



2016 Monitoring Summary for Pipestone National Monument, Minnesota

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 Pipestone National Monument (PIPE), Minnesota. 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 PIPE. 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 17 points by Seth B. Hendriks, Chris D. Langland, Susan C. Bury, and Sarah E. Schmit, between June 1 and June 2.
- 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 (Janssen et al. 2003).
- Using hot-spot-analysis in ArcGIS, areas of higher and lower species richness on the Monument were determined.
- Calculated number of individuals encountered per plot visit, and proportion of plots occupied by a species.

Summary of Findings:

- Forty bird species were observed during surveys. Thirty-eight of the 40 species are resident or summer resident species thus considered breeding species at PIPE (Table 1).
- The most commonly occurring and widespread bird species on PIPE are the American Goldfinch, Bobolink, and Ring-necked Pheasant, respectively.
- Two species – Dickcissel and Grasshopper Sparrow – are a species of conservation concern for the Prairie Potholes Bird Conservation Region (Figure 1).

- Hot-spot-analysis showed that species richness was quite variable across the Monument (Figure 2).

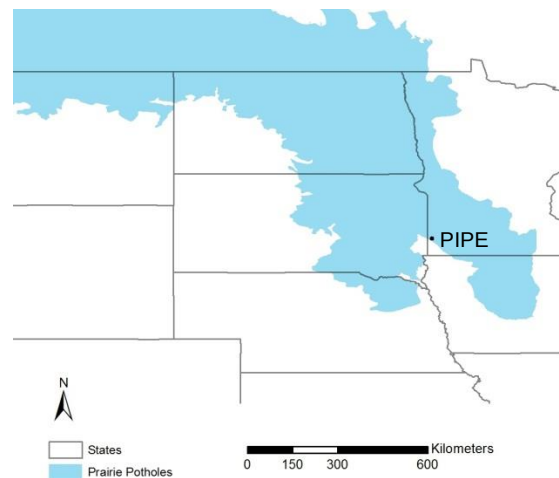


Figure 1. Prairie Potholes Bird Conservation Region.

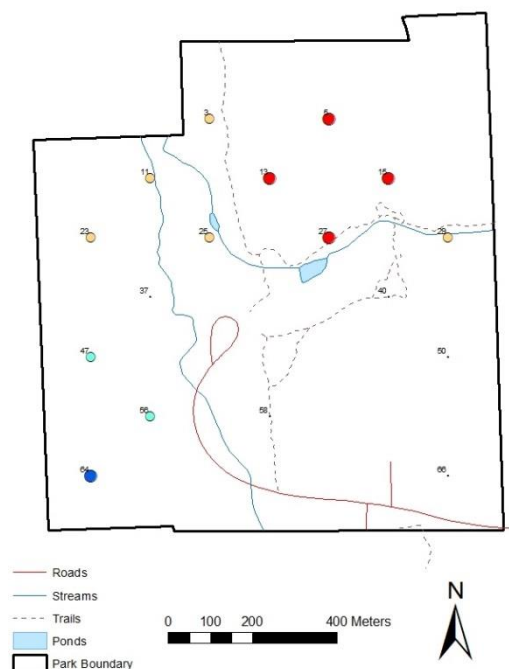


Figure 2. Concentrations of plots with high orange to higher red and low light blue to lower dark blue breeding bird species richness at Pipestone National Monument, Minnesota in 2016.

Table 1. Number of individuals encountered per plot visit, and proportion of plots out of 17 occupied by breeding bird species at Pipestone National Monument, Minnesota 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
American Crow	R	0.24	0.18
American Goldfinch	R	1.53	0.65
American Robin	R	0.76	0.41
Bank Swallow	SR	1.00	0.12
Baltimore Oriole	SR	0.06	0.06
Barn Swallow	SR	0.41	0.18
Belted Kingfisher	SR	0.12	0.12
Blue Jay	R	0.12	0.12
Bobolink	SR	1.53	0.65
Brown-headed Cowbird	SR	0.29	0.29
Canada Goose	SR	0.29	0.29
Clay-colored Sparrow	SR	0.88	0.65
Cerulean Warbler	T	--	--
Common Grackle	SR	1.24	0.71
Common Nighthawk	SR	0.06	0.06
Common Yellowthroat	SR	0.53	0.53
Dickcissel	SR	0.12	0.12
Eastern Kingbird	SR	0.18	0.12
Eastern Meadowlark	T	--	--
Eastern Phoebe	SR	0.06	0.06
European Starling	R	0.41	0.12
Field Sparrow	SR	0.24	0.24
Grasshopper Sparrow	SR	0.77	0.53
Gray Catbird	SR	0.06	0.06
Great Blue Heron	SR	0.24	0.12
House Wren	SR	0.18	0.18
Killdeer	SR	0.18	0.18

Mallard	R	0.29	0.24
Mourning Dove	R	0.47	0.24
Northern Flicker	R	0.06	0.06
Red-winged Blackbird	SR	1.00	0.59
Ring-neck Pheasant	R	1.18	0.82
Savannah Sparrow	SR	0.29	0.24
Sedge Wren	SR	0.35	0.29
Song Sparrow	R	0.53	0.47
Tree Swallow	SR	0.76	0.29
Turkey Vulture	SR	0.82	0.18
Wild Turkey	R	0.24	0.12
Wood Duck	SR	0.12	0.06
Yellow Warbler	SR	0.18	0.18

¹ Residency status: R = year around resident; SR = summer resident; T = transient (Janssen et al. 2003).

Bolded species names are those species considered of conservation concern for the Prairie Potholes Bird Conservation Region – U.S. portion only (U.S. Fish and Wildlife Service 2008).

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Citations:

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