# Platte River

# Recovery Implementation Program

## IMPLEMENTATION OF THE WHOOPING CRANE MONITORING PROTOCOL

## 2020 FALL

Photo: Colleen Childers

**Prepared for: PRRIP Technical Advisory and Governance Committees**

**Date: 12/22/2020**


**Prepared By**

Mallory Jaymes
Platte River Recovery Implementation Program
Executive Director's Office
4111 4th Avenue, Suite 6
Kearney, NE 68845
jaymesm@headwaterscorp.com



**Suggested Citation:**

Jaymes, M.L. 2020. Platte River Recovery Implementation Program: 2020 Implementation of the Whooping Crane Monitoring Protocol - Fall 2020 Report

## Table of Contents

## Summary
In 2007, the Platte River Recovery Implementation Program ("Program" or "PRRIP") began its 13-year First Increment and implementation of an Adaptive Management Plan ("AMP") to learn more about the physical processes of the central Platte River and the response of four target species to management actions, including the whooping crane (*Grus americana*). The AMP includes established protocols for monitoring target species, habitat, and physical processes to better understand interrelationships and provide data for evaluating species response to management actions. The Platte River Recovery implementation Program (PRRIP) team conducted the whooping crane monitoring effort for the 2020 fall migration following the protocol detailed in the *Platte River Recovery Implementation Program – Whooping Crane Monitoring Protocol – Migrational Habitat Use in the Central Platte River Valley rev. June 2017* (PRRIP 2017b). Fall migration monitoring took place from October 9th through November 15th, 2020. Surveys were conducted using systematic flight transects along the Platte River from Chapman to Lexington, NE. Systematic and opportunistic sightings within the transect boundaries during the 38-day survey period resulted in three individual whooping cranes observed, consisting of a single individual plus one group of two individuals. Information from this monitoring effort will be used to help evaluate the biological response of whooping cranes to the land and water management activities of the Program.

## Introduction
In 2007, the Platte River Recovery Implementation Program ("Program" or "PRRIP") began its 13-year First Increment and implementation of an Adaptive Management Plan ("AMP") to learn more about the physical processes of the central Platte River and the response of four target species to management actions, including the whooping crane (*Grus americana*). The AMP includes established protocols for monitoring whooping cranes, habitat, and physical processes to better understand interrelationships and provide data for evaluating species response to management actions. Information resulting from monitoring efforts following this established protocol is used to help evaluate the biological response of whooping cranes and habitat to the land and water management activities of the Program.

Several critical scientific and technical uncertainties about whooping cranes, physical processes, and the response of whooping cranes to management actions have been the focus of the application of rigorous adaptive management in the First Increment through implementation of the Program's AMP. These uncertainties are captured in statements of broad hypotheses in the AMP (PRRIP 2020) and, as a means of better linking science learning to Program decision-making, those uncertainties comprise a set of "Big Questions" that provide a template for linking specific hypotheses and performance measures to management objectives and overall Program goals (PRRIP 2017a).

Two "Big Questions" relate directly to whooping cranes:

- **Big Question #5 –** Do whooping cranes select suitable riverine roosting habitat in proportions equal to its availability?
- **Big Question #10** – How do Program management actions in the central Platte River contribute to least tern, piping plover, and whooping crane recovery?

These uncertainties led to the development of a specific management objective for the whooping crane and indicators related to that objective, as noted in the AMP:

| | |
|---|---|
| **Management Objective** | *Contribute to the survival of whooping cranes during migration* |
| **Indicators** | * Increase area of suitable roosting and foraging habitat<br>* Increase crane use days<br>* Increase proportion of whooping crane population use |

To assess progress toward this objective and learn about the major whooping crane uncertainties, several finer-scale priority hypotheses were developed by Program participants. In 2010, those hypotheses were sequenced to develop a smaller set of Tier 1 hypotheses to receive focused attention in the First Increment. For whooping cranes, those Tier 1 hypotheses are:

- **WC-1:** Whooping crane use will increase as a function of Program land and water management activities.
- **WC-3:** Whooping crane use is related to habitat suitability. Riverine habitat suitability for whooping cranes is a function of channel characteristics such as water depth, channel width, and unobstructed-view widths.

The implementation of the whooping crane monitoring protocol is intended to provide systematic methods for collecting whooping crane use and habitat (i.e., landscape level attributes at roost sites and diurnal use sites) data necessary to test the Tier 1 whooping crane hypotheses, assess progress toward meeting the whooping crane management objective, and evaluate learning related to the whooping crane Big Questions. The protocol is used by the Program to gather information on whooping crane habitat use and to provide an index of whooping crane abundance in the study area. It is understood that regardless of survey method not all whooping cranes are certain of being detected during migration and therefore full implementation of this or any other protocol will not represent complete whooping crane use of the central Platte River valley.

The purpose for implementing the whooping monitoring protocol is to:

1) Detect and confirm whooping crane stopovers in the study area – Systematic, but targeted aerial surveys of the river channel and wetlands within the study area will be conducted and the data will be used to comparatively evaluate changes in the frequency and distribution of stopovers within the study area over time.

2) Landscape data collection – Basic landscape source data of whooping crane use-sites in the study area will be collected through this protocol. Habitat metrics will be collected at confirmed systematic and opportunistic whooping crane use sites.

## Methods

The Platte River Recovery implementation Program (PRRIP) EDO conducted fall 2020 migration monitoring in accordance with the *Platte River Recovery Implementation Program – Whooping Crane Monitoring Protocol – Migrational Habitat Use in the Central Platte River Valley rev. June 2017* (PRRIP 2017b). General methods are described below.

**Study Area**

The area of study (Figures 1-2), is the Program's Associated Habitat Reach (AHR), extending from the Highway 283 Platte River bridge near Lexington, Nebraska (40° 44' 08.15" N; 99° 44' 37.31" W) to the Platte River bridge near Chapman, Nebraska (40° 59' 07.06" N; 98° 08' 40.40" W) focusing on Platte River channels and adjacent wetlands and ponds within 3.5 miles of the river channel(s). The monitoring area encompasses a total of approximately 90 linear miles of river and is divided into two routes, an east route and a west route.

**Systematic flight transects**

Two Cessna 172 aircraft, each crewed by a pilot and two observers, were used to make aerial observations along predetermined systematic 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. 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, in red on Fig. 1) and one from Kearney (west route, in green on Fig. 2). 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, unless the pilot cancelled the next day's flight on the day prior using their best judgement. Two types of transects were flown to ensure coverage of both on-channel riverine and off-channel wetland roosting habitat. On-channel river transects (0SE and 0SW, in blue on Figs. 1-2) 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. Starting point was alternated daily to allow different sections of the study area to be observed as early as possible in the flight times. Off-channel transects (in red on Figs. 1-2) were designed to sample existing off-channel roosting habitat within the 3.5-mile limit, as well as to serve as functional routes for planes to return to starting airports.

**East Route:** On day one (Fig. 1), the east route started at the Platte River bridge near Chapman (Chapman bridge) and followed the river transect (0SE, blue line indicating river) to the Highway 10 bridge (Minden bridge). The pilots then followed the targeted Primary Wetland Return Transect (PWRTE, red line) back to the Chapman bridge, turned, and followed the targeted Secondary Wetland Return Transect (CSRT, red line) to the Highway 34 bridge and returned to the airport at Grand Island. On day two (Fig. 2), the east route flights started at the Platte River bridge near Wood River (Wood River bridge) and followed the 0SE to the Minden bridge, then followed the PWRTE back to the Chapman bridge. The pilots then followed the 0SE to the Wood River bridge, then returned on the Secondary Wetland Return Transect (WSRT, red line) that stretched from HWY 10 near Wood River to the Highway 34 – Platte River bridge, from which point they returned to the Grand Island airport.

**West Route:** On day one (Fig. 1), the west route started at the Minden bridge and followed the river transect (0SW, blue line indicating river) to the Highway 283 bridge (Lexington bridge). The pilots then followed the targeted Primary Wetland Return Transect (PWRTW, green line) back to the Minden bridge, from which point they then returned to the airport. On day two (Fig.

2), the west route flights started at the Platte River bridge near Odessa (Odessa bridge) and followed the 0SW to the Lexington bridge. They turned and followed the PWRTW back to the Minden bridge and then returned on the 0SW to the Odessa bridge. Pilots then followed the Secondary Wetland Return Transect (ESRT, green line) from HWY 183 near Elm Creek to HWY 40 near the Platte River bridge, from which point they returned to the Kearney Airport.

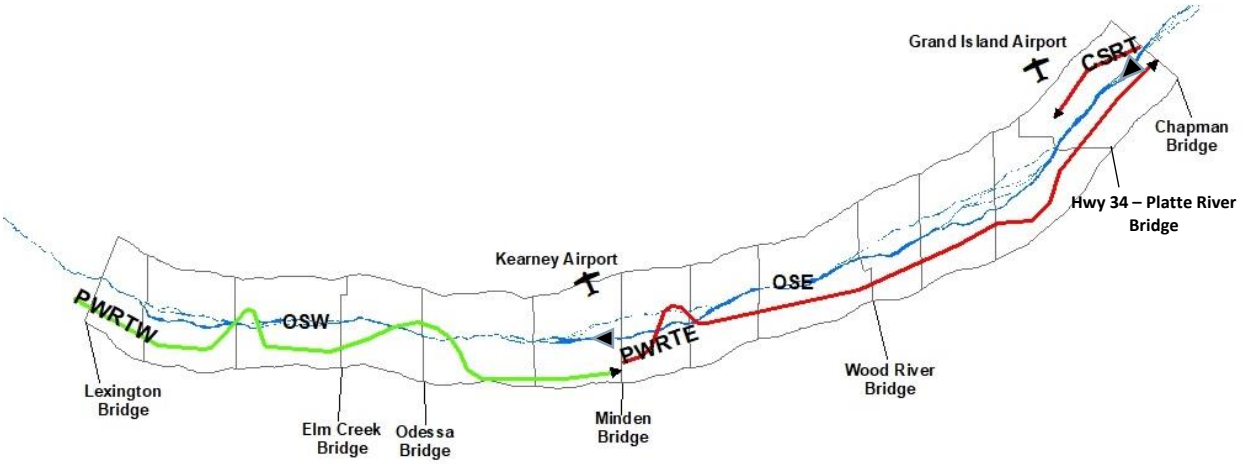


**Figure 1.** Day one east and west flight transects. Primary Riverine Transects: East – 0SE and West – 0SW. Primary Return Transects: East – PWRTE and West – PWRTW. Secondary Return Transect: East – CSRT.

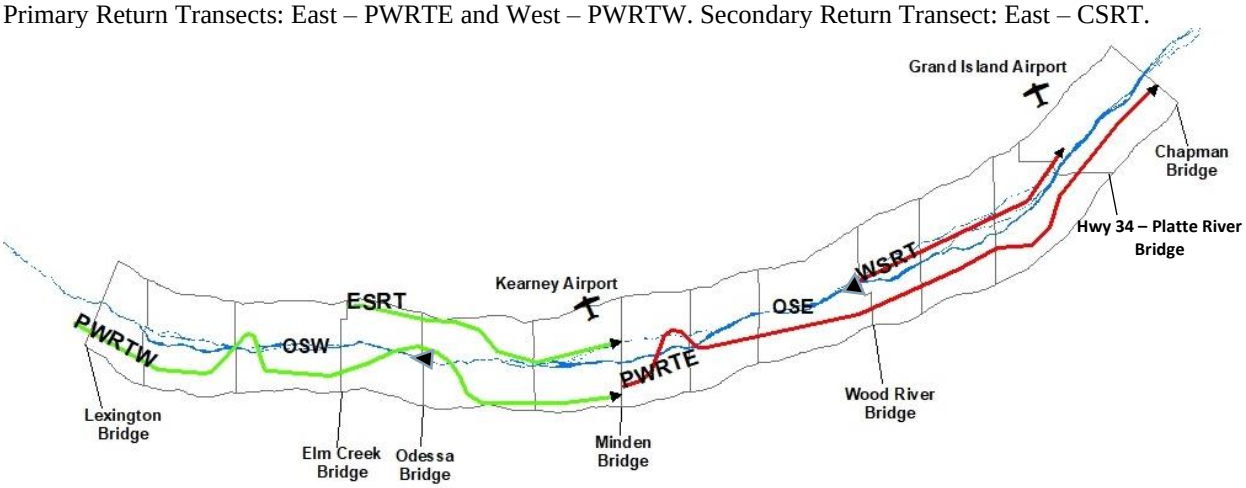


**Figure 2.** Day two east and west flight transects. Primary Riverine Transects: East – 0SE and West – 0SW. Primary Return Transects: East – PWRTE and West – PWRTW. Secondary Return Transects, (East – WSRT and West – ESRT).

### Observations and data collection

At the beginning of each transect and at turn around points, the aerial crews relayed their position via mobile phone to the nearby ground crews so they could stay in relatively close proximity. The aerial observers utilized binoculars for sighting, a Canon Rebel T6s 760D camera for photo documentation, and mobile phones for communication. If an aerial crew spotted a potential whooping crane(s), they would take photos of the object(s) and the surrounding area to later confirm the identity and location. If additional observations for confirmation were 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), the EDO as well as the U.S. Fish and Wildlife Service (USFWS) were immediately notified so they could take appropriate measures to minimize disturbance if needed. Otherwise, they were notified of results of surveys daily following the completion of both flights.

In addition to 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 nearest airport and/or ground personnel would 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.

Aerial and ground crews documented their observations using data sheets, which included aerial flight logs, aerial observations, ground search efforts, and use site monitoring logs. 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 within UTM Zone 14N were determined for each crane or crane group and recorded with the rest of the data. All data were later translated from the completed data sheets directly to the PRRIP species database. Data were then subjected to Quality Assurance/Quality Control (QA/QC) checks by the EDO to ensure accuracy.

## Results

### Confirmed whooping crane sightings

A total of three individual whooping cranes were confirmed during the 38-day monitoring effort, consisting of a single individual plus one group of two individuals (Table 1). A crane group was defined as any individual or group of whooping cranes observed. Each was given an individual crane group ID (e.g., 2020FA01 = year-season-number) at sighting 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. There were 2 unique crane groups registered on 16 days over the fall 2020 monitoring period. Use sites were given a numerical value at the time of sighting if the crane group was observed in riverine, lacustrine, or palustrine environment. Crane groups sighted outside of these environments were assigned the location's appropriate land cover classification or denominated as "AIR" if the group was sighted while in flight (Table 1).

Table 1 includes unique crane group icons, observation dates, the number of cranes in each group, crane group ID's, use site designations, and the type of observation during each sighting instance. To facilitate cross-referencing, crane group icons are included in Tables 1, 2, 3, 4 and 5 as well as on the collective crane group location map in Figure 7 and the individual crane group location maps in Figures 8 and 9.

**Table 1.** Data for each crane group observed during the 2020 fall survey, including unique group identifier icons; the date of observation; the number of cranes in each group; group ID's; riverine, lacustrine, or palustrine use site designation numbers and off-channel habitat type; GPS locations within UTM Zone 14N; and the type of observation resulting in the sighting.

| | Unique Group Icon | Obs. Dates | # of Cranes Adult:Juv | Group ID # | Use Site # | Zone 14N UTMx | Zone 14N UTMy | Observation Type | See Figures |
|---|---|---|---|---|---|---|---|---|---|
| Fall 2020 | | 10/21/20 | 1:0 | 2020FA01 | 1 | 517890 | 4505518 | Systematic | 7,8,10 |
| | | 10/27/20 | 2:0 | 2020FA02 | 2 | 451368 | 4503145 | Systematic | 7,9,11 |
| | | 10/28/20 | 2:0 | 2020FA03* | 3 | 451204 | 4503166 | Systematic | 7,9,11 |
| | | 10/29/20 | 2:0 | 2020FA04 | Ag Field | 451354 | 4502895 | Systematic | 7,9,11 |
| | | 10/30/20 | 2:0 | 2020FA05 | Grassland | 451354 | 4502895 | Systematic | 7,9,11 |
| | | 10/31/20 | 2:0 | 2020FA06 | Ag Field | 451354 | 4502895 | Systematic | 7,9,11 |
| | | 11/1/20 | 2:0 | 2020FA07 | 2 | 451368 | 4503145 | Systematic | 7,9,11 |
| | | 11/2/20 | 2:0 | 2020FA08 | Ag Field | 451354 | 4502895 | Systematic | 7,9,11 |
| | | 11/3/20 | 2:0 | 2020FA09 | Ag Field | 451354 | 4502895 | Systematic | 7,9,11 |
| | | 11/4/20 | 2:0 | 2020FA10 | Ag Field | 451354 | 4502895 | Systematic | 7,9,11 |
| | | 11/5/20 | 2:0 | 2020FA11 | 4 | 449257 | 4504464 | Systematic | 7,9,11 |
| | | 11/6/20 | 2:0 | 2020FA12 | 4 | 449257 | 4504464 | Systematic | 7,9,11 |
| | | 11/7/20 | 2:0 | 2020FA13 | 4 | 449257 | 4504464 | Systematic | 7,9,11 |
| | | 11/8/20 | 2:0 | 2020FA14 | Ag Field | 452361 | 4502761 | Ground | 7,9,11 |
| | | 11/9/20 | 2:0 | 2020FA15 | Ag Field | 452361 | 4502761 | Ground | 7,9,11 |
| | | 11/10/20 | 2:0 | 2020FA16 | Ag Field | 451354 | 4502895 | Ground | 7,9,11 |

*Crane group 2020FA03 was observed by aerial crew in both 0SW and PWRTW on the same day. Secondary locations (2020FA03B) were excluded from this table.

## Proportion of population

According to the surveys conducted by the U.S. Fish and Wildlife Service during the winter of 2019-2020, the Aransas – Wood Buffalo (AWB) migratory whooping crane population was estimated as 506 birds (95% CI: 342.6 - 678.0; USFWS 2020). The three individuals observed during the fall 2020 monitoring effort constitute approximately 0.59% of that migratory population estimate. This estimate of the proportion of the AWB population observed within the AHR during Fall 2020 monitoring will be updated once a new population estimate is released by USFWS according to the 2020-2021 winter survey.

Observed whooping crane use of the Great Bend region of the Platte River during fall systematic surveys of the associated habitat reach for the PRRIP has varied from year to year (Figure 3). Since the initiation of monitoring efforts in 2007, the estimated proportion of the AWB population that has been observed on the central Platte River through implementation of the PRRIP monitoring

protocol has generally remained steady at around 4% of the population. Low numbers observed during the fall of 2020 contribute to a slight downward trend in this long-term dataset.

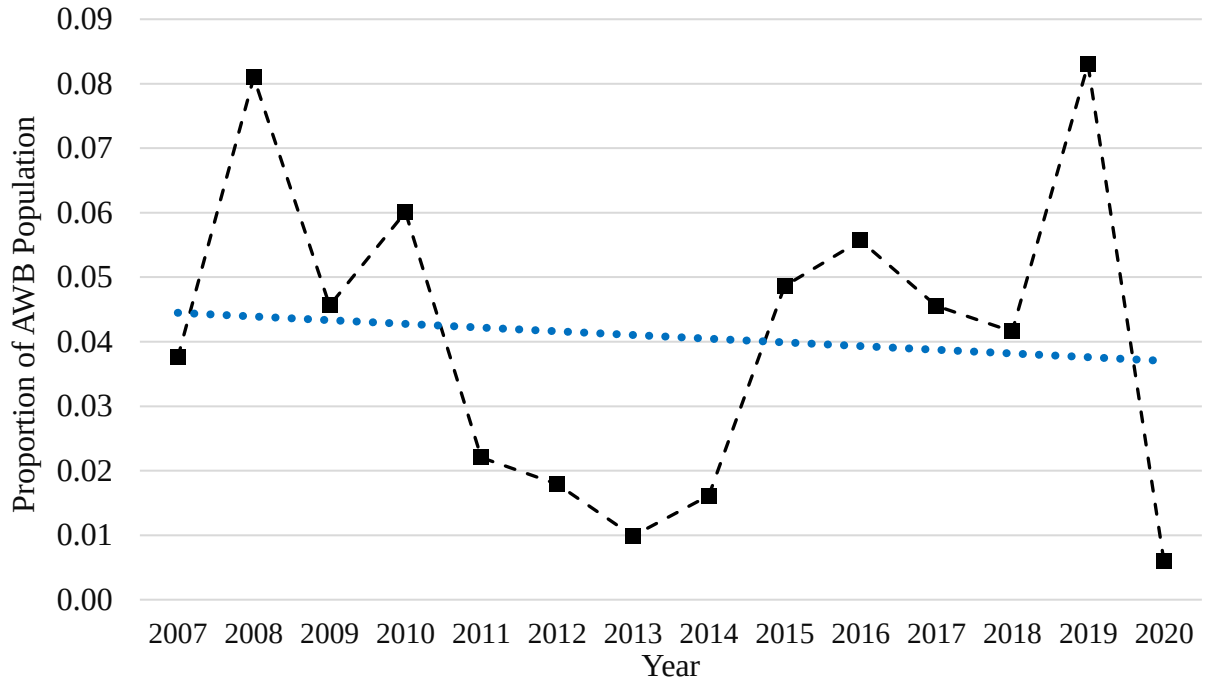


**Figure 3**. Estimated proportion of the Aransas-Wood Buffalo (AWB) Whooping Crane population observed (dashed line) during aerial systematic and opportunistic fall migration surveys from 2007-2020, and the long-term linear trend over time (dotted line).

**Streamflow and unobstructed channel width at whooping crane use locations**

During the 38-day fall 2020 whooping crane migration monitoring period, streamflow along the Big Bend region of the central Platte River ranged from a low of 148 cubic feet per second (cfs) at Grand Island on 10/16/2020 (USGS 2020d) to a high of 2,230 cfs at Overton on 10/21/2020 and 11/13/20 (USGS 2020b). Instantaneous discharge at the nearest gaging station at the time crane groups were observed, ranged from 221 cfs – 2,170 cfs (Table 2).

**Table 2.** Associated crane group use sites and streamflow discharge (cfs) based on nearest gauging station and time of observation.

| Unique Group Icon | Crane Group ID | # of Cranes Adults:Juv | Use Site # | Date | Gauging station | Discharge (cfs) |
|---|---|---|---|---|---|---|
| | 2020FA01 | 1:0 | 1 | 10/21/2020 | Kearney[1] | 1720 |
| | 2020FA02 | 2:0 | 2 | 10/27/2020 | Overton[2] | 1420 |
| | 2020FA03 | 2:0 | 3 | 10/28/2020 | Overton[2] | 2150 |
| | 2020FA07 | 2:0 | 2 | 11/1/2020 | Overton[2] | 221 |
| | 2020FA11 | 2:0 | 4 | 11/5/2020 | Overton[2] | 2170 |
| | 2020FA12 | 2:0 | 4 | 11/6/2020 | Overton[2] | 343 |
| | 2020FA13 | 2:0 | 4 | 11/7/2020 | Overton[2] | 278 |

[1]USGS 2020c
[2]USGS 2020b

Table 3 includes unobstructed channel width and nearest forest, as measured in GIS using July 2020 imagery, at each in-channel use location. Both have been found to be important predictors of whooping crane use of the central Platte River (Baasch *et al*. 2019). Unobstructed channel widths at riverine use sites ranged from 334 – 1,112 feet (average = 567 feet). Nearest forest, the nearest straight-line distance to riparian forest, ranged from 639 – 1,730 feet (average = 958 feet).

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

| Unique Group Icon | Crane Group ID # | Use Site # | Zone 14N UTMx | Zone 14N UTMy | Unobstructed Channel Width (ft) | Nearest Forest (ft) |
|---|---|---|---|---|---|---|
| | 2020FA01 | 1 | 517890 | 4505518 | 1,112 | 784 |
| | 2020FA02, 07 | 2 | 451368 | 4503145 | 434 | 639 |
| | 2020FA03 | 3 | 451204 | 4503166 | 388 | 681 |
| | 2020FA11, 12, 13 | 4 | 449257 | 4504464 | 334 | 1,730 |

Figures 4-6 display discharge during the fall 2020 monitoring period at USGS river gages located at Overton, Kearney, and Grand Island (USGS 2020a).

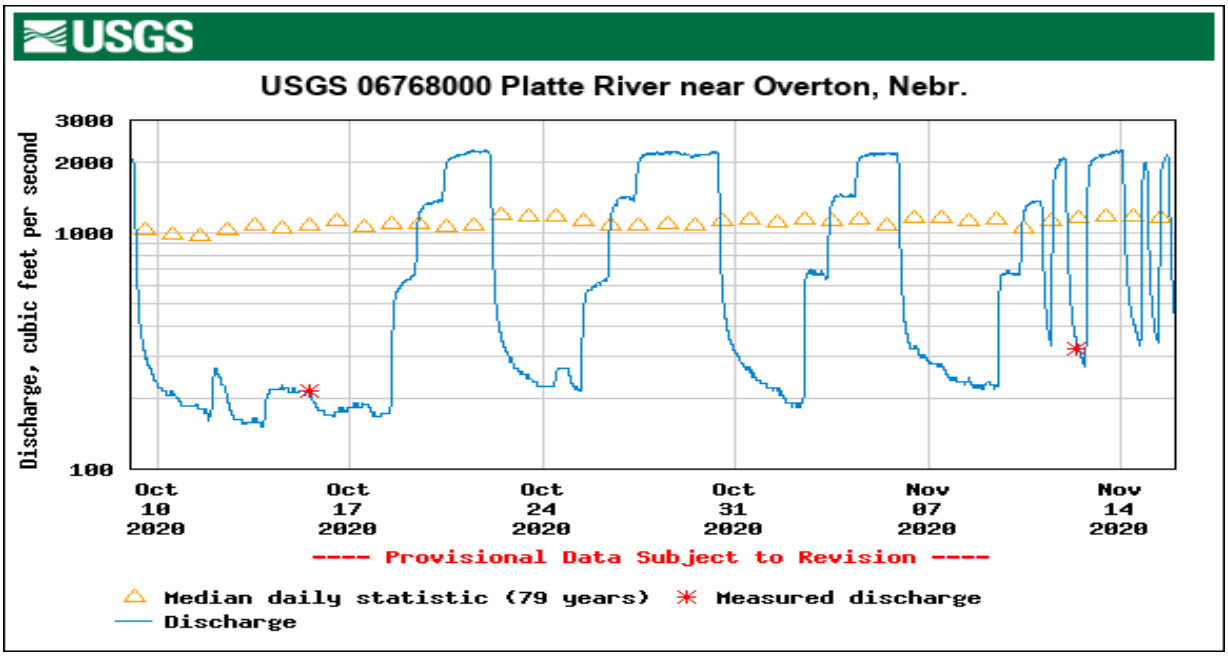


**Figure 4.** Daily mean discharge (blue line) at the Overton gage during the 38-day monitoring period along with median daily discharge for the last 79 years (yellow triangles) (USGS 2020b).

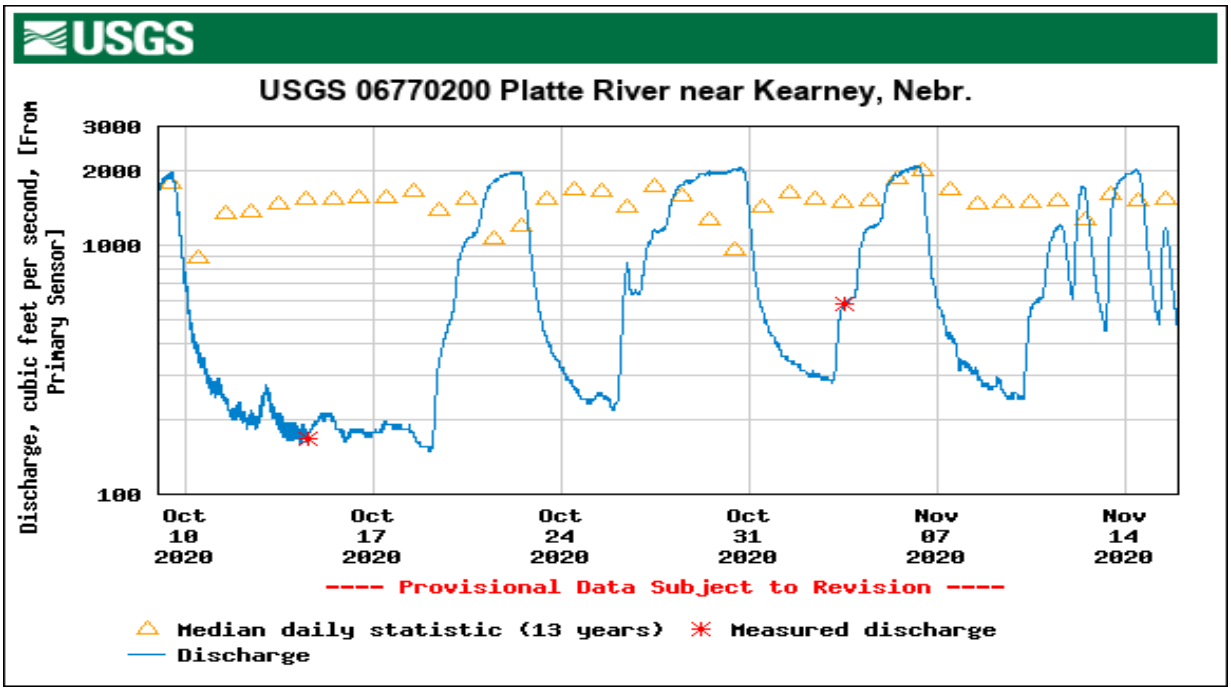


**Figure 5.** Daily mean discharge (blue line) at the Kearney gage during the 38-day monitoring period along with median daily discharge for the last 13 years (yellow triangles) (USGS 2020c).

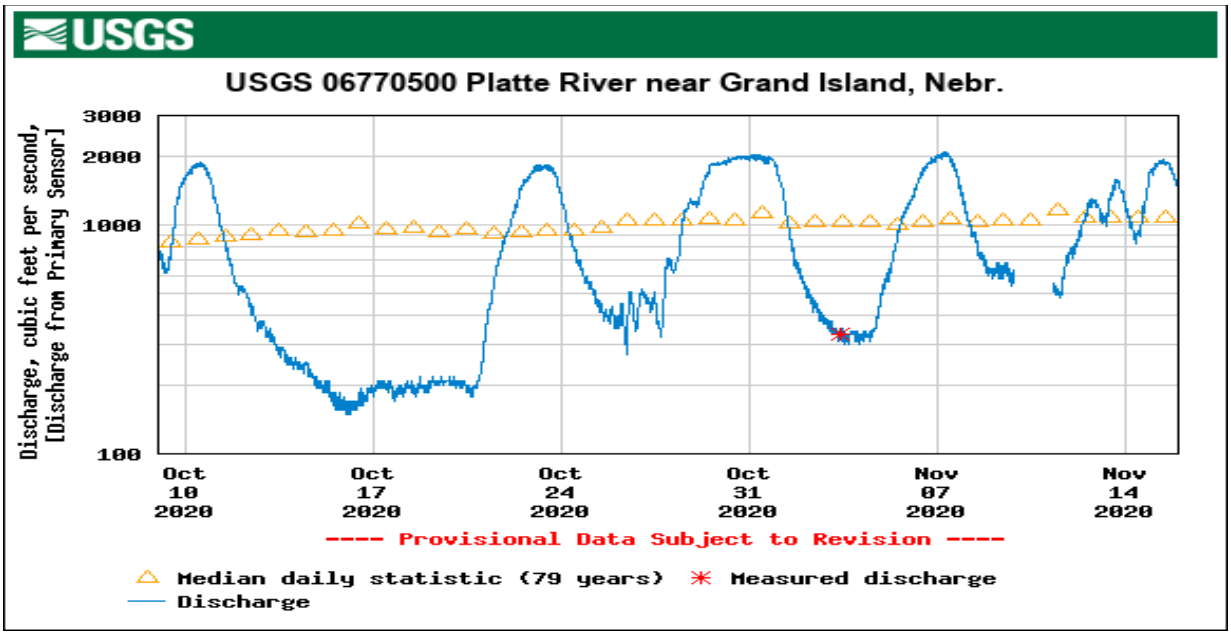


**Figure 6.** Daily mean discharge (blue line) at the Grand Island gage during the 38-day monitoring period along with median daily discharge for the last 79 years (yellow triangles) (USGS 2020d).

## 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 a group is observed.

**Table 4**. USFWS/PRRIP whooping crane (WC) group ID comparisons and PRRIP crane use days.

| Unique Group Icon | Dates Present | # of WC Ad:Juv | USFWS ID # | PRRIP ID # | Use Days = (Days Present x Cranes) + 1 day per crane*. | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Days Observed by PRRIP | Days Present | Cranes | Use Days |
| N/A | 10/20-10/21 | 2:0 | 20B-14 | N/A | 0 | 2 | 2 | **4*** |
| | 10/21-10/21 | 1:0 | 20B-15 | 2020FA01 | 1 | 1 | 1 | **2** |
| | 10/26-11/10 | 2:0 | 20B-26 | 2020FA02. 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16 | 15 | 16 | 2 | **32*** |
| | | | | | | | **Crane Use Days** | **38** |

*Use days did not include an extra day per crane where groups were first observed in the afternoon on the first day present.

There was one instance (20B-14) where USFWS reported a crane group consisting of two adults that was not observed by PRRIP due to that group leaving the river prior to the survey plane reaching them. In addition, crane groups 20B-14 and 20B-26 were reported by the public to USFWS in the afternoon of their arrival. This added an extra day to USFWS recorded dates present for 20B-26 (10/26 date shown in Table 4) when compared to PRRIP observations of this group (first observed on 10/27 as shown in Table 1).

Crane use days were calculated by multiplying the number of individual cranes in each group by the number of days the group was present, plus one day per crane, as each crane observed during early morning PRRIP aerial surveys was assumed to have been present the evening prior to the morning of the first observation. Since crane groups 20B-14 and 20B-26 were accounted for by USFWS in the afternoons on the first day they were recorded as present, we could not assume they had arrived the evening prior. Consequently, the additional one use day per crane was not added to their use day totals. This resulted in a total of 38 crane use days during the fall survey. Whooping cranes were observed by PRRIP on 16 of the 38 days of the survey effort (on 42.1% of the days; Table 1).

## Ground Search Effort and Opportunistic Observations

There were three instances where ground crews independently observed a whooping crane group as well as one other instance where 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 (Table 5). 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 was located and identified or a reasonable amount of effort has been put forth. Of the 16 sightings (Table 1), three of these were made by ground crews without the aid of aerial support.

**Table 5.** Ground search effort for whooping cranes (WC) in response to either aerial sighting by plane (plane) or without aerial support based upon previous known locations (known). Sighting resulted from effort by aerial and ground crew working together (both) or ground crew sighting alone (ground).

| Unique Group Icon | Date | Source | WC Confirmed Ad:Juv | Miles Driven | Aerial/Ground Effort |
|---|---|---|---|---|---|
| | 10/21 | Plane | 1:0 | 6 | Both |
| | 11/8 | Known | 2:0 | 3 | Ground |
| | 11/9 | Known | 2:0 | 15 | Ground |
| | 11/10 | Known | 2:0 | 1 | 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. During the 38-day monitoring period, PRRIP documented no instances of take as defined above. Specifically:

- *Lethal or crippling take*

There were no observations of crippling or lethal take of whooping cranes this season resulting from 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

A total of 20 whooping crane decoy sets (one to three decoys per set) were placed by the EDO in 20 unique locations along the aerial transects. Ten decoy sets were placed at randomly selected locations within the channel and ten decoy sets were placed at randomly selected locations along off channel conservation lands within 500 feet of the channel. Flight crews spotted five of the ten decoy sets placed in a wetted channel (50.0%) and four of the ten decoy sets placed at off-channel locations (40.0%), for an overall spotting efficiency of 45.0% (Table 6).

**Table 6.** Observation efficiency trials using whooping crane decoys.

| Date Placed | Date Tested | UTMx | UTMy | Decoy Set | # of Decoys | Habitat Type | Detected |
|---|---|---|---|---|---|---|---|
| 10/13/20 | 10/14/20 | 499066 | 4501145 | 11 | 3 | Wet Meadow | YES |
| 10/14/20 | 10/15/20 | 472243 | 4503502 | 1 | 1 | Channel | YES |
| 10/15/20 | 10/16/20 | 535359 | 4512129 | 12 | 2 | Wet Meadow | NO |
| 10/17/20 | 10/19/20 | 517503 | 4505561 | 2 | 2 | Channel | NO |
| 10/17/20 | 10/18/20 | 472643 | 4503265 | 14 | 2 | Wet Meadow | YES |
| 10/18/20 | 10/19/20 | 473499 | 4503111 | 15 | 3 | Wet Meadow | YES |
| 10/20/20 | 10/21/20 | 513349 | 4502900 | 3 | 2 | Channel | NO |
| 10/20/20 | 10/21/20 | 442338 | 4506432 | 4 | 3 | Channel | YES |
| 10/21/20 | 10/23/20 | 445557 | 4504970 | 5 | 2 | Channel | YES |
| 10/23/20 | 10/24/20 | 447814 | 4504166 | 16 | 2 | Wet Meadow | NO |
| 10/26/20 | 10/27/20 | 541150 | 4512949 | 13 | 2 | Wet Meadow | NO |
| 10/27/20 | 10/28/20 | 534305 | 4510571 | 6 | 3 | Channel | NO |
| 10/28/20 | 10/29/20 | 467214 | 4503769 | 18 | 1 | Wet Meadow | NO |
| 10/28/20 | 10/30/20 | 542220 | 4512945 | 17 | 3 | Wet Meadow | NO |
| 10/30/20 | 10/31/20 | 550439 | 4516027 | 19 | 3 | Pond | YES |
| 11/2/20 | 11/4/20 | 516347 | 4504993 | 7 | 3 | Channel | YES |
| 11/3/20 | 11/4/20 | 559914 | 4523773 | 8 | 1 | Channel | YES |
| 11/4/20 | 11/5/20 | 509410 | 4502303 | 20 | 1 | Wet Meadow | NO |
| 11/12/20 | 11/13/20 | 490061 | 4500867 | 9 | 1 | Channel | NO |
| 11/12/20 | 11/13/20 | 458386 | 4503680 | 10 | 1 | Channel | NO |

## Flight Completion

Of the 76 scheduled flights, there were 61 instances when crews were able to depart the airport. of which 58 were completed, resulting in an overall completion of 76.3% (Table 7). Three flights were initiated, but not completed and fifteen flights were cancelled. Three were cancelled due to COVID-19, and the remaining 12 cancellations were weather related.

**Table 7.** Flight completion rates.

| | East Route | West Route | Totals |
|---|---|---|---|
| **Completed** | 28 | 30 | 58 |
| **Cancelled/Incomplete** | 10 | 8 | 18 |
| **Scheduled Season Total** | 38 | 38 | 76 |
| **% Completed** | 73.7% | 78.9% | 76.3% |

## Survey Efficiency Results

Of the 209 scheduled systematic transects, 162 (77.5%) were completed. Of the 17 sightings of two unique whooping crane groups, 14 of these were observed from the air while conducting systematic flights and three were observed by ground crews while independently searching for previous day groups when flights were cancelled (Table 8). During the 38-day fall 2020 monitoring period, 0.26 crane groups were observed per hour of total survey effort.

**Table 8.** Whooping crane (WC) sightings per effort comparisons.

| | Flight Transects | WC Group Sightings[1] | Completed | Incompleted | Cancelled | TOTAL SCHEDULED | WC Sightings / Transect Completed | Hours | WC Sightings / Hour Total Effort |
|---|---|---|---|---|---|---|---|---|---|
| On Channel | 0SE, 0SW[2] | 13 | 59 | 2 | 15 | 76 | 0.22 | 30:10:00 | 0.43 |
| Off Channel | PWRTE, PWRTW[3] | 1 | 59 | 2 | 15 | 76 | 0.02 | 26:59:00 | 0.04 |
| | WSRT/CSRT, ESRT[4] | 0 | 44 | 0 | 13 | 57 | 0.00 | 7:34:00 | 0.00 |
| Ground/Opportunistic[5] | | 3 | | | | | | 1:01:00 | 3.00 |
| TOTALS | | 17 | 162 | 4 | 43 | 209 | 0.10 | 65:44:00 | 0.26 |

[1]These sightings may or may not consist of crane groups observed on previous days. See Table 1 for crane group sighting details. Crane group 2020FA03 was observed by aerial crew in both 0SW and PWRTW on the same day. Secondary locations (2020FA03B) were included in this table.
[2]Primary Transect (Riverine), (East – 0SE, West – 0SW) (Figs. 1-2)
[3]Primary Return transect, (East – PWRTE, West – PWRTW) (Figs. 1-2)
[4]Secondary Return transect, (East – WSRT and CSRT, West – ESRT) (Figs. 1-2)
[5]Ground/Opportunistic were efforts made outside of systematic flight transects to confirm or deny unconfirmed crane groups or to independently search for previous day groups by motorized vehicle when flights were cancelled.

# Supplements

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

## References Cited


Baasch DM, Farrell PD, Howlin S, Pearse AT, Farnsworth JM, Smith CB. 2019.Whooping crane use of riverine stopover sites. PLOS ONE 14(1): e0209612. https://doi.org/10.1371/journal.pone.0209612

Platte River Recovery Implementation Program (PRRIP). 2017a. Platte River Recovery Implementation Program Data Synthesis Compilation Whooping Crane (*Grus americanus*) Habitat Synthesis Chapters. https://platteriverprogram.org/sites/default/files/PubsAndData/ProgramLibrary/PRRIP%20Whooping%20Crane%20Habitat%20Synthesis%20Chapters.pdf

Platte River Recovery Implementation Program (PRRIP). 2017b. Platte River Recovery Implementation Program Whooping Crane Monitoring Protocol – Migrational Habitat Use in the Central Platte River Valley revised June 08, 2017. https://platteriverprogram.org/internal-document/prrip-whooping-crane-monitoring-protocol-migrational-habitat-use-central-platte

Platte River Recovery Implementation Program (PRRIP). 2020. Final Platte River Recovery Implementation Program Cooperative Agreement, Attachment 3 – Adaptive Management Plan. pp. 14-17. https://platteriverprogram.org/sites/default/files/2020-03/PRRIP%20Full%20Program%20Document%20Updated%203_11_2020.pdf

United States Fish and Wildlife Service (USFWS). 2020. Whooping Crane Survey Results: Winter 2019-2020. https://www.fws.gov/uploadedFiles/WHCR%20Update%20Winter%202019-2020b.pdf

United States Geological Survey (USGS). 2020a. United States Geological Survey National Water Information System: Web Interface. https://waterdata.usgs.gov/nwis

United States Geological Survey (USGS). 2020b. United States Geological Survey National Water Information System: Web Interface. USGS 06768000 Platte River near Overton, Nebr. https://waterdata.usgs.gov/usa/nwis/uv?site_no=06768000

United States Geological Survey (USGS). 2020c. United States Geological Survey National Water Information System: Web Interface. USGS 06770200 Platte River near Kearney, Nebr. https://waterdata.usgs.gov/usa/nwis/uv?site_no=06770200

United States Geological Survey (USGS). 2020d. United States Geological Survey National Water Information System: Web Interface. USGS 06770500 Platte River near Grand Island, Nebr. https://waterdata.usgs.gov/usa/nwis/uv?site_no=06770500

## Maps

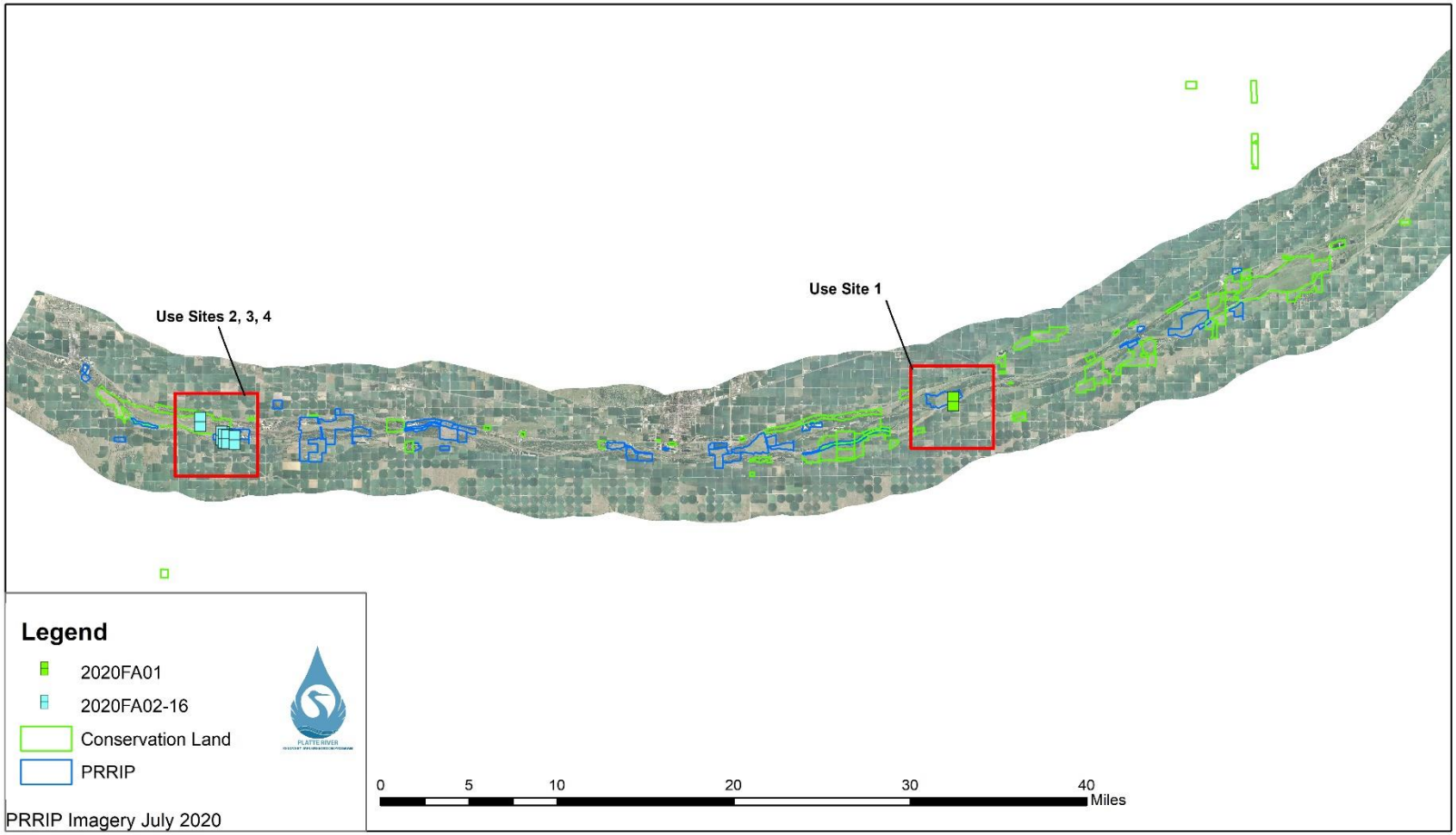


**Figure 7.** Distribution of whooping crane group observations within the AHR during the 2020 fall survey in relation to PRRIP lands (highlighted in blue) and all other conservation lands (highlighted in green).

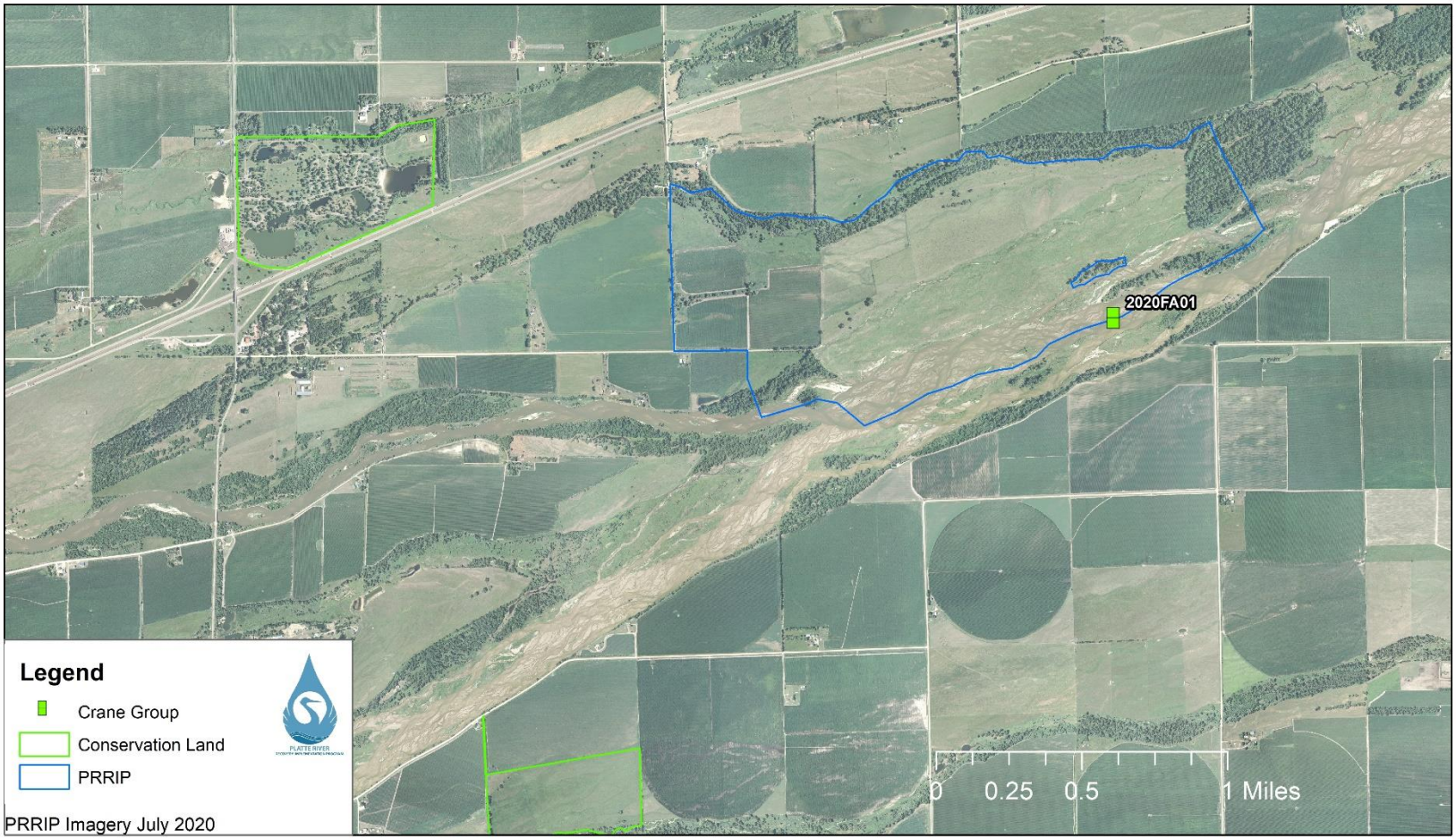


**Figure 8.** Whooping crane group 2020FA01 observed on 10/21/20 at use site 01 near Gibbon, NE.

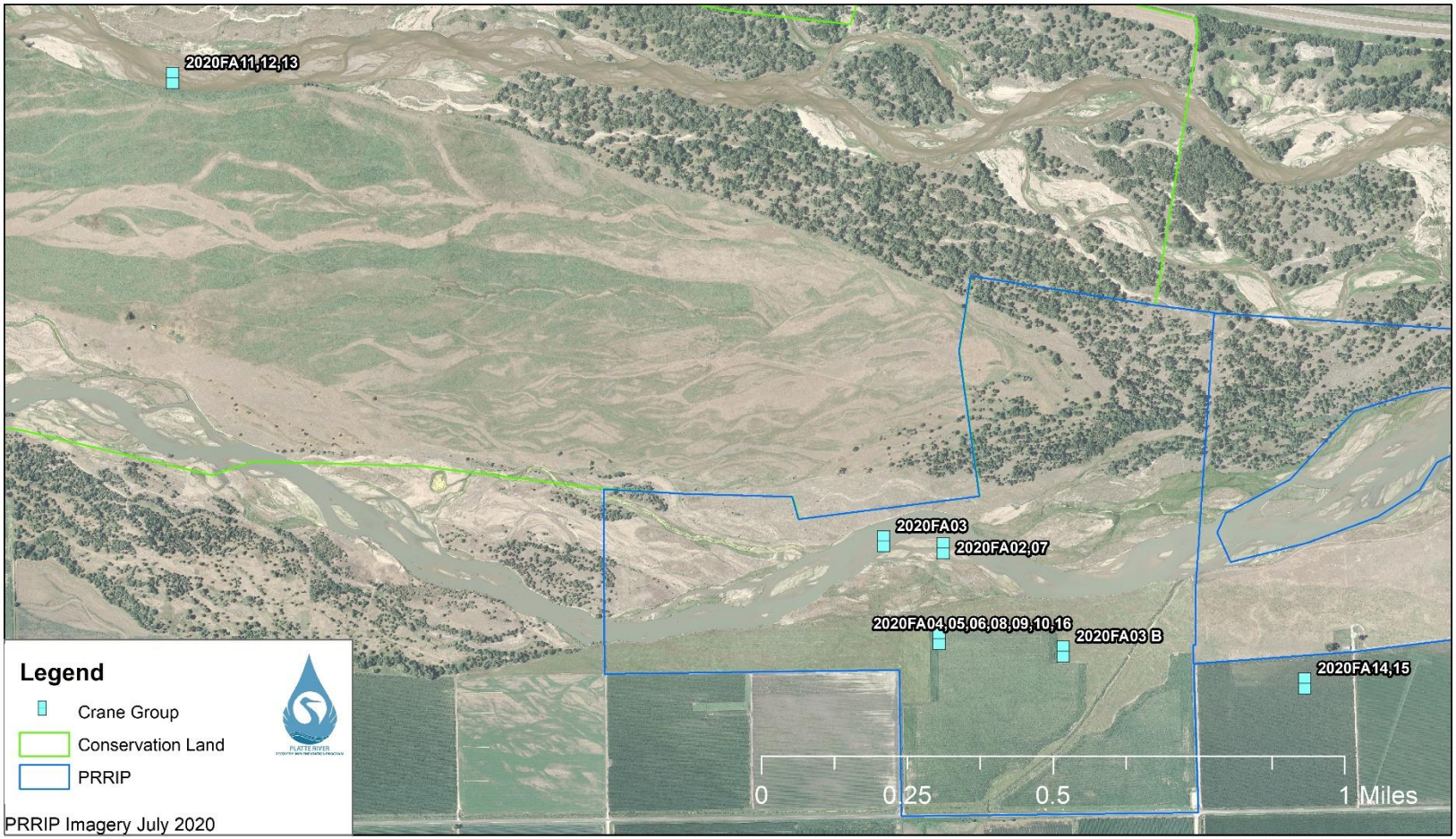


**Figure 9.** Whooping crane group 2020FA02-16 observed on 10/27/20 - 11/10/20 at use sites 02 - 04 two miles west of the Overton bridge, NE.

## Aerial Photos

**Figure 10.** Photo taken during a systematic observation of the 1:0 crane group 2020FA01 on 10/21/20 at use site 01 in the main channel of the Platte River (see Fig. 8 above for location).

**Figure 11.** Photo taken during a systematic observation of the 2:0 crane group 2020FA02 - 16 on 10/28/20 at use site 03 in the south channel of the Platte River (see Fig. 9 above for location).