United States Department of the Interior

U.S. GEOLOGICAL SURVEY

Northern Prairie Wildlife Research Center
8711 37th Street SE
Jamestown, North Dakota 58401
(701) 253-5500 • fax: (701) 253-5553

June 2015

Remote Tracking of Aransas-Wood Buffalo Whooping Cranes
2014 – 2015 Project Update

**********NOTICE**********

This document includes summaries and maps that have been generated from a subset of preliminary data. In some instances, these data may include errors or other inconsistencies. Therefore, interpretations or conclusions drawn solely from information presented in this report would be premature and lack scientific rigor. This information is preliminary and is subject to revision. The assessment is provided on the condition that neither the U.S. Geological Survey nor the United States Government may be held liable for any damages resulting from the authorized or unauthorized use of the assessment. In reference to this project, please acknowledge the following partners: the Canadian Wildlife Service, Crane Trust, U.S. Fish and Wildlife Service, the Platte River Recovery Implementation Program, and U.S. Geological Survey, with support from the Gulf Coast Bird Observatory, International Crane Foundation, and Parks Canada.

****

Partner Contacts

Aaron Pearse, Research Wildlife Biologist, U.S. Geological Survey, Northern Prairie Wildlife Research Center; 701-253-5500; apearse@usgs.gov

Mark Bidwell, Species at Risk Biologist, Canadian Wildlife Service; 306-975-4688; mark.bidwell@ec.gc.ca

Brice Krohn, Senior Director, Crane Trust; 308-384-4633; bkrohn@cranetrust.org

Kris Metzger, Inventory and Monitoring Coordinator, U.S. Fish and Wildlife Service, Region 2; 505-248-6432; kris_metzger@fws.gov

Chad Smith, Director of Natural Resources Decision Support, Headwaters Corporation; 402-432-7950; smithc@headwaterscorp.com

Abstract: The Whooping Crane Tracking Partnership gathered location data for 32 whooping cranes during summer 2014. Cranes initiated fall migration on 29 September, and all marked cranes arrived at the Texas coast by 14 November. Two hundred stopovers were identified during fall migration and the average time spent in migration was 42 days. One mortality event was confirmed on the wintering grounds in 2015. Twenty-one marked cranes departed wintering sites and completed migration to traditional summer areas. Cranes initiated spring migration on 9 April and all marked birds arrived on summer grounds by 14 May. Average time spent in

migration was 20 days, and 181 stopovers were identified in all states and provinces within the migration corridor.

General Background and Methods

The Whooping Crane Tracking Partnership began in 2008 as a research project conceived by the Crane Trust with support from the U.S. Geological Survey to use Platform Transmitting Terminals with Global Positioning System capabilities (GPS-PTTs) as a means to identify migration pathways of Aransas-Wood Buffalo whooping cranes. The Whooping Crane Recovery Team provided necessary support for initiation of this study. The U.S. Fish and Wildlife Service and Canadian Wildlife Service authorized capture of whooping cranes at wintering areas on and surrounding Aransas National Wildlife Refuge and at breeding sites at Wood Buffalo National Park. They also made technical, in-kind, and financial contributions. The Platte River Recovery Implementation Program provided the Crane Trust funds to initiate this work.

During 2011, the Crane Trust, Canadian Wildlife Service, U.S. Fish and Wildlife Service, Platte River Recovery Implementation Program, and U.S. Geological Survey entered into a research partnership. Partner organizations have agreed to function as equal partners to administer this research project, as each has a substantial stake in the successful outcome of this endeavor. Other organizations that support this work include the Gulf Coast Bird Observatory, International Crane Foundation, and Parks Canada. The fundamental objectives of the research are to: 1) advance knowledge of whooping crane breeding, wintering, and migratory ecology, including threats to survival and population persistence; 2) disseminate research findings in reports, presentations, and peer-reviewed literature to provide reliable scientific knowledge for conservation, management, and recovery of whooping cranes; and 3) minimize negative effects of research activities to whooping cranes. Partners agree that this opportunity to mark wild whooping cranes with GPS technology represents the best prospect in the past 30 years to enhance understanding of whooping cranes and assess risks they face during their entire life cycle.

We captured cranes and attached GPS-PTTs at breeding sites at Wood Buffalo National Park and wintering sites along the Texas coast near and at Aransas National Wildlife Refuge. Over the lifespan of the project we captured 33 juvenile (hatch-year) birds and 35 adult (after-hatch-year) birds. Capture teams consisted of individuals with experience handling endangered cranes, including a licensed veterinarian. At capture, the veterinarian performed a health check on each crane, which included a general external examination, blood collection for pathogen, toxin, and genetic screening, and fecal collections for parasite evaluation. Captured birds were marked with a GPS-PTT attached with two-piece leg bands. The GPS-PTTs have solar panels integrated on all 3 exposed surfaces to maximize battery recharge, which will provide a potential lifespan of 3–5 years. The transmitter and leg band weigh approximately 72 g, which represent <1.5% of body weight of adult whooping cranes. Transmitters were programmed to record 4 GPS locations daily, which provide daytime and nighttime locations. This data collection schedule allows for detailed information on roosting sites, diurnal site use, and general flight paths. Transmitters upload new data approximately every 2.5 days, allowing for monitoring of survival.

Capture Summary

Capture and marking of wild whooping cranes concluded in February 2014. We captured one juvenile and one adult crane in 2009, one adult crane in January 2011, 11 adult cranes during late November and early December 2011, one juvenile and 11 adult cranes during late November 2012 through early January 2013, and 11 adult cranes during late January and early February 2014 along the Gulf Coast of Texas. Capture teams also marked 9 juvenile cranes during August 2010, 12 juvenile cranes during August 2011, and 10 juvenile cranes during July and August 2012 at Wood Buffalo National Park in Canada.

2014 Summer Season Summary

During the 2014 summer season, 32 transmitters provided over 12,500 locations. Ten marked cranes successfully nested and were observed with young during August surveys or during fall staging in Saskatchewan. In addition, comparison of survey data (i.e., nest locations) and locations of marked birds provided circumstantial evidence that another seven marked birds likely nested. Three birds spent the summer outside of the tradition breeding area, one in south-central Saskatchewan near Brownlee, one in southeastern Alberta near Rumsey, and one north of Hay River, Northwest Territories. No mortalities were detected prior to the onset of fall migration.

2014 Fall Migration Summary

Prior to migration, three transmitters stopped providing data leaving 29 GPS-marked cranes initiating migration. Two transmitters ceased providing data during migration, and six provided only sporadic information to the wintering grounds (Table 1). Cranes departed sites in Wood Buffalo National Park between 20 August and 30 October with an average departure date of 29 September. Twenty-three percent of birds departed by 15 September and 69% departed by 15 October. Total time spent migrating between summering and wintering areas during 2014 ranged from 14–86 days and averaged 42 days. For comparison, we estimated average migration time during fall 2010 at 36 days (12–70 days; $n = 10$), fall 2011 at 36 days (9–63; $n = 19$), fall 2012 at 45 days (9–67 days, $n = 25$) and fall 2013 at 35 days (9–78, $n = 25$).

We documented whooping cranes using 200 stopover locations (geographic areas where cranes remained ≥1 night), which occurred in every state and province in the Great Plains. Saskatchewan contained the majority of sites used, and other states and provinces received relatively similar use (Table 2). Cranes spent the most time at staging sites in Saskatchewan, Alberta and the Dakotas. The general migration corridor used by whooping cranes during fall 2014 was similar to past migrations and other published reports (Fig. 1). We observed one stopover site along the Central Platte River, three birds stopped at or near Quivira National Wildlife Refuge in Kansas, and three birds stopped at Salt Plains National Wildlife Refuge in Oklahoma. We did not detect any mortalities during fall migration.

During fall staging in Saskatchewan observations of marked birds provided information on their status (i.e., with or without offspring or mate). During September– November, visual sightings of 15 marked birds (13 with active transmitters) were obtained in Saskatchewan by CWS biologists. Six marked birds were accompanied by offspring. Of pairs that were detected with young on the

breeding grounds, those resighted during fall staging in Saskatchewan were all observed with offspring.

2014-2015 Winter Season Summary

The first bird arrived at winter use sites on 31 October, and the last marked cranes arrived on 14 November. The average arrival date was 10 November. Twenty-four GPS-marked cranes provided >11,000 locations during winter 2014–2015, of which, >7000 were within the boundaries of Aransas National Wildlife Refuge. Birds used a variety of ecologically distinct areas including coastal salt and brackish marsh communities, agricultural and ranching areas, and inland freshwater wetlands. Less than 1% of locations were outside of Aransas and Calhoun counties. Of monitored birds, a single mortality was confirmed on Aransas National Wildlife Refuge in March 2015.

2015 Spring Migration Summary

Twenty-one marked cranes departed wintering sites in Texas between 24 March and 30 April with an average departure date of 9 April. Thirty percent of birds departed by 1 April and 75% departed by 15 April. The first birds arrived at summer use sites on 18 April, and the last marked crane arrived on 14 May. Average arrival date was 27 April. Total time spent migrating between wintering and summering areas during 2015 ranged from 21–47 days and averaged 30 days. For comparison, we estimated average migration time during spring 2011 at 30 days (21–38 days; $n = 11$), spring 2012 at 26 days (15–46; $n = 25$), spring 2013 at 37 days (16–69 days, $n = 32$) and spring 2014 at 28 days (15–47, $n = 27$).

During spring 2015 migration, we documented whooping cranes using 181 stopover locations (geographic areas where cranes remained ≥1 night), which occurred in every state and province in the Great Plains. As in other years, Saskatchewan contained the majority of sites used, and other northern Great Plains states and provinces received relatively similar use (Table 3). Cranes spent the most time at staging sites in Saskatchewan followed by North Dakota, and South Dakota. Staging in the remaining states and provinces accounted for <26% of overall stopover time (Table 3). The general migration corridor used by whooping cranes during spring 2015 was similar to past migrations and other published reports (Fig. 2). Three birds stopped at Salt Plains National Wildlife Refuge in Oklahoma, two birds stopped at or near Quivira National Wildlife Refuge in Kansas, and two birds used stopover sites along the Central Platte River. All cranes with active transmitters terminated migration in the traditional summer use area in and around Wood Buffalo National Park. No mortalities were detected during spring migration.

Recent and Future Activities

Recent captures have met study plan objectives and no new capture activities are currently planned. Partners are planning and preparing products based on data collected.

Acknowledgements

This extensive research project has been made possible because of a partnership among multiple agencies and organizations including, the Canadian Wildlife Service, Crane Trust, U.S. Fish and Wildlife Service, Platte River Recovery Implementation Program, U.S. Geological Survey, Gulf Coast Bird Observatory, International Crane Foundation, and Parks Canada. We thank all for providing past and continued financial, technical, and in-kind contributions.

Table 1. Status of whooping cranes with active transmitters during June 2014–May 2015.

		Markings [a]		
Bird ID	Capture Location	Left Leg	Right Leg	Status
2010-04	Wood Buffalo NP	GPS(BK)	A/B/Y	Completed both migrations, broken ant. [b]
2010-05	Wood Buffalo NP	GPS(BK)	A/G/Y	Completed fall migration, broken ant. [b]
2010-08	Wood Buffalo NP	GPS(BK)	A/Y/Y	Completed both migrations [b]
2011-05	Aransas NWR	A/B/W	GPS(B/W-05)	Completed fall migration, fate unknown [b]
2011-06	Aransas NWR	B/G	GPS(B/W-06)	Unknown fate
2011-07	Aransas NWR	GPS(B/W-07)	G/BK	Completed both migrations
2011-99	Aransas NWR	B/B	GPS(B/W-99)	Completed fall migration, fate unknown
2011-12	Wood Buffalo NP	GPS(55-GLD)	GLD/R	Completed both migrations [c]
2011-15	Wood Buffalo NP	GPS(W/B-15)	BK/Y	Completed both migrations [b]
2011-80	Wood Buffalo NP	GPS(46-GLD)	G/GRY	Completed both migrations [c]
2011-90	Wood Buffalo NP	GPS(W/B-90)	G/G	Completed fall migration, fate unknown [b]
2012-21	Wood Buffalo NP	GPS(W/G-21)	Y/W	Completed both migrations
2012-23	Wood Buffalo NP	GPS(W/G-23)	G/R	Completed fall migration, fate unknown
2012-24	Wood Buffalo NP	GPS(W/G-24)	Y/G	Completed both migrations
2012-25	Wood Buffalo NP	GPS(W/G-25)	GRY/B	Completed fall migration, fate unknown
2012-28	Wood Buffalo NP	GPS(W/G-28)	GRY/W	Unknown fate
2012-30	Wood Buffalo NP	GPS(W/G-30)	GRY/G	Completed both migrations
2012-31	Aransas NWR	R/G	GPS(B/B-31)	Completed both migrations
2012-32	Aransas NWR	GPS(G/W-32)	NONE	Completed both migrations
2012-33	Aransas NWR	G/Y	GPS(G/W-33)	Completed both migrations
2012-35	Aransas NWR	Y/GRY	GPS(G/W-35)	Completed fall migration, fate unknown
2012-37	Aransas NWR	W/GRY	GPS(G/W-37)	Completed both migrations [b]
2012-41	Aransas NWR	BK/GRY	GPS(G/W-41)	Died during winter
2014-44	Aransas NWR	R/GLD	GPS(44-GLD)	Completed both migrations
2014-45	Aransas NWR	GPS-45-GLD	NONE	Unknown fate
2014-47	Aransas NWR	GLD/G	GPS(47-GLD)	Completed both migrations
2014-48	Aransas NWR	GLD/BK	GPS-48-GLD	Completed both migrations
2014-49	Aransas NWR	GLD/W	GPS(49-GLD)	Completed both migrations
2014-51	Aransas NWR	G/GLD	GPS(51-GLD)	Completed both migrations
2014-52	Aransas NWR	GLD/B	GPS(52-GLD)	Completed both migrations
2014-53	Aransas NWR	GLD/Y	GPS(53-GLD)	Completed both migrations
2014-56	Aransas NWR	Y/GLD	GPS(56-GLD)	Completed both migrations

[a] A = BBL aluminum band, B = blue, BK = black, G = green, R = red, W = white, Y = yellow, GRY = gray GLD=gold. GPS bands pre-2011 were all black, 2011-2012 PTT bands are color coded with superimposed numbers on the band half without the transmitter. For example: GPS(B/W-01) = upper half is blue with number 0, and lower half is white with number 1. 2014 PTT bands are all Gold with Black numbers.

[b] Transmitter giving intermittent data but enough to ascertain completion of migration.

[d] Bird recaptured and transmitter replaced.

Table 2. Percentage of stopover sites used by whooping cranes and percentage of time spent by U.S. state and Canadian province during 2014 fall migration.

State/province	% sites	% days
Northwest Territories	1	<1
Alberta	12	3
Saskatchewan	38	83
North Dakota	6	5
South Dakota	9	3
Nebraska	8	1
Kansas	8	1
Oklahoma	7	1
Texas	12	2

Table 3. Percentage of stopover sites used by whooping cranes and percentage of time spent by U.S. state and Canadian province during 2015 spring migration.

State/province	% sites	% days
Northwest Territories	2	<1
Alberta	10	5
Saskatchewan	31	33
Montana	1	2
North Dakota	11	26
South Dakota	12	16
Nebraska	6	3
Kansas	9	6
Oklahoma	8	4
Texas	12	6

Figure 1. Generalized migration corridor (shaded gray) and stopover sites (white circles) of 29 whooping cranes during fall migration, September–November 2014.

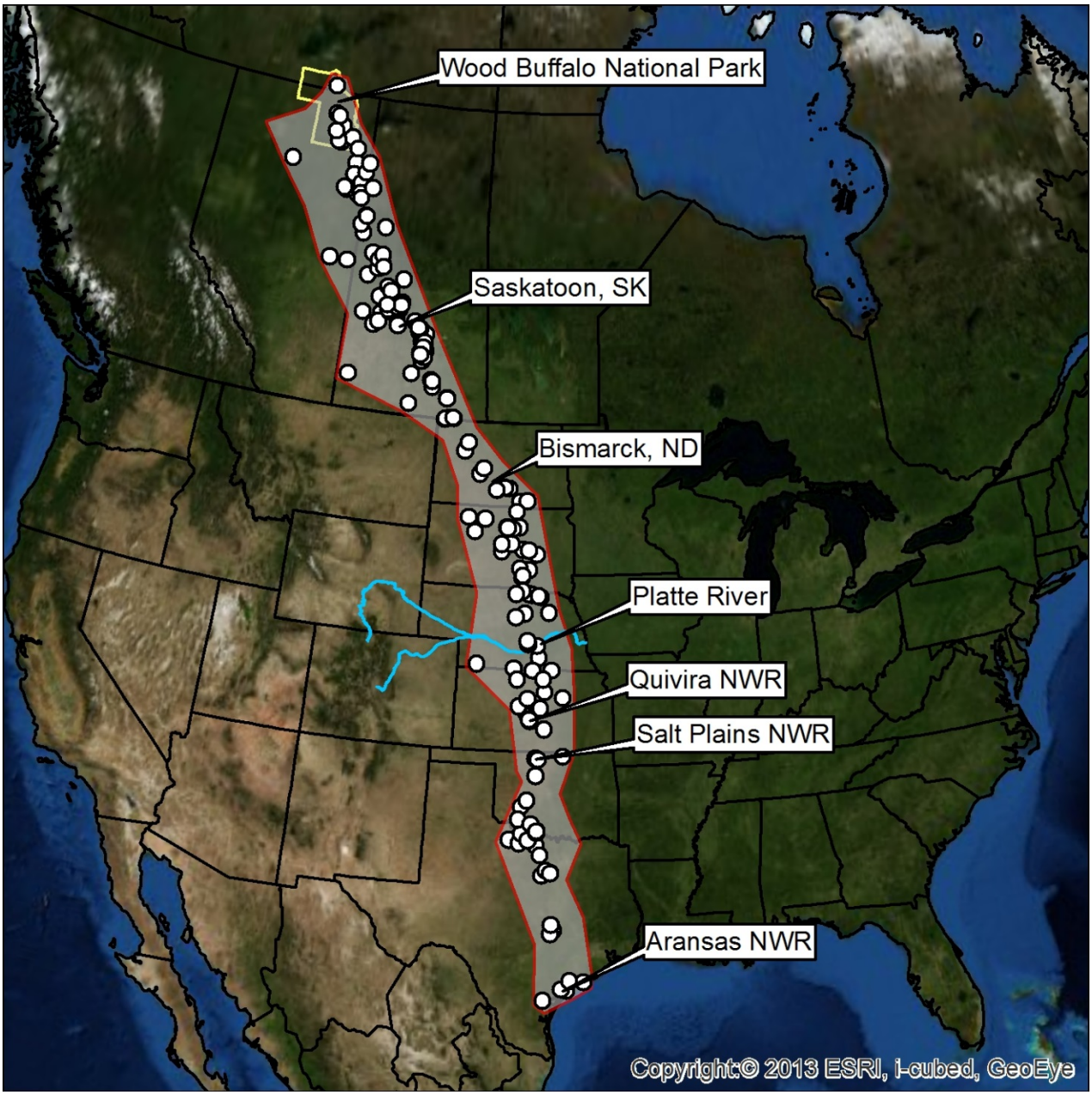

Figure 2. Generalized migration corridor (shaded gray) and stopover sites (white circles) of 21 whooping cranes during spring migration, March–May 2015.