

Implementation of the Whooping Crane Monitoring Protocol Spring 2015



FINAL REPORT

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AIM Environmental Consultants and
Western Ecosystems Technology, Inc.**

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

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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 2015 migration season. Only observations made during the survey period (6 March - 29 April) are contained in this report. Four crane groups totaling 7 individuals were identified during systematic aerial surveys; some of these groups represent the same individual cranes located on different days. In addition, one crane group representing 4 individuals was located opportunistically. A total of 5 unique individual Whooping Cranes was located on the central Platte River during the spring 2015 survey period. Other groups were documented using the study area but were not confirmed by AIM personnel. 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 2015. 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 (March 6 rather than March 21). This was the second season for the earlier initiation date. 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 0SE) to Minden then flew a primary targeted wetland return transect east (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 0SW) west to Lexington then flew a primary targeted wetland return transect west (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 2015 survey was the fourth 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.

The air 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 wetted channel, 10 wetland/pond, 10 ag-corn, 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 third 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 8).

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

ID # 2015SP	Use Site ID	Aerial Photo	Date	# of birds	UTMx	UTMy	Type of Sighting
1	1	y	28-Mar	1	543770	4513916	Systematic
2	NA	n	29-Mar	1	546618	4520602	Opportunistic
3	2	y	30-Mar	1	547339	4515336	Systematic
4	NA	n	31-Mar	1	549319	4520711	Opportunistic
5	3	y	13-Apr	4	532505	4509991	Systematic

Aerial Survey.--

We departed from the protocol in flying at an elevation of 2000’ instead of 1000’, due to safety concerns as a result of the large number of Snow Geese in the area at the onset of the survey. By March 16, we resumed flying at 1000’ since most of the Snow Geese had departed from the area by that time.

CONFIRMED WHOOPING CRANE SIGHTINGS-

A total of 4 Whooping Crane groups totaling 7 individuals was located during systematic aerial surveys. There were 5 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, the east leg completed 40 (73%) flights and the west leg completed 40 (73%) flights. About 7,300 survey miles were flown. Adverse weather or facility issues resulted in flight cancellations or delayed start times. Of the 81 total flight departures (1 was aborted after take-off and 1 was aborted during the PWRTE); three flights were delayed over 15 minutes, 7 flights were delayed 11-15 minutes, 24 flights were delayed 6-10 minutes, and the remaining 47 flights were not delayed.

INDEX OF USE-

We completed 219 (72%) aerial survey transects out of 302 transects scheduled (2 or 3 transects per flight depending on flight leg and origin). Four 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 0.02 sightings per transect. All sightings occurred on the East Leg.

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

Transect	# scheduled	# completed	# WC sightings	Frequency
River	110	80	3	.04
Primary return	110	80	1	.01
Secondary return	82	59	0	0
Total	302	219	4	.02

OPPORTUNISTIC FLIGHTS-

We conducted 6 opportunistic flights that totaled about 1.9 hours. One opportunistic Whooping Crane sighting 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. No additional flights were deployed at other times of the day.

Opportunistic Locates.—

Reports received from the public were forwarded to AIM for a follow-up investigation. One report was received and is summarized below.

On April 13, Dave Baasch reported 2 Whooping Crane groups spotted on the river early that morning. One was a family group of 3 individuals (Appendix A 2015SP-NA2) and the other contained 4 individuals (Appendix A 2015SP-NA3). They were detected by personnel from the Crane Trust during their weekly aerial crane survey. By the time AIM was notified and dispatched ground personnel that afternoon, the cranes had migrated. Crane group 2015SP-NA3 contained a radio-marked individual.

An additional radio-marked group (Appendix A 2015SP-NA1) went undetected and unreported until after it had migrated on April 12.

Diurnal Movements, and Activity.--

DIURNAL USE LOCATIONS-

Whooping Crane movements ranged within 5.3 miles of nocturnal roost sites. We documented 11 diurnal use locations during 5 days of observation (Figures 4-5, Table 3). These locations were sites where activity data was collected or where the cranes were visible from the ground during daylight hours.

Table 3. Whooping Crane diurnal use locations.

Use Date	Habitat	UTMx	UTMy
3/28/2015	Open Water Canal	545173	4506885
3/28/2015	Ag - Corn	546933	4505837
3/28/2015	Ag - Corn	546253	4505751
3/28/2015	Ag - Soy Bean	544929	4505647
3/28/2015	Ag - Corn	544801	4505951
3/28/2015	Open Water Canal	545173	4506885
3/28/2015	Ag - Corn	545682	4506711
3/29/2015	Ag - Corn	546618	4520602
3/30/2015	Grassland - Lowland	550536	4517092
3/31/2015	Ag - Corn	549319	4520711
4/13/2015	Wetted Channel	532505	4509991

LAND-COVER CLASS-

Ag-Corn, Wetted Channel, Open Water Canal, Ag-Soybeans, and Grassland-Lowland were the cover-types used by Whooping Cranes during the day. Five locations were in corn, 3 were in wetted channel (includes aerial sightings), and 1 each was in ag-soybean, open water canal, and lowland grassland. Nocturnal roost locations were in wetted channel.

ACTIVITY-

About 18.6 hours of continuous and instantaneous use (time budget) data of Whooping Cranes was collected by ground personnel during 5 days of observation. About 35% (6.3 hrs) of

the observations were in corn, 18% (2.8 hrs) were in wetted channel, 29% (6.3 hrs) were in lowland grassland, 16% (3 hrs) were in open water canal, and 2% (0.2 hrs) were in soybeans (Table 4). We recorded 89 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.

Table 4. Count of instant points by habitat.

Habitat	# of Points	Hours	Percent
Ag - Corn	31	6.27	34.8%
Ag - Soy Bean	2	0.25	2.3%
Grassland - Lowland	26	6.28	29.2%
Open Water Canal	14	3	15.7%
Wetted Channel	16	2.75	18.0%

Table 5. Whooping Crane activity by habitat.

Habitat	Activity	Number of Instant Points per Activity	Total Instant Points per Habitat	Percent
Ag - Corn	Alert	5	31	16.1%
Ag - Corn	Feeding	25	31	80.7%
Ag - Corn	NA	1	31	3.2%
Ag - Soy Bean	Alert	1	2	50.0%
Ag - Soy Bean	Feeding	1	2	50.0%
Grassland - Lowland	Alert	1	26	3.9%
Grassland - Lowland	Feeding	8	26	30.8%
Grassland - Lowland	Preening	7	26	26.9%
Grassland - Lowland	Resting	10	26	38.5%
Open Water Canal	Feeding	2	14	14.3%
Open Water Canal	NA	11	14	78.6%
Open Water Canal	Preening	1	14	7.1%
Wetted Channel	NA	4	16	25.0%
Wetted Channel	Preening	2	16	12.5%
Wetted Channel	Resting	10	16	62.5%

Streamflow.—

Streamflow measured at the USGS gauging stations located near Grand Island, Kearney, and Overton was generally slightly higher 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.

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

	Overton	Kearney	Grand Island
Minimum	465	545	833
Date	March 19	March 20	March 21
Maximum	2490	2540	2890
Date	April 21	April 21	April 19

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 (cfs)
1	28-Mar	1700
2	30-Mar	1750
3	13-Apr	1700

Search Effort.--

Ground searches were initiated on 16 occasions. A total of 20.2 hours was expended in this effort and 485 miles were driven. Search duration extended from 0.1 to 2.5 hours. Whooping Cranes were found on 3 (19%) 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 7 (12%) of the 55 days of the survey. We documented the presence of two crane groups that contained a minimum of 5 (5 adults:0 juvenile) individuals. A minimum of 13 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 documented by the survey team.

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

Crane Group 2015SP	Number of Cranes (ad:juv)	Dates of Occurrence	# of days present	Crane-Use Days
01-04	1:0	March 28-31	5	5
05	4:0	April 13	2	8
TOTAL	5:0	March 28- April 13		13

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

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

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

Program Crane ID (Prefix 2015SP)	Program Name	USFWS Crane ID (Prefix 15A)	Dates Observed	# of cranes
01- 04	Wild Rose single	05	March 28-31	1:0
05	Westering site	24	April 13	4:0

Radio-marked Whooping Cranes and Platte River Use.—

Twenty-two GPS radios attached to Whooping Cranes were active during the 2015 spring migration (Whooping Crane Tracking Partnership 2014 Winter and 2015 Spring Migration Season Report). Two radio-marked Whooping Cranes were known to be present on the Platte River this spring which represent 9% of the radio-marked population with active transmitters. Neither of these groups were detected by AIM personnel; however, 1 group was detected by Crane Trust personnel. The other group was not reported by the public.

Analyses of Whooping Crane survey data collected by U.S. Fish and Wildlife biologists at Aransas National Wildlife Refuge reported a population size of 308 individuals for winter 2014–2015 (<http://www.fws.gov/uploadedFiles/WHCR%20Update%20Winter%202014-2015.pdf>). 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 2 Whooping Crane groups with telemetry units that were not detected by AIM personnel.

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

SPRING 2015		
WC Pop		%
January 2015	# Platte	Using Platte
308	5	1.6

Searcher Efficiency Trials.—

Whooping Crane decoys were placed at 40 locations between 17 March and 23 April (Table 11). The air observers detected a decoy at 8 (80%) wetted channel, 1 (10%) ag-corn, 6 (60%) wetland/pond, and 1 (10%) lowland grassland sites for an overall detectability rate of 40%.

Table 11. Random locations of decoys for detectability trials.

Decoy	Date	X	Y	Detected	Habitat
1	3/18/2015	516684	4505233	Y	Wetted Channel
2	3/19/2015	464713	4503611	N	Wetted Channel
3	3/27/2015	461398	4503920	Y	Wetted Channel
4	3/29/2015	444334	4505372	N	Wetted Channel
5	3/31/2015	440577	4507415	Y	Wetted Channel
6	4/10/2015	491909	4500923	Y	Wetted Channel
7	4/21/2015	517404	4505405	Y	Wetted Channel
8	4/21/2015	550621	4515969	Y	Wetted Channel
9	4/22/2015	549250	4515362	Y	Wetted Channel
10	4/23/2015	563805	4528840	Y	Wetted Channel
11	3/18/2015	471729	4501984	N	Ag-Corn
12	3/27/2015	482650	4505698	Y	Ag-Corn
13	3/31/2015	441733	4502718	N	Ag-Corn
14	4/1/2015	504574	4498454	N	Ag-Corn
15	4/4/2015	499611	4503279	N	Ag-Corn
16	4/10/2015	516672	4502524	N	Ag-Corn
17	4/12/2015	529841	4505809	N	Ag-Corn
18	4/20/2015	496832	4502836	N	Ag-Corn
19	4/15/2015	573730	4535404	N	Ag-Corn
20	4/20/2015	563011	4524142	N	Ag-Corn
21	3/17/2015	460279	4501368	N	Lowland Grassland
22	3/19/2015	514494	4502733	N	Lowland Grassland
23	3/20/2015	458618	4500974	N	Lowland Grassland

24	3/26/2015	508926	4500683	N	Lowland Grassland
25	3/27/2015	524014	4504240	N	Lowland Grassland
26	3/28/2015	479909	4503485	N	Lowland Grassland
27	4/5/2015	568904	4536534	N	Lowland Grassland
28	4/11/2015	476585	4503418	N	Lowland Grassland
29	4/12/2015	478034	4503418	N	Lowland Grassland
30	4/20/2015	510851	4505602	Y	Lowland Grassland
31	3/17/2015	501308	4502101	Y	Wetland/Pond
32	3/26/2015	493469	4495759	N	Wetland/Pond
33	4/1/2015	559310	4515913	N	Wetland/Pond
34	4/2/2015	554951	4515908	N	Wetland/Pond
35	4/2/2015	480653	4507284	Y	Wetland/Pond
36	4/5/2015	567350	4531062	Y	Wetland/Pond
37	4/11/2015	560608	4523382	N	Wetland/Pond
38	4/15/2015	562340	4525620	Y	Wetland/Pond
39	4/21/2015	497946	4495080	Y	Wetland/Pond
40	4/22/2015	481350	4507284	Y	Wetland/Pond

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 28, a tractor applying fertilizer caused the Whooping Crane (2015SP01) along with a few Sandhill Cranes to take flight. The tractor was about 175 yards from the cranes before they flushed. They settled back down in the adjacent field after flying about ¼ mile.

Supplements

QAQC of the database was completed by AIM.

Original Data Sheets

CD containing an electronic copy of the final report and photos

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

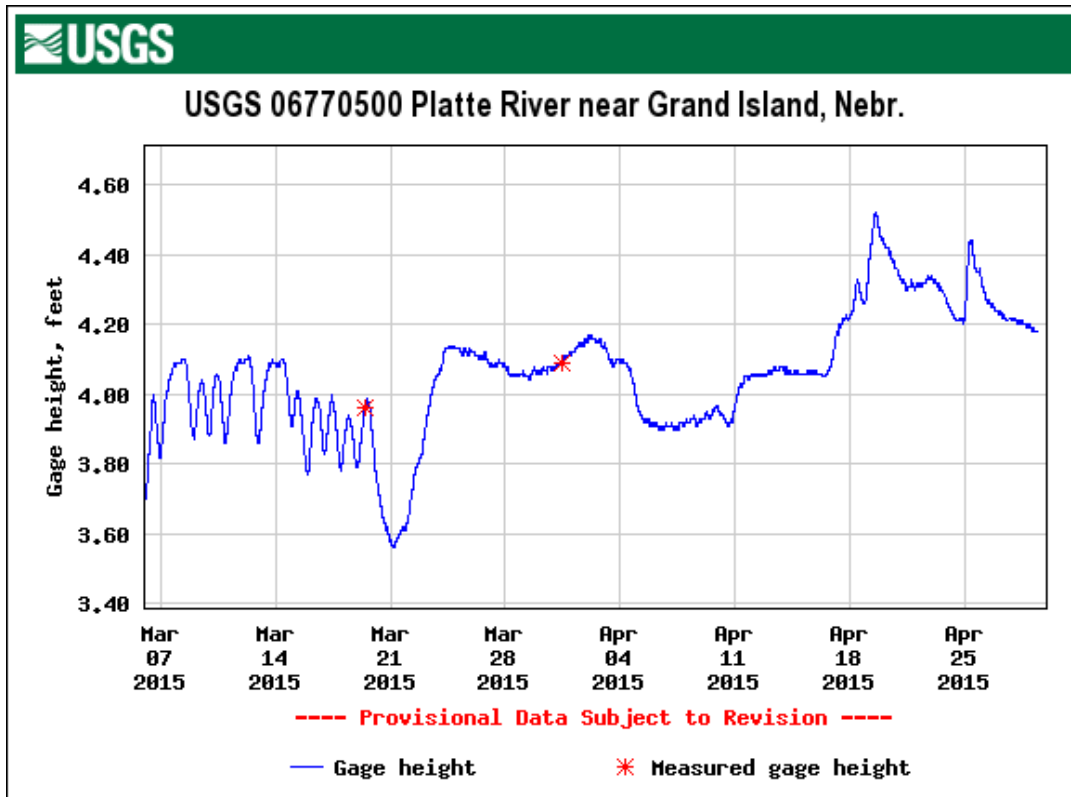
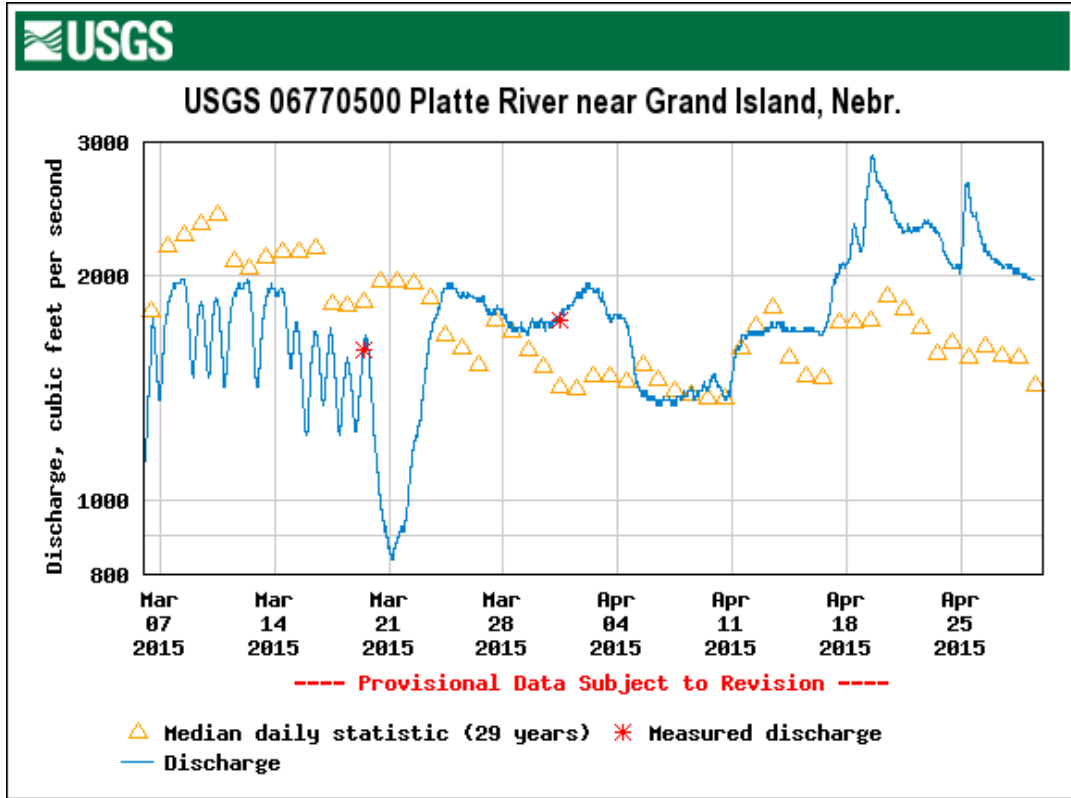


Figure 2. Platte River discharge (cfs) at Kearney.

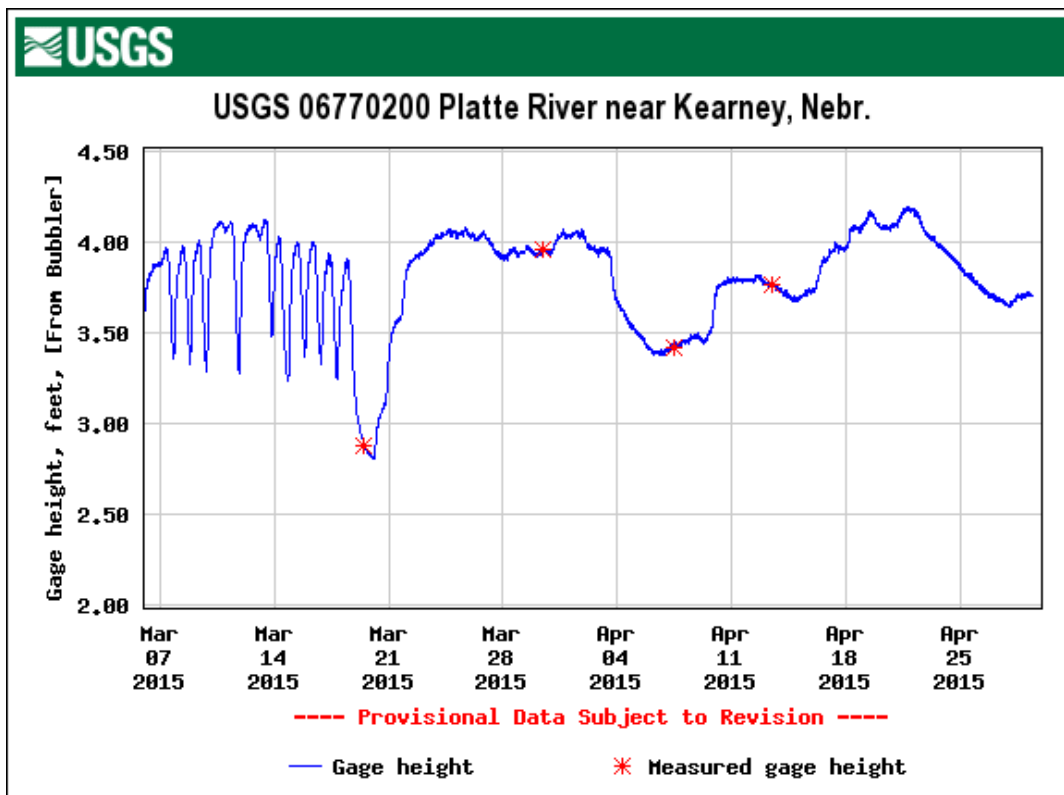
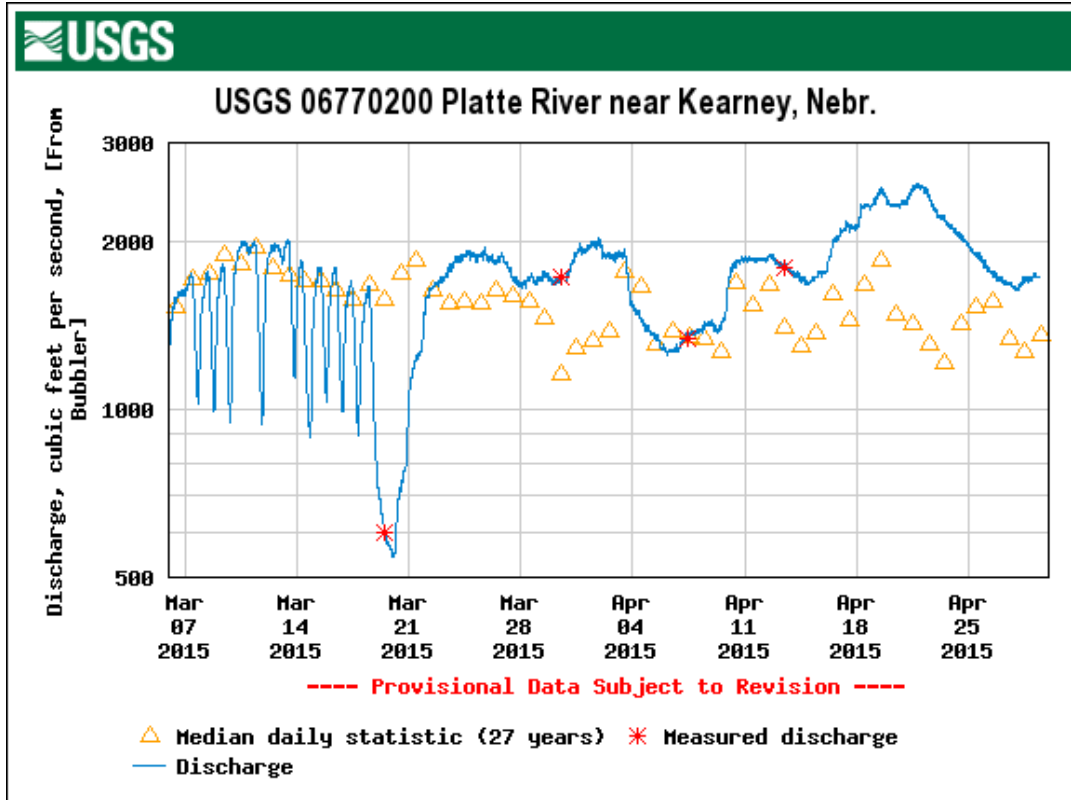


Figure 3. Platte River discharge (cfs) at Overton.

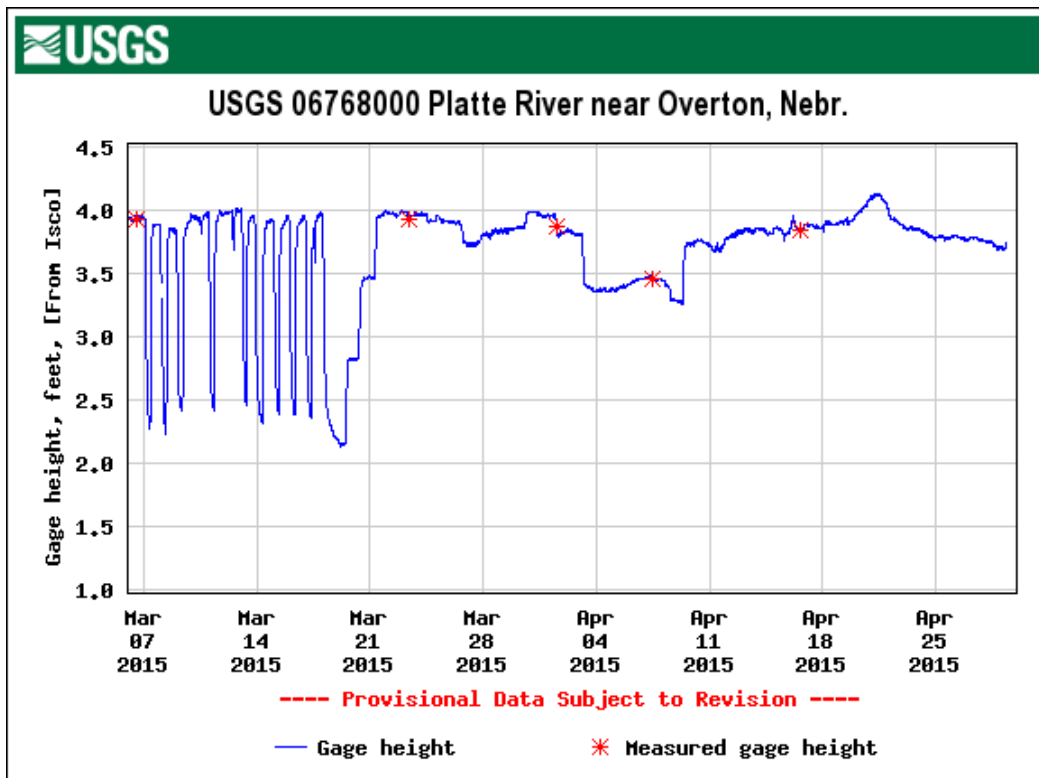
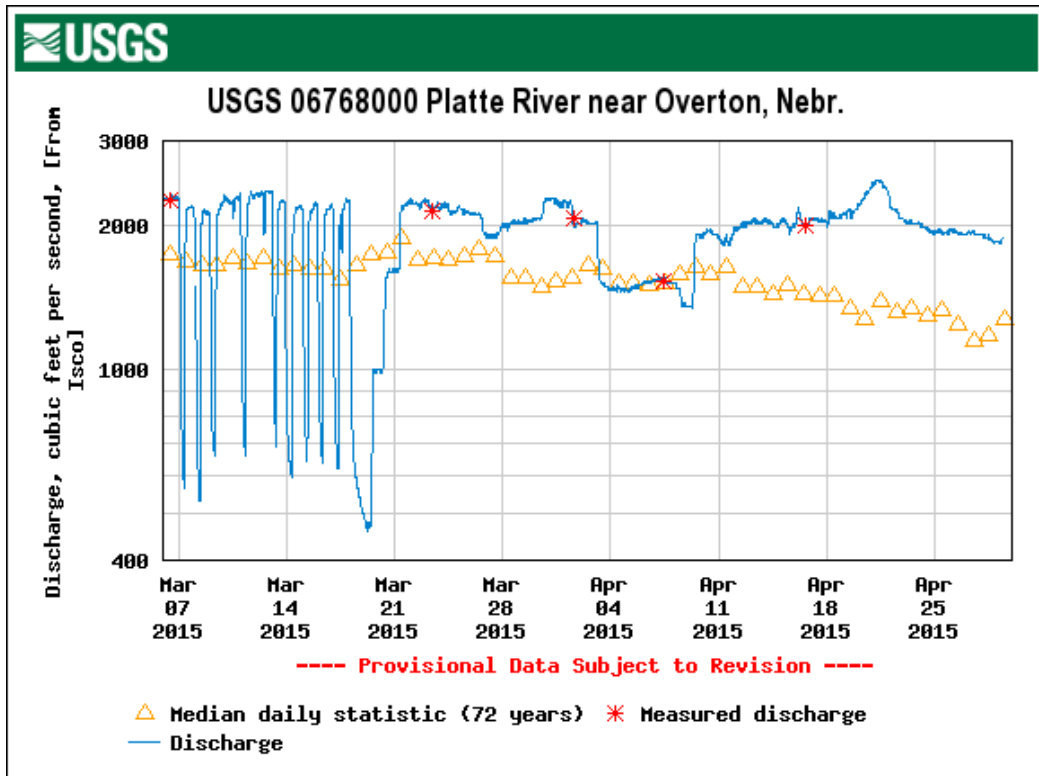


Figure 4. Whooping Crane use locations downstream of the Alda bridge. All locations were from a single unbanded individual (2015SP01-04).

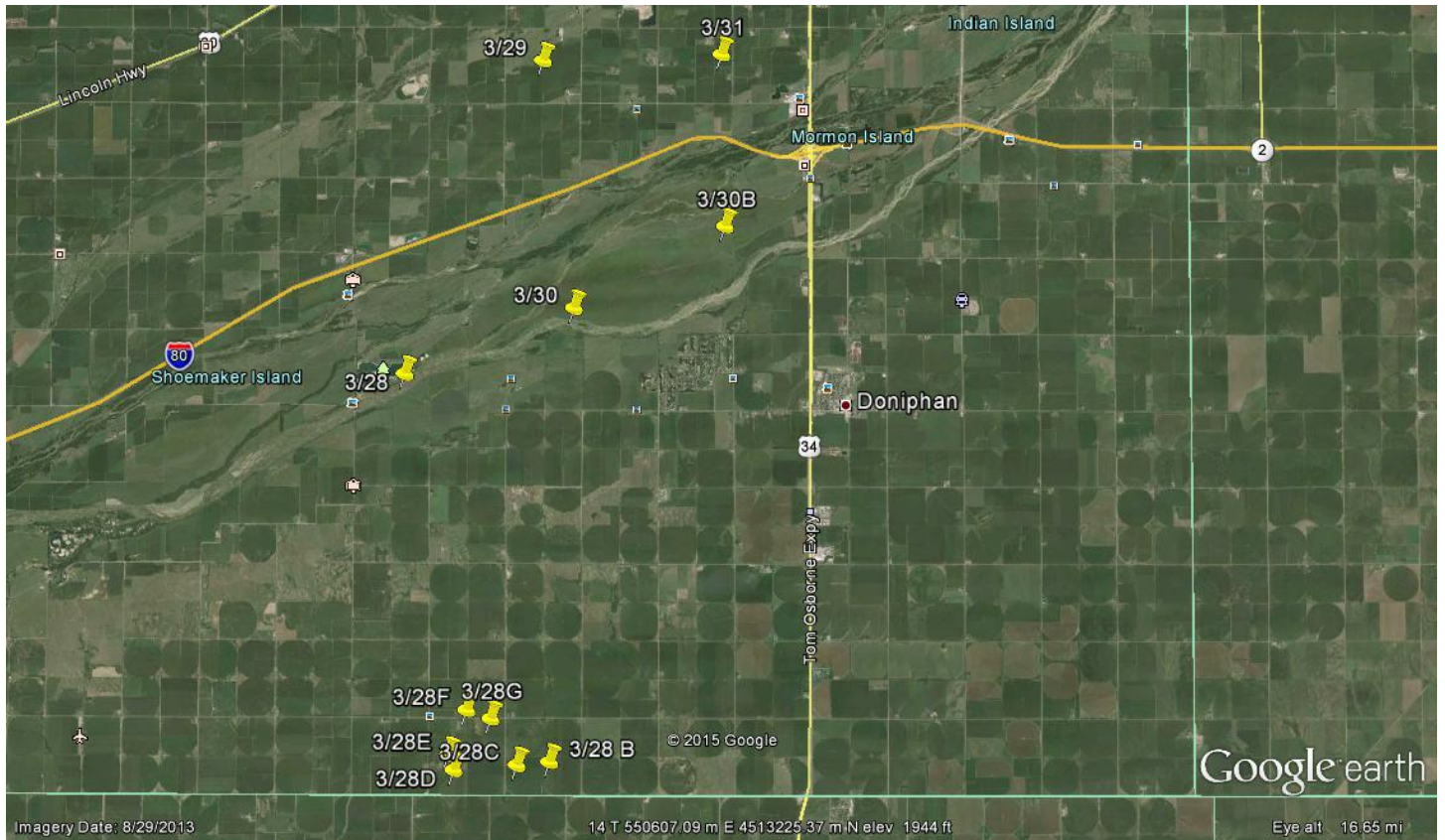
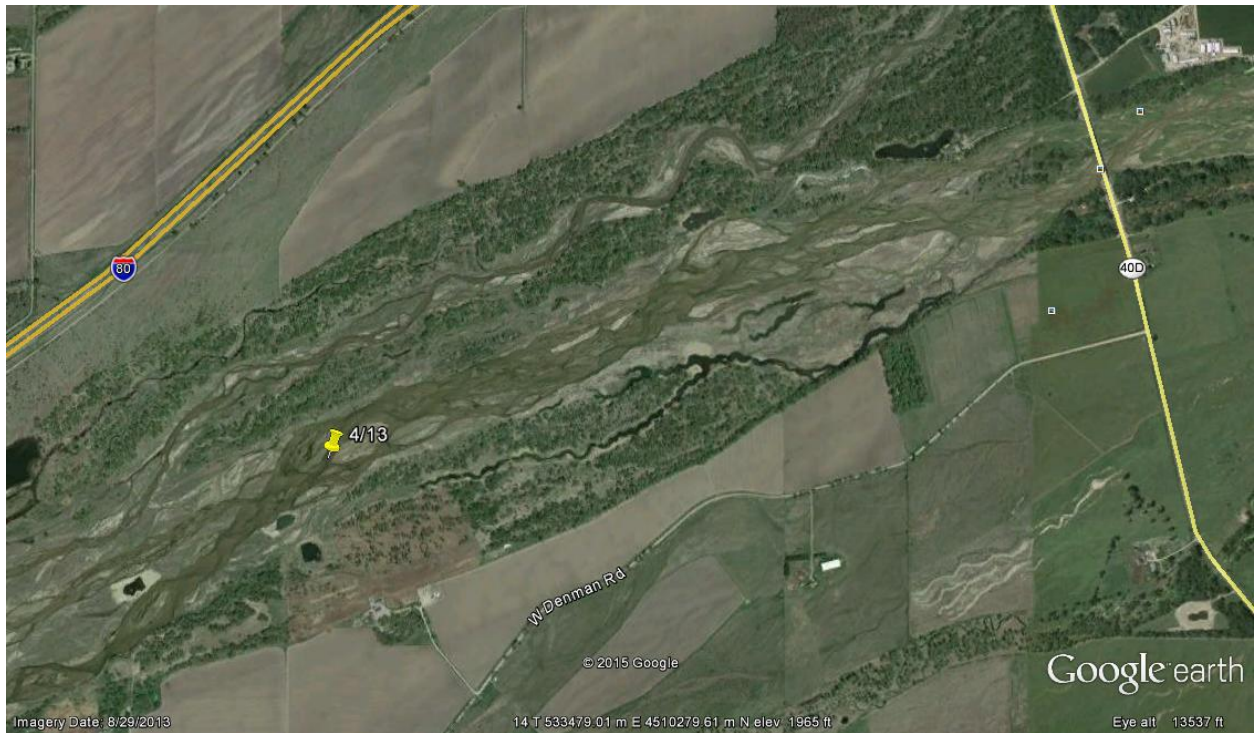


Figure 5. Whooping Crane use location about 1.7 miles west of the Wood River bridge. Crane group 2015SP05 was detected on April 13.



Appendix A

Spring 2015 Whooping Crane Roost Locations

Crane Group ID #	UTMx	UTMy	Unforested Width (ft)	Nearest Forest (ft)	Unvegetated Width (ft)	Nearest Vegetation (ft)
2015SP-01	543770	4513916	>5,280	633	771	354
2015SP-03	547339	4515336	5,108	591	409	135
2015SP-NA1	535684	4511071	>5,280	461	284	92
2015SP-05	532505	4509991	998	402	613	162
2015SP-NA2	539286	4511527	>5,280	540	1,513	493
2015SP-NA3	547128	4515407	5,151	780	477	110