

MONITORING & MANAGEMENT TEAM

Prepared by Hillary Thompson, Nicki Gordon, Jadine Lee, and Darby Bolt, International Crane Foundation

During 2019, there were about 86 Whooping Cranes in the Eastern Migratory Population. The majority spent the summer in Wisconsin, with the exception of 6 birds that spent all or part of the summer in Michigan, Iowa, or Illinois (Fig. 1). We recorded a total of 36 nests by 22 breeding pairs of cranes, from which 19 chicks hatched. Three of these chicks made it to fledging, migrated south, and wintered with their parents. In June, two one-year-old cranes who were raised at the Calgary Zoo were released at Horicon National Wildlife Refuge. In October, one parent-reared juvenile was released at White River Marsh State Wildlife Area in a territory of a breeding pair of Whooping Cranes. One additional parent-reared juvenile was released in November at Goose Pond Fish and Wildlife Area in Indiana near a group of sub-adult Whooping Cranes. There were ten confirmed mortalities during 2019, due to powerline collisions, gunshot, predation, bacterial infections, and unknown causes. Members of the Whooping Crane Eastern Partnership captured three adult Whooping Cranes during 2019 for transmitter replacement, as well as 2 wild-hatched juveniles for initial transmitter deployment, which will help us track individuals in this population to inform our management decisions and future releases. Additionally, one adult Whooping Crane was captured and removed from the Eastern Migratory Population and was placed back into captivity. He had been frequenting a military airport, was no longer responding to hazing activities, and was causing safety hazards for himself and others. In April-May of 2020, we documented 21 first nests and 2 re-nests, 13 of which hatched at least 17 chicks, although by the end of May nesting season was on-going and a full report of the 2020 breeding season will be in the next annual report.

Highlights related to monitoring and management of the EMP from 2019 (and early 2020) include:

- During 2019, we recorded a total of 36 nests by 25 different pairs breeding in Wisconsin. The numbers reported here are the total we observed but there may have been a few missed short-term nests, or chicks who only lived a few days. Eleven first nest had two eggs removed as part of the active nest management protocol. One re-nest also had eggs removed. Seven nests failed due to unknown causes. One nest was incubated full term, and two nests had unknown outcomes but the pairs were confirmed later without chicks. 19 chicks hatched from 9 first nests and 8 re-nests. Three wild-hatched chicks made it to fledging and they all migrated south (Table 3).
- In April-May 2020, we recorded 23 nests by 21 pairs in Wisconsin. Nest monitoring was limited in early April due to restrictions from COVID-19, so we likely missed a few breeding pairs. We did document 17 chicks hatch from 13 nests, and still had active nests in June 2020. A full report on the 2020 breeding season will be in the next annual report on the Eastern Migratory Population.
- Three adults were captured for transmitter replacement, two wild-hatched chicks were captured for initial banding, and one adult was captured and placed back in captivity during 2019. One additional adult was captured for transmitter replacement in early 2020.

- There were ten mortalities confirmed during 2019 (Table 1): seven in Wisconsin, one in Illinois, one in Alabama, and one in Ontario, Canada.
- We released four parent-reared cranes in 2019. Two one-year-olds were released at Horicon National Wildlife Refuge in June, one juvenile was released at White River Marsh State Wildlife Area in Green Lake County in October, and one juvenile was released at Goose Pond Fish and Wildlife Area in Greene County Indiana in November. One of the one-year-olds died on migration in Illinois due to a powerline strike.
- There were no additional releases, mortalities, or removals from the population during Jan – May 2020.

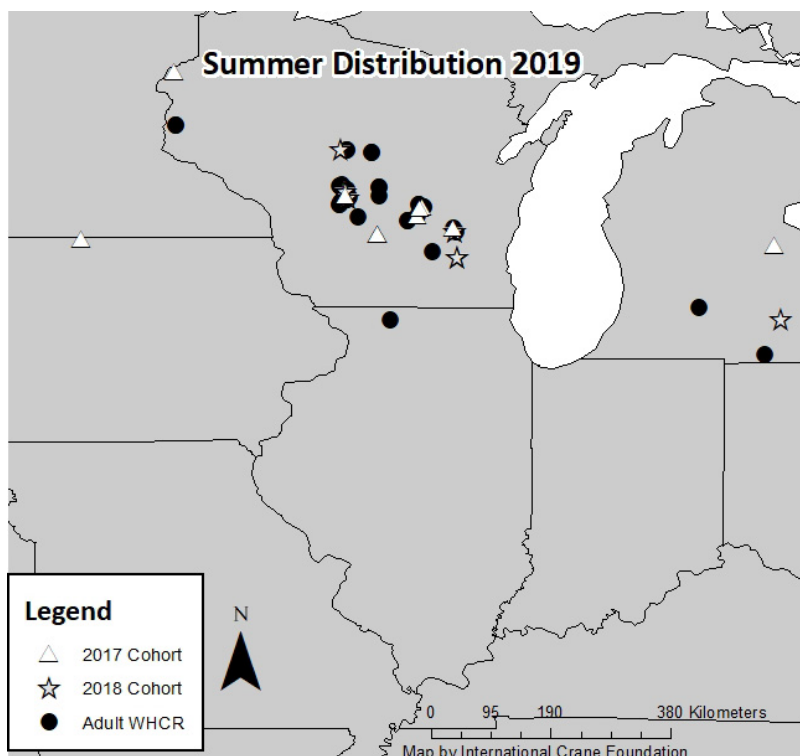


Figure 1. Summer distribution of the Eastern Migratory Population of Whooping Cranes during 2019. At least 74 cranes spent the summer in Wisconsin, 1 in Illinois, 4 in Michigan, and 1 in Iowa.

Winter 2018/2019

The estimated population size as of 7 January 2019 was 101 (45 F, 53 M, 3 U). The final wintering locations of Whooping Cranes in the EMP during winter 2018/2019 were as follows (Figure 2):

- Indiana – 31
- Illinois – 12
- Kentucky – 10
- Tennessee – 7
- Louisiana – 1

- Alabama – 18
- Georgia – 2
- Florida – 5
- Unknown – 15

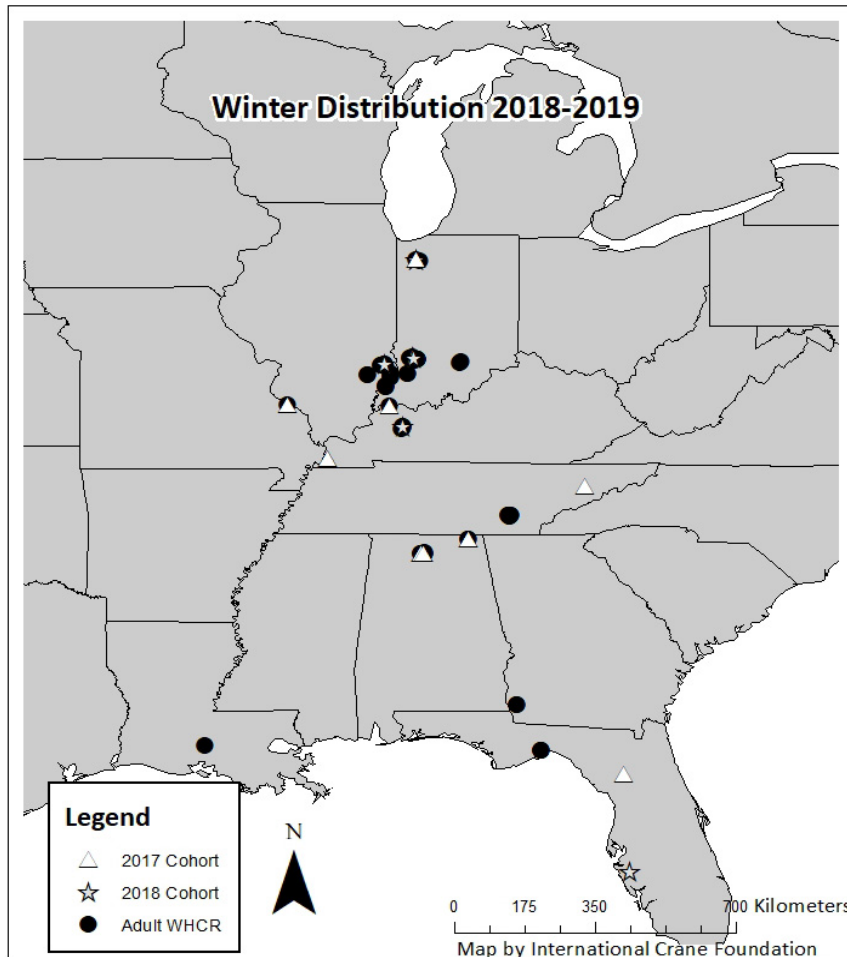


Figure 2. Distribution of the Eastern Migratory Population of Whooping Cranes during winter 2018-2019.

Captures and Banding

- Captures for transmitter replacement:
 - 1-10 Greene County, Indiana, February 18th, 2019
 - 1-11 St. Croix County, Wisconsin, July 22nd, 2019
 - 37-07 Necedah NWR, Wisconsin, August 23rd, 2019
 - 13-03 Greene County, Indiana, February 20th, 2020
- Captures of pre-fledged wild-hatched chicks (transmitter and bands):
 - W1-19 Juneau County, Wisconsin, June 27th
 - W14-19 Necedah NWR, Wisconsin, July 25th

- Captured to remove from EMP and place in captivity due to frequenting a military airport and endangering himself and others:
 - 12-09 Juneau County, Wisconsin, September 24th

Winter distribution as of 1 January 2020

The maximum population size as of 1 January 2020 was 86 (41 Female, 42 Male, 3 Unknown). The distribution of these birds at this time is as follows (Figure 3):

- Indiana – 34
- Illinois – 9
- Kentucky – 4 confirmed, 3 assumed
- Tennessee – 2
- Alabama – 20
- Georgia – 2 assumed
- Florida – 2
- Unknown – 8

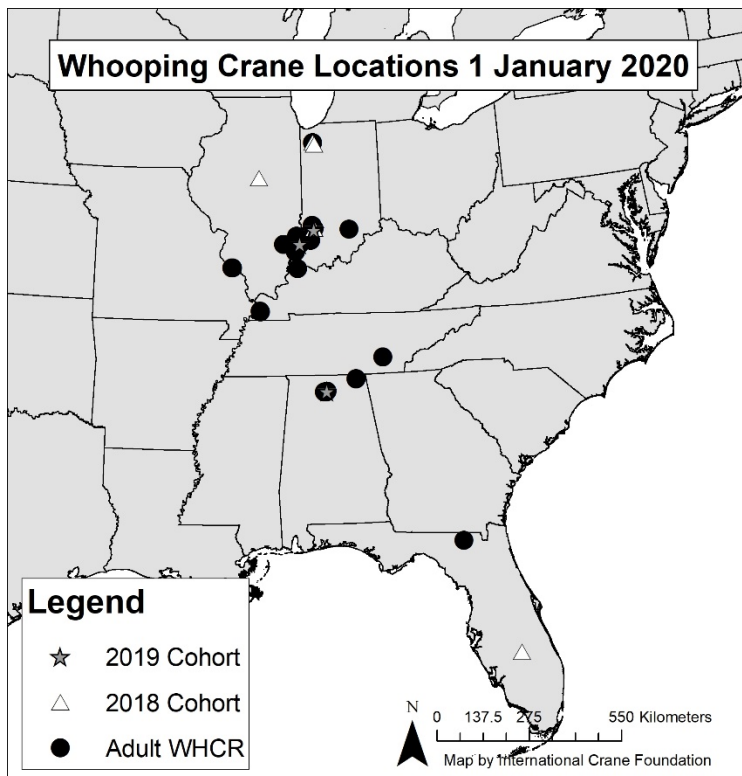


Figure 3. Distribution of wintering Whooping Cranes in the Eastern Migratory Population as of 1 January 2020.

Survival

- As of 31 December 2019, there have been 295 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 twenty-four wild-hatched chicks that survived to fledging, twenty-one of which have been recruited to the EMP (see Reproduction section below). The total released or wild-hatched chicks in this population since 2001 is 316 (Figure 4), of which 86 (27.2%) may be alive as of 1 January 2020 (Figure 5).
- There were ten confirmed mortalities recorded in 2019 (not including wild-hatched chicks born in 2019, Table 1):
 - 25_17 – 18 January, euthanized after powerline collision
 - 19_17 – 9 May, powerline collision
 - 39_17 – 9 May, gunshot
 - 8_04 – 31 May, bacterial infection
 - 29_16 – died during 2018, remains collected May 2019, cause unknown
 - 3_11 – 6 June, bacterial infection
 - 41-09 – died during 2018, remains collected June 2019, cause unknown
 - 9_03 – 3 July, predation
 - 16_07 – 17 August, cause unknown
 - 78_18 – 12 November, powerline collision

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 2001-2018	Number of cases 2019
Predation	37	1
Impact Trauma – confirmed or suspected power line collision	7	3
Impact Trauma – other (vehicle or aircraft collision, unknown source of trauma)	11	0
Gunshot	13	1
Disease	5	2
Other	14	0
Unknown	68	3
Total confirmed mortalities	155	10

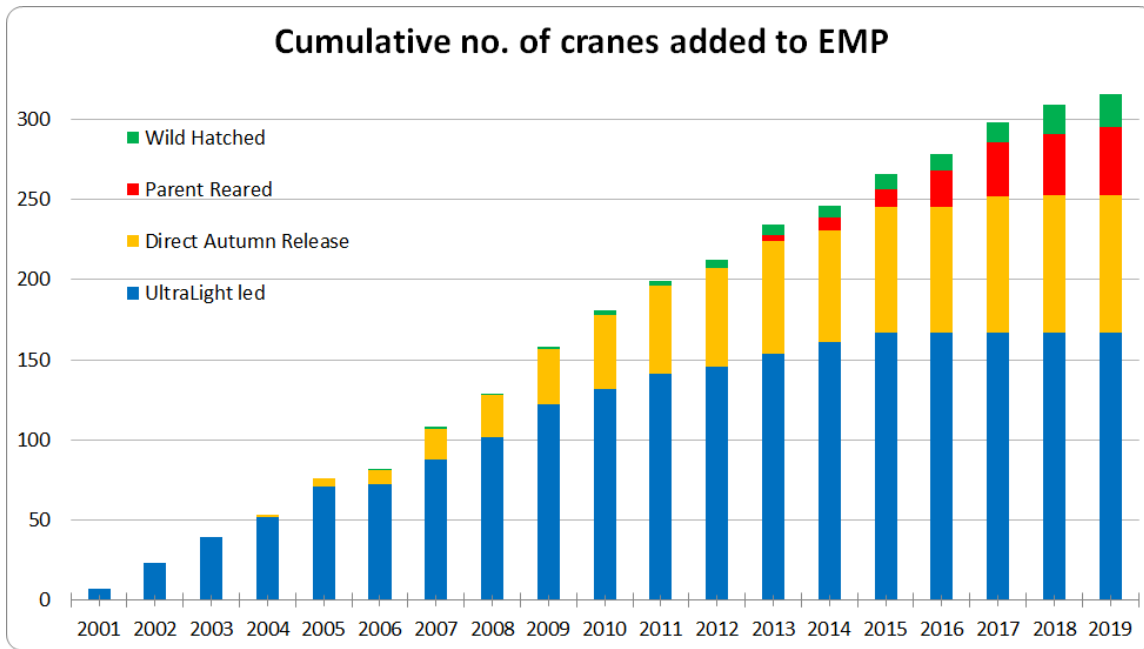


Figure 4. Cumulative number of cranes added to the Eastern Migratory Population by rearing method since 2001. As of 2019, there have been 167 UltraLight led, 86 Direct Autumn Release, 42 Parent Reared, and 21 Wild Hatched Whooping Cranes added to the EMP.

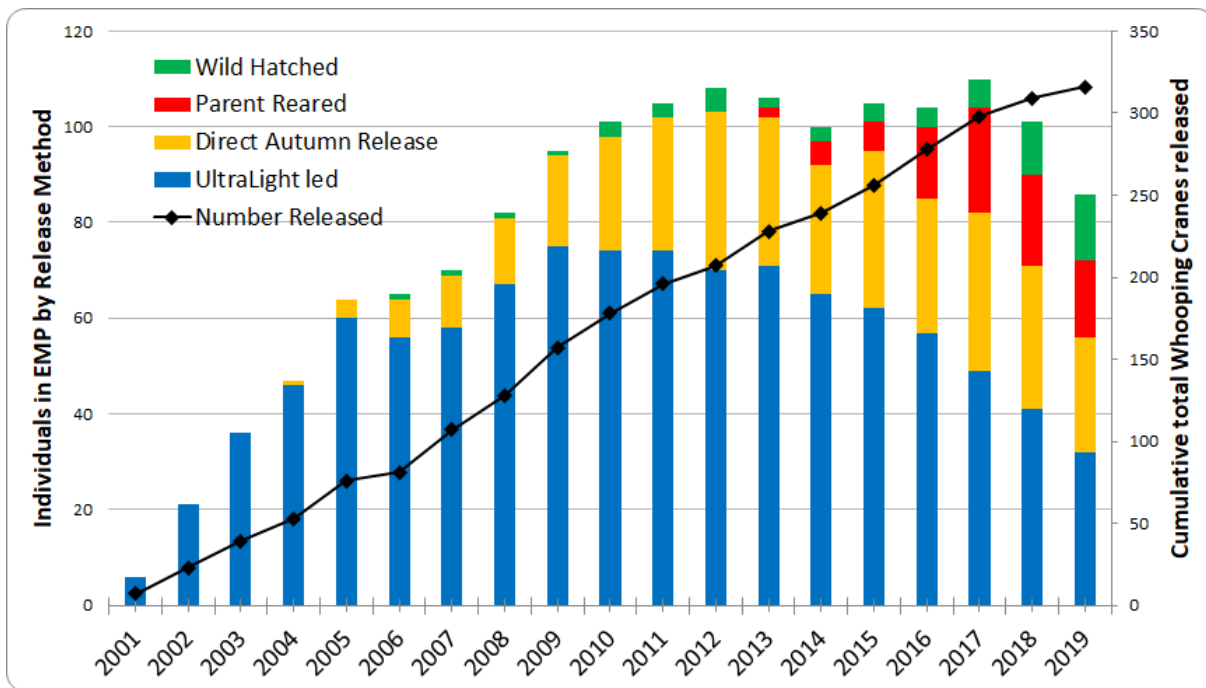


Figure 5. Population size of EMP by rearing method. As of 1 January 2020, there were 86 birds recorded in the EMP (left axis; 41 males, 42 females, 3 unknown). Black line indicates the total birds released into the population cumulatively (right axis; same number as figure 4, above).

Reproduction

- This year we recorded a total of 36 nests by 25 different pairs breeding in Wisconsin. The numbers reported here are the total we observed but there may have been a few missed short-term nests, or chicks who only lived a few days.
- Ten first nests had eggs removed as part of the active nest management protocol. An additional first nest had eggs removed because it was near a busy airstrip at a military airport. One second nest had eggs removed when one adult was found dead near the nest.
- 7 nests failed due to unknown causes. One nest was incubated full term, and two nests had unknown outcomes but the pairs were confirmed later without chicks.
- 19 chicks hatched from 9 first nests and 8 re-nests (Table 2). Three wild-hatched chicks made it to fledging and migrated south (Table 3).
- At the end of 2019, there have been a total of 331 nests (253 first nests, and 78 re-nests), leading to 135 chicks hatched in the wild and 24 fledged chicks. As of 31 December 2019, thirteen wild-hatched birds survive in the wild (Tables 3 and 4).
- In early 2020, we documented 23 nests by 21 pairs, hatching 17 chicks from 13 nests. There are still active nests, thus a full 2020 breeding report will be in the next annual report. We had limited nest monitoring in April 2020 due to restrictions from COVID-19 and did not implement forced re-nesting on a large scale. We did collect two fertile eggs from one nest that was likely to be impacted by black flies and put them in the nest of two female Whooping Cranes, who hatched at least one chick.

Table 2. Nesting summary for 2019. Asterisks indicate a re-nest.

Female	Male	Nest Outcome	Date Completed	County	Chicks	Notes
12_11	5_11	Hatched (1 of 2)	5/3/2019	Juneau	W1-19	W1-19 survived to fledge and migrated with parents
42_09	24_09	Hatched (1 of 2)	5/7/2019	Adams	W2-19	Male 24-09 and chick both disappeared after 23 May
59_13	1_11	Failed	4/15/2019	St. Croix		Snow storm on 11 April. Pair seen on 15 April and were not nesting.
W1_06	1_10	Active Nest Management	4/20/2019	Juneau		
6_15	37_07	Active Nest Management	4/20/2019	Juneau		
25_09	2_04	Active Nest Management	4/20/2019	Juneau		
24_08	13_02	Active Nest Management	4/21/2019	Juneau		
36_09	18_03	Active Nest Management	4/20/2019	Juneau		

13_03	9_05	Active Nest Management	4/20/2019	Juneau		
27_14	10_11	Hatched (2 of 2)	5/10/2019	Marquette	W3-19, W4-19	Both chicks had disappeared by 27 May.
23_10	4_08	Active Nest Management	4/20/2019	Juneau		
W3_10	8_04	Hatched (2 of 2)	5/14/2019	Juneau	W5-19, W6-19	Male 8_04 found dead on 31 May. Both chicks had disappeared by 13 June.
9_03	3_04	Active Nest Management	4/20/2019	Juneau		
16_07	7_07	Active Nest Management	4/20/2019	Juneau		
12_03	12_05	Active Nest Management	4/20/2019	Juneau		
7_11	3_11	Failed	4/26/2019	Adams		Unknown why this nest failed
3_14	4_12	Failed	5/4/2019	Marquette		Unknown why this nest failed
10_15	4_13	Unknown/ Full Term	5/23/2019	Marquette		Pair sat full term but we were unable to determine whether eggs hatched
W3_17	30_16	Unknown/ Full Term	5/15/2019	Marquette		Eggshell seen on 15 May. Inconclusive photos on whether a chick is present or not.
67_15	3_17	Failed	4/26/2019	Marquette		Unknown reason for nest failure
7_17	4_14	Failed	5/3/2019	Green Lake		Unknown reason for nest failure
69_16	12_09	Active Nest Management	5/3/2019	Juneau		Collected two eggs. Found 3rd egg buried in nest.
15_11	29_08	Hatched (2 of 2)	5/20/2019	Juneau	W7-19, W8-19	Both chicks disappeared by 6 June.
W18_15	19_10	Hatched (1 of 2)	5/25/2019	Juneau	W9-19	Female W18-15 and chick both disappeared by 23 July.
5_10	28_08	Hatched (2 of 2)	5/31/2019	Marathon	W10-19, W11-19	Both chicks had disappeared by 28 June.

13_03	9_05	Failed*	5/12/2019	Juneau		Unknown why this nest failed
W1_06	1_10	Failed*	5/6/2019	Juneau		Unknown why this nest failed
25_09	2_04	Hatched (1 of 2)*	6/2/2019	Juneau	W12-19	Chick not seen on 3 July.
36_09	18_03	Hatched (1 of 2)*	6/4/2019	Juneau	W13-19	Chick not seen on 17 June.
12_03	12_05	Hatched (1 of 2)*	6/6/2019	Juneau	W14-19	W14-19 survived to fledge and migrated south with parents
16_07	7_07	Hatched (1 of 2)*	6/6/2019	Juneau	W15-19	Chick not seen on 16 June.
24_08	13_02	Hatched (1 of 2)*	6/5/2019	Juneau	W18-19	W18-19 found dead on 20 June
9_03	3_04	Hatched (2 of 2)*	6/7/2019	Juneau	W16-19, W17-19	Female 9-03 found dead 3 July and both chicks had disappeared by 2 August
7_11	3_11	Active Nest Management*	6/6/2019	Adams		Collected eggs on 6 June after 3_11 died. One egg hatched in captivity and the chick 80-19 was released in fall.
59_13	1_11	Unknown/ Full Term*	5/29/2019	St. Croix		59-13 disappeared for a period of time - assume they were nesting but did not locate nest. Unknown nest outcome
13_03	9_05	Hatched (1 of 2)*	6/22/2019	Juneau	W19-19	Third nest attempt for this pair. W19-19 survived to fledge and migrated south with parents.

Table 3. Nest initiation dates, number of nests, number of chicks hatched, and number of chicks fledged 2005-2019

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
Total		253	78	331	135	24

*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		
29_09	12_03	2016		
1_04	8_05	2016		
12_02	4_11	2016*		
14_08	24_08	2017	2018**	
24_09	42_09	2017	2018	
5_11	12_11	2018	2019	
4_08	23_10	2018		
8_04	W3_10	2018		
1_04	16_07	2018		
12_05	12_03	2019		

*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.