere as a *moderate-intensity spread*. A *low-intensity spread* involves head feathers only, and a *high-intensity spread* ruffles both head and body feathers. The tail is never fanned at such times.

for a long period. They sing mainly high in trees where sound is likely to carry farther.

Yellow-throated Vireos tend to remain high in trees all the time and it is difficult to see clearly what they may be doing other than foraging. But, certainly some, and probably all males, will spend some time looking for nest sites (James 1978). Solitary Vireo males also search for nest sites when unmated, but because they nest closer to the ground, it is usually more apparent when they change activities and come lower in the forest to look for sites. Males of both species, when they have found a possible crotch, will become silent for a while, examining it closely. They hop from side to side, or in and out along the twig, and rotate their bodies side to side while their heads are down where they can see the site clearly.

After each examination, they suddenly begin to sing more quickly than normal and intersperse their song with other calls such as trills and *cheee's*. These calling bouts last only a few seconds before the bird flies off to resume foraging and singing at the more usual rate.

Within a day or two it is apparent that sites have been chosen, as males return to them periodically to re-examine them and call there. They may also begin to carry some nest material and start to build a nest (James 1978). In the case of Yellow-throated Vireos, males typically seem to have three or four sites chosen. Only one may get any nest material, or if two or three get some, one gets more than the others. But, all three or four sites will be visited from time to time, although again one is usually favoured with more visits than the rest.

For Solitary Vireo males, there appear to be fewer sites chosen (but my sample size is small for either species). They usually choose one site and start to build there. One male, however, definitely visited two sites fairly regularly while concentrating on one. However, in both species only the barest minimum amount of material is added, so that the site with the most would not even be evident if it were not for the actions of the males at these sites.

The nest sites of Solitary Vireos, if there are more than one, are usually fairly close together, within 10 to 30 m of each other. Yellow-throated Vireos spread them somewhat more, perhaps within 75 m of each other. All nest material can be added quickly, even within a few hours of one day. If the male still does not have a mate by this time, he generally does not add any more material. But, in the succeeding days he continues to visit the sites periodically, examines them again, pulls at a bit of nest material if there is any, and gives bursts of songs and calls.

Some males of both species, however, do not appear to start nests. They may return to particular trees many times and probably are looking at sites there, but will not carry any material as far as can be seen. Some do not even appear to visit particular trees, but just wherever they happen to be in the territory, they give a burst of fast song and calls, probably at a place that might serve as a nest site. The persistent singing most of the time, and the bursts of calling, rather clearly indicate that the male is unmated whether at a nest site or not. But, the behaviour of males once a female appears, clearly suggests that most, if not all, have preselected at least one site. It is just very difficult to follow

some birds closely enough to be certain whether they have not selected, or just not revealed, the locations by starting to build or by returning repeatedly to a particular place. Some males are quite sensitive to watching, and one even gave alarm calls when I tried to follow.

Discussion

There are relatively few detailed studies of the behaviour of other vireo species, and details of unmated male behaviour are scanty at best. Territorial patrolling while singing persistently is common behaviour in many vireos, as well as many other passerine birds. However, in only one other species of vireo so far studied is there any indication that nest building by unmated males is to be found.

Male Black-capped Vireos (*V. atricapillus*) also begin a nest prior to pairing (Graber 1961). As will be seen (more in a succeeding article), the preselected nests are of importance in Solitary and Yellow-throated Vireos once a female arrives. The significance to male Black-capped Vireos is unknown at present. However, it is another vireo with prominent "spectacles" and wing bars and additional study will likely reveal a similar function as in these two species.

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