



## MULTISCALE ASSOCIATIONS BETWEEN GREATER PRAIRIE-CHICKENS, GRASSLAND CONSERVATION RESERVE PROGRAM ENROLLMENTS, AND LANDSCAPE COMPOSITION IN NORTHWESTERN MINNESOTA

Kalysta Adkins<sup>1</sup>, Charlotte Roy, Robert Wright<sup>2</sup>

### ABSTRACT<sup>3</sup>

Both the abundance of greater prairie-chickens (*Tympanuchus cupido pinnatus*) and the area enrolled in Conservation Reserve Program (CRP) have undergone recent declines in northwestern Minnesota. Although wildlife conservation is a stated objective of the CRP, the impact of CRP grassland on greater prairie-chicken populations has not been quantified. To address that information need, we evaluated the association between greater-prairie chicken population indices (i.e., lek density (leks/km<sup>2</sup>) and number of males per lek) and CRP enrollments in the context of landscape structure and composition in northwestern Minnesota. We used data from the standardized annual prairie-chicken surveys coordinated by the Minnesota Department of Natural Resources and land cover data in 17 42-km<sup>2</sup> survey blocks during the period 2004-2016. We used a mixed-effect model and a layered approach in an information-theoretic framework at multiple spatial scales to identify covariates related to prairie-chicken abundance. At the landscape scale, the best-supported model for lek density included the amount of CRP grassland; state-, federal-, and The Nature Conservancy (TNC)-managed grasslands; CRP wetland; state-, federal-, and TNC-managed wetlands, “other” wetlands; the contiguity of grasslands; and the number of patches of grasslands and wetlands in each survey block each year. At the lek scale, the best-supported model to explain the number of males/lek included the amount of CRP grassland; state-, federal-, and TNC-managed grasslands; CRP wetland; state-, federal-, and TNC-managed wetlands; “other” wetlands; forests; developed areas; shrubs; and the contiguity of CRP grassland. These results suggest that increasing the quantity of grassland and wetland CRP contracts throughout the existing range of greater prairie-chickens in northwestern Minnesota and aggregating CRP grassland contracts in areas of known lek sites may increase greater prairie-chicken abundance.

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<sup>1</sup> Graduate Research Assistant, University of Minnesota, Department of Fisheries, Wildlife, and Conservation Biology, 2003 Upper Buford Circle, Ste. 135, St. Paul, MN 55108.

<sup>2</sup> MN.IT Services @ Department of Natural Resources, 5463-C West Broadway, Forest Lake, MN 55025

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