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Remote Tracking of Aransas-Wood Buffalo Whooping Cranes
2011 Breeding Season and Fall 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. 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 23 whooping cranes during the 2011 breeding season and fall migration. One adult crane nested during summer 2011 but was observed without young during fall migration, while one 1-year-old crane spent the summer in southern Saskatchewan and northern North Dakota. The first cranes initiated migration on 10 September and all cranes that completed migration arrived on the Texas Coast by 27 November. We confirmed a mortality during migration of a juvenile crane in early November. 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 marked 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. Prior to the beginning of fall 2011 migration, we directed capture of 1 juvenile crane and 2 adult cranes along the Gulf Coast of Texas during winters 2009 and 2010. Capture teams marked 9 juvenile cranes during August 2010 and 12 juvenile cranes during August 2011 at Wood Buffalo National Park in Canada. During the 2011 breeding season and fall migration, 23 transmitters actively provided location data (Table 1).

Breeding Season Summary

One adult crane, marked in December 2009 at Aransas National Wildlife Refuge, nested in Wood Buffalo National Park during summer 2011 but was observed without young during fall staging in central Saskatchewan. One 1-year-old crane, marked in August 2010 at Wood Buffalo National Park, spent the entire summer of 2011 in southern Saskatchewan and northern North Dakota. This observation was consistent with historical reports of lone whooping cranes remaining at lower latitudes, frequently in association with sandhill cranes. On 16 October, the crane migrated south within the typical migration route for whooping cranes and arrived at Aransas National Wildlife Refuge in late October.

Migration Summary

Prior to migration, three transmitters stopped providing data (two mortalities and one suspected equipment failure; Table 1). Cranes departed Wood Buffalo National Park between 10 September and 29 October with an average departure date of 5 October. Four birds departed on 10 September and four departed on 21 October. The first birds arrived along the Gulf Coast of Texas on 19 October, and the last marked crane arrived on 27 November. The most common arrival date was 16 November. Total time spent migrating between summering and wintering areas during 2011 ranged from 9 to 62 days and averaged 35 days. For comparison, we estimated average migration time during fall 2010 at 39 days (19–70 days; $n = 8$).

We documented whooping cranes using 203 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 most other states and provinces received relatively similar use (Table 2). The general migration corridor used by whooping cranes during spring 2011 was similar to fall 2010 and other published reports (Fig. 1). We identified one stopover site along the Platte River, near Columbus, Nebraska, and none along the central Platte River. Six birds stopped near Cheyenne Bottoms Wildlife Area and Quivira National Wildlife Refuge in Kansas, and six birds stopped at Salt Plains National Wildlife Refuge in Oklahoma.

A juvenile crane, marked in August 2011, migrated through central Nebraska, eastern Kansas, and western Missouri, using a migration route with few previously reported whooping crane sightings. This crane, presumably accompanied by its parents, used stopover sites approximately 100–250 km east of the next nearest marked individual while passing through Nebraska and Kansas.

We documented one mortality event during fall migration. A juvenile marked in August 2011 died in western Kansas in early November. A conservation officer recovered the remains and sent them to the USGS National Health Center in Madison, WI. Cause of death was not determined.

Recent and Future Activities

During December 2011, we captured and marked 11 white-plumed cranes in Texas, 8 of which we believed to be paired adults. 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 the 2011 breeding season and fall migration, May–November 2011.

		Markings[a]		
Bird ID	Mark Location	Left Leg	Right Leg	Status
2009-01	Aransas NWR	R/A/Y	GPS(BK)	Completed migration
2009-02	Aransas NWR	Y/A/Y	GPS(BK)	Completed migration
2010-01	Wood Buffalo NP	GPS(BK)	B/Y/A	Suspected transmitter failure
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
2010-09	Wood Buffalo NP	GPS(BK)	A/R/Y	Died at Wood Buffalo
2011-01	Aransas NWR	A/R/R	GPS(B/W-01)[b]	Died at Wood Buffalo
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	Completed migration
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	Completed migration
2011-19	Wood Buffalo NP	GPS(W/B-19)	R/B	Died in Kansas
2011-20	Wood Buffalo NP	GPS(W/B-20)	BK/BK	Completed migration
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

[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 stopover sites used by whooping cranes during 2011 fall migration by U.S. state and Canadian province.

State/province	% sites
Alberta	11
Saskatchewan	32
North Dakota	6
South Dakota	7
Nebraska	8
Kansas	10
Missouri	1
Oklahoma	14
Texas	11

Figure 1. Generalized migration corridor (shaded gray) and stopover sites (white circles) of 20 whooping cranes during fall migration, September–November 2011.