EASTERN CRANE BULLETIN

June 2019

The Eastern Crane E-bulletin is distributed to those interested in cranes in general, and specifically, the Eastern Populations of Sandhill and Whooping Cranes, as well as the continuing work for the protection of these birds and their habitats.

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John James Audubon's wild Whooper observations

Editor's note: *[Excerpts from Audubon Society.org] John James Audubon (1785-1851) was not the first person to attempt to paint and describe all the birds of America (Alexander Wilson has that distinction), but for half a century he was North America's foremost wildlife artist. He was a keen observer of birds and nature. Like his peers, he was an avid hunter, and he also had a deep appreciation and concern for conservation; in his later writings he sounded the alarm about destruction of birds and habitats.*

George Bird Grinnell, one of the founders in the late 1800s of the early Audubon Society, knowing of Audubon's reputation, chose him as the inspiration for the organization's earliest work to protect birds and their habitats. Today, the name Audubon remains synonymous with birds and bird conservation all over the world.

Audubon's notes indicate that he had observed Whooping Cranes in 1810 – which would have been early in his painting career. However, he incorrectly identified Sandhill Cranes as young Whooping Cranes, a detail that should be considered when reading his notes on Whooping Crane distribution. His report of cranes roosting in trees is questionable as well. Nevertheless, Audubon's reports do document that Whooping Cranes once nested in open marshes from Illinois to North Dakota and southward to the Louisiana coast. Unfortunately, westward expansion also meant an influx of settlers, and with that came widespread draining of wetlands to make way for farmland. As the landscape changed, the cranes dependent on the wetland habitat disappeared too.

The following excerpts are from Audubon's notes.

> "The Whooping Crane reaches the Western Country about the middle of October, or the beginning of November, in flocks of twenty or thirty individuals, sometimes of twice or thrice that number; the young by themselves, but closely followed by their parents. They spread from Illinois over Kentucky, and all the intermediate States, until they reach the Carolinas on the southern coast, the Floridas, Louisiana, and the countries bordering on Mexico, in all of which they spend the winter, seldom returning northward until about the middle of April, or towards the beginning of May. They are seen on the edges of large ponds supplied with rank herbage, on fields or savannahs, now in swampy woods, and again on extensive marshes. The interior of the country, and the neighbourhood of the sea shores, suit them equally well, so long as the temperature is sufficiently high.
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> … towards the approach of spring, when they are ready to depart for their breeding grounds, the voice of one will startle and urge to flight all within a mile of the spot. When this happens, all the

birds around join into a great flock, gradually rise in a spiral manner, ascend to a vast height, and sail off in a straight course.

I had, in 1810, the gratification of taking Alexander Wilson to some ponds within a few miles of Louisville [Kentucky], and of shewing him many birds of this species, of which he had not previously seen any other than stuffed specimens. I told him that the white birds were the adults, and that the grey ones were the young. Wilson, in his article on the Whooping Crane, has alluded to this, but, as on other occasions, has not informed his readers whence the information came. …

…I had so fair an opportunity that I could not resist the temptation, especially as several of the birds had their necks so close together that I felt confident I must kill more than one of them. Accordingly, just as their last croaking notes were heard, and I saw them preparing to set to work again, I fired. Only two flew up, to my surprise. They came down the pond towards me, and my next shot brought them to the ground. On walking to the hole, I found that I had disabled seven in all.

…While in the Floridas, I saw only a few of these birds alive, but many which had been shot by the Spaniards and Indians, for the sake of their flesh and beautiful feathers, of which latter they make fans and fly-brushes.…

…The young are considerably more numerous than the old white birds; and this circumstance has probably led to the belief among naturalists that the former constitute a distinct species, to which the name of Canada Crane, Grus canadensis, has been given.…

…According to circumstances, this species roosts either on the ground or on high trees. In the latter case, they leave their feeding-ground about an hour before sun-set, and going off in silence, proceed towards the interior of high land forests, where they alight on the largest branches of lofty trees, six or seven settling on the same branch. For half an hour or so, they usually dress their plumage, standing erect: but afterwards they crouch in the manner of Wild Turkeys.…

…These cries… I have heard at the distance of three miles, at the approach of spring, when the males were paying their addresses to the females, or fighting among themselves. They may be in some degree represented by the syllables kewrr, kewrr, kewrooh…

…From Texas to North Carolina during autumn and winter, and across to the Rocky Mountains. Breeds from Upper California northward to the Arctic regions, from which it removes southward early in autumn. Abundant in Georgia and Florida, and from thence to Texas. …

…The trachea of this bird confirms my opinion that the Canada Crane and the Whooping Crane are merely the same species in different states of plumage, or in other words, at different ages; and, in truth, the differences are not greater than those exhibited by many other birds, both aquatic and terrestrial.…

…I have never had the satisfaction of finding any of the breeding-places of the Whooping Crane; but I well know that many birds breed long before they have attained their full plumage.…

…The young after its first autumnal moult has the sides of the head feathered behind the eye, and beneath to the base of the lower mandible; the curved secondaries and their coverts are tapering and elongated, but not nearly so much developed as in the old birds. The skin of the head is red; the bill brownish-black, as are the feet. Chin and sides of the head greyish-white. The plumage generally is bluish-grey, but the feathers are largely tipped and margined with yellowish-brown; the primary quills and their coverts dark brown towards the end, but with brownish-white shafts; the abdomen pure greyish-blue.

As the bird advances in age, the yellowish-brown disappears, and the general colour of the plumage becomes pure bluish-grey, which ultimately changes to white. …"

To read Audubon's report about the "Hooping Crane" (and Sandhills) and to see his painting of an adult Whooping Crane (Plate 226), drawn while in New Orleans, go here: https://www.audubon.org/birds-of-america/hooping-crane-0

Also identified as "Hooping Crane," is Audubon's painting of a Sandhill Crane (Plate 261) titled; "Young. Interior of the Floridas with sand Hills in [background]," to see it go here: https://www.audubon.org/birds-of-america/hooping-crane

(Left above) Painting of an adult Whooping Crane (Plate 226), drawn while in New Orleans; (right above) Audubon's painting of a Sandhill Crane (Plate 261) titled; "Hooping Crane," Young. Interior of the Floridas with sand Hills (in the background).

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Eastern Migratory Population of WHOOPERS

Whooping Crane egg scorecard

"A tradition at the International Crane Foundation is to follow our "Egg Scorecard," which tracks the Whooping Crane eggs from our captive flock and wild nests in Wisconsin. Each crane is identified by a two-part number (e.g. 12-11), with the second number identifying the hatch year. A "W" indicates that the crane hatched in the wild.
https://www.savingcranes.org/whooping-crane-egg-scorecard/

"We'll be posting updates to our scorecard on our website, Facebook, Twitter and Instagram, so check back often in the coming weeks to view our progress." Click here *to learn more about Whooping Cranes*.

Eastern Migratory Population, Whooping Crane Update – May 1, 2019

In the last month adult Whooping Cranes have been nesting and young cranes have been doing a bit of wandering. A huge thank-you to the staff of the Fish and Wildlife Service, the Departments of Natural

Resources of flyway states, the International Crane Foundation, and all of the volunteers who help us keep track of the cranes throughout the year. We appreciate your contribution to the recovery of the Whooping Crane Eastern Migratory Population. *This report is produced by the International Crane Foundation for the Whooping Crane Eastern Partnership.*

Population Estimate
The current estimated population size is 100 (45 F, 52 M, 3 U). To the best of our knowledge, as of 1 May at least 77 Whooping Cranes are back in Wisconsin, 1 was last reported in Iowa, 4 are in Michigan, and 1 is in Ontario Canada (**Update**: #39-17 was shot and killed on May 5, 2019, while on Barrie Island. See story below under General News - Canada). The remaining birds' locations have not been confirmed in the last month. *Click here for a distribution map, or click here to view the Whooping Crane Eastern Partnership interactive "Where are the Whoopers?" map for more details.*

Reproduction
As of 1 May, we have had at least 25 first nests. At least 3 nests have failed due to unknown causes, however we suspect a snow storm was the cause for one nest's failure. Ten nests from Necedah National Wildlife Refuge had eggs pulled during black fly emergence to encourage cranes to re-nest after black flies were off the landscape. Eggs from these nests were brought into captivity to be reared and released back into the wild. Currently we have 12 active nests, some of which may hatch still this week.

For distribution and population estimates of the 2017 and 2018 Wild-hatched cranes, 2017 and 2018 Parent-Reared Cohorts, 2017 Costume-Reared Cohort and mortality, and to see a map of current Whooper locations, go here:
https://www.savingcranes.org/whooping-crane-eastern-population-update-may-2019/

To learn more about the individual cranes in the eastern population, go here:
http://operationmigration.org/InTheField/emp-whooping-crane-biographies/

Where are the Whoopers?
To view the Whooping Crane Eastern Partnership interactive map of the last known location of cranes in the Eastern Migratory Population, go here: http://map.bringbackthecranes.org

Data courtesy of the International Crane Foundation *for the* Whooping Crane Eastern Partnership (WCEP)

***UL= ultralight** (Chicks were captive-hatched, then raised by costumed handlers and taught to follow an ultralight for their first migration to Florida); **DAR= Direct Autumn Release** (Chicks are captive-hatched then released in the fall in the company of adult cranes from whom they will learn the migration route); **PR=Parent Reared** (chicks are captive-hatched and raised by captive Whooping Cranes, then released near a wild crane pair in hopes the pair will "adopt" the juvenile and lead it on migration); **W=wild hatched** to a wild Whooping Crane pair that then teach the migration route to the juvenile.*

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Aransas-Wood Buffalo WHOOPERS

How exactly does FOTWW help the Whoopers?

For over three years Friends of the Wild Whoopers (FOTWW), has continued its mission to protect and help manage "stopover habitat" for the Aransas-Wood Buffalo population of Whooping Cranes. Stopover habitat locations are found all along the 2,500-mile-long migration corridor between the coastal Aransas National Wildlife Refuge, Texas and Wood Buffalo National Park in Canada.

With very little outside funding assistance, FOTWW decided to work with government agencies (U.S. Army Corps of Engineers and military bases) and Indian tribes that already owned thousands of acres of land distributed along the migration corridor from North Dakota to Texas. Chester McConnell, FOTWW's wildlife biologist said that 85 percent of his working time is spent traveling to meet with government land

managers and Indian tribe natural resource managers. He instructs them on the needs of endangered Whooping Cranes and importantly, he evaluates their wetland habitats and prepares management plans to guide them to successfully manage their "stopover habitats".

FOTWW has recently completed evaluations of potential Whooping Crane "stopover habitats" on four additional Corps lakes in Texas. 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.

To read more about the work being done by FOTWW, go here:
https://friendsofthewildwhoopers.org/stopover-habitat-for-whooping-cranes-on-corps-of-engineer-lakes-and-military-bases/

Drought and migration Q&A

According to the International Crane Foundation's Q&A, the North American Drought Monitor (NADM) is a cooperative effort between drought experts in Canada, Mexico and the United States to monitor drought across the continent on an ongoing basis, blending science and art. There is no one 'correct' way to measure drought. Drought indices are used to detect and measure droughts, but different indices measure drought in different ways, and no single index works under all circumstances (Heim, 2002). So, the Drought Monitor concept was developed (jointly by the National Weather Service, the National Drought Mitigation Center and the US Department of Agriculture's Joint Agricultural Weather Facility in the late 1990s) as a process that synthesizes multiple indices, outlooks and local impacts, into an assessment that best represents current drought conditions. The final outcome of each Drought Monitor is a consensus of federal, state and academic scientists.

As the Aransas-Wood Buffalo population of Whooping Cranes make their annual journey north, the Texas team analyzes the drought conditions along the crane's migration route. Dependent on where drought is encountered along the route, the negative effects felt by the cranes can range from the lack of access to fresh drinking water, food resources, safe roosting sites and, ultimately, on their breeding grounds at Wood Buffalo National Park, cause for the cranes to move outside preferred nesting territories resulting with fewer nesting sites to be built.

For a map illustrating the migration route overlaying the most recent available drought map, go here:
https://www.savingcranes.org/wp-content/uploads/2019/05/north_american_drought_monitor_migration_route_original-1.jpg

- **Stars** – The starred regions on the map indicate designated critical habitat areas numbered as follows:
  - Aransas National Wildlife Refuge in Texas
  - Salt Plains National Wildlife Refuge in Oklahoma
  - Quivira National Wildlife Refuge and Cheyenne Bottoms in Kansas
  - Central Platte River in Nebraska

- **Circle** – The single black circle on the map represents one of the most northern locations where recreational birders have viewed migrating Whooping Cranes with photo verification. At the time of publishing, the birds were viewed last at this location on April 12, 2019. This area currently is not under any drought conditions.

To read the full Q&A, go here:
https://www.savingcranes.org/whooping-crane-migration-drought/

For more information about the North American Drought Monitor (NADM), and to see additional maps and statistics, go here to the NADM supplemental website:
https://droughtmonitor.unl.edu/nadm/Home.aspx

Back home again at Wood Buffalo National Park

According to Rhona Kindopp, Manager of Resource Conservation, Parks Canada the first Whooping Cranes arrived in late April at their breeding grounds in Wood Buffalo National Park (WBNP). Signals were also picked up from North and South Dakota, Kansas, Texas, and central Saskatchewan from 12 Whooping Cranes marked with transmitters indicating that while the flock was spread out along the Central Flyway the birds were heading to WBNP.

Whooping Cranes usually arrive at WBNP during late April and May after migrating 2,500 miles from Aransas National Wildlife Refuge area on the Texas coast. Each nesting pair locates their nesting site which is normally in the same general area as past years. Park records show that several pairs have nested in the same areas for 22 consecutive years. Soon after their arrival on their nesting grounds, they build their nest. Nesting territories of breeding pairs vary in size but average about 1,500 acres. Eggs are usually laid in late April to mid-May.

As of late April 2019, the majority of the flock was still migrating north. Parks Canada requests that any Whooping Cranes sightings be reported by contacting the Park Office at 867-872-7960.

To read more about the Wood Buffalo NP nesting, go here:
https://friendsofthewildwhoopers.org/spring-whooping-cranes-arrive-wood-buffalo/

Species Profile: Whooping Crane (Species at Risk Act (SARA) - Endangered
https://wildlife-species.canada.ca/species-risk-registry/species/speciesDetails_e.cfm?sid=34

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General News

Alabama:

Alabama joins Kentucky and Tennessee in hunting Greater Sandhill Cranes

Editor's note: *The following excerpt is from the Federal Register announcing the Alabama 3-year experimental Sandhill Crane hunting season to begin this year.*

16160 Federal Register/Vol. 84, No. 74/Wednesday, April 17, 2019/Proposed Rules

9. Sandhill Cranes
Council Recommendations: The Mississippi Flyway Council recommended that Alabama be allowed a 3-year experimental sandhill crane hunting season beginning in 2019, consistent with the guidelines in the Eastern Population of Sandhill Cranes Management Plan (EP Plan). The experimental season would include up to 60 days and 1,200 harvest tags.

Service Response: We agree with the Mississippi Flyway Council's recommendation to establish an experimental season in Alabama. A management plan for the Eastern Population of sandhill cranes was approved by the Atlantic and Mississippi Flyway Councils in 2010. The plan contained provisions and guidelines for establishing hunting seasons in the Mississippi and Atlantic Flyway States if the fall population was above a minimum threshold of 30,000 cranes. The management plan also set an overall harvest objective of no more than 10 percent of the 5-year average peak population estimate for each State. Alabama's 5-year average peak count is 14,104 cranes, setting the State's maximum allowable harvest under the plan at 1,410 birds. Alabama's proposal for an experimental season of 1,200 tags meets this provision. Further, Alabama's experimental season would limit the number of crane hunters to 400 (with each getting 3 harvest tags).

The Council further notes that the management plan has the following thresholds for permit allocation among the States:

- When the 3-year fall survey average is ≥30,000, maximum permit allocation will be 10 percent of the 3-year fall survey average; and
- When the 3-year fall survey average is >60,000, the maximum permit allocation will be 12 percent of the 3- year fall survey average.

The latest fall survey 3-year average the Eastern Population of sandhill cranes is 91,250 cranes, which would allow a maximum harvest of up to 10,950 cranes under the current management plan. Currently, only Kentucky, Tennessee, and now Alabama have sandhill crane seasons. Including this new proposal for Alabama, the combined number of allowed harvest permits in the Flyway would be 5,424 permits, well below the maximum allowed. Thus, we support the creation and implementation of an experimental crane season in Alabama. Per all experimental seasons, we will implement a memorandum of agreement with Alabama to cover the experimental period.

Sandhill Cranes
Regular Seasons in the Mississippi Flyway
Outside Dates: Between September 1 and February 28 in Minnesota, and between September 1 and January 31 in Alabama, Kentucky and Tennessee.

Hunting Seasons: A season not to exceed 37 consecutive days may be selected in the designated portion of northwestern Minnesota (Northwest Goose Zone), and a season not to exceed 60 consecutive days in Alabama, Kentucky, and Tennessee. The season in Alabama is experimental.

Daily Bag Limit: 1 sandhill crane in Minnesota, 2 sandhill cranes in Kentucky, and 3 sandhill cranes in Alabama and Tennessee. In Alabama, Kentucky, and Tennessee, the seasonal bag limit is 3 sandhill cranes.

Permits: Each person participating in the regular sandhill crane seasons must have a valid Federal or State sandhill crane hunting permit.

Other Provisions: The number of permits (where applicable), open areas, season dates, protection plans for other species, and other provisions of seasons must be consistent with the management plans and approved by the Mississippi Flyway Council.

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Canada:

Female Whooper, #39-17 killed on Barrie Island, Ontario

Thought to be the first Whooping Crane ever seen in the Algoma-Manitoulin District, the crane was reported April 21, 2019, on Barrie Island in the North Channel of Lake Huron. From its bands it was identified as female #39-17, part of the reintroduced Eastern Migratory Population of Whooping Cranes. She was one of two Parent-Reared juveniles released in Wisconsin in 2017.

Realizing that the crane was rare, residents did not broadcast its location in order to protect the bird. Four individuals observed the crane on a regular basis up to and including May 5 when it appeared healthy. Sadly, on the evening of May 5 the endangered crane was shot and killed.

Anyone with information concerning the shooting is asked to contact **the Crime Stoppers Tips Hotline** at **1-800-222-TIPS (8477)**.

Ontario looks at wildlife crop damage

Sandhill Cranes, considered on the verge of extinction in the region due to habitat loss, human disturbance and unregulated hunting, are now on the rebound. Aided in large part to a shift from forested to agricultural landscapes throughout much of Eastern Canada and the United States, and, coupled with agricultural practices that provide abundant and reliable food sources throughout much of the year, the species is once again becoming established in areas it historically occupied.

However, as the population has grown so have conflicts between farmers and cranes, prompting The Ontario Federation of Agriculture (OFA) to look into requesting a government compensation program for the farmers based on wildlife damage to their crops. Environment and Climate Change Canada-Canadian Wildlife Service (ECCC-CWS) has been collecting data to assess the status and harvest potential for Sandhill cranes in Ontario to evaluate whether a hunting season would help mitigate agricultural conflicts.

Additionally, Environment and Climate Change Canada (ECCC) is working on a proposal for research on Sandhill Cranes across Ontario and Manitoulin Island. The targeted study focus areas for the five-year project will include the Claybelt and Temiskaming areas of Ontario and Quebec, as well as Manitoulin Island/the North Shore of Lake Huron. Data gathered will assist in review of damage assessments; investigate alternative mitigation techniques that could be useful in minimizing crop damage; determine changes in abundance and distribution and assess risk factors associated with field characteristics at different times of year; help augment current monitoring efforts for Sandhill Cranes as well as to provide insights into the ecology of Sandhill Cranes nesting in Ontario and Quebec, and genetic data will help determine the breeding area of individuals using agricultural areas throughout Ontario and Quebec.

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Florida:

When two worlds collide

The Florida Fish and Wildlife Conservation Commission (FWC) is researching how Sandhill Cranes are using urbanized areas as wetland and upland habitats shrink, as well as the impact the suburban lifestyle is having on them. As part of the study, adult cranes in urban, suburban and rural areas are being tagged with GPS transmitters that collect multiple GPS locations. As their habitat falls to development, cranes are being forced to survive in close proximity to human populations. Unfortunately, things do not look good for the Sandhills.

The shooting deaths of two Sandhill Cranes in late March 2019 in the area of Brooksville Florida is under investigation by the FWC. Two men heard gunshots and when they went to investigate found the two dead cranes. They were able to get video of the shooters, the truck, tags and turned that along with the cranes and shells found at the scene over to officials. FWC knows the identity of the shooter.

Then in early April, in Umatilla, not far from the North Lake County Park, at least four Sandhills were reported shot with arrows – photos and video show the arrows lodged in various parts of the Sandhills' bodies. A concerned citizen posted photos and video of the injured cranes on Facebook generating hundreds of comments which has led to an investigation by FWC. Florida Sandhill Cranes are listed as a threatened species and are therefore protected – it's against the law to kill or injure them.

Reports of hit and run fatalities are also on the upswing as Sandhill numbers increase. Family groups of Sandhills are particularly at risk as they feed along, or attempt to cross, busy roads. Drivers impatient with the slow-moving birds, or perhaps unaware they are even in the road, aren't slowing down for them, resulting in dead or injured birds and orphaned young birds. Tragically, in late April 2019, a 100-year-old Florida man was killed when the car he was riding in hit other vehicles that had stopped to avoid hitting a group of Sandhill Cranes in the road.

The FWC Fish and Wildlife Research Institute asks that if you see a color-banded Sandhill Crane to please report it cranes@myfwc.com. Include band color information, location, time and if possible, a photo. Some cranes have only one-color band, while others have up to four bands. Please also include

which leg (right or left), and how many bands are on the leg. The color and the placement of each band is important in identifying individuals.

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Indiana:

Exhibits coming to Goose Pond visitor center in 2020

Thanks to a partnership with Duke Energy Foundation and the Indiana Natural Resources Foundation (INRF), guests at Goose Pond Fish & Wildlife Area can expect to see interpretive displays at the property's visitor center by spring 2020. Recently, Duke Energy Foundation awarded the INRF a $20,000 grant to create such exhibits to educate visitors about Goose Pond FWA's wetland, grassland, and agricultural habitats.

More than 260 bird species have been documented at the FWA, attracting birders from across the country. Each year, thousands of Sandhill Cranes stop by during their annual migration. Whooping Cranes, a federally endangered species, are also regular visitors. In addition to birding, the multi-use property provides hunting and hiking.

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Louisiana:

Flooding interferes with nesting season

Last year was a good year for Whooping Cranes nesting in Louisiana – 5 chicks hatched, successfully fledged and have all survived. 2019 has not been a good year. As of a mid-May, 4 chicks had hatched, but sadly none of them have survived. This is thought to be due in large part to the fact that the area has experienced almost weekly rain events that have flooded nests and likely contributed to the loss of the small chicks. Proven in past breeding seasons, Louisiana Whooping Cranes are persistent, and though the nesting season is almost over, 5 pairs are currently sitting on "renests" – 3 pairs are on their second nest and 2 are on their third! Whooping Cranes are a long-lived species so while this year has been disappointing there should be many more breeding seasons ahead.

New Floridians in the neighborhood

As reported in the March issue of the *Eastern Crane Bulletin*, in February 2019 two Whooping Cranes were captured and moved from Micanopy in central Florida to their new home at the 71,905-acre White Lake Wetlands Conservation Area in Louisiana.

The 4-year-old Whooping Crane, now known as LFW12-15, has a much better prospect of finding a mate in Louisiana, and biologists hope that she will settle in and before long add to the restoration of the non-migrating population there.

Her 21-year-old mother, known now as LF1-98, has an impressive history. Part of the discontinued reintroduction effort in Kissimmee Prairie, Florida, the female Whooping Crane nested 23 times, hatched 13 chicks and fledged nine! In 2002, she and her first mate were the first Whooping Cranes to fledge a chick in the wild in the U.S. since 1939. After that mate was killed in 2006, she found another mate and fledged her fourth chick in 2007. Along with her second mate she fledged a total of six chicks, including twins in 2016. Unfortunately, after that mate was killed in August 2016, there were no remaining male Whooping Cranes in Florida with which she could pair.

Catching the Florida cranes involved teamwork from the U.S. Fish and Wildlife Service, the Florida Fish and Wildlife Conservation Commission and the International Crane Foundation. Areas the birds frequented were baited and set with leg nooses. When caught, the two cranes were taken to the White Oak Conservation Foundation in Yulee for quarantine and were later driven to Louisiana. There, they had

health evaluations and were tagged and fitted with transmitters before release. There are no plans to move the remaining 14 Florida Whooping Cranes to Louisiana.

Currently the Louisiana non-migratory population numbers 75 individuals — 35 males, 39 females and 1 unknown, and can be found in Louisiana (64), Texas (10) and Mississippi (1). Unfortunately, several cranes have been shot and killed over the past few years. LDWF continues its educational campaigns to try to prevent such killings and to raise interest in these amazing cranes.

Trash and cranes don't mix

Summertime usually means more outdoor adventures – fishing, picnics and lots of cold beverages (usually in aluminum cans). Have fun, but please be responsible and recycle and dispose of trash properly so that it doesn't become a hazard for our wildlife! Anglers need to be especially mindful and discard old fishing line and hooks.

Cranes are naturally curious and may pick up and "play" with litter such as aluminum cans, plastic water bottles, etc. that they come across on the landscape. In 2004, a young male Whooping crane in Michigan was found with part of an aluminum can stuck on his beak, preventing him from eating or drinking. If the can had not been removed it would have proved fatal to the bird. In 2011, biologists noticed a female crane in Wisconsin with fishing line wrapped around her leg. Fortunately, she was able to be captured, and the line removed before it cut through any major tendons or blood vessels – although the line was wrapped so tightly that the leg at that point wasn't much larger than a mechanical pencil. Thankfully she was able to make a full recovery.

Check out LDWF's Facebook "Timeline photos" link for photos of some of the above-mentioned dangers posed by trash: https://www.facebook.com/lawhoopingcranes/posts/1847103228729115

Biologists capture Whooping Crane L1-13 to replace broken transmitter

In early November 2018, when biologists caught colt LW3-18 to band, they noticed that the antenna on L1-13's (LW3-18's dad) transmitter had broken and needed to be replaced. But, despite repeated tries over the next few months they couldn't get anywhere near him to do so. Then in February, when breeding hormones kicked in, LW3-18 had left the adults' territory, and L1-13 and his mate were defensive of their nest platform (seen in the video), biologists were able to catch him – the last capture of a successful fall/winter capture season.

Following are statistics from the fall/winter capture season:

- 14 cranes (5 males, 8 females) were caught between 1 November and 5 February
- 7 were caught by hand and the other 7 were caught with our leg noose
- 4 were wild hatched chicks receiving their first bands, while the remaining 10 were caught so transmitters could be changed
- The cranes ranged in age from 6 months to 7.5 years old
- Louisiana Whooping Cranes are big and healthy with their weights ranging from 6.5-8.78 kilograms (14.3 - 19.4 pounds)!

Check out the LDWF video showing the capture of male L1-13, here:
https://www.facebook.com/lawhoopingcranes/videos/vb.733006696805446/598821340586675/?type=2&theater

'Spy eggs' may shed light on why some chicks die in the egg

There are now 75 Whooping Cranes in the Louisiana non-migratory flock and while some pairs nest and lay eggs, for whatever reason their eggs don't hatch. So, why do some chicks die in the egg while others don't? With the help of eight "data logger" eggs, a.k.a. "spy eggs," on loan from the Calgary Zoo, data gathered over several nesting seasons will help answer those questions for LDWF biologists.

Developed by a team of Canadian and U.S. scientists to help track why some eggs have low hatch rates in the wild, Whooping Crane "data logger" eggs record egg temperature, humidity and position once a minute. The data logger can also detect when the egg is turned — an important part of keeping developing birds healthy. The electronic data loggers use infrared connections to transfer information to nearby computers. The data is then sent to scientists in Calgary for analysis.

The team of scientists compared nests of captive Whooping Cranes and Sandhill Cranes at the Calgary Zoo's Devonian Wildlife Conservation Centre to that of incubators, hoping to improve the hatching rate of incubated eggs. According to Dr. Axel Moehrenschlager, the Calgary Zoo's Director of Conservation and Science, their study, "As the Egg Turns: Monitoring Egg Attendance Behavior in Wild Birds Using Novel Data Logging Technology" published in 2012 (read the research abstract in this issue's ECB Science section), helped people raising the cranes in Canada and the U.S. to adjust incubator temperature and humidity settings.

What logistics are involved with this process? LDWF wildlife biologists swap the egg-shaped "data loggers," that are encased in a plastic polymer, for one of the two eggs that many cranes lay. The real eggs are taken to the Audubon Nature Institute's Species Survival Center in New Orleans, where they're incubated until they're nearly ready to hatch, when biologists will then swap the incubated eggs back into the active nests. Other than defending their nest, adult birds do not seem bothered by the egg switching process. Richard Dunn, curator at the Species Survival Center, says he hopes to learn if he needs to tweak incubator settings to more closely mimic Louisiana's climate, which is hotter and damper than the northern settings where previous studies were done.

Female L5-14 and male L12-16 were fiercely protective of their nest when biologists swapped a data-logging egg with the (real) egg they previously pulled. The Whooper pair later hatched LW1-19 on St. Patricks Day! To watch a video of the very deft swapping of eggs by the LDWF biologists (aided by a couple of brooms), go here:
https://www.facebook.com/lawhoopingcranes/videos/vb.733006696805446/919544385103438/?type=2&theater

Help LDWF by reporting all Whooping Crane sightings

Anyone encountering a Whooping Crane is advised to observe the bird from a distance and to please report your sighting to the Louisiana Department of Wildlife and Fisheries by using the following link:
http://www.wlf.louisiana.gov/webform/whooping-crane-reporting-form

Anyone witnessing suspicious activity involving Whooping Cranes is advised to call the LDWF's Enforcement Division at 1-800-442-2511 or use the tip411 program, which may offer a cash reward for information leading to arrests or convictions. To use the tip411 program, citizens can text LADWF and their tip to 847411 or download the "LADWF Tips" iPhone app from the Apple iTunes store free of charge. Citizen Observer, the tip411 provider, uses technology that removes all identifying information before LDWF receives the text so that LDWF cannot identify the sender.

And, for LDWF updates on the Louisiana non-migratory population of Whooping Cranes, go here:
https://www.facebook.com/lawhoopingcranes/

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Mississippi:

EPIC Experience | Mississippi Sandhill Crane National Wildlife Refuge: In partnership with USFWS

The Mississippi Sandhill Crane National Wildlife Refuge, run by the US Fish and Wildlife Service, is now also home to two USFWS American Conservation Experience EPIC interns! This is the first group of interns to have the opportunity to work with USFWS biologist, Angela Dedrickson at this particular refuge.

Interns Rose Caplan, and Shannon Finnerty started their year-long internship in September of 2018. During their time with the refuge, they have been an integral part of the US Fish and Wildlife Service team, monitoring and tracking cranes on the refuge; conducting wildlife surveys; and surveying potential release sites for the critically endangered Mississippi Gopher frog (commonly known as the Dusky Gopher frog) also protected by the refuge.

To learn more about the "Emerging Professional Internship Corps" (EPIC), go here: http://www.usaconservation.org/programs/epic-internship/

To read more and see photos of the interns in action, go here: http://www.usaconservation.org/epic-experience-mississippi-sandhill-crane-national-wildlife-refuge/

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Nebraska:

UV light may help stop fatal night powerline collisions

Managers at Nebraska's Iain Nicolson Audubon Center have installed PVC coils and reflective markers as diverters on the power lines crossing the Central Platte River along the Sandhill and Whooping Crane migration corridor. While the diverters have helped during daylight hours, it has not stopped powerline strikes at night.

In search of a solution, a team of biologists and electrical engineers looked at UV light, which birds can see but people can't, to act as a deterrent to cranes, without causing light pollution that bothers humans. James Dwyer, a research scientist at EDM international, Inc. (a power utility and environmental services company), and his team are testing whether the mounted UV lights – which they named the Avian Collision Avoidance System, or ACAS – might make a difference in the area. Dwyer is also a member of The Wildlife Society (TWS).

The scientists randomly chose when the mounted ultraviolet lights, ACAS, set to shine along the length of the line between two towers, would be on or off each night. Then, they observed the Sandhill Cranes (*Grus canadensis*), through military grade night vision scopes to check for collisions. The team detected a 98% reduction in collisions when the ACAS was turned on. They also discovered 82% fewer dangerous flights with the UV lights turned on. Only one bird collided with the wire when the ACAS was on, while 48 Sandhill Cranes collided when it was turned off.

The next step for researchers is to understand whether the ACAS works with other birds, in different habitats, and on longer spans of wire. Of particular interest is whether UV light may help reduce collisions with cell towers in areas where large numbers of passerine collisions occur during migration, and whether it would be useful in areas of high wind turbine concentration.

To read the abstract for the article "Near-ultraviolet light reduced Sandhill Crane collisions with a power line by 98%," see the Science section below, or go here: https://academic.oup.com/condor/advance-article-abstract/doi/10.1093/condor/duz008/5476728

"Perfect storm" has impact on Rowe Sanctuary

In other years it would not have caused even a ripple, but a tenth of an inch of rain became the tipping point this year throughout Sandhill Crane migration season. A tenth of an inch often determined whether Elm Island Road, which runs along the Platte River and past Audubon's Rowe Sanctuary, was passable for thousands of visitors who came to the Central Platte Valley to see one of the world's last great wildlife migration events.

Bill Taddicken, Director of Rowe Sanctuary, pointed to the "perfect storm" of conditions that complicated the festival this year. It all began in December 2018 with precipitation that saturated the ground, followed by extremely cold weather in January and February 2019 that resulted in frost at least 36 inches deep. The frozen ground allowed rain and melting snow from the March 13-14 "bomb cyclone" and blizzard to

run off into low places. Conditions only got worse when a quick thaw followed causing the "bottom" to go out of many rural roads. "It was a mire of mud and even a tenth of an inch of rain was too much," said Taddicken. The specific conditions creating the Elm Island Road problem was brought on by its sandy soils and the high level of groundwater that caused bubbles of black mud to surface all along it.

River blind tour cancellations began in early March due to a frozen river and the slow arrival of cranes in any significant numbers and continued through the season as impassable roads made tours and other events difficult for the public to attend. Once the show of more than 600,000 cranes began in the Central Platte Valley, road conditions were assessed daily so decisions could be made about whether to continue or cancel morning and evening blind tours and related events. Rowe Sanctuary experienced an estimated revenue loss of $250,000 for the 2019 crane season — two-thirds of the Sanctuary's typical annual income.

Sandhill Crane migration featured in Netflix's "Our Planet" series

Our Planet, an eight-episode series produced by *Planet Earth* and *Blue Planet* creators Alastair Fothergill and Keith Scholey and narrated by Sir David Attenborough, was released April 5, 2019. Some 600 crew members, equipped with 4K camera technology, embedded themselves in the oceans and rainforests of 50 countries to capture the amazing footage seen in the series. One of the wildlife cinematographers was Sophie Darlington.

In a phone interview with *Sierra* (national magazine of the Sierra Club) Darlington said, "I've traveled the world, but shooting the Sandhill Crane migration in Nebraska's Platte River – where hundreds of thousands of cranes gather because several conservation organizations have worked together to enable them to be there – stands out as one of the most beautiful, awe-inspiring things I've ever experienced. Getting the perfect nature shot takes about a year of planning—six months of research and then plenty of logistical planning. It's a communal effort, and it was just so rewarding to work with these farmers in the local community and eventually get to see the sky fill with these beautiful birds. It's featured toward the end of the "Freshwater" episode [*Our Planet*, episode 7]."

To read more about the making of the Our Planet series; go here:
https://www.sierraclub.org/sierra/behind-scenes-netflixs-our-planet

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Tennessee:

SACR winter population and hunting season summary

The 2018-19 Sandhill Crane (*Antigone canadensis*) hunting season was the second season since Tennessee began hunting sandhill cranes in 2013, where a hunt was permitted throughout the state. Applications were received from 2,339 hunters. Three tags each were issued to 479 individuals for use in the southeast crane zone while another 637 were issued two tags each for use statewide. Hunters were required to submit a post-season harvest survey to TWRA by the agency-imposed deadline of February 10, 2019, or risk ineligibility the following season. TWRA received surveys from 751 individuals; therefore, 365 individuals are ineligible to apply for Sandhill Crane tags for the 2019-20 season.

The 2018-19 season record shows 555 Sandhill Cranes killed in 11 different counties – down 33.1% from the 2017-18 season total of 830 cranes taken. Biologists point to warmer winter temperatures and lack of snow cover to the north of Tennessee that may have allowed Sandhill Cranes to stay longer at northern latitudes than in years of typical winter temperatures and precipitation, thus impacting overall harvest because less cranes arrived in Tennessee during the hunting months. Final numbers include: 473 adults and 82 juveniles killed, and 59 cranes that were reported wounded but not retrieved (making for a "wounding rate" or "crippling loss" of 11%). More cranes were killed on private land than public land.

To read or download a PDF of the 2018-19 TN SACR Winter Pop and Hunting Season Report – Final*, by Jamie C. Feddersen, Certified Wildlife Biologist® Migratory Game Bird Program Coordinator Tennessee Wildlife Resources Agency, go here:* 2018-19 TN SACR Winter Pop and Hunting Season Report – Final (PDF)

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Texas:

Craniacs flock to Aransas

Birding enthusiasts and nature lovers converged on Port Aransas for the 23rd annual Whooping Crane Festival, February 21-24, 2019. The festival, organized by the Port Aransas Chamber of Commerce and Tourist Bureau, celebrates the annual return of the cranes to their wintering habitat at the Aransas National Wildlife Refuge. The Texas Coastal Bend is the only place where you can see the world's last naturally-occurring population of Whooping Cranes.

"We had more than 650 registered participants," said Joan Garland, public relations and special events manager with the chamber. "It was one of our largest turnouts," she said. "The attendance at the speaker sessions averaged about 100 registrants each."

World renowned crane expert, Dr. George Archibald, Co-Founder of the International Crane Foundation, opened the festival with a talk about the 15 species of cranes found world-wide as well as the Foundation's work with colleagues in 10 countries to educate the public and preserve the ecosystems needed by the crane species to survive. Presentations by representatives from Wood Buffalo National Park, the Aransas National Wildlife Refuge, and Louisiana Department of Wildlife and Fisheries were also part of the festival.

Save dates February 20-23, 2020 to attend next year's festival!
For more information, go here: https://www.whoopingcranefestival.org

Earthwatch - Protecting Whooping Cranes and coastal habitats in Texas

The purpose of Earthwatch's "Protecting Whooping Cranes and Coastal Habitats in Texas" research program is to gain a better understanding of coastal marsh ecosystems and to determine the impact of environmental and anthropogenic stressors on wading bird resources and habitat quality.

"To understand the plight of the Whooping Crane and to help protect them, you will assist researchers in exploring the complex coastal saltmarsh ecosystems along the Texas Gulf Coast to study how variable hydrology and other environmental changes affect this endangered species. You will closely monitor the birds – recording their locations, behavior, access to food, defense of coastal territories, and the frequency with which they leave their territory (potentially to find fresh drinking water). You'll share the marsh with the cranes, listening to their famous whooping calls as you collect water, soil, and plant samples and conduct abundance surveys of their favorite food resources in coastal wetlands."
– the *Earthwatch Institute*

In December 2018, Earthwatch Program Coordinator, Ian Ozeroff, travelled to Aransas National Wildlife Refuge and participated in his first Earthwatch expedition. To read about his experiences and for photos, go here: https://blog.earthwatch.org/2019/03/01/whooping-cranes-a-texas-love-story/

Why not consider joining scientists to study the endangered Whooping Crane and discover firsthand how a changing environment is impacting the coastal marsh ecosystems these unique birds call their winter home?
To learn about the work being done by Earthwatch and to sign up for Earthwatch expeditions, go here: https://earthwatch.org/Expeditions/Protecting-Whooping-Cranes-and-Coastal-Habitats-in-Texas

Kathrine G. McGovern Texas Wetlands opens

The Houston Zoo's Kathrine G. McGovern Texas Wetlands just opened to the public on Friday, May 24, 2019. This new Texas wetlands habitat exhibit brings together for the public three native Texas species – Bald Eagles, Whooping Cranes, and American Alligators. All three species share having faced extinction if it were not for the protection provided by the Endangered Species Act, the efforts of Texans and a

number of dedicated groups and organizations working together to help the species make a comeback in the state.

The pair of Whooping Cranes, Heiden and Angel, now gracing the new exhibit came to the zoo from the USGS Patuxent Wildlife Research Center in Maryland after its research and breeding program there ended. The pair was part of the flock of 75 cranes transferred to research institutions and zoos in Virginia, Florida, Texas, Oklahoma, Nebraska, Louisiana and Canada. And, although this pair of cranes is considered past breeding age, it is hoped that before long there will be a Whooping Crane breeding program at the Houston Zoo.

"We want people to understand that the zoo is a conservation organization" said Lee Ehmke, CEO of the zoo. Those efforts can be felt in the Houston area as the zoo is spending more than $100,000 each year on education and outreach in Port Aransas where Anna Turkett, Texas Whooping Crane Outreach Coordinator, has been charged with the task of not only building public awareness of the cranes, but also with helping educate the public to the importance of crane conservation, and by doing so, show how the presence of Whooping Cranes on the local landscape can positively impact the community economy.

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Virginia:

Doors close on 50 years of Whooping Crane research

"Whooping cranes are still endangered, but the overall population has grown more than tenfold in the last 50 years since Patuxent's program began," said John French, a USGS biologist and director of the USGS Patuxent Wildlife Research Center. "The end of the USGS program is an indication of just how far we've come in our research and recovery efforts and is a tribute to the numerous researchers from the U.S. Geological Survey and numerous collaborators and partners who dedicated five decades to help chart the course for the recovery of this iconic species."

With the end of the program, Patuxent Wildlife Research Center had to find homes for approximately 75 Whooping Cranes that were in its flock. The cranes were transferred to other research institutions and zoos in Virginia, Florida, Texas, Oklahoma, Nebraska, Louisiana and Canada with breeding programs to produce chicks for reintroduction. These include the Smithsonian Conservation Biology Institute in Front Royal, Virginia; the White Oak Wildlife Conservation in Yulee, Florida; the International Crane Foundation in Baraboo, Wisconsin; the Houston, Dallas, Abilene and San Antonio Zoos in Texas; the Oklahoma City Zoo in Oklahoma; the Omaha Zoo in Nebraska; the Freeport-McMoRan Audubon Species Survival Center in Louisiana; and the Calgary Zoo and the African Lion Safari in Canada.

On March 13, 2019 USGS transferred its last two cranes to other institutions, marking the end of more than 50 years of the center's Whooping Crane research and captive breeding success.

Learn more about the USGS Patuxent Wildlife Research Center's captive breeding program and the role it had in Whooping Crane research at: https://www.usgs.gov/centers/pwrc/science/whooping-crane-restoration *and here:* https://www.usgs.gov/news/significant-milestone-whooping-crane-recovery

In 2018, the current administration's budget cuts decreased United States Geological Survey (USGS) funding by over $150 million forcing reductions in, and the elimination of, certain programs, in order to "reflect the continued execution of core USGS mission responsibilities." To read or download a PDF of the USGS Program Changes/2018 Budget Justification document (page E-4, "Eliminate Whooping Crane Propagation Program"), go here: https://prd-wret.s3-us-west-2.amazonaws.com/assets/palladium/production/s3fs-public/atoms/files/2018%20Summary%20of%20Program%20Changes.pdf

32-year old Whooper dies at Smithsonian Conservation Biology Institute

Alta, a male Whooping Crane, was 32 years old when he died, older than the median life expectancy of 28 years for the species. He had a history of arthritis and veterinarians began treating him for lameness associated with the arthritis on February 24, 2019. The next day, February 25, he was unable to stand,

and keepers transported him to the veterinary hospital, where he died shortly after arrival. A blood sample obtained before he died suggested he was experiencing kidney failure. An initial necropsy supports kidney disease and arthritis in both legs as a cause for Alta's lameness and acute decline.

In December 2018 Alta had been moved to the Smithsonian Conservation Biology Institute (SCBI) from the U.S. Geological Survey's Patuxent Wildlife Research Center. The crane had sired and fostered chicks with several mates during his lifetime, and several of the chicks were eventually released into the wild. Three of his offspring also live at SCBI. Alta's mate may eventually be paired with another male at the recommendation of the Species Survival Plan. Until that time she will be able to see and vocalize with 11 other Whooping Cranes at SCBI.

Headquartered in Front Royal, Virginia, SCBI facilitates and promotes veterinary and reproductive research as well as conservation ecology programs based at Front Royal, the Smithsonian's National Zoo and at field research stations and training sites worldwide. Its scientists are leaders in applying advanced biomedical approaches, including assisted reproductive technologies and germplasm cryopreservation, for enhancing the demographic and genetic diversity of endangered species.

Habitat Matters!

Dakotas:

Tribal Reservations perfect to host Whooper stopovers

Indian reservations in North Dakota and South Dakota are providing huge amounts of "stopover habitat" for the migrating wild population of Whooping Cranes. Chester McConnell, Friends of the Wild Whoopers (FOTWW) wildlife biologist, visited six of the reservations to evaluate numerous "stopover habitats" and to provide management recommendations. The reservations FOTWW visited collectively have approximately 2.6 million hectares of land, and there are approximately 1,000 permitted range units and 6,000 farm/pasture leases on 7 reservations. The permitted areas and farm/pasture leases are managed under reservation guidelines which are largely useful to wildlife. The headquarters reservation biologist (each reservation has a biologist) advised that there are over 1,700 potential stopover ponds/wetlands on the reservations within the whooping crane migration corridor.

To read more and see photos of some habitat at the Cheyenne River Sioux Reservation, South Dakota; Spirit Lake Reservation, (Fort Totten) North Dakota; and the Cheyenne River Indian Reservation Sioux Tribe, South Dakota, and for a map of the Dakotas/Nebraska area showing Indian Reservations, go here: https://friendsofthewildwhoopers.org/indian-reservations-in-dakotas-abundant-whooping-crane-stopover-habitat/

Indiana:

Restored wetland habitat attracts Sandhills

With the help of Natural Resources Conservation Service Indiana (NRCS) programs, Charlotte and Robert Wolfe were able to restore over 50-acres of wetlands and prairie on their farm, Prairie Winds Nature Farm. Last year a pair of Sandhills hatched a chick on the property, but unfortunately the chick did not survive, and the adult birds then moved elsewhere. (See the September 2018 issue of the Eastern Crane Bulletin: Habitat Matters! / "Sandhill Crane chick born on NRCS restored wetland," page 21) Recently, Robert Wolfe contacted me to let me know that "their" Sandhill Cranes had not only returned this year, but as of April 22 were photographed sitting on a nest in the farm's restored wetland area! In mid-May two colts where photographed on the farm with the adult cranes. Case in point that when the right habitat is there, birds will come. Best wishes to the Prairie Winds Nature Farm crane family!

For a photo of the pair sitting on a nest (dated April 22, 2019), go here: https://www.facebook.com/prairiewindsnaturefarm/photos/a.119553504747204/2130483150320886/?type=3&theater

For photos of an adult SACR with two colts (dated May 15, 2019), go here: https://www.facebook.com/prairiewindsnaturefarm/photos/pb.104650082904213.-2207520000.1558109347./2165843183451549/?type=3&theater

For information about Prairie Winds Nature Farm, go here: www.prairiewindsnaturefarm.com *or here:* https://www.facebook.com/prairiewindsnaturefarm/?ref=bookmarks

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Kansas:

Bring Back the Bottoms campaign

A public campaign to raise $300,000 to match more than $1.2 million in federal grants for improvements at Cheyenne Bottoms Wildlife Area was launched in May by Ducks Unlimited. The multi-year project will primarily replace nonfunctioning pumps and water control gates within the almost 20,000-acre public wildlife area, as well as remove tons of silt that has accumulated over the decades.

Owned by the Kansas Department of Wildlife, Parks and Tourism (KDWPT) the wetland on the eastern side of Barton County is of international importance for migratory birds, as well as a major economic boost for central Kansas, drawing some 60,000 visitors to the region each year.

"Cheyenne Bottoms is an essential stop-over for millions of birds during their spring and fall migrations," Matt Hough, manager of conservation at Ducks Unlimited for Kansas stated in a news release. "The shallow wetlands and grass support about 350 bird species. Half of North America's shorebirds and endangered Whooping Cranes visit every year." Unfortunately, according to Hough, the wetland's ability to attract birds has declined because the Bottoms is filling up with silt, which in turn plugs water-control structures and other infrastructure needed to keep the wetland in healthy and manageable condition.

Located within a natural geological depression about 60 miles north of Hutchinson, the state acquired land to develop and preserve the wetlands in the 1940s and 1950s. After acquiring the property, KDWPT built canals and dams to supplement natural runoff with water from the Arkansas River and Wet Walnut Creek. The area is recognized as internationally important by the Ramsar Convention, National Audubon Society and American Bird Conservancy.

For more information on how you can help Bring Back the Bottoms, contact Kirk Davidson, kdavidson@ducks.org, 303-927-1949 or Eric Lindstrom, elindstrom@ducks.org, 701-355-3503.

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Texas:

Stopover habitat, winter and nesting habitats all key to survival of wild Whoopers

While there is good public awareness of the work being done on behalf of habitat needs for the wild population of Whoopers on their wintering and breeding grounds, highlighting suitable habitat along the 2,500 mile migration route the cranes travel each spring and fall (8-10 weeks of travel each season) has pretty much remained uncharted territory. Other than wildlife management areas along the route, what stopover habitat is available for the cranes to forage, rest and roost overnight? Thanks to work begun three years ago by the fledgling organization Friends of the Wild Whoopers (FOTWW), this third piece in the survival puzzle is falling into place.

Chester McConnell, FOTWW President and wildlife biologist, visited and assessed four U.S. Army Corps of Engineer (USACE) Texas lakes: Proctor Lake, Stillhouse Hollow Lake, Belton and Lake Georgetown recently to assess potential stopover habitats for the Aransas-Wood Buffalo Whooping Cranes.

For site photos and more information about what makes an area ideal stopover habitat, go here: https://friendsofthewildwhoopers.org/stopover-habitat-for-whooping-cranes-on-corps-of-engineer-lakes-and-military-bases/

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Wisconsin:

Fox River NWR celebrates 40 years

Fox River National Wildlife Refuge, managed as part of the Horicon Leopold Complex, encompasses 1,054 acres of wetland and upland habitat along the Fox River in Wisconsin. Established as a national wildlife refuge in 1979 to protect habitat for the Greater Sandhill Crane which can be found nesting there during summers. The majority of the refuge habitat is sedge meadow, wet prairie and shallow marsh wetlands but it also protects fens, a rare wetland type in Wisconsin that harbors many state-threatened and endangered plants. Fox River NWR has lowland forests, shrub-carr thickets (an intermediate stage between marsh or sedge meadow and upland forest), deep marshes and areas of open water making it rich in wildlife.

For four decades, refuge staff have restored, enhanced and preserved the oak savanna upland by using prescribed fire burns, selective timber cutting and woody shrub removal. Areas have also been seeded with native prairie forbs and grass species, and non-native, invasive plants removed in the process. Some wetlands were restored by using ditch filling and stream course re-establishment. These restoration and management activities create biologically diverse and productive wildlife habitats for a range of bird and mammal species.

Other management objectives include protecting the habitats of any Federal or State endangered or threatened species within the refuge, such as the state threatened Blanding's turtle, and to make the refuge available for outdoor recreation, environmental education, and other public-use activities compatible with the above objectives.

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Science News:

As the Egg Turns: Monitoring Egg Attendance Behavior in Wild Birds Using Novel Data Logging Technology

Scott A. **Shaffer**[1*], Corey A. **Clatterbuck**[1], Emma C. **Kelsey**[1], Alex D. **Naiman**[2], Lindsay C. **Young**[3], Eric A. **VanderWerf**[3], Pete **Warzybok**[4], Russell **Bradley**[4], Jaime **Jahncke**[4], Geoff C. **Bower**[2]

1 San Jose´ State University, Department of Biological Sciences, San Jose, California, United States of America, 2 Stanford University, Department of Aeronautics and Astronautics, Stanford, California, United States of America, 3 Pacific Rim Conservation, Honolulu, Hawaii, United States of America, 4 Point Blue Conservation Science, Petaluma, California, United States of America

https://doi.org/10.1371/journal.pone.0097898

Abstract: Egg turning is unique to birds and critical for embryonic development in most avian species. Technology that can measure changes in egg orientation and temperature at fine temporal scales (1 Hz) was neither readily available nor small enough to fit into artificial eggs until recently. Here we show the

utility of novel miniature data loggers equipped with 3-axis (i.e., triaxial) accelerometers, magnetometers, and a temperature thermistor to study egg turning behavior in free-ranging birds. Artificial eggs containing egg loggers were deployed in the nests of three seabird species for 1–7 days of continuous monitoring. These species (1) turned their eggs more frequently (up to 6.5 turns h−1) than previously reported for other species, but angular changes were often small (1–10° most common), (2) displayed similar mean turning rates (*ca*. 2 turns h−1) despite major differences in reproductive ecology, and (3) demonstrated distinct diurnal cycling in egg temperatures that varied between 1.4 and 2.4°C. These novel egg loggers revealed high-resolution, three-dimensional egg turning behavior heretofore never measured in wild birds. This new form of biotechnology has broad applicability for addressing fundamental questions in avian breeding ecology, life history, and development, and can be used as a tool to monitor birds that are sensitive to disturbance while breeding.

To download a full text PDF, go here:
https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0097898&type=printable

Examination of Multiple Working Hypotheses to Address Reproductive Failure in Reintroduced Whooping Cranes

Article (PDF Available) in *The Condor* 120(3):632-649 · August 2018
DOI: 10.1650/condor-17-263.1

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Submitted December 22, 2017; Accepted May 12, 2018; Published August 1, 2018

Abstract: Understanding multiple challenges that restrict conservation success is a central task of applied ecology, especially when resources are limited and actions are expensive, such as with reintroduction programs. Simultaneous consideration of multiple hypotheses can expedite identification of factors that most limit conservation success. Since 2001, reintroduction of a migratory population of Whooping Cranes (*Grus americana*) has been under way in eastern North America. Hatching success, however, has been extremely low. In our study area, in and near Necedah National Wildlife Refuge in central Wisconsin, USA, we simultaneously tested 3 hypotheses explaining poor hatching success: harassment of incubating birds by black flies (*Simuliidae*), effects of captivity, and inexperience of breeders. When black flies were experimentally suppressed, hatching probability doubled. Daily nest survival for Whooping Cranes was strongly and negatively related to an index of black fly abundance, particularly of *Simulium annulus*. Daily nest survival was negatively but only weakly related to the number of generations that ancestors of breeding Whooping Cranes had been in captivity and was not related to nesting experience. We also examined whether Whooping Cranes were nesting later to avoid stress from black flies. Phenology shifted earlier with more growing degree days and greater nesting experience and was only weakly related to year. Overall, improved hatching success did not lead to better reproductive success. Although effects of black flies on hatching success can be mitigated through management, such actions would not be adequate to generate satisfactory population growth. Recognition of this limitation was hastened through experimentation.

A full-text PDF download is available from Jeb Barzen at:
https://www.researchgate.net/publication/326753751_Examination_of_multiple_working_hypotheses_to_address_reproductive_failure_in_reintroduced_Whooping_Cranes

The Dilemma of Pest Suppression in The Conservation of Endangered Species

Article in Conservation Biology · December 2018
DOI: 10.1111/cobi.13262

Peter H. Adler; Jeb Anthony Barzen, Private Lands Conservation LLC; Elmer W Gray, University of Georgia; Anne Lacy, International Crane Foundation

Abstract: In the conservation of endangered species, suppression of a population of one native species to benefit another poses challenges. Examples include predator control and nest parasite reduction. Less obvious is the control of blood-feeding arthropods. We conducted a case study of the effect of native black flies (*Simulium* spp.) on reintroduced Whooping Cranes (*Grus americana*). Our intent was to provide a science-driven approach for determining the effects of blood-feeding arthropods on endangered vertebrates and identifying optimal management actions for managers faced with competing objectives. A multiyear experiment demonstrated that black flies reduce nest success in cranes by driving incubating birds off their nests. We used a decision-analytic approach to develop creative management alternatives and evaluate trade-offs among competing objectives. We identified 4 management objectives: establish a self-sustaining crane population, improve crane well-being, maintain native black flies as functional components of the ecosystem, and minimize costs. We next identified potential management alternatives: do nothing, suppress black flies, force crane renesting to occur after the activity period of black flies, relocate releases of cranes, suppress black flies and relocate releases, or force crane renesting and relocate releases. We then developed predictions on constructed scales of 0 (worst-performing alternative) to 1 (best-performing alternative) to indicate how alternative actions performed in terms of management objectives. The optimal action depended on the relative importance of each objective to a decision maker. Only relocating releases was a dominated alternative, indicating that it was not optimal regardless of the relative importance of objectives. A rational decision maker could choose any other management alternative we considered. Recognizing that decisions involve trade-offs that must be weighed by decision makers is crucial to identifying alternatives that best balance multiple management objectives. Given uncertainty about the population dynamics of blood-feeding arthropods, an adaptive management approach could offer substantial benefits.

To request a full-text PDF, go here: https://www.researchgate.net/profile/Jeb_Barzen/research

Whooping Cranes: Biology and Conservation Biodiversity of The World

"The International Crane Foundation has been a leader in endangered Whooping Crane conservation for over 25 years. Our involvement in this species' remarkable recovery is illustrated by the depth and breadth of contributions our staff provided to a recently published volume from Academic Press: Whooping Cranes: Biology and Conservation.

With a forward by our Co-founder George Archibald, 12 International Crane Foundation staff and former interns authored or co-authored 11 of the 24 chapters in this book, and provided scholarly input in the areas of historic distribution, population biology, behavior and social structure, habitat use, disease and health, captive breeding, reintroduction and emerging issues for Whooping Crane conservation."
Read the press release here: https://www.savingcranes.org/whooping-cranes-biology-and-conservation/

Revisiting the Historic Distribution and Habitats of The Whooping Crane

Chapter · September 2018
DOI: 10.1016/B978-0-12-803555-9.00003-7
In book: WHOOPING CRANES: BIOLOGY AND CONSERVATION BIODIVERSITY OF THE WORLD; CONSERVATION FROM GENES TO LANDSCAPES, Publisher: Elsevier/Academic Press, pp.25-88

Jane E **Austin**, United States Geological Survey; Matthew A. **Hayes**, International Crane Foundation; Jeb Anthony **Barzen**, Private Lands Conservation LLC

Abstract: Accurate determination of a species' historic range can assist in conservation and reintroduction efforts for that species. The endangered whooping crane (*Grus americana*) historically had

a wide distribution that covered diverse biomes and yet, within each biome, limited areas of occurrence. The remnant wild population is now greatly restricted in population size and range. Understanding any ecological implications of this collectively broad yet limited distribution could improve recovery strategies for this species. Whooping crane conservation has long relied on historic information complied by Robert Porter Allen in 1952. We obtained 76 additional historic records, for a total of 794 records, and used geographic information systems to re-assess historic distribution, landscapes, and habitats in breeding and wintering ranges of whooping cranes. Our revised map of breeding, summering, and wintering ranges extends the historical distribution into several new areas and alters the focus of core areas. Whooping cranes were historically found in nine biomes and many ecoregions, extending from the taiga of northwestern Canada, through the upper tallgrass prairie, to the Gulf Coast and xeric shrublands of interior Mexico. Based on landscape and wetland features of historic locations as well as crane life history, we identified four features common to breeding and wintering areas: 1) high densities of shallow, open wetlands or wetland complexes; 2) subtle to rolling topography with an interspersion of wetland and low meadow or prairie habitats, with relatively sparse cover of trees and shrubs; 3) hydrological regimes providing reliable conditions for nesting and brood rearing; and 4) high productivity due to fertile soils, hydrological pulsing, periodic inflow of nutrients, or other periodic perturbations. These new insights about the historic distribution and habitats of whooping cranes should stimulate renewed discussions about habitat needs and reintroduction strategies designed to enhance the long-term success of recovery efforts.

A full-text PDF download is available from Jeb Barzen at:
https://www.researchgate.net/publication/327872152_Revisiting_the_Historic_Distribution_and_Habitats_of_the_Whooping_Crane

Habitat Use by the Reintroduced Eastern Migratory Population of Whooping Cranes

Chapter · September 2018
DOI: 10.1016/B978-0-12-803555-9.00014-1
In book: WHOOPING CRANES: BIOLOGY AND CONSERVATION BIODIVERSITY OF THE WORLD; CONSERVATION FROM GENES TO LANDSCAPES, Publisher: Elsevier/Academic Press, pp.307-325

Jeb Anthony **Barzen**, Private Lands Conservation LLC; Anne **Lacy**, International Crane Foundation; Hillary Lynn **Thompson**, International Crane Foundation; Andrew P. **Gossens**, International Crane Foundation

Abstract: It is difficult to predict how reintroduced Whooping cranes will use habitats in areas where cranes have been extirpated for decades. Knowledge of habitat-use in the core, historical nesting area of the upper tallgrass prairie is limited, and it is likely that high quality habitats used by Whooping Cranes in the late 1800's have been substantially altered in this highly developed and fragmented landscape. Here we describe the habitat use in the upper tallgrass prairie nesting area reintroduced Whooping Cranes of the Eastern Migratory Population (EMP) have used during summer (predominantly central Wisconsin), migration (in the Midwest) and during winter (in the southeastern part of the U.S.). Habitat composition and use of territorial and non-territorial cranes in summer was determined in 2011-2014 by tracking cranes using Very High Frequency transmitters and various satellite-based transmitters. These data were then combined with a review of previous studies to develop a description of habitat use over the entire annual cycle. Home range of 8 territorial birds averaged 3.60 (SE = 3.54, range: 0.65 – 10.62) km2 in summer (April – October) while home ranges of non-territorial birds averaged 5,532 (SE = 5,299) km2 during their first year of independence (first calendar year following the hatch year) and averaged 390 (SE = 552) km2 during their third year of independence April to October. During the day, 75% of territorial Whooping Cranes locations were found in wetlands during summer. During remigial molt (synchronous molt of flight feathers rendering the bird flightless), however, 92% of recorded locations for territorial (n = 2 pair) and non-territorial (n = 2) Whooping Cranes were in wetlands. Home range size during the remigial molt averaged 0.45 (SE = 0.12, range: 0.29 – 0.58) km2, smaller than pre- or post-molt home range averages of 51.67 (SE = 77.44) km2 and 82.90 (SE = 100.44) km2 respectively (Pairwise t-test, $P < 0.02$). Habitat use is further constrained by low natal dispersal distances that averaged 19.4 km, a relatively small movement in relation to the size of the 4,600 km2 Glacial Lake Wisconsin Sand Plain that the EMP nests in. Over 13 years, the winter distribution of Whooping Cranes in the EMP has shifted

dramatically north and wetland use in winter declined from 52.4% (2004 - 2006) to 32% (2014 - 2015). Wetland use during migration (18.4%) was the lowest of the annual cycle. On summer areas the EMP was characterized by low natal dispersal distances and extensive wetland use. A second release location within Wisconsin was established to disperse Whooping Cranes outside the Glacial Lake Wisconsin Sand Plain more quickly to areas without black flies and containing more diverse wetlands than found in the sand plain. Facilitated dispersal behavior might more quickly reveal new interactions between Whooping Cranes and novel wetland habitats that can inform management needs of the EMP and crane reintroduction more generally.

A full-text PDF download is available from Jeb Barzen at:
https://www.researchgate.net/publication/327872001_Habitat_Use_by_the_Reintroduced_Eastern_Migratory_Population_of_Whooping_Cranes

Near-Ultraviolet Light Reduced Sandhill Crane Collisions with a Power Line By 98%

James F **Dwyer**, Arun K **Pandey**, Laura A **McHale**, Richard E **Harness**
The Condor: Ornithological Applications, duz008, https://doi.org/10.1093/condor/duz008
Published: 06 May 2019

Abstract: Midflight collisions with power lines impact 12 of the world's 15 crane species, including 1 critically endangered species, 3 endangered species, and 5 vulnerable species. Power lines can be fitted with line markers to increase the visibility of wires to reduce collisions, but collisions can persist on marked power lines. For example, hundreds of Sandhill Cranes (*Antigone canadensis*) die annually in collisions with marked power lines at the Iain Nicolson Audubon Center at Rowe Sanctuary (Rowe), a major migratory stopover location near Gibbon, Nebraska. Mitigation success has been limited because most collisions occur nocturnally when line markers are least visible, even though roughly half the line markers present include glow-in-the-dark stickers. To evaluate an alternative mitigation strategy at Rowe, we used a randomized design to test collision mitigation effects of a pole-mounted near-ultraviolet light (UV-A; 380–395 nm) Avian Collision Avoidance System (ACAS) to illuminate a 258-m power line span crossing the Central Platte River. We observed 48 Sandhill Crane collisions and 217 dangerous flights of Sandhill Crane flocks during 19 nights when the ACAS was off, but just 1 collision and 39 dangerous flights during 19 nights when the ACAS was on. Thus, we documented a 98% decrease in collisions and an 82% decrease in dangerous flights when the ACAS was on. We also found a 32% decrease in the number of evasive maneuvers initiated within 25 m of the power line along the river, and a 71% increase in the number of evasive maneuvers initiated beyond 25 m when the ACAS was on. Sandhill Cranes reacted sooner and with more control, and experienced substantially fewer collisions, when the ACAS was on. Installation of the ACAS on other high-risk spans, and perhaps on other anthropogenic obstacles where birds collide, may offer a new solution to a long-running conservation dilemma.

For information about access to the complete article, go here: academic.oup.com/condor/articl … 0.1093/condor/duz008

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Upcoming Events:

2019 An Evening with the Construction Cranes
Date: Saturday, June 15, 2019
Time: 5:00 – 8:00 p.m.
Location: International Crane Foundation Headquarters, E11376 Shady Lane Road, Baraboo, Wisconsin 53913

While the International Crane Foundation site is closed (opening again in 2020) as it undergoes a $10 million site renovation, the show will go on! Please join them for a unique *2019 An Evening with the Construction Cranes*. Registration for this year's event is limited, and costs $75 for members and

$100 for non-members. *For questions about registration please contact:* membership@savingcranes.org or 608-356-9462 ext. 807.

8th Annual Yampa Valley Crane Festival

Dates: August 29 – September 1, 2019
Location: Steamboat Springs and Hayden, Colorado

Keynote talk to be given by Kerryn Morrison, Manager of the African Crane Conservation Program for the International Crane Foundation/Endangered Wildlife Trust.
For more information about the Yampa Valley Crane Festival, go to:
https://coloradocranes.org/2019-festival/ *Online reservations begin July 1, 2019.*

2019 Tanana Valley Sandhill Crane Festival

Dates: August 23 - August 25, 2019
Location: Creamer's Field Migratory Waterfowl Refuge, Tanana Valley, 1300 College Road, Fairbanks, Alaska

Keynote speaker will be Gary Ivey of Bend, Oregon.
International Crane Foundation Western Crane Conservation Manager
Most events are free of charge. For the complete schedule of events when available, go to: http://www.friendsofcreamersfield.org/crane_festival2018.shtml

2019 Princeton Whooping Crane Festival

Dates: September 13-15, 2019
Location: Princeton Public School and surrounding area
604 Old Green Lake Road - Princeton, WI 54968
For more information call: 920-295-3877

2nd Annual Greater Yellowstone Crane Festival

Date: September 21, 2019
Location: Driggs City Center, 60 S. Main Street, Driggs, ID 83422
Organized by the Teton Regional Land Trust
For more information go to: http://www.tetonlandtrust.org/

International Crane Foundation Member Appreciation Day

Date: Saturday, September 21, 2019
Time: 9:00 a.m. - 5:00 p.m.
Location: International Crane Foundation Headquarters, E11376 Shady Lane Road, Baraboo, Wisconsin 53913

"Your membership makes a difference for cranes worldwide, and we want to thank you for your support. Please join us for this fun-filled day with behind-the-scenes tours, special programs and lectures – dedicated to you!"

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The Eastern Crane Bulletin is issued quarterly (March, June, September and December).
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