# United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
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May 1, 2020

**Memorandum**

To: File (S:\T&E\ESA Section 7\IPaC\Determination Keys\ARLES DKey Finals)

From: Omar Bocanegra, Supervisory Fish & Wildlife Biologist, Arlington, Texas

Through: Debra Bills, Field Supervisor, Arlington, Texas; Wade Harrell, Whooping Crane Recovery Coordinator

Subject: Whooping Crane Determination Key

This memo is a record of the rationale behind the determination key section for the endangered whooping crane (*Grus americana*) within the 112 counties covered by the Arlington Ecological Services Office (ARLES). This determination key is a logically structured set of questions to assist a user in determining whether a proposed project qualifies for a predetermined consultation outcome based on USFWS standing analysis. General biology and other information is included to support the standing analysis and key. This key is intended to be delivered through the USFWS' Information for Planning and Consultation (IPaC) web application.

Whooping cranes are currently listed as endangered except where two nonessential experimental populations exist in 18 eastern states adjoining or east of the Mississippi River. In the United States, the whooping crane was listed as endangered in 1970 under the Endangered Species Act. Critical habitat is designated, but does not occur within the ARLES area of responsibility.

The whooping crane is a species with a low reproductive rate and limited genetic material derived from the 15 whooping cranes that remained in the 1940s. The migratory Aransas-Wood Buffalo Population (AWBP) is the only self-sustaining flock of whooping cranes remaining in the wild, breeding in the wetlands of Wood Buffalo National Park (WBNP) in Alberta and the Northwest Territories of northern Canada and wintering on the Texas coast at Aransas National Wildlife Refuge (Aransas NWR), Austwell, Texas, and surrounding areas.

The extensive drainage of wetlands in the prairie pothole region of Canada and the United States resulted in a tremendous loss of migration habitat available to whooping cranes (CWS and USFWS 2007). Original migration stopover habitat became unsuitable due to draining, fencing, sowing, and subsequent conversion of pothole and prairie wetlands to hay and grain production. The

International Whooping Crane Recovery Plan (CWS and USFWS 2007) lists the following as current threats and reasons for listing: human settlement/development, insufficient freshwater inflows, shooting, disturbance, disease, parasites, predation, food availability, sibling aggression, severe weather, loss of genetic diversity, climate change, red tide, chemical spills, collisions with power lines, fences, and other structures, collisions with aircraft and pesticides. Major current threats include limited genetics of the population with an estimated 66% of the genetic material lost during the decimation of the population, loss and degradation of migration stopover habitat, construction of additional power lines and communication towers, fences, degradation of coastal habitat, and threat of chemical spills in Texas. Another threat to the whooping crane is the decrease in the suitability of the species' winter habitat due to accelerating development within and adjacent to the designated critical habitat in Texas.

Whooping cranes could be encountered at suitable stopover sites within the corridor during spring and fall migration. Stopovers sites within the corridor were evaluated over a 5-year period (2010 – 2014) be monitoring radio-tagged cranes (Pearse et al. 2015) (Figure 1). The migration corridor extends from Canada to the Texas Coast and for 95% of sightings, averages 294 kilometers in width (Pearse et al. 2018) (Figure 1). The majority of migrant crane observations in Texas occur in the spring from March 19 – April 30 and fall from October 20 – November 24 (Pearse et al. 2020). Whooping crane have been documented throughout the migratory corridor as individuals, pairs, family groups, small flocks, and as part of sandhill crane flocks. Although whooping crane migratory flights are generally at altitudes of between 1,000 and 6,000 feet, they fly at lower altitudes when seeking stop-over habitats such as reservoirs, large ponds, rivers and wetlands. They will often make low flights up to two miles from a stop-over site to forage late in the day or in early morning. They may also interrupt migration flights to drink and/or forage in agricultural fields or wetlands for brief periods and may be at low altitudes during mid-day. Currently, collisions with power lines are the greatest known source of mortality for fledged whooping cranes and have accounted for the death or serious injury of 46 whooping cranes since 1956 (Stehn and Wassenich 2008). Whooping cranes may avoid stopover habitat that is developed with wind energy appurtenances, particularly turbines. This avoidance may deny them the use of important habitat, and thus may result in take in the form of harm by significant habitat modification.

Whooping cranes use a variety of habitats during migration, primarily croplands, lowland grasslands, and wetlands (open water, riverine and semi-permanent wetlands) (Howe 1987, 1989, Lingle 1987, Lingle et al. 1991, Johns et al. 1997, Baasch et al. 2019). Size of wetlands used during spring and fall migration ranges from 0.4 hectare (ha) to over 500 ha, and no seasonal use patterns are evident (Austin and Richert 2001); 75 percent of recorded roost wetlands were smaller than 4 ha (10 acres). Although size of the wetlands used varied for roosting varies, water depth ranges 18 to 20 inches and little variability is found among sites. Whooping cranes forage in wetlands and agricultural fields during migration and may commute between roosting and feeding areas. These arrival and departure flights are when whooping cranes would be most at risk of collision with wind turbines and power lines. Whooping cranes are known to actively roost (as opposed to foraging) from sunrise to 10:00 a.m. and from 4:00 p.m. to sunset. During inclement weather, whooping cranes may remain in their roosting locations for longer periods. Palustrine wetlands are used most often when whooping cranes forage in wetlands, but lacustrine and riverine have also been used as feeding sites (Austin and Richert 2001). Among agricultural crops used as feeding sites, use of winter wheat was higher than other crop types in fall and use of row-crop stubble

(comprised mostly of corn) was higher in spring than other crop types (Austin and Richert 2001). Whooping cranes have also been observed feeding in sorghum, sunflower, and soybean stubble (Austin and Richert 2001). Feeding sites are often found adjacent to roosting sites.

**Key for evaluating potential impacts to the whooping crane within the ARLES area of responsibility.**

If the project is found to intersect the crane corridor or stopover Area of Influence (determined through IPaC), the Key for evaluating effects follows:

A. Is this a wind energy project?
    a. If yes……. *go to B.*
    b. If no…….. *go to C.*
B. [add popup: *"The Service generally recommends wind energy facilities be sited as far away from the centerline of the migration corridor as possible. Additional information regarding wind energy and whooping cranes can be found here https://www.usgs.gov/publications/migrating-whooping-cranes-avoid-wind-energy-infrastructure-when-selecting-stopover*). Have Tiers 1 through 3 of the USFWS Land-Based Wind Energy Guidelines (https://www.fws.gov/media/land-based-wind-energy-guidelines) been completed?
    a. If yes……*make effect determination and coordinate with field office.*
    b. If no……... *implement Tiers 1 through 3 and coordinate with field office.*
C. Does the action area have a habitat that may be used by whooping cranes during spring and fall migrations (Mar 19- Apr 30, Oct 20 – Nov 24)? [SEMANTIC – based on stopover layer, asked if not (popup: *Croplands and grasslands interspersed with wetlands such as lakes, ponds and rivers. The portion of water bodies used by whooping cranes tend to be shallow (up to 20 inches in depth). Information on stopover habitat can be found here: https://pubs.er.usgs.gov/publication/70202378)]*
    a. If yes……*Use BMP list, go to D.*
    b. If no…… …..*No effect.*
D. Would the proposed project render onsite or adjacent habitat unsuitable for whooping crane stopovers by habitat degradation (including permanent placement of manmade structures within or adjacent to habitat) or by the presence of human activity during migration?
    a. If yes……. *May affect; submit biological evaluation to field office.*
    b. If no……. *NLAA*

END KEY

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evaluation data of migrant whooping cranes in the United States, 1943-99. U.S. Geological Survey, Northern Prairie Wildlife Research Center, Jamestown, North Dakota, and State Museum, University of Nebraska, Lincoln, Nebraska. 157 pp.

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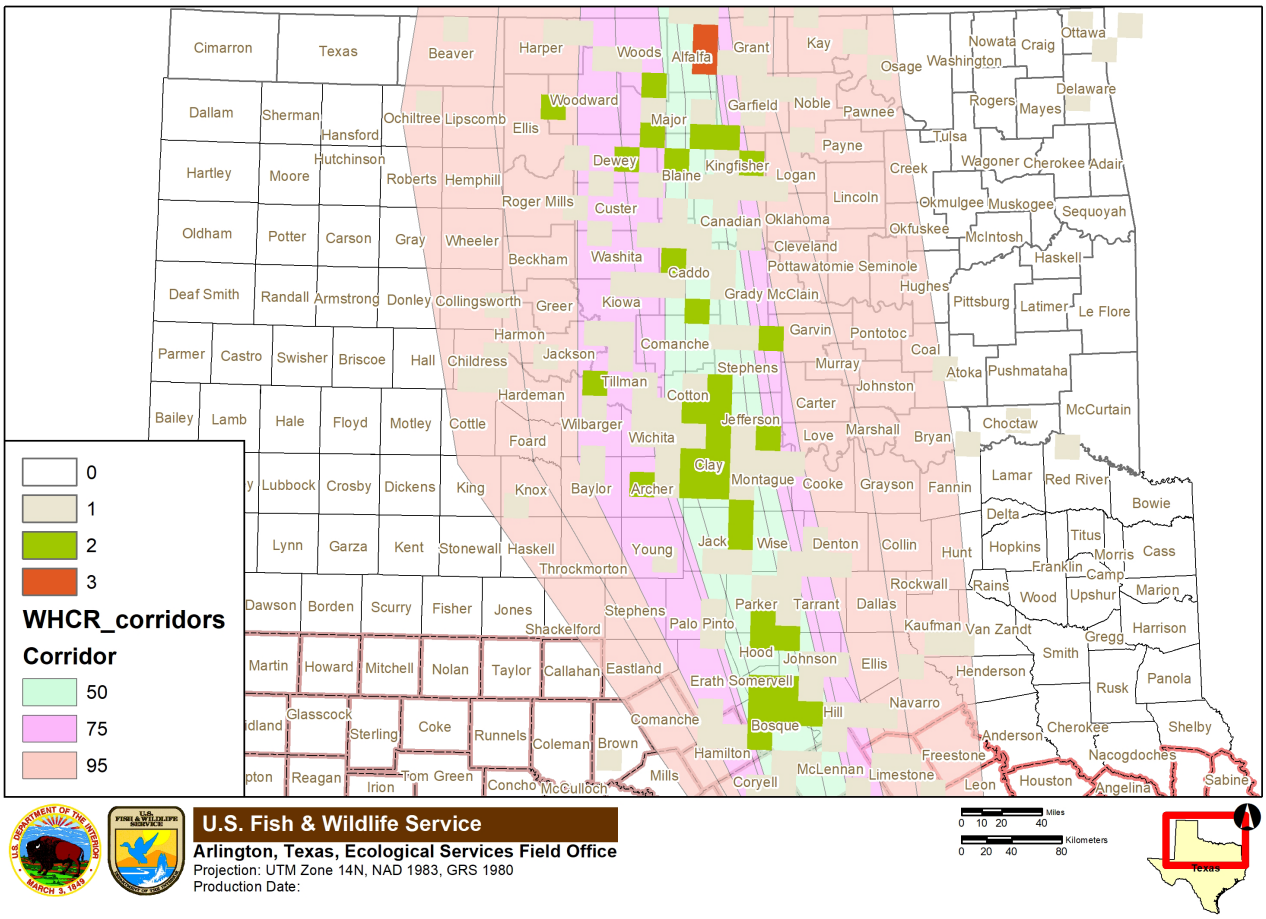


*Figure 1- Whooping crane migration corridor and probable stopover sites. Stopover value 1 = Low intensity, value 2 = Core intensity, value 3 = Extended-use core intensity.*