

## THE WARBLERS OF ASH CAVE

By Dennis Profant and Pat Quackenbush

Ash Cave is one of the elements of Hocking Hills State Park and is located in Hocking County. Several areas of the Park are known for their sandstone outcrops and spectacular waterfalls. Ash Cave is the largest recess cave in the state, measuring 100 feet high and 700 feet wide. Ash Cave is a popular destination for tourists, not only for its geological formations, but for the flora and fauna as well. I (DP) have recorded 70 species of woody plants in the park and nearly 100 species of spring wildflowers. Many of these species are common in southern Ohio, yet others are usually associated with glacial remnant forests found much further north. The gorge is full of towering Tuliptree (*Liriodendron tulipifera*), Eastern Hemlock (*Tsuga canadensis*), Sycamore (*Platanus occidentalis*), American Beech (*Fagus grandifolia*), and Sugar Maple (*Acer saccharum*). The rim is blanketed with hemlock trees and the upper slopes have a mix of oaks and hickories.



Black-throated Green Warbler, photo taken by Michael Williams.

While working at the park back in 1980, I was able to conduct various natural history surveys. I noticed a high number of Northern Parulas (*Setophaga americana*, then *Parula americana*) and Black-throated Green Warblers (*Setophaga virens*, then *Dendroica virens*). They weren't just passing through, but nesting here. In the surrounding counties these two species are fewer in number, or even absent in many of the forest types, in comparison to their abundance at Ash Cave. I wondered how many other species were utilizing the area, so I decided to make a count of all the warblers found at Ash Cave.

Surveys were conducted in 1980 and again in 1981 between 7:00 and 9:00 am. The route included the picnic area, gorge trail, rim trail, and a portion of the Buckeye trail behind the falls.

Birds were recorded by both sight and song. Later that summer I relocated out of state and never did anything with the data. Years later I returned to the area and asked Pat Quackenbush, naturalist at Old Man's Cave and surrounding parks, if he would like to participate in repeating the study in 2005. I wanted to see if the diversity had changed over 25 years. We gathered data using the same methods as before. With both of us involved in other projects, we once again put off calculating our results. It was suggested we write this up for a possible publication, so in 2013, we surveyed again, allowing us to compare over a 30 year period.

Nineteen species of warblers were recorded over the five survey years. The most frequently encountered species include Ovenbird, Northern Parula, Louisiana Waterthrush, and Black-throated Green, Yellow-throated, Black-and-White, Hooded, and Worm-eating warblers. Those that were occasional or uncommon were Common Yellowthroat, American Redstart, and Pine, Yellow, Blue-winged, Blackburnian, Cerulean, Canada, Kentucky, Prothonotary, and Tennessee warblers.

The three most common species were Black-throated Green Warbler, Northern Parula, and Ovenbird (*Seiurus aurocapillus*). When we compare 1980-81 with 2005-06 and 2013, their numbers have declined by over 50%. The Cerulean Warbler is a species of concern and has showed rapid decline throughout its range. In 1980-81 I found 14. In 2005-06 we saw two, and last year zero. Cerulean Warblers, like the Kentucky Warbler, prefer broken canopies, and a multi-layered understory. With the maturity of Ash Cave forests, there are many spots with very sparse understory cover, so it may no longer be favorable to these species.

There were four species in particular that showed the most change. Yellow-throated Warbler (*Setophaga dominica*) and Kentucky War-



Common Yellowthroat male, photo taken by Michael Williams.

bler (*Geothlypis formosa*) numbers dropped 93%, Worm-eating Warbler (*Helmitheros vermivorum*) by 90%, and Hooded Warbler (*Setophaga citrine*) by 85%. In South-east Ohio, these are not rare warblers by any means, but at Ash Cave they are nearly nonexistent today.

Comparing the total numbers of birds seen may be misleading, as the number of times we surveyed varied between the years. A better way to see the change is to average the number of birds per visit.

1980-81 = 16.7

2005-06 = 6.6

2013 = 4.7



*Yellow Warbler, photo taken by Michael Williams.*

Of the original 19 species from 1980-81, we recorded only seven this past year. Plant community succession in the old fields on either side of the picnic areas have made the habitat unsuitable for species like Prairie, Blue-winged, and Yellow warblers, Yellow-breasted Chat, and other early-succession specialists. The hardwoods in the canopy can live for several hundred years, and the hemlocks easily twice that. So the vegetation composition through most of the park, including the understory, has remained the same over the years. It may simply be what we mentioned earlier, the forest structure itself has changed.

Why does the understory still have Ovenbirds and waterthrushes, but not Worm-eating Warblers? If they forage throughout the forest, their behavior should not be affected. Has soil compaction from too much off trail hiking changed the density of ground cover? Perhaps visitation in the park has reached numbers that are uncomfortable for this species to nest on the ground here anymore. The same could be asked of the Hooded Warbler, which also prefers understory, and whose numbers have declined.

Without studying individual nesting behavior, number surveys like this may ask more questions than they answer. We have all heard of deforestation in the wintering grounds as a major cause of

declining numbers of songbirds. We also need to consider land use practices in our own country. Building collisions and the increased number of wind power installations and cell phone towers take their toll in migration. A higher incidence of Brown-headed Cowbird parasitism is being mentioned as another factor. Pesticides, destruction of wetlands, climate change, and feral cats are also implicated in population declines. The list goes on. It's probably a combination of many factors.

Locally, another threat looms on the horizon. The Hemlock Woolly Adelgid (*Adelges tsugae*), a piercing-sucking insect, has wreaked havoc on the hemlock trees of the Smoky Mountains. Though not yet at Ash Cave, it has been found in the Hocking Hills nearby. The loss of the Eastern Hemlock would surely cause an even more rapid decrease in species diversity.

We thank Jim McCormac for his comments and input.

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*Hooded Warbler, photo taken by Michael Williams.*