2015

A summary of 2015 breeding bird surveys of selected Rainwater Basin wetlands

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NEBRASKA GAME PARKS

Nongame Bird Program

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INTRODUCTION

The Rainwater Basin is a landscape in south-central Nebraska (Figure 1) which is considered a key migratory stopover site, primarily in spring, for waterfowl and shorebirds in the Midcontinent of North America (Gersib 1989, 1992, LaGrange 2005). Due to this importance, recent studies have focused primarily on these bird groups during spring (Jorgensen 2004, Vrtiska and Sullivan 2009, Webb et al. 2010a, 2010b, Tidwell et al. 2013, Gillespie 2015). Less attention has been directed toward breeding birds that use Rainwater Basin wetlands. In fact, published information about breeding birds using Rainwater Basin wetlands is notably sparse and is limited to notable observations (Jorgensen 1994, 2003, Drahota 2003, Jorgensen and Dunbar 2005, Jorgensen 2012) and two studies focused on waterfowl (Evans and Wolfe 1967, Harding 1986) and one on Red-winged Blackbirds (*Agelaius phoeniceus*; Post van der burg 2005).

A key reason why less attention has been directed toward Rainwater Basin wetland breeding birds compared to spring migrants is because breeding bird use and diversity is unexceptional in the region. Rainwater Basin wetlands are dynamic since their principal source of water is precipitation run-off. Generally, Rainwater Basin wetlands collect water from snowmelt in late winter/early spring and increased precipitation during spring and early summer. Decreasing precipitation and increased evaporation and transpiration often results in decreasing water levels during the summer breeding season. It is not unusual for wetlands to dry completely during the summer. Thus, Rainwater Basin wetlands have short hydro-periods (LaGrange 2005). Rainwater Basin wetlands are also small and shallow compared to some other wetland types. The absence of relatively large, deep wetlands with relatively stable water levels likely limits the numbers of common bird species and overall diversity regularly nesting in Rainwater Basin wetlands.

In addition to natural hydrology, essentially all Rainwater Basin wetlands have been altered by humans (LaGrange et al. 2011). Many wetlands have accumulated culturally-accelerated sediment in the wetland footprint due to increased sediment run-off from anthropogenic changes to surrounding watersheds (LaGrange et al. 2011). Increased sedimentation negatively affects wetlands, reducing water depth and hydroperiod (LaGrange et al. 2011). Rainwater Basins have also been colonized by invasive plants, such as reed canary grass (*Phalaris arundinacea*; LaGrange 2005, LaGrange et al. 2011). Collectively, these human alterations have also likely negatively affected the number and diversity of breeding birds using Rainwater Basin wetlands. For example, evidence suggest a handful of species were either regular breeders in the Rainwater Basin in the late 1800s and early 1900s, but they are either extirpated (e.g., Black Tern; *Chlidonias niger*) or breed irregularly (e.g. Least Bittern; *Ixobrychus exilis*).

Even though natural and altered hydrology currently limits diversity and numbers of breeding species in Rainwater Basin wetlands, occasional periods of increased precipitation may create conditions suitable for increased breeding bird use. Such a period occurred during 2015 when above average precipitation fell over much of the eastern portion of the region in May and June. The purpose of this report is to summarize breeding bird observations recorded during opportunistic surveys conducted in July and

August 2015 and to place these observations in context with each species historical and current breeding status.

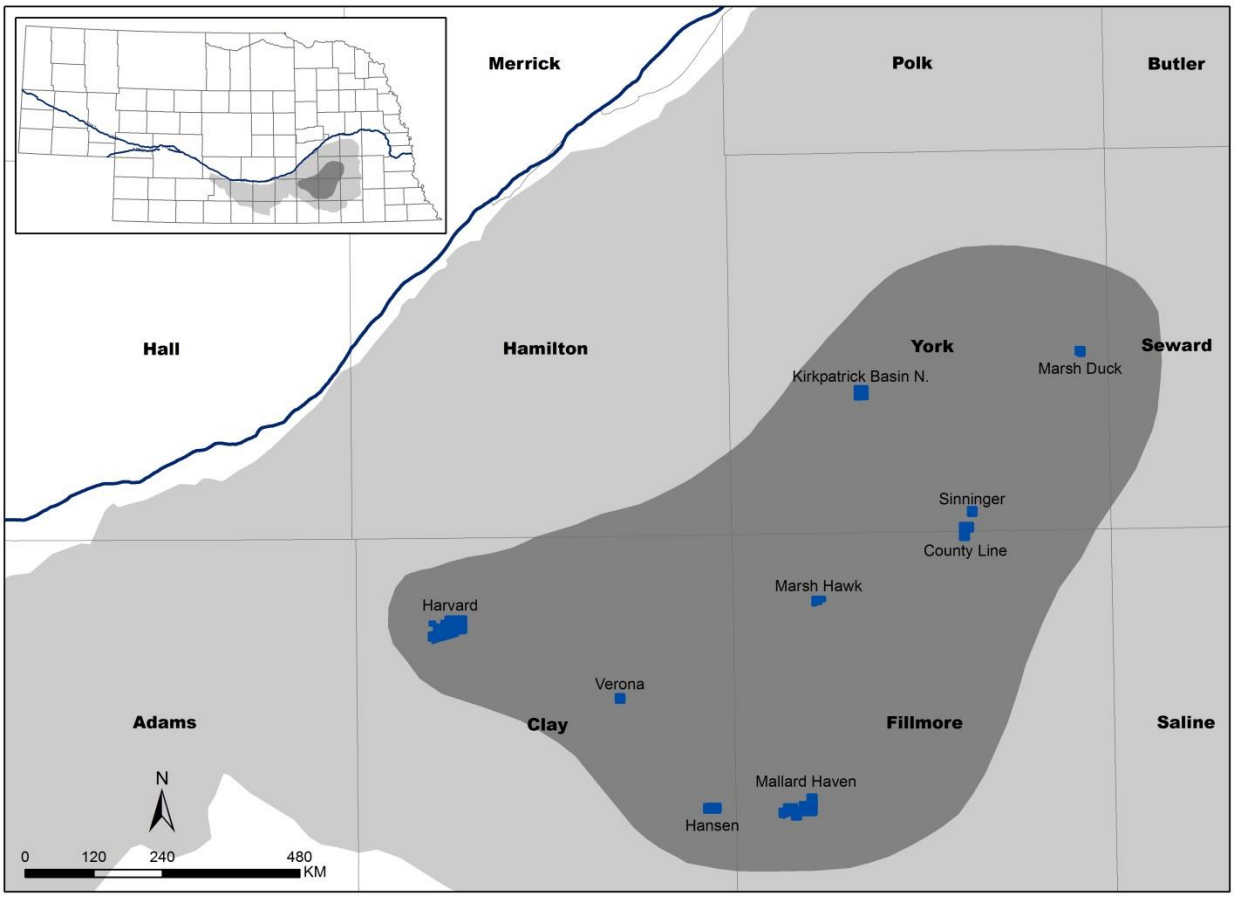

Figure 1. Location of the Rainwater Basin (light gray), the focus area of 2015 breeding bird surveys (dark gray) and location of individual wetland sites surveyed in 2015 (blue).

METHODS

During June 2015, heavy rain fell over much of the eastern portion of the Rainwater Basin (Figure 2). For example, Clay Center, Clay County, totaled 8.5 inches during June which is 102% above the average June total precipitation for this location (U.S. Climate Data 2015). As a result of the amount and intensity of the rainfall, many Rainwater Basin wetlands received abundant runoff and had water levels well above average (JGJ, personal observation). During July and August 2015, I visually inspected large wetlands in the eastern portion of the Rainwater Basin (Seward, York, Hamilton, Clay, Fillmore and Thayer counties). Large wetlands with relatively high water levels were opportunistically surveyed for breeding birds from a kayak, by wading or from a vehicle using a spotting scope. Wetlands with notable breeding bird activity were surveyed more than once. I, first, provide a brief description of conditions observed at each wetland surveyed by kayak. I then provide summaries of notable breeding or summer observations by species in taxonomic order. I do not provide summaries for common breeding species (e.g., Red-winged Blackbird, Mallard (*Anas platyrhynchos*)).

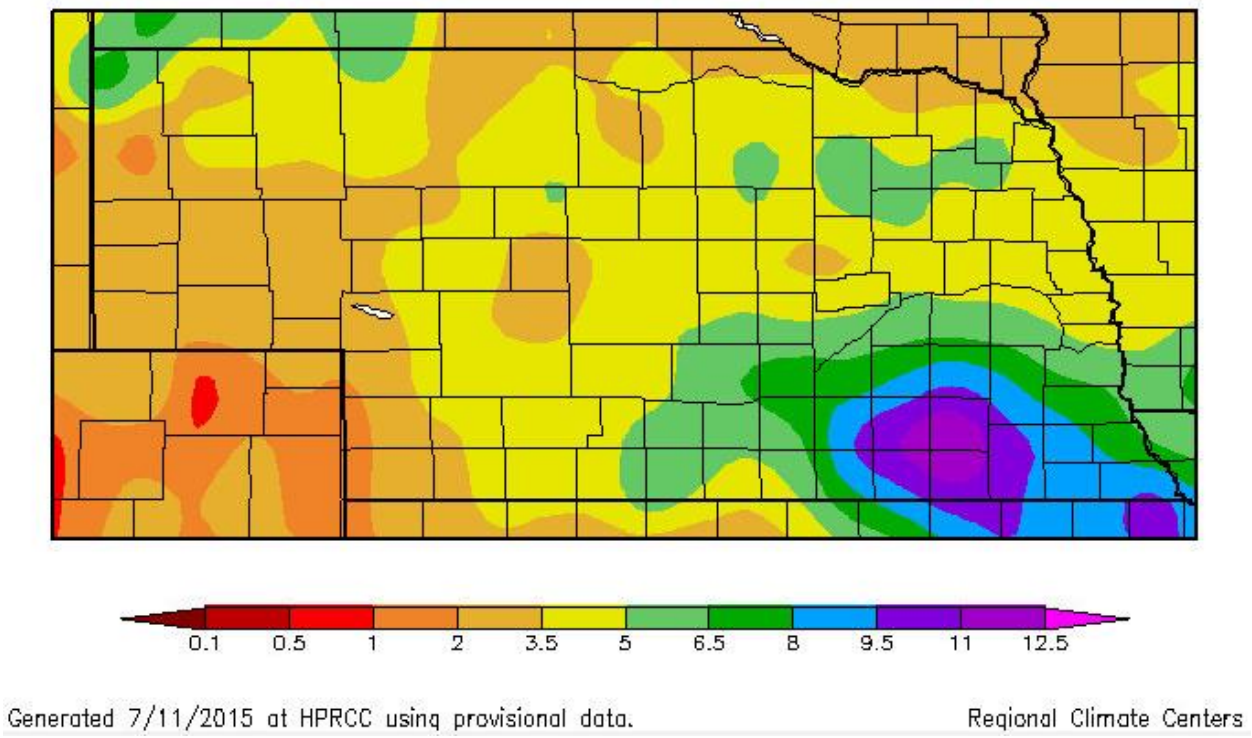

Figure 2. Departure from normal precipitation in Nebraska for June 2015. Graphic shows above average precipitation in southeast Nebraska, including eastern portions of the Rainwater Basin.

RESULTS

I surveyed seven large wetlands at least once by kayak (Table 1) and one wetland (Sinninger), which is mostly privately-owned, only from a vehicle. Lauren Dinan (NGPC Nongame Bird Biologist) accompanied me on the 26 August survey of Harvard WPA. Additional observations were made at small wetlands.

Table 1. Summary of sites surveyed by date by kayak (X), wading (●) or from wetland perimeter with spotting scope (✓).

	7 Jul	8 Jul	11 Jul	19 Jul	26 Jul	3 Aug	9 Aug	10 Aug	16 Aug	26 Aug
Harvard WPA	X			✓	✓	✓	X		✓	X
Marsh Hawk WMA	X			✓	✓	✓		X	✓	
Kirkpatrick North WMA		X		✓	✓	✓		●	✓	
County Line WPA		X		✓	✓	✓			✓	
Marsh Duck WMA		X		✓	✓	✓	✓		✓	
Sinninger WPA/basin				✓	✓	✓			✓	
Hansen WPA			X	✓	✓	✓			✓	
Mallard Haven WPA			X	✓	✓	✓			✓	

Wetland descriptions

Harvard WPA: Water levels at this large wetland were above normal and perhaps at the highest level since 1993-94. Water depth was > 1.5 m in some locations and ponded water around the wetland perimeter inundated trees and areas of warm season grass. The main wetland was mostly open water with the exception of the perimeter and a large "island" of cattails (*Typha* spp.) and bulrush (*Scirpus* spp.) in the wetland interior. Photo, below, from 7 July 2015.

Marsh Hawk WMA: Water levels were above normal. Maximum water depth was approximately 1.2 m and water was relatively clear. Most of the wetland was interspersed with dead stalks of weedy vegetation from the previous growing season. Photo, below, from 7 July 2015.

Kirkpatrick Basin North WMA: Water levels were above normal. Maximum water depth was approximately 1 m. The wetland was approximately 50/50 open water and vegetation with high interspersion. Photo, below, from 8 July 2015.

County Line WPA: Water levels were well above normal and maximum water depth was approximately 1.5 m. Wetland was mostly vegetated with approximately 20% of the wetland open water. Dominant vegetation was pink smartweed (*Polygonum pensylvanicum*) with some small patches of bulrush. Photo, below, from 8 July 2015.

Marsh Duck WMA: Water levels were above average or average, but this determination is challenging since the wetland was recently restored. Maximum water depth was approximately 1 m. Wetland was approximately 60% open water. Wetland area with emergent vegetation had relatively high interspersion. Photo, below, from 8 July 2015.

Hansen WPA: Water levels were above average and maximum water depth was approximately 1.2 m. More than half of the wetland was open water, but a large proportion vegetated and dominated by bulrush. Photo, below, from 11 July 2015.

Mallard Haven WPA: Water levels were above normal. Small areas of open water but the wetland was dominated by dense stands of bulrush. Photo, below, from 11 July 2015.

Species accounts

Wood Duck (*Aix sponsa*): A hen with a brood was observed at Kirkpatrick Basin North WMA on 8 July. This is a regularly breeding species, typically at sites with nearby large trees.

Northern Pintail (*Anas acuta*): A hen with a brood was observed at Harvard WPA on 26 July. This is a regular nesting duck species in the Rainwater Basin although its abundance possibly has declined over the last several decades. Evans and Wolfe (1967) found 37 Northern Pintail nests 1958–1962 and Harding (1986) found 24 total nests 1981-1985 in the Rainwater Basin. It is currently considered a rare breeder (Jorgensen 2012).

Green-winged Teal (*Anas crecca*): A hen with a brood was observed at a wetland (40.5495, -97.9746) at the Ducks Unlimited Verona Complex on 26 July. There are two other Rainwater Basin breeding records. Harding (1986) discovered a nest at Massie WPA in 1985 and a hen with a brood of 7 ducklings was at Harvard WPA 28 July 2007 (Paul Dunbar, personal communication). There are no other breeding records south of the Platte River in Nebraska for this species (Sharpe et al. 2001).

Redhead (*Aythya americana*): Common during the summer of 2015 with as many as 345 tallied on 26 July including 245 at Harvard WPA, a new high count for summer (Jorgensen 2012). Two hens with broods were observed at Marsh Duck WMA on 9 and 16 August (one pictured, below). There are only about five other breeding records for Redhead in the Rainwater Basin, all relatively recent.

Ring-necked Duck (*Aythya collaris*): A single male was observed at Marsh Duck WMA on 8 July. This species is a casual summer visitor to the Rainwater Basin (Jorgensen 2012).

Lesser Scaup (*Aythya affinis*): Three individuals were observed at Marsh Hawk WMA on 8 July. This species is a casual summer visitor to the Rainwater Basin (Jorgensen 2012).

Common Goldeneye (*Bucephala clangula*): A single immature male (pictured, right) was observed at County Line Marsh (privately-owned portion) on 8 July. This is the first summer record for this species in the Rainwater Basin (Jorgensen 2012) and one of only a few summer records for Nebraska (Sharpe et al. 2001).

Hooded Merganser (*Lophodytes cucullatus*): Several female-plumaged type individuals, presumably immatures, were observed during the summer, including a total of 13 birds at Harvard WPA on 7 July. Presumed immature birds regularly occur during summer when water is present (Jorgensen 2012).

Ruddy Duck (*Oxyura jamaicensis*): Fairly common during the summer of 2015, with counts of 19 at Kirkpatrick Basin North WMA on 8 July, 15 at Harvard WPA on 7 July, and 14 at Marsh Hawk WMA on 7 July. Hens with broods were observed at Kirkpatrick Basin North WMA on 8 July (pictured, left), Sinninger Basin on 26 July, the Ducks Unlimited Verona Complex on 16 August, and at Marsh Duck WMA on 9 and 16 August (pictured, right). Since Evans and Wolfe (1967) found five broods in Clay County 1958–62, there are only about ten additional breeding records for the Rainwater Basin in addition to those observed in2015 (Jorgensen 2012).

Pied-billed Grebe (*Podilymbus podiceps*): Fairly common during the summer of 2015. Nests were discovered at Harvard WPA and Marsh Duck WMA on 7 July and 2 nests were found at County Line WPA on 8 July. This species is currently considered an uncommon breeder in the Rainwater Basin (Jorgensen 2012).

Eared Grebe (*Podiceps nigricollis*): Thirteen adults and 11 nests (pictured below, left) were discovered at Marsh Hawk WMA on 7 July. Upon revisiting the nests on 10 August, it was determined most of the Eared Grebe nests were abandoned. However, one pair of adult Eared Grebes with two nearly-fledged juveniles (pictured below, right) indicated at least one nest was successful. There are only a few additional reports of Eared Grebes breeding in the Rainwater Basin. Eared Grebes were known to have nested at what is now Harvard WPA in 1914 and 1915, as noted by Swenk (1925):

> "*However at the lagoon near Inland, Clay County, A.M. Brooking reports that in recent years it has still been a fairly common summer resident and breeder, and at that place he collected a specimen on July 28, 1914, several sets of eggs on July 4, 1915, and four young birds on July 28, 1915, in which latter year it bred abundantly at the lagoon. Concerning the habits of this grebe, at the Inland Lagoon, A.M. Brooking says that it "nests in about three feet of water and always covers its eggs.*"

The only other recent record of nesting was in 2008 when 12 adults and 2 nests were discovered at Kirkpatrick Basin North WMA (Jorgensen 2012). In addition to nesting at Marsh Hawk WMA in 2015, four adults were also observed at Harvard WPA and a grebe nest found on 9 August at Harvard WPA may have belonged to this species.

Western Grebe (*Aechmophorus occidentalis*): A single adult was observed at Harvard WPA from 19 July through August. There are three other summer records all from June. Thus, this is the first record of Western Grebe during July and August in the Rainwater Basin (Jorgensen 2012).

Double-crested Cormorant (*Phalacrocorax auritus*): Two nests with attending adults were discovered at Harvard WPA on 19 July. The nests were located in a small grove of willows in standing water (pictured, below). By 26 July, two more pairs/nests were observed. The nests remained active through 16 August, but a kayak survey conducted on 26 August indicated all nests had been abandoned. This is the first documented nesting record by this species in the Rainwater Basin.

American Bittern (*Botaurus lentiginosus*): Adults were observed at Harvard WPA 19 and 26 July and another was heard at North Lake Basin WMA on 26 July. This species is rare to uncommon in summer even when favorable conditions are present. However, direct evidence of nesting in the Rainwater Basin has remained elusive.

Least Bittern (*Ixobrychus exilis*): None were observed.

Black-crowned Night-Heron (*Nycticorax nycticorax*): At least 30 adults and 8 first-year birds were at Harvard WPA on 7 July and similar numbers were observed during the subsequent kayak surveys. A small number of adults were observed in the large cattail/bulrush island in the wetland interior where an ibis colony was present. On 3 August, two nests with young were discovered at Harvard WPA (pictured, below). This is the first documented breeding record by the species in the Rainwater Basin since 1985 (Garthright 1985). Brookings (Notes) considered it "very common" and collected a young male at Harvard WPA 31 July 1915.

Glossy Ibis (*Plegadis falcinellus*): Three adults were observed, along with White-faced Ibises, standing on and over nests (pictured, below) on 7 July in a large cattail/bulrush island at Harvard WPA. Additional details are provided by Jorgensen and Silcock (2015, *in press*). This is the first documented nesting record by the species in Nebraska.

White-faced Ibis (*Plegadis chihi*): Nesting colonies were discovered at both Harvard WPA and Kirkpatrick Basin North WMA. At Harvard WPA, 70 adults, 11 nests and 5 fledging were observed on 7 July. At Kirkpatrick Basin North WMA, 45 adults and 4 nests were observed on 8 July. Additional nests were almost certainly present given the number of adults at each site. However, I limited my time searching for nests to minimize disturbance to the birds. Subsequent visits to each site showed both colonies were successful. On 3 August, I observed approximately 50 recently-fledged juveniles and ten nests still with eggs at Harvard WPA. On 9 August, I observed 10 recently-fledged juveniles at Kirkpatrick Basin North WMA. White-faced Ibis were discovered nesting at what is now Harvard WPA in 1916. The 1916 record represents the first known nesting by the species in Nebraska and only one of two from the central and northern Great Plains during the early 20th Century (Jorgensen and Dinsmore 2001). Since the mid-20th Century, White-faced Ibis have increased dramatically in the Great Plains (Jorgensen and Dinsmore 2001). White-faced Ibis were first found nesting in the Rainwater Basin in 2001. Since 2001, there are about seven additional nesting records. However, all previous nesting attempts were either unsuccessful or the fate was not determined. The observations of fledged young in 2015 represent the first known successful nesting by the species in Rainwater Basin. Photos below include a nest with eggs at Kirkpatrick Basin North on 8 July and chicks in a nest at Harvard WPA on 1 August 2015.

Sora (*Porzana carolina*): This species was common and ubiquitous, often heard calling, throughout the summer. At total of 17 calling birds was heard at Harvard WPA on 7 July. However, no direct evidence of breeding was observed.

Virginia Rail (*Rallus limicola*): None were observed.

Common Moorhen (*Gallinula galeata*): None were observed. This species occurs casually in the Rainwater Basin and is known to have bred twice, most recently at North Lake Basin WMA in 2009 (Jorgensen 2012).

American Coot (*Fulica americana*): Common breeder during summer 2015. Six nests were found at Marsh Hawk WMA and 7 nests and 2 broods were at Harvard WPA, both on 7 July. Four nests and eleven broods were at Kirkpatrick Basin North, 2 nests and 3 broods were at County Line WPA, 8 broods were at Sinninger Basin, and 7 nests and 9 broods were at Marsh Duck WMA, all on 7 July. Evidence of breeding activity was not detected at Hansen WPA despite what appeared to be suitable habitat. Only two old nest platforms, but no broods, were observed at Mallard Haven WPA. An exceptional density of adults with broods was observed at Marsh Duck WMA during August.

Sandhill Crane (*Grus canadensis*): A single adult and a pair were observed at Harvard WPA on 19 July. The single adult was observed on and off throughout the remainder of the summer. Sandhill Cranes have been observed occasionally in summer in the RWB since 1992 and have bred on least seven occasions since 1994 (Jorgensen 2012).

Black-necked Stilt (*Himantopus mexicanus*): Three adults were observed at a private wetland (Fillmore #85) on 26 July. This species has bred on several occasions in the Rainwater Basin since 2003 when breeding was discovered at Funk WPA (Drahota 2003). No evidence of breeding was observed in 2015.

Wilson's Phalarope (*Phalaropus tricolor*): This species breeds occasionally in the Rainwater Basin, but no evidence of breeding was observed in 2015.

Black Tern (*Chlidonias niger*): Presumed migrants were observed throughout the summer but no evidence of breeding was observed.

DISCUSSION

Rainwater Basin wetlands provide habitat and resources to a diversity of birds, particularly during spring migration. Because of the role this landscape and its wetlands serve during spring migration, migratory bird stopover ecology has been a focus of research and conservation efforts. Less attention has been directed toward breeding birds that use Rainwater Basin wetlands. This is understandable since natural and altered hydrology presumably limits breeding bird numbers and diversity.

Following localized heavy precipitation or during climate cycles with increased precipitation, Rainwater Basin wetlands may possess more water for longer periods than normal. During these wet cycles, the number and diversity of breeding birds observed at specific sites and throughout the region may increase. This occurred during the early to mid-1980s when a number of notable breeding records were recorded during the first Nebraska Breeding Bird Atlas Project (Mollhoff 2001). Similarly, higher than average precipitation during spring and early summer 2015 resulted in above average water levels at several Rainwater Basin wetlands and a number of notable breeding bird observations that included a first state and region nesting record for Glossy Ibis, first nesting record for Double-crested Cormorant in the region, first known successful nesting (young fledged) for White-faced Ibis, first successful nesting by Eared Grebe in a century, third nesting record for Green-winged Teal and sixth nesting record for Redhead in the Rainwater Basin.

Even though conducting a full inventory of breeding birds was beyond the scope of this project, differences in the numbers and species diversity was noted. Not surprisingly, a number of notable breeding observations were from Harvard WPA, the largest wetland surveyed. Increased wetland area is known to be associated with higher species richness (Brown and Dinsmore 1986). However, numbers of regular breeding species, such as American Coot and Pied-billed Grebe, along with notable observations, such as Ruddy Duck and Redhead, at Marsh Duck WMA, which is a relatively small wetland, was unexpected. This site was recently restored in 2010 and 22,425 cubic yards of sediment was removed from approximately 50% of the wetland, mostly the outer portion. High interspersion of wetland vegetation and water was observed at this site during summer 2015. Wetland restoration likely increased water depth and lengthened hydro-period, which likely made the wetland more attractive to breeding water birds. However, the reasons why a high density and diversity of breeding birds were

observed at Marsh Duck WMA are not known. In contrast, low numbers of even common species and overall diversity of breeding birds at other relatively large wetlands, such as Mallard Haven and Hansen WPAs, was also unexpected. These observations suggest that breeding birds may be very sensitive to specific variables when selecting (or avoiding) wetlands to nest.

My results and this report provide insights on breeding bird use in the Rainwater Basin wetlands. However, the overall understanding of current and potential breeding bird use in the Rainwater Basin is limited. Additional research is needed to determine how restoration and management influence wetland characteristics which, in turn, influence breeding bird use. Furthermore, additional research is needed to understand the role the Rainwater Basin does or can play in supporting local and regional bird populations, including species of conservation concern. A specific question is how do wetland-dependent birds opportunistically colonize and use Rainwater Basin wetlands when suitable conditions occur in context with breeding populations which typically breed in relatively stable wetland complexes such as those found in the Sandhills and Prairie Pothole Region. Addressing these and other questions related to breeding bird use in the Rainwater Basin will help inform future restoration and management efforts.

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