Presenters

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His background is focused on ornithology, habitat management, and wildlife monitoring.

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THE USE OF USACE RESERVOIRS AS STOP-OVER SITES FOR THE ARANSAS-WOOD BUFFALO POPULATION OF WHOOPING CRANE (WHCR)

Jacob Jung and Richard Fischer
Research Wildlife Biologists
U.S. Army Engineer R&D Center
Date: August 31, 2021

US Army Corps of Engineers®

WHOOPING CRANE INFORMATION

Federally Endangered

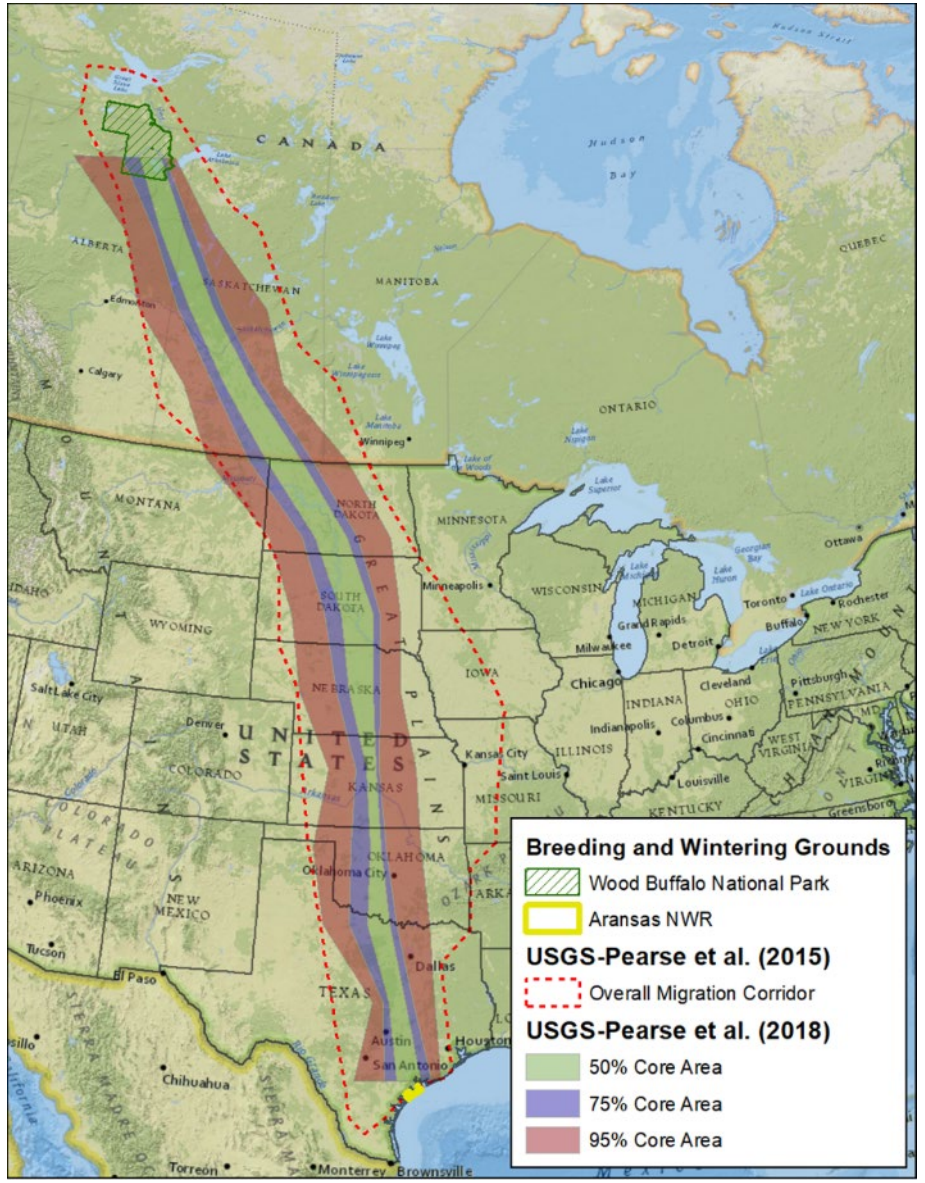
The Aransas-Wood Buffalo Population is only wild, migratory population

- Nests and rears young in Wood Buffalo National Park, Alberta and Northwest Territories, Canada
- Winters primarily at the USFWS Aransas National Wildlife Refuge on Gulf Coast of Texas
- Migrates 2,500 miles through 7 states in the midsection of the U.S. during fall and spring
- Population currently estimated at 504 individuals as of February 2020
- Population estimate not conducted in 2021

D. Severson/USFWS

WHOOPING CRANE MIGRATION

- Total migration length ~4,000 km (2,500 miles).
- Average ~250-300 km (150-200 mi) between stopovers
- Average 29 days to complete spring migration
- Average 45 days to complete fall migration



WHCR CONSERVATION EFFORTS

Friends of the Wild Whoopers (FOTWW)

- The USACE and FOTWW signed a Memorandum Of Understanding in 2018
- Purpose is to, “jointly support the creative and sustainable solutions to water resources challenges, and actively pursuing the protection, restoration, and enhancement of whooping crane habitat.”

MEMORANDUM OF UNDERSTANDING
BETWEEN
THE U.S. ARMY CORPS OF ENGINEERS
AND
FRIENDS OF THE WILD WHOOPERS

ARTICLE I - PURPOSE

This Memorandum of Understanding (MOU) is entered into by and between the U.S. Army Corps of Engineers (USACE) and the Friends of Wild Whoopers (FOTWW), collectively "the Parties," in jointly supporting the creative and sustainable solutions to water resources challenges, and actively pursuing the protection, restoration, and enhancement of whooping crane habitat, and the myriad species which rely on the habitat as well as habitat adjacent to facilities or lands under the control of the USACE or its Defense Department clients consistent with the USACE Civil Works, Regulatory, and Real Estate missions.

ARTICLE II - BACKGROUND

USACE provides national leadership in the development, management, conservation and restoration of the nation's water resources and provides real estate services for the agencies of the U.S. Department of Defense. The FOTWW is a charitable, 501(c)(3) non-profit organization established to preserve and protect the Aransas/Wood Buffalo population of wild whooping cranes, an Endangered Species Act listed endangered species. FOTWW assists federal agencies in undertaking and conducting such activities as will further the conservation and management of fish, wildlife, plants, and other natural resources. The FOTWW has an extensive and active network of conservation partnerships; a proven ability to invest and leverage federal and non-federal funds; and a unique position as a facilitator with other Federal agencies, as well as a variety of local, state, and non-governmental organizations. Both USACE and the FOTWW have worked successfully together on projects of significant mutual interest and value to the nation and want to continue this national partnership. In accordance with applicable laws, regulations, and Army polices, this MOU establishes a framework for continuing this partnership based on the following:

(1) Shared commitments to the management of water resources consistent with the need for sustainable land use, development, and conservation;

(2) Shared commitments to the value of working in partnerships, both public and private, and engaging communities and diverse stakeholders by identifying, understanding, and implementing projects to improve whooping crane habitat at USACE projects;

(3) Shared desire to exchange and disseminate conservation and environmental information related to whooping crane habitat including stop over, roosting, and wintering habitat.

Whooping Cranes at USACE Projects

29 November 2017

U.S. ARMY CORPS OF ENGINEERS **BUILDING STRONG®**

INFORMATION PAPER: Whooping Cranes

Whooping Cranes are a charismatic megafauna and a symbol of American conservation. Because of historical habitat loss and unregulated hunting, the Whooping Crane is now one of the most critically endangered species in North America. The species declined to around 20 wild birds in the 1940s. Currently the population is around 600 birds including throughout the migration corridor and the wintering grounds.

Importance of USACE to Whooping Cranes: USACE operates and maintains 101 water resources development projects within the migration range of the Aransas - Wood Buffalo population of whooping cranes. This population is the only self-sustaining, wild, migratory population of whooping cranes in the U.S. Our projects contain crucial stopover habitat used to refuel energy supplies of whooping cranes during their migration. Understanding the habitat that whooping cranes prefer and where these habitats exist at our projects can help guide management decisions and conservation efforts that can assist in recovery of this imperiled species. Working with Friends of the Wild Whoopers (FOTWW), a non-profit organization with a mission of recovering whooping cranes, will allow us to make better informed habitat management decisions.

Why an MOU? We are seeking to develop an MOU with FOTWW to help facilitate their efforts of habitat assessments at our projects. A national MOU is necessary due to the size of the current range (3 USACE Divisions) as well as the historic range (5 Divisions) of the whooping crane.

Benefits for USACE: Projects will receive free habitat assessment and reports documenting available habitat and potential habitat improvement projects. Project staff will be educated on the whooping crane and the habitat conservation efforts surrounding the species. In addition, proactive conservation efforts are looked upon favorably by regulatory agencies such as the U.S. Fish and Wildlife Service, and these actions can help facilitate Section 7 consultations involving USACE actions within the species' range. Furthermore, proactive conservation for whooping cranes and other species promotes the USACE as a leader in the conservation of our nation's precious natural resources.

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WHCR CONSERVATION EFFORTS

Friends of the Wild Whoopers (FOTWW)

Whitney Lake – Corps Of Engineers' Jewel For Whooping Cranes

June 1, 2018 by Admin

by Pam Bates, Friends of the Wild Whoopers

Whooping Crane "stopover habitats" are increasing in importance on Corps of Engineer lakes according to Friends of the Wild Whoopers (FOTWW). Chester McConnell, FOTWW's wildlife biologist explains that, "due to numerous land use changes on private lands, many wetlands and ponds that once served as Whooping Crane habitat are being drained and converted to other uses. So the large Corps of Engineer lakes are being used more and more by the cranes."

"Stopover Habitat" For Whooping Cranes On Corps Of Engineer Lakes And Military Bases

May 12, 2019 by Admin

May 12, 2019

by Pam Bates, Friends of the Wild Whoopers

Whooping Cranes are receiving significant awareness and interest about their habitat needs in Texas and other states. It's happening on Corps of Engineer (COE) lakes and military bases throughout Texas. Friends of the Wild Whoopers (FOTWW) have recently completed evaluations of potential Whooping Crane "stopover habitats" on four additional Corps lakes. This brings the total assessments in Texas to fifteen lakes on Corps property and two hundred and ninety-eight ponds of various sizes (1/2 ac. to 4 ac.) on seven military bases.

More Stopover Habitat For Whooping Cranes On Corps Of Engineer Lakes

August 5, 2019 by Admin

August 6, 2019
by Pam Bates, Friends of the Wild Whoopers

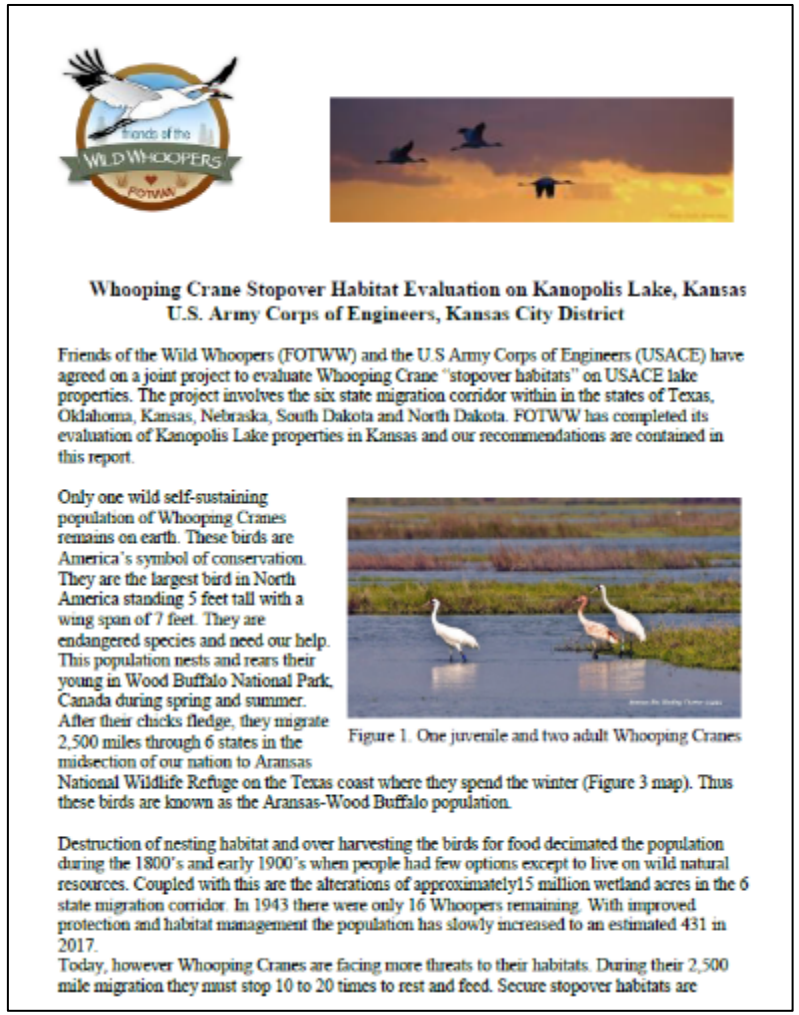
"Stopover habitat" for Whooping Cranes received another large boost this week. Friends of the Wild Whoopers (FOTWW) and their *Corps of Engineers* (COE) partners recently completed evaluations of potential Whooping Crane "stopover habitats" on four additional COE lakes. During the past two years there has been remarkable increasing awareness and interest about Whooping Crane "stopover habitat" needs throughout the seven state mid-continent migration corridor. FOTWW President Chester McConnell is thrilled and remarked, "It's about time".

WHCR CONSERVATION EFFORTS

Friends of the Wild Whoopers (FOTWW)

– FOTWW generates reports after each site visit
  - Identifies stopover habitat
  - Identifies ways to maintain and/or improve stopover habitat
  - Identifies areas where minor actions could be implemented to create potential stopover habitat

Figure 6. Excellent "stopover roost site" for Whooping Cranes. Number "1" points out the glide path for Whooping Cranes landing on lake shore. The site is clear of obstructions and provides a gradual slope into the shallow water. Horizontal visibility around the roost site is good. Number "2" points out the shallow water from 2 to 10 inches deep in roost area. Whoopers can feed on aquatic animal in the lake and forage on insects and grains in nearby fields.



Whooping Crane Stopover Habitat Evaluation on Kanopolis Lake, Kansas
U.S. Army Corps of Engineers, Kansas City District

Friends of the Wild Whoopers (FOTWW) and the U.S Army Corps of Engineers (USACE) have agreed on a joint project to evaluate Whooping Crane "stopover habitats" on USACE lake properties. The project involves the six state migration corridor within in the states of Texas, Oklahoma, Kansas, Nebraska, South Dakota and North Dakota. FOTWW has completed its evaluation of Kanopolis Lake properties in Kansas and our recommendations are contained in this report.

Only one wild self-sustaining population of Whooping Cranes remains on earth. These birds are America's symbol of conservation. They are the largest bird in North America standing 5 feet tall with a wing span of 7 feet. They are endangered species and need our help. This population nests and rears their young in Wood Buffalo National Park, Canada during spring and summer. After their chicks fledge, they migrate 2,500 miles through 6 states in the midsection of our nation to Aransas National Wildlife Refuge on the Texas coast where they spend the winter (Figure 3 map). Thus these birds are known as the Aransas-Wood Buffalo population.

Figure 1. One juvenile and two adult Whooping Cranes

Destruction of nesting habitat and over harvesting the birds for food decimated the population during the 1800's and early 1900's when people had few options except to live on wild natural resources. Coupled with this are the alterations of approximately15 million wetland acres in the 6 state migration corridor. In 1943 there were only 16 Whoopers remaining. With improved protection and habitat management the population has slowly increased to an estimated 431 in 2017.

Today, however Whooping Cranes are facing more threats to their habitats. During their 2,500 mile migration they must stop 10 to 20 times to rest and feed. Secure stopover habitats are

STOP-OVER ROOST SITE REQUIREMENTS (FOTWW)

- Lakes/small ponds/wetlands from 0.3 acres and larger in size
- Lakes/ponds/wetlands with some shallow areas 2 to 10 inches deep for roosting sites
- Flight glide path clear of obstructions for Whooping Cranes to land near roosting sites
- No thick bushes or trees in or near landing site
- Gradual or gentle slopes into lakes/ponds where water is shallow
- Little or no emergent or submerged vegetation in lake at roost areas
- Extensive horizontal visibility from roost site so predators can be detected
- 200 or more yards from human development or disturbance such as power lines
- Agricultural grain fields or pasture land within one mile of stopover site for foraging

THREATENED AND ENDANGERED SPECIES

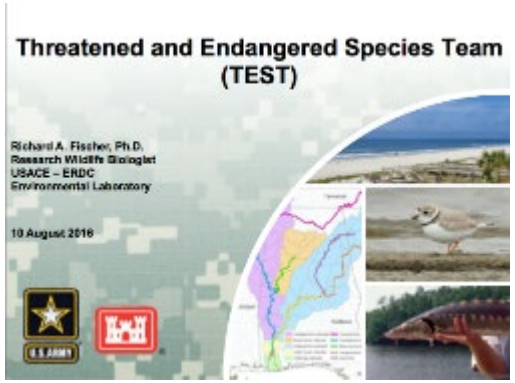
Threatened/Endangered species (TES) concerns currently exist for 300+ species at over 430 USACE projects. The ERDC has developed a formal strategy for reducing costs and operational impacts while promoting TES conservation.

Key Points:

USACE spends $230 million annually on TES

Significant impacts to navigation, hydropower, and coastal engineering

Using power of Endangered Species Act and partnerships for recovery



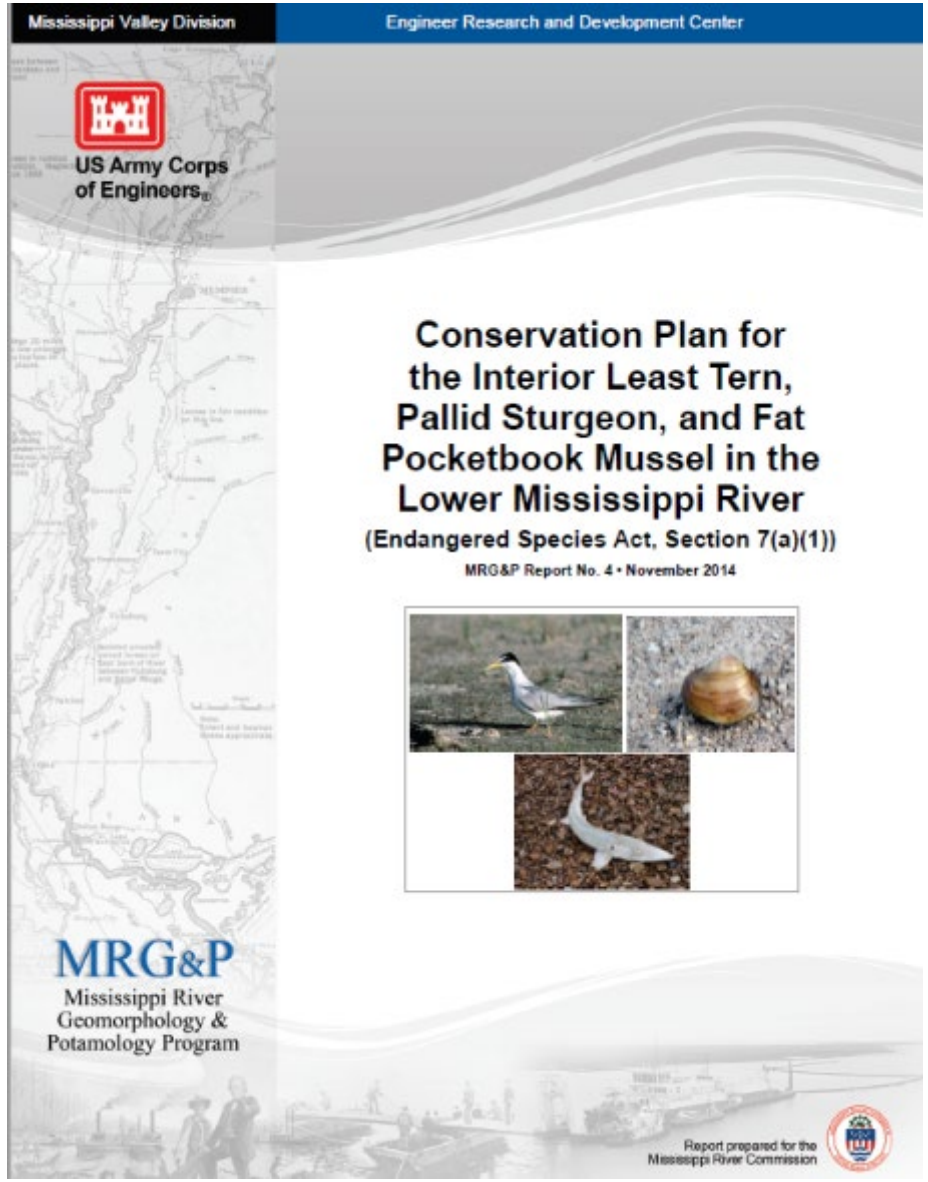
The ERDC TEST is developing solutions to priority TES issues that improves operational flexibility, reduces future costs, improves budget planning capabilities, reduces adverse impacts to mission execution, and improves species conservation outcomes (including Recovery)

SECTION 7(A)(1) OF THE ESA

- Section 7(a)(1) of the Endangered Species Act—Supporting Agency Missions through Proactive Conservation Planning and Endangered Species Recovery

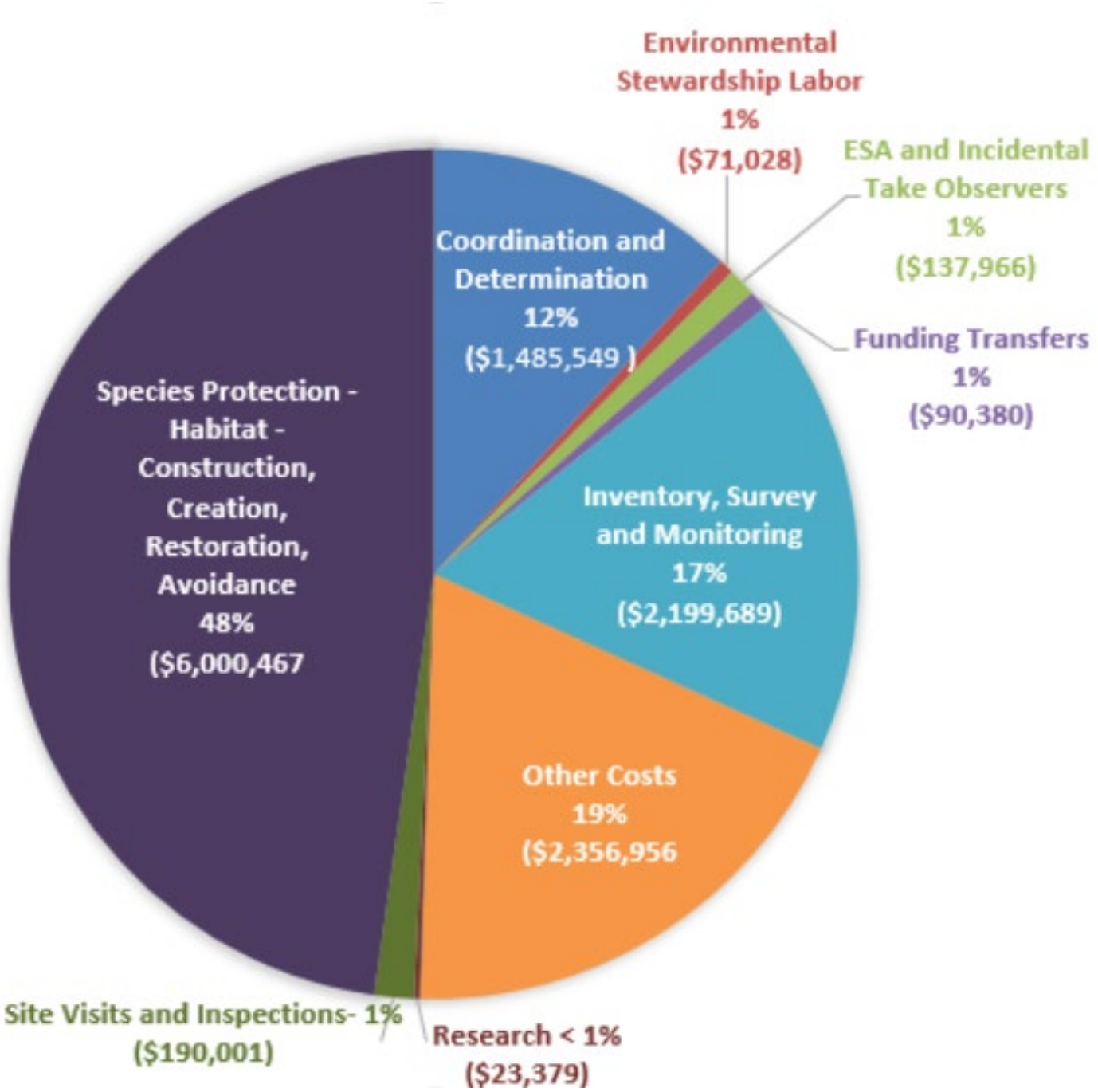
- 7(a)(1) conservation programs are to improve listed species baselines within the scope of Federal action agency authorities

- Section 7(a)(1) Conservation Plans
  - Formal agreement enables long-term management

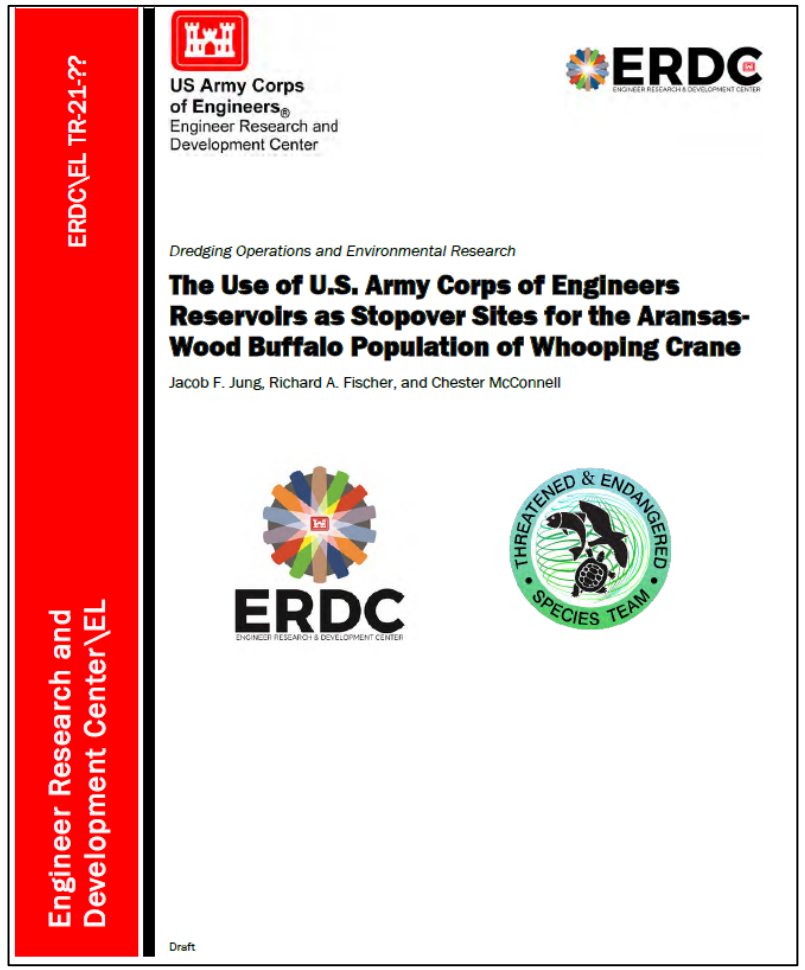


USACE WHCR EXPENDITURES 2005-2020

- Since 2005, the USACE has expended $12.5M on WHCR
- Nearly 50% of expenditures has gone to species protection, much of which is direct habitat management
- Less than 1% has gone to research, mainly the analyses from this publication. Need exists to tie habitat management and monitoring together through research efforts



STUDY DESCRIPTION



Authored by:

Jacob F. Jung and Richard A. Fischer
U.S. Army Engineer Research and Development Center-Environmental Laboratory (ERDC-EL)

Chester McConnell and Pam Bates, Friends of the Wild Whoopers (FOTWW)

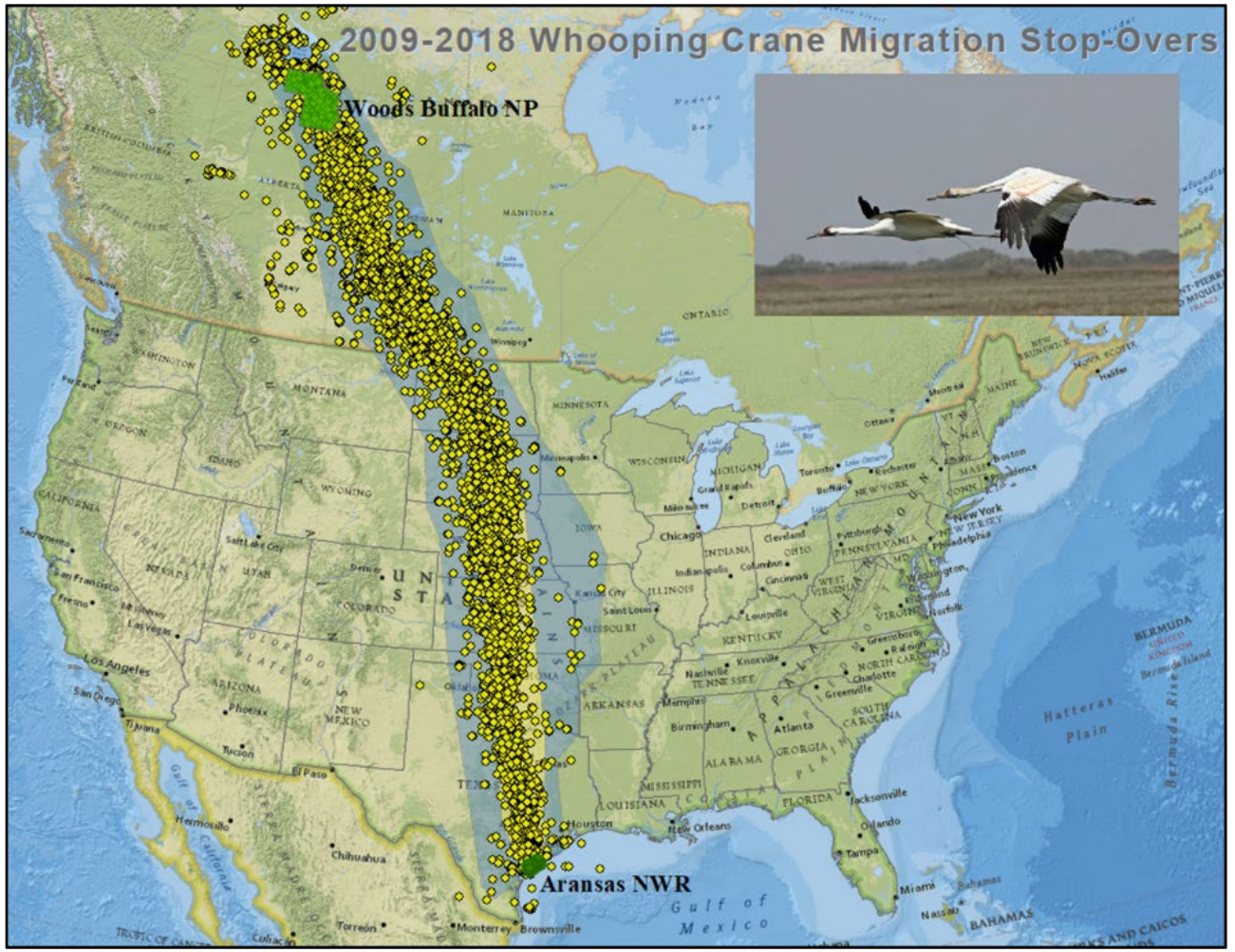
Objectives

- Identify which USACE reservoir lands and waters are used by WHCR for stopover habitat within the migratory corridor
- Describe relative use among the projects
- Identify key stopover sites
- Suggest a path forward for more detailed habitat assessments at key stopover sites
- Outline potential USACE commitments, in the context of ESA Section 7(a)(1), that promote conservation and recovery

DATA SOURCES

USGS Satellite Telemetry Study
- Primary source of data
- Conducted from 2009 to 2018
- Total number of WHCR in study- 68
  - Represents small, yet significant portion of wild population (504 WHCR as of winter 2020)
- Total number of observations- 165,541
- 2,128 records of WHCR within 1-mile of USACE reservoir boundary
- 1,800 directly within boundary of reservoir

Data collected from WHCR transmitters
- Bird identification
- Date, time, season
- Direction and speed of movement
- Altitude
- Coordinates of WHCR location



DATA SOURCES

USFWS-CWCTP

- Nebraska Ecological Services office maintains the Cooperative Whooping Crane Tracking Project (CWCTP) database
- Records from 1975-2019
- 326 of 3,433 records of WHCR locations recorded within one mile of the boundary of USACE reservoirs

USGS-BISON

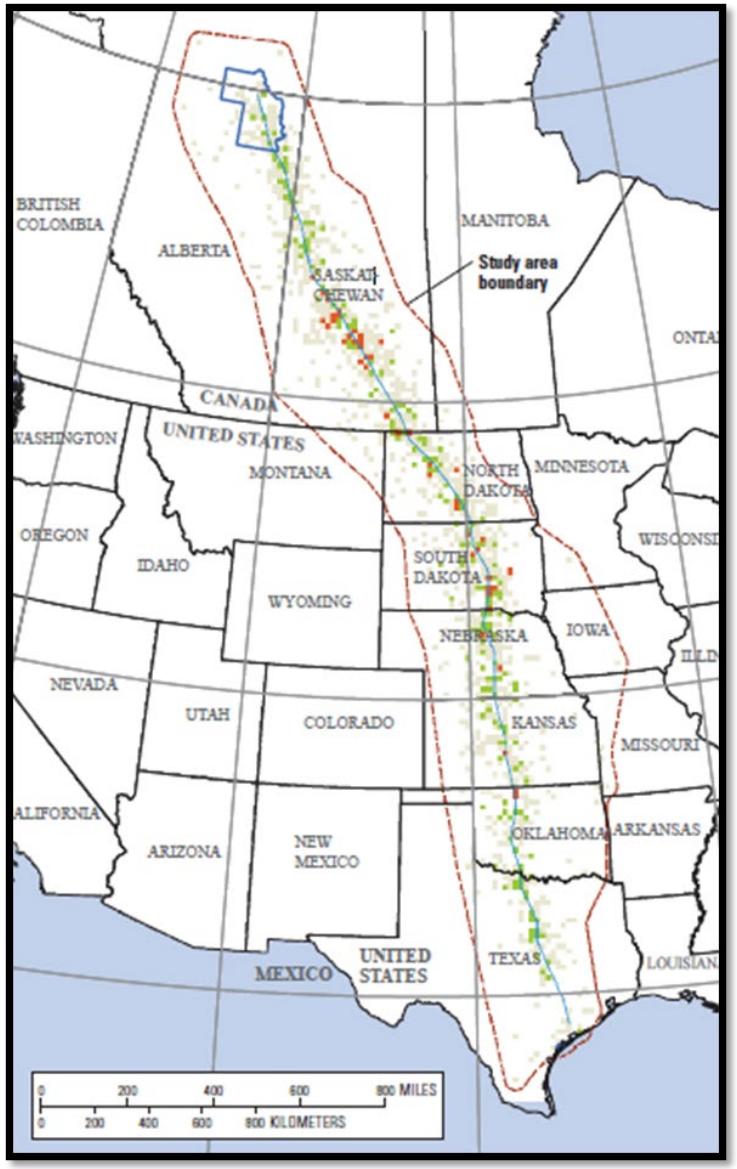
- USGS houses the Biodiversity Information Serving Our Nation (BISON)
- Web-based Federal mapping database for locations of species occurrence records.
- 332 of 6,174 records of WHCR locations recorded within one mile of the boundary of USACE reservoirs

Some records lack precise GPS location, but can still give general location

Years with Active Satellite Transmitters	# of WHCR with Active Satellite-transmitters	Winter Population Survey Season	Population Estimate during Winter[a]	Percentage of Marked WHCR within Population[d]
2009	2	-	-	-
2010	11	-	-	-
2011	35	2011/2012	254[b]	14%
2012	51	2012/2013	257[b]	20%
2013	39	2013/2014	304[b]	13%
2014	41	2014/2015	308[b]	13%
2015	29	2015/2016	329[b]/463[c]	6%
2016	14	2016/2017	431[b]/489[c]	3%
2017	11	2017/2018	505[c]	2%
2018	4	2018/2019	504[c]	1%

11 WHCR at Wilson Lake
Photo: Matt Beckman

MIGRATION CORRIDOR



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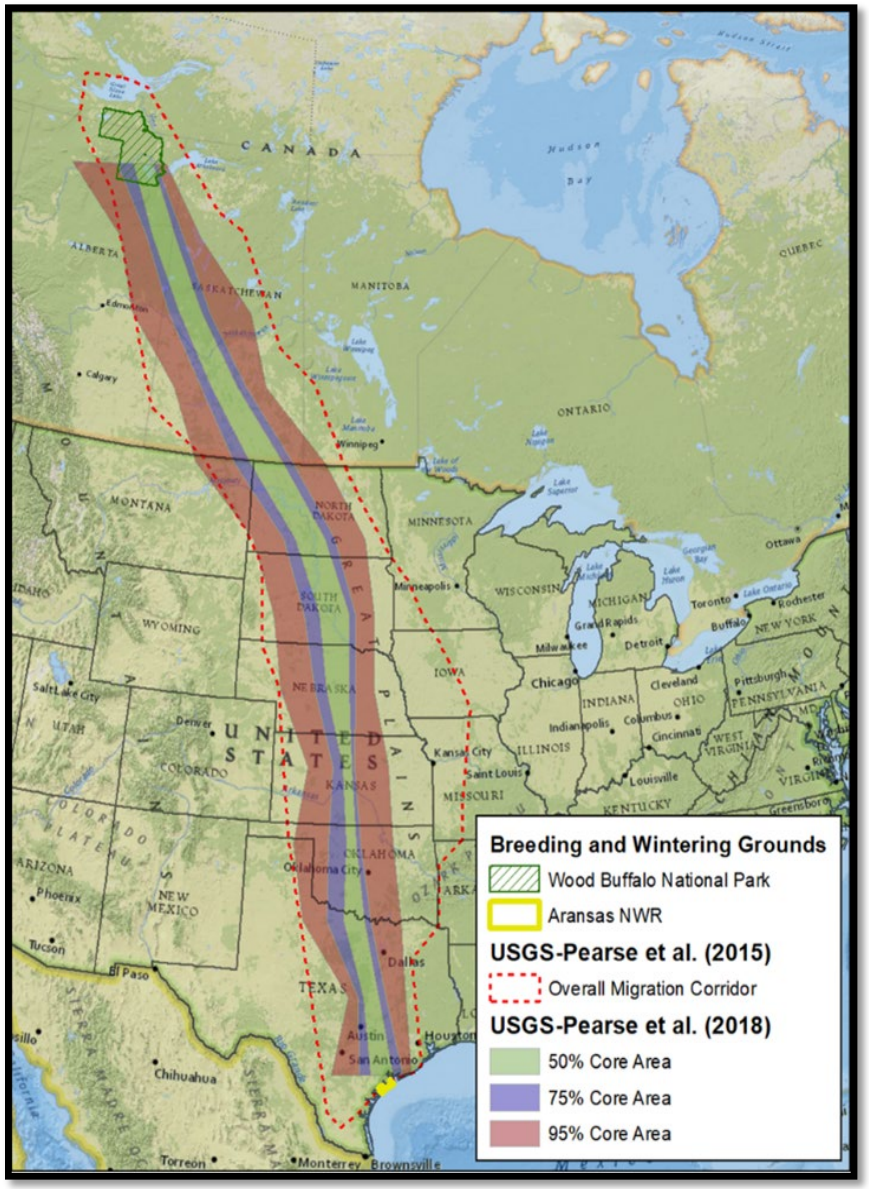

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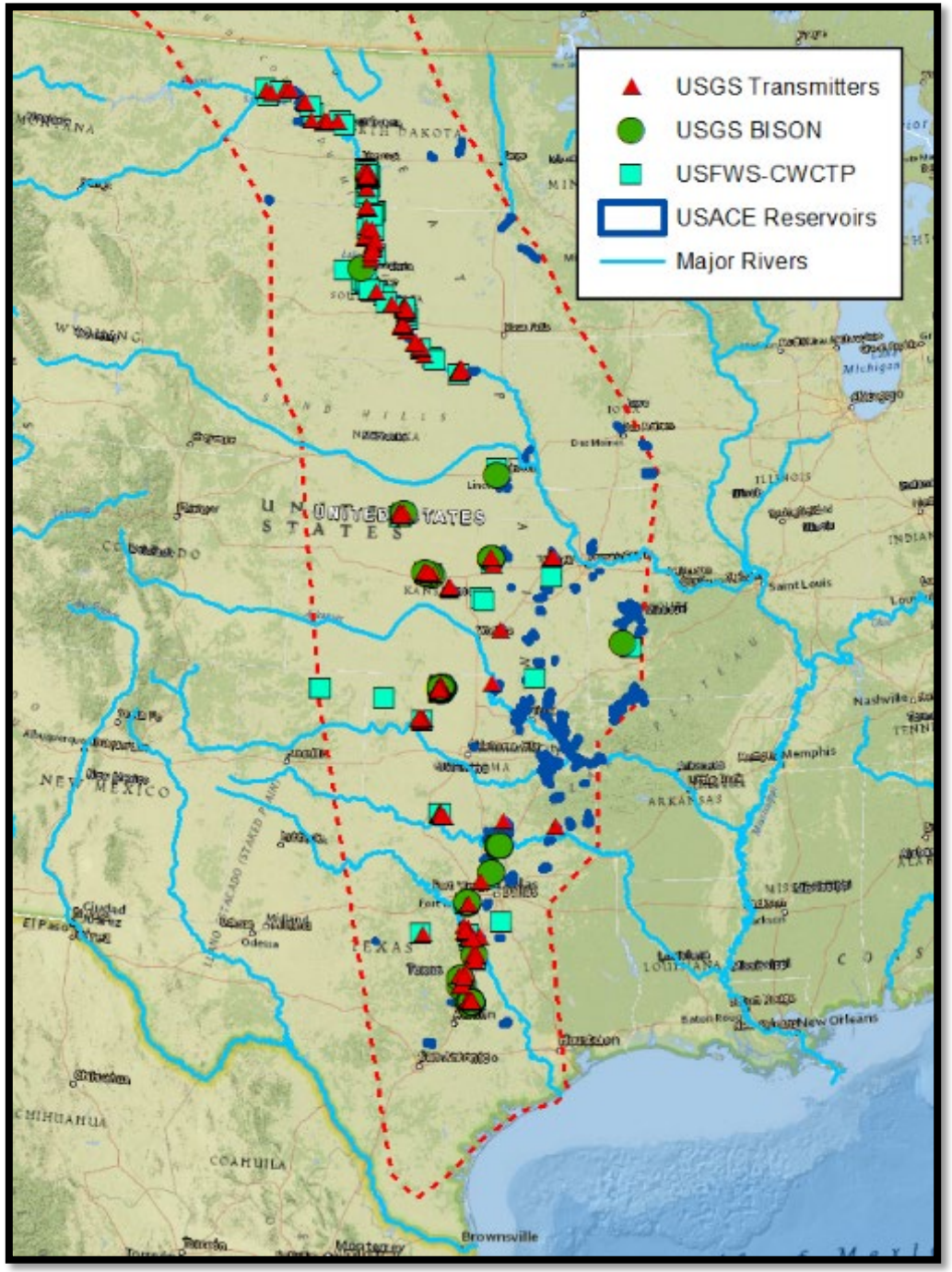
USACE Reservoirs
Major Rivers


USGS Transmitters
USGS BISON
USFWS-CWCTP
USACE Reservoirs
Major Rivers

OVERVIEW OF WHCR OBSERVATION DATA

Significant stopover habitat use was observed during spring and fall migration

– Much higher use of USACE reservoirs than previously known
  - Tracked individuals represent a subset of the population, thus actual use is likely even higher

– USACE reservoirs are important to WHCR life history by providing important stopover habitat

– One reservoir (Granger Lake, TX) also served as wintering habitat

WHOOPING CRANE USE OF USACE RESERVOIRS AS STOPOVER HABITAT WITHIN THE FLYWAY

Dataset	Overall Corridor (102)[a]		50% Core Area (14)[a]		75% Core Area (4)[a]		95% Core Area (21)[a]		Core Areas Combined (39)[a]	
	# of reservoirs observed as stopover	% of reservoirs with stopover	# of reservoirs observed as stopover	% of reservoirs with stopover	# of reservoirs observed as stopover	% of reservoirs with stopover	# of reservoirs observed as stopover	% of reservoirs with stopover	# of reservoirs observed as stopover	% of reservoirs with stopover
USGS Satellite	26	25%	14	100%	2	50%	8	38%	24	62%
USFWS-CWCTP	28	27%	12	86%	2	50%	8	38%	22	56%
USGS-BISON	14	14%	8	57%	1	25%	3	14%	12	31%
Datasets combined	36	35%	14	100%	2	50%	12	57%	28	72%

WHCR USE OF USACE RESERVOIRS

A total of 102 USACE reservoirs occur within the overall migration corridor

– WHCR observations occurred at 36 of 102 reservoirs (35%)

– 39 reservoirs are within core migration areas

  • Observations occurred at **28 of the 39** core migration area reservoirs

– Most frequented reservoirs within core zone included the 4 reservoirs along the Missouri River (Sakakawea, Oahe, Francis Case, and Lewis & Clark), as well as Lake Wilson, Great Salt Plains Lake, Waurika Lake, and Lake Whitney

Great Salt Plains Lake, OK may be the most critical of all USACE reservoirs, particularly during fall migration

– **Over half** of the USGS Satellite tracked WHCR (35) stopped at this project

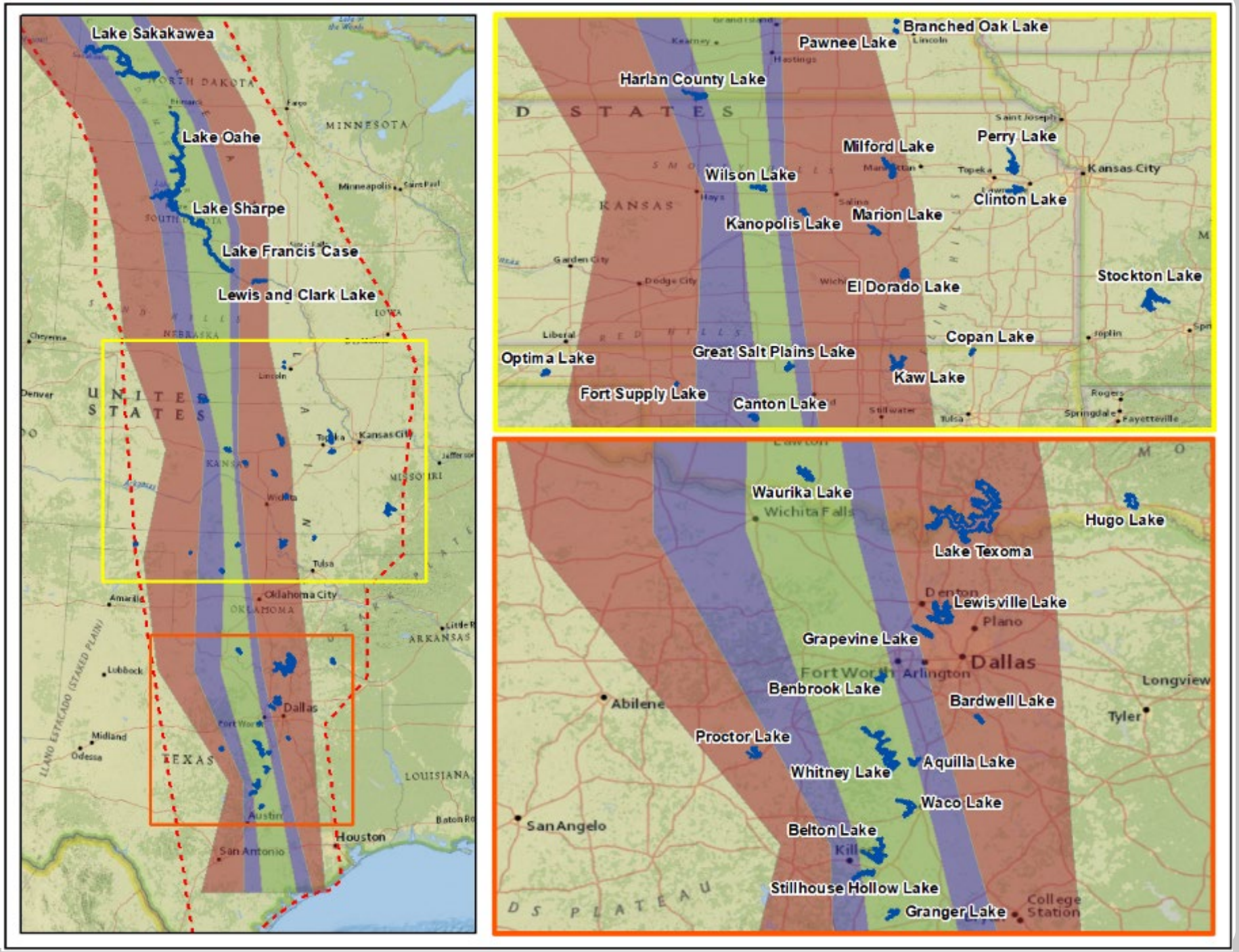
– Collectively **130 days** were spent at the reservoir from 2009-2018

Stopover events from satellite-tagged WHCR

- Tulsa District (72 events at 7 reservoirs)
- Omaha District (64 events at 5 reservoirs)
- Fort Worth District (57 events at 9 reservoirs)
- Kansas City District (24 events at 5 reservoirs)

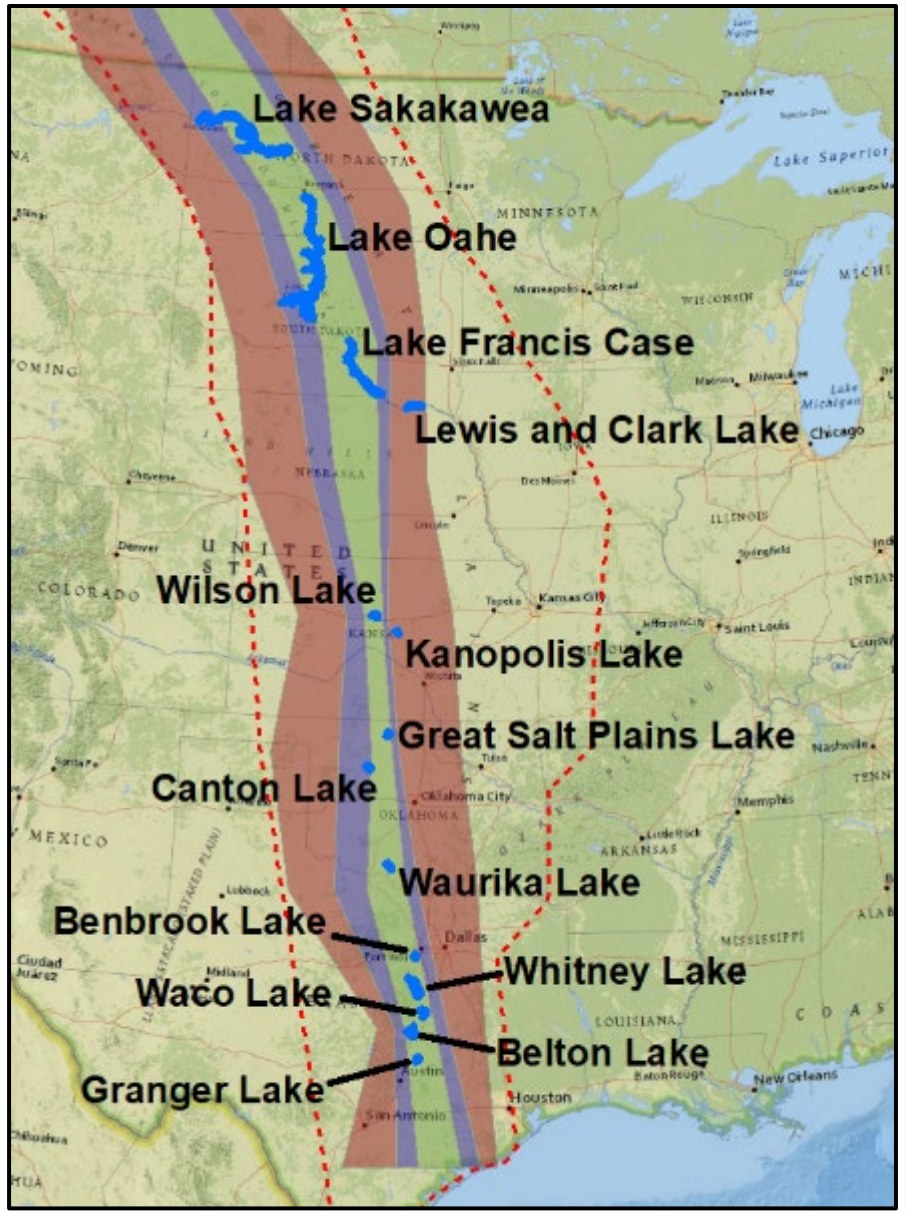
All reservoirs within 50% core migration area recorded stopovers

- Sakakawea, Oahe, Sharpe, Francis Case, Wilson, Great Salt Plains, Waurika, Benbrook, Whitney, Aquilla, Waco, Belton, Stillhouse Hollow, and Granger



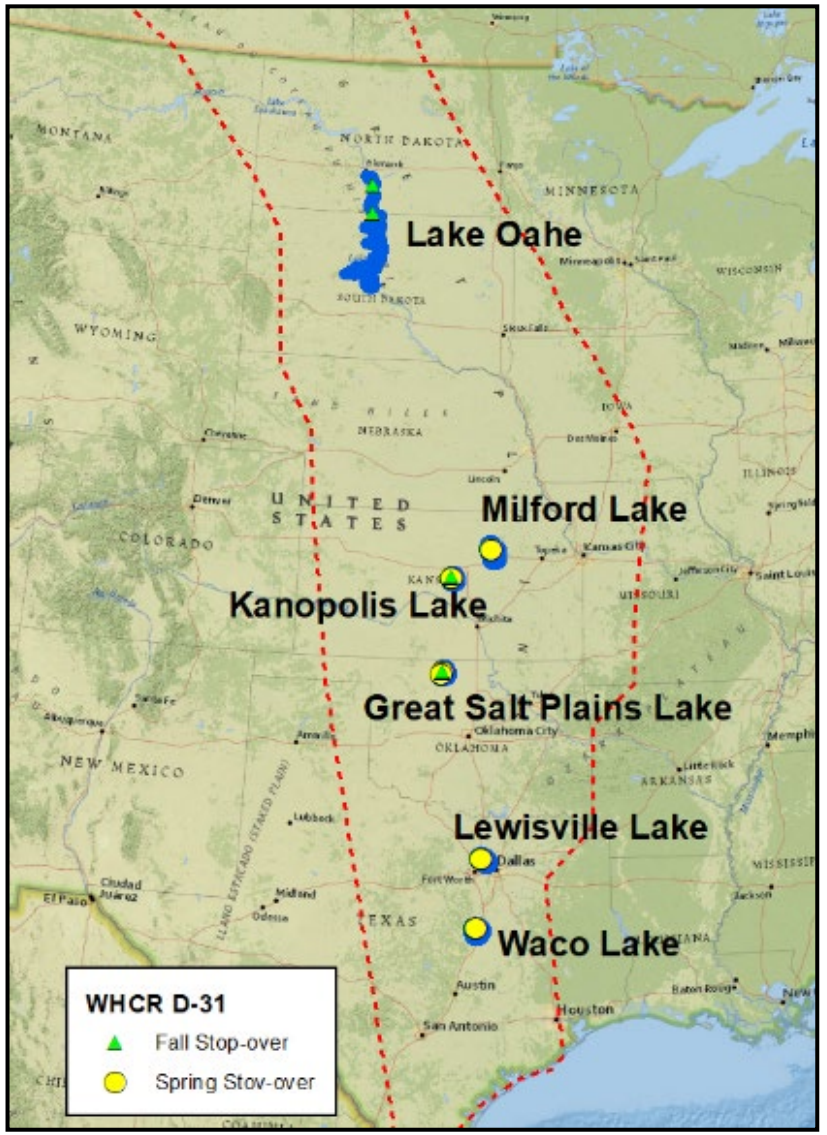
MAJOR STOP-OVER SITES AT USACE RESERVOIRS

USACE Reservoir	USACE District	Total Stop-over Events	# of Stopover Days	Average # of Stopover Days	Max # of Stopover Days	# of Stopover Nights
Lake Sakakawea	Omaha	11	25	2.27	11	14
Lake Oahe	Omaha	27	138	5.11	35	111
Lake Francis Case	Omaha	22	60	2.73	12	38
Lewis and Clark Lake	Omaha	2	50	25.00	49	48
Wilson Lake	Kansas City	11	16	1.45	2	5
Kanopolis Lake	Kansas City	5	26	5.20	19	21
Great Salt Plains Lake	Tulsa	51	130	2.55	14	79
Canton Lake	Tulsa	5	13	2.60	3	8
Waurika Lake	Tulsa	12	30	2.50	4	18
Benbrook Lake	Fort Worth	5	11	2.20	3	6
Whitney Lake	Fort Worth	27	53	1.96	5	26
Waco Lake	Fort Worth	6	9	1.50	2	3
Belton Lake	Fort Worth	7	12	1.71	2	5
Granger Lake	Fort Worth	7	291	41.57	106	284



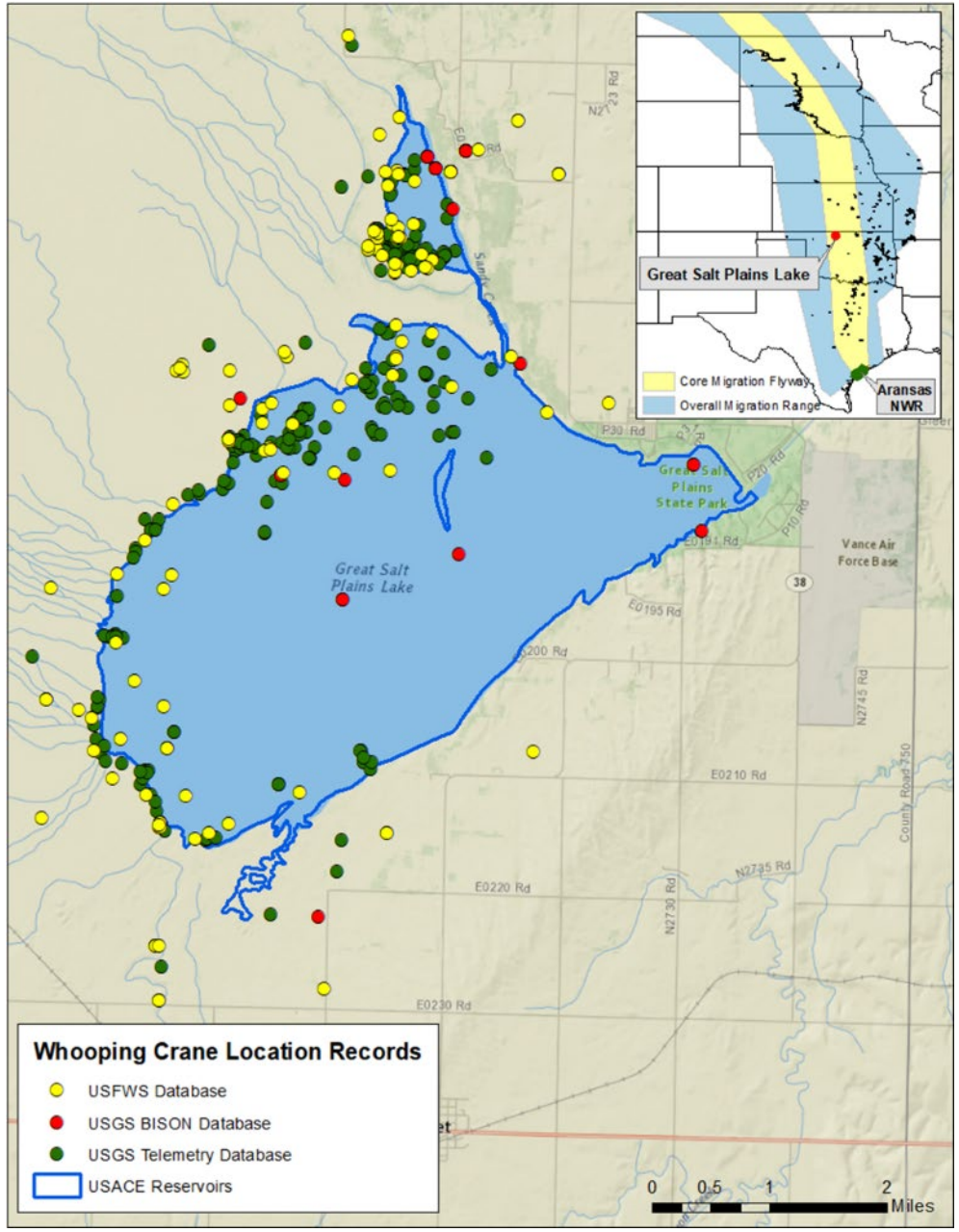
WHCR-D31

USACE Reservoir	Season	Sum of Stopover Days	Sum of Stopover Nights	# of Stopover Accounts Over Multiple Years	Average of Stopover Days	Average of Stopover Nights
Grapevine Lake						
	Spring Migration	2	1	1	2	1
Great Salt Plains Lake						
	Fall Migration	6	3	3	2	1
	Spring Migration	4	2	2	2	1
Kanopolis Lake						
	Fall Migration	22	19	3	7.3	6.3
	Spring Migration	2	1	1	2	1
Lake Oahe						
	Fall Migration	5	4	1	5	4
Milford Lake						
	Spring Migration	2	1	1	2	1
Waco Lake						
	Spring Migration	2	1	1	2	1
Total		45	32	13	3.46	2.46



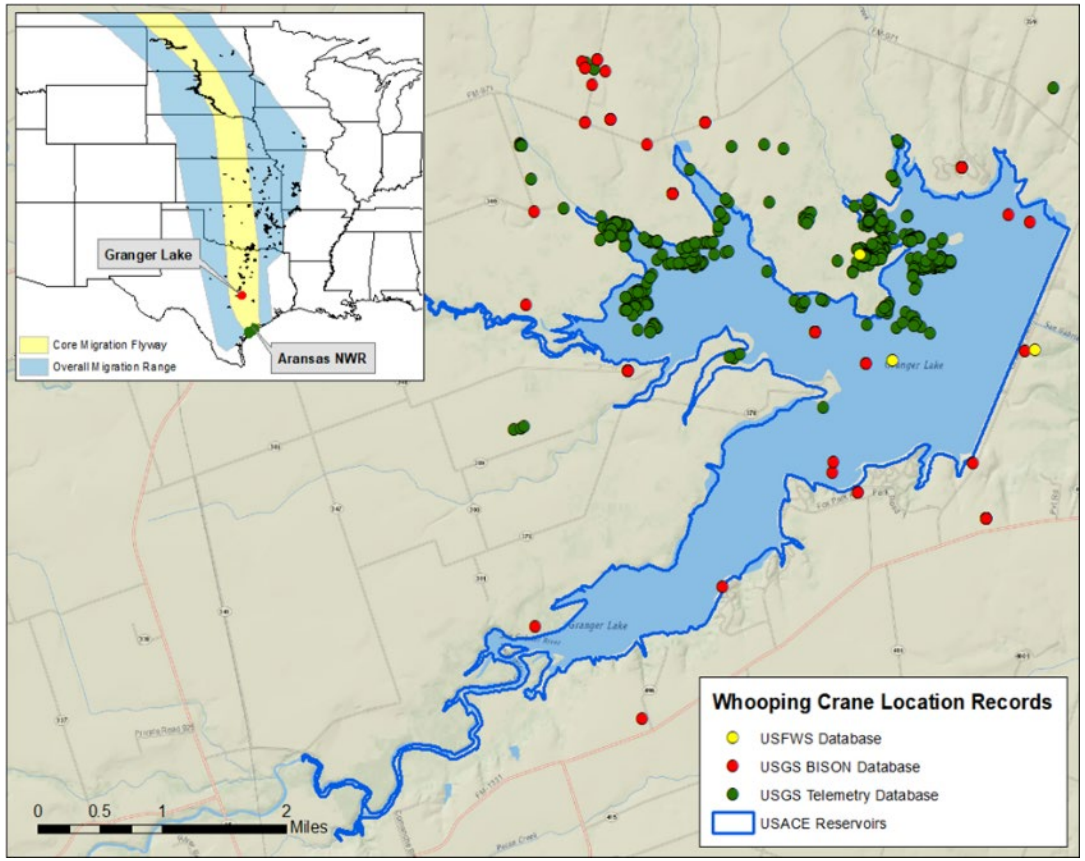
Great Salt Plains Lake

	Spring	Fall	All Seasons
# of Individuals	15	27	35
Total # of stopovers	17	34	51
Total # of stopover days	33	97	130
Total # of stopover nights	16	63	79
Avg # of stopover days	1.94	2.85	2.55
Avg # of stopover nights	0.94	1.85	1.55
Minimum stopover (days)	1	1	1
Maximum stopover (days)	3	14	14
Observation Range	Mar 5 to Apr 16	Oct 14 to Dec 7	



GRANGER LAKE, TX

	Spring	Fall	Winter	All Seasons
# of Individuals	1	1	3	5
Total # of stopovers	1	1	5	7
Total # of stopover days	1	2	288	291
Total # of stopover nights	0	1	283	284
Avg # of stopover days	1	2	57.6	41.57
Avg # of stopover nights	0	1	56.6	40.57
Minimum stopover (days)	1	2	2	1
Maximum stopover (days)	1	2	106	106
Observation Range	Apr 23	Nov 8-9	Nov 17-Mar 13	



NEXT STEPS

Continue to monitor for WHCR at USACE reservoirs

Continue working with Friends of the Wild Whoopers (FOTWW) to evaluate conditions at USACE reservoirs

– Emphasis on action at reservoirs within 50% core of migration corridor where every USACE reservoir was observed to be used as stopover habitat

Utilize study information...

– To develop a USACE 7(a)(1) conservation plan for WHCR
  - Goal is to improve future ESA Section 7 consultation involving WHCR, and to promote future operational flexibility

– To update project Operational Management Plans to include actions that may assist in WHCR recovery

– Implement and/or develop management plans for reservoirs with significant stopover use by WHCR
  - Emphasis on action at reservoirs within 50% core of migration corridor

– This work will support the goals of the International Whooping Crane Recovery Plan

FUTURE TRACKING EFFORTS

- Efforts underway between the U.S. and Canadian partners to implement additional satellite transmitters on Whooping Cranes
- Great opportunity to document successes of habitat management as stopover sites with additional telemetry data for Whooping Cranes
- Currently ERDC has a proposal with the USGS to further study WHCR use at reservoirs with a focus on Corps projects serving as drought refugia
- Seeking assistance from local project managers with hydrology/lake level management/bathymetry data
- Collaboration with any projects on WHCR including efforts towards Section 7(a)(1)

Dave Brandt (USGS) holds WHCR prior to attaching satellite transmitter

ACKNOWLEDGEMENTS

USGS science for a changing world

U.S. FISH & WILDLIFE SERVICE
DEPARTMENT OF THE INTERIOR

friends of the WILD WHOOPERS FOTWW

CRANE TRUST

Platte River Recovery Implementation Program

SERVICE CANADIEN DE LA FAUNE
CANADIAN WILDLIFE SERVICE

US Army Corps of Engineers

QUESTIONS?

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