



**Whooping Crane Monitoring for the Cooperative Agreement and
The Platte River Recovery Implementation Program**

May 31, 2011

This document describes changes in the CA whooping crane monitoring protocol since Spring 2001. The Technical Committee implemented the February 23, 2001 version of this protocol during the spring 2001 season; the September 12, 2001 version during the fall 2001 season; the December 20, 2001 version during the spring and fall 2002 seasons; the August 21, 2003 version during the fall 2003, fall and spring 2004, and spring 2005 seasons; and the September 16, 2005 version during fall 2005, spring and fall 2006–2010, and spring 2011 seasons. The Technical Committee did not implement a survey in spring 2003. This version of the protocol incorporates changes as a result of the previous implementation periods, independent peer review, and other comments. Details of the changes have been recorded to facilitate analyses involving all the data together. Major changes included aerial survey details and the crane group numbering. Excerpts of text from the protocols are included at the end.

Fall 2011

Implementation of Protocol dated May 31, 2011

- River transect always flown in Westward direction
- Two start locations for each leg of the river transect
- Seven return transects always flown in Eastward direction
- All transects will be flown at 750' altitude

(see additional modifications of the September 16, 2005 Monitoring Protocol below)

Spring 2011

Implementation of Protocol dated September 16, 2005 (Modified Summer 2010)

- River transect always flown in Westward direction
- Two start locations for each leg of the river transect
- Seven return transects always flown in Eastward direction
- All transects will be flown at 750' altitude

Decoys only placed in active river channel on governmental, NGO, and Program properties.
River profiles not collected at decoy locations and rebar protocol was abandoned.

Fall 2010

Implementation of Protocol dated September 16, 2005 (Modified Summer 2010)

- River transect always flown in Westward direction
- Two start locations for each leg of the river transect
- Seven return transects always flown in Eastward direction
- All transects will be flown at 750' altitude

Decoys only placed in active river channel on governmental, NGO, and Program properties.
River profiles not collected at decoy locations and rebar protocol was abandoned.



Spring 2010

Implementation of Protocol dated September 16, 2005

- River transect always flown in Westward direction
- Two start locations for each leg of the river transect
- Seven return transects always flown in Eastward direction
- All transects will be flown at 750' altitude

Fall 2009

Implementation of Protocol dated September 16, 2005

- River transect always flown in Westward direction
- Two start locations for each leg of the river transect
- Seven return transects always flown in Eastward direction
- All transects will be flown at 750' altitude

Spring 2009

Implementation of Protocol dated January 14, 2004

- River transect always flown in Westward direction
- Two start locations for each leg of the river transect
- Seven return transects always flown in Eastward direction
- All transects will be flown at 750' altitude

Fall 2008

Implementation of Protocol dated September 16, 2005

- River transect always flown in Westward direction
- Two start locations for each leg of the river transect
- Seven return transects always flown in Eastward direction
- All transects will be flown at 750' altitude

Spring 2008

Implementation of Protocol dated September 16, 2005

- River transect always flown in Westward direction
- Two start locations for each leg of the river transect
- Seven return transects always flown in Eastward direction
- All transects will be flown at 750' altitude

Fall 2007

Implementation of Protocol dated September 16, 2005

- River transect always flown in Westward direction
- Two start locations for each leg of the river transect
- Seven return transects always flown in Eastward direction
- All transects will be flown at 750' altitude



Spring 2007

Implementation of Protocol dated January 14, 2004

- River transect always flown in Westward direction
- Two start locations for each leg of the river transect
- Seven return transects always flown in Eastward direction
- All transects will be flown at 750' altitude

Fall 2006

Implementation of Protocol dated September 16, 2005

- River transect always flown in Westward direction
- Two start locations for each leg of the river transect
- Seven return transects always flown in Eastward direction
- All transects will be flown at 750' altitude

Spring 2006

Implementation of Protocol dated September 16, 2005

- River transect always flown in Westward direction
- Two start locations for each leg of the river transect
- Seven return transects always flown in Eastward direction
- All transects will be flown at 750' altitude

Fall 2005

Implementation of Protocol dated September 16, 2005

- River transect always flown in Westward direction
- Two start locations for each leg of the river transect
- Seven return transects always flown in Eastward direction
- All transects will be flown at 750' altitude

Spring 2005

Implementation of Protocol dated January 14, 2004

- River transect always flown in Westward direction
- Two start locations for each leg of the river transect
- Seven return transects always flown in Eastward direction
- All transects will be flown at 750' altitude

Changes during implementation:

1. Added Time field in 'WC use Locations' table for time of sighting. If a crane returns to the same location on the same day it will have the same date, crane group ID, and location ID, but different time.
2. Does not appear the flight information was recorded correctly. Specifically, the rows of the 'WC Flight surveys' table are not unique by flight date, transect ID, flight direction and flight origin. The flight origin does not appear to change for the two halves of a split transect.



Fall 2004

Implementation of Protocol dated January 14, 2004

- River transect always flown in Westward direction
- Two start locations for each leg of the river transect
- Seven return transects always flown in Eastward direction
- All transects will be flown at 750' altitude

Changes during implementation:

1. Flight origin not used

Spring 2004

Implementation of Protocol dated January 14, 2004

- River transect always flown in Westward direction
- Two start locations for each leg of the river transect
- Seven return transects always flown in Eastward direction
- All transects will be flown at 750' altitude
- Research to determine relative value of afternoon versus morning flights continued

Changes during implementation:

1. Flight origin not used; contractor added 1 or 2 to transect ID when split

Fall 2003

Implementation of Protocol dated August 23, 2003 & Research document with same date

- River transect always flown in Westward direction
- Two start locations for each leg of the river transect
- Seven return transects always flown in Eastward direction
- All transects will be flown at 750' altitude
- Research to determine relative value of afternoon versus morning flights

Changes during implementation:

1. Added 'Research transect' field to 'WC Flight Surveys' table, with YES entered for afternoon flights.
2. Flight Origin added to 'WC Flight Surveys' table

Fall 2002

Implementation of Protocol dated August 1, 2002

- River transect flight direction alternated between east and west
- Seven return transects flown in alternating direction
- River transect flown at 750' altitude, while the return transects flown at 1000'

Spring 2002

Implementation of Protocol dated December 20, 2001

- River transect flight direction alternated between east and west
- Seven return transects flown in alternating direction
- River transect flown at 750' altitude, while the return transects flown at 1000'



Fall 2001

Implementation of Protocol dated September 12, 2001

River transect flight direction alternated between east and west

Six upland transects flown in alternating direction

Flights at 500 feet in protocol but contractor report states “The riverine transects were flown at an altitude of 750 feet while the return transects were flown at an altitude of 1000 feet”.

Changes during implementation:

1. Flight direction added to ‘WC Flight Surveys’ table.

Spring 2001

Implementation of Protocol dated February 23, 2001

River transect always flown in Westward direction

Six upland transects flown in East direction

Flights at 1000 feet

Crane Group Numbering (protocol section IV.B.3 Crane Group Numbering)

December 20, 2001

Any time a crane group is observed in the study area by the survey crew, a *Crane Group ID* will be assigned to the group. The *Crane Group ID* will consist of the following information: year; “SP” for the spring monitoring period or an “FA” for the fall; sequential number (e.g. 2002FA01, 2002FA02, 2002FA03,... etc). Any time a crane group is observed in the study area by the survey crew, a new *Crane Group ID* will be assigned. Each time a different sighting of a crane group occurs, it will get a new *Crane Group ID*. Judgments about the likelihood of a crane group being the same group previously observed will be noted in the field datasheets and database.

August 1, 2002

Any time a crane group is observed in the study area by the survey crew, a crane group ID will be assigned to the group. The crane group ID will consist of the year, followed by an “SP” for the spring monitoring period or an “FA” for the fall, followed by a sequential number (2002FA01, 2002FA02, 2002FA03,... etc). Any time a crane group is observed in the study area by the survey crew, a new crane group ID will be assigned unless the surveyors note on the data sheets the reasons why they believe this is a previously recorded group (using their professional judgment). In this case, the same crane group ID will be used.

Aerial Survey (Protocol section IV.B.1. *Detecting/Locating Whooping Crane Stopovers*)

Protocol February 23, 2001

Spring 2001

Planes will fly at an altitude of approximately 300 meters (1,000 feet) and at 100 mph. A Cessna 172 or similar aircraft will be used. One plane will begin at Chapman and fly **west** to the Nebraska Highway 10 (Minden) Bridge. The second plane will begin at the Minden Bridge and fly **west** to the Lexington Bridge. Surveys along the flight line will begin 15 minutes prior to sun rise or when visibility is adequate in the opinion of the observer (e.g., the start time might be



later on overcast days). Each plane will begin the surveys (i.e., traveling west) flying south of the main channel centerline, such that the main channel(s) can be clearly viewed. When the westward leg of each survey is completed, the planes will return to the airport/landing strip (i.e., traveling east) flying one, two or three miles either north or south of the center line of the river (6 possibilities). The survey will continue on the return flight along one of the six transects. The exact transect traveled each day will be determined using a rotating schedule. This will provide a systematic aerial survey to locate whooping crane groups in areas outside of the channel as well as within the channel.

Protocol September 12, 2001

Fall 2001

Each plane will begin the survey flying north or south of the main channel centerline, such that the main channel(s) can be clearly viewed (i.e., one day south of the channel centerline, next day north of the channel centerline). When the river leg of the survey is completed, the planes will fly the return leg surveying one, two or three miles either north or south of the center line of the river (6 upland transect possibilities). The upland transect that is surveyed each day will be determined based on a predetermined, systematically rotating schedule. Similarly, **the initial direction of flight for the first leg of each survey will alternate between West and East**, although the river leg will always be flown first. This design will provide a systematic aerial survey to locate whooping crane groups in areas outside of the channel as well as within the channel.

Protocol December 20, 2001

Spring 2002

Each plane will begin the survey flying the river transect along the river, such that the main channel(s) can be clearly viewed by both observers looking out the passenger side of the plane. When the river leg of the survey is completed, each plane will **fly one of 7 return flights** with each observer looking out different sides of the plane. The 7 return flights are one, two or three miles either north or south of the center line of the river and directly down the centerline of the river (Figure 1). **The flight direction for the river transect on each day will be alternated between East and West** (the direction of flight for the return transect will always be the opposite of the direction of flight for the river transect). The return transect surveyed each day will be determined based on a predetermined, systematically rotating schedule. This design will provide a systematic aerial survey to locate whooping crane groups in areas outside of the channel as well as within the channel.

Protocol August 1, 2002

Fall 2002 – No aerial survey changes

Spring 2003 – Monitoring Protocol not implemented



Protocol & Research document August 23, 2003

Fall 2003

All aerial surveys will be flown such that the flight direction when flying the river transect will be away from the rising sun. To help address the concern that one end of the river transect will always be flown early and the other late, **there will be two start locations for each leg (east side and west side) of the study area.** Using the eastern section as an example: day one the flight will begin at Chapman, fly the river west to Minden, fly a predetermined return transect (upland) back to Chapman. Day two the flight will begin at the Wood River bridge, fly the river transect west to Minden, fly a predetermined return transect back to Chapman, and then fly the rest of the river transect from Chapman to Wood River. This pattern will continue through the survey period. The start points for the west leg will be the Minden Bridge and Odessa Bridge. During the river transect, observers will be situated such that the main channel(s) can be clearly viewed by both observers looking out the passenger side of the plane. This will necessitate that the plane fly just south of the main channel.

Protocol January 14, 2004

Spring 2004, Fall 2004, and Spring 2005

No aerial survey changes

Protocol September 16, 2005

Fall 2005, Spring 2006, Fall 2006, Spring 2007, Fall 2007, Spring 2008, Fall 2008, Spring 2009, Fall 2009, and Spring 2010.

No aerial survey changes

After the start direction changed, the recording of data also changed. The number of flights in the database appears to double because every other day, river flights are split in half and are (sometimes) recorded on two separate rows.

Fall 2003- did not record split river transects on separate rows.

Spring 2004- Split into separate rows, indicated which half in transect ID, no flight origin

Fall 2004- Split into separate rows but did not indicate which half with transect ID or flight origin

Spring 2005- Split into separate rows, used flight direction and flight origin- flight origin appears to be wrong, did not change for multiple rows in a day. Must represent origin of entire flight.

Fall 2005- Split into separate rows, used flight direction and flight origin- best

This issue was fixed in the final SP06 database (and retained in subsequent complete databases). The SAS program and other documentation is in 'C:\Projects\Platte\Protocols\Whooping crane\Database\final SP06\flight fix'.

Fall 2010 and Spring 2011

Decoys only placed in active river channel (i.e., no off-channel decoy locations) on governmental, non-governmental, and Program properties. River Profiles not collected at randomly generated decoy locations. The 'Rebar Protocol' was also abandoned.



Protocol May 31, 2011

Modifications of the September 16, 2005 Protocol made during summer 2010 and 2011 include:

- Added information on availability of additional data such as telemetry, 2005 land cover/use, LiDAR, and annual habitat suitability analysis data
- Moved Protocol history to document titled 'WC Monitoring Changes Through Time 2001-2011'
- Specified camera requirements to be used by air and ground crews
- Removed collecting video at use sites (never been collected)
- Removed collecting river profile data at random/decoy locations (changed during 2010)
- Included additional aerial surveys and ability to relocate cranes via telemetry project lost during the day (changed during 2010)
- Replaced stadia transit and rod method of collecting river profile data and replaced it with the use of GPS equipment with elevation accuracies $\leq \pm 6$ inches or other means approved by the Program
- Added Active Channel Width as a parameter to be measured
- Added 'proportion of population using the central Platte River' as an indicator
- Added information explaining how the contractor could complete river transects
- Moved full definition of 'Visual Obstruction' to the definition section in the methods
- Contractor will conduct basic analyses as requested by the Program including analyses related to use of Program defined complex, suitable, and unsuitable habitat
- Contractor will produce migration-period summaries and 1 annual report where data is analyzed, presented, and summarized
- Specified that InfoPath is needed to upload data to the Program's database
- Decoys randomly placed on private lands as well as NGO, governmental, and Program lands.
- Program staff or partners will place decoys in the field

Fall 2011



REFERENCES

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