LEOPOLD CENTER
FOR SUSTAINABLE AGRICULTURE

Whiterock Conservancy baseline data project

Abstract: Baseline surveys of pasture diversity and bird populations were conducted and will be used to help inform conservation-based land management decisions at the Whiterock Conservancy in southwest Iowa.

Question & Answer

Q: Can you have both beef and bobolinks on the same acres?

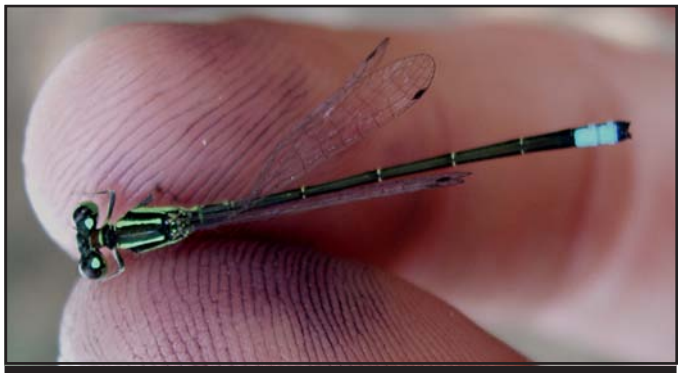
A: As Whiterock Conservancy integrates "prairie pasture" plantings and grazing/prescribed burning management tools into the current cool-season grass pasture matrix, it is hypothesized that bobolink and other grassland bird nesting frequency will increase.

Background

The Whiterock Conservancy (WRC) occupies 4,300 acres southeast of Coon Rapids. The Leopold Center is one of three groups charged with conducting research and demonstration projects in conjunction with Whiterock. The goals of this project were to gain a better understanding of the current floral and faunal conditions within the 750 acres of pasture with varying management history, and to document the abundance and diversity of bird populations within the Conservancy's core land holdings. The baseline data obtained will help Conservancy administrators detect changes within the natural resource base as land management techniques change over time, plan for conservation management in working lands, and enhance the Iowa Department of Natural Resources (IDNR) comprehensive wildlife "species of concern" knowledge base.

Approach and methods

The first surveys were designed in 2005 and focused on migratory bird cycles in major habitat areas of WRC. The approach was designed to use comparable techniques to the more sophisticated IDNR state wildlife monitoring plan that was under construction at that time. Since 2006, a change from continuous to rotational grazing prompted the need for Whiterock staff and other scientific investigators to better assess the unique characteristics and populations within this swath of the Middle Raccoon River watershed. The study for this project had two components: one collected baseline data from four plots within 750 acres of pasture that has been grazed under different management regimes, and the other conducted bird counts from within 54 habitat points throughout the entirety of Whiterock Conservancy's core river valley lands.



Eastern Forktail

Principal Investigator:
Elizabeth Hill
Whiterock Conservancy
Coon Rapids

Co-investigators:
Tom Rosburg
Drake University
Des Moines

Kay Neumann
Saving Our Avian Resources
Dedham

Bill Clark
Ecology, Evolution, and Organismal Biology
Iowa State University

Budget:
$10,717 for year one

Eastern Tailed-blue

The monitoring protocol used to assess the pasture species diversity followed the Multiple Species Inventory and Monitoring Program, a long-term monitoring protocol from the Iowa Department of Natural Resources. The bird survey protocol followed a point count method at randomly placed points that were subdivided by three general habitat descriptions, including prairie, woodland, and agriculturally disturbed.

Results and discussion

The large majority of Iowa's grasslands are managed for intensive agricultural production rather than in accord with the habitat requirements of native vertebrates, many of which are grassland obligates. Twenty-five percent of those listed as the Iowa Department of Natural Resources Species of Greatest Conservation Need (SGCN) are grassland obligates, and many of these populations are not just lacking habitat but declining precipitously. From point-count surveys undertaken during this project, it was determined that 12 grassland SGCN are present on Whiterock properties. Whiterock Conservancy's long-term goal is to successfully harbor nesting populations of grassland birds (preferably SGCN) within a pasture-based livestock production system. The bobolink, a grassland obligate, was chosen by Whiterock Conservancy as a representative grassland bird species because of its relative conservatism towards specific habitats within the avian grassland obligate guild. While Whiterock's question was whether domestic cattle and bobolinks could grow alongside one another, the long-term goal is to harbor populations of both livestock and conservative grassland species.

Snapping turtle

The assessment of pasture diversity was conducted on four plots within pasture areas managed under different practices. Grazing Plot 1, the only purely grass pasture plot in the study, yielded 45 different vegetative species, four reptile and amphibian species, eight butterfly species, seven dragon and damselfly species, and four mammalian species. Cool-season grasses dominated, along with some non-grass species of low conservation value. This plot was typical of pastures that have a history of intensive grazing with long intervals of continuous grazing pressure.

Grazing Plot 2 also has experienced prolonged and extensive grazing management, but contains some areas of savanna-like and denser woodland. This plot contained 71 vegetative species, four reptile and amphibian species, 17 different butterflies, 13 dragon and damselfly species, and seven mammalian species. The "higher" species diversity observed in this plot is likely the result of the differing habitats.

Grazing Plot 3 is within a pasture that was subdivided for enhanced rotational grazing in spring 2006 and included a section of upland mixed forest that had been a cattle enclosure. Species diversity was richer in this plot, probably because of the inclusion of the enclosure area.

Grazing Plot 4 is within a historically intermittently grazed upland oak forest. It featured relatively high species diversity, reflecting the historical grazing regimes and the use of several habitat management techniques such as prescribed burning. Plot 4 was home to 128 different vegetative species, displaying even more diversity than the other plots.

Of the five long-term monitoring plots developed at Whiterock Conservancy, four of these plots were dominated by habitat suitable for bobolink nesting (one of the plots was centered in a mixed-oak forest, habitat not suitable for nesting grassland birds). In three of the four grassland plots, nesting bobolinks were observed during point-count surveys in 2006. After the vegetation data was collected, it became clear bobolinks were not present in one of the plots because the sward heights of the herbaceous layer were much shorter than the other plots. This is in consensus with bobolink nesting ecology literature. Cool-season grass sward heights necessary for bobolink nesting can be achieved at Whiterock Conservancy with longer periods of rest between grazing passes through paddocks, which are being implemented in more of the grazing acres in 2008 than in 2007. As Whiterock Conservancy integrates "prairie pasture" plantings and grazing/prescribed burning management tools into the current cool-season grass pasture matrix, it is hypothesized that bobolink and other grassland bird nesting frequency will increase.

Bird survey results demonstrated the effects of the varying habitats present within the Conservancy. From interior woodland bird species such as the wood thrush to the common prairie species, the dickcissel, the bird assemblage documented at Whiterock reflects the diverse range of habitats, habitat conditions, varying historical management, and large geographic extent of the Whiterock land base.

Conclusions

The data collected will become part of the inventories of all functional groups of species at the Whiterock Conservancy. A new GIS database is just one repository of the information collected. The data also will enhance the staff's ability to understand the floral and faunal communities found within the Conservancy's grazed pastures, and make better informed decisions about the rotational grazing program.

Impact of results

The data will be incorporated into the habitat restoration and farm management decision- making process related to future changes in land management techniques at Whiterock Conservancy. More importantly, these data will help the Whiterock Conservancy staff monitor changes at the species diversity level resulting from alterations in management or usage. The bird counts have sparked

Juniper Hairstreak

interest from members of the birding community who visit Whiterock to watch the warbler migration, hear the whip-poor-wills, or see the shorebirds work in the wetland and the river.

Elizabeth Hill met with Monitoring and Research Biologists Karen Kinkead and Stephanie Shepherd from the IDNR Wildlife Diversity Program in February 2007 to share data from long-term monitoring plots at Whiterock Conservancy. All of the data from Whiterock's plots were integrated into the IDNR database for long-term monitoring. IDNR staff explained that while protocol used by Whiterock Conservancy was consistent with IDNR's protocol in the Iowa Multiple Species Inventory and Monitoring Technical Manual (MSIM), the staffing limitations of the IDNR program would not allow for their continued presence to oversee Ms. Hill's ongoing monitoring of these sites at Whiterock Conservancy. Small staff

Leopard frog

Buckeye

Brown snake

All photos credited to Elizabeth Hill of Whiterock Conservancy.

numbers would keep the expanded monitoring program limited to the southern Iowa plots that the IDNR MSIM group developed and on which all baseline data was collected. It was decided that Ms. Hill would continue to monitor the long-term plots and that should IDNR have time and spare staff in the future, oversight would be reinstated and data from Whiterock Conservancy's plots could be integrated into the MSIM program at INDR. The continued research at Whiterock Conservancy will facilitate long-term monitoring of the rotational grazing program and multiple-use land management as well as the ecological restoration process.

Baseline collection of inventories from the rotational grazing plots produced information that was pertinent to the long-term planning and transformation of the rotational grazing process. Whiterock Conservancy determined that conservation-based rotational grazing was limited by water access and fencing issues, and that nesting populations of some grassland and wetland obligates were imperiled by the lack of fencing around riparian areas and several ponds.

Education and outreach

Information from the surveys was included in the preparation of a visitor's brochure/trail map of the Whiterock Conservancy and the Whiterock Resort outdoor recreation area.

Leveraged funds

Whiterock Conservancy is currently working with the Guthrie County Natural Resources Conservation Service to implement an $86,000 EQIP project that includes funding for fencing of riparian areas, watering facilities, brush removal, timber-stand improvement, and stream crossing. This project will be implemented on four of the five farms where long-term plots are located, and will further facilitate the conservation-based grazing system that Whiterock and Hat Ranch/Willow Creek Ranch are developing.

For more information, contact Tolif Hunt, Whiterock Conservancy, 1390 Highway 141, Coon Rapids, Iowa 50058; (712) 684-2697 x111, e-mail tolif@whiterockconservancy.org