

**IMPLEMENTATION OF THE WHOOPING CRANE
MONITORING PROTOCOL
2017 SPRING – FINAL REPORT**



Prepared by

Dave Fehlhafer and
Brian Peterson

Ecological Solutions
203 W. Bartelt Ave
Doniphan, NE 68832

Date 01/29/2018

Implementation of the Whooping Crane Monitoring Protocol Spring 2017

**Prepared by
Ecological Solutions**

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

Date 01/29/2018

Summary

The Ecological Solutions (ES) team conducted the whooping crane monitoring effort for the 2017 spring migration following the protocols detailed in the *Platte River Recovery Implementation Program – Whooping Crane Monitoring Protocol – rev. May 2015*.

The spring migration monitoring took place from March 6th through April 29th. Surveys were conducted using systematic flight transects along the Platte River from Chapman to Lexington. Systematic along with opportunistic sightings, resulted in 65 individual whooping cranes observed within the transect boundaries during the 55-day survey period. Below includes survey methodology, results, and supporting data.

Equipment/Materials, Personnel, and Study Area

Two Cessna 172 aircraft, crewed by a pilot and two observers, were used to make observations along the predetermined flight transects. The pilot utilized a GPS unit to follow the pre-loaded route, as well as to mark any observed objects with a waypoint. The aerial observers utilized binoculars, a Canon EOS 6D camera equipped with a 24 x 105 mm lens, and mobile phones for communication.

The data sheets, provided by the Platte River Recovery Implementation Program (PRRIP) Executive Director's Office (EDO), included aerial flight logs, aerial observations, ground search efforts, and use site monitoring logs.

The area of study ran from the Highway 283 Platte River bridge near Lexington, NE to the Platte River bridge near Chapman, NE and focused on the Platte River channels and the adjacent wetlands, ponds, and waterways extending 3.5 miles out on each side of the outermost channels. The total length of the coverage area was approximately 90 miles and was divided into two routes, an east route and a west route. Any observations outside the study area were not included in the data.

Implementation and Methodology

Systematic aerial transects were flown daily, conditions permitting, at an air speed of approximately 100 MPH and at an altitude of approximately 2000 feet from March 6 – 9 due to collision risk with snow geese, then thereafter at an altitude of approximately 750 feet unless conditions demanded higher altitudes. Two flights were initiated each morning, one from Grand Island (east route) and one from Kearney (west route). Planes were to be at the transect starting points ½ hour before sunrise and would typically complete flights in less than two hours. In the event of adverse weather, crews were required to wait up to two hours after sunrise for conditions to improve before cancelling the flight, that is unless the pilot, using their best judgement, cancelled the flight for the day prior to that. River transects were flown east to west and the plane was oriented south of the southern-most river channel to reduce the effect of sun glare. Each riverine transect had two daily alternating starting points. The alternating starting points were implemented to allow different sections of the study area to be observed as early as possible in the flight times.

The east route day one was started at the Platte River bridge near Chapman (Chapman bridge) and followed the river transect (OSE) to the Highway 10 bridge (Minden bridge). They would then follow the targeted Primary Wetland Return Transect (PWRTE) back to the Chapman bridge, turn and follow the targeted Secondary Wetland Return Transect (CSRT) to the Highway 34 bridge. East route day two would start at the Platte River bridge near Wood River (Wood River bridge) and follow the OSE to the Minden bridge, then follow the PWRTE back to the Chapman bridge. They would then follow the OSE to the Wood River bridge, then return on the Secondary Wetland Return Transect (WSRT) that stretched from HWY 10 near Wood River to the Highway 34 – Platte River bridge.

The west route day one started at the Minden bridge and followed the river transect (OSW) to the Highway 283 bridge (Lexington bridge). They would then follow the targeted Primary Wetland Return Transect (PWRTW) back to the Minden bridge. West route day two started at the Platte River bridge near Odessa (Odessa bridge) and follow the OSW to the Lexington bridge. They would turn and follow the PWRTW back to the Minden bridge and then return on the OSW to the Odessa bridge. They would then follow the Secondary Wetland Return Transect (ESRT) from HWY 183 near Elm Creek to the HWY 40 near the Platte River bridge.

At the beginning of each transect and at turn around points, the aerial crews would relay their position via mobile phone to nearby ground crews so the ground crews could maintain a relatively close proximity. If an aerial crew spotted any potential whooping crane(s), they would take photos of the object(s) and the surrounding area to confirm the identity and location. If additional confirmation was needed, they would contact the nearest ground observer, who would then position themselves to make a positive identification of the object without disturbance. If the object was determined to be a whooping crane(s), personnel at the EDO as well as the Fish and Wildlife Service would be immediately notified so they could take appropriate measures to minimize disturbance if needed. Otherwise, they were notified of results of surveys following the completion of both flights on a daily basis.

In addition to the systematic flights, the aerial and ground crews also confirmed opportunistic sightings. Immediately after receiving a report, depending on the situation, either a plane would be deployed from the airport and/or ground personnel would systematically survey the area until the cranes were located and confirmed or sufficient search time was allocated to confirm the cranes had left and/or were not present in the immediate area.

Using metrics developed by the EDO in conjunction with a Geographic Information System (GIS) and facilitated by the in-flight photos and/or GPS waypoints, UTM coordinates were determined for each crane or crane group and recorded with the rest of the data.

All data was later translated from the completed data sheets to the program database via electronic form on a web based server using Microsoft SharePoint software that was developed for PRRIP by Riverside Technology, Inc. It was then subjected to QA/QC checks by Ecological Solutions to insure accuracy.

Results

Confirmed Whooping Crane Sightings

A total of 65 unique whooping cranes were confirmed during the 55-day monitoring effort. Forty-eight crane groups, comprised of 16 unique groups, were observed and each was given a unique crane group ID (e.g. 2017SP01). For data purposes, a crane group consisted of any individual or group of whooping cranes observed once daily and would be re-counted as a new group and given a new crane group ID the next day if they were still in the area. Table 1 includes the date of observation, the number of cranes in each group, crane group ID, use site ID (if available), whether it was observed systematically or opportunistically, and total crane use days. Color-coded observation location maps of all crane groups are shown in Figures 6-10 and individual color-coded observation location maps, along with a photo of each unique crane group are shown in Figures 11-42.

Of note, crane groups: 2017SP01, 2017SP04, 2017SP07, 2017SP22 – SP33, 2017SP35, and 2017SP41 – SP43 were ground observations. Of these, 2017SP07, 2017SP25, and 2017SP30 were confirmed by EDO staff, therefore they have no ES ground observation datasheet entries, but have been entered into the program database for historical documentation.

It was decided that two opportunistic evening flights be conducted on 3/30 and 3/31 due to nine continuous days of cancelled systematic flights (3/23 – 3/31) as a result of weather conditions prohibiting the flights. Crane groups 2017SP34 and 2017SP36 – SP38 were observed during these opportunistic flights, of which 2017SP34, SP37, and SP38 were all in flight at the time of observation. In the case of in-flight whooping crane observations, UTMs were collected to the best of the observer's (Air and Ground) abilities and it was recorded in the Program Database as Location ID "AIR" and Use Site "N/A".

TABLE 1

	Observation Dates	# of Cranes Adult:Juv	Group ID #	Use Site #	UTMx	UTMy	Flight Type	See Figure
SPRING	¹ 3-12	1:0	2017SP01	Corn/ag	495334	4499951	Opp/ground	11, 12
	3-13	1:0	2017SP02	1	507773	4501906	Systematic	11,12
	3-13	0:1	2017SP03	2	468342	4504246	Opp	13, 14
	¹ 3-14	1:0	2017SP04	Corn/ag	532189	4508962	Opp/ground	15, 16
	3-14	0:1	2017SP05	3	469604	4503868	Systematic	13, 14
	3-15	1:0	2017SP06	4	534273	4510598	Systematic	15, 16
	¹ 3-15	1:0	2017SP07	Pond	516380	4507135	Opp/ground	11, 12
	3-16	1:0	2017SP08	5	540910	4512584	Systematic	15, 16
	3-16	1:0	2017SP09	6	520370	4507054	Systematic	17, 18
	3-17	0:1	2017SP10	7	470230	4504196	Systematic	13, 14
	3-17	1:0	2017SP11	Corn/ag	504808	4505246	Opp	11, 12
	3-18	0:1	2017SP12	8	470556	4504130	Systematic	13, 14
	3-19	0:1	2017SP13	9	469332	4503663	Systematic	13, 14
	3/19	1:0	2017SP14	10	511816	4503066	Systematic	11, 12
	3/19	1:0	2017SP15	11	549035	4515258	Systematic	19, 20
	3-20	2:0	2017SP16	12	566335	4532012	Systematic	21, 22
	3-20	2:0	2017SP17	13	504995	4501066	Systematic	23, 24
	3-20	0:1	2017SP18	7	470230	4504196	Systematic	13, 14
	3-20	1:0	2017SP19	Corn/ag	516166	4503413	Systematic	11, 12
	3-21	1:0	2017SP20	14	512141	4502896	Systematic	11, 12
	3-22	1:0	2017SP21	10	511816	4503066	Systematic	11, 12
	¹ 3-23	1:0	2017SP22	15	512438	4502842	Opp/ground	11, 12
	¹ 3-24	1:0	2017SP23	14	512141	4502896	Opp/ground	11, 12
	¹ 3-24	0:1	2017SP24	Corn/ag	470781	4504967	Opp/ground	13, 14
	¹ 3-24	2:0	2017SP25	Corn/ag	496690	4501560	Opp/ground	25, 26
	¹ 3-25	1:0	2017SP26	14	512141	4502896	Opp/ground	11, 12
	¹ 3-25	0:1	2017SP27	Corn/ag	470485	4505033	Opp/ground	13, 14
	¹ 3-28	1:0	2017SP28	15	512438	4502842	Opp/ground	11, 12
	¹ 3-28	0:1	2017SP29	wheat	468175	4505180	Opp/ground	13, 14
	¹ 3-28	2:0	2017SP30	Corn/ag	496690	4501560	Opp/ground	25, 26
	¹ 3-29	1:0	2017SP31	14	512141	4502896	Opp/ground	11, 12
	¹ 3-29	2:0	2017SP32	Corn/ag	496749	4501666	Opp/ground	25, 26
	¹ 3-30	2:0	2017SP33	Corn/ag	496178	4503107	Opp/ground	25, 26
	^{2,3} 3-30	8:0	2017SP34	AIR	542673	4515824	Opp	27, 28
	¹ 3-31	1:0	2017SP35	Corn/ag	519465	4505710	Opp/ground	11, 12
	³ 3-31	2:0	2017SP36	16	496494	4501141	Opp	25, 26
	^{2,3} 3-31	1:0	2017SP37	AIR	539846	4511933	Opp	29, 30
	^{2,3,4} 3-31	1:0	2017SP38	AIR	514031	4503478	Opp	11, 12
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	Observation dates	# of Cranes Adult:Juv	Group ID #	Use site #	UTMx	UTMy	Flight Type	See Figure
SPRING	4-1	1:0	2017SP39	14	512141	4502896	Opp	11, 12
	² 4-1	7:0	2017SP40	AIR	467841	4499121	Systematic	31, 32
	¹ 4-1	2:0	2017SP41	Corn/ag	495252	4504807	Opp/ground	25, 26
	¹ 4-2	1:0	2017SP42	15	512438	4502842	Opp/ground	11, 12
	¹ 4-2	2:0	2017SP43	Corn/ag	495685	4504492	Opp/ground	25, 26
	4-7	2:0	2017SP44	17	488741	4501413	Systematic	33, 34
	4-7	10:0	2017SP45	18	474111	4503061	Systematic	35, 36
	4-7	8:0	2017SP46	Corn/ag	506076	4499184	Systematic	37, 38
	4-7	9:0	2017SP47	19	458813	4503587	Systematic	39, 40
	4-7	9:0	2017SP48	Corn/ag	448405	4503252	Systematic	41, 42
Crane Use Days		194						

¹Spotted by the ground crew only

²Group was in-flight when spotted, use site ID # designated as "AIR"

³Opportunistic evening flight

⁴This is the same group that was spotted in the morning, but was given a new group ID due to non-protocol timeframe of second spotting

Crane use days were calculated by multiplying the number of individual cranes in each group by the number of days the group was observed plus one day as each group was assumed to have been present the evening prior to the morning of first observation. Or in the case of the opportunistic evening flights 2017SP34 and SP37, the groups were assumed to have stayed in the valley until the next morning. Of note, there were two unique groups, starting with ID # 2017SP01 (1:0) and ID # 2017SP03 (0:1), that USFWS received confirmed observations outside the dates recorded in Table 1 which were counted as part of the total crane use days. See Table 4 for the additional dates. This resulted in a total of 194 crane use days during the spring survey. Whooping cranes were observed on 21 of the 55 days of the survey effort (38.2% of the days; Table 1).

According to the surveys conducted by the U.S. Fish and Wildlife Service in the winter of 2016 – 2017, the Aransas – Wood Buffalo migratory whooping crane population was estimated to be 431 birds ([See the following web link for source](https://www.fws.gov/uploadedFiles/Region_2/NWRS/Zone_1/Aransas-Matagorda_Island_Complex/Aransas/Sections/What_We_Do/Science/Whooping_Crane_Updates_2013/WHCR_Update_Winter_2016-2017.pdf)). The 65 individuals observed by our monitoring effort constitute approximately 15.1% of the migratory population using the survey area of the Platte River during the spring migration.

https://www.fws.gov/uploadedFiles/Region_2/NWRS/Zone_1/Aransas-Matagorda_Island_Complex/Aransas/Sections/What_We_Do/Science/Whooping_Crane_Updates_2013/WHCR_Update_Winter_2016-2017.pdf

Observed whooping crane use of the central Platte River during systematic surveys of the associated habitat reach for the Platte River Recovery Implementation Program has increased significantly since the beginning of monitoring efforts in 2001 (Figure 1).

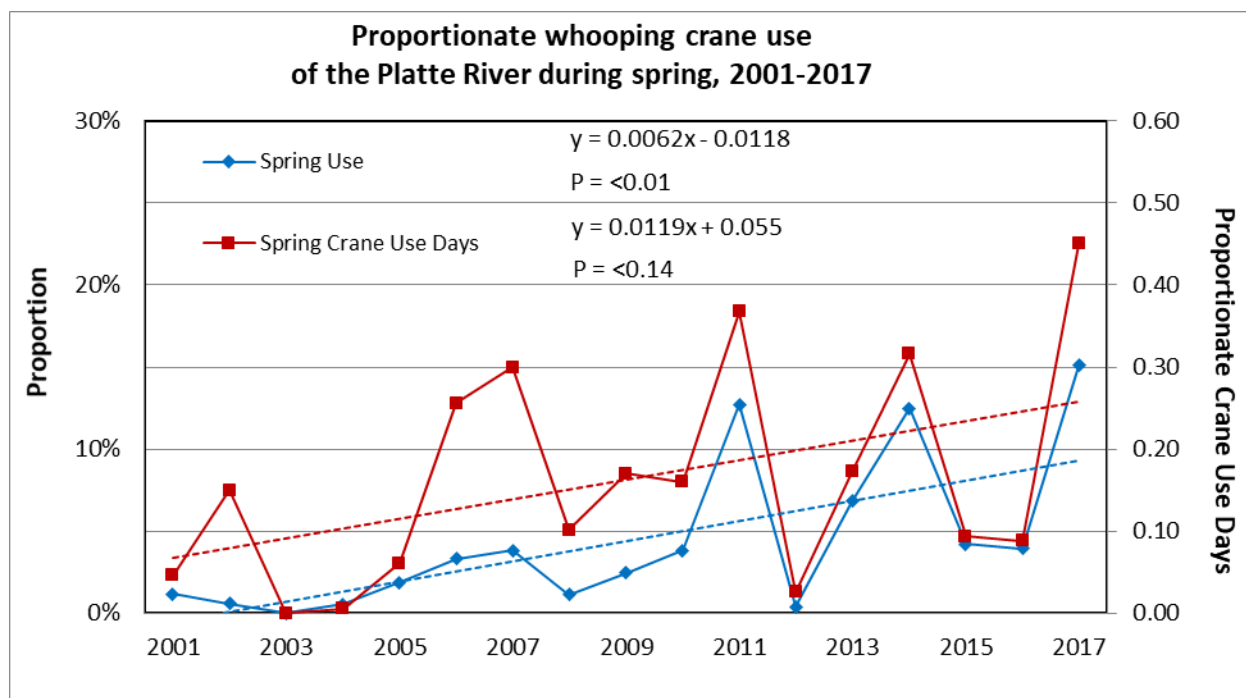


Figure 1. Observed use of the central Platte River during spring migration seasons, 2001-2017.

Streamflow and Unobstructed Channel Width at Whooping Crane Use Locations

According to USGS streamflow data, the Platte River streamflow was above the median levels (75 years at Overton and Grand Island, 15 years at Elm Creek, and 31 years at Kearney) except for two brief drops at all the gaging stations (Figures 2 – 5). The discharge ranged from a high of 3,640 cfs at Grand Island on 3/6 to a low of 181 cfs at Elm Creek on 4/26, during the survey period. At the specific crane group observation times, streamflow ranged from 1,410 cfs – 2,920 cfs. Table 2 depicts flows in conjunction with the date of crane group observations (when applicable) and Table 3 includes unobstructed channel width, as measured in GIS, at each in-channel use location. Groups with different color schemes were considered unique.

TABLE 2

Stream flow conditions at Crane Use Sites					
Date	Gauging Station	Discharge (cfs)	Crane Group ID	Use site #	# of cranes Adults:Juv
3/13	Kearney	2,820	2017SP02	1	1:0
3/19	Kearney	2,210	2017SP14	10	1:0
3/21	Kearney	2,210	2017SP20	14	1:0
3/22	Kearney	2,160	2017SP21	10	1:0
3/23	Kearney	2,100	2017P22	15	1:0
3/24	Kearney	2,160	2017SP23	14	1:0
3/25	Kearney	2,240	2017SP26	14	1:0
3/28	Kearney	2,610	2017SP28	15	1:0
3/29	Kearney	2,680	2017SP31	14	1:0
4/1	Kearney	2,540	2017SP39	14	1:0
4/2	Kearney	2,460	2017SP42	15	1:0
3/13	Elm Creek	1,670	2017SP03	2	0:1
3/14	Elm Creek	1,670	2017SP05	3	0:1
3/17	Elm Creek	1,640	2017SP10	7	0:1
3/18	Elm Creek	1,630	2017SP12	8	0:1
3/19	Elm Creek	1,540	2017SP13	9	0:1
3/20	Elm Creek	1,490	2017SP18	7	0:1
3/15	Grand Island	2,920	2017SP06	4	1:0
3/16	Grand Island	2,800	2017SP08	5	1:0
3/16	Kearney	2,450	2017SP09	6	1:0
3/19	Kearney	2,210	2017SP15	11	1:0
3/20	Grand Island	2,220	2017SP16	12	2:0
3/20	Kearney	2,560	2017SP17	13	2:0
3/31	Kearney	2,570	2017P36	16	1:0
4/7	Kearney	2,060	2017SP44	17	2:0
4/7	Elm Creek	1,410	2017SP45	18	10:0
4/7	Overton	2,080	2017SP47	19	9:0

TABLE 3

Group ID #	Use Site #	UTMx	UTMy	Unobstructed Channel Width (ft)
2017SP02	1	507773	4501906	732
2017SP14 & 21	10	511816	4503066	975
2017SP20, 23, 26, 31, & 39	14	512141	4502896	838
2017SP22, 28, & 42	15	512438	4502842	711
2017SP03	2	468342	4504246	48
2017SP05	3	469604	4503868	209
2017SP10 & 18	7	470230	4504196	724
2017SP12	8	470556	4504130	904
2017SP13	9	469332	4503663	1,060
2017SP06	4	534273	4510598	966
2017SP08	5	540910	4512584	1,492
2017SP09	6	520370	4507054	152
2017SP15	11	549035	4515258	472
2017SP16	12	566335	4532012	568
2017SP17	13	504995	4501066	897
2017SP36	16	496494	4501141	443
2017SP44	17	488741	4501413	635
2017SP45	18	474111	4503061	708
2017SP47	19	458813	4503587	761

Figure 2

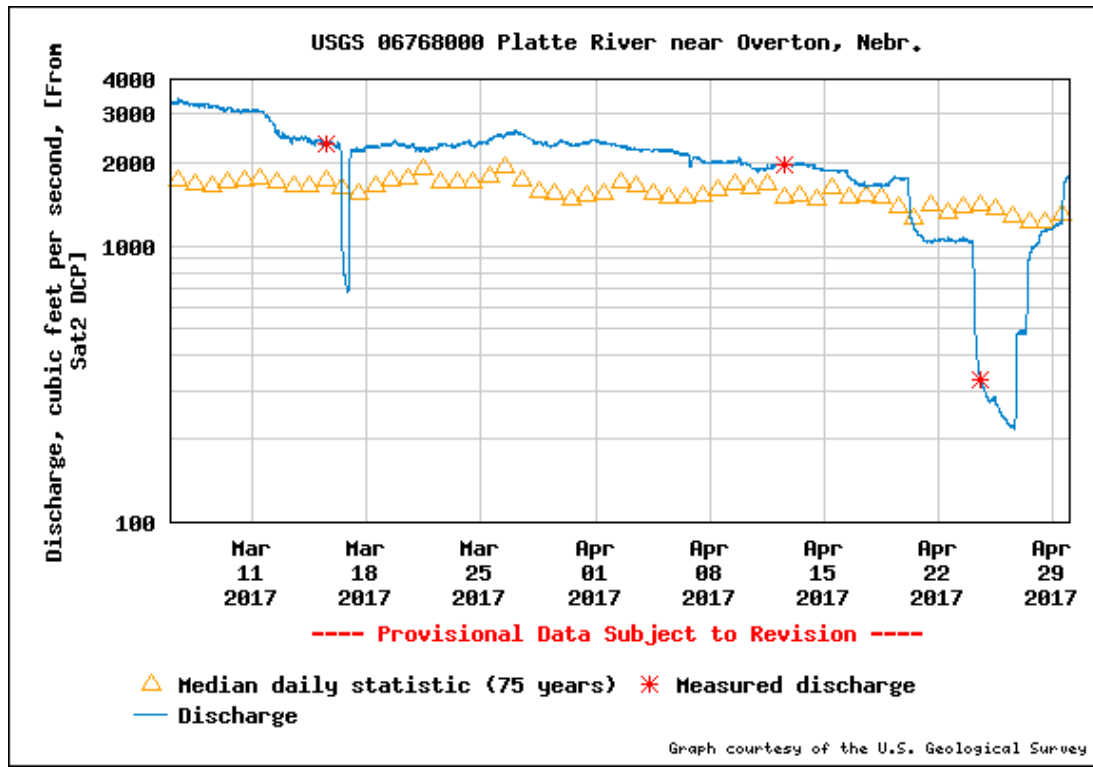


Figure 3

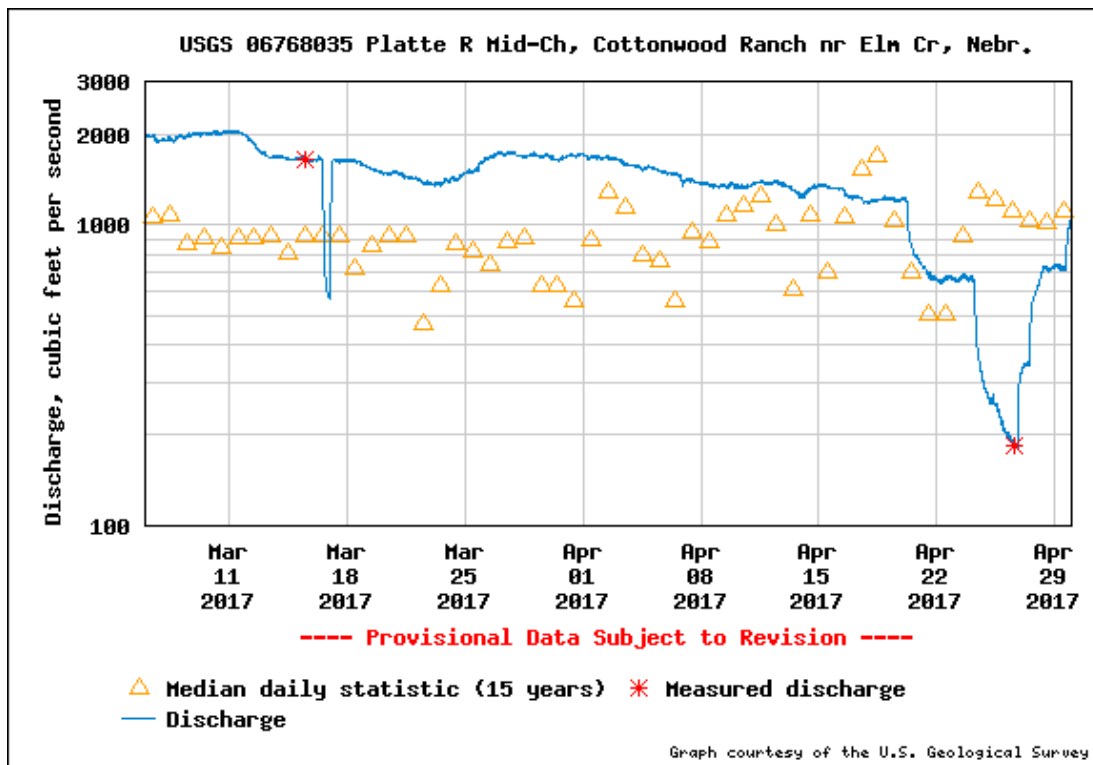


Figure 4

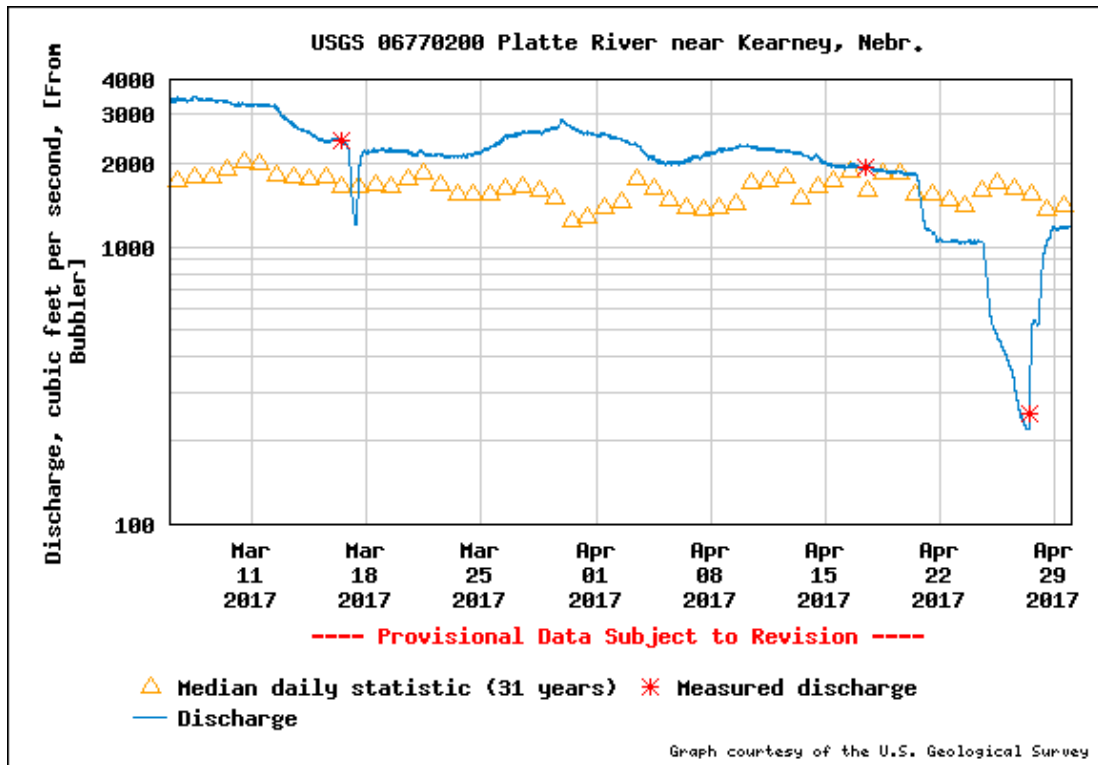
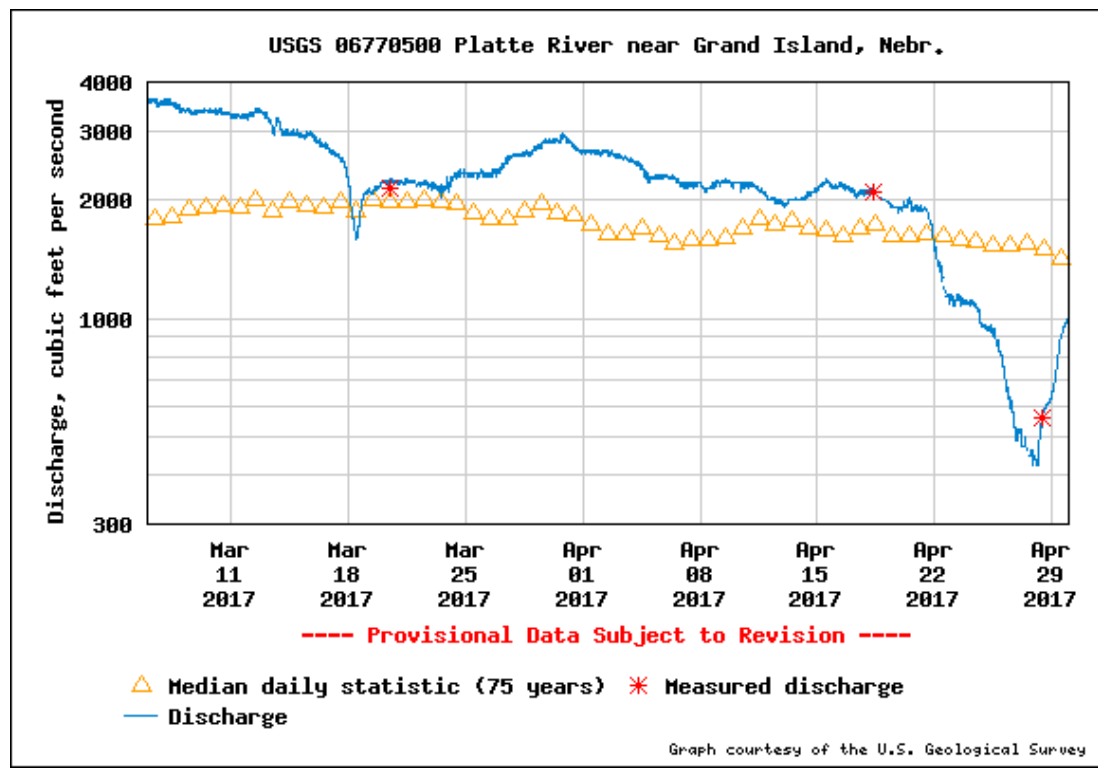


Figure 5



USFWS/PRRIP Data Comparison

Table 4 compares the USFWS WC sighting data (Provided by Matt Rabbe – USFWS whooping crane lead) to the Platte River Recovery Implementation Program (PRRIP) WC survey effort. Included are the date(s) the group was observed, the number of individuals in the group and each agency’s identification numbers assigned to the respective groups.

There is a difference in dates in Table 4 compared to Table 1 due to the USFWS data which operates on a “initial sighting” basis of identification., whereas PRRIP assigns a new crane group identification number each day observed. There were 3 crane groups that were not observed by ES or EDO staff on some of the dates within the time period the USFWS data indicates they were present. On these dates, they were either reported directly to USFWS from other sources or assumed to be the same group seen on previous date/s and are as follows: USFWS group # 17A-01 on 3/10, 11, 16, 18, 27, & 30. USFWS group # 17A-02 on 3/12, 15, 16, 21-23, 26, 27, 28, & 3/29 – 4/1. USFWS group # 17A-12 on 3/25-27.

TABLE 4

USFWS/PRRIP Data Comparison			
Date	# of WC Ad:Juv	USFWS ID #	PRRIP Group ID #s
3/10 – 4/2	1:0	17A-01	2017SP01, 02, 07, 11, 14, 19 – 23, 26, 28, 31, 35, 38, 39, & 42
3/12 – 4/2	0:1	17A-02	2017SP03, 05, 10, 12, 13, 18, 24, 27, & 29
3/14 – 3/16	1:0	17A-03	2017SP04, 06, & 08
3/19	1:0	17A-05	2017SP15
3/20	2:0	17A-06	2017SP16
3/20	2:0	17A-07	2017SP17
3/16	1:0	17A-10	2017SP09
3/24 – 4/2	2:0	17A-12	2017SP25, 30, 32, 33, 36, 41, & 43
3/30	8:0	17A-24	2017SP34
3/31	1:0	17A-26	2017SP37
4/1	7:0	17A-27	2017SP40
4/7	2:0	17A-36	2017SP44
4/7	10:0	17A-37	2017SP45
4/7	8:0	17A-38	2017SP46
4/7	9:0	17A-39	2017SP47
4/7	9:0	17A-40	2017SP48

Ground Search Effort and Opportunistic Observations

There were 29 instances where ground crews either independently observed a WC group or they conducted a search to verify either a public sighting or a white object spotted by aerial crews within the survey area during the 55-day monitoring effort. Nineteen of these were opportunistic ground observations resulting in crane groups 2017SP01, SP04, SP07, SP22 – SP33, SP35, & SP41 – SP43. The remaining 10 resulted in no whooping crane observations. Of note, the groups observed on 3/15 (2017SP07), 3/24 (2017SP25), and 3/28 (2017SP30) were spotted by PRRIP staff therefore, these entries are not on the datasheets, only in the database and in this report.

TABLE 5

GROUND SEARCH EFFORT/OPP. SIGHTINGS				
Date	Source	WC Confirmed Ad:Juv	Miles Driven	Aerial, Ground Effort
3/7	Public	None	4	Ground
3/10	Public	None	None	Ground
3/11	Air crew	None	None	Ground
3/12	ES staff	1:0	29	Ground
3/13	PRRIP staff	0:1	26	Both
3/14	Known	1:0	None	Both
3/14	ES staff	0:1	18	Both
3/14	Known	None	30	Ground
3/14	Known	None	14	Ground
3/15	PRRIP staff	1:0	None	Ground
3/17	Air crew	0:1	None	Both
3/17	Air crew	None	6	Both
3/22	Air crew	None	25	Both
3/23	Known	1:0	None	Ground
3/24	Known	1:0	None	Ground
3/24	Public	0:1	5	Ground
3/24	PRRIP staff	2:0	None	Ground
3/25	Known	1:0	None	Ground
3/25	Known	0:1	2	Ground
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Date	Source	WC Confirmed Ad:Juv	Miles Driven	Aerial, Ground Effort
3/28	Known	1:0	None	Ground
3/28	Known	0:1	None	Ground
3/28	PRRIP staff	1:0	None	Ground
3/29	Known	1:0	None	Ground
3/30	Air crew	None	8	Both
3/31	Public	1:0	15	Ground
4/1	Known	2:0	24	Ground
4/2	Known	2:0	2	Ground
4/4	Air crew	None	10	Both
4/21	Air crew	None	None	Both

Incidental Take

The USFWS requests 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

There were no observations of crippling or lethal take of Whooping Cranes this season as a result of the monitoring conducted by ES.

HARASSMENT

Ecological Solutions staff did not observe or engage in any activity that could be construed as harassment as defined by USFWS.

PUBLIC DISTURBANCE

Ecological Solutions staff did not observe any incident of public disturbance of whooping cranes.

Observation Efficiency Trials

Twenty-five whooping crane decoys were randomly placed by PRRIP personnel along the aerial transects. Flight crews spotted 3 in the wetted channel (30.0%), 1 in the corn/ag (20.0%), 0 in lowland grassland (0.0%), and 3 in the open water pit/pond/lake (60.0%), for an overall spotting efficiency of 28.0% (Table 6).

TABLE 6

Decoys

Decoy	Date Placed	Date Retrieved	UTMx	UTMy	Type	Detected
1	3/14/2016	3/8/17	553316	4517291	Wetted channel	NO
2	3/15/2016	3/10/17	454036	4503455	Wetted channel	YES
3	3/16/2016	3/14/17	503021	4501258	Wetted channel	NO
4	3/17/2016	3/14/17	562530	4527683	Wetted channel	NO
5	3/21/2016	3/15/17	472426	4503580	Wetted channel	NO
6	3/24/2016	3/15/17	458096	4503666	Wetted channel	NO
7	3/24/2016	4/1/17	442490	4506100	Wetted channel	NO
8	4/5/2016	4/5/17	559451	4522848	Wetted channel	YES
9	4/5/2016	4/6/17	558255	4522299	Wetted channel	YES
10	4/13/2016	4/22/17	512166	4504416	Wetted channel	NO
11	3/29/2016	3/8/17	501264	4496371	Ag - corn	NO
12	3/29/2016	3/8/17	512320	4504018	Ag - corn	NO
13	3/31/2016	3/16/17	457133	4501898	Ag - corn	NO
14	4/7/2016	4/15/17	529256	4505876	Ag - corn	YES
15	4/7/2016	4/17/17	474153	4507350	Ag - corn	NO
16	3/25/2016	3/9/17	544095	4515541	Grassland-lowland	NO
17	3/31/2016	3/22/17	482948	4503845	Grassland-lowland	NO
18	4/15/2016	4/4/17	486659	4502992	Grassland-lowland	NO
19	4/20/2016	4/4/17	555303	4521517	Grassland-lowland	NO
20	4/27/2016	4/12/17	454998	4507100	Grassland-lowland	NO
21	3/14/2016	4/15/2017	509847	4505948	Open water pit/pond/lake	NO
22	3/21/2016	4/5/17	460430	4501064	Open water pit/pond/lake	YES
23	3/22/2016	4/6/2017	510698	4505794	Open water pit/pond/lake	YES
24	4/14/2016	4/11/2017	507122	4500317	Open water pit/pond/lake	YES
25	4/16/2016	4/15/17	443155	4501268	Open water pit/pond/lake	NO

Flight Statistics and Sighting Frequency

There was a total of 110 scheduled flights (55 West, 55 East), of which 60 were completed (Table 7). Of the 50 flights that were cancelled or incomplete, 48 were due to inclement weather and two were due to logistical issues.

TABLE 7

	East	West	TOTALS
COMPLETED	28	32	60
CANC./INCOMP.	27	23	50
SEASON TOTAL	55	55	110
% COMPLETED	50.9%	58.2%	54.5%

FLIGHT RESULTS

A total of 302 individual systematic transects were flown throughout the survey period. During this time, 22 whooping crane groups were observed from the air during systematic flights for an overall sighting per transect frequency of 7.3% (Table 8). Of note, Groups 2017SP03, SP11, SP17, SP21, SP34, & SP36 – SP39 were observed during opportunistic flights, therefore were not included in the chart.

TABLE 8

SIGHTING FREQUENCY/COMPLETED TRANSECTS

		TRANSECTS			# WC Groups ¹	FREQUENCY
		COMPLETED	CANC/INCOMP	TOTAL		
SPRING	OSE, OSW ²	63	47	110	17	15.5%
	PWRTE, PWRTW ³	61	49	110	5	4.5%
	WSRT/CSRT, ESRT ⁴	45	37	82	0	0.0%
TOTALS		169	133	302	22	7.3%

¹These groups may or may not consist of crane(s) observed on previous days

²Primary Transect (Riverine), (East – OSE, West – OSW)

³Primary Return transect, (East – PWRTE, West – PWRTW)

⁴Secondary Return transect, (East – WSRT and CSRT, West – ESRT)

Supplements

QA/QC of database was performed by ES

Original datasheets – Retained at PRRIP

FIGURE 6. Observed whooping crane locations. 1 of 5 collective crane group maps. See Table 1 for color coding and details.

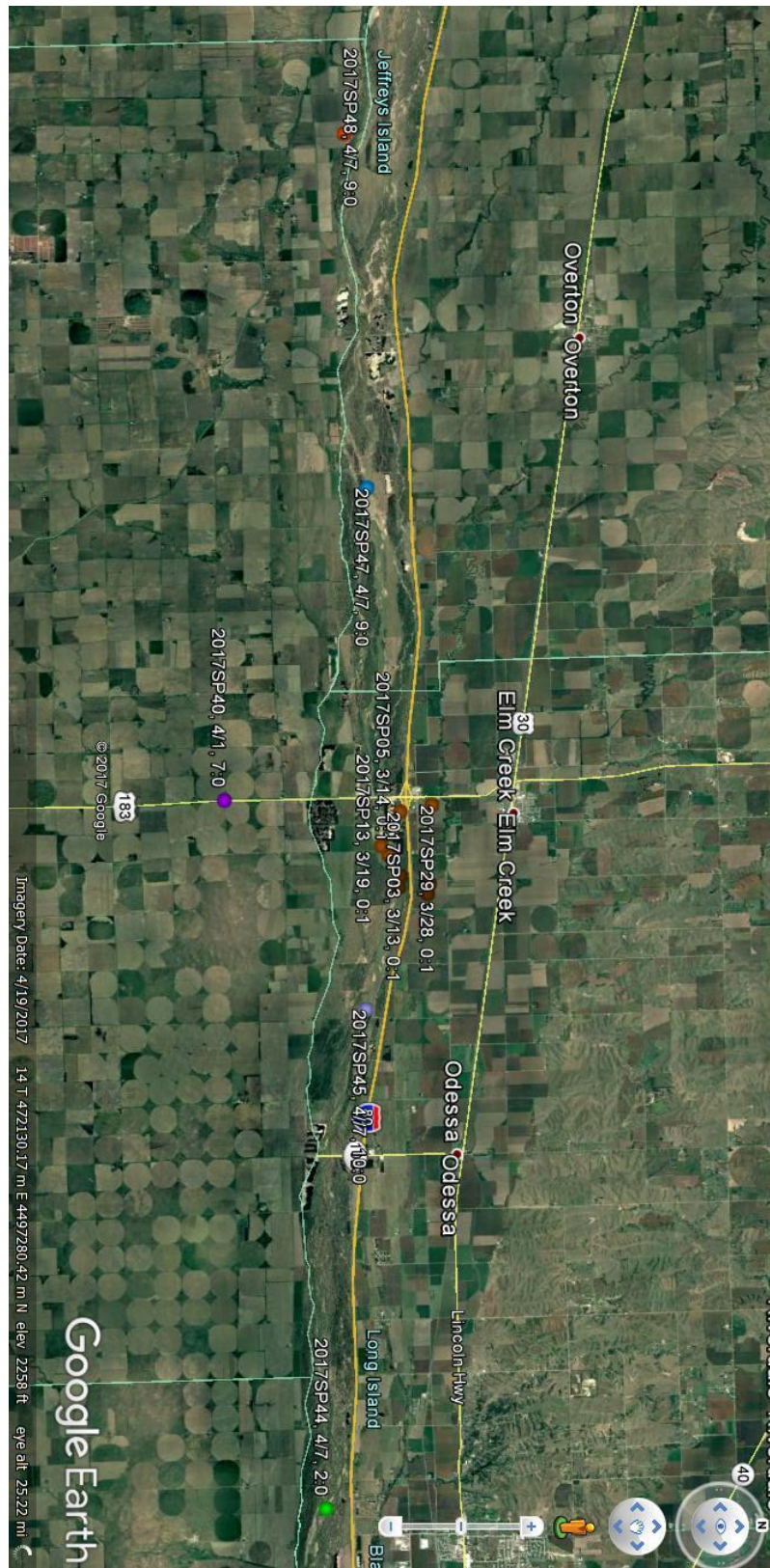


FIGURE 7. Observed whooping crane locations. 2 of 5 collective crane group maps. See Table 1 for color coding and details.

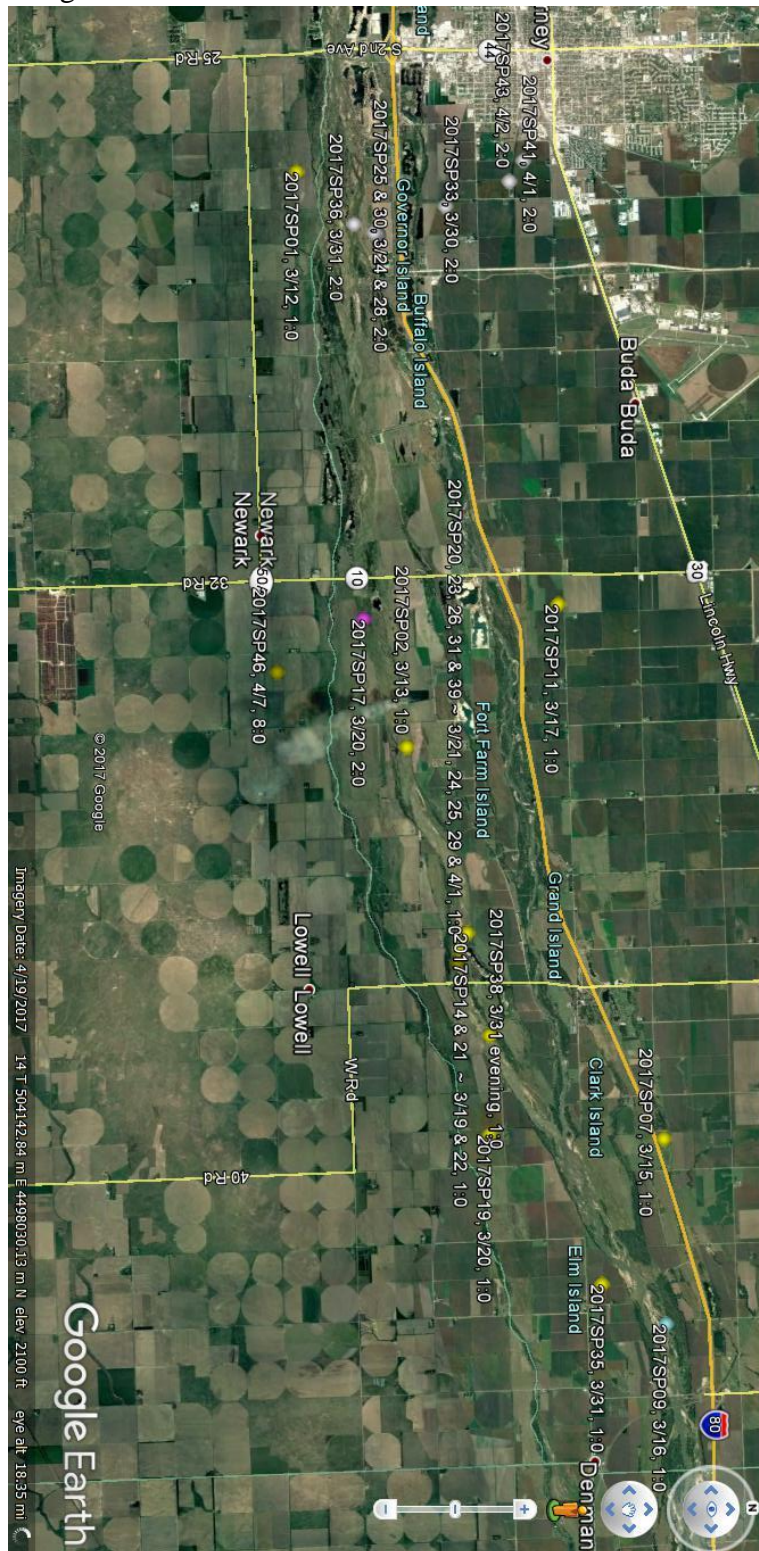


FIGURE 8. Observed whooping crane locations. 3 of 5 collective crane group maps. See Table 1 for color coding and details.

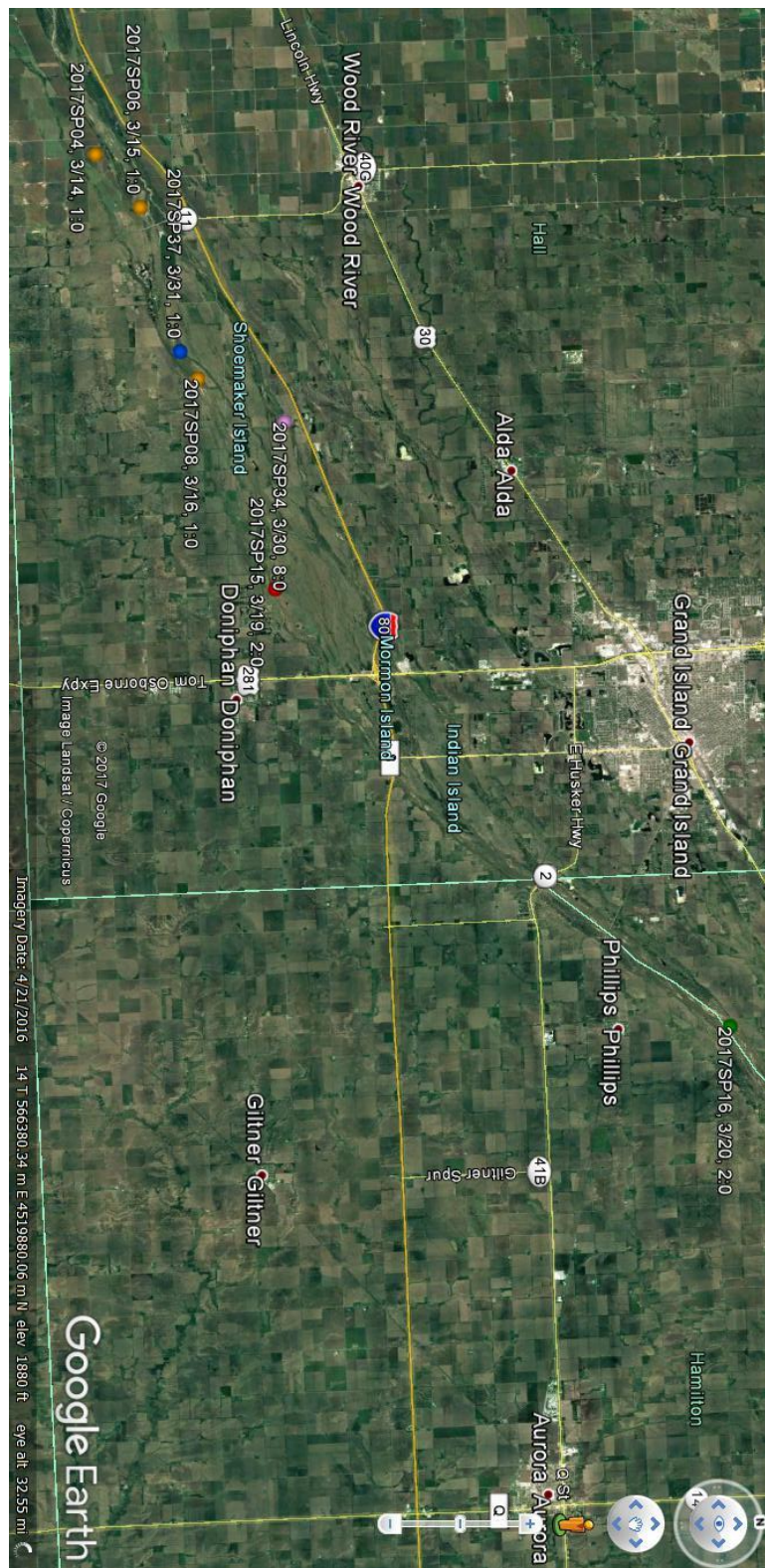


FIGURE 9. Observed whooping crane locations (Zoomed in for greater detail). 4 of 5 collective crane group maps. See Table 1 for color coding and details.

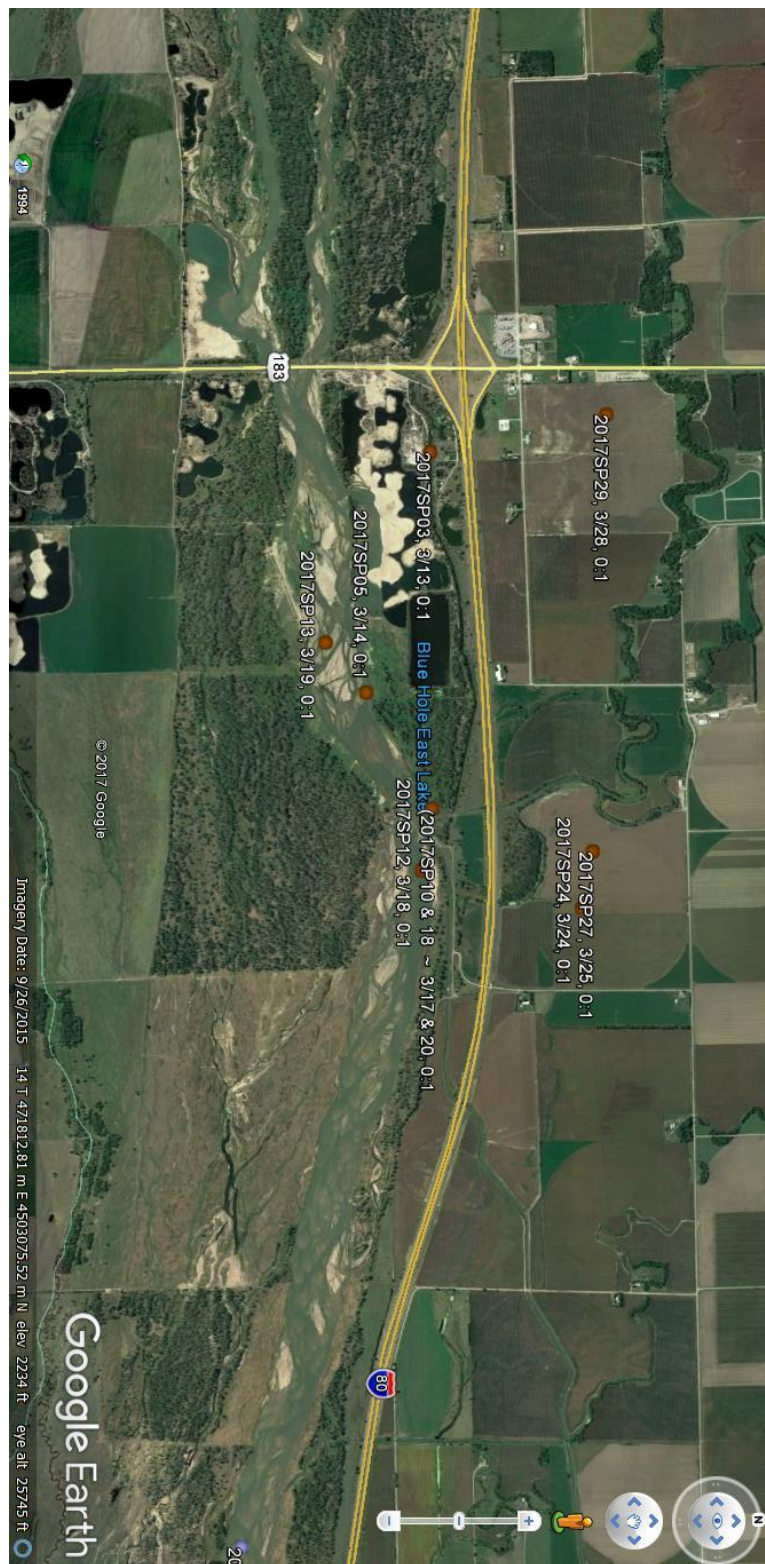


FIGURE 10. Observed whooping crane locations (Zoomed in for greater detail). 5 of 5 collective crane group maps. See Table 1 for color coding and details.

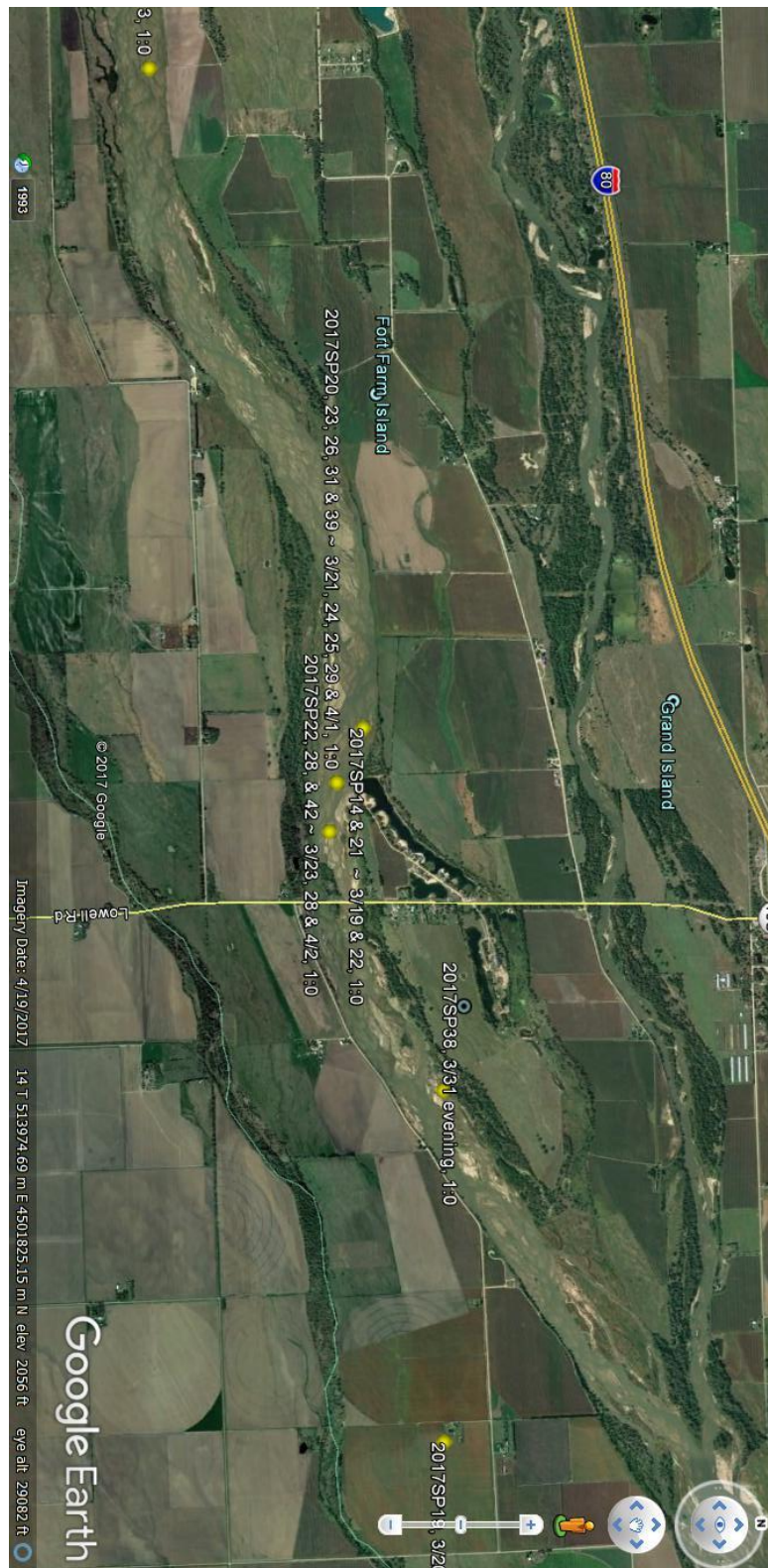


FIGURE 11. Locations of a 1:0 crane group: 2017SP01 – SP02 on 3/12 – 13, 2017SP07 on 3/5, 2017SP11 on 3/17, 2017SP14 on 3/19, 2017SP19 – SP23 on 3/20 – 24, 2017SP26 on 3/25, 2017SP28 on 3/28, 2017SP31 on 3/29, 2017SP35 & SP38 both on 3/31 (morning and evening), 2017SP39 on 4/1, & 2017SP42 on 4/2.

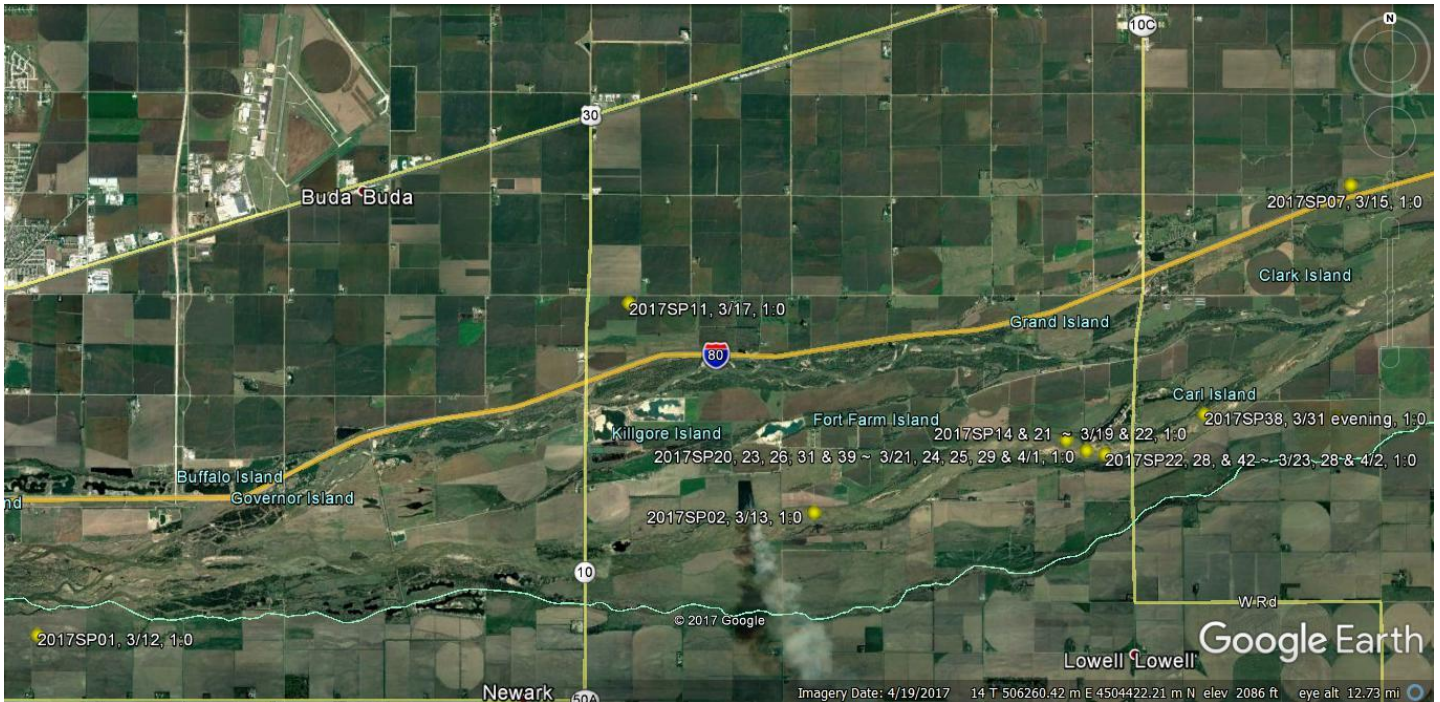


FIGURE 12. This photo was taken during a systematic observation of the 1:0 crane group 2017SP04 on 3/13 at use site 1 in the main channel of the Platte River.



FIGURE 13. Locations of a 0:1 crane group: 2017SP03 on 3/13, 2017SP05 on 3/14, 2017SP10 on 3/17, 2017SP12 – SP13 on 3/18 – 19, 2017SP18 on 3/20, 2017SP24 on 3/24, 2017SP27 on 3/25, and 2017SP29 on 3/28.



FIGURE 14. This photo was taken during the systematic observation of the 0:1 crane group 2017SP03 on 3/13 at use site 2 in a creek adjacent to the Platte River.



FIGURE 15. Locations of a 1:0 crane group: 2017SP04 on 3/14, 2017SP06 on 3/15, and 2017SP08 on 3/16.

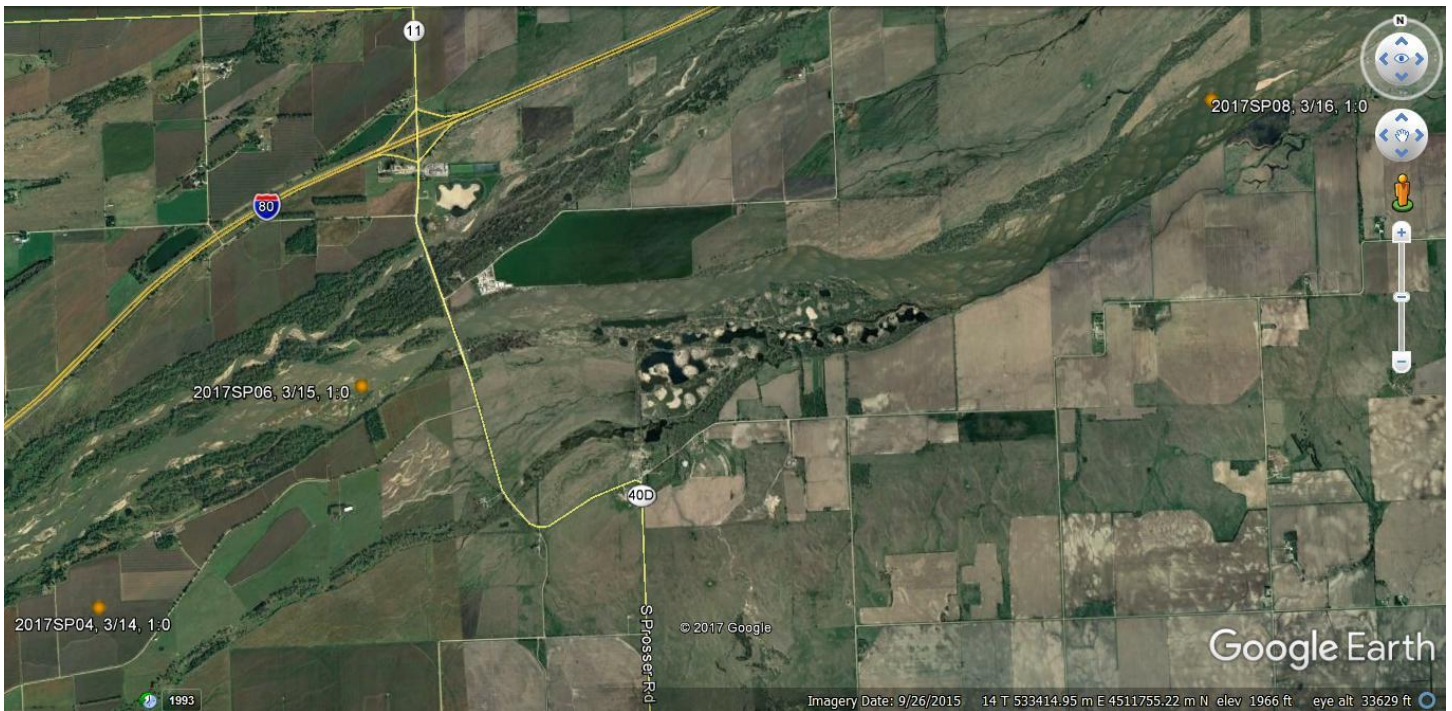


FIGURE 16. This photo was taken during the systematic observation of the of the 1:0 crane group 2017SP06 on 3/14 at use site 4 in the main channel of the Platte River.



FIGURE 17. Location of the 1:0 crane group 2017SP09 observed on 3/16.

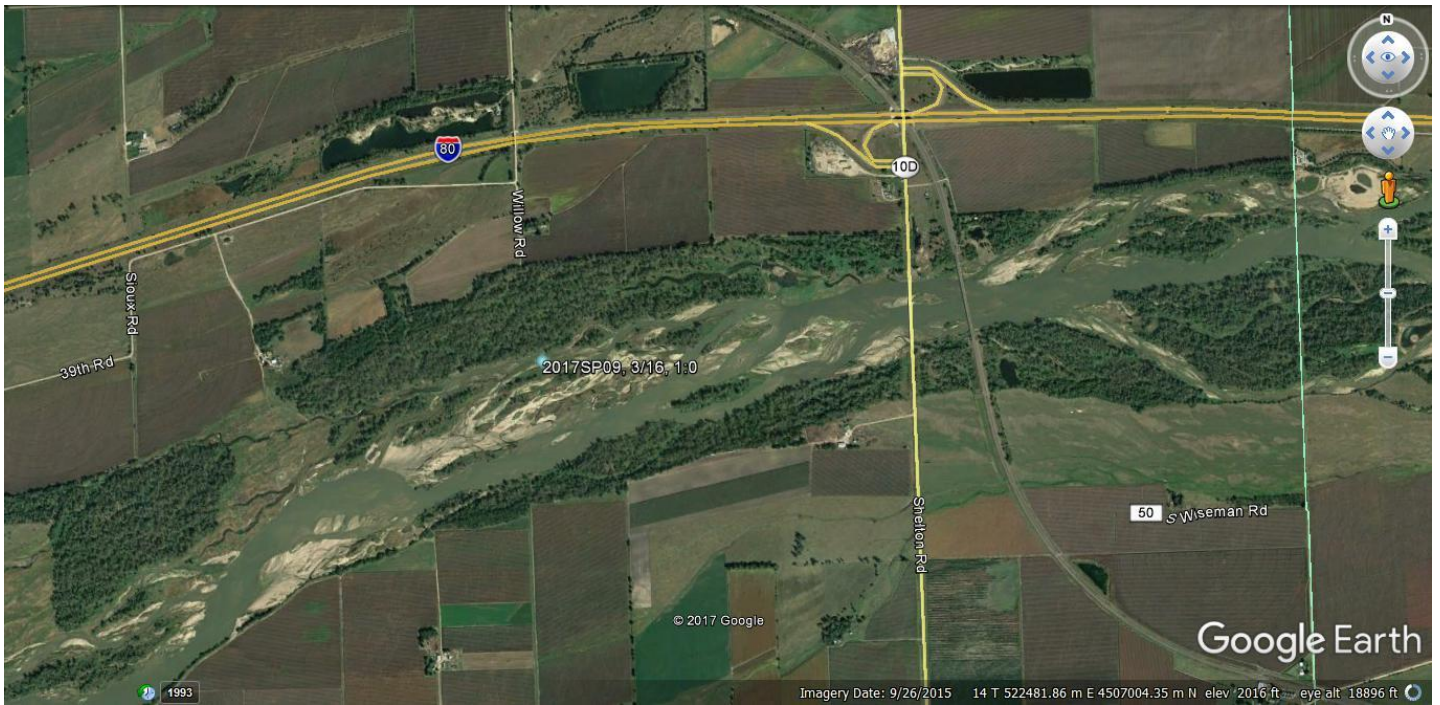


FIGURE 18. This photo was taken during the systematic observation of the 1:0 crane group 2017SP09 on 3/16 at use site 6 in the main channel of the Platte River.



FIGURE 19. Location of the 1:0 crane group 2017SP15 observed on 3/19.

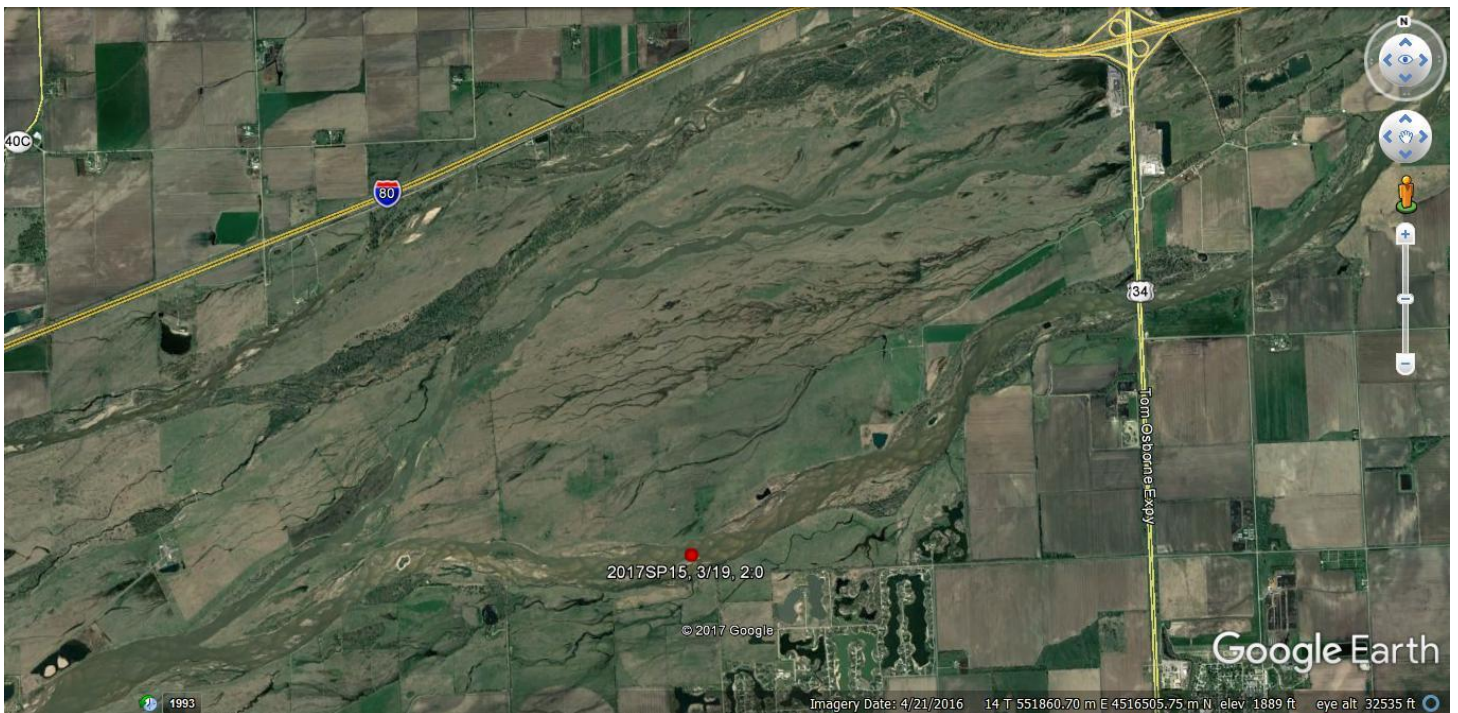


FIGURE 20. This photo was taken during the systematic observation of the 1:0 crane group 2017SP15 on 3/19 at use site 11 in the main channel of the Platte River.



FIGURE 21. Location of the 2:0 crane group 2017SP16 observed on 3/20.

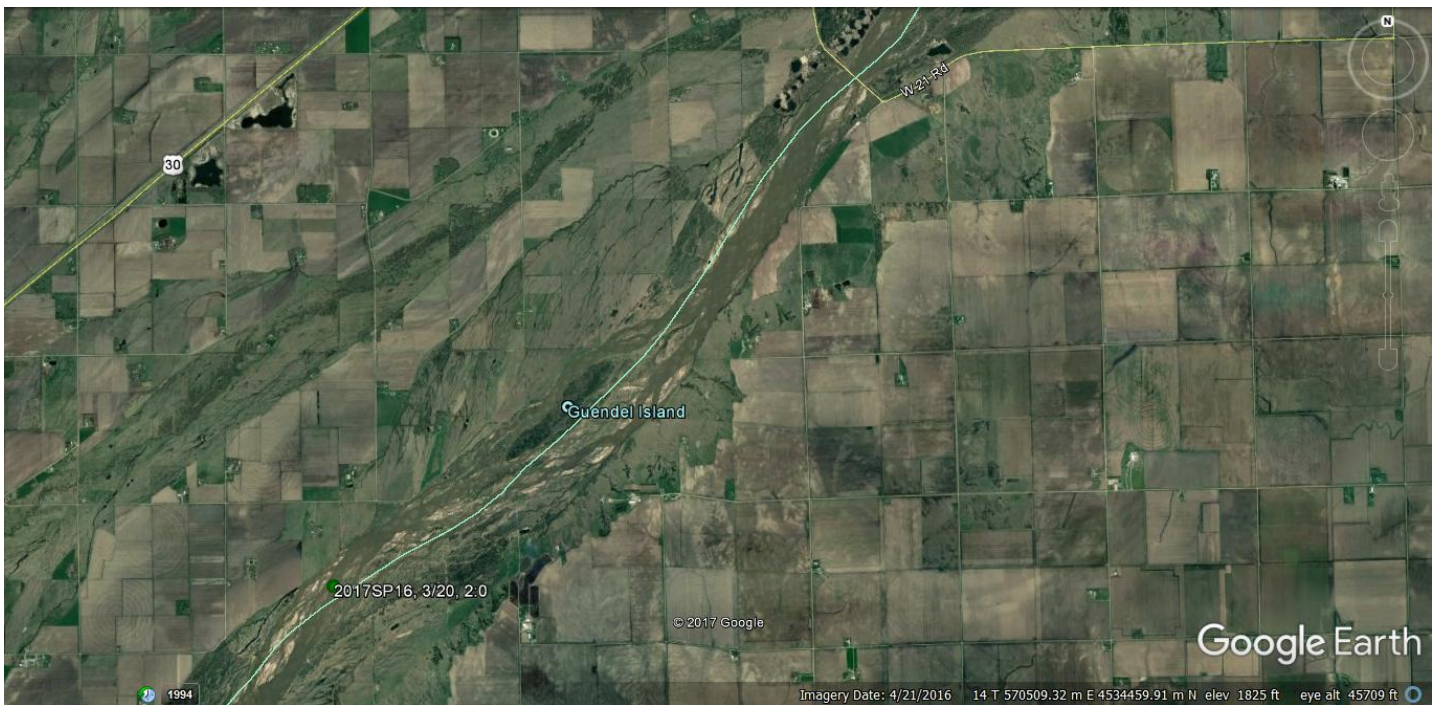


FIGURE 22. This photo was taken during a systematic observation of the 2:0 crane group 2017SP16 on 3/20 at use site 12 in the main channel of the Platte River.



FIGURE 23. Location of the 2:0 crane group 2017SP17 observed on 3/20.



FIGURE 24. This photo was taken during a systematic observation of the 2:0 crane group 2017SP17 on 3/20 at use site 13 in the main channel of the Platte River.



FIGURE 25. Locations of a 2:0 crane group: 2017SP25 on 3/24, 2017SP30 on 3/28, 2017SP32 – SP33 on 3/29 – 30, 2017SP36 on 3/31, 2017SP41 on 4/1, and 2017SP43 on 4/2.

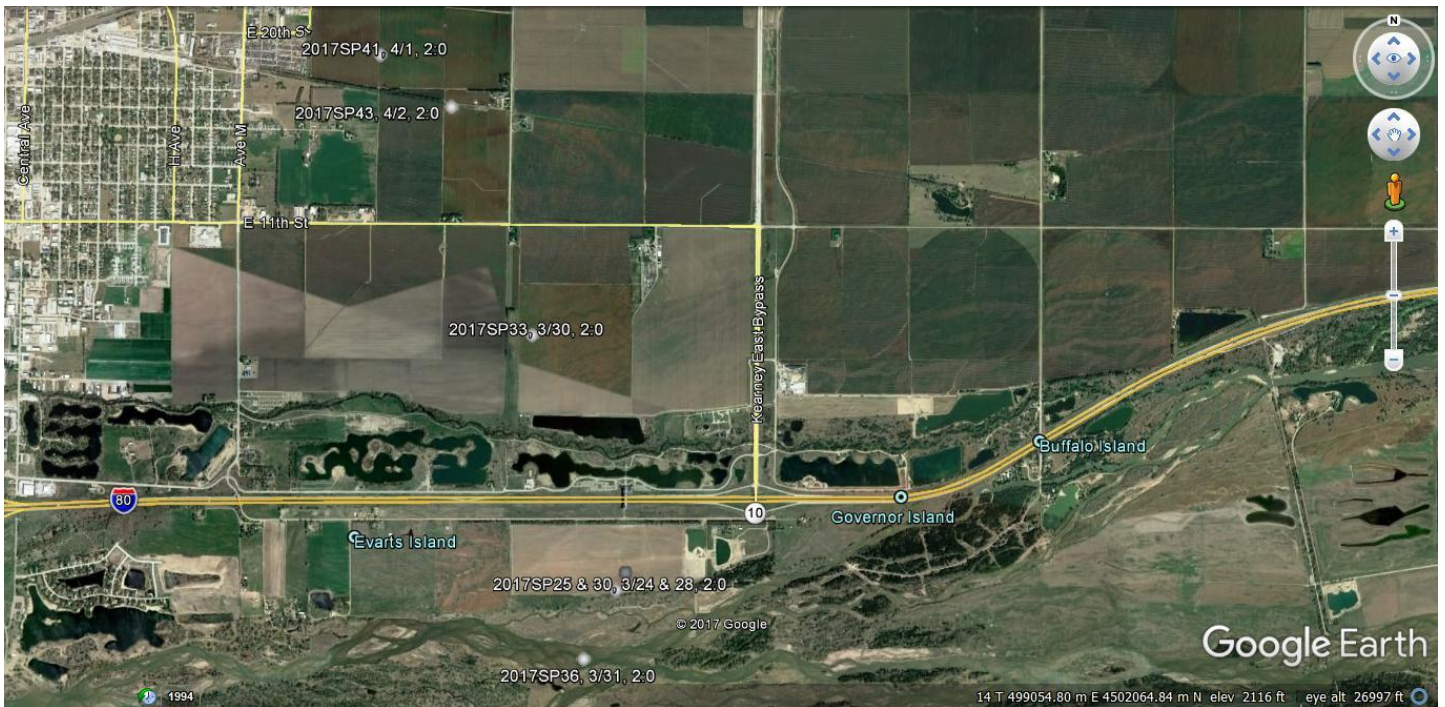


FIGURE 26. This photo was taken during a systematic observation of the 2:0 crane group 2017SP36 on 3/31 at use site 16 in the main channel of the Platte River.



FIGURE 27. Location of the 8:0 crane group 2017SP34 at initial observation on 3/30 during an evening flight. It was an opportunistic flight and the cranes were in flight during the observation.

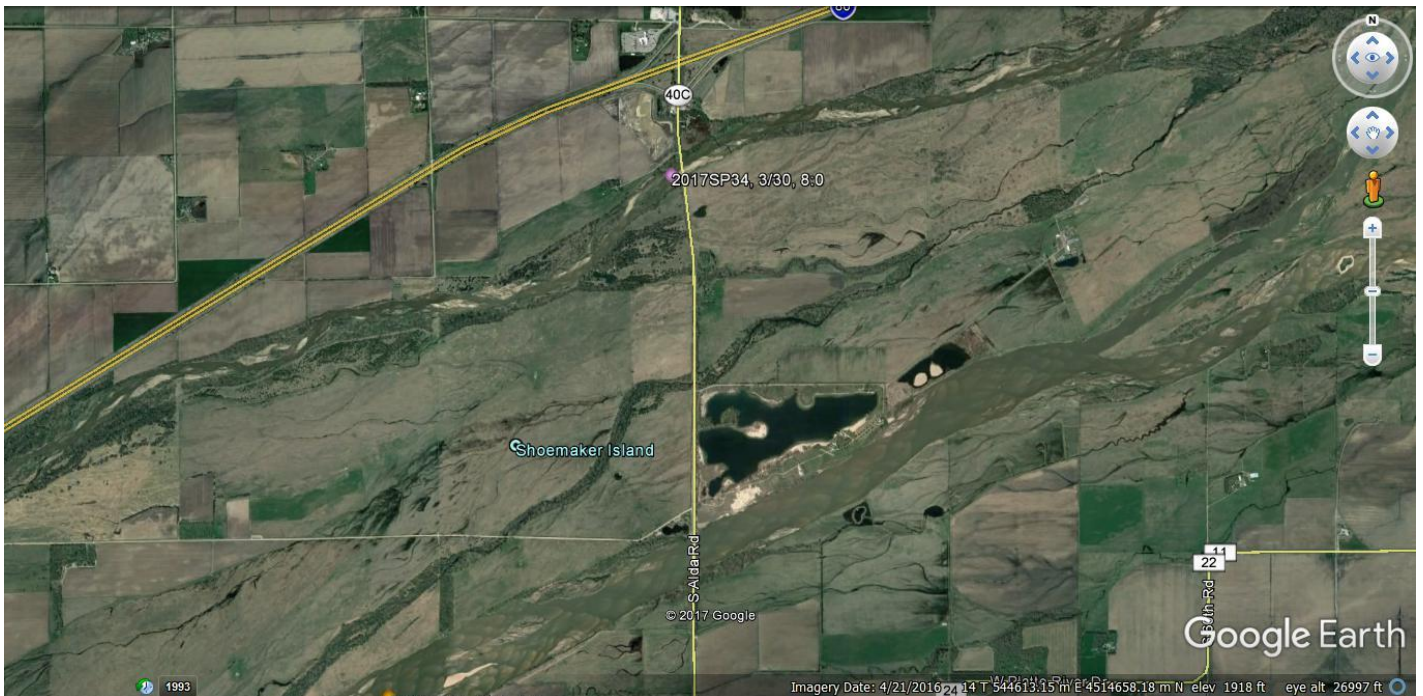


FIGURE 28. This photo was taken during an opportunistic observation of the 8:0 crane group 2017SP34 on 3/30. The cranes were in flight at the time of the observation. Six are in the lower left of the photo and the other two, which had split off prior to the photo, are in the upper right.



FIGURE 29. Location of the 1:0 crane group 2017SP37 at initial observation on 3/31 during an evening flight. It was an opportunistic flight and the crane was in flight during the observation.



FIGURE 30. This photo was taken during an opportunistic observation of the 1:0 2017SP37 on 3/31. The crane was in flight at the time of the observation



FIGURE 31. Location of the 7:0 crane group 2017SP40 at initial observation on 4/1. The cranes were in flight at the time of the observation.

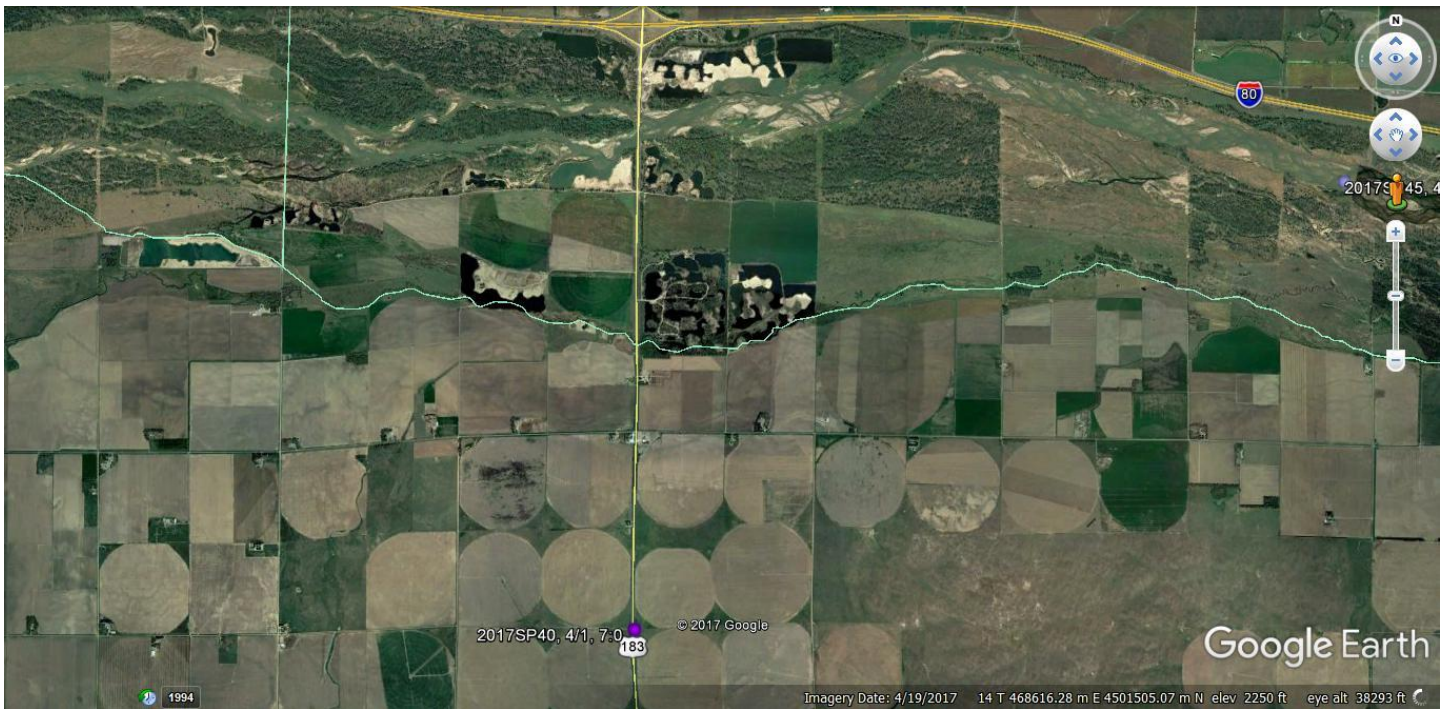


FIGURE 32. This photo was taken during a systematic observation of the 7:0 crane group 2017SP40 on 4/1. The cranes were in flight during the observation.



FIGURE 33. Location of the 2:0 crane group 2017SP44 observed on 4/7.



FIGURE 34. This photo was taken during a systematic observation of the 2:0 crane group 2017SP44 on 4/7 at use site 17 in the main channel of the Platte River.



FIGURE 35. Location of the 10:0 crane group 2017SP45 observed on 4/7.



FIGURE 36. This photo was taken during a systematic observation of the 10:0 crane group 2017SP45 on 4/7 at use site 18 in the main channel of the Platte River.



FIGURE 37. Location of the 8:0 crane group 2017SP46 observed on 4/7.

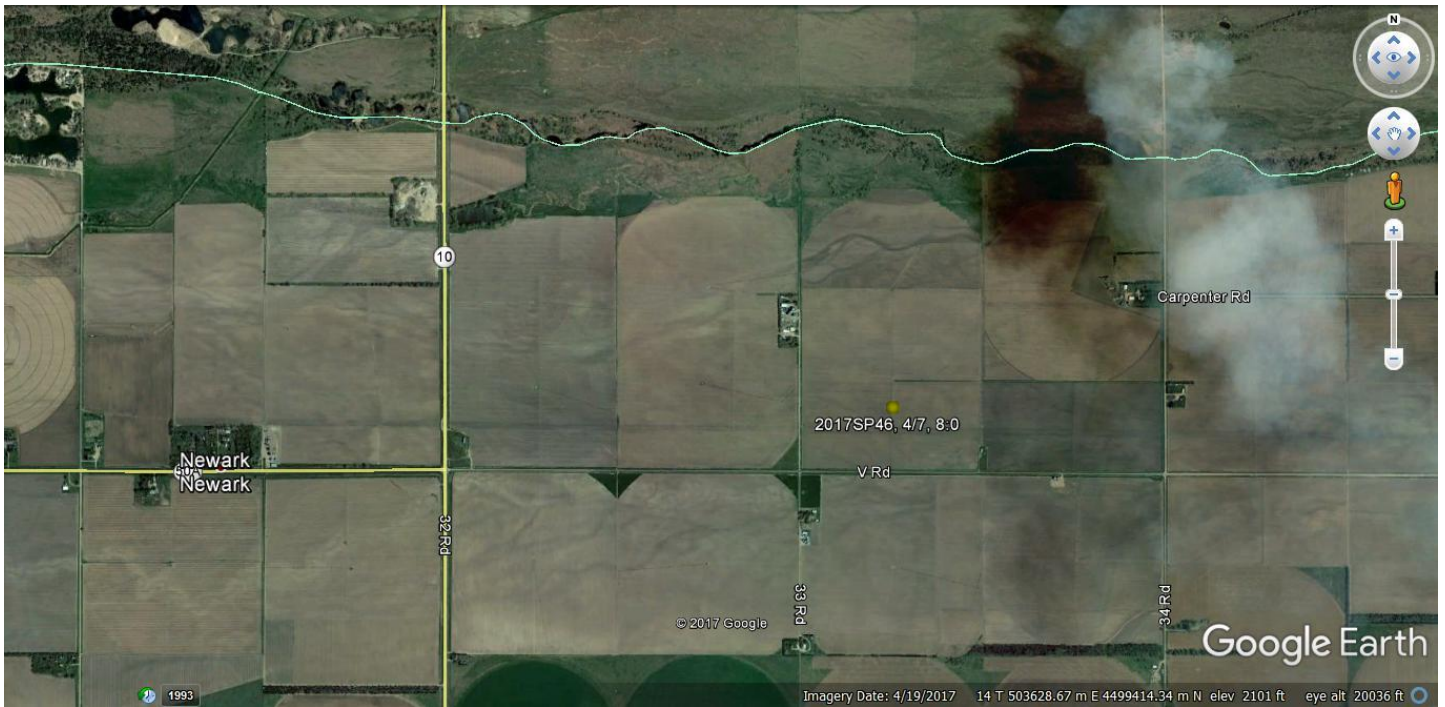


FIGURE 38. This photo was taken during a systematic observation of the 8:0 crane group 2017SP46 on 4/7 in a cornfield.



FIGURE 39. Location of the 9:0 crane group 2017SP47 observed on 4/7.

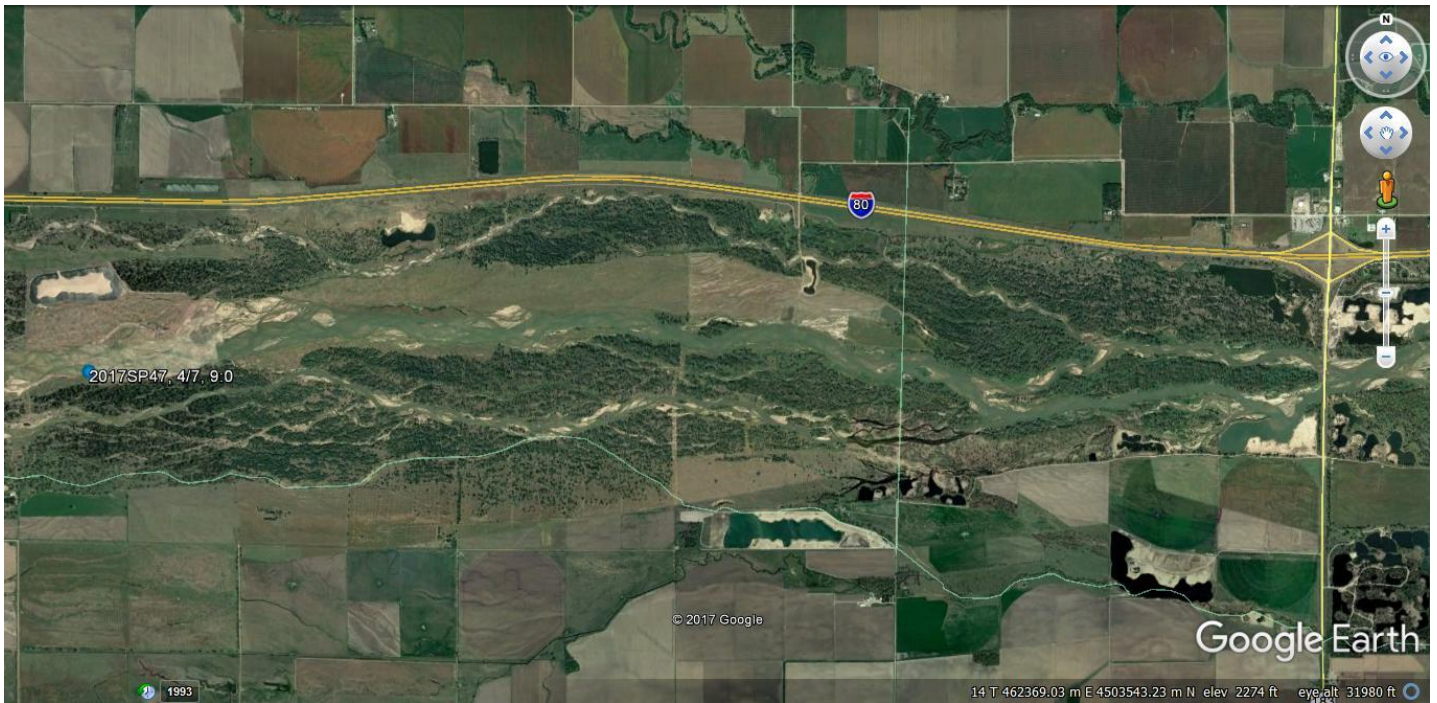


FIGURE 40. This photo was taken during a systematic observation of the 9:0 crane group 2017SP47 on 4/7 at use site 19 in the main channel of the Platte River.



FIGURE 41. Location of the 9:0 crane group 2017SP48 observed on 4/7.



FIGURE 42. This photo was taken during a systematic observation of the 9:0 crane group 2017SP48 on 4/7 in a cornfield.

