

# Summary of 2010 Bird Surveys

Grant-Kohrs Ranch National Park:  
Stuart and Taylor Field Sites



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## **ABSTRACT**

This report describes the first year of point-count surveys established in hayfields at Grant-Kohrs Ranch National Historic Site (GRKO). This study aims to provide baseline species abundance data during the breeding season, to better inform Best Management Practices for hayfields at GRKO. Untimely mowing of hayfields is often cited for negatively affecting breeding success of grassland birds. A total of 496 birds were detected, representing 47 species during three point-counts in 2010. The most abundant species were Savannah Sparrows and Bobolink. No nests were located during casual observations, but juvenile birds were observed during the final visit to GRKO on July 9<sup>th</sup>. Hay harvest began 15<sup>th</sup> July. Recommendations follow multiple sources for continuation of late-July hay harvest of GRKO fields. Future surveys and nest monitoring will bolster understanding of species use and breeding chronology in GRKO hayfields.

## **INTRODUCTION**

The apparent decline of many grassland species is often attributed to habitat loss, conversion, and fragmentation, and management practices (Brennan and Kuvlesky 2005, Jones et al. 2010, NABCI 2009). However, some agricultural habitats, including hayfields, alfalfa, and other forage crops, may provide suitable habitat for some grassland species in the absence of native grasslands (Bollinger et al 1990). The use of agricultural habitats by grassland species may also help counter the declines associated with loss of native habitat (Herkert et al. 1996), although agricultural management practices associated with mowing, burning, and grazing may negatively impact breeding abundance and success (Frawley and Best 1991, Bollinger et al. 1990, Herkert et al. 1996).

Grant-Kohrs Ranch National Historic Site (GRKO) is a working cattle ranch with an explicit commitment to preserve both its landscape and natural resources. This objective includes the management of resources to benefit wildlife, people, and livestock (FPM 2008).

GRKO manages approximately 1,325 acres, comprised of irrigated hayfields/pastures and riparian and grassland habitat. Approximately 485 acres is devoted to forage crop production. These sites potentially offer a significant area for breeding grassland species. While the purpose

of GRKO is to be a working cattle ranch that provides an understanding of the frontier cattle era of the Nation's history, natural resources are managed through practices that not only support this purpose but also benefit the wild flora and fauna. This goal is implicit on all National Park System lands (Sustainable Ranching 2008).

This study aims to provide information for the development of best management practices (BMP's) in the Pasture / Hayfield component landscape at GRKO in areas dedicated to both traditional ranching purposes and preservation of habitat. More specifically, the objective of this project is to identify bird species, via point-count surveys, that could be impacted by annual hay harvest at the Stuart, Taylor, and West fields. Each year, these fields undergo a summer cut. The Stuart field is cut according to historical practices, using horses and other traditional equipment, typically in mid-July. Taylor and West fields are cut using more conventional methods. The practice occurs during the tail end of the avian breeding season. Mowing hay during this sensitive period can often lead to nest failure or nestling mortality (Bollinger 1990, Dale 1997, Frawley 1991, Perlut 2006). However, some species, like the Bobolink (*Dolichonyx oryzivorus*) often respond positively to field mowing, burning, and grazing if these practices occur before or after the breeding season (Dechant et al. 2003).

This study provides baseline information on abundance and avian richness in GRKO fields that are to be harvested near the passerine breeding season. This study will help to measure and reduce potential impacts to grassland species.

This report summarizes the findings in the first year (2010) of this project and provides guidelines for BMP implementation and recommendations for future study.

## **METHODS**

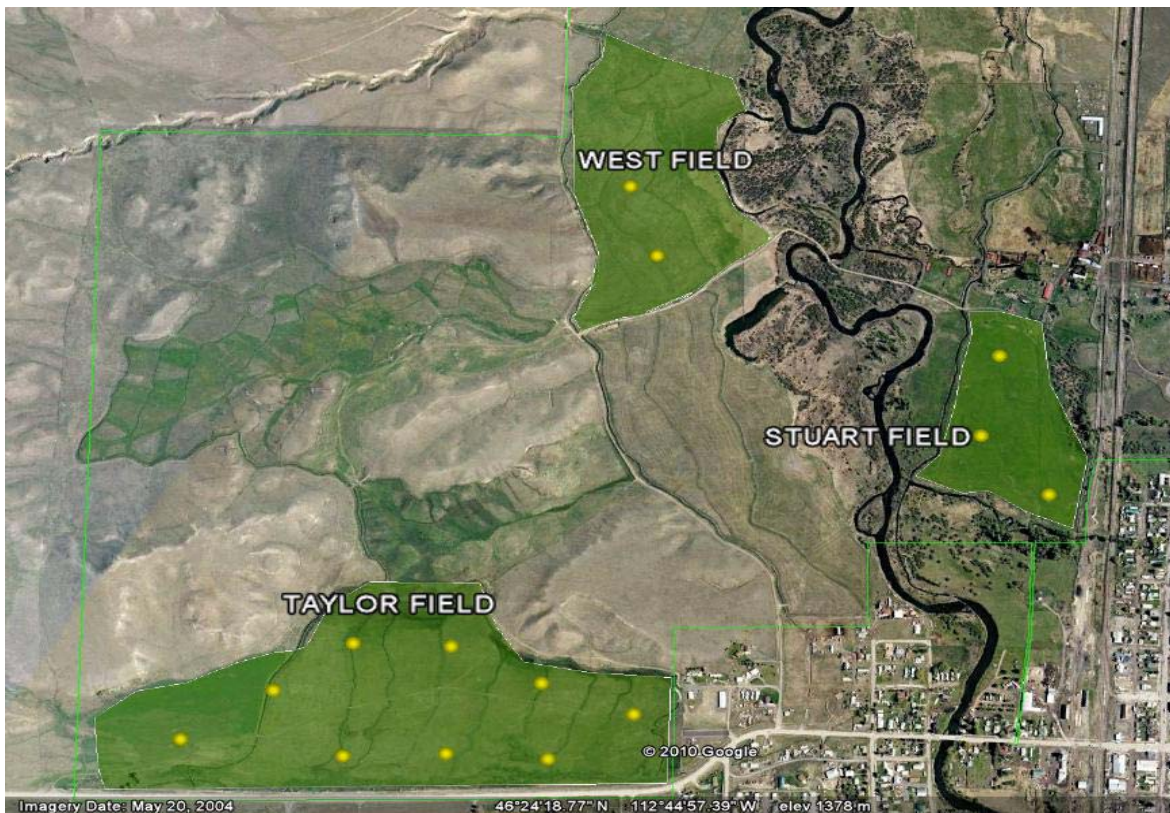
Surveys occurred from mid-May to mid-July, according to standard protocols established by the Avian Science Center ([http://avianscience.dbs.umt.edu/projects/habitat\\_relationships.php](http://avianscience.dbs.umt.edu/projects/habitat_relationships.php)).

They entailed ten-minute point counts at Stuart, Taylor, and West fields during the peak of the passerine breeding season. Counts began no earlier than 15 minutes after sunrise and were completed by 10:30 am MST. All birds once detected via visual and auditory cues, were recorded by species, distance from the observer, and abundance. Attempts to locate active nests

were limited to searches while walking between survey points and to informal observations of these areas after the normal survey periods.

### *Site Selection*

Selection of survey areas was coordinated with GRKO park managers to correspond to the specific timing of hay mowing and other agricultural practice. Due to the size constraints of the study areas, randomization of survey points was not practical. Survey points were selected arbitrarily on an aerial photograph prior to the start of surveying and spaced 200m apart. Stuart field contained 3 points situated in the middle of the field to minimize counting birds using the riparian habitat at the field margins. Taylor field contained 9 survey points roughly following the perimeter of the field and situated roughly 100 m from the field boundary. In addition, 2 survey points in West field were established and surveyed in 2010, but time constraints precluded more extensive survey coverage. See Figure 1 for more detailed point locations.



**Figure 1. Map of study area and survey point locations at Grant-Kohrs Ranch National Historic Site (2010)**

## SUMMARY OF FINDINGS

A total of 14 survey points were surveyed on 18 May, 18 June, and 09 July 2010. A total of 496 birds were detected, representing 47 species. The species and unadjusted detection totals are shown in Table 1. Also listed are designations for Partners in Flight (PIF) “priority species” and Montana Fish, Wildlife & Parks (MFWP) “species of concern” in U.S. Nine different species with PIF designations and two with MFWP designations were detected. The Willow Flycatcher (*Epidonax trailii*) is designated as “level II” priority species. However, this species is likely a detection more associated with adjacent riparian habitat than the fields of interest. All other PIF species with designation are “level III” priority species, which signifies lowest level of conservation concern, they include: Bobolink (*Dolichonyx oryzivorus*), Red-winged Blackbird (*Agelaius phoeniceus*), Song Sparrow (*Melospiza melodia*), Chipping Sparrow (*Spizella passerina*), Swainson’s Hawk (*Buteo swainsonii*), Brewer’s Blackbird (*Agelaius phoeniceus*), Lark Sparrow (*Chondestes grammacus*), and Northern Harrier (*Circus cyaneus*).

The Bobolink, the only species to carry both PIF and MFWP designations, is a species of interest and is especially relevant to GRKO management. MFWP lists the Bobolink as “potentially at risk because of limited and/or declining numbers, range and/or habitat, even though it may be abundant in some areas” (MFWP, 2010). Bobolinks commonly use agricultural fields and express high site fidelity, particularly in areas associated with previous successful breeding (Fajardo et al. 2009). Bobolinks were the second most abundant bird during 2010 surveys, comprising 11% of total detections (n=496). Although no nests were located during casual post-survey observations, juvenile Bobolinks were detected in both the Stuart and Taylor fields during the final survey on 09 July. The presence of juveniles is not unequivocal evidence of local breeding, but does lend strong support to the possibility that it occurred at the site. This also suggests that at least a portion of Bobolink nest were fledged before the annual hay cutting.

**Table 1. Total abundance of bird species detected in fixed radius in 2010.**

| SPECIES   | ABUNDANCE <sup>1</sup> | PIF PRIORITY <sup>2</sup> | MT SOC <sup>3</sup> |
|---|------------------------|---------------------------|---------------------|
| Savannah Sparrow ( <i>Passerculus sandwichensis</i> ) | 156                    |                           |                     |
| Bobolink ( <i>Dolichonyx oryzivorus</i> )             | 57                     | III                       | S3B                 |
| Western Meadowlark ( <i>Sturnella neglecta</i> )      | 43                     |                           |                     |

|   |    |     |     |
|---|----|-----|-----|
| Brown-headed Cowbird ( <i>Molothrus ater</i> )                      | 29 |     |     |
| Red-winged Blackbird ( <i>Agelaius phoeniceus</i> )                 | 28 | III |     |
| Vesper Sparrow ( <i>Pooecetes gramineus</i> )                       | 28 |     |     |
| American Robin ( <i>Turdus migratorius</i> )                        | 14 |     |     |
| Wilson's Snipe ( <i>Gallinago delicata</i> )                        | 14 |     |     |
| American Crow ( <i>Corvus brachyrhynchos</i> )                      | 12 |     |     |
| Killdeer ( <i>Charadrius vociferus</i> )                            | 12 |     |     |
| Black-billed Magpie ( <i>Pica hudsonia</i> )                        | 11 |     |     |
| Song Sparrow ( <i>Melospiza melodia</i> )                           | 9  | III |     |
| European Starling ( <i>Sturnis vulgaris</i> )                       | 6  |     |     |
| Tree Swallow ( <i>Tachycineta bicolor</i> )                         | 5  |     |     |
| Eastern Kingbird ( <i>Tyrannus tyrannus</i> )                       | 4  |     |     |
| Sandhill Crane ( <i>Grus Canadensis</i> )                           | 4  |     |     |
| Chipping Sparrow ( <i>Spizella passerina</i> )                      | 3  | III |     |
| Common Grackle ( <i>Quiscalus quiscula</i> )                        | 3  |     |     |
| Dark-eyed Junco ( <i>Junco hyemalis</i> )                           | 3  |     |     |
| Horned Lark ( <i>Eremophila alpestris</i> )                         | 3  |     |     |
| Northern Rough-winged Swallow ( <i>Stelgidopteryx serripennis</i> ) | 3  |     |     |
| Red-tailed Hawk ( <i>Buteo jamaicensis</i> )                        | 3  |     |     |
| Western Wood Pewee ( <i>Contopus sordidulus</i> )                   | 3  |     |     |
| Willow Flycatcher ( <i>Empidonax trailii</i> )                      | 3  | II  |     |
| Yellow Warbler ( <i>Dendroica petechia</i> )                        | 3  |     |     |
| Alder Flycatcher ( <i>Empidonax alnorum</i> )                       | 2  |     | 3SB |
| American Kestrel ( <i>Falco sparverius</i> )                        | 2  |     |     |
| Barn Swallow ( <i>Hirundo rustica</i> )                             | 2  |     |     |
| Black-capped Chickadee ( <i>Poecile atricapillus</i> )              | 2  |     |     |
| House Wren ( <i>Troglodytes aedon</i> )                             | 2  |     |     |
| Northern Flicker ( <i>Colaptes auratus</i> )                        | 2  |     |     |
| Rock Dove ( <i>Columba livia</i> )                                  | 2  |     |     |
| Swainson's Hawk ( <i>Buteo swainsonii</i> )                         | 2  | III |     |
| Unidentified Bird   | 2  |     |     |
| Unidentified Swallow  | 2  |     |     |
| Western Bluebird ( <i>Sialia Mexicana</i> )                         | 2  |     |     |
| Brewer's Blackbird ( <i>Euphagus cyanocephalus</i> )                | 1  | III |     |
| Canada Goose ( <i>Branta Canadensis</i> )                           | 1  |     |     |
| Common Raven ( <i>Corvus corax</i> )                                | 1  |     |     |
| Common Yellowthroat ( <i>Geothlypis trichas</i> )                   | 1  |     |     |
| House Finch ( <i>Carpodacus mexicanus</i> )                         | 1  |     |     |
| House Sparrow ( <i>Passer domesticus</i> )                          | 1  |     |     |
| Lark Sparrow ( <i>Chondestes grammacus</i> )                        | 1  | III |     |
| Mallard ( <i>Anas platyrhynchos</i> )                               | 1  |     |     |
| Northern Harrier ( <i>Circus cyaneus</i> )                          | 1  | III |     |

|  |   |  |  |
|--|---|--|--|
| Osprey ( <i>Pandion haliaetus</i> )                      | 1 |  |  |
| Unidentified Empid. Flycatcher ( <i>Empidonax spp.</i> ) | 1 |  |  |
| Unidentified Falcon ( <i>Falco spp.</i> )                | 1 |  |  |
| Unidentified Gull ( <i>Larus spp.</i> )                  | 1 |  |  |
| White-crowned Sparrow ( <i>Zonotrichia leucophrys</i> )  | 1 |  |  |
| Western Kingbird ( <i>Tyrannus verticalis</i> )          | 1 |  |  |

<sup>1</sup>Abundance was calculated as the maximum number of birds detected across 3 surveys, summed across points and site

<sup>2</sup>Partners in Flight (PIF) Priority levels I-III, with I being species of greatest conservation concern based on threats, population declines, and proportion of range occurring in Montana (Montana Partners in Flight 2000).

<sup>3</sup>Montana Fish, Wildlife, & Parks designation for state population

## DISCUSSION AND RECOMMENDATIONS

This study, in its first year, provides baseline data on bird species using hayfields at GRKO during the breeding season. This information can be used to help inform management decisions and agricultural practices on these fields. Trend data for many grassland species, including the Bobolink and the Western Meadowlark, have shown range-wide declines over the last 50 years (NACBL 2009). The Bobolink exemplifies the ability of some grassland species to successfully utilize agricultural habitats in the absence of native grasslands, to the point of even preferring “old” hay fields with a high grass to legume ratio (Bobolink, 2010, Dale et al 1997). Nesting chronology for this species is particularly important to consider: the Bobolink regularly initiates nesting later than other grassland passerines with average start dates of nesting period that can be two weeks later than several other grassland songbirds, including the Savannah Sparrow (*Passerculus sandwichensis*) (Johnson et al. 2004). Therefore, the end of the Bobolink nesting period may be well suited as an indicator of nest completion for other species. Although, using a single species to inform management decisions would only be recommended if these fields continue to be cut once a year, as is the current practice at GRKO. Timing of hay cutting with respect to breeding phenology of grassland passerines is one management consideration to be addressed through BMP’s for the GRKO hayfields.

This year the annual hay harvest began on 15 July in Stuart field. The relatively delayed hay cutting date of GRKO hayfields adheres to multiple recommendations for cutting on or after the 15th of July (Bollinger et al 1990, Dale et al 1997, Dechant et al 2003, Fajardo 2009, Johnson



2004). I recommend that mowing of hayfields at GRKO continue to take place in the second half of July or at the latest possible date to minimize negative impacts to nests and nestlings in these fields.

Further, it is recommended that monitoring for grassland songbirds continues in the future. It would be informative to conduct a more intensive study of breeding birds in agricultural fields at GRKO to inform timing of management applications to these areas and to ensure appropriate and best management practices are in use.

## **OUTREACH**

I was joined by members of the Youth Conservation Corps (YCC) and several GRKO employees for an afternoon workshop on avian point-counts. YCC is a program which offers high school students the opportunity to work in a National Park and gain hands-on experience in natural resource management and conservation. After demonstrating the protocols used during this project, we discussed many aspects of ranch management and the importance of monitoring and research in developing best management practices.

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