# Implementation of the Whooping Crane Monitoring Protocol Spring 2014



## FINAL REPORT

Prepared by

Gary Lingle ASSESSMENT IMPACT MONITORING ENVIRONMENTAL CONSULTANTS 45320 Kilgore Road Gibbon NE 68840

and

Shay Howlin WESTERN ECOSYSTEMS TECHNOLOGY, INC. 2003 Central Avenue Cheyenne, WY 82001



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## Final Report Prepared by AIM Environmental Consultants and Western Ecosystems Technology, Inc.

#### For

## **Committees of the Platte River Recovery Implementation Program**

## 25 July 2014

#### Summary

The team of Western Ecosystems Technology, Inc. (WEST) and AIM Environmental Consultants implemented the *Whooping Crane Monitoring Protocol - Migrational Habitat Use in the Central Platte River Valley* (version dated 1 March 2014) during the spring 2014 migration season. Only observations made during the survey period (6 March - 29 April) are contained in this report. Twenty crane groups representing 36 individuals were identified during systematic aerial surveys; some of these groups represent the same individual cranes located on different days. In addition, eight crane groups representing 5 individuals, including 2 additional unique individuals, were located opportunistically. A total of 38 unique individual Whooping Cranes was located on the central Platte River during the spring 2014 survey period. Following are the detailed methods and results of the seasonal study.

## **Study Area and Methods**

The study area was the Platte River reach between U.S. Highway 283 (near Lexington) and Chapman, Nebraska. This reach was about 90 miles long and included an area extending 3.5 miles either side of the outermost banks of the Platte River. Field work and aerial surveys were conducted from 6 March through 29 April 2014. Based on analyses of several sets of data [*Whooping Crane Monitoring Protocol - Migrational Habitat Use in the Central Platte River Valley* (version dated 1 March 2014)], the Platte River Recovery Implementation Program (Program) scheduled the spring survey period to begin 15 days earlier than previous surveys. Observations of Whooping Cranes outside the survey period are not included herein. Data sheets were provided by the Program's Executive Director's Office and all data were entered into a web-based Microsoft SharePoint database developed and implemented for the Program by Riverside Technology, Inc.

Two air services were contracted and aerial surveys were conducted along specified routes near sunrise from 6 March through 29 April as weather permitted. Flights were initiated no earlier than 30 minutes before sunrise and typically were completed within 2 hours. Start times were delayed when weather/visibility conditions dictated. Flights were cancelled due to

unsafe weather or mechanical problems. Cessna 172's were equipped with GPS units and each had two observers to conduct the surveys. Waypoints for each survey route were programmed into the GPS units onboard the aircraft. Surveys were flown at an altitude of 750' and at a speed of about 100 mph.

The study area was divided into two legs. The east leg surveyed the Platte River reach between Chapman and the Minden (Highway 10) bridges and the west leg surveyed from the Minden to the Lexington (Highway 283) bridges. Each survey began flying upstream (east to west) along the south side of the main river channel with both observers looking out the right side of the aircraft. This provided optimum light conditions such that observers looked away from the rising sun thereby minimizing glare off reflective surfaces. Start points were alternated for each leg to address the concern that one end of the river transect would always be flown earlier than the other end. On the east leg, on day one the survey began at Chapman, flew the river west (transect OSE) to Minden then flew a primary targeted wetland return transect (PWRTE) back to Chapman then flew a secondary targeted wetland return transect (CSRT) from Chapman to Highway 34. Day two began at Wood River, flew the river to Minden, returned along a primary targeted wetland return transect back to Chapman, then flew the rest of the river transect from Chapman to Wood River, then flew a secondary targeted wetland return transect (WSRT) from Wood River to Highway 34. The start points for the west leg were Minden and Odessa bridges. Day one began at Minden, flew the river (transect OSW) west to Lexington then flew a primary targeted wetland return transect (PWRTW) back to Minden. Day two began at Odessa, flew the river to Lexington, returned along a primary targeted wetland return transect back to Minden, then flew the rest of the river transect from Minden to Odessa, then flew a secondary targeted wetland return transect (ESRT) from Elm Creek to Minden. All primary and secondary targeted wetland transects were flown with observers looking out opposite sides of the aircraft. The spring 2014 survey was the second season where primary and secondary return transects were flown instead of the seven fixed return transects at 1, 2, and 3 miles north and south of the main channel as well as one directly over the main channel.

Prior to the flight, the air crew was notified when Whooping Cranes were reported by the public to be within the survey area. The observers recorded whether they were aware or not aware of the presence of Whooping Cranes beforehand on the aerial observations form. Four ground observers were stationed along the survey routes. Communication between the ground observers and the aircraft was accomplished through the use of two-way radios. In the event of a possible Whooping Crane sighting by the aircrew, the ground person nearest the sighting was contacted and immediately dispatched to the location in an effort to confirm the identity of the white object. Efforts were made to photograph Whooping Cranes from the air using Nikon D90 digital cameras. In addition, a GPS reading of the location was taken by the air crew.

If a Whooping Crane was located by ground personnel, habitat use and activity monitoring commenced. Activity monitoring of the Whooping Crane or of a "focus" bird when more than one individual was present, was recorded every 15 minutes as one of the following categories: courtship, preening, defensive, feeding, alert, resting, or other activity as defined by the observer. These observations continued until the group was either lost from view or went to roost for the night. If a group was lost, observers spent a minimum of 2 hours attempting to re-

locate the group. Each Whooping Crane sighting was assigned a unique number and later compared with the U.S. Fish and Wildlife Service's (USFWS) sighting records in Grand Island.

Whooping Crane movements, behavior, and diurnal habitat use were recorded when possible. All monitoring activities followed USFWS and Nebraska Game & Parks Commission guidelines to avoid disturbing the cranes. Landowner permission was obtained prior to entering any private property.

Whooping Crane decoys were placed at 10 riverine, 10 wetland, 10 cornfield, and 10 lowland grassland locations by personnel from the Executive Director's Office for the purposes of determining aerial survey detection rates. The air crew did not know when or where the decoys were placed. Decoys were placed prior to the flights and only ground crew personnel were notified of their location. Observations of Whooping Crane decoys by the aircrew were reported to the ground crew for confirmation.

Topographic profiles and use site characteristics were discontinued. This was the first season that profiles were not surveyed and use site characteristics were not measured. Instead, the Executive Director's Office staff developed similar metrics at roost locations that were measured remotely via a Geographical Information System (Appendix A).

#### Results

#### Summary of Observations

Table 1 depicts AIM's assigned crane group identification numbers along with the Use Site ID when applicable, date, number of cranes, location at the time of the initial sighting, and the type of sighting. Multiple identification numbers may represent a single crane group (see Table 7).

Table 1. Crane Group ID numbers and location of initial observations of each group.

ID #	Use	Aerial	Date	# of	UTMx	UTMy	Type of
2014SP	Site ID	Photo		birds			Sighting
1	NA	n	14-Mar	1	NA	NA	Opportunistic
2	NA	У	16-Mar	1	507391	4499988	Systematic
3	1	У	26-Mar	1	560532	4524477	Systematic
4	NA	n	27-Mar	1	558637	4519620	Opportunistic
5	2	У	28-Mar	1	559598	4522933	Systematic
6	4	У	29-Mar	1	559978	4523823	Systematic
7	5	У	30-Mar	1	559899	4523519	Systematic
8	6	n	31-Mar	1	560163	4523760	Opportunistic
9	6	n	1-Apr	1	560163	4523760	Opportunistic
10	7	У	2-Apr	1	560052	4523723	Systematic
11	NA	n	3-Apr	1	561914	4522388	Opportunistic
12	8	У	4-Apr	1	560039	4523741	Systematic

13	9	У	5-Apr	1	559501	4523273	Systematic
14	10	У	5-Apr	2	545541	4514628	Systematic
15	11	У	5-Apr	2	532364	4509878	Systematic
16	12	У	5-Apr	2	529564	4508384	Systematic
17	13	У	5-Apr	2	508830	4501878	Systematic
18	14	n	6-Apr	2	560136	4523828	Opportunistic
19	14	n	6-Apr	1	560136	4523828	Opportunistic
20	NA	n	6-Apr	5	540590	4511091	Systematic
21	14	n	7-Apr	1	560136	4523828	Opportunistic
22	14	n	8-Apr	1	560136	4523828	Opportunistic
23	15	У	9-Apr	1	560299	4524002	Systematic
24	NA	n	9-Apr	1	NA	NA	Opportunistic
25	16	У	12-Apr	6	511126	4502937	Systematic
26	17	У	12-Apr	6	510873	4502876	Systematic
27	18	У	12-Apr	5	508157	4501804	Systematic
28	19	У	14-Apr	3	505749	4501330	Systematic
29	19	У	15-Apr	3	505749	4501330	Systematic

#### Aerial Survey .--

#### CONFIRMED WHOOPING CRANE SIGHTINGS-

A total of 23 Whooping Crane groups totaling 45 individuals was located during systematic aerial surveys. There was a minimum of 36 unique individuals detected considering that some of the crane groups were seen on more than one occasion.

Of a possible 55 morning flights scheduled per leg, both legs completed 47 (85%) flights and about 9,500 survey miles were flown. Adverse weather resulted in flight cancellations or delayed start times. Facility issues in Grand Island also delayed flight times. Of the 98 total flight departures (4 were aborted after take-off); three flights were delayed over 25 minutes, 2 flights were delayed 21-25 minutes, 3 flights were delayed 16-20 minutes, 16 flights were delayed 11-15 minutes, 20 flights were delayed 6-10 minutes, and the remaining 54 flights were not delayed.

#### INDEX OF USE-

We completed 258 (85%) aerial survey transects out of 302 transects scheduled (2 or 3 transects per flight depending on flight leg and origin). Twenty-three Whooping Crane group sightings were made on these transects (Table 2). Some of these groups were seen on more than one transect. This resulted in an index of use (frequency of occurrence) of 0.09 sightings per transect. All sightings occurred on the East Leg.

υ	ne 2. Whooping Crane index of use along aerial transects.							
		#	#	# WC				
	Transect	scheduled	completed	sightings	Frequency			
	River	110	95	19	0.20			
	Primary return	110	93	4	0.04			
	Secondary return	82	70	0	0.00			
	Total	302	258	23	0.09			

Table 2. Whooping Crane index of use along aerial transects.

#### **OPPORTUNISTIC FLIGHTS-**

We conducted 14 opportunistic flights that totaled about 3.1 hours. Thirteen opportunistic Whooping Crane sightings occurred when the plane deviated from the systematic survey's return transect at the request of the ground observer to confirm the presence of a previously detected crane group. This was done to assist the ground crew in determining whether to initiate a ground search during those instances when the cranes were not visible from the ground. These flights did not result in locating additional unique crane groups. Three additional flights were deployed at other times of the day and resulted in one Whooping Crane sighting.

#### **Opportunistic Locates.**—

Reports received from the public were forwarded to AIM for a follow-up investigation. Those reports are summarized below.

On March 14, Kent Skaggs reported 1 Whooping Crane photographed southwest of Elm Island and 33 Roads. A ground search detected this crane (2014SP01) in flight northwest of Carpenter and 35 Roads. It flew out of sight and was not located again that day.

On March 23, David Baasch received a report of 1 Whooping Crane in a soybean field about 2 mi east of Hwy 183 and north of 747 Road. A ground search was conducted and a leucistic Sandhill Crane known to be in the area was observed.

On March 26, 1 Whooping Crane was reported by Rick Rasmussen about 1 mile upstream of the Highway 34 bridge in Hall County. A ground search was conducted and this Whooping Crane (2014SP03) was detected and monitored.

On March 30, Kent Skaggs reported a large white bird seen from the Hike-Bike bridge the previous evening. That morning, 1 Whooping Crane was reported in a corn field northeast of 27 and U Roads in Kearney County. A ground search was conducted and a leucistic Sandhill Crane was found.

On April 1, Greg Wright reported 1 Whooping Crane in a cornfield northeast of Wild Wood and Locust in Hall County. AIM personnel located and monitored this individual (2014SP09).

On April 1, Greg Wingfield reported 2 Whooping Cranes seen from Rowe's north blind the previous evening. A ground search of the area revealed 2 leucistic Sandhill Cranes and a pair of Snow Geese in the vicinity. No Whooping Cranes were detected by AIM personnel.

On April 2, Greg Wright reported 1 Whooping Crane in a cornfield northeast of Highway 2 and 10 Road in Hamilton County. AIM personnel located and monitored this individual (2014SP10).

On April 5, Gene Hunt reported 3 Whooping Cranes seen at 7:01AM on the river west of the Hike-Bike bridge. Our aerial search of that reach at 6:50 AM did not detect any Whooping Cranes. A ground search was done in the adjacent fields and no Whooping Cranes were detected. AIM personnel were dispatched to search other areas where confirmed Whooping Cranes were detected during the systematic aerial survey. This group was radio-marked and photographed; however, AIM personnel did not observe them.

At 7:50 PM on April 11, Kent Skaggs reported 5 Whooping Cranes on Rowe Sanctuary that evening. No action was taken until the following morning when they were spotted from the airplane and later monitored from the ground (2014SP27).

In summary, a total of 5 crane groups comprising a minimum of 2 individuals were located opportunistically based on public reports. In addition, 1 crane group comprised of 5 individuals was located during a systematic aerial survey following a public report. A radio-marked family group of 3 individuals was not detected during a systematic aerial survey or a ground search.

#### Diurnal Movements, and Activity .--

DIURNAL USE LOCATIONS-

Whooping Crane movements ranged within 4.8 miles of nocturnal roost sites. We documented 76 diurnal use locations during 20 days of observation (Figures 4-8, Table 3). These locations were sites where activity data was collected or where the cranes were visible from the ground during daylight hours.

	Crane	Use			
Use Date	Group ID	Site ID	UTMx	UTMy	Landcover Class
3/14/2014	2014SP01	NA	NA	NA	Ag - Corn
3/16/2014	2014SP02	NA	507391	4499988	Ag - Corn
3/26/2014	2014SP03	1	560532	4524477	Wetted Channel
3/26/2014	2014SP03	1	560552	4524608	Barren Beach/Bar
3/27/2014	2014SP04	NA	558637	4519620	Ag - Corn
3/28/2014	2014SP05	2	559598	4522933	Wetted Channel
3/28/2014	2014SP05	3	560242	4524199	Wetted Channel
3/28/2014	2014SP05	NA	561103	4519440	Ag - Corn

Table 3. Whooping Crane diurnal use locations.

3/28/2014	2014SP05	NA	560165	4522552	Ag - Soybean
3/29/2014	2014SP06	4	559978	4523823	Wetted Channel
3/29/2014	2014SP06	4	559978	4523823	Barren Beach/Bar
3/29/2014	2014SP06	NA	562669	4522415	Ag - Corn
3/29/2014	2014SP06	4	559978	4523823	Wetted Channel
3/30/2014	2014SP07	5	559899	4523519	Barren Beach/Bar
3/30/2014	2014SP07	5	559899	4523519	Wetted Channel
3/30/2014	2014SP07	5	559899	4523519	Wetted Channel
3/30/2014	2014SP07	NA	562663	4522348	Ag - Corn
3/30/2014	2014SP07	NA	562165	4524352	Ag - Mown
3/31/2014	2014SP08	NA	564342	4522498	Ag - Corn
3/31/2014	2014SP08	6	560163	4523760	Wetted Channel
4/1/2014	2014SP09	NA	554592	4524101	Ag - Corn
4/1/2014	2014SP09	6	560163	4523760	Wetted Channel
4/2/2014	2014SP10	7	560052	4523723	Wetted Channel
4/2/2014	2014SP10	NA	562440	4521344	Ag - Corn
4/2/2014	2014SP10	NA	562440	4521344	Ag - Corn
4/2/2014	2014SP10	7	560052	4523723	Wetted Channel
4/2/2014	2014SP10	NA	562440	4521344	Ag - Corn
4/2/2014	2014SP10	NA	560225	4522444	Ag - Soybean
4/3/2014	2014SP11	NA	561914	4522388	Ag - Corn
4/3/2014	2014SP11	NA	561914	4522388	Ag - Corn
4/5/2014	2014SP13	9	559501	4523273	Barren Beach/Bar
4/5/2014	2014SP13	NA	562392	4521175	Ag - Corn
4/5/2014	2014SP14	10	545541	4514628	Barren Beach/Bar
4/5/2014	2014SP15	11	532364	4509878	Barren Beach/Bar
4/5/2014	2014SP16	12	529564	4508384	Barren Beach/Bar
4/5/2014	2014SP16	12	529564	4508384	Wetted Channel
4/5/2014	2014SP17	13	508830	4501878	Barren Beach/Bar
4/5/2014	2014SP17	13	508830	4501878	Wetted Channel
4/6/2014	2014SP18	NA	559718	4522688	Grassland - Upland
4/6/2014	2014SP18	NA	560071	4521336	Ag - Corn
4/6/2014	2014SP18	14	560136	4523828	Wetted Channel
4/6/2014	2014SP18	NA	560071	4521336	Ag - Corn
4/6/2014	2014SP18	14	560136	4523828	Wetted Channel
4/6/2014	2014SP19	14	560136	4523828	Wetted Channel
4/6/2014	2014SP19	14	560136	4523828	Barren Beach/Bar
4/6/2014	2014SP19	NA	562513	4521193	Ag - Corn
4/4/2014	2014SP12	8	560039	4523741	Barren Beach/Bar
4/4/2014	2014SP12	8	560039	4523741	Wetted Channel
4/4/2014	2014SP12	NA	564122	4520516	Ag - Corn
4/6/2014	2014SP20	NA	540222	4511129	Ag - Corn
4/6/2014	2014SP20	NA	540222	4511129	Ag - Corn

4/6/2014	2014SP20	NA	541054	4512444	Wetted Channel
4/7/2014	2014SP21	NA	564899	4520676	Ag - Corn
4/7/2014	2014SP21	14	560136	4523828	Barren Beach/Bar
4/7/2014	2014SP21	NA	564348	4520445	Ag - Corn
4/7/2014	2014SP21	NA	560830	4523650	Ag - Corn
4/8/2014	2014SP22	14	560136	4523828	Barren Beach/Bar
4/8/2014	2014SP22	14	560136	4523828	Barren Beach/Bar
4/8/2014	2014SP22	NA	564182	4520747	Ag - Corn
4/9/2014	2014SP23	15	560299	4524002	Barren Beach/Bar
4/9/2014	2014SP23	15	560299	4524002	Wetted Channel
4/9/2014	2014SP23	NA	563910	4521399	Ag - Corn
4/9/2014	2014SP24	NA	498880	4500551	Pond/Lake
4/12/2014	2014SP25	16	511126	4502937	Barren Beach/Bar
4/12/2014	2014SP25	16	511126	4502937	Wetted Channel
4/12/2014	2014SP25	NA	510858	4503946	Ag - Corn
4/12/2014	2014SP25	NA	511315	4503070	Wetted Channel
4/12/2014	2014SP26	17	510873	4502876	Barren Beach/Bar
4/12/2014	2014SP26	NA	511510	4503707	Ag - Corn
4/12/2014	2014SP27	18	508157	4501804	Wetted Channel
4/12/2014	2014SP27	NA	508031	4502341	Ag - Corn
4/12/2014	2014SP27	NA	508710	4508693	Ag - Corn
4/14/2014	2014SP28	19	505749	4501330	Wetted Channel
4/15/2014	2014SP29	19	505749	4501330	Wetted Channel
4/15/2014	2014SP29	19	505749	4501330	Wetted Channel
4/15/2014	2014SP29	20	506303	4501712	Wetted Channel

#### LAND-COVER CLASS-

Ag-Corn, Wetted Channel, Barren Beach/Bar, Ag-Soybeans, and Grassland-Upland were the cover-types used by Whooping Cranes during the day. Twenty-nine locations were in corn, 26 were in wetted channel (includes aerial sightings), 16 were in barren beach/bar, 2 were in soybeans, and 1 each was in ag-mown, open water pit/pond, and upland grassland. Nocturnal roost locations were in Wetted Channel.

#### ACTIVITY-

About 123 hours of continuous and instantaneous use (time budget) data of Whooping Cranes was collected by ground personnel during 20 days of observation. Fifty-three percent (58.2 hrs) of the observations were in corn, 27% (28.8 hrs) were in wetted channel, 18% (19.1 hrs) were in barren beach/bar, 1% (0.2 hrs) were in soybeans, and 1% (0.2 hrs) were in ag-mown (Table 4). We recorded 493 data points of activity (time budget). The breakdown of activity within each habitat type is depicted in Table 5. Feeding was the most common activity observed in all of the habitats combined.

	Ν	Hours	Percent	
Ag - Corn	262	58.2	53.1%	
Ag - Mown	5	0.2	1.1%	
Ag - Soybean	5	0.2	1.1%	
Barren/Bar	90	19.1	18.2%	
Wetted Channel	131	28.8	26.6%	

Table 4. Count of instant points by habitat.

Table 5. Whooping Crane activity by habitat.

			# Instant	
		#	Points	
		" Instant	per	
Habitat	Activity	Points	Habitat	Percent
Ag - Corn	Alert	9	262	3.44%
Ag - Corn	Defensive	1	262	0.38%
Ag - Corn	Feeding	224	262	85.50%
Ag - Corn	NA	12	262	4.58%
Ag - Corn	Preening	3	262	1.15%
Ag - Corn	Resting	13	262	4.96%
Ag - Mown	Alert	1	5	20.00%
Ag - Mown	Feeding	4	5	80.00%
Ag - Soybean	Alert	1	5	20.00%
Ag - Soybean	Defensive	1	5	20.00%
Ag - Soybean	Feeding	3	5	60.00%
Barren Beach/Bar	Alert	2	90	2.22%
Barren Beach/Bar	Feeding	24	90	26.67%
Barren Beach/Bar	NA	20	90	22.22%
Barren Beach/Bar	Resting	44	90	48.89%
Wetted Channel	Alert	12	131	9.16%
Wetted Channel	Defensive	6	131	4.58%
Wetted Channel	Feeding	32	131	24.43%
Wetted Channel	NA	27	131	20.61%
Wetted Channel	Preening	5	131	3.82%
Wetted Channel	Resting	49	131	37.40%

## Streamflow.—

Streamflow measured at the USGS gauging stations located near Grand Island, Kearney, and Overton was generally lower than the median streamflow for each site during the survey (Figures 1-3). Note all flow data are provisional and subject to revision. Table 6 depicts the minimum and maximum values for unit (instantaneous) flows at each station during the survey period.

	Overton	Kearney	<b>Grand Island</b>
Minimum	172	622	553
Date	4/21	3/24	4/2
Maximum	2530	2310	2170
Date	4/8	3/28	4/21

Table 6. Discharge values (cfs) at USGS gauging stations (provisional data).

The streamflow when Whooping Cranes were observed on the river are shown in Table 7.

Table 7. Flow conditions when Whooping Cranes were observed. (Discharge recorded at the Platte River gauging station near Grand Island).

Use		
Site ID	Date	Discharge
1	26-Mar	1080
2	28-Mar	1900
3	28-Mar	1880
4	29-Mar	1920
5	30-Mar	1040
6	31-Mar	774
6	1-Apr	589
7	2-Apr	565
8	4-Apr	1460
9	5-Apr	1700
10	5-Apr	1700
11	5-Apr	1700
12	5-Apr	1700
13	5-Apr	1700
14	6-Apr	1750
14	7-Apr	894
15	9-Apr	991
16	12-Apr	1880
17	12-Apr	1880

18	12-Apr	1880
19	14-Apr	926
19	15-Apr	926
20	15-Apr	926

#### Search Effort.--

Ground searches were initiated on 52 occasions. A total of 65.5 hours was expended in this effort and 1,257 miles were driven. Search duration extended from 0.1 to 5.0 hours. Whooping Cranes were found on 24 (46%) occasions.

#### Crane-Use Days .--

Crane-use days were calculated by multiplying the number of Whooping Cranes within a crane group by the number of days present. For this calculation, we assumed that a Whooping Crane observed during the morning aerial survey was present at some point the previous day (i.e. the cranes arrived in late afternoon/early evening of the previous day to roost within the study area). Whooping Cranes were believed to be present in the study area a minimum of 25 (45%) of the 55 days of the survey. We documented the presence of 29 crane groups that contained a minimum of 38 (31:7) individuals. A minimum of 96 crane-use days was recorded (Table 8). Again these data only reflect use during the survey period of 6 March - 29 April through both the systematic and opportunistic efforts.

Crane Group	Number of	Dates of Occurrence	# of days present	Crane-Use Days
2014SP	Cranes (ad:juv)			
01-02	1:0	March 14 & 16	4	4
03-13,19,21-23	1:0	March 26-Apr 9	16	16
14	2:0	Apr 5	2	4
15	2:0	Apr 5	2	4
16	2:0	Apr 5	2	4
17	2:0	Apr 5	2	4
18	2:0	Apr 6	2	4
20	4:1	Apr 6	2	10
24	1:0	Apr 9	2	2
25	4:2	Apr 12	2	12
26	4:2	Apr 12	2	12
27	4:1	Apr 12	2	10
28-29	2:1	Apr 14-15	4	12
TOTAL*	31:7	March 14- April 15		96

Table 8. Whooping Crane dates of occurrence and crane-use days.

\*3 additional whooping cranes, including 1 radio-marked bird, were observed in the area on 5 April, but were not detected during aerial or ground surveys and thus are not included in Table 8.

#### Program ID and U.S. Fish & Wildlife Service ID Comparisons.--

Table 9 compares the Program numbering system with the USFWS database (Martha Carlisle, personal communication).

Program Crane ID	Program Name	USFWS Crane ID	Dates of	# of
(Prefix 2014SP)		(Prefix 14A)**	Occurrence	cranes
01, 02	Rowe single	02	March 14&16	1:0
03-13,19,21-23	Hwy 34 single	07	Mar 26- Apr 9	1:0
14	Wild Rose pair	20	Apr 5	2:0
15	Westering pair	21	Apr 5	2:0
16	Mangelsen pair	22	Apr 5	2:0
17	Rowe pair	23	Apr 5	2:0
18	Hwy 34 pair	25	Apr 6	2:0
20	Shoemaker Island*	26	Apr 6	4:1
24	Ft Kearny single	44	Apr 9	1:0
25	Rowe 6a	38	Apr 12	4:2
26	Rowe 6 b*	38	Apr 12	4:2
27	Rowe 5*	38	Apr 12	4:1
28,29	Rowe family	39	Apr 14-15	2:1

Table 9. Comparison of Program Crane ID and USFWS Crane ID.

\*indicates a radio-marked individual was present in the group

\*\* an additional whooping crane group consisting of 3 birds (USFWS ID 14A-24) including 1 radio-marked bird was observed by the public on 5 April, but was not observed during aerial or ground surveys and thus is not included in Table 9.

#### Radio-marked Whooping Cranes and Platte River Use.—

Thirty-two GPS radios attached to Whooping Cranes were active during the 2014 spring migration (Whooping Crane Tracking Partnership 2013 Winter and 2014 Spring Migration Season Report). AIM personnel observed 3 individual Whooping Cranes that were radio-marked. In addition, one radio-marked adult in a family group of 3 was not detected by AIM. Four radio-marked Whooping Cranes were known to be present on the Platte River this spring which represent 12.5% of the radio-marked population with active transmitters.

Analyses of Whooping Crane survey data collected by U.S. Fish and Wildlife biologists at Aransas National Wildlife Refuge reported a population size of 304 individuals for winter 2013–2014 (<u>http://www.fws.gov/nwrs/threecolumn.aspx?id=2147544385</u>). These estimates were calculated from survey results from Whooping Crane abundance surveys involving survey methodology that may not be directly comparable to population estimates prior to winter 2010-2011. Table 10 depicts an estimate of the percent of the population observed stopping within the study area on the Platte River. This estimate does not include the family group of 3 that was not detected by AIM personnel.

Table 10. Whooping Crane population estimate and the percentage of the population stopping on the Platte River.

	SPRING 2014	
WC Pop		
January		% Using
2014	# Platte	Platte
304	38	12.5

## Searcher Efficiency Trials.—

Whooping Crane decoys were placed at 40 locations between 8 March and 25 April (Table 11). The air observers detected a decoy at 6 (60%) riverine, 0 (0%), corn, 0 (0%) wetland, and 0 (0%) grassland sites for an overall detectability rate of 15%.

Table 11.	Random	locations	of decoys	for c	detectability trials.	•
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Decoy	Date	Leg	x	Y	Landcover	Detected
1	29-Mar	West	451333	4503158	Wetted Channel	No
2	16-Mar	East	533149	4510332	Wetted Channel	Yes
3	16-Mar	East	516803	4505254	Wetted Channel	Yes
4	17-Mar	West	496494	4500941	Wetted Channel	Yes
5	17-Mar	East	571691	4537136	Wetted Channel	Yes
6	29-Mar	West	460452	4503863	Wetted Channel	No
7	22-Mar	West	501742	4501327	Wetted Channel	No
8	31-Mar	East	539771	4514634	Wetted Channel	Yes
9	16-Apr	West	486360	4501986	Wetted Channel	No
10	16-Apr	East	558703	4521959	Wetted Channel	Yes
11	8-Apr	East	505514	4499267	Ag – Corn	No
12	8-Apr	East	555242	4514863	Ag – Corn	No
13	9-Apr	East	569034	4530699	Ag – Corn	No
14	10-Apr	East	518206	4504382	Ag – Corn	No
15	10-Apr	West	450696	4499617	Ag – Corn	No
16	15-Apr	East	560034	4521494	Ag – Corn	No
17	17-Apr	West	446916	4500596	Ag – Corn	No
18	18-Apr	West	436443	4504930	Ag – Corn	No
19	24-Apr	West	489401	4496035	Ag – Corn	No
20	24-Apr	West	461147	4499983	Ag – Corn	No
21	8-Mar	West	472264	4502565	Grassland – Lowland	No
22	20-Mar	West	460024	4501155	Grassland – Lowland	No
23	21-Mar	West	500105	4502167	Grassland – Lowland	No
24	25-Mar	West	458506	4501928	Grassland – Lowland	No
25	30-Mar	East	571176	4538086	Grassland – Lowland	No

26	4-Apr	East	510241	4505567	Grassland – Lowland	No
27	5-Apr	East	568991	4535940	Grassland – Lowland	No
28	9-Mar	East	569289	4536241	Grassland – Lowland	No
29	17-Apr	West	477466	4503122	Grassland – Lowland	No
30	25-Apr	East	509388	4500859	Grassland – Lowland	No
31	18-Mar	West	459738	4501323	Palustrine Wetland	No
32	24-Mar	West	471977	4503036	Palustrine Wetland	No
33	22-Mar	West	456369	4506127	Palustrine Wetland	No
34	2-Apr	East	569836	4533723	Palustrine Wetland	No
35	8-Apr	East	570528	4533738	Palustrine Wetland	No
36	16-Apr	West	475084	4508655	Palustrine Wetland	No
37	18-Apr	East	566991	4531567	Palustrine Wetland	No
38	19-Apr	East	571798	4535221	Palustrine Wetland	No
39	20-Apr	East	573457	4536381	Palustrine Wetland	No
40	25-Apr	West	448373	4501023	Palustrine Wetland	No

#### Incidental Take.—

The USFWS requested information and documentation of any human activity that occurred in the proximity of Whooping Cranes that could constitute "take" as defined by the Endangered Species Act i.e. "...to harass, harm, pursue, hunt, shoot, wound, kill, capture, or collect, or attempt to engage in any such conduct". Because harassment interrupts essential feeding or sheltering behaviors, the definition includes disturbance of Whooping Cranes sufficient to result in cranes taking flight.

LETHAL OR CRIPPLING TAKE-

AIM's monitoring effort did not result in any crippling or lethal take of Whooping Cranes this season.

#### HARASSMENT-

AIM and Program personnel did not observe or engage in any activity that could be construed as "harassment" as defined by USFWS.

#### PUBLIC DISTURBANCE-

On March 30, a military helicopter flew low (<2000') over the river at 7:22AM causing a Whooping Crane along with hundreds of Sandhill Cranes to flush. They settled back down on the river after the aircraft left. Later that afternoon, an airboat inadvertently flushed the Whooping Crane and Sandhill Cranes from the river as it motored upstream. Upon seeing the cranes in flight, the airboat operator turned around to avoid flushing additional cranes.

On April 12, a tractor flushed a group of 5 Whooping Cranes from a field during cattle feeding operations at 7:20AM. The tractor was about 100 yards from the cranes before they flew. At 9:38AM, a dog approached these birds to within 100 yards and flushed them from a cornfield.

At 9:25AM on April 12, a tractor driving down a county road flushed a group of 6 Whooping Cranes when it approached to less than 150 yards of them while they were in a cornfield. A second group of 6 Whooping Cranes also flushed when the tractor and other cranes passed near them.

## Recommendations

Consider shortening the survey to March 12 through April 25. The added 15 days this season resulted in 1 Whooping Crane observation.

Place an "Aware" field in the *Aerial Observations* portion of the database. The field would be filled in as either "yes" or "no". This would aid in future detectability analyses. Currently that information is contained in the "Notes".

## **Supplements**

QAQC of the database was completed by AIM.

Original Data Sheets

CD with photos and electronic copy of the final report.



Figure 1. Platte River discharge (cfs) and gage height at Grand Island.





Figure 2. Platte River discharge (cfs) at Kearney.



Final Spring 2014 Whooping Crane Monitoring Report 7/25/2014



Figure 3. Platte River discharge (cfs) at Overton.



Figure 4. Whooping Crane use locations upstream of the Highway 34 bridge. All but two of these locations were from a single individual (Hwy 34 single, see Table 8). Crane group 2014SP18 (Hwy 34 pair) used a cornfield on April 6.



Figure 5. Whooping Crane use locations in the vicinity of the Alda bridge. Crane group 2014SP14 was detected on April 5 and 2014SP20 on April 6. Observation 4/6C? was an approximate location.



Figure 6. Whooping Crane use locations (crane groups 2014SP15 & 16) west of the Wood River bridge.



Figure 7. Whooping Crane use locations in the vicinity of Rowe Sanctuary downstream of the Minden bridge (lower image is zoomed in). Twenty-three (60%) of the 38 unique Whooping Cranes detected occurred in this reach.



Figure 8. Overview of observed Whooping Crane use locations during spring 2014.



# Appendix A

Summary of channel metrics measured remotely using ArcGIS by the Executive Director's Office of the Platte River Recovery Implementation Program

In 2013, the Executive Director's Office (EDO) of the Program began evaluating the Program's whooping crane data, such as River Profile and Use Characteristic data, that had been collected since 2001 as outlined in the Program's Whooping Crane Monitoring Protocol. The EDO attempted to replicate measurements recorded in the field using ArcGIS, HEC-RAS models, and LiDAR data with the goal of generating a comparable set of data at unused or 'available' sites to be used in use-availability types of analyses. Among other things, the EDO noticed numerous inconsistencies in metric values between methods of measuring channel features such as unobstructed channel width. More specifically, features identified in the field as an obstruction (object >1.5 meters tall) at times were not determined to be >1.5 meters tall when evaluated using LiDAR data and thus the length of the metrics were occasionally much longer when measured remotely than they were in the field. The Program determined it would be inappropriate to incorporated field collected measurements at use locations and remotely sensed measurements at the available locations in a use-availability analysis as the results would likely be highly biased by the discrepancies associated with the method used to collect the data. The Program decided the field collected data were expensive to collect and were of little additional value to the Program where potentially more consistent and less biased data could be collected remotely via ArcGIS. As such, in 2014 the Program opted to discontinue collecting River Profile and Use Characteristics data as has been done in the past and instead plans to evaluate whooping crane response to similar metrics that are measured remotely. A few examples of currently used metrics as well as definitions and links to Program hypothesized metrics include:

Current Metric	Definition	Hypothesized Metric
Unforested Width	Distance, perpendicular to flow, between wooded	Unobstructed
Distance to Nearest Wooded Area	Distance to the nearest wooded area in any direction from the location	Distance to Visual Obstruction
Unvegetated Width	Distance, perpendicular to flow, between vegetated islands or bank on each side of the location.	Unobstructed Channel Width
Distance to Nearest	Distance to the nearest vegetated islands or bank in	Distance to Visual
Vegetated Island or Bank	any direction from the location	Obstruction

**Table A-1.** Whooping crane habitat related metrics collected remotely at use and available locations as well as a proposed definition for each metric and a link to Program hypothesized metrics.

Summaries contained in this Appendix include data collected remotely at roost locations observed during the spring 2014 monitoring season (Table A-2), data collected remotely at roost locations observed during spring, fall, and winter monitoring seasons 2001-2014 (Table A-3), data collected remotely at roost locations observed during spring monitoring seasons 2001-2014 (Table A-4), and data collected remotely at roost locations observed during fall monitoring seasons 2001-2013 (Table A-5). All data included in Appendix A were compiled by EDO staff and were not collected under the Program's current monitoring protocol nor were the data reviewed or scrutinized by AIM or WEST. Any reference to information contained in Appendix A should acknowledge the data contained herein are preliminary and have not been subjected to an exhaustive review.

**Table A-2.** Unvegetated width, distance to nearest vegetated island or bank, unforested width, and distance to nearest wooded area, as measured in ArcGIS, at roost locations observed during spring 2014 monitoring efforts.

	Program Crane			Unique Crane	Systematic or Opportunistic	Unvegetated	Distance to Nearest	Unforested	Distance to Nearest
Date	Group ID	UTM X	UTM Y	Group	Observation	Width (Ft)	Vegetation (Ft)	Width (Ft)	Forest (Ft)
3/26/2014	2014SP03	560532	4524477	Yes	Systematic	220	46	1104	189
3/28/2014	2014SP05	559601	4522938	No	Systematic	139	48	375	96
3/29/2014	2014SP06	559978	4523823	No	Systematic	554	34	1502	338
3/30/2014	2014SP07	559899	4523519	No	Systematic	544	202	1122	230
3/31/2014	2014SP08	560163	4523760	No	Opportunistic	771	36	1075	158
4/2/2014	2014SP10	560446	4524261	No	Systematic	782	164	1573	332
4/4/2014	2014SP12	560039	4523741	No	Systematic	615	233	1504	398
4/5/2014	2014SP14	545541	4514628	Yes	Systematic	413	184	676	235
4/5/2014	2014SP15	532364	4509878	Yes	Systematic	734	55	1473	561
4/5/2014	2014SP16	529564	4508384	Yes	Systematic	681	210	1148	382
4/6/2014	2014SP17	508830	4501878	Yes	Systematic	565	94	1417	367
4/6/2014	2014SP18	560071	4521336	Yes	Systematic	217	95	1400	405
4/6/2014	2014SP19	560136	4523828	No	Opportunistic	784	146	1403	400
4/6/2014	2014SP20	540222	4511129	Yes	Systematic	197	58	9388	1204
4/7/2014	2014SP21	560136	4523828	No	Opportunistic	784	146	1401	400
4/8/2014	2014SP22	560136	4523828	No	Opportunistic	784	146	1407	400
4/9/2014	2014SP23	560299	4524002	No	Systematic	231	108	1458	102
4/12/2014	2014SP25	511126	4502937	Yes	Systematic	779	107	4791	732
4/12/2014	2014SP26	510873	4502876	Yes	Systematic	398	104	4060	357
4/12/2014	2014SP27	508157	4501804	Yes	Systematic	387	173	4208	725
4/14/2014	2014SP28	505749	4501330	Yes	Systematic	513	131	1274	536
4/15/2014	2014SP29	505749	4501330	No	Systematic	671	108	1343	632
		Aver	age of All S	pring 2014 Roost	Locations (N=22)	535	119	2050	417
		Average o	of Unique Cr	ane Group Roost	Locations (N=11)	464	114	2813	518
	Av	erage of Sy	/stematicall	y Detected Roost	Locations (N=18)	480	120	2212	435
Average of	Average of Systematically Detected Unique Crane Group Roost Locations (N=11)				464	114	2813	518	

**Table A-3.** Mean unvegetated width, distance to nearest vegetated island or bank, unforested width, and distance to nearest wooded area, as measured in ArcGIS, at roost locations observed during spring, fall, and winter monitoring efforts, 2001–2014.

Spring, Fall, and Winter Locations Included in the 2001 – 2014 Summary	Unvegetated Width (Ft)	Distance to Nearest Vegetation (Ft)	Unforested Width (Ft)	Distance to Nearest Forest (Ft)
Average of All Roost Locations (N=279)	597	167	2891	509
Average of Unique Crane Group Roost Locations (N=95)	559	139	2388	441
Average of Systematically Detected Roost Locations (N=197)	538	152	2667	460
Average of Systematically Detected Unique Crane Group Roost Locations (N=68)	507	124	2104	427

**Table A-4.** Mean unvegetated width, distance to nearest vegetated island or bank, unforested width, and distance to nearest wooded area, as measured in ArcGIS, at roost locations observed during spring monitoring efforts, 2001–2014. Measures exclude fall and winter observations.

	Unvegetated Channel	Distance to Nearest	Unforested Channel	Distance to Nearest
Spring Locations Included in the 2001 – 2014 Summary	Width (Ft)	Vegetation (Ft)	Width (Ft)	Forest (Ft)
Average of All Roost Locations (N=177)	595	158	2777	459
Average of Unique Crane Group Roost Locations (N=52)	507	104	2222	397
Average of Systematically Detected Roost Locations (N=147)	554	156	2801	448
Average of Systematically Detected Unique Crane Group Roost Locations (N=44)	472	99	2095	399

**Table A-5.** Mean unvegetated width, distance to nearest vegetated island or bank, unforested width, and distance to nearest wooded area, as measured in ArcGIS, at roost locations observed during fall monitoring efforts, 2001–2013. Measures exclude spring and winter observations.

Fall Locations Included in the 2001 – 2013 Summary	Unvegetated Channel Width (Ft)	Distance to Nearest Vegetation (Ft)	Unforested Channel Width (Ft)	Distance to Nearest Forest (Ft)
Average of All Roost Locations (N=60)	497	142	2641	492
Average of Unique Crane Group Roost Locations (N=31)	577	164	2493	488
Average of Systematically Detected Roost Locations (N=50)	492	141	2273	494
Average of Systematically Detected Unique Crane Group Roost Locations (N=24)	573	169	2120	480