

**IMPLEMENTATION OF THE WHOOPING CRANE
MONITORING PROTOCOL
2019 FALL – FINAL REPORT**



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Date: 2/25/2020

Implementation of the Whooping Crane Monitoring Protocol Fall 2019

**Prepared by
Platte River Recovery Implementation Program**

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

Date: 2/25/2020

Summary

The Platte River Recovery implementation Program (PRRIP) team conducted the whooping crane monitoring effort for the 2019 fall migration following the protocols detailed in the *Platte River Recovery Implementation Program – Whooping Crane Monitoring Protocol – rev. June 2017*.

The fall migration monitoring took place from October 9th through November 15th. Surveys were conducted using systematic flight transects along the Platte River from Chapman to Lexington. Systematic along with opportunistic sightings, resulted in forty-two unique whooping cranes observed within the transect boundaries during the 38-day survey period. Below includes survey methodology, results, and supporting data.

Equipment/Materials, Personnel, and Study Area

Two Cessna 172 aircrafts, crewed by a pilot and two observers, were used to make observations along 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 SX530 HS Powershot camera and mobile phones for communication.

PRRIP documented information using data sheets, which included aerial flight logs, aerial observations, ground search efforts, and use site monitoring logs.

The area of study, often referred to as the Big Bend region stretches from the Highway 283 Platte River bridge near Lexington, Nebraska to the Platte River bridge near Chapman, Nebraska 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. 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 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 required to be at transect starting points ½ hour before sunrise. Flights were typically completed 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 cancelled the flight for the day prior to that using their best judgement. 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 started at the Platte River bridge near Chapman (Chapman bridge) and followed the river transect (OSE) to the Highway 10 bridge (Minden bridge). The pilots 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. For the east route day two, flights 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. The pilots 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). The pilots would then follow the targeted Primary Wetland Return Transect (PWRTW) back to the Minden bridge. For the west route day two, flights would start 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. Pilots 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 the 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 U.S. Fish and Wildlife Service (USFWS) would be immediately notified so they could take appropriate measures to minimize disturbance if needed. Otherwise, they were notified of results of surveys on a daily basis following the completion of both flights.

In addition to the systematic flights, the aerial and ground crews also confirmed and reported 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 directly to the PRRIP species database. It was then subjected to Quality Assurance/Quality Control (QA/QC) checks by the EDO to ensure accuracy.





















Results

Confirmed Whooping Crane Sightings

A total of forty-two unique whooping cranes were confirmed during the 38-day monitoring effort. Twenty documented crane groups, comprised of eleven unique groups, were observed and each was given an individual crane group ID (e.g. 2019FA01 = year-season-number). A crane group consisted of any individual or group of whooping cranes observed once daily and would be re-labeled as a new group and given a new crane group ID the next day if they were still in the area. Use site #'s were notated either as a numerical value if the crane group was observed in a riverine, lacustrine, or palustrine environment or with the location's land cover classification (or "AIR" if in flight) at the time of sighting.

Table 1 includes unique crane group icons, observation dates, the number of cranes in each group, crane group ID's, use site designations, the type of observation during each sighting instance, and total crane use days. To facilitate cross-referencing, the crane group icons can be found in Tables 1, 2, 3, 4 and 5 as well as the collective crane group location maps in Figures 6 - 9 and the individual crane group location maps, shown along with a photo of each unique crane group, in Figures 10 - 21.

TABLE 1. Observation data of each crane group during the 2019 fall survey including unique group identifier icons, the date of observation, the number cranes in each group, group ID's, use site designation, GPS locations, and the type of observation at time of sighting.

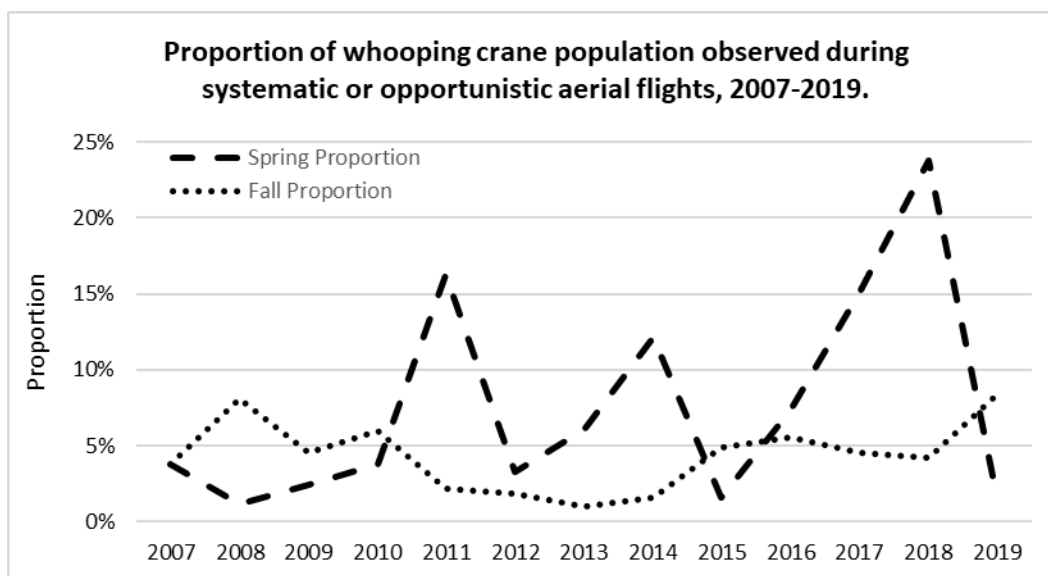
FAL	Unique Group Icon	Obs. Dates	# of Cranes Adult:Juv	Group ID #	Use Site #	UTMx	UTMy	Observation Type	See Figures
		10/15/19	2:0	2019FA01	1	515150	4503976	Systematic	8
	10/28/19	8:1	2019FA02	2	504859	4501022	Systematic	8,10,11	
	10/28/19	2:1	2019FA03	3	458361	4503657	Systematic	9,12,13	
	10/28/19	2:0	2019FA04	4	496487	4501157	Systematic	8,14,15	
	10/28/19	5:1	2019FA05	5	476615	4508718	Systematic	9,16,17	
	10/29/19	2:0	2019FA06	6	541060	4512634	Systematic	7	
	11/1/19	3:1	2019FA07	7	544703	4514355	Systematic	7,18	
	11/2/19	3:1	2019FA08	8	549651	4515515	Systematic	7,20,21	
	11/2/19	3:1	2019FA09	7	544703	4514355	Systematic	7,18	
	11/3/19	3:1	2019FA10	7	544703	4514355	Systematic	7,18	
	11/4/19	3:1	2019FA11	7	544703	4514355	Systematic	7,18	
	11/4/19	2:0	2019FA12	AIR	562440	4530271	Opportunistic	7	
	11/5/19	3:1	2019FA13	7	544703	4514355	Ground	7,18	
	11/6/19	3:1	2019FA14	7	544703	4514355	Systematic	7,18	
	11/6/19	2:0	2019FA15	9	548031	4515213	Systematic	7	
	11/6/19	6:0	2019FA16	Ag-corn	544575	4513766	Ground	7	
	11/7/19	3:1	2019FA17	7	544703	4514355	Systematic	7,18,19	
	11/8/19	3:1	2019FA18	7	544703	4514355	Systematic	7,18	
	11/9/19	3:1	2019FA19	7	544703	4514355	Ground	7,18	
	11/10/19	3:1	2019FA20	7	544703	4514355	Systematic	7,18	

Proportion of Population

According to the surveys conducted by the U.S. Fish and Wildlife Service during the winter of 2019 – 2020 (the most recent available), the Aransas – Wood Buffalo migratory whooping crane population was estimated to be 506 birds (See the following web link for source). The 42 individuals observed by this monitoring effort constitutes approximately 8.3% of the migratory population using the Platte River survey area during the 2019 fall migration.

<https://www.fws.gov/WorkArea/DownloadAsset.aspx?id=6442456792>

Figure 1. Observed use of the central Platte River during spring and fall migration seasons, 2007-2019.



Observed whooping crane use of the Great Bend region of the Platte River during spring systematic surveys of the associated habitat reach for the PRRIP has increased significantly ($P < 0.01$) since the initiation of monitoring efforts in 2007 (Figure 1).

Streamflow and Unobstructed Channel Width at Whooping Crane Use Locations

The discharge rates used in Table 2 were obtained from the USGS gauging station nearest in location and time of measurement to each associated crane group and time of observation. The discharge ranged from a low of 1420 cubic feet per second (cfs) at Kearney on 10/13 to a high of 3150 cfs at Grand Island on 10/10 during the survey period. At the specific crane group observation times, streamflow ranged from 2190 cfs – 2700 cfs. Figures 2-4 display discharges during the fall 2019 monitoring period.

TABLE 2. Associated crane group use sites and streamflow discharge (cfs) based on nearest gauging station.








Unique Group Icon	Date	Gauging station	Discharge (cfs)	Crane Group ID	Use Site #	# of Cranes Adults:Juv
	10/15/19	Kearney	2240	2019FA01	1	2:0
	10/28/19	Kearney	2190	2019FA02	2	8:1
	10/28/19	Overton	2260	2019FA03	3	2:1
	10/28/19	Kearney	2190	2019FA04	4	2:0
	10/28/19	Kearney	2190	2019FA05	5	5:1
	10/29/19	Grand Island	2310	2019FA06	6	2:0
	11/1/19	Grand Island	2370	2019FA07	7	3:1
	11/2/19	Grand Island	2460	2019FA08	8	3:1
	11/2/19	Grand Island	2460	2019FA09	7	3:1
	11/3/19	Grand Island	2590	2019FA10	7	1:0
	11/4/19	Grand Island	2700	2019FA11	7	1:0
	11/5/19	Grand Island	2650	2019FA13	7	1:0
	11/6/19	Grand Island	2650	2019FA14	7	1:0
	11/6/19	Grand Island	2650	2019FA15	9	2:0
	11/7/19	Grand Island	2570	2019FA17	7	1:0
	11/8/19	Grand Island	2480	2019FA18	7	1:0
	11/9/19	Grand Island	2550	2019FA19	7	1:0
	11/10/19	Grand Island	2610	2019FA20	7	1:0

TABLE 3. Unobstructed channel width at each in-channel crane use location.










Unique Group Icon	Group ID #	Use Site #	UTMx	UTMy	Unobstructed Channel Width (ft)
	2019FA01	1	515150	4503976	821
	2019FA02	2	504859	4501022	968
	2019FA03	3	458361	4503657	914
	2019FA04	4	496487	4501157	483
	2019FA05	5	476615	4508718	pond
	2019FA06	6	541060	4512634	841
	2019FA07,09,10,11,13,14,17,18,19,20	7	544703	4514355	820
	2019FA08	8	549651	4515515	1275
	2019FA15	9	548031	4515213	605

Table 3 includes unobstructed channel width, as measured in GIS, at each in-channel use location. Unobstructed channel widths at riverine use sites ranged from 483 – 1,275 feet (average = 840 feet).

Figure 2

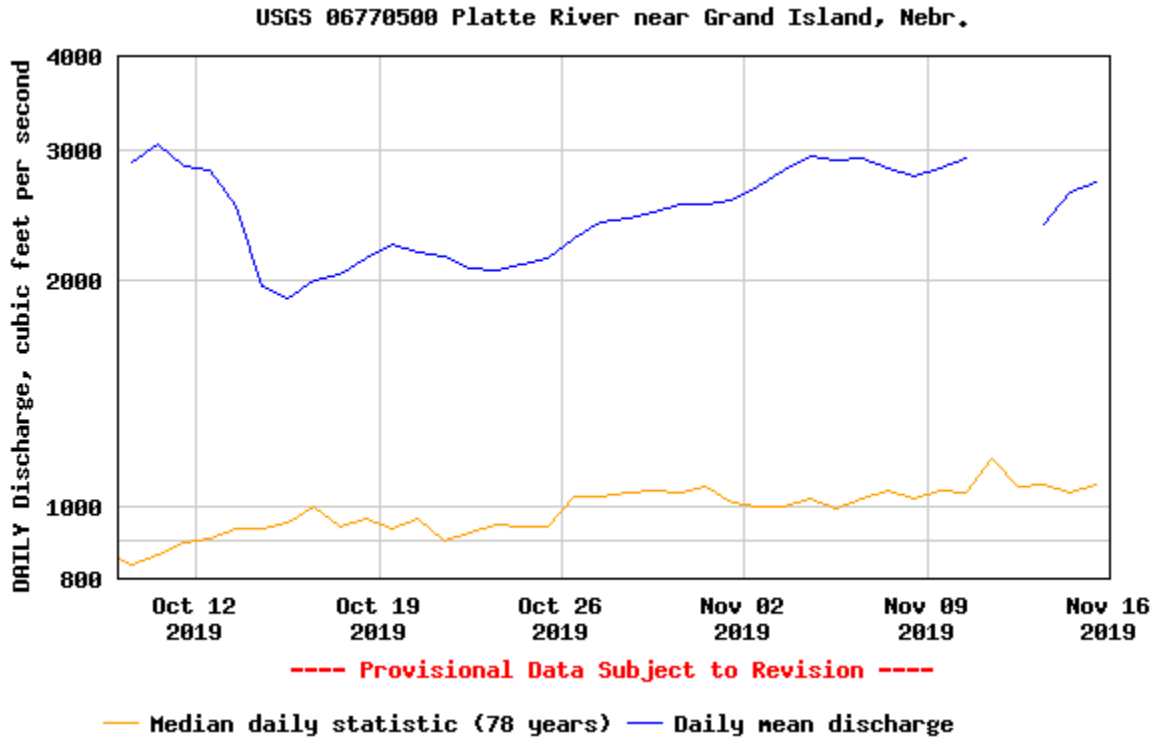


Figure 3

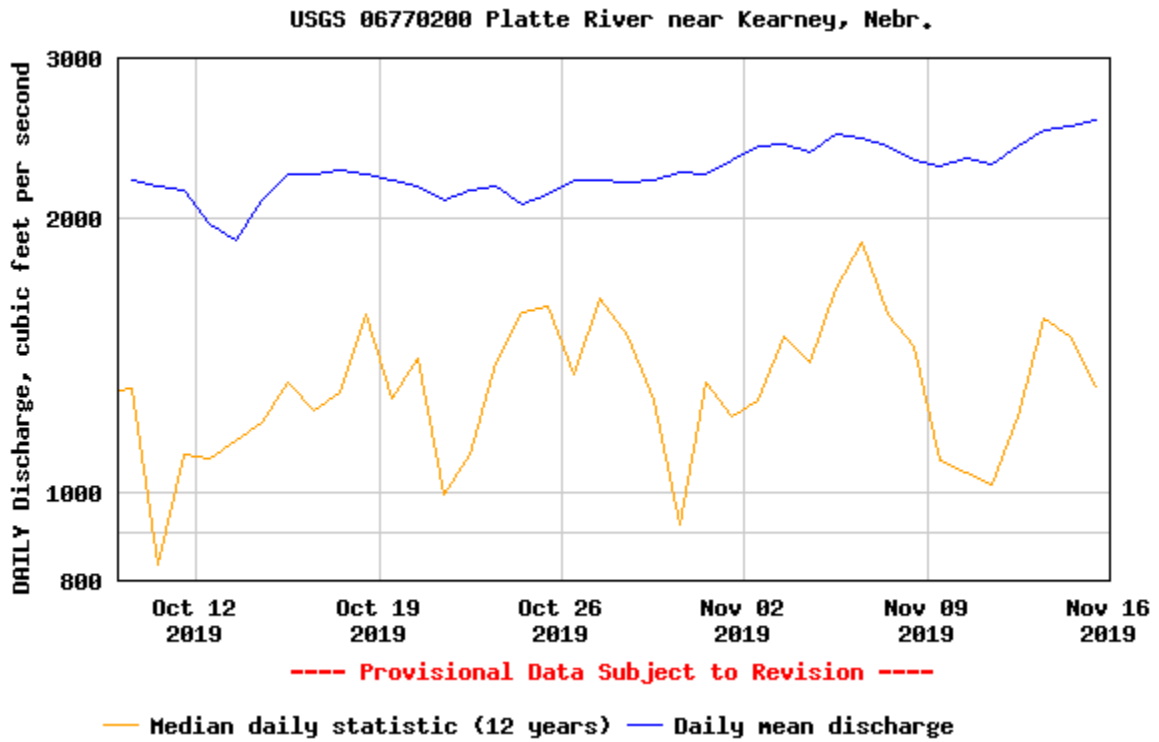
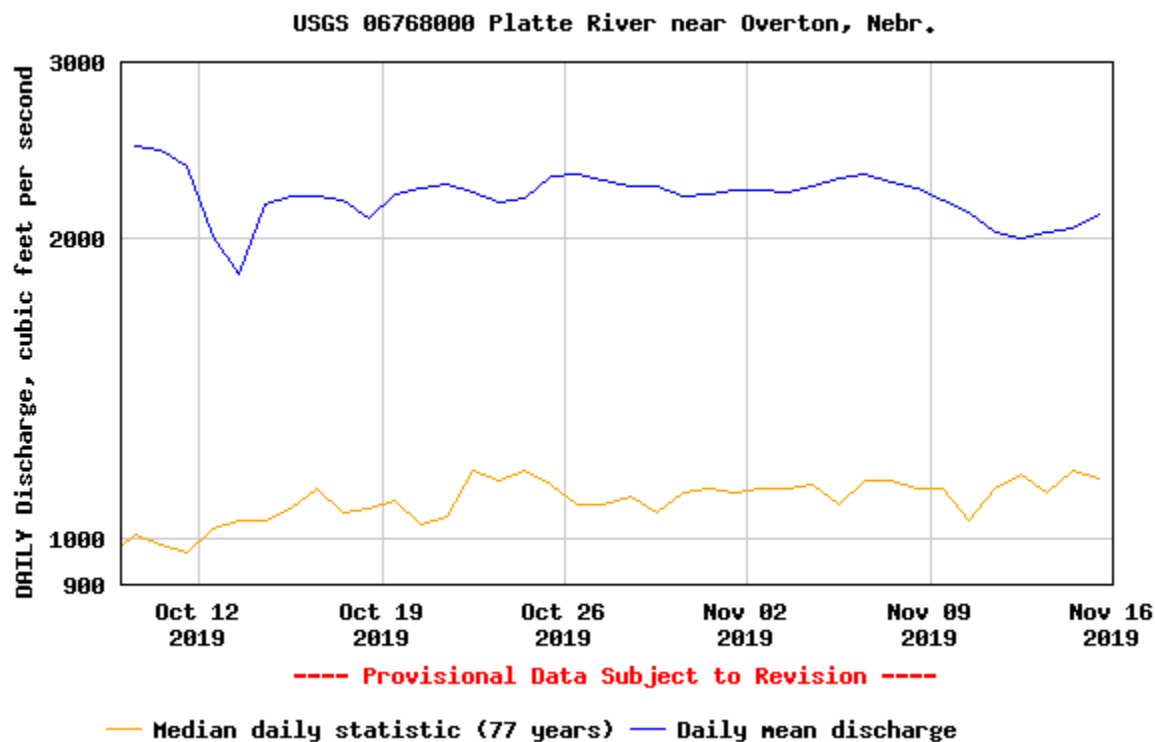


Figure 4














USFWS/PRRIP Data Comparison

Table 4 compares the USFWS whooping crane sighting data (provided by Matt Rabbe – USFWS whooping crane lead) to the PRRIP survey effort on all reported observations in the Big Bend corridor. Included are the icons associated with each unique crane group, 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.

The difference in ID #'s is due to the USFWS data operating on an “initial sighting” basis of identification, whereas PRRIP assigns a new crane group ID number each day observed.

There was one instance where crane group (19B-03) was reported directly to the USFW and was missed by PRRIP and therefore there is no PRRIP ID.

TABLE 4. USFWS/PRRIP Whooping Crane Group ID Comparisons











Unique Group Icon	Date	# of WC Ad:Juv	USFWS ID #	PRRIP ID #	Days observed, plus 1 for migration in for ea. crane		
					Days	Cranes	Use Days
N/A	10/13- 10/13	2:0	19B-03	N/A	NA	N/A	
	10/15-10/15	2:0	19B-04	2019FA01	2	2	4
	10/28-10/28	8:1	19B-19	2019FA02	2	9	18
	10/28-10/28	2:1	19B-21	2019FA03	2	3	6
	10/28-10/28	2:0	19B-20	2019FA04	2	2	4
	10/28-10/28	5:1	19B-22	2019FA05	2	6	12
	10/29-10/29	2:0	19B-57	2019FA06	2	2	4
	10/31– 11/10	3:1	19B-43	2019FA07, 09, 10, 11, 13, 14, 17, 18, 19, 20	11	4	44
	11/2-11/2	3:1	19B-47	2019FA08	2	4	8
	11/4-11/4	2:0	19B-45	2019FA12	2	2	4
	11/6-11/6	2:0	19B-51	2019FA15	2	2	4
	11/6-11/6	6:0	19B-52	2019FA16	2	6	12
Crane Use Days							120

Crane use days were calculated by multiplying the number of individual cranes in each group by the number of days the group was observed or known to be in the area, plus one day, as each group was assumed to have been present the evening prior to the morning of the first observation. This resulted in a total of 120 crane use days during the fall survey. Whooping cranes were observed on 13 of the 38 days of the survey effort (34.2% of the days; Table 1).

Ground Search Effort and Opportunistic Observations

There was one instance where ground crews independently observed a WC group and several others that they acted on a confirmation request to verify a white object spotted by aerial crews within the survey area during the 38-day monitoring effort. In Table 5, the “miles driven” column indicates the total miles driven in the effort to locate a potential crane group, starting from the location of the last reported sighting or known location based on previous days’ observations, then continuing until the crane group or white object is located and identified or a reasonable amount of effort has been put forth. There were 10 days of repeated observations of the 3:1 at Alda by both plane and ground crew that did not require ground search effort due to being spotted by the plane systematically. However, ground crews opportunistically sighted that 3:1 group feeding in the field all 10 days that the group was present.

TABLE 5. Ground search effort and opportunistic observations.

Unique Group Icon	Date	Source	WC Confirmed Ad:Juv	Miles Driven	Aerial/Ground Effort
	10/15	Air	2:0	10	Both
N/A	10/19	Air	None	2	Both
N/A	10/19	Air	None	1	Both
	10/28	Air	8:1	3	Both
	11/1	Known	3:1	1	Both
	11/2	Air	3:1	25	Both
	11/4	Air	2:0	40	Both
	11/5	Air	3:1	1	Both
	11/5	Air	3:1	1	Both
N/A	11/6	Air	None	1	Both
N/A	11/6	Air	None	23	Both
	11/7	Air	3:1	1	Both
N/A	11/8	Air	None	11	Both
	11/9	Air	3:1	15	Both
	11/10	Air	3:1	2	Both
N/A	11/11	Known	None	40	Ground

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 PRRIP.

HARASSMENT

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

PUBLIC DISTURBANCE

PRRIP 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 8 of the decoys in a wetted channel (80.0%), 1 in AG-corn/soybean (20.0%), 0 in a lowland or grassland (0.0%), and 1 in an open water pit/pond/lake (20.0%), for an overall spotting efficiency of 40.0% (Table 6).

TABLE 6. Observation Efficiency Trials Using Whooping Crane Decoys

Decoy	Date Placed	Date Tested	UTMx	UTMy	Type	Detected
1	10/14/19	10/15/19	509815	4502360	Wetted Channel	Yes
2	10/14/19	10/15/19	489012	4501263	Wetted Channel	Yes
3	10/16/19	10/17/19	447124	4503977	Wetted Channel	Yes
4	10/16/19	10/17/19	534288	4510607	Wetted Channel	Yes
5	10/17/19	10/18/19	448183	4503889	Wetted Channel	Yes
6	10/19/19	10/20/19	560201	4523893	Wetted Channel	Yes
7	10/22/19	10/23/19	507316	4501883	Wetted Channel	Yes
8	10/31/19	11/1/19	528434	4507726	Wetted Channel	No
9	11/4/19	11/5/19	450008	4503122	Wetted Channel	No
10	11/5/19	11/6/19	444873	4504076	Wetted Channel	Yes
11	10/17/19	10/18/19	495688	4496343	AG - Corn	No
12	10/22/19	10/23/19	456594	4505944	AG - Corn	No
13	10/23/19	10/24/19	440200	4503722	AG - Soybean/rye	Yes
14	11/13/19	11/14/19	556375	4516634	AG - Corn	No
15	11/13/19	11/14/19	541836	4508778	AG - Corn	No
16	10/17/19	10/18/19	550432	4517030	Lowland-Grasslands	No
17	10/19/19	10/20/19	539028	4512307	Lowland-Grasslands	No
18	10/26/19	10/28/19	454955	4507033	Lowland-Grasslands	No
19	10/30/19	11/1/19	453145	4503303	Lowland-Grasslands	No
20	11/5/19	11/6/19	510095	4505587	Lowland-Grasslands	No
21	10/15/19	10/16/19	478796	4508354	Open Water/pond/lake	No
22	10/16/19	10/17/19	507149	4500342	Open Water/pond/lake	Yes
23	10/23/19	10/24/19	510715	4505800	Open Water/pond/lake	No
24	10/23/19	10/24/19	470463	4510773	Open Water/pond/lake	No
25	10/29/19	10/31/19	564483	4535918	Open Water/pond/lake	No

Flight Statistics and Sighting Frequency

Of the 76 scheduled flights, there were 66 instances when crews were able to depart the airport, of which 63 were completed, resulting in an overall completion of 82.8% (Table 7). Thirteen flights were cancelled or incomplete due to inclement weather.

TABLE 7. Flight Completion Rates

	East	West	Totals
COMPLETED	33	30	63
CANC./INCOMP.	5	8	13
SEASON TOTAL	38	38	76
% COMPLETED	86.8%	78.9%	82.8%

FLIGHT RESULTS

Of the 209 scheduled systematic transects, 174 (83.2%) were completed. During this time, 19 whooping crane groups were observed from the air while conducting systematic flights for an overall sighting-per-transect frequency of 9.1% (Table 8).

TABLE 8. Whooping Crane Sighting Frequency per Transect

	Transects	Transects			# WC Groups ¹	Frequency
		Completed	Cancel/Incomp.	TOTAL		
FALL	0SE, 0SW ²	63	13	76	18	23.6%
	PWRTE, PWRTW ³	63	13	76	0	0.0%
	WSRT/CSRT, ESRT ⁴	48	9	57	1	1.7%
TOTALS		174	35	209	19	9.1%

¹These groups may or may not consist of crane(s) observed on previous days. See crane group ID designation on page 4 under “Confirmed Whooping Crane Sightings”.

²Primary Transect (Riverine), (East – 0SE, West – 0SW)

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

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

Supplements

QA/QC of database was performed by PRRIP and Brian Peterson

Original datasheets – Retained at PRRIP

FIGURE 6. The distribution of initial whooping crane group observations during the 2019 fall survey (red) and 2019 spring survey (yellow) in relation to the PRRIP lands (highlighted in blue) and all other conservation lands (highlighted in green).

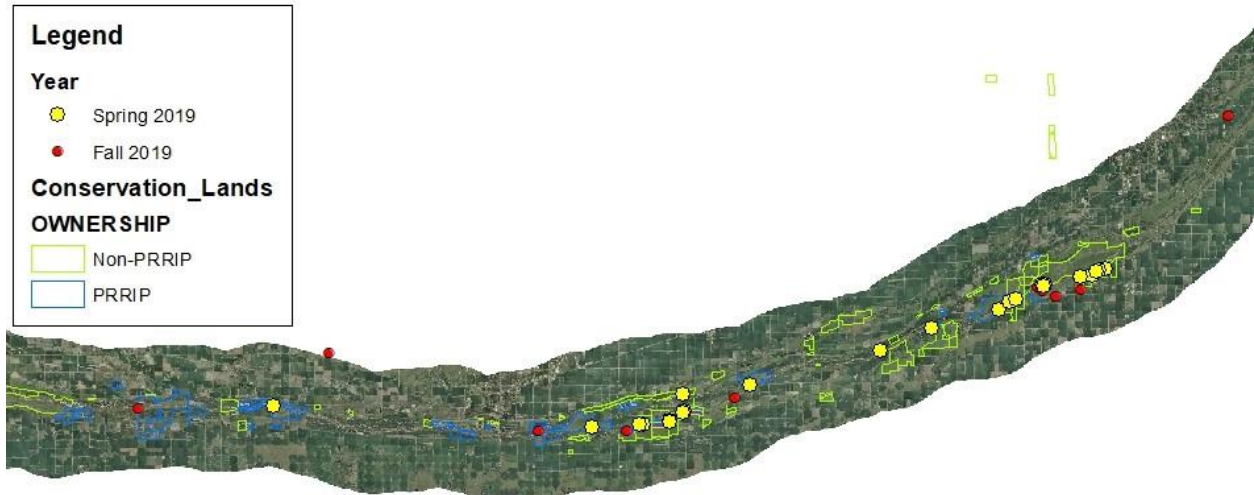


FIGURE 7. Observed whooping crane locations. 1 of 3 collective crane group maps. See Table 1 for color icon coding and details.

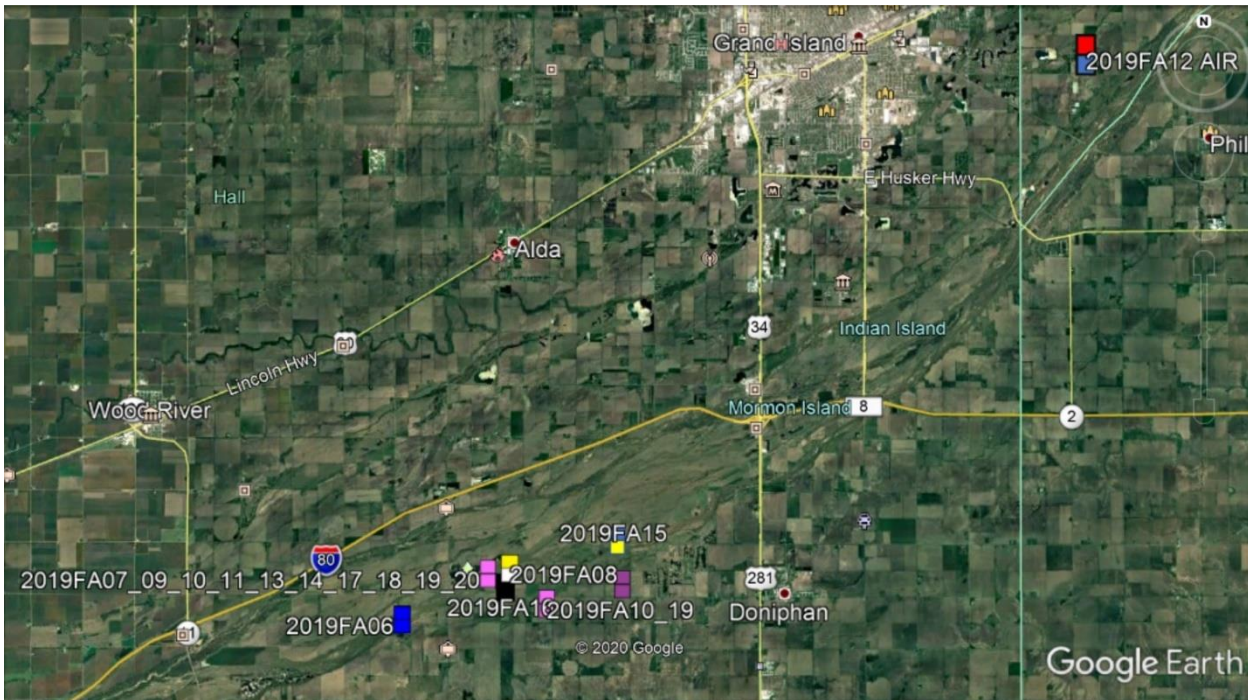


FIGURE 8. Observed whooping crane locations. 2 of 3 collective crane group maps. See Table 1 for icon color coding and details.

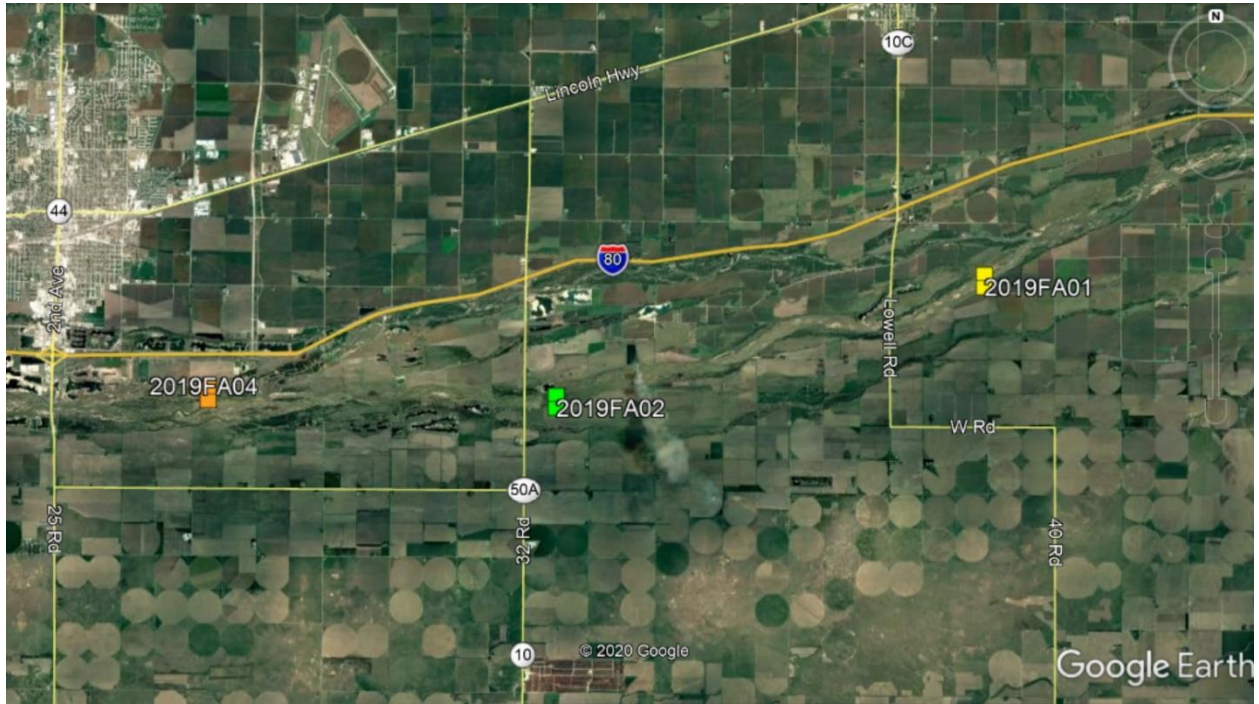


FIGURE 9. Observed whooping crane locations. 3 of 3 collective crane group maps. See Table 1 for icon color coding and details.



FIGURE 10. Observed locations of the 8:1 crane group designated with ID #: 2019FA02 This group was observed in the survey area 10/28.

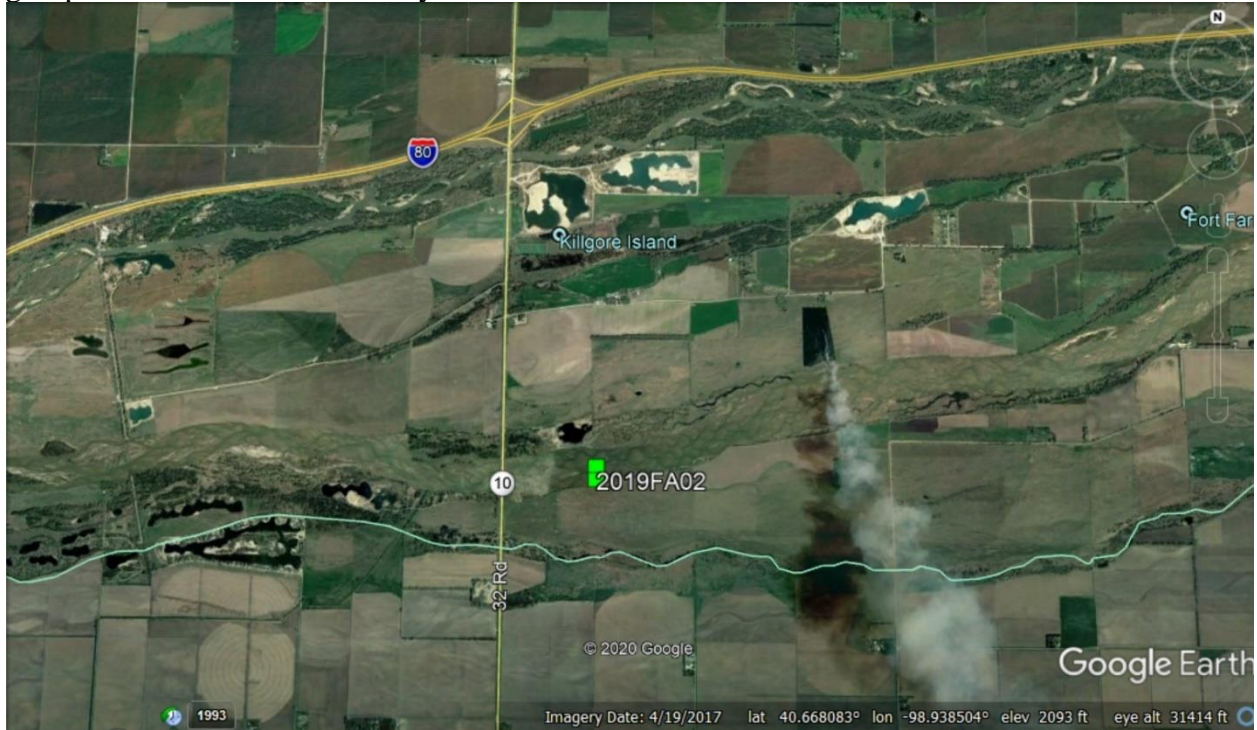


FIGURE 11. This photo was taken during a ground observation of the 8:1 crane group 2019FA02 on 10/28 at use site 2 in the main channel of the Platte River.



FIGURE 12. Observed locations of the 2:1 crane group designated with ID #: 2019FA03. This group was observed in the survey area 10/28.



FIGURE 13. This photo was taken during a systematic observation of the 2:1 crane group 2019FA03 at use site 3 on 10/28 in the main channel of the Platte river.



FIGURE 14. Observed locations of the 2:0 crane group designated with ID #'s: 2019FA04. This group was observed in the survey area 10/28.

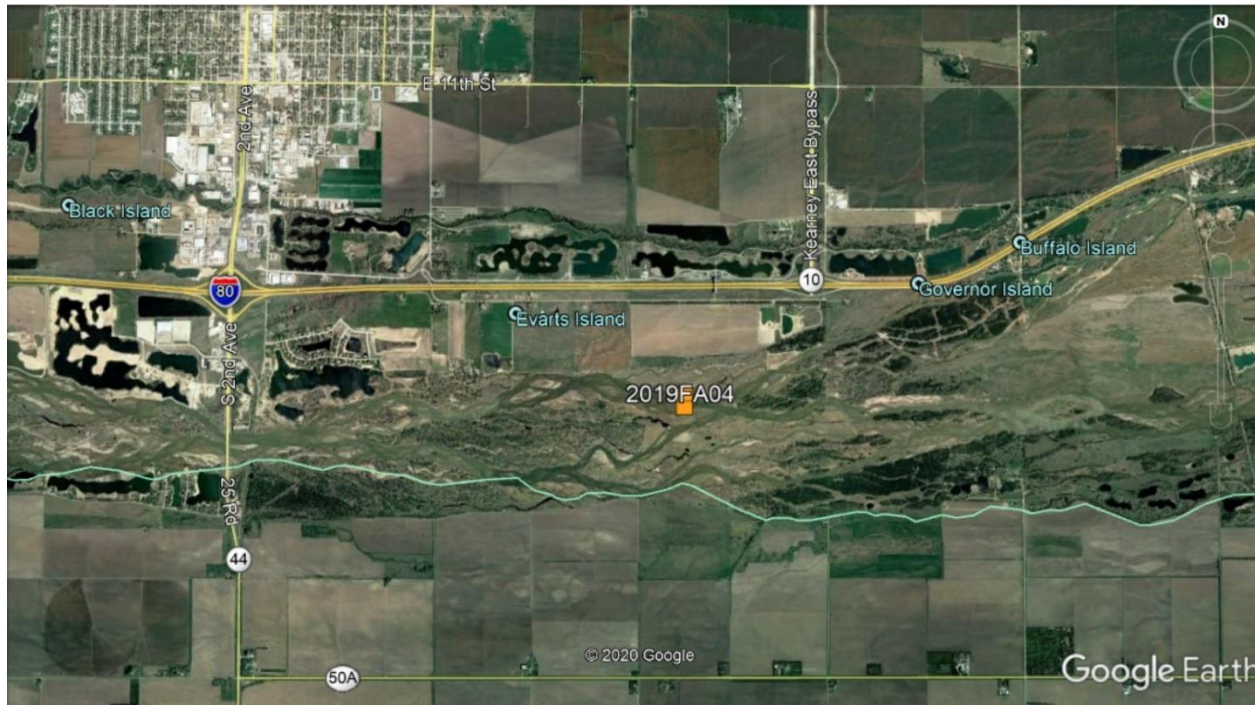


FIGURE 15. This photo was taken during the systematic observation of the 2:0 crane group 2019FA04 at use site 4 on 10/28 in the main channel of the Platte River.

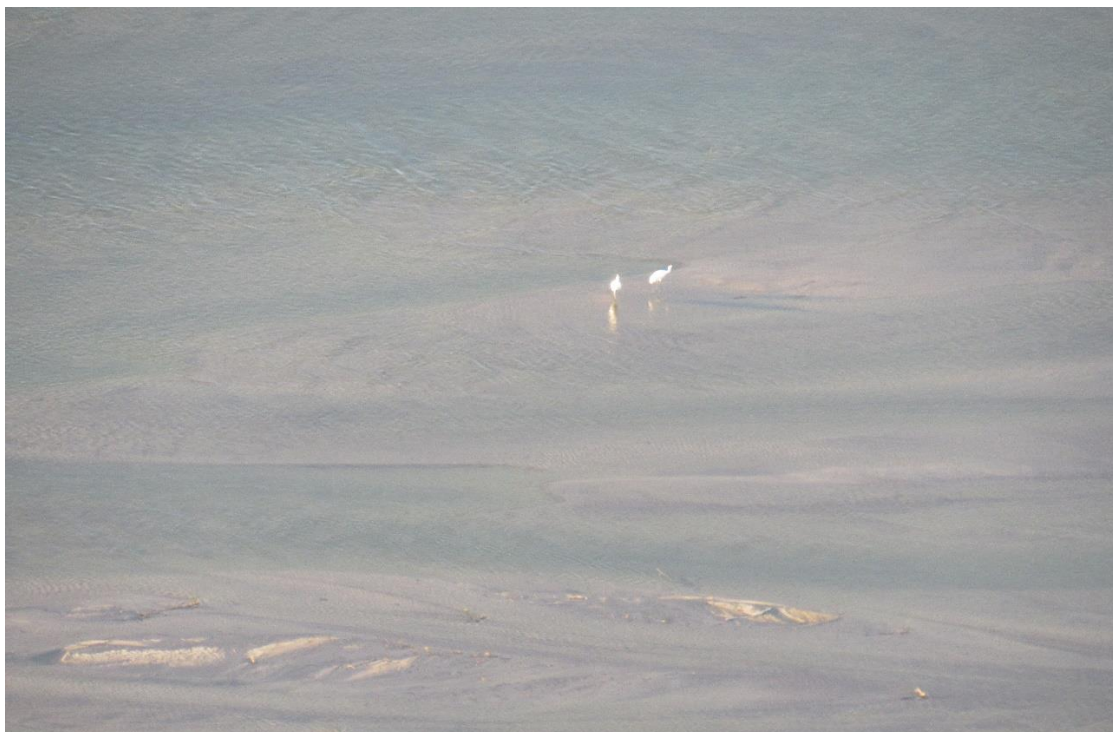


FIGURE 16. Observed location of the 5:1 crane group designated with ID #: 2019FA05. This group was observed in the survey area 10/28.

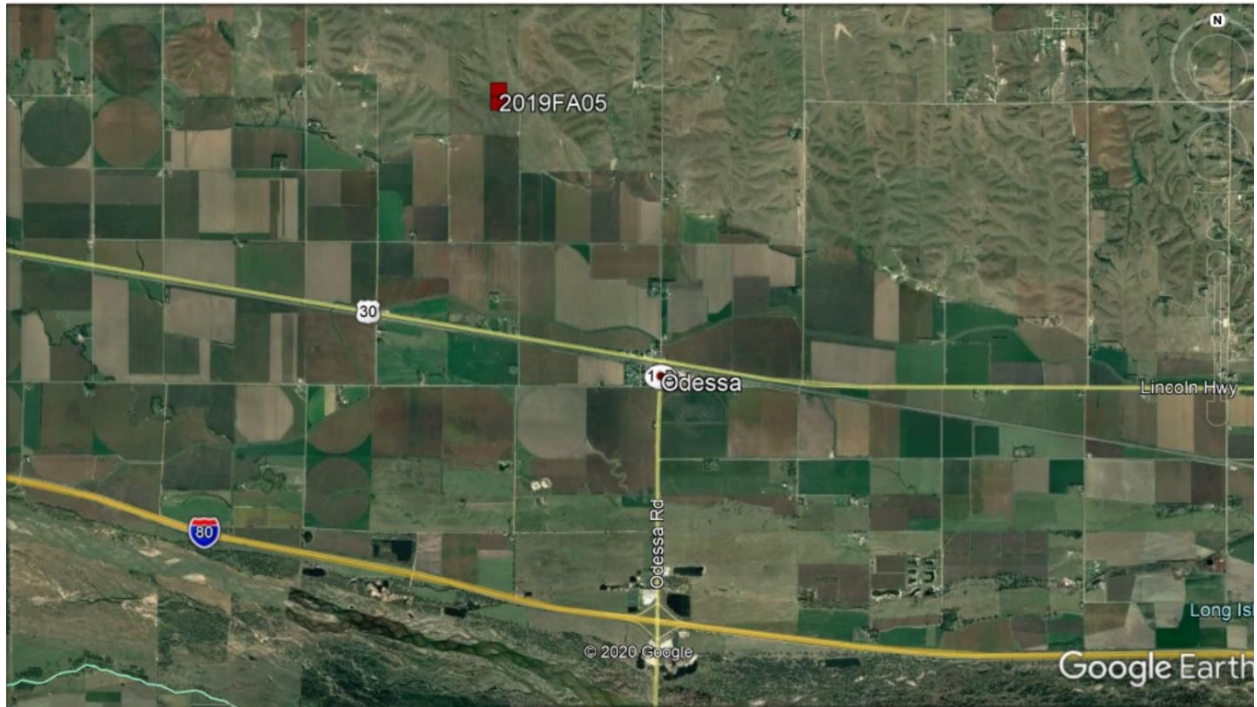


FIGURE 17. This photo was taken during a systematic observation of the 5:1 crane group 2019FA05 in a pond on 10/28 near Odessa, NE.



FIGURE 18. Observed locations of the 3:1 crane group designated with ID #'s: 2019FA07, 09, 10, 11, 13, 14, 17, 18, 19, 20. This group was observed in the survey area 11/1 – 11/10.

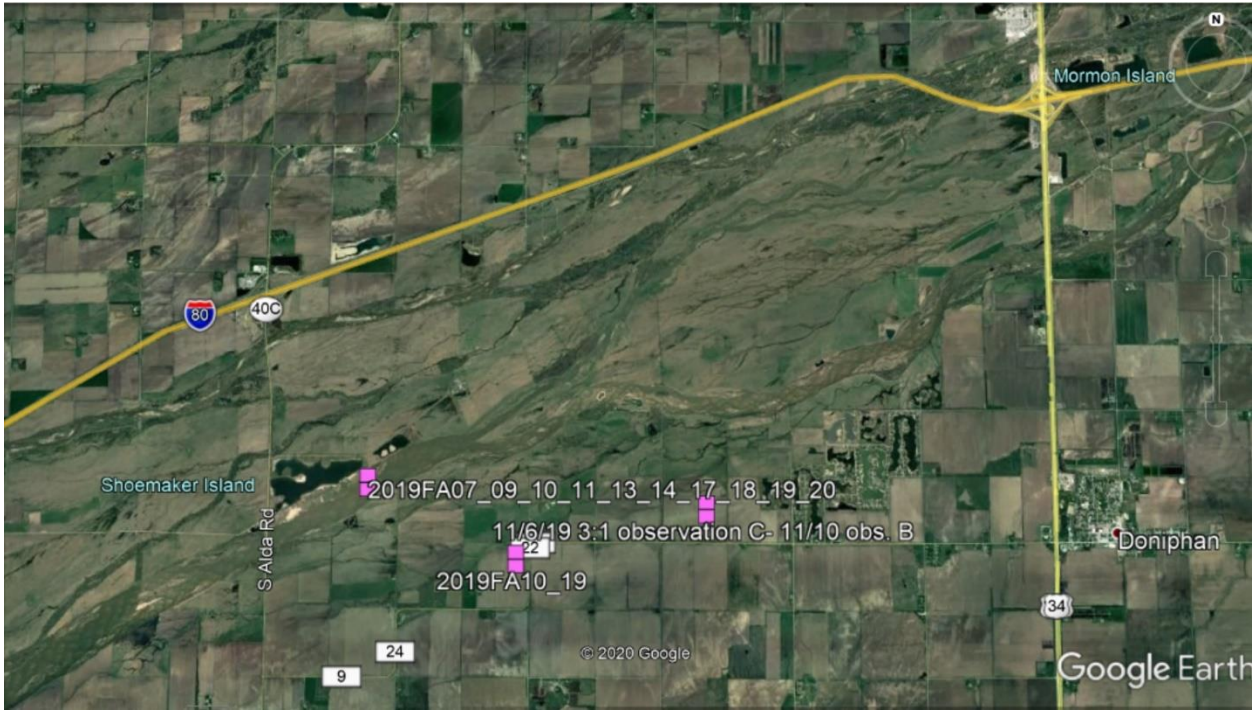


FIGURE 19. This photo was taken during a systematic observation of the 3:1 crane group 2019FA17 use site 7 on 11/7 in the main channel of the Platte River.



FIGURE 20. Observed location of the 3:1 crane group designated with ID # 2019FA08. This group was observed in the survey area on 11/2.

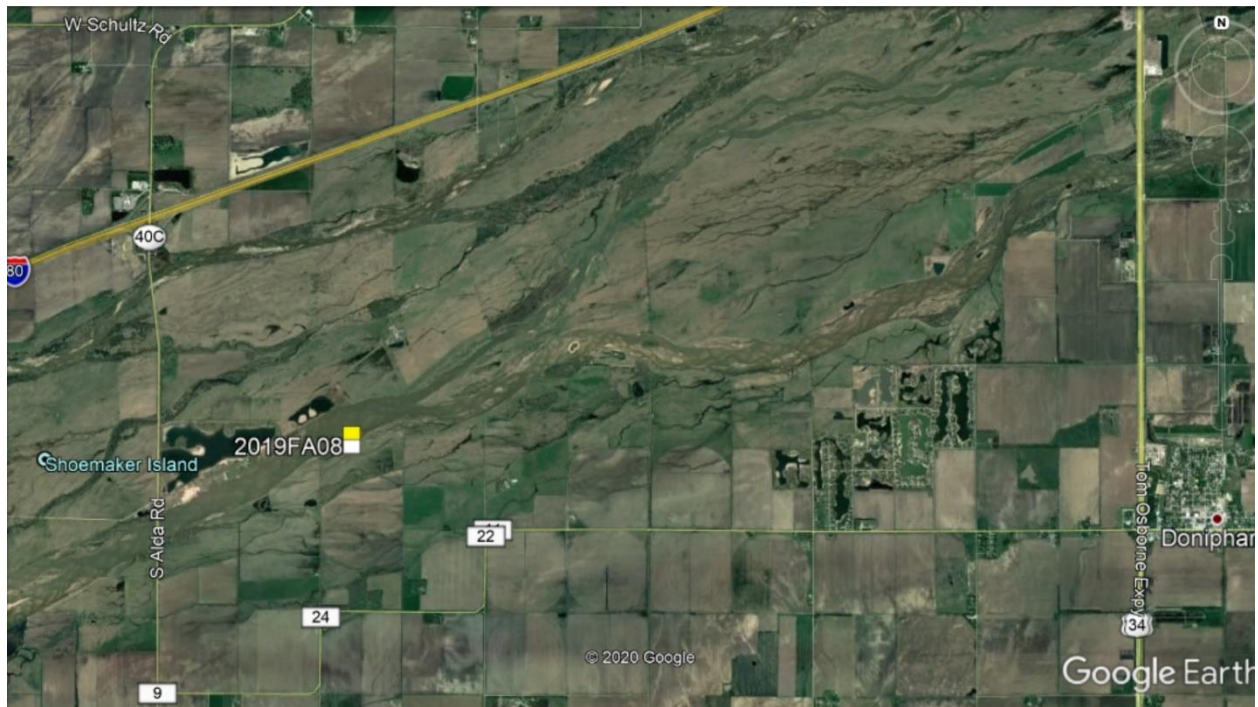


FIGURE 21. This photo was taken during a systematic observation of the 3:1 crane group 2019FA08 use site 8 on 11/2 in the main channel of the Platte River.

