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Prairie strips provide wildlife habitat within the agricultural matrix

StoneFarm LynnBetts 2017 prairie strips



Prairie strips planted along the contour of a farmed hillside, Tama County, Iowa. Grassland bird nests in prairie strips are successful more often than those in less vegetatively-diverse areas of farms. (Photographer Lynn Betts)

Much of the Midwestern U.S. is dominated by row crop agriculture. Landscapes formerly covered by tallgrass prairie are now covered by huge fields of corn and soybeans with little grassland and even less native prairie. Modern industrialized farming practices produce food in amazing quantities and efficiencies, but this system of intensive cultivation leaves little habitat for wildlife.

The Prairie STRIPS project, conducted at Iowa State University and partner organizations, is a team of scientists, educators, and extension specialists studying the use of strips of native prairie as a farmland conservation practice. STRIPS researchers hypothesized that conversion of a small

percentage of row crop area to contour strips of diverse native prairie would yield disproportionately

large ecosystem services.

During an initial round of research conducted at [Neal Smith National Wildlife Refuge](#) near Prairie City, Iowa, [researchers found](#) that conversion of 10% of a crop field to prairie strips reduced total surface water runoff by 37%, reduced soil erosion by 20 times, and reduced phosphorous runoff by 4.3-fold without reducing per-acre yield. In addition to agronomic benefits, prairie strips were also shown to increase insect taxa richness by 2.6-fold, pollinator abundance 3.5-fold, native bird species richness 2.1-fold, and abundance of bird species of greatest conservation need by 2.1-fold.

Research on prairie strips as wildlife habitat has expanded to 18+ full-scale commercial farms in Iowa. Graduate students Jordan Giese and Julia Dale have found that farm fields with prairie strips have 2.46 the bird density as conventional crop fields, with red-winged blackbirds, dickcissels, common yellowthroats, and meadowlarks comprising around 90% of detections.

Research by graduate student Matt Stephenson has shown that red-winged blackbirds that nest in prairie strips fledge young 4.33 times more often than those who nest in low-diversity contour strips, dickcissel nests fledge young 4.52 times as often, and vesper sparrows fledge young 4.35 times as often, with no difference seen in fledging rates between prairie strips and larger blocks of restored prairie. Furthermore, dickcissel nest density was 1.76 times higher in prairie strips than in low-diversity contour strips and vesper sparrow nest density was 3.07 times higher. Nest density for both dickcissels and vesper sparrows was higher in prairie strips than in wider blocks of restored prairie.



Red-winged blackbird nest in *Monarda*. Many grassland-nesting birds require stiff-stemmed vegetation to support their nests. Prairie strips offer nesting birds many high-quality nest-building locations. (Photographer Matt Stephenson)

Data collection and analysis for these projects and other prairie strips wildlife studies are still ongoing, but preliminary results shows that prairie strips are being used successfully as breeding habitat by grassland nesting birds. Prairie strips are an appropriate conservation practice for 9.6 million acres of crop ground in Iowa alone. If widely adopted, prairie strips could provide a significant new resource of breeding habitat for a guild of birds whose populations are declining across much of North America.

Resources

The Priarie STRIPS Project

Schulte, L. A., Niemi, J., Helmers, M. J., Liebman, M., Arbuckle, J. G., James, D. E., Kolka, R. K., O'Neal, M. E., Tomer, M. D., Tyndall, J. C., Asbjornsen, H., Drobney, P., Neal, J., Van Ryswyk, G., and Witte, C. 2017. [Prairie strips improve biodiversity and the delivery of multiple ecosystem services from corn–soybean croplands](#). *Proceedings of the National Academy of Sciences* 114(42): 11247-11252

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Matt Stephenson is a Ph. D student at Iowa State University in the Landscape Ecology and Sustainable Ecosystem Management Laboratory studying under Dr. Lisa Schulte Moore and Dr. Bob Klaver. He studies wildlife in agricultural landscapes focusing on the habitat qualities of prairie strips. Areas of study include nest survival and density, reptile, amphibian, and small mammal occupancy using cover board surveys, and meso-mammal occupancy using trail camera surveys. Matt received his M.S. from Iowa State University.

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