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Remote Tracking of Aransas-Wood Buffalo Whooping Cranes 2011 Winter Season and 2012 Spring Migration Update

*****NOTICE*****

This document includes summaries and a map 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.

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Abstract: The Whooping Crane Tracking Partnership gathered location data for 30 whooping cranes during the 2011 winter season. We confirmed mortalities of 3 juveniles on the wintering grounds. One marked juvenile crane spent the majority of winter in the vicinity of Granger Lake, 280 km north of Aransas National Wildlife Refuge and was observed with other whooping cranes nearby. Twenty-five cranes completed spring migration. Cranes initiated spring migration on 5 March, and all cranes arrived at summer use sites by 17 May. Future trapping

efforts are planned for August 2012 at Wood Buffalo National Park and winter 2012–2013 at Aransas National Wildlife Refuge.

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 plan to capture cranes and attach 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 intend to capture approximately 30 juvenile (hatch-year) birds and 30 adult (after-hatch-year) birds. Capture teams consist of individuals with experience handling endangered cranes, including a licensed veterinarian. At capture, the veterinarian performs a health check on each crane, which includes a general external examination, blood collection for pathogen, toxin, and genetic screening, and fecal collections for parasite evaluation. Captured birds are 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 are programmed to record 4 GPS locations daily, which will provide daytime and nighttime locations. This data collection schedule will allow 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 Update and Active Transmitters

Capture and marking of wild whooping cranes encompasses the main fieldwork activities conducted for this project thus far. We captured one juvenile and one adult crane in 2009, one adult crane in January 2011, and 11 adult cranes during late November and early December 2011 along the Gulf Coast of Texas. Capture teams also marked 9 juvenile cranes during August 2010 and 12 juvenile cranes during August 2011 at Wood Buffalo National Park in Canada. During the 2011 winter season and 2012 spring migration, 30 transmitters provided location data (Table 1).

Winter Season Summary

GPS-marked cranes provided >11,000 locations during winter 2011. The average date marked birds arrived on the Texas coast, or nearby wintering area, was 9 November 2011, with a range of 20 October–28 November. Space-use data collected during winter 2011 showed birds used a variety of ecologically distinct areas while over-wintering in Texas (Table 2). Whooping cranes frequented coastal salt and brackish marsh communities, agricultural and ranching areas, and inland freshwater wetlands. Approximately 65% of recorded locations were within the boundaries of the Aransas National Wildlife Refuge. Approximately 22% of the locations were recorded on nearby, privately owned land, which whooping cranes had used frequently in the past. Nearly 13% of the locations of over-wintering whooping cranes were located in areas not known to be frequented by whooping cranes previously. We confirmed mortalities of 3 juveniles on the wintering grounds.

Migration Summary

Prior to migration, five transmitters stopped providing data (three mortalities, two suspected malfunctioning transmitters; Table 1). Cranes departed wintering sites in Texas between 5 March and 20 April with an average departure date of 5 April. Forty percent of the birds departed by 1 April and 76% departed by 10 April. The first birds arrived at summer use sites on 19 April, and the last marked crane arrived on 17 May. The average arrival date was 30 April. Total time spent migrating between wintering and summering areas during 2012 ranged from 15 to 46 days and averaged 27 days. For comparison, we estimated average migration time during spring 2011 at 31 days (25–38 days; $n = 10$).

We documented whooping cranes using 266 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 3). Cranes spent the most time at staging sites in Saskatchewan and South Dakota. The general migration corridor used by whooping cranes during spring 2012 was similar to past migrations and other published reports (Fig. 1). Four birds stopped at or near Salt Plains National Wildlife Refuge in Oklahoma and four birds stopped at or near Quivira National Wildlife Refuge in Kansas. We observed two stopover sites along the Platte River system, one southwest of Grand Island, Nebraska (Central Platte River) and one near Paxton, Nebraska (North Platte River). We did not detect any mortalities during spring migration.

Recent and Future Activities

We plan to capture 10 juvenile cranes at Wood Buffalo National Park during August 2012 and 10 adult cranes at Aransas NWR during winter 2012–2013.

Table 1. Status of whooping cranes with active transmitters during winter and spring migration, November 2011–May 2012.

Bird ID	Capture Location	Markings ^a		Status
		Left Leg	Right Leg	
2009-01	Aransas NWR	R/A/Y	GPS(BK)	Completed migration
2009-02	Aransas NWR	Y/A/Y	GPS(BK)	Completed migration
2010-03	Wood Buffalo NP	GPS(BK)	Y/Y/A	Completed migration
2010-04	Wood Buffalo NP	GPS(BK)	A/B/Y	Completed migration
2010-05	Wood Buffalo NP	GPS(BK)	A/G/Y	Completed migration
2010-06	Wood Buffalo NP	GPS(BK)	A/W/Y	Completed migration
2010-07	Wood Buffalo NP	GPS(BK)	G/Y/A	Completed migration
2010-08	Wood Buffalo NP	GPS(BK)	A/Y/Y	Completed migration
2011-11	Wood Buffalo NP	GPS(W/B-11)	BK/B	Completed migration
2011-12	Wood Buffalo NP	GPS(W/B-12)	G/B	Completed migration
2011-13	Wood Buffalo NP	GPS(W/B-13)	BK/R	Completed migration
2011-14	Wood Buffalo NP	GPS(W/B-14)	BK/W	Died during winter
2011-15	Wood Buffalo NP	GPS(W/B-15)	BK/Y	Completed migration
2011-16	Wood Buffalo NP	GPS(W/B-16)	W/G	Completed migration
2011-17	Wood Buffalo NP	GPS(W/B-17)	Y/B	Completed migration
2011-18	Wood Buffalo NP	GPS(W/B-18)	W/B	Died during winter
2011-20	Wood Buffalo NP	GPS(W/B-20)	BK/BK	Died during winter
2011-80	Wood Buffalo NP	GPS(W/B-80)	BK/G	Completed migration
2011-90	Wood Buffalo NP	GPS(W/B-90)	G/G	Completed migration
2011-00	Aransas NWR	B/BK	GPS(B/W-00)	Unknown: last fix 1/24
2011-02	Aransas NWR	Y/BK	GPS(B/W-02)	Completed migration
2011-03	Aransas NWR	W/BK	GPS(B/W-03)	Transmitter malfunction
2011-04	Aransas NWR	R/W	GPS(B/W-04)	Completed migration
2011-05	Aransas NWR	A/B/W	GPS(B/W-05)	Completed migration
2011-06	Aransas NWR	B/G	GPS(B/W-06)	Completed migration
2011-07	Aransas NWR	GPS(B/W-07)	G/BK	Completed migration
2011-08	Aransas NWR	B/Y	GPS(B/W-08)	Completed migration
2011-09	Aransas NWR	B/R	GPS(B/W-09)	Completed migration
2011-10	Aransas NWR	R/BK	GPS(B/W-10)	Completed migration
2011-99	Aransas NWR	B/B	GPS(B/W-99)	Completed migration

^a A = BBL aluminum band, B = blue, BK = black, G = green, R = red, W = white, Y = yellow.

^b GPS bands pre-2011 were all black, post-2011 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.

Table 2. Percentage of locations used by whooping cranes wintering in Texas during winter 2011.

Location	% locations
San Jose Island	11
Matagorda Island	12
Blackjack Peninsula	45
Calhoun County	11
Lamar Peninsula	8
Other	13

Table 3. Percentage of stopover sites used by whooping cranes and percentage of time spent by U.S. state and Canadian province during 2012 spring migration.

State/province	% sites	% days
Alberta	9	4
Saskatchewan	30	35
Manitoba	1	1
Montana	1	1
North Dakota	9	10
South Dakota	10	24
Nebraska	10	9
Kansas	7	6
Northwest Territories	<1	<1
Oklahoma	11	5
Texas	11	5

Figure 1. Generalized migration corridor (shaded gray) and stopover sites (white circles) of 25 whooping cranes during spring migration, March–May 2012.

