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

July 2013

Remote Tracking of Aransas-Wood Buffalo Whooping Cranes
2012 Winter Season and 2013 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.
****

Partner Contacts

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

Dave Baasch, Wildlife Biologist, Headwaters Corporation; 308-390-0456; baaschd@headwaterscorp.com

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

Mary Harner, Director of Science, Crane Trust; 308-384-4633; mharner@cranetrust.org

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

Abstract: The Whooping Crane Tracking Partnership gathered location data for 41 whooping cranes during the 2012 winter season. The majority of marked cranes wintered at or near Aransas National Wildlife Refuge, although we identified multiple use sites >100 km from traditional use areas. Thirty-three cranes completed spring migration. One crane died during winter in Texas and one died during migration in South Dakota. Cranes initiated spring migration on 24 February, and all cranes arrived at summer use sites by 24 May. Future trapping efforts are planned for winter 2013–2014 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 have 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 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. Along the Gulf Coast of Texas, we captured one juvenile and one adult crane during winter 2009, one adult crane during winter 2010, 11 adult cranes during winter 2011, and one juvenile and 11 adult cranes during winter 2012. 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. During the 2012 winter season and 2013 spring migration, 39 transmitters provided location data (Table 1).

Winter Season Summary

GPS-marked cranes provided >15,000 locations during winter 2012-2013. The first date a marked bird arrived on the Texas coast, or nearby wintering areas, was 28 October 2012, with the last to arrive on 27 November 2012. The date the last bird left the wintering grounds area was 4 May 2013. Birds used a variety of ecologically distinct areas including coastal salt and brackish marsh communities, agricultural and ranching areas, and inland freshwater wetlands while over-wintering in Texas. GPS-marked bird locations were collected in 27 Texas Counties. The majority of locations were in Aransas, Calhoun, Refugio, Williamson, Wharton, and Colorado counties. Approximately 60% of recorded locations were within the boundaries of the Aransas National Wildlife Refuge. One mortality was confirmed on Aransas Wildlife Refuge.

Migration Summary

Prior to migration, five transmitters stopped providing data (Table 1). Cranes departed wintering sites in Texas between 24 February and 4 May 2013 with an average departure date of 5 April 2013. Forty-two percent of the birds departed by 1 April and 67% departed by 10 April. The first birds arrived at summer use sites on 4 May, and the last marked crane arrived on 24 May. The average arrival date was 11 May. Total time spent migrating between wintering and summering areas during 2013 ranged from 16 to 69 days and averaged 36 days. For comparison, we estimated average migration time during spring 2012 at 27 days (15–46; $n = 25$).

Thirty-three marked birds successfully migrated to northern summer areas. We documented whooping cranes using 409 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 proportional use as in previous years (Table 2). Cranes spent the most time at staging sites in South Dakota followed by Nebraska and North Dakota. Staging duration in Saskatchewan was reduced substantially compared to previous years. This coupled with increased staging duration in Nebraska and the Dakotas likely reflected winter-weather conditions encountered during migration. The general migration corridor used by whooping cranes during spring 2013 was similar to past migrations and other published reports (Fig. 1). Six birds stopped at Salt Plains National Wildlife Refuge in Oklahoma and eight birds stopped at or near Quivira National Wildlife Refuge in Kansas. Five birds used stopover sites along the Central Platte River. We confirmed one mortality in South Dakota during spring migration.

Recent and Future Activities

We plan to capture 10 adult cranes and mark them with GPS-PTTs at Aransas NWR during winter 2013–2014.

Table 1. Status of whooping cranes with active transmitters during winter and spring migration, November 2012–May 2013.

		Markings[a]		
Bird ID	Capture Location	Left Leg	Right Leg	Status
2009-01	Aransas NWR	R/A/Y	GPS(BK)	Died during 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	Broken transmitter antenna
2010-06	Wood Buffalo NP	GPS(BK)	A/W/Y	Unknown
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	Unknown
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
2011-15	Wood Buffalo NP	GPS(W/B-15)	BK/Y	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
2011-02	Aransas NWR	Y/BK	GPS(B/W-02)	Completed migration
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
2011-09	Aransas NWR	B/R	GPS(B/W-09)	Completed migration
2011-10	Aransas NWR	R/BK	GPS(B/W-10)	Broken transmitter antenna
2011-99	Aransas NWR	B/B	GPS(B/W-99)	Completed migration
2012-21	Wood Buffalo NP	GPS(W/G-21)	Y/W	Completed migration
2012-23	Wood Buffalo NP	GPS(W/G-23)	G/R	Completed migration
2012-24	Wood Buffalo NP	GPS(W/G-24)	Y/G	Completed migration
2012-25	Wood Buffalo NP	GPS(W/G-25)	GRY/B	Completed migration
2012-26	Wood Buffalo NP	GPS(W/G-26)	GRY/BK	Completed migration
2012-28	Wood Buffalo NP	GPS(W/G-28)	GRY/W	Completed migration

2012-30	Wood Buffalo NP	GPS(W/G-30)	GRY/G	Completed migration
2012-31	Aransas NWR	R/G	GPS(B/B-31)	Completed migration
2012-32	Aransas NWR	GPS(G/W-32)	NONE	Completed migration
2012-33	Aransas NWR	G/Y	GPS(G/W-33)	Completed migration
2012-34	Aransas NWR	W/Y	GPS(G/W-34)	Completed migration
2012-35	Aransas NWR	Y/GRY	GPS(G/W-35)	Completed migration
2012-36	Aransas NWR	Y/R	GPS(G/W-36)	Completed migration
2012-37	Aransas NWR	W/GRY	GPS(G/W-37)	Completed migration
2012-38	Aransas NWR	B/GRY	GPS(G/W-38)	Transmitter malfunction[b]
2012-39	Aransas NWR	G/W	GPS(G/W-39)	Unknown
2012-40	Aransas NWR	R/GRY	GPS(G/W-40)	Died during winter
2012-41	Aransas NWR	BK/GRY	GPS(G/W-41)	Completed migration
2012-42	Aransas NWR	R/Y	GPS(G/W-42)	Completed migration

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

[b] Transmitter stopped sending data 12/29/12, single location in WBNP 6/8/13.

Table 2. Percentage of stopover sites used by whooping cranes and percentage of time spent by U.S. state and Canadian province during 2013 spring migration.

State/province	% sites	% days
Alberta	6	1
Saskatchewan	28	13
Manitoba	<1	<1
North Dakota	17	15
South Dakota	15	34
Nebraska	12	27
Kansas	8	3
Oklahoma	6	3
Texas	8	4

Figure 1. Generalized migration corridor (shaded gray) and stopover sites (white circles) of whooping cranes during spring migration, February–May 2013.