



2016 Monitoring Summary for Hopewell Culture National Historical Park, Ohio

Birds are an important component of park ecosystems, as their high body temperature, rapid metabolism, and high ecological position in most food webs make them good indicators of the effects of local and regional changes in ecosystems. Moreover, birds have a tremendous following among the public and many parks provide information on the status and trends of birds through their interpretive programs.

We use trends in the composition and abundance of bird populations as long-term indicators of ecosystem integrity in the varied habitats of Hopewell Culture National Historical Park (HOCU), Ohio. Ecosystem integrity is defined as the system's capability to support and maintain a balanced, integrated, adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of the natural habitat of the region (Karr and Dudley 1981).

Changes in the population size and community composition of birds on the park may reflect the effectiveness of management in restoring and maintaining the various vegetative communities at HOCU. Long-term trends in community composition and abundance of breeding bird populations provide one measure for assessing the ecological integrity and sustainability of these systems.

Methods:

For details on methods of bird surveys see Peitz et al. (2008).

- Bird communities were monitored at 40 points by Bruce J. Lombardo, Andrew L. Molloy, Andrew J. Travers, Jason R. Snider, and Jacob J. Sisler, between June 15th and June 28th.
- All birds seen or heard in a 5-minute sampling period at each plot were recorded.
- Residency status of each species was established prior to analysis of the data (Peterjohn 2001)
- Using hot-spot-analysis in ArcGIS, areas of higher and lower species richness on the park were determined.
- Calculated number of individuals encountered per plot visit, and proportion of plots occupied by a species.

Summary of Findings:

- Seventy-five bird species were observed during surveys. All species are resident or summer resident species thus are considered breeding species at HOCU (Table 1).
- The most commonly occurring and widespread birds on HOCU were the European Starling and Common Yellowthroat, respectively.
- Eight species are species of conservation concern (Table 1) for the Appalachian Mountains and Eastern Tallgrass Prairie Bird Conservation Regions (Figure 1).

- Hot-spot-analysis showed a large concentrations of plots with low species richness at the Hopeton Earthworks Unit of HOCU (Figure 2).

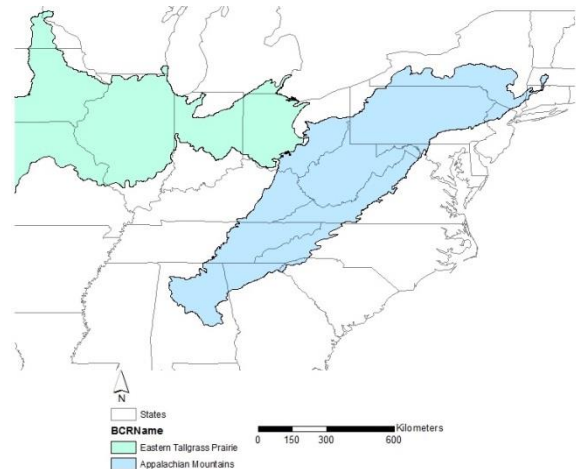


Figure 1. Appalachian Mountains and Eastern Tallgrass Prairie Bird Conservation Regions.

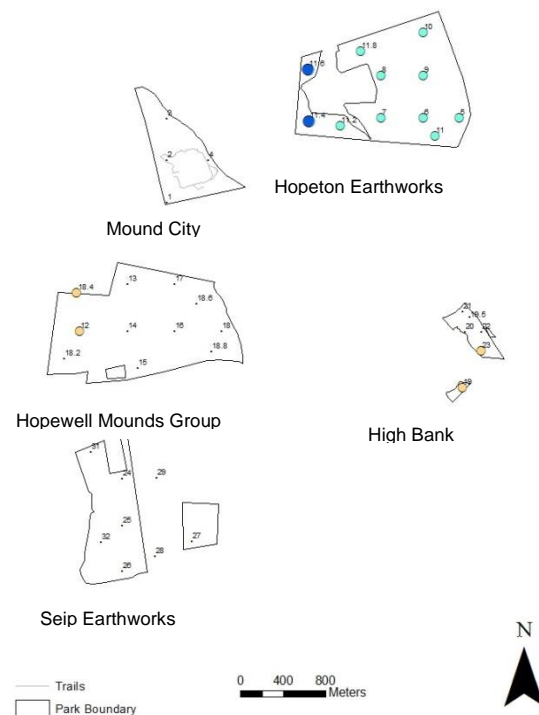


Figure 2. Concentrations of plots with high (orange to higher red) and low (blue to lower dark blue) breeding bird species richness at Hopewell Culture National Historical Park, Ohio in 2016.

Table 1. Number of individuals encountered per plot visit, and proportion of plots out of 40 occupied by breeding bird species at Hopewell Culture National Historical Park, Ohio during the 2016 bird surveys. Number of individuals per plot, and proportion of plots occupied includes all individuals recorded on plots during a 5-minute survey, including flyovers.

Common name	Residency ¹	Individuals / plot visit	Proportion of plots occupied
Acadian Flycatcher	SR	0.13	0.10
American Crow	SR	0.53	0.30
American Goldfinch	SR	0.80	0.45
American Robin	R	0.73	0.53
Bald Eagle	R	0.03	0.03
Bank Swallow	SR	0.05	0.03
Baltimore Oriole	SR	0.40	0.38
Barn Swallow	SR	0.48	0.28
Belted Kingfisher	R	0.05	0.05
Black Vulture	R	0.08	0.05
Blue-gray Gnatcatcher	SR	0.10	0.10
Blue Grosbeak	SR	0.13	0.10
Blue Jay	R	0.25	0.25
Bobolink	SR	0.03	0.03
Brown-headed Cowbird	SR	0.20	0.13
Brown Thrasher	R	0.03	0.03
Canada Goose	R	0.03	0.03
Carolina Wren	R	0.33	0.33
Cedar Waxwing	SR	0.08	0.08
Chipping Sparrow	SR	0.18	0.15
Chimney Swift	SR	0.33	0.13
Cliff Swallow	SR	0.15	0.13
Common Grackle	R	0.48	0.35
Common Yellowthroat	SR	1.08	0.78
Dickcissel	SR	0.75	0.43
Downy Woodpecker	R	0.18	0.18
Eastern Bluebird	SR	0.33	0.23
Eastern Kingbird	SR	0.05	0.05
Eastern Meadowlark	SR	1.05	0.53
Eastern Towhee	SR	0.33	0.25
Eastern Wood-pewee	SR	0.15	0.15
European Starling	R	3.23	0.30
Field Sparrow	SR	0.73	0.50
Great Blue Heron	SR	0.03	0.03
Great Crested Flycatcher	SR	0.10	0.10
Gray Catbird	SR	0.30	0.25
Grasshopper Sparrow	SR	0.30	0.23
Hairy Woodpecker	R	0.08	0.08
Henslow's Sparrow	SR	0.35	0.20
House Finch	R	0.10	0.10
House Wren	SR	0.25	0.20
Indigo Bunting	SR	0.83	0.65
Killdeer	SR	0.10	0.10
Mallard	SR	0.05	0.05
Mourning Dove	R	0.88	0.55

Northern Cardinal	R	0.58	0.50
Northern Parula	SR	0.03	0.03
Northern Rough-winged Swallow	SR	0.40	0.30
Orchard Oriole	SR	0.03	0.03
Pileated Woodpecker	R	0.05	0.05
Red-bellied Woodpecker	R	0.08	0.05
Red-eyed Vireo	SR	0.33	0.28
Rock Dove	R	0.20	0.08
Rose-breasted Grosbeak	SR	0.10	0.10
Ring-neck Pheasant	R	0.15	0.15
Red-tailed Hawk	R	0.13	0.13
Red-winged Blackbird	R	1.85	0.73
Ruby-throated Hummingbird	R	0.03	0.03
Scarlet Tanager	SR	0.10	0.10
Song Sparrow	R	0.98	0.60
Tree Swallow	SR	0.53	0.33
Tufted Titmouse	R	0.30	0.30
Turkey Vulture	SR	0.28	0.20
Warbling Vireo	SR	0.10	0.08
White-eyed Vireo	SR	0.08	0.08
White-breasted Nuthatch	R	0.15	0.15
Willow Flycatcher	SR	0.20	0.20
Wild Turkey	R	0.03	0.03
Wood Duck	SR	0.03	0.03
Wood Thrush	SR	0.53	0.38
Yellow-breasted Chat	SR	0.18	0.18
Yellow-billed Cuckoo	SR	0.03	0.03
Yellow-throated Vireo	SR	0.15	0.13
Yellow-throated Warbler	SR	0.13	0.13
Yellow Warbler	SR	0.08	0.08

¹ Residency status: R = year around resident; SR = summer resident (Peterjohn 2001).

Bolded species names are those species considered of conservation concern for the Appalachian Mountains and Eastern Tallgrass Prairie Bird Conservation Regions (U.S. Fish and Wildlife Service 2008).

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Citations:

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Heartland Inventory and Monitoring Network of the National Park Service. Visit <http://www.nps.gov/im/units/htln/index.htm>

