

Bird Use of Rotationally Grazed Pastures*

- A part of Leopold Center Project #2003-E6: *Integrating hunting and grazing – a southern Iowa investigation into management issues, Part I.*

James L. Pease, Ph.D.
Dept. of Natural Resource Ecology and Management
Iowa State University

Introduction

Little is known about the use of rotationally grazed pastures by wild bird species, particularly in Midwestern landscapes. What is known is that continuously grazed pastures tend to have low bird production and use due to lack of sufficient vegetative structure and to trampling of ground nests by cattle. Long-term rotational grazing (where livestock are shifted between several pastures every few days or weeks, as opposed to intensive rotational grazing where they are shifted every day) has the potential to produce high-quality cattle grazing and grasslands for wildlife. Early in the grazing season, farmers could utilize cool-season grass and forb (CSG) pastures for rotational grazing, leaving warm-season grass and forb (WSG) pastures to produce wildlife, especially birds. At the end of June or early July, cattle could be shifted to the WSG pastures for rotational grazing. Not only does this allow the WSGs to grow to excellent grazing height, it also allows ground-nesting birds to potentially complete a nesting cycle. Further, as CSGs are left to grow (although slowly) until fall, late-nesting birds and re-nesters may utilize the CSGs, as well. Depending upon the length of time between rotations, early nesters may also use the CSGs early in the nesting season.

This project investigated bird use of rotationally grazed pastures, using the CSG/WSG regime described above.

Study Site

The ISU McNay Farm has CSG and WSG pastures already established. There are 12 CSG pastures and 6 WSG pastures, each about 3 acres (1+ hectare) in size and each divided by permanent, barbed 5-wire fence. In addition, two 8- to 9-acre pastures exist adjacent to the CSGs that also contain cool season grasses and forbs. These have occasionally been hayed and, depending upon needs, can be subdivided into 3-acre pastures by electric fencing. Additionally, woody vegetation is adjacent to the entire south boundary fence.

The farm has two cow-calf herds of 22 to 24 cows each that graze those pastures. The herd manager grazed the cattle on the CSGs through the end of June. The herd manager was not given specific instructions on how to rotate the cows, only to "do as he would normally do." Pasture changes were dictated by visual inspections of pasture conditions and depended upon weather and resulting plant growth. Pastures were

never allowed to be grazed down to "carpet" level; rather, cattle were allowed to remove the most nutritious leafy matter and are then switched to another pasture. While we recorded when the cattle were moved, we felt that a strict regime would not simulate actual farm conditions very accurately.

Methodology

We gathered 3 types of information:

- observation of non-game and game birds using the CSGs and WSGs during the prime nesting season of mid-May through the end of June;
- vegetation height in each of the pastures on a week-by-week basis; and
- actual nests of non-game and game birds in the CSGs and WSGs.

Bird use:

Two transects were established in each pasture on north/south axes. They were established approximately 25 meters from each N-S fence line, allowing observation of birds approximately 25 meters on either side of the transect. They were walked 5 days per week, just after dawn each day, the peak time of most bird activity. Birds observed on those transect walks were recorded, including numbers of each species and sex (if able to be determined). Observation was done by trained student assistants using 8 X 42 binoculars and field guides, as needed. Song and call information was used in locating birds, but only direct observation of birds was recorded. Only birds using the pasture or adjacent fence line were recorded as present. Field assistants made efforts to eliminate duplication.

Vegetation height:

Researchers measured the height of vegetation in 10 randomly selected plots of each pasture twice each week through the end of June. Using the established observation transects, a random numbers table was used to determine the number of steps north or south on the transect and the number of steps off the transect (even numbers to the right, odd numbers to the left) to determine the plots within each pasture. A plot was a .5 m diameter circle around the point determined. The maximum height of vegetation within that plot was recorded.

Nest searches:

Two nest searches of the pastures were made. Researchers used a drag method to flush birds from nests which attempted to cover 100 percent of each pasture. Flags marked nearby locations of nests so that their fate could be determined (i.e. hatched, predated, abandoned, etc.). One such search was conducted near the end of May and a second near the end of June.

Results and discussion

Some 36 species of birds were identified using these pastures. An additional 6 species used adjacent woody shrubs and trees. Preliminary analysis of the results indicates that both CSGs and WSGs that were unused by cattle were attractive to grassland birds. CSGs, in fact, tended to attract the same number of species but greater numbers of birds than the WSG pastures. When cattle were rotated into the pastures, species numbers and numbers of individuals dropped rapidly. Both trampling disturbance and change in plant height and structure accounted for this abandonment. When cattle were rotated to other pastures, CSGs tended to recover rather quickly, since they were not grazed down too far, and birds did recolonize the recovering pastures. Plant growth measurements showed that WSG pastures reached greater mean heights (120 cm) by the end of the sampling period and were continuing to grow while CSG pasture growth had leveled off or declined. Nest searches, while inconclusive, found some nests of game and non-game bird species in both CSGs and WSGs but only in those not in cattle rotation.

It appears that a longer term pasture rotational scheme that leaves some pastures ungrazed during the important ground bird nesting season of May and June would make grazing compatible with bird nesting in southern Iowa. Warm season grass and forb pastures, if carefully managed, can provide important nesting cover for birds during the growing season and valuable forage for cattle later in the summer. Cool season grass and forb pastures provide similar value to birds but only if grazing can be delayed until late June or early July. Variations in weather, plant species composition, and management are important variables that demand further investigation.