



Results of the 2014 Birding Efforts at Wilson's Creek National Battlefield, Missouri

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 Wilson's Creek National Battlefield (WICR), Missouri. 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 WICR. 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 35 points by Dorothy J. Thurman, Myra Scroggs, Ann Liles, April McDonough and Dean R. Rising, between June 4 and June 8.
- 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 (Robbins and Easterla 1992).
- Using hot-spot-analysis in ArcGIS, areas of higher and lower species richness on the memorial were determined.
- Calculated number of individuals encountered per plot visit, and proportion of plots occupied by a species.

Summary of Findings:

- Eighty-seven bird species were observed during surveys. Seventy of the 87 species are resident or summer resident species thus considered breeding species at WICR (Table 1).
- The most commonly occurring and widespread bird on WICR was the Northern Cardinal.
- Five species – Bell's Vireo, Blue-winged Warbler, Henslow's Sparrow, Kentucky Warbler, Red-bellied Woodpecker, Red-headed Woodpecker – are species of

conservation concern for the Central Hardwoods Bird Conservation Region (Figure 1).

- Hot-spot-analysis showed concentrations of plots with low species richness at the south end of WICR, and concentrations of plots with high species richness at the north end (Figure 2).

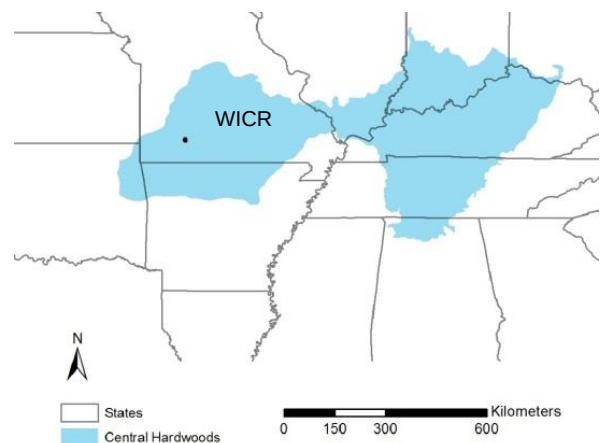


Figure 1. Central Hardwoods Bird Conservation Region.

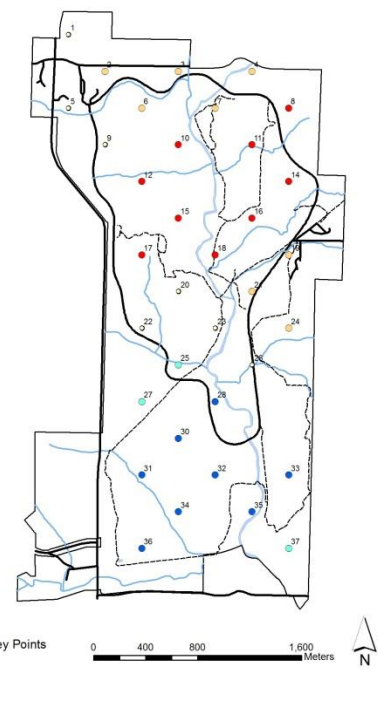


Figure 2. Concentrations of plots with high (orange) to higher (red) and low (blue) to lower (dark blue) breeding bird species richness at Wilson's Creek National Battlefield, Missouri in 2014.

Table 1. Number of individuals encountered per plot visit, and proportion of plots out of 35 occupied by breeding bird species at Wilson's Creek National Battlefield, Missouri during the 2014 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	0.06	0.06
American Crow	R	0.57	0.37
American Goldfinch	R	0.69	0.29
American Redstart	SR	0.03	0.03
American Robin	R	0.11	0.06
Bank Swallow	SR	0.26	0.06
Baltimore Oriole*	SR	--	--
Barred Owl	R	0.03	0.03
Bell's Vireo	SR	0.03	0.03
Blue Jay	R	0.37	0.23
Blue-gray Gnatcatcher	SR	0.71	0.46
Blue-winged Warbler	SR	0.06	0.06
Brown-headed Cowbird	R	0.74	0.37
Brown Thrasher	R	0.11	0.06
Carolina Chickadee	R	0.17	0.17
Canada Goose	R	0.14	0.03
Carolina Wren	R	0.51	0.46
Cooper's Hawk*	R	--	--
Cliff Swallow	SR	0.46	0.09
Common Grackle	R	0.17	0.06
Common Yellowthroat	SR	0.23	0.23
Chestnut-sided Warbler*	SR	--	--
Dickcissel	SR	0.17	0.06
Downy Woodpecker	R	0.06	0.06
Eastern Bluebird*	R	--	--
Eastern Kingbird	SR	0.40	0.09
Eastern Meadowlark	R	0.31	0.29
Eastern Phoebe	R	0.09	0.09
Eastern Towhee	R	0.71	0.49
Eastern Wood-pewee	SR	0.09	0.09
European Starling	R	0.17	0.11
Field Sparrow	R	0.57	0.49
Great Blue Heron*	R	0.17	0.14
Great Crested Flycatcher	SR	0.23	0.23
Gray Catbird	SR	0.09	0.09
Grasshopper Sparrow	SR	0.09	0.09
Henslow's Sparrow	SR	0.09	0.06
House Wren	SR	0.03	0.03
Indigo Bunting	SR	0.71	0.51
Kentucky Warbler	SR	0.23	0.23
Least Flycatcher	T	--	--
Lincoln's Sparrow*	T	--	--
Louisiana Waterthrush	SR	0.06	0.06
Mourning Dove*	R	--	--
Nashville Warbler	T	--	--
Northern Cardinal	R	1.17	0.69
Northern Flicker	R	0.03	0.03
Northern Harrier*	T	--	--
Northern Mockingbird	R	0.09	0.09
Northern Parula	SR	0.34	0.26
Northern Waterthrush	T	--	--
Northern Rough-winged Swallow	SR	0.17	0.03

Orchard Oriole	SR	0.03	0.03
Ovenbird*	SR	--	--
Pileated Woodpecker*	R	--	--
Palm Warbler	T	--	--
Philadelphia Vireo	T	--	--
Prothonotary Warbler	SR	0.03	0.03
Red-bellied Woodpecker	R	0.31	0.31
Ruby-crowned Kinglet	T	0.06	0.03
Red-eyed Vireo	SR	0.26	0.17
Red-headed Woodpecker	R	0.03	0.03
Red-tailed Hawk	R	0.03	0.03
Ruby-throated Hummingbird	SR	0.03	0.03
Red-winged Blackbird	R	0.09	0.06
Savannah Sparrow	T	--	--
Song Sparrow*	R	--	--
Scissor-tailed Flycatcher*	SR	--	--
Summer Tanager	SR	0.11	0.11
Swainson's Thrush	T	--	--
Tennessee Warbler	T	--	--
Tree Swallow	T	--	--
Tufted Titmouse	R	0.97	0.60
Turkey Vulture	R	0.11	0.06
Unknown Sparrow*	--	--	--
Warbling Vireo	SR	0.03	0.03
White-breasted Nuthatch	R	0.06	0.06
White-crowned Sparrow	T	--	--
White-eyed Vireo	SR	0.14	0.14
Wild Turkey	R	0.20	0.17
Wilson's Warbler	T	--	--
White-throated Sparrow	T	--	--
Yellow-breasted Chat	SR	0.34	0.26
Yellow-billed Cuckoo	SR	0.03	0.03
Yellow Warbler	SR	0.03	0.03
Yellow-rumped Warbler	T	--	--
Yellow-throated Warbler	SR	0.06	0.06

¹ Residency status: R = year around resident; SR = summer resident; T = transient (Robbins and Easterla 1992).

* Breeding species recorded outside of 5-minute survey periods.

Bolded species names are those species considered of conservation concern for the Central Hardwoods Bird Conservation Region (U.S. Fish and Wildlife Service 2008).

Report Prepared By:

Robin D. Graham
Heartland I & M Network
6424 W Farm Road 182
Republic, MO 65738

For More Information Contact:

David G. Peitz, Wildlife Ecologist
Heartland I & M Network
6424 W Farm Road 182
Republic, MO 65738
David.Peitz@nps.gov

Citations:

Karr, J. R., and D. R. Dudley. 1981. Ecological perspective on water quality goals. *Environmental Management* 5:55-68.

Peitz, D. G., G. A. Rowell, J. L. Haack, K. M. James, L. W. Morrison, and M. D. Debacker. 2008. Breeding bird monitoring protocol for the Heartland Network Inventory and Monitoring Program. *Natural Resource Report NPS/HTLN/NRR-2008/044*. National Park Service, Fort Collins, Colorado. 152pp.

Robbins, M. B. and D. A. Easterla. 1992. *Birds of Missouri: their distribution and abundance*. University of Missouri Press, Columbia. 399 pp.

U.S. Fish and Wildlife Service. 2008. *Birds of Conservation Concern 2008*. United States Department of Interior, Fish and Wildlife Service, Division of Migratory Bird Management, Arlington, Virginia. 85 pp. [Online version available at <http://www.fws.gov/migratorybirds/>].

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