IMPLEMENTATION OF THE WHOOPING CRANE MONITORING PROTOCOL

2016 SPRING – FINAL REPORT

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For
The Committees of the
Platte River Recovery Implementation Program

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Summary

The Ecological Solutions (ES) team conducted the whooping crane monitoring effort for the 2016 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 33 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 altitude of approximately 750 feet and at an air speed of approximately 100 MPH. 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 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 33 unique whooping cranes were confirmed during the 55-day monitoring effort. Seventeen crane groups, comprised of 9 unique groups, were observed and each was given a unique crane group ID (e.g. 2016SP01). For data purposes, a crane group consisted of any individual or group of whooping cranes observed once daily and may 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 observations, the number of cranes spotted, crane group ID, use site number and/or location ID, whether it was a systematic or opportunistic observation, and crane use days. Location observation maps and photos (if available) of each crane group observed by ES are shown in Figures 4-20. Each unique crane group is color coded on Table 1. to correspond to the map markers in Figures 4-6, 8, 10, 12, 14, 16, 18, and 20.

Of note, 2016SP16 and 2016SP17 (2:1 and 5:0 respectively), 4/9/16 were observed by PRRIP personnel, but were added to the report as they were observed and confirmed by EDO and ES staff. While being observed they joined up to form a loose 7:1 group, therefore they were given the same color map marker. These two groups, as well as 2016SP04 (0:1), 3/20/16 were ground observations only.

TABLE 1

	Observation Dates	# of Cranes Adult:Juv	Group ID #	Use Site #	UTMx	UTMy	Flight Type	See Figures
SPRING	3-18	1:0	2016SP01	1	504411	4501120	Systematic	6, 7
	3-19	1:0	2016SP02	corn/ag	503647	4499325	Systematic	6, 7
	3-20	1:0	2016SP03	2	507410	4501888	Systematic	6, 7
	*3-20	0:1	2016SP04	grassland	532663	4508354	Opp/ground	8, 9
	3-22	1:0	2016SP05	3	512511	4502884	Systematic	6, 7
	3-23	1:0	2016SP06	4	510869	4503055	Systematic	6, 7
	3-24	1:0	2016SP07	5	510533	4502989	Systematic	6, 7
	3-25	1:0	2016SP08	6	509181	4501992	Systematic	6, 7
	3-27	1:0	2016SP09	5	510533	4502989	Systematic	6, 7
	3-28	1:0	2016SP10	corn/ag	511768	4503806	Systematic	6, 7
	4-9	5:0	2016SP11	7	570986	4536023	Systematic	10, 11
	4-9	7:0	2016SP12	8	548148	4515250	Systematic	12, 13
	4-9	2:0	2016SP13	9	448784	4503590	Systematic	14, 15
	4-9	6:0	2016SP14	wet meadow	471317	4503081	Systematic	16, 17
	4-9	3:0	2016SP15	corn/ag	502790	4505825	Opp.	18, 19
	*4-9	2:1	2016SP16	alfalfa/ag	505729	4502371	Opp/ground	20
	*4-9	5:0	2016SP17	alfalfa/ag	505729	4502371	Opp/ground	20
Crane Use Days		74						

* 2016SP04 (0:1) and (2:1 & 5:0) were opportunistic ground observations only.

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. This resulted in a total of 74 crane use days during the spring survey. Whooping cranes were observed on 10 of the 55 days of the survey effort (18.2% of the days; Table 1).

According to the surveys conducted by the U.S. Fish and Wildlife Service in the winter of 2015 – 2016, the Aransas – Wood Buffalo migratory whooping crane population was estimated to be 329 birds (See the following web link for source). The 33 individuals observed by this monitoring effort constitute approximately 10% of the migratory population using the survey area of the Platte River during the spring migration.

http://www.fws.gov/uploadedFiles/Region_2/NWRS/Zone_1/Aransas-Matagorda_Island_Complex/Aransas/Sections/What_We_Do/Science/Whooping_Crane_Updates_2013/WHCR%20Update%20Winter%202015-2016.pdf

Streamflow and Unobstructed Channel Width

at Whooping Crane Use Locations

The Platte River streamflow was above the median levels (30 years at Overton, 28 years at Kearney, and 74 years at Grand Island) except for two brief drops at the Overton and Kearney gaging stations and one at the Grand Island gaging station (Figures 1-3). The discharge ranged from a low of 850 cfs at Kearney to a high of 5,980 cfs at Grand Island during the survey period. During periods when whooping cranes were observed, streamflow ranged from 1,970 cfs – 2,460 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	Crane Group Composition
3/18	Kearney	2,460	2016SP01	1:0
3/20	Kearney	2.280	2016SP03	1:0
3/22-3/25	Kearney	2,230-2,460	2016SP05-08	1:0
3/27	Kearney	1,970	2016SP09	1:0
4/9	Grand Island	2,010	2016SP11	5:0
4/9	Grand Island	2,010	2016SP12	7:0
4/9	Overton	2,240	2016SP13	2:0

TABLE 3

Group ID #	Use Site #	UTMx	UTMy	Unobstructed Channel Width (ft)
2016SP01	1	504411	4501120	916
2016SP03	2	507410	4501888	1,065
2016SP05	3	512511	4502884	877
2016SP06	4	510869	4503055	967
2016SP07	5	510533	4502989	1,000
2016SP08	6	509181	4501992	858
2016SP09	5	510533	4502989	1,000
2016SP11	7	570986	4536023	1,465
2016SP12	8	548148	4515250	712
2016SP13	9	448784	4503590	850

Figure 1

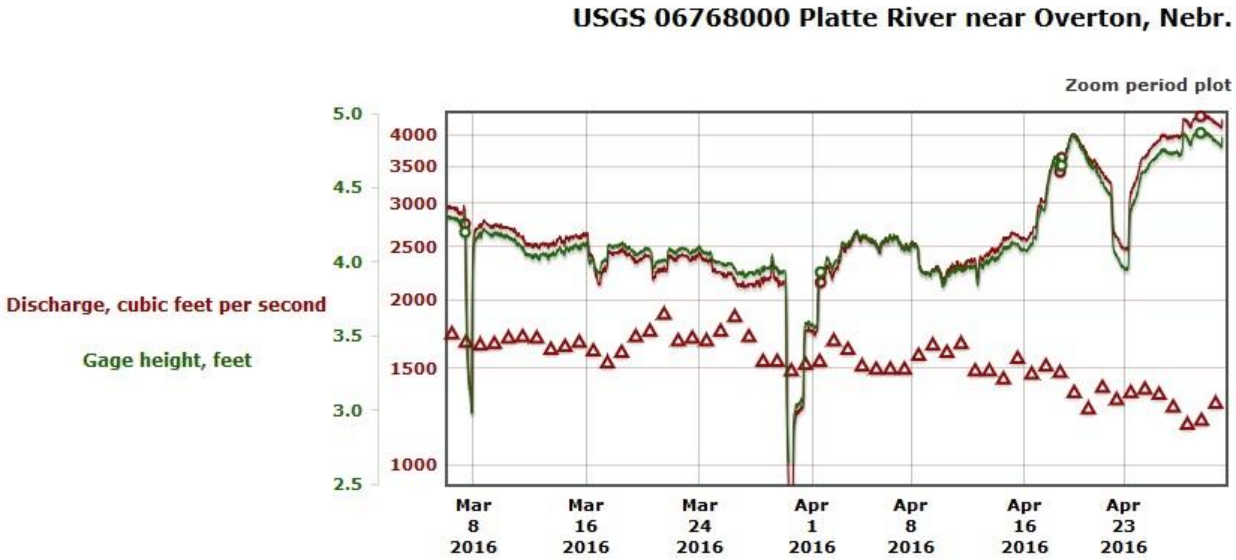


Figure 2

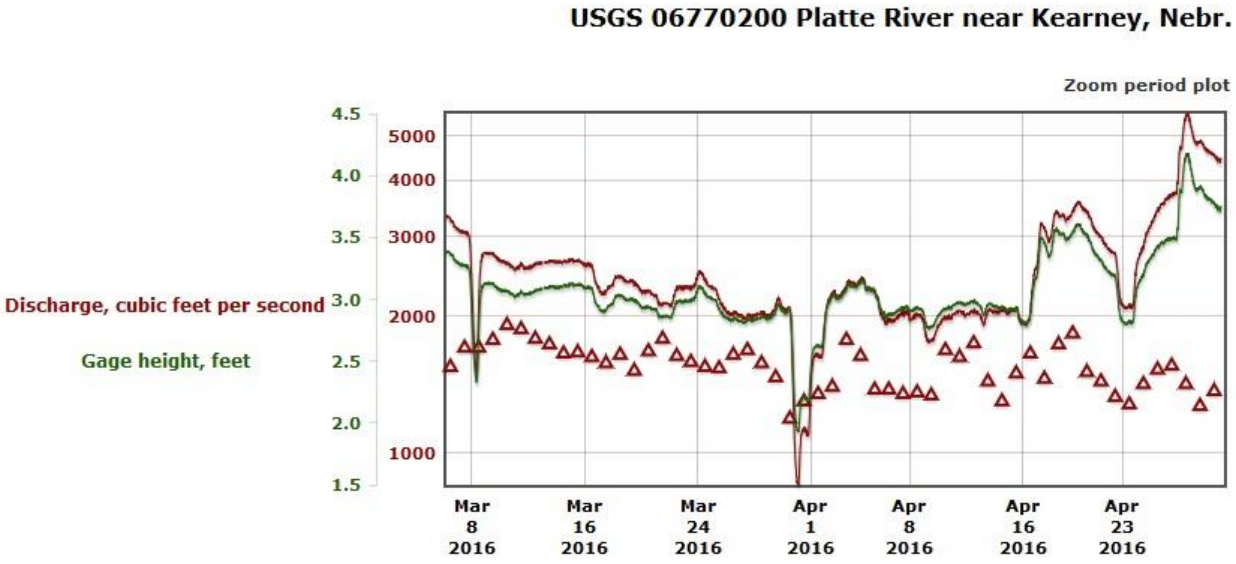
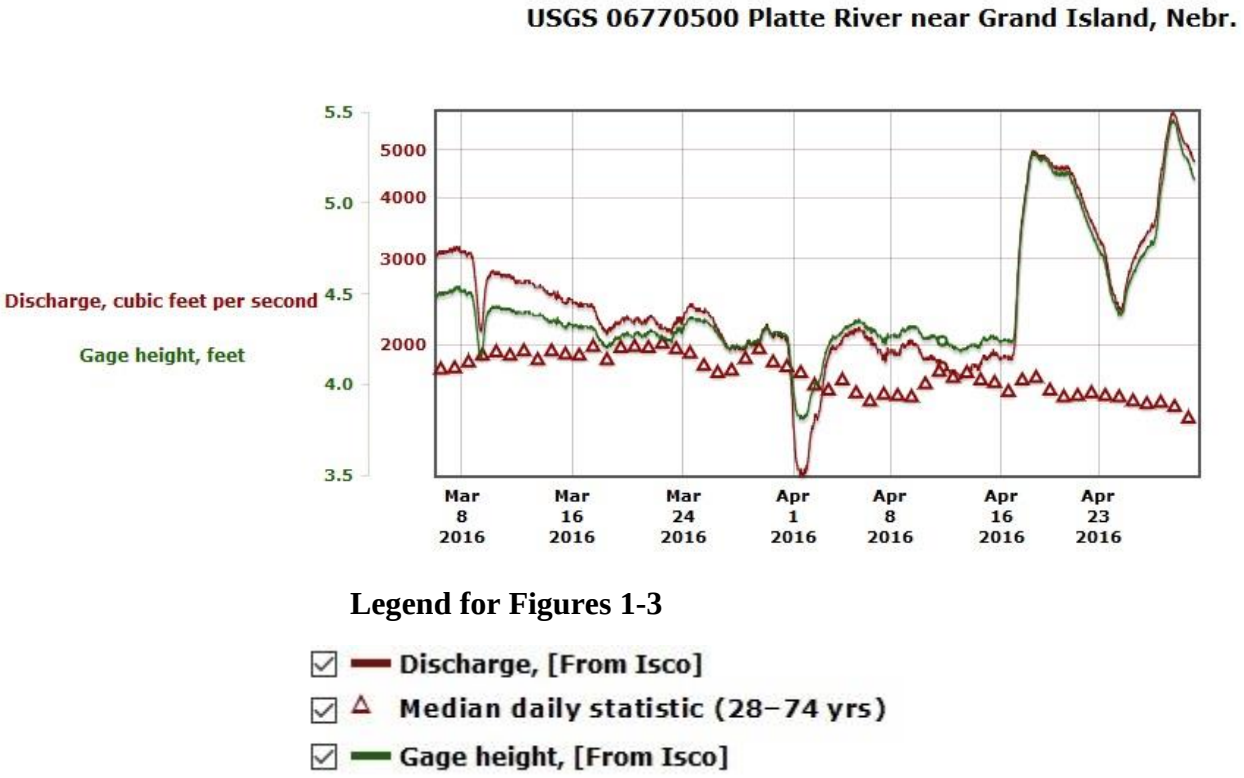


Figure 3



Legend for Figures 1-3

(ALL DATA IN FIGURES 1-3 ARE PROVISIONAL)

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. On 3/21/16 and 3/26/16, flights were not able to be conducted but the crane (16A-04) was assumed to remain in the area, and on 4/9/16 the groups were observed the evening prior to PRRIP observing them during the systematic survey and opportunistic sightings.

TABLE 4

USFWS/PRRIP Data Comparison			
Date	# of WC Ad:Juv	USFWS ID #	PRRIP Group ID #s
3/18 – 3/20, 3/22 – 3/25, 3/27 – 3/28	1:0	16A-04	2016SP01-03, 2016SP05-10
3/20	0:1	16A-05	2016SP04
4/9	5:0	16A-26	2016SP11
4/9	7:0	16A-27	2016SP12
4/9	2:0	16A-28	2016SP13
4/9	6:0	16A-29	2016SP14
4/8 – 4/9	3:0	16A-37	2016SP15
4/8 – 4/9	5:0	16A-30	2016SP16
4/8 – 4/9	2:1	16A-38	2016SP17

Ground Search Effort and Opportunistic Observations

There were nine 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. Four were opportunistic ground observations resulting in crane groups 2016SP01 (spotted earlier that morning by the aerial crew), 2016SP02, 2016SP04, 2016SP16, and 2016SP17. Groups 2016SP16 (2:1) and 2016SP17 (5:0) joined to become the 7:1 group noted in Table 5. on 4/9/2016. The remaining five ground search efforts were attributed to one known adult in the area, one juvenile that was reported in the area the evening before, and three confirmations of white objects spotted by the aerial crews. None of the remaining 5 resulted in a whooping crane observation. Table 5. lists the details of efforts expended and the results.

TABLE 5

GROUND SEARCH EFFORT/OPP. SIGHTINGS				
Date	Source	WC Confirmed Ad:Juv	Miles Driven	Aerial, Ground Effort
3/17	Public	None	34.0	Ground
3/18	ES staff	1:0	1.5	Ground
3/19	ES staff	1:0	0.0	Ground
3/20	ES staff	0:1	0.0	Ground
3/21	Known bird	None	26.0	Ground
3/21	Air crew	None	28.0	Both
3/22	Air crew	None	7.0	Both
4/9	PRRIP staff	7:1	10.0	Ground
4/15	Air crew	None	10.0	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 5 in the wetted channel (50.0%), 0 in the corn/ag (0.0%), 0 in the grassland – lowland (0.0%), and 3 in the open water pit/pond/lake (60.0%), for an overall spotting efficiency of 32.0% (Table 6).

TABLE 6
Decoys

Decoy	Date Placed	UTMx	UTMy	Type	Detected
1	3/14/2016	486122.0	4501640.6	Wetted channel	N
2	3/15/2016	497945.9	4500903.4	Wetted channel	Y
3	3/16/2016	546555.0	4515242.0	Wetted channel	N
4	3/17/2016	505564.0	4501159.0	Wetted channel	N
5	3/21/2016	562498.8	4527544.6	Wetted channel	N
6	3/24/2016	453471.5	4503745.1	Wetted channel	Y
7	3/24/2016	468515.3	4503561.0	Wetted channel	N
8	4/5/2016	509904.6	4502632.8	Wetted channel	Y
9	4/5/2016	546583.7	4515086.7	Wetted channel	Y
10	4/13/2016	458331.0	4503681.0	Wetted channel	Y
11	3/29/2016	567733.6	4531179.3	Ag - corn	N
12	3/29/2016	452386.3	4501789.8	Ag - corn	N
13	3/31/2016	563584.0	4525847.7	Ag - corn	N
14	4/7/2016	487181.4	4504405.6	Ag - corn	N
15	4/7/2016	477913.6	4507166.0	Ag - corn	N
16	3/25/2016	441982.3	4502764.3	Grassland-lowland	N
17	3/31/2016	457723.3	4501054.0	Grassland-lowland	N
18	4/15/2016	529662.4	4506492.5	Grassland-lowland	N
19	4/20/2016	512233.6	4504967.5	Grassland-lowland	N
20	4/27/2016	460653.1	4501170.3	Grassland-lowland	N
21	3/14/2016	458911.8	4501025.9	Open water pit/pond/lake	Y
22	3/21/2016	472331.2	4502117.5	Open water pit/pond/lake	N
23	3/22/2016	504206.1	4497251.0	Open water pit/pond/lake	N
24	4/14/2016	507125.9	4500319.4	Open water pit/pond/lake	Y
25	4/16/2016	546900.4	4511225.0	Open water pit/pond/lake	Y

Flight Statistics and Sighting Frequency

There were a total of 110 scheduled flights (55 West, 55 East), of which 74 were completed (Table 7). Of the thirty-six flights that were cancelled or incomplete, thirty-three were due to inclement weather and three were due to logistical issues.

TABLE 7

	East	West	TOTALS
COMPLETED	37	37	74
CANC./INCOMP.	18	18	36
SEASON TOTAL	55	55	110
% COMPLETED	67.3%	67.3%	67.3%

FLIGHT RESULTS

A total of 303 individual systematic transects were flown throughout the survey period. During this time, 13 whooping crane groups were observed from the air during systematic flights for an overall sighting per transect frequency of 4.3% (Table 8). It should be noted that there was one additional group (2016SP15) that was observed from the air, although it was an opportunistic sighting observed while approaching the Kearney airport for landing, and therefore was not included the table.

TABLE 8

SIGHTING FREQUENCY/COMPLETED TRANSECTS

		TRANSECTS			# WC Groups[1]	FREQUENCY
		COMPLETED	CANC/INCOMP	TOTAL		
SPRING	OSE, OSW[2]	74	36	110	10	9.1%
	PWRTE, PWRTW[3]	74	36	110	3	2.7%
	WSRT/CSRT, ESRT[4]	54	29	83	0	0.0%
TOTALS		202	101	303	13	4.3%

[1]These groups may or may not consist of crane(s) observed on previous days
[2]Primary Transect (Riverine), (East – OSE, West – OSW)
[3]Primary Return transect, (East – PWRTE, West – PWRTW)
[4]Secondary Return transect, (East – WSRT and CSRT, West – ESRT)

Supplements

QA/QC of database was performed by ES
Original datasheets – Retained at PRRIP

FIGURE 4. Observed whooping crane locations. See Table 1. for color coding and details.

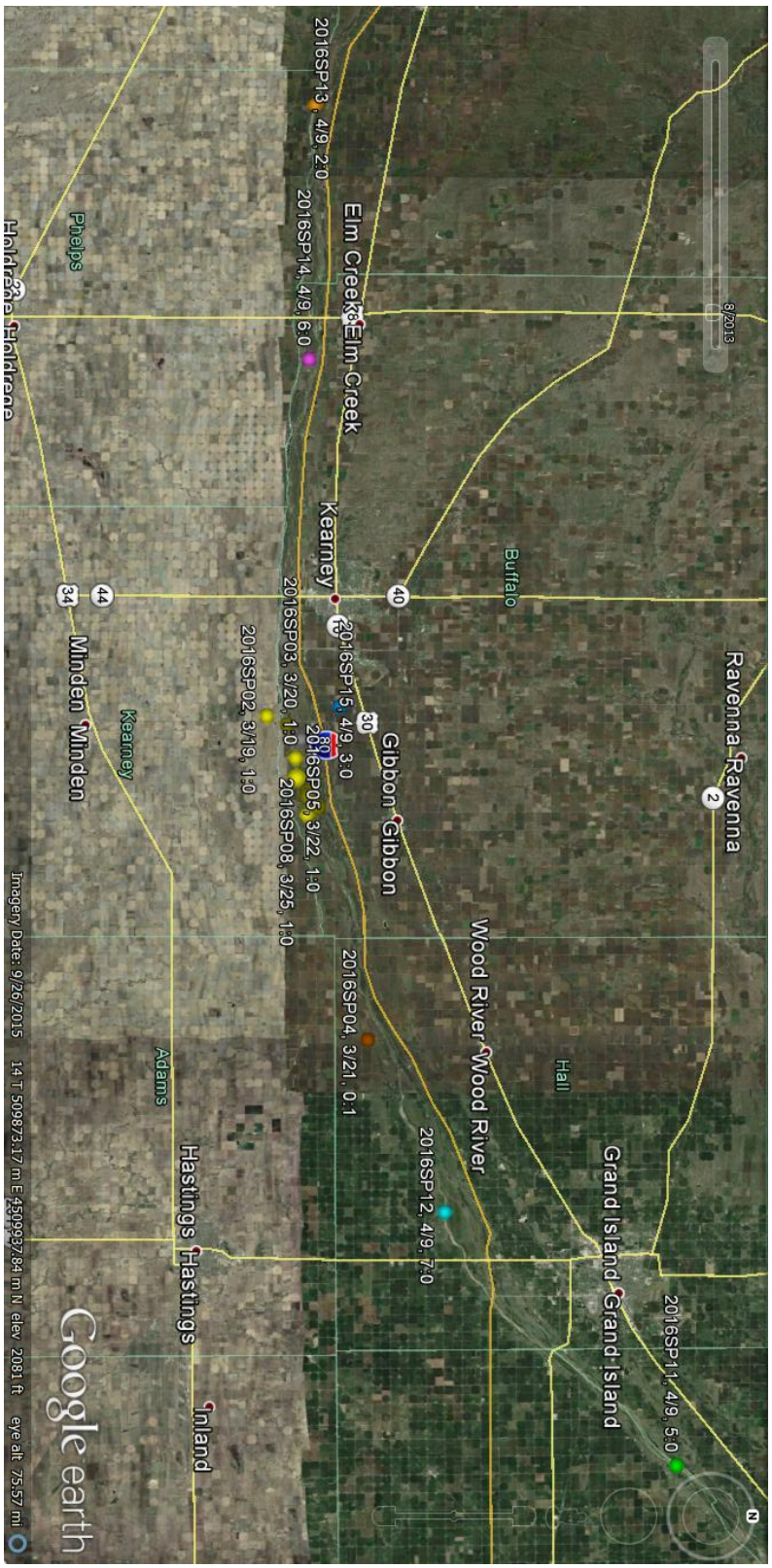


FIGURE 5. Observed whooping crane locations (zoomed in to high density area). See Table 1. for color coding and details.

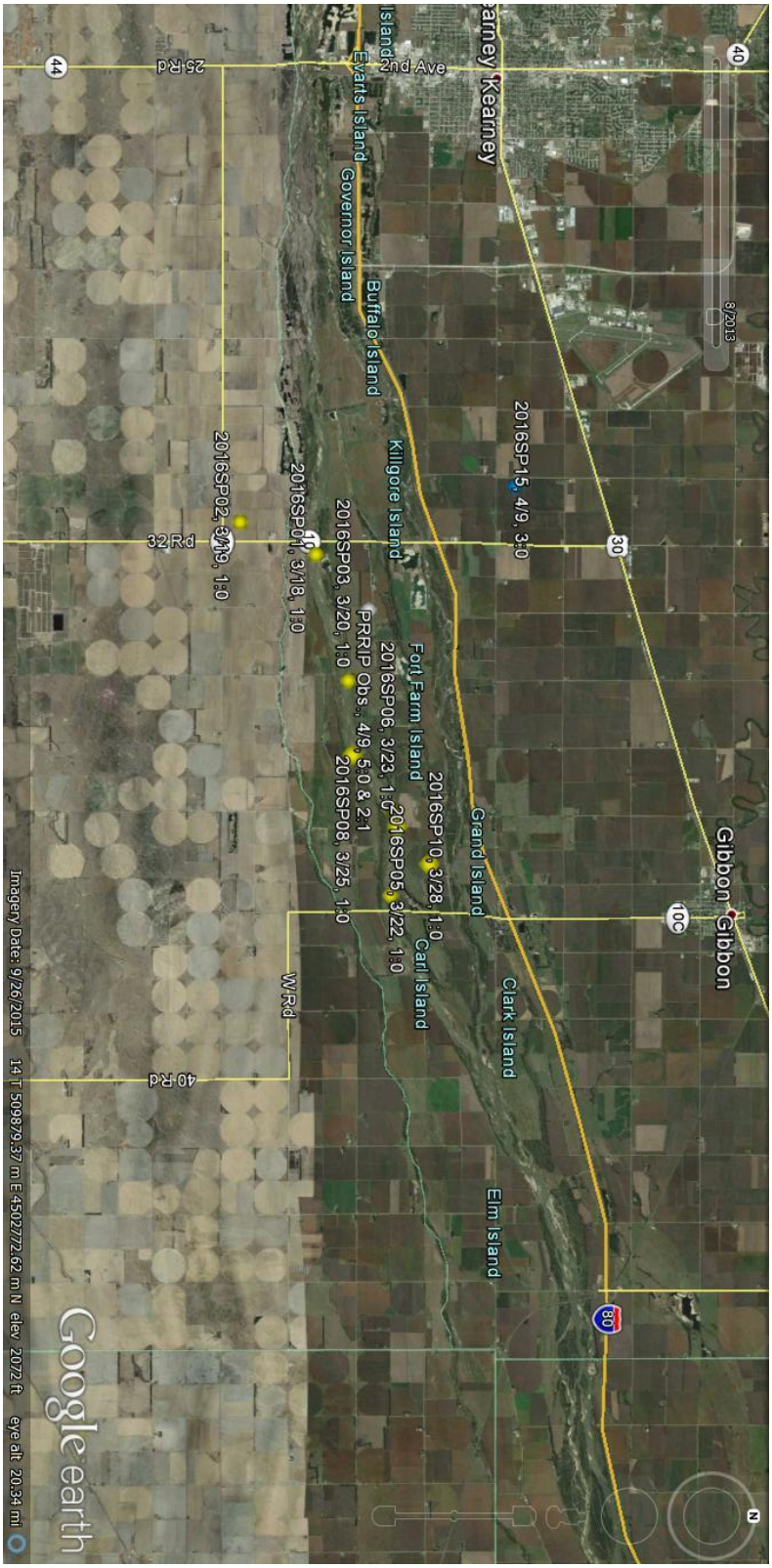


FIGURE 6. Locations of 2016SP01-03 and 2016SP05-10 (1:0) observed 3/18/2016 – 3/20/2016, 3/22/2016 – 3/25/2016, and 3/27/2016 – 3/28/2016.

FIGURE 7. Systematic observation of a 1:0 group which comprised ID #'s 2016SP01-03 on 3/18/2106 – 3/20/2016 and 2016SP05-10 on 3/22/2016 – 3/25/2016, and 3/27/2016 – 3/28/2016. This photo was taken 3/24/2016 at Use Site 5.

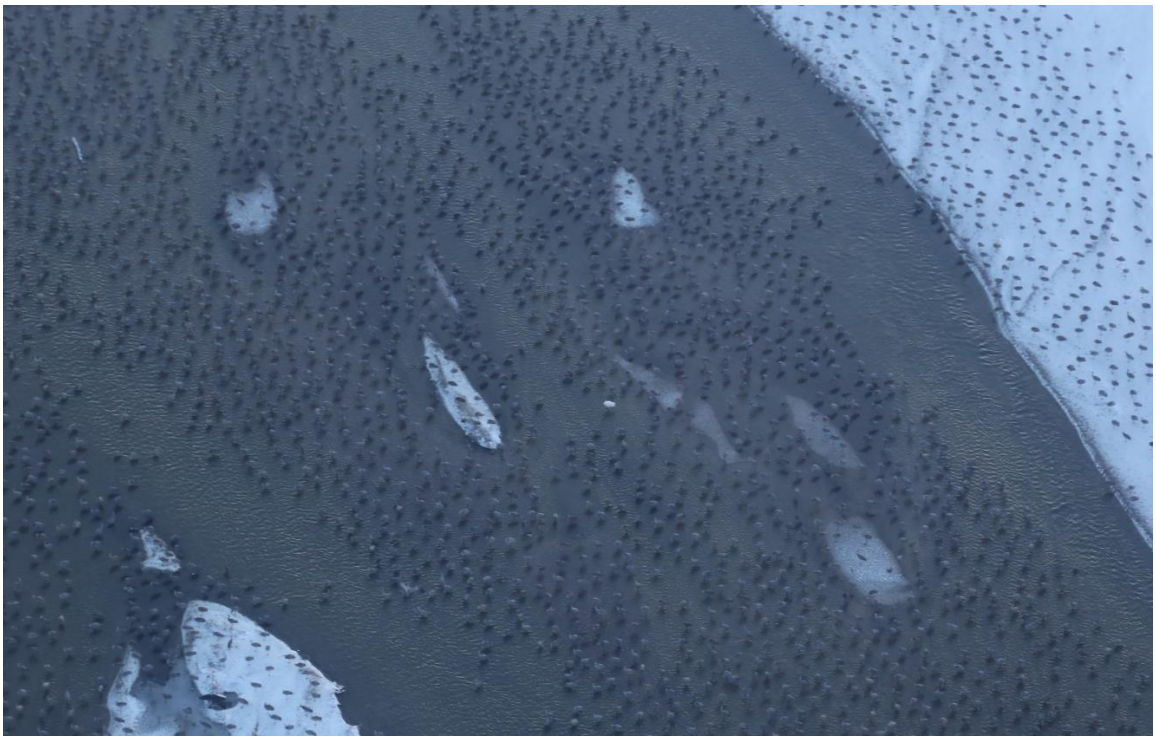


FIGURE 8. Location of 2016SP04 (0:1) observed 3/20/16.

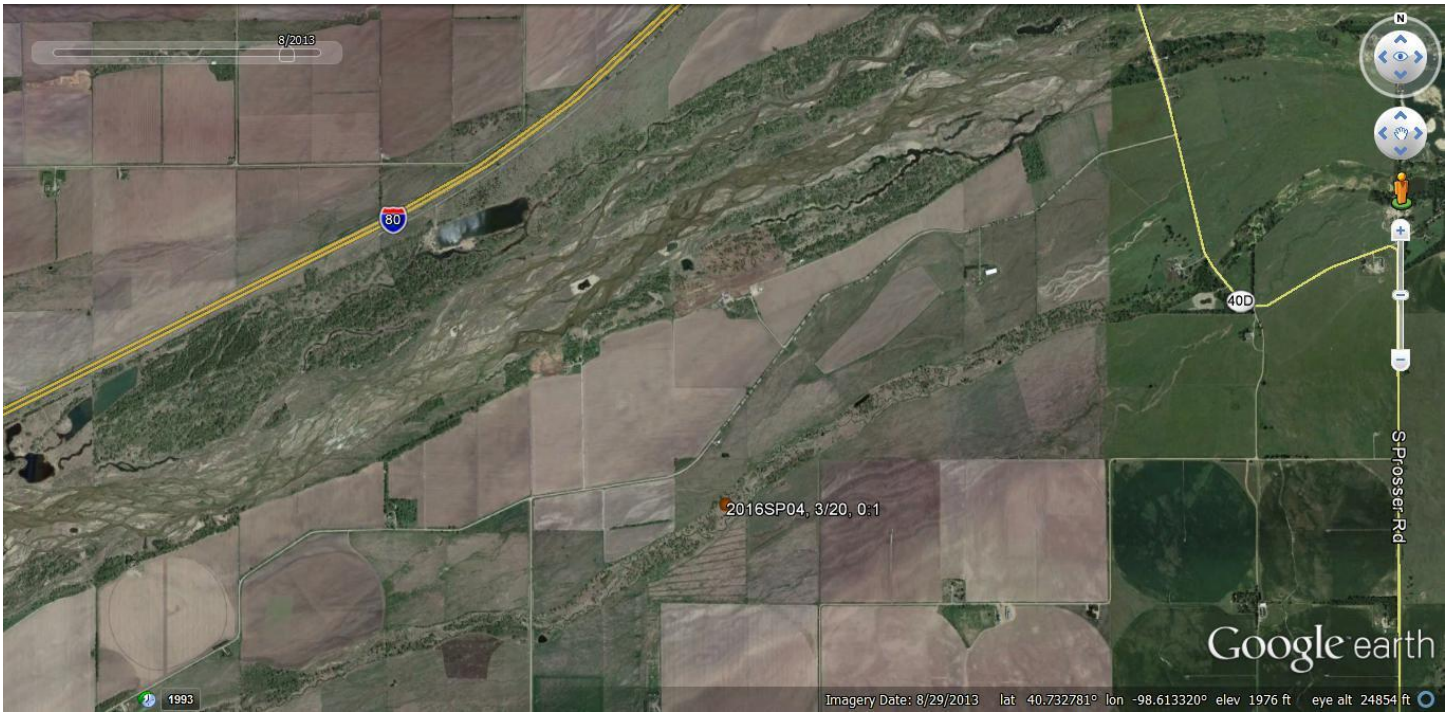


FIGURE 9. Opportunistic ground observation of 2016SP04 (0:1) on 3/20/2016 in a grassland near an offside southern channel of the Platte River.

FIGURE 10. Location of 2016SP11 (5:0) observed 4/9/2016.

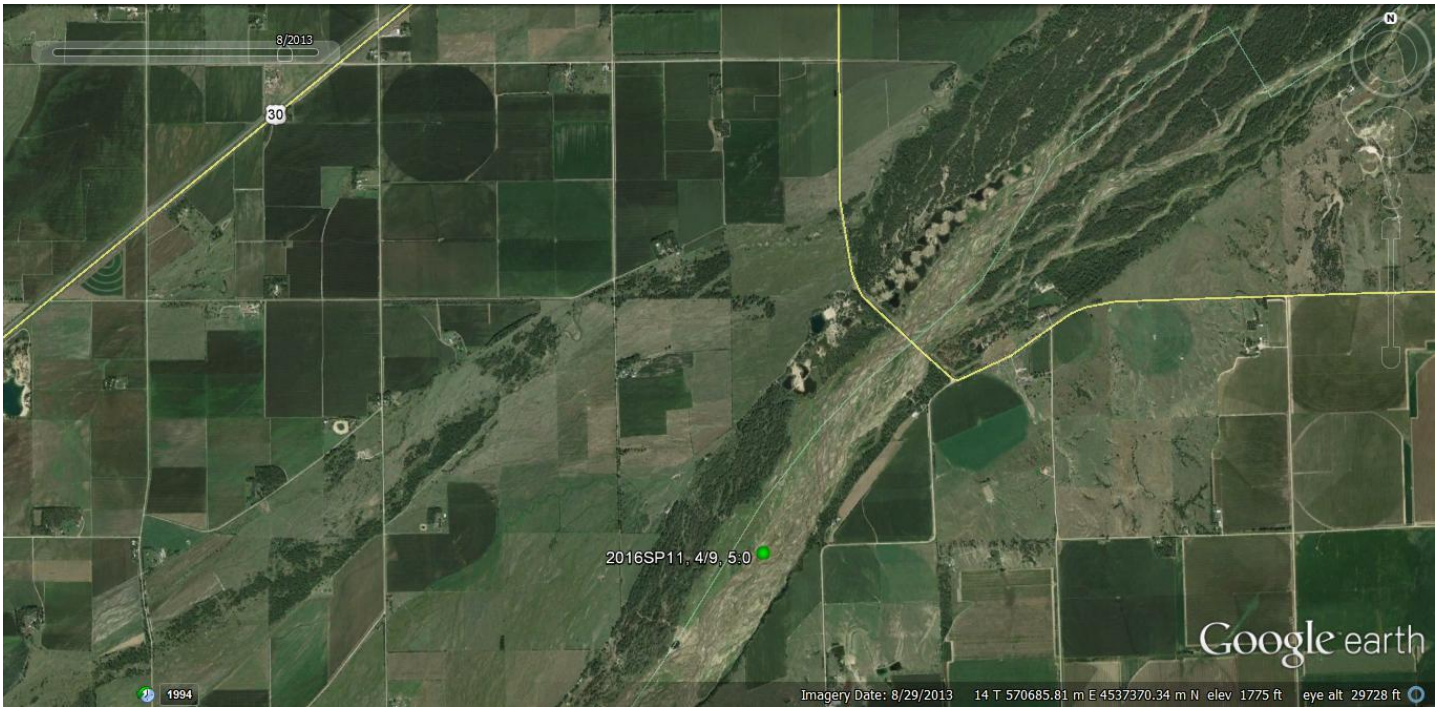


FIGURE 11. Systematic observation of 2016SP11 (5:0) on 4/9/2016 in the main channel of the Platte River.

FIGURE 12. Location of 2016SP12 (7:0) observed 4/9/2016.

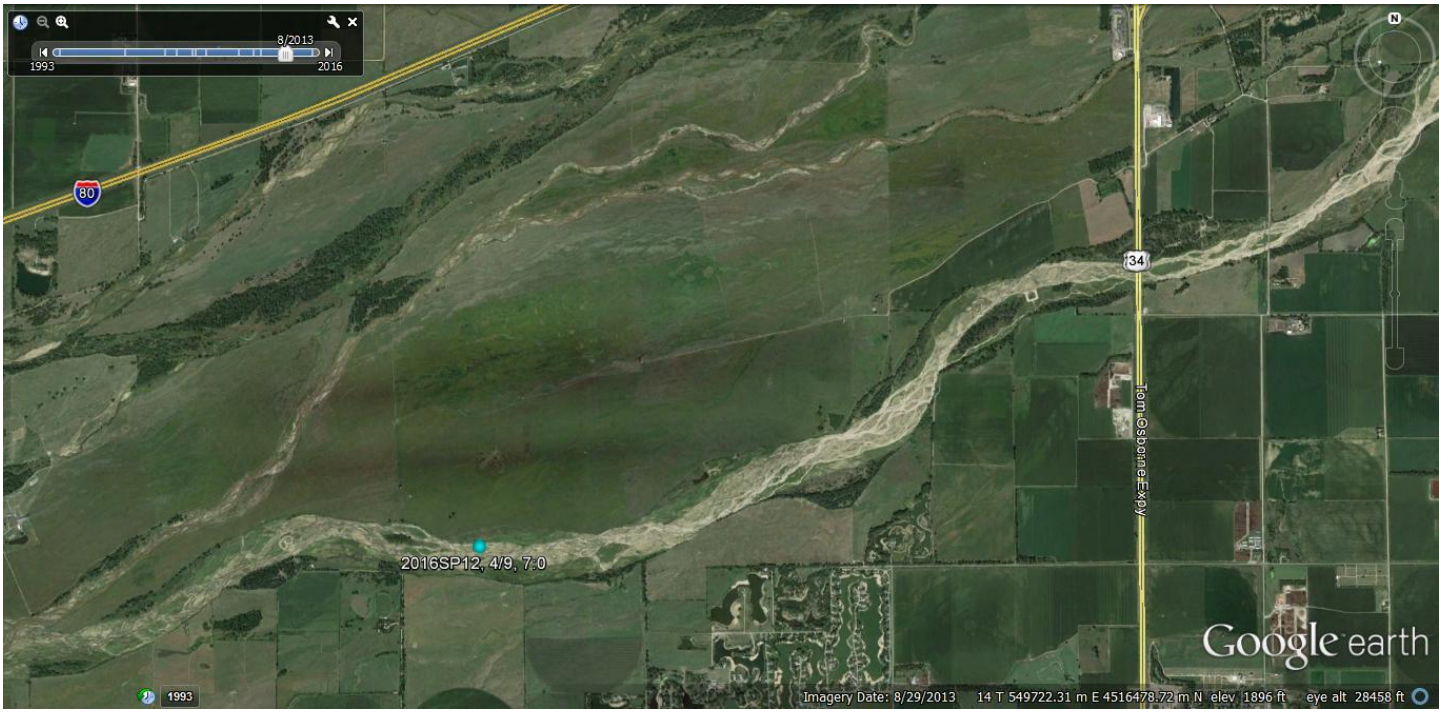


FIGURE 13. Systematic observation of 2016SP12 (7:0) on 4/9/2016 in the main channel of the Platte River.

FIGURE 14. Location of 2016SP13 (2:0) observed 4/9/2016.

FIGURE 15. Systematic observation of 2016SP13 (2:0) on 4/9/2016 in the main channel of the Platte River.

FIGURE 16. Location of 2016SP14 (6:0) observed 4/9/2016.

FIGURE 17. Systematic observation of 2016SP14 (6:0) on 4/9/2016. The whooping cranes in the photo are in flight in the upper left and the Use Site where they were first observed is indicated with a yellow X in the lower right at the confluence of southern secondary channels of the Platte River.

FIGURE 18. Location of 2016SP15 (3:0) observed 4/9/2016.

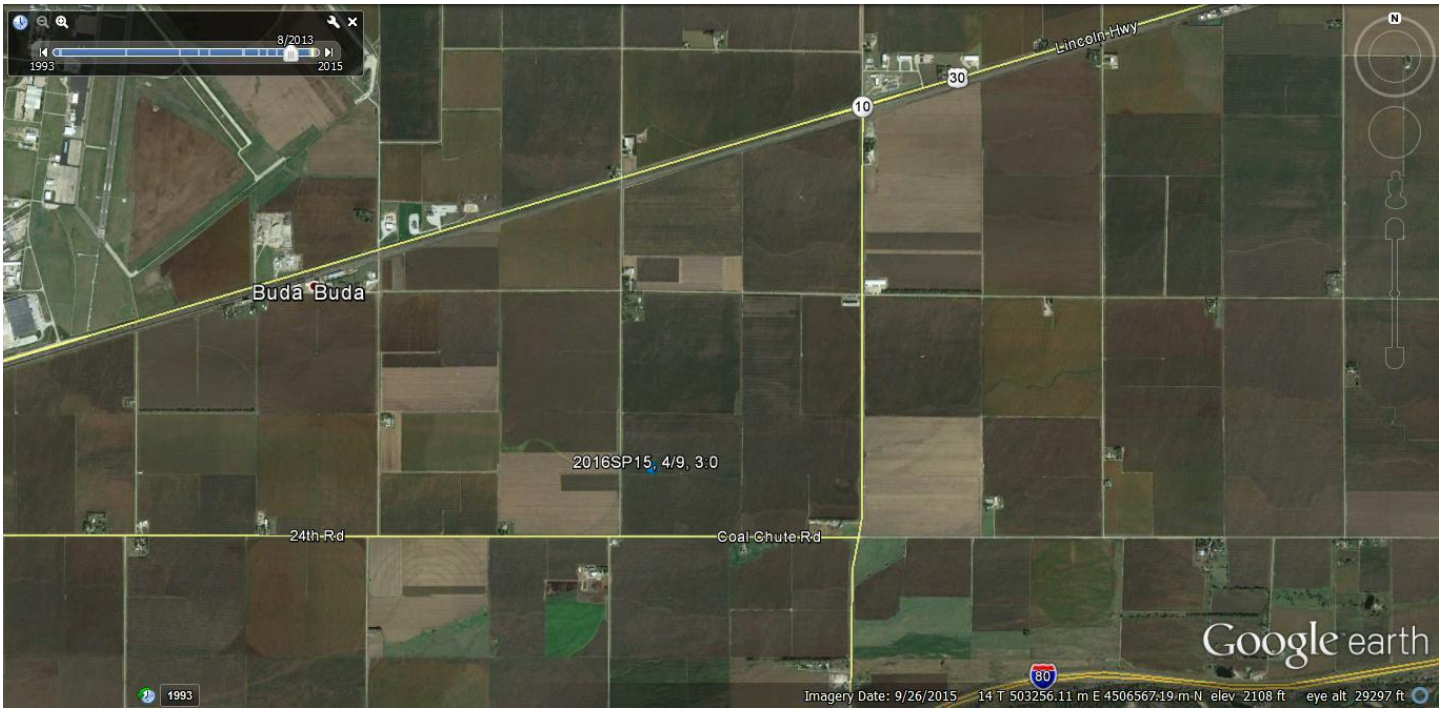


FIGURE 19. Opportunistic observation of 2016SP15 (3:0) on 4/9/2016 in a cornfield.

FIGURE 20. Location of the opportunistic observation of 2016SP16 (2:1) first observed in flight and 2016SP17 (5:0) on 4/9/2016 after they joined up in an alfalfa field. (No photo available)