

Can You Hear Prebasic Molt?

Kevin E. Metcalf

12459 Fowler's Mill Road
Chardon, OH 44024
kem@clevelandmetroparks.com

Introduction

Most birdwatchers have experienced those late spring and early summer mornings when the forests and meadows are brimming with birdsong. By late summer this auditory storm dissipates - slowly, almost imperceptibly - until the last drops of song must be consciously sought out. I developed an interest in noting the seasonal ebb and flow of Northeast Ohio's avian "sound-scape" over ten years ago.

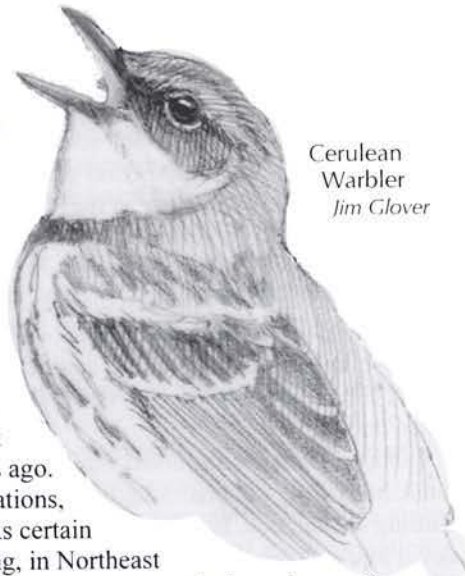
After a few years of recording my observations, I learned that I could anticipate what weeks certain birds could be found singing, or not singing, in Northeast Ohio. Over time I focused my attention on the late summer decline of song. Patterns began to emerge and became predictable from year to year.

There is still a lot to be learned about the song "phenology" or seasonal changes in Ohio's birdsong. This article will only scratch the surface of a topic that is potentially vast. I hope that this basic treatment of a fascinating topic will spur others to take notice of the seasonal rhythms of birdsong in their own neighborhoods.

Function of Song and General Seasonal Patterns

The basic function of male territorial song in passerines, which are also called "songbirds", is to attract a mate. Some near passerines, such as cuckoos and doves, and some other groups of birds have complex songs as well that probably serve the same function. Studies of some songbird species indicate that unmated males will sing more frequently than mated males. For example, male hooded warblers, upon arriving on a potential breeding territory will spend about 50 - 60% of their time singing. (Evans & Stutchbury 1994). Once a male songbird has mated and nesting has begun, the frequency of song given by that individual often declines.

Wood thrushes offer one fairly typical example of the annual cycle of song in our migratory breeding birds. Wood thrushes are very vocal just after they arrive on territory (usually late April or early May in Ohio) and sing frequently through the mating and incubation stages of breeding. Singing declines when the first brood of young is being fed (Watson 1987) -- frequently by the end of May through June. Wood thrushes will often attempt to raise two broods. By early August in northeastern Ohio song has greatly decreased, as most wood thrushes have completed nesting for the year. By mid-August most have stopped singing entirely (pers. obs.). Some may sing infrequently at dawn or dusk into September. Wood thrushes usually give call notes only during fall migration, and apparently sing little



Cerulean
Warbler
Jim Glover

METCALF

if at all on their tropical wintering grounds (Roth, Johnson, & Underwood 1996).

There are a few resident birds for which I have noted male territorial song every, or nearly every, month of the year. These birds include black-capped chickadee, tufted titmouse, Carolina wren, northern cardinal, song sparrow, and house finch. I suspect that mourning doves, red-winged blackbirds, European starlings, and American robins probably can be heard singing year round as well. It should be noted that the "songs" of black-capped chickadees ("fee-bee-bee") and tufted titmice ("peter-peter-peter") serve more than one social function and so do not necessarily indicate male territorial behavior.

Late Summer Song Decline in Northeast Ohio

Typically in northeastern Ohio from mid-July through mid-August the chorus of songs of our flycatchers, vireos, thrushes, wrens, warblers, sparrows, and other songbirds greatly diminishes. Why bird song declines at this time seems obvious. The nesting season is ending. There is no longer a need to hold territory and advertise for a mate. Most of our breeding songbirds, many of which have migrated from other areas, sing until the last broods of young have been raised. After this, song quickly diminishes - no nesting, no territories, no song. End of story?

From late July through September of 2003 I attempted to document the post-breeding decline in bird song along two survey routes in northeastern Ohio. I concentrated my efforts between 6 August and 6 September, when I recorded the number of singing individual birds of each species on several dates. One route in Geauga County took me through diverse habitats, including successional old fields, wetlands and forests. Another route in North Chagrin Reservation of Cleveland Metroparks (Cuyahoga and Lake counties) ran primarily through forest, including beech-maple forest, with some hemlock ravine and edge habitats. The surveys were conducted between 7 a.m. and 9 a.m. They revealed a dramatic decline in singing individuals during the study period. On the Geauga route I noted a 78% decline in singing birds per hour, while there was a 64% decline in singing birds per hour on the North Chagrin route. Most bird species that were singing at the onset of the surveys were silent by late August or early September. (See Table 1)

Table 1.

Following is a list of forty-five "songbird" species encountered on the Geauga County and North Chagrin Reservation routes surveyed in 2003 (study period ending 6 September), with dates of last song.

Mourning Dove*: 9 August (singing can persist through at least mid August)
Yellow-billed Cuckoo*: 19 August
Eastern Wood-Pewee: singing through end of study period.
Acadian Flycatcher: 28 August
Willow Flycatcher: 28 July
Alder Flycatcher: 9 August
Least Flycatcher: 28 August (fall migrant)
Eastern Phoebe: 26 August (singing can persist into October)
Great Crested Flycatcher: 10 August

Black-capped Chickadee: singing through end of study period
 Tufted Titmouse: singing through end of study period
 White-eyed Vireo: 26 August
 Yellow-throated Vireo: 28 August
 Warbling Vireo: singing through end of study period
 Red-eyed Vireo: singing through end of study period
 Brown Creeper: 19 August
 Carolina Wren: 26 August (sings throughout the year)
 House Wren: 12 August
 Veery: none singing during study period
 Wood Thrush: 12 August
 American Robin: 26 August
 Gray Catbird: none singing during study period
 Brown Thrasher: none singing during study period
 European Starling: through the end of study period
 Blue-winged Warbler: 19 August
 Yellow Warbler: 10 August
 Common Yellowthroat: 26 August (singing can persist into September)
 Hooded Warbler: 28 August
 Scarlet Tanager: 23 August
 Eastern Towhee: 19 August
 Chipping Sparrow: 19 August
 Field Sparrow: 19 August
 Savannah Sparrow: none singing
 Song Sparrow: singing through end of study period (sings throughout the year)
 Swamp Sparrow: 26 August
 Dark-eyed Junco: 23 August
 Northern Cardinal: singing through end of study period
 Rose-breasted Grosbeak: whisper song given once
 Indigo Bunting: 10 August (sometimes heard through 15 - 20 August)
 Bobolink: none heard singing during the study period
 Red-winged Blackbird: 6 September (resumed song at end of study period - will sing through at least November)
 Common Grackle: none heard singing during study period
 Baltimore Oriole: 26 August
 Purple Finch: none heard singing during study period
 American Goldfinch: 28 August

*Mourning dove and yellow-billed cuckoo were included in the study, although they are not passerines.

Prebasic Molt and Song Phenology

In addition to the obvious connection between singing and breeding cycles, there seems to be a correlation between the onset of prebasic molt (the transition to "winter" plumage) and cessation of territorial song. It is believed that prebasic molt in most migratory North American birds is timed to take advantage of abundant late

summer food supplies, when demands of family duties have ended and migration is not yet underway (Terres 1980). Although the specific timing of molts for northeastern Ohio birds is still fertile ground for research, we have enough general information to say at least that a correlation between the late summer "quiet period" and prebasic molt exists.

There are some interesting exceptions and variations to this basic seasonal pattern. During my surveys, for example, eastern wood-pewees and red-eyed vireos continued to sing persistently through the end of August and even into September. Baltimore orioles, nearly silent in July, actually sang more in August. It is among these exceptions that I think we can learn the most about the reasons for the precise timing of the late summer decline in song.

In the case of eastern wood-pewees, I found that the number of individuals singing per hour on 6 September (5.6/hr) was nearly the same as that on 6 August (5.33 per/hr.) in North Chagrin Reservation. Wood-pewees are the most obvious singers in the forest from very late August through mid-September, after which singing quickly declines. Prebasic molt in this species apparently peaks in September (McCarty 1996), continuing as the birds undertake fall migration. It is interesting to note that in Ohio wood-pewees have been found with nestlings as late as September (Peterjohn 1989, McCarty 1996). Therefore, wood-pewees may be holding territory later in the season than most of our other breeding birds, and they undergo prebasic molt later than most of our breeding birds. Detailed observation might reveal whether these late nesters are putting off molt until nesting has been completed.

Resumption of Song After Prebasic Molt

One of the most fascinating aspects of song phenology in our passerines occurs after the prebasic molt has been completed. Even though these birds are finished with nesting for the season, some will resume singing. Singing in this case may be just a hormonal response to changes in the photoperiod, but this needs further study. Usually this late season song lacks the "enthusiasm" of the spring and early summer song. This post-molt song is usually (but not always) given in short bouts and sometimes with incomplete phrasing. Warbling vireos, American robins, pine warblers, Baltimore orioles, and red-winged blackbirds are some examples of "post-molt" singers in northeastern Ohio.

The song phenology of warbling vireos can help illustrate this pattern. Warbling vireos become fairly non-vocal in mid- or late July through early August (pers. obs., Peterjohn 1989), though some sporadic singing will sometimes be heard during this time (pers. obs.). Singing often increases toward the end of August and into September before the local breeders depart for migration. Apparently, unlike red-eyed vireos, warbling vireos are known to sing in fall migration (Gardali & Ballard 2000). How does this song pattern fit into warbling vireo breeding and molt cycles? First, warbling vireos are usually single-brooded (again, this is unlike red-eyed vireo, which frequently raises two broods). Once nesting is complete in warbling vireos, usually by early July, they go through a complete molt in July and August. This corresponds to the relatively quiet period that I have noted for this species in northeastern Ohio. Therefore, it seems that once the prebasic molt is complete, warbling vireos will resume singing, and I suspect that at least some of these birds

are singing on the same territories they held earlier in the year.

Baltimore orioles follow a similar pattern of nesting, molt, and song.

Red-winged blackbirds offer another example of this "post-molt" resumption of song. Male red-winged blackbirds give frequent territorial songs when they reach their breeding sites in late winter or early spring. Song is given regularly until about 21 July (pers. obs.) Singing becomes very sporadic in late July through about the first week of September, after which songs are given more frequently (pers. obs.) Red-winged blackbirds are reported to go through a complete molt from "early July - mid

October" (Yasukawa & Searcy 1995) or June - September for after-hatch-year birds (Pyle 1997). From my observations in northeastern Ohio, the peak of prebasic molt in red-winged blackbirds occurs in August, with most adult males appearing to be in fresh basic plumage by about mid-September. Adult male red-winged blackbirds will do some singing at least into November in northeastern Ohio (pers. obs.) and possibly throughout the winter. I have even observed adult males doing a wing-spread or "song spread" display while singing in fall, contra published reports (Orians & Christman 1968 cited in Yasukawa & Searcy 1995).

Why males of some bird species, particularly migratory species, continue to sing once the nesting season has ended is, to my knowledge, still a mystery. 🐦

Conclusions

Understanding the song phenology of birds can broaden our understanding of bird distribution, breeding, molt, and migration cycles. It has implications for anyone doing breeding bird censuses, as the timing of any song-based censusing should take into account the variations of song phenology for a given species at a given location.

I suspect that the dates of last song will be different for other regions in Ohio. I encourage birders to find their own summer songbird survey route. Visit it each week, recording the number of each species heard, along with time spent afield, so that birds

singing per hour can be compared as the seasons change. With more detailed observations, we might learn that we can not only see molt in birds, but hear it as well.

Bibliography

- Evans Ogden, L.J. and B.J. Stutchbury. 1994. Hooded Warbler. In *The Birds of North America*, No. 110 (A. Poole and F. Gill, eds.). Academy of Natural Sciences, Philadelphia, PA and The American Ornithologists' Union, Washington, D.C.
- Gardali, T. and G. Ballard. 2000. Warbling Vireo. In *The Birds of North America*, No. 551 (A. Poole and F. Gill, eds.). Academy of Natural Sciences, Philadelphia, PA and the American Ornithologists' Union, Washington D.C.
- McCarty, J. P. 1996. Eastern Wood-Pewee. In *The Birds of North America*, No. 245 (A. Poole and F. Gill, eds.). Academy of Natural Sciences, Philadelphia, PA and the American Ornithologists' Union, Washington, D.C.

Orians, G. H., and G. M. Christman. 1968. A comparative study of the behavior of Red-winged, Tricolored, and Yellow-headed Blackbirds. *Univ. Calif. Publ. Zool.* 84: 1 - 81.

Peterjohn, B. G. 1989. *The Birds of Ohio*. Indiana Univ. Press, Bloomington, IN.

Popp, J. W., R. W. Ficken, and J. A. Reinartz. 1985. Short-term temporal avoidance of interspecific acoustic interference among forest birds. *Auk* 102: 744 - 748.

Pyle, P. 1997. *Identification guide to North American birds*. Part 1: Columbidae to Ploceidae. Slate Creek Press, Bolinas, CA.

Rising, J.D., and N. J. Flood 1998. Baltimore Oriole. In *The Birds of North America*, No. 384 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA and the American Ornithologists' Union, Washington D.C.

Roth, R.R., M. S. Johnson, and T.J. Underwood. 1996 Wood Thrush. In *The Birds of North America*, No. 246 (A. Poole and F. Gill, eds.). Academy of Natural Sciences, Philadelphia, PA and the American Ornithologists' Union, Washington, D.C.

Terres, J. K. 1980. *The Audubon Society Encyclopedia of North American Birds*. Alfred A. Knopf, New York.

Watson, L. M. 1994. Effects of nesting stage, time of season, and time of day on Wood Thrush detectability. B.Sc. thesis, Univ. of Delaware, Newark.

Yasukawa, K., and W.A. Searcy. 1995. Red-winged Blackbird. In *The Birds of North America*, No. 184 (A. Poole and F. Gill, eds.). Academy of Natural Sciences, Philadelphia, PA and the American Ornithologists' Union, Washington, D.C.