

# EMP FIELD TEAM ANNUAL REPORT 2021

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During 2021, there were about 75 Whooping Cranes in the Eastern Migratory Population. The majority spent the summer in Wisconsin, with the exception of 2 birds that spent the summer in Michigan (Fig. 1). We recorded a total of 23 nests by 21 breeding pairs of cranes, from which 14 chicks hatched. Four of these chicks made it to fledging, and 3 migrated south, and wintered with their parents. Three captive-reared cranes were released, and 2 survived to migration. There were 4 confirmed mortalities during 2021, due to various causes. Members of the Field Team captured 8 adult Whooping Cranes during 2021 for transmitter replacement, as well as 2 wild-hatched juveniles for initial transmitter deployment. All 8 of the adults were fitted with GSM transmitters or VHF radios to help us monitor during nesting and chick-rearing seasons. Additionally, 1 adult Whooping Crane (16-12) was captured and removed from the Eastern Migratory Population due to his continued use of a military air base. He was placed back into captivity at the International Crane Foundation (ICF).

Highlights related to monitoring and management of the EMP from 2021 include:

- During 2021, we recorded a total of 23 nests by 21 different pairs breeding in Wisconsin. This does not include 1 nest of a hybrid Sandhill-Whooping Crane pair in Michigan, and 2 nests of a hybrid pair in Dodge County, Wisconsin. The numbers reported here are the total we observed but there may have been a few missed nests or chicks who only lived a few days. We recovered 3 eggs from abandoned nests, collected 2 eggs from 2 occupied nests, and conducted forced re-nesting for one additional nest with 2 eggs. In total we brought 7 eggs into captivity for rearing and release. Additionally, we pulled a fertile egg from one nest and swapped it into a hybrid (Whooping Crane – Sandhill Crane) nest, however it did not hatch. Ten nests failed due to a variety of known and unknown causes (predation, abandonment, Table 2). Additionally, 2 nests were incubated full term, but the pairs were confirmed later without chicks. 14 chicks hatched from 8 first nests and 2 re-nests (Table 2). Four wild-hatched chicks fledged and 3 survived to migration (Table 3).
- Eight adults were captured for transmitter replacement, 2 wild-hatched chicks were captured for initial banding, and 1 adult was captured and placed back in captivity due to continued use of a military air base. In addition to having her transmitter replaced, Whooping Crane 6-17 was captured in Sauk County, Wisconsin, and translocated to White River Marsh SWA. She returned to Sauk County a few days later.
- We released 3 captive-reared Whooping cranes into the wild, and 2 survived to migration and headed south with other Whooping Cranes in the EMP.

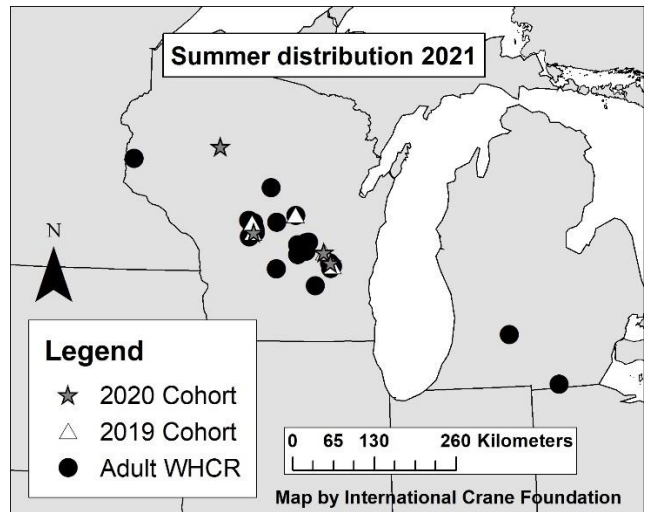


Fig 1. Summer distribution of the Eastern Migratory Population of Whooping Cranes during 2021. Seventy-three cranes spent the summer in Wisconsin and 2 were in Michigan.

**Winter 2020-21**

The estimated population size as of 1 January 2021 was 80 (39 F, 38 M, 3 U). The final wintering locations of Whooping Cranes in the EMP during winter 2020-21 were as follows (Figure 2): 36 in Indiana, 10 in Illinois, 11 in Kentucky, 1 in Tennessee, 14 in Alabama, 2 in Georgia, and 1 in Florida. There were 5 in unknown locations, including 1 pair who consistently winter in an unknown spot, 2 birds who became long-term missing in early 2021, and 72-17 who was confirmed dead in spring 2021 but likely died during fall 2020.

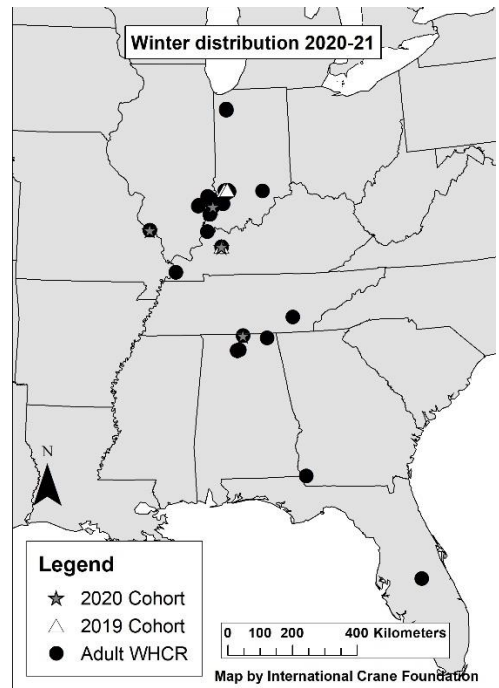


Fig 2. Distribution of the Eastern Migratory Population of Whooping Cranes during winter 2020-2021.

## Captures and Banding in 2021

- Captures for transmitter replacement:
  - 4-17 Sauk County, Wisconsin, March 26<sup>th</sup>
  - 7-07 Juneau County, Wisconsin, April 30<sup>th</sup>
  - 18-03 Juneau County, Wisconsin, August 23<sup>rd</sup>
  - W1-06 Juneau County, Wisconsin, August 23<sup>rd</sup>
  - W10-15 Juneau County, Wisconsin, August 31<sup>st</sup>
  - 6-17 Sauk County, Wisconsin, October 26<sup>th</sup>.
    - Translocated to White River Marsh SWA in Green Lake County, but she returned to Sauk County shortly thereafter.
  - 12-05 Knox County, Indiana, December 13<sup>th</sup>
  - 15-11 Greene County, Indiana, December 14<sup>th</sup>
- Captures of pre-fledged wild-hatched chicks (transmitter and bands):
  - W11-21 Juneau County, Wisconsin, August 2<sup>nd</sup>
  - W14-21 Juneau County, Wisconsin, August 3<sup>rd</sup>
- Captured to be removed from the population due to use of a military air base:
  - 16-12 Juneau County, Wisconsin, April 14<sup>th</sup>

## Winter distribution as of 1 January 2022

The maximum population size as of 1 January 2022 was 79 (38 Female, 38 Male, 3 Unknown). The distribution of these birds at this time is as follows (Figure 3): 34 in Indiana, 13 in Illinois, 6 in Kentucky, 1 in Tennessee, 14 in Alabama, 3 in Georgia, and 1 in Florida. There were 7 in unknown locations, 3 of which have not been seen south of Wisconsin.

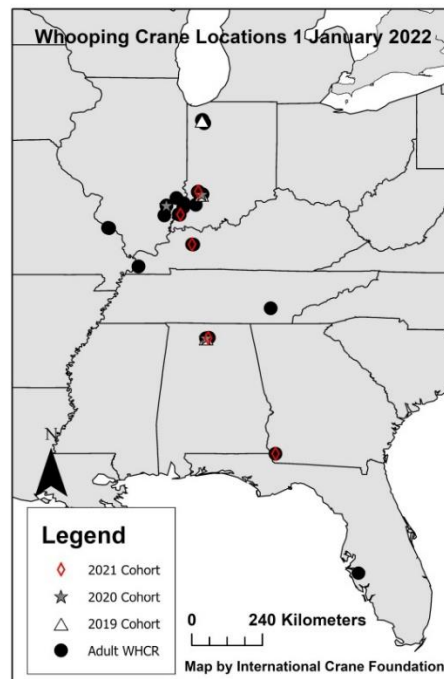


Fig 3. Distribution of wintering Whooping Cranes in the Eastern Migratory Population as of 1 Jan 2022.

## Survival

- The total (both captive releases and wild-hatched chicks) coming into this population since 2001 is 327 (Figure 4), of which 79 (24%) may be alive as of 31 December 2021 (Figure 5). There have been 298 captive raised Whooping Cranes released since the beginning of the reintroduction in 2001. This number does not include the 17 HY2006 ultralight-led juveniles that died during confinement in a storm and one HY2007 ultralight-led juvenile that was removed from the project prior to release. There have been 32 wild-hatched chicks that survived to fledging, 28 of which have been recruited to the EMP (see Reproduction section below). One of the fledged wild-hatched chicks died prior to fall migration.
- There were 4 confirmed mortalities recorded in 2021 (not including pre-fledged wild-hatched chicks born in 2021, Table 1):
  - 72-17 - remains collected March 20<sup>th</sup>, cause unknown - possibly powerline collision
  - 11-15 - remains collected May 26<sup>th</sup>, suspected bobcat predation
  - W3-18 - remains collected July 19<sup>th</sup>, cause unknown
  - 83-21 – remains collected October 8<sup>th</sup>, cause unknown - possibly predation
- There were 3 cranes classified as long-term missing during 2021, that had not been seen in more than a year.
  - W7-17 – last seen 24 March, 2020 in Fayette County, Illinois
  - 23-10 – last seen 8 April, 2020 in Juneau County, Wisconsin
  - W10-21 – has not been missing for more than one year, but is a hatch year bird whose parents showed up on the wintering grounds with no chick. Therefore, we assume W10-21 is dead, although there was never a carcass recovered.

**Table 1.** Causes of death for fledged, wild-hatched and captive-reared Whooping Cranes in the Eastern Migratory Population. We did not include confirmed mortalities for wild-hatched pre-fledged chicks. “Other” causes of mortality included euthanasia due to injuries, hemorrhages, capture myopathy, emaciation, and egg binding.

Cause of Death	Number of cases cumulatively 2001-2020	Number of cases 2021
Predation	38	1
Impact Trauma – confirmed or suspected power line collision	10	0
Impact Trauma – other (vehicle or aircraft collision, unknown source of trauma)	11	0
Gunshot	14	0
Disease (including lead poisoning)	8	0
Other	14	0
Unknown	73	3
Total confirmed mortalities	168	4

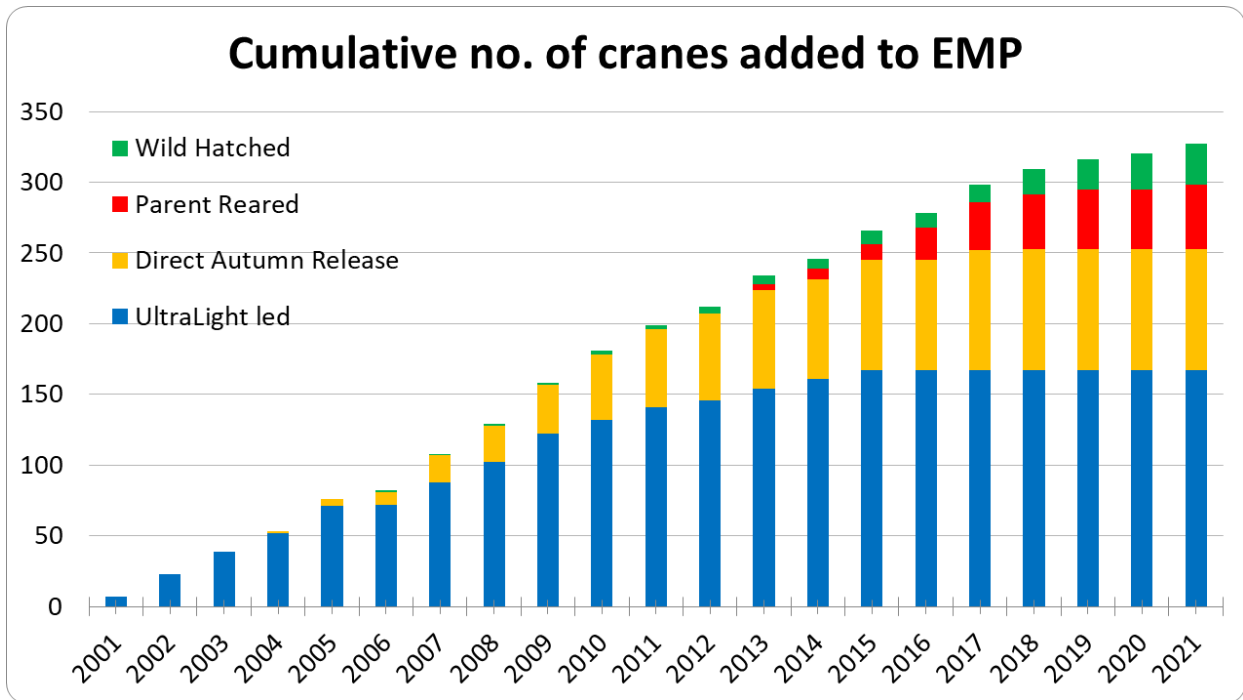


Fig 4. Cumulative number of cranes added to the Eastern Migratory Population by rearing method since 2001. As of 2021, there have been 167 UltraLight led, 86 Direct Autumn Release, 45 Parent Reared, and 29 Wild Hatched Whooping Cranes added to the EMP.

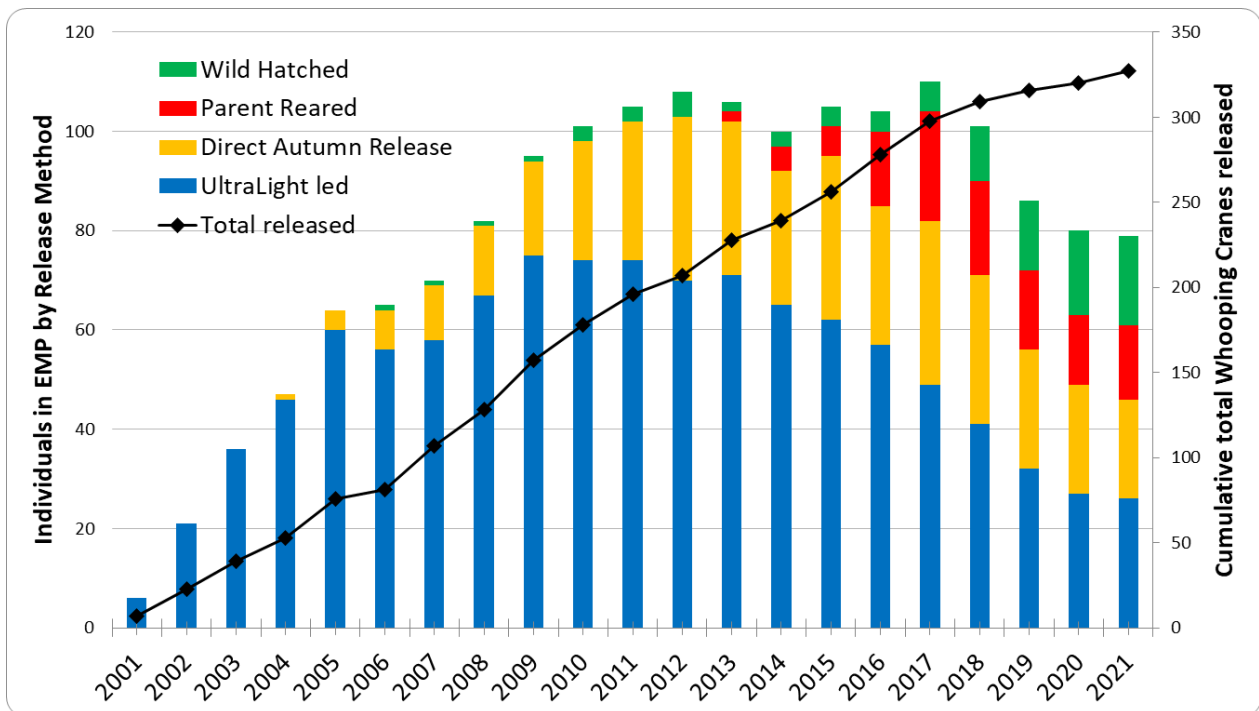


Fig 5. Population size of EMP by rearing method. As of 1 January 2022, there were 79 birds recorded in the EMP (left axis; 38 males, 38 females, 3 unknown). Black line indicates the total birds released (or wild-hatched and fledged) into the population cumulatively (right axis; same number as figure 4, above).

## Reproduction

- This year we recorded a total of 23 nests by 21 different pairs breeding in Wisconsin. This does not include 3 hybrid Sandhill-Whooping Crane nests, by 2 pairs. The numbers reported here are the total we observed but there may have been a few missed nests or chicks who only lived a few days.
- We recovered 3 eggs from abandoned nests, collected 2 eggs from 1 occupied nest, and collected 2 additional eggs from 2 renests with 2 egg clutches (took 1 egg from two 2-egg clutches). In total we brought 7 eggs into captivity for rearing and release.
- 10 nests failed due to a variety of known and unknown causes (predation, abandonment, Table 2). Additionally, 2 nests were incubated full term, but the pairs were confirmed later without chicks.
- There was 1 hybrid Sandhill-Whooping Crane pair in Michigan and 1 in Dodge County, Wisconsin. In Michigan, Michigan DNR staff replaced the hybrid eggs with dummy eggs. The pair in Dodge County was given a fertile egg collected from another nest, but the female Sandhill Crane did not continue incubating after the disruption. This pair re-nested later in the season, and the eggs were collected (Table 2).
- 14 chicks hatched from 8 first nests and 2 re-nests (Table 2). Four wild-hatched chicks fledged and 3 survived to migration (Table 3).
- At the end of 2021, there have been a total of 377 nests (294 first nests, and 83 re-nests). 167 chicks hatched in the wild of which 32 fledged of 31 December 2021, 18 of those survive in the wild (Tables 3 and 4).

**Table 2.** Nesting summary for 2021. Asterisks indicate a re-nest.

Female	Male	Nest Outcome	Date Completed	County	Chicks	Notes
12-11	5-11	Failed - abandoned	4/7/2021	Juneau		Nest failed around black fly emergence. Likely abandoned due to black flies.
36-09	18-03	Failed - unknown	4/7/2021	Juneau		Likely abandoned due to black flies but did not find any remains of eggs.
2-17	16-04	Failed - abandoned	4/7/2021	Juneau		One egg was broken with black flies in it. The second egg was collected and hatched in captivity.
24-17	4-17	Failed - abandoned	4/20/2021	Sauk		Abandoned for unknown reasons. Eggs were salvaged and one egg was hatched in captivity.
10-15	4-13	Active nest management	4/21/2021	Marquette		Eggs collected for captive rearing.

25-09	2-04	Failed - unknown	4/24/2021	Juneau		
W3-17	30-16	Hatched	4/26/2021	Green Lake	W1-21	Chick did not fledge.
15-11	29-08	Failed - unknown	4/28/2021	Juneau		
W3-10	7-07	Failed – abandoned	4/30/2021	Juneau		
59-13	5-11	Failed - predation	5/1/2021	Saint Croix		One egg was collected and placed in the nest of 16-11 and SACR mate. The second egg was eaten by an unknown nocturnal predator.
3-14	4-12	Hatched	5/2/2021	Green Lake	W2-21, W3-21	W3-21 did not fledge. W2-21 fledged and migrated south with parents.
42-09	11-15	Hatched	5/4/2021	Adams	W4-21, W5-21	Neither chick fledged.
7-11	19-10	Failed - predation	5/4/2021	Juneau		Egg eaten by a canid.
27-14	10-11	Hatched	5/7/2021	Green Lake	W6-21, W7-21	Neither chick fledged.
38-17	63-15	Hatched	5/11/2021	Dodge	W8-21, W9-21	Neither chick fledged.
13-03	9-05	Failed - predation	5/19/2021	Juneau		One egg was collected and hatched in captivity. Nest camera showed the nest was destroyed and the other egg was likely predated.
12-03	12-05	Hatched	5/21/2021	Juneau	W10-21	Chick died sometime after fledging but before or during migration.
36-09	18-03	Hatched*	5/23/2021	Juneau	W11-21	Chick fledged and migrated south with parents.
24-08	13-02	Hatched	5/27/2021	Juneau	W12-21	Chick did not fledge.
69-16	W10-15	Hatched	5/31/2021	Juneau	W13-21	Chick did not fledge.
73-18	3-04	Full term	5/31/2021	Juneau		
25-09	2-04	Hatched*	6/2/2021	Juneau	W14-21	One egg collected and raised in captivity. The second egg hatched and W14-21 fledged

						and migrated south with parents.
8-17	28-17	Full term	6/7/2021	Green Lake		
SACR	14-12	Failed - management	4/1/2021	Lenawee Co, MI		Hybrid eggs were removed and replaced with dummy eggs.
SACR	16-11	Failed - abandoned	4/26/2021	Dodge		Hybrid eggs were replaced with fertile egg from 59-13 and 1-11 nest. SACR never returned to the nest after the disturbance.
SACR	16-11	Failed* - management	5/24/2021	Dodge		Removed hybrid eggs from the nest.

**Table 3.** Nest initiation dates, number of nests, number of chicks hatched, and number of chicks fledged 2005-2021. This does not include hybrid nests or chicks nor does it include same-sex pairs. There was one same-sex female pair that nested in 2020, was given fertile eggs, and hatched a chick that did not fledge. This chick is included in the number of chicks hatched, but the nest is not included in nest totals.

Year	First Nest Initiation	# First Nests	# Re-nests	Total Nests	# Hatched	# Fledged
2005	16 Apr	2	0	2	0	0
2006	5-6 Apr	5	1	6	2	1
2007	3 Apr	4	1	5	0	0
2008	7 Apr	11	0	11	0	0
2009	2 Apr	12	5	17	2	0
2010	<1 Apr	12	5	17	7	2
2011	3-4 Apr	20	2	22	4	0
2012	<26 Mar	22	7	29	9	2
2013	15 Apr	21	2	23	3	1
2014	7 Apr	25	3	28	13	1
2015	1-3 Apr	27	9	36	24	3
2016	29-31 Mar	25	16	41	24	3*
2017	30 Mar	25	10	35	18	2
2018	8 Apr	17	6	23	10	6*
2019	30 Mar	25	11	36	19	3
2020	25 Mar	20	3	23	18	4
2021	<31 Mar	21	2	23	14	4
Total		294	83	377	167	32

\*One chick was old enough to have fledged when it died, but flights were never observed.



**Table 4.** Pairs that have successfully fledged chicks with years of fledging

Sire	Dam	Year(s)		
11-02	17-02	2006		
3-04	9-03	2010	2013	2015
12-02	19-04	2010	2012	2014
9-05	13-03	2012	2019	
10-09	17-07	2015		
2-04	25-09	2015	2021	
29-09	12-03	2016		
12-05	12-03	2019	2020	2021
1-04	8-05	2016		
12-02	4-11	2016*		
14-08	24-08	2017	2018**	
13-02	24-08	2020		
24-09	42-09	2017	2018	
11-15	42-09	2020		
5-11	12-11	2018	2019	
4-08	23-10	2018		
8-04	W3-10	2018		
1-04	16-07	2018		
63-15	38-17	2020		
18-03	36-09	2021		
4-12	3-14	2021		

\*12-02 died before chick fledged. Chick was old enough to have fledged when it died, but flights were never observed. 4-11 was found shot at her wintering area at the beginning of 2017.

\*\* 14-08 disappeared before chick fledged and 14-08 is believed to be dead. The chick (W9-18) was old enough to have fledged when it died, but flights were never observed.