

Iowa Trumpeter Swan Restoration: 2023 Summary



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ABSTRACT

Trumpeter Swans, which were once wide-spread throughout the state, were extirpated from Iowa in the 1880s. The Iowa Department of Natural Resources (Iowa DNR) developed a Trumpeter Swan restoration plan in 1993 to guide efforts to bring the species back. Trumpeter Swan restoration has been successful and Iowa now hosts over 130 nesting pairs (Jones et al. 2022) and restoration, education, and monitoring efforts are ongoing.

INTRODUCTION

Prior to the settlement of Iowa, trumpeter swans nested throughout the state. However, wetland drainage and unregulated harvest of trumpeters together caused their demise. Prior to restoration, the last pair of wild nesting trumpeter swans in Iowa occurred in 1883 on the Twin Lakes Wildlife Area southwest of Belmond, Iowa in Hancock County. Trumpeter swans were first given nationwide protection in 1918 when the United States, Canada, and Mexico signed the International Migratory Bird Treaty. A nationwide survey in the early 1930's indicated that only 69 trumpeters existed in the continental United States, all occurring in the Red Rock Lakes area in southwest Montana. The Red Rock Lakes became the nation's first National Wildlife Refuge in order to protect these trumpeter swans.

TRUMPETER SWAN RESTORATION PROGRAM

Beginning in 1993, the Iowa Department of Natural Resources developed a plan to restore trumpeter swans to the state. The first objective of the plan was to restore a self-sustaining, migratory population of trumpeter swans to its former nesting range in Iowa and the second objective was to "Trumpet the Cause for Wetlands".

After 115 years of absence, the first modern day hatch of three wild trumpeter swan cygnets occurred in 1998 in Dubuque County. In 2000, a second pair nested on a Winnebago County Conservation Board wetland (Russ Tract at Thorpe Park) 8 miles west of Forest City. Additional nest attempts and successful broods have continued to occur and increase throughout Iowa since. The reintroduction efforts have taken time, but have been a wonderful success.

There have been over 376 swan releases conducted by DNR staff with the public and media in attendance. With each swan release involving the public, the many positive values of wetlands have been presented. The swans serve as wonderful ambassadors for conservation and have garnered lots of attention and interest from the public, media, and landowners. DNR staff have used these opportunities to educate the public on the value of healthy wetlands to support "charismatic mega-fauna" such as Trumpeter Swans.

Swans used for the restoration project in Iowa have been obtained from 26 different states, including zoos, private propagators and other state swan restoration programs. A total of 132 sources and partnerships have been used to date. Once in Iowa, flightless breeder pairs are established at appropriate sites, the young of which are removed and later released for free flight across the state. There are currently eleven active partnership breeding pair sites in the state. Funding to help support the DNR with this restoration program has come from a wide variety of swan enthusiasts, conservation groups, and charities. Considerable soft match/in-kind contributions have been made and are conservatively estimated at over 1.75 million dollars. These funds have been used to help cover the costs of feed, vet care, nesting site preparations, equipment, and obtaining and transporting swans.

Trumpeter Swans are nearing sustainable numbers in north central and east central Iowa and have exceeded the Iowa DNR's initial restoration goals. The southern half of Iowa has been the priority area for recent restoration work. Cygnet releases have occurred in southern Iowa in recent years due to very low trumpeter swan nesting densities and the fact that trumpeters very rarely pioneer their nesting efforts south. The objective is to achieve a self-sustaining breeding population of swans across southern Iowa. To reach this objective, a goal was set to establish eight nesting swan pairs south of Interstate 80 by the year 2022. This goal was reached during the 2020 breeding season. As a result of the program's success, the Iowa DNR has significantly reduced direct hands-on efforts of handling and transporting swans over the past five years. Instead, time is now more focused on population monitoring and maintaining high quality habitat for swans. An updated trumpeter swan management plan is currently being drafted and will determine the future course of action in Iowa.

A total of 1,237 trumpeters have been released as part of the restoration effort to date, with the most recent releases occurring in 2021 (Table 1). A total of 129 wild free flying Trumpeter swans have been captured, banded and released in Iowa since 1997 (Table 2).

Table 1. Trumpeter Swan releases in Iowa 2019-2021.

Year	Release Site	County	Males	Females	Total
2019	Lake Anita	Cass	5	3	8
	Lake Icaria	Adams	7	3	10
	Viking Lake	Montgomery	0	2	2
	Total				20
2021	Lake Anita	Cass	2	1	3
	Lake Icaria	Adams	6	3	9
	Sedan Bottoms	Appanoose	3	2	5
	Viking Lake	Montgomery	1	1	2
	Total				19
Grand total (1994 to 2023)					1,237

Table 2. Wild free flying Trumpeter Swans banded and released in Iowa, 1997-2023.

Year	Area	County	Males	Females	Total
1997	Miller's Quarry	Black Hawk	0	1	3
1998	Holzer's Pond	Dubuque	2	1	5
1999	Mason City	Cerro Gordo	3	2	3
2000	Holzer's Pond	Dubuque	2	1	4
2000	Mason City	Cerro Gordo	2	2	2
2000	Stark/Nessa Quarry	Hamilton	2	0	1
2001	Dunbar Slough	Greene	1	0	2
2001	Kennedy's Pond	Dubuque	1	1	4
2002	Holzer's Pond	Dubuque	3	1	5
2002	Schildberg Gravel Quarry	Cass	1	4	2
2002	East Twin Lake	Hancock	2	0	4
2003	Schildberg Gravel Quarry	Cass	2	2	12
2004	Schildberg Gravel Quarry	Cass	5	7	8
2004	Beemer's Pond	Hamilton	3	5	5
2005	Stark/Nessa Quarry	Hamilton	5	0	6
2006	Beemer's Pond	Hamilton	4	2	1
2006	Schildberg Gravel Quarry	Cass	0	1	2

Year	Area	County	Males	Females	Total
2007	Ventura Marsh	Cerro Gordo	0	2	1
2008	Ventura Marsh	Cerro Gordo	0	1	1
2020	Twelve Mile Lake	Emmet	1	2	3
2020	CREP	Floyd	4	1	5
2020	Private wetland	Hamilton	2	5	7
2020	Gladfelter Marsh	Hancock	1	4	5
2020	High Amana	Iowa	1	0	1
2020	Negus Rec area	O'Brien	3	3	6
2020	Private wetland	Story	2	2	4
2020	Cardinal Marsh	Winneshiek	5	1	6
2020	Hanlontown/Elk Creek	Worth	13	4	17
2021	Private wetland	Clinton	1	0	1
2021	Hale Slough	Dickinson	0	2	2
2022	Lakin Slough	Guthrie	1	0	1
Total					129

OUTREACH - UPCOMING FILM

The Iowa DNR is partnering with the Trumpeter Swan Society and Steve Devon (filmmaker) to assist in the production of an upcoming film: *Return of Trumpeters* (film trailer <https://vimeo.com/56795018>), due out on public television stations in the fall of 2023.

MARKED SWANS AND REPORTED OBSERVATIONS

Through the summer of 2008 nearly all trumpeter swans released in Iowa were marked with plastic green or red neck collars and leg bands, along with U.S. Geological Survey (USGS) metal leg bands. The plastic neck collars and leg bands are marked with alpha letters C, F, H, J, K, P, T, M, and two numbers, 00 through 99. Several of our marked swans have lost both plastic neck collars and the soft aluminum metal USGS leg bands within 1-4 years of deployment. Neck collar losses create problems analyzing both movements and mortality of Iowa Trumpeter Swans. In 2004, we began using stainless steel lock-on 9C USGS leg bands and we are not aware of any leg band losses since. Over the past 5 years, we have neck collared less than 5% of released swans.

Iowa has the largest trumpeter swan observation database, with over 4,500 observations of neck collared swans. As of 2023, Iowa marked swans have been reported in 17 states. Swan observations have occurred as far west as Colorado, and east to Virginia, and north in three Canadian provinces (Figure 1). Based on 20 years of migration observations, the largest concentrations of wintering swans that migrated from Iowa occur in northeast and east-central Kansas and northwest and west-central Missouri. Iowa swans also winter near Heber Springs, Arkansas and the Riverlands Bluffs area in southwestern Illinois. During the winter of 2002-2003, 2 swans released at Hottes Lake near Spirit Lake, Iowa migrated to Lubbock, Texas. These are possibly the first known, or at least the first of very few interior swans to migrate to Texas since the 1880's. Migration movements "out of that norm" included 3 swans released at Union Slough National Wildlife Refuge that migrated to and wintered in southeast Colorado near Ft Lyon. Two of these birds were observed at Monticello, Minnesota in the spring of 1997. The straight-line round-trip mileage for these birds was over 1,300 miles.

"Traditional" swan wintering sites are developing in Iowa. Sites include Bill Beemer's Pond, a private partner site near Webster City, Schilberg quarry near Atlantic, Laurie Severe's Pond near Nora Springs, Dale Maffitt Reservoir southwest of Des Moines, Ada Hayden Heritage Park in Ames and a rock quarry near Fertile, IA. Many areas of the state are now seeing swans throughout the year. This is another indication of the success of Iowa DNR restoration efforts.

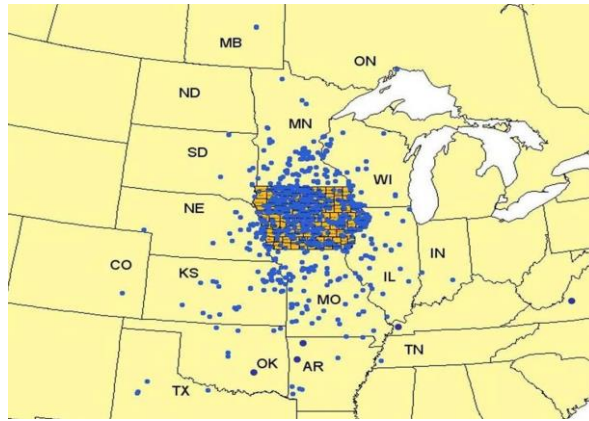


Figure 1. Observation reports of Iowa-collared/banded Trumpeter Swans, 1995-2023.

TRUMPETER SWAN RESEARCH

In an ongoing project, the Iowa DNR partnered with Iowa State University (ISU) to capture and deploy GPS/GSM collars on trumpeter swan cygnets. Goals of the project include: 1) evaluating breeding locations, migratory movements and wintering areas of trumpeter swans. 2) providing the opportunity for ISU ornithology students to collect and analyze ornithological data. 3) providing information to the public on trumpeter swan ecology, movements and the value of wetlands via a website (<https://www.nrem.iastate.edu/track-trumpeter>). This website provides location updates on marked swans. A cygnet that was captured and GPS collared in Tama County was later reported in Arkansas. One GPS/GSM collared swan traveled 1,800 miles northwest into northern British Columbia for the summer and later migrated south for the winter, traveling over 3,800 miles in one year.

In addition to the project with ISU, the Iowa DNR partnered with a multi-state research project lead by the University of Minnesota from 2020-2023. This project is focused on understanding the movement ecology of the [Interior Population of Trumpeter Swans](#). The Iowa DNR deployed GPS/GSM collars on 11 adult Trumpeter Swans across Iowa. More information on this collaborative research project is available on the webpage. The Iowa DNR also conducted a cygnet winter survival study by placing green neck collars and matching leg bands on 37 cygnets reared by the GPS/GSM collared adults. We followed the movements of the family groups and recorded survival through collar re-sighting from September 2020 to April 2021. Our research found the average cygnet survival rate was 78% over their first winter.

TRUMPETER SWAN MORTALITY FACTORS

Lead poisoning, power line collisions, illegal shootings and disease are the leading mortality factors for Trumpeter Swans in Iowa. Nearly 75% of the released Trumpeter Swans perish before they reach their breeding age (4-6 years old). This high mortality rate is a concern due to negative impacts on trumpeter swan recruitment.

Lead Poisoning- Iowa has recorded 235 Trumpeter Swan deaths from lead poisoning between 1995 and 2023. Lead poisoning increases in years of drought when wetland water levels are low. Legacy and recent lead (from shot and sinkers, respectively) is more easily accessible and more likely to be ingested by foraging waterfowl. For example, a total of 55 lead poisoned swans were recorded in Iowa in the fall/winter of 2017-18. Of those mortalities, 34 were documented at one wetland site in western Clinton County. Approximately 40% of the total swan deaths reported in Iowa are lead related.

Collision with Power Lines- Iowa has recorded 203 Trumpeter Swan deaths associated with power line collisions between 1995 and 2023. Swans have large wingspans and heavy bodies, and therefore don't fly very high above the ground (often about powerline height unfortunately). This increases the likelihood of collisions with power lines because they are unable to quickly reroute their flight. Recently fledged cygnets may be more vulnerable to power line collisions during the late summer when they are learning to fly. Weather conditions such as dense fog or high winds also increase incidence of power line collision across all ages of Trumpeter Swans. Collisions may cause instantaneous death, or may injure swans so they cannot fly and do not survive for long. In some cases, swans that collide with power lines can successfully recover and be released if taken to a licensed wildlife rehabilitator. Approximately 33% of the total swan deaths reported in Iowa have been from power line collisions.

Illegal Harvest- Iowa has recorded 92 Trumpeter Swan deaths associated with illegal harvest between 1995 and 2023. An estimated 40% of the shootings are reported as intentional. Shooting a trumpeter swan can result in a citation of \$1,500, liquidated damages, court costs, and possible hunting license revocation. We hope illegal shootings will decrease with increased publicity, additional enforcement efforts, and public scrutiny. There have been 13 confirmed shootings of Iowa swans that occurred out-of-state, (1 in Wisconsin, 5 in Missouri, 5 in Texas). A \$17,000 fine was charged to four men in connection with the family group of 5 Iowa swans shot in Texas. Approximately 14% of the total swan deaths reported in Iowa are due to illegal harvest.

Disease- Iowa has recorded 63 Trumpeter Swan deaths due to disease between 1995 and 2023. The most common diseases affecting Trumpeter swans are Aspergillosis and Avian Cholera, although many others could possibly contribute to mortality. Approximately 9% of the total swan deaths reported in Iowa are due to disease.

Malnutrition- Iowa has recorded 13 Trumpeter Swan deaths due to malnutrition between 1995 and 2023. Most malnutrition mortalities affect pre-fledging cygnets and occur in drought years when wetlands dry up and foraging options are limited. Approximately 2% of the total swan deaths reported in Iowa are due to malnutrition.

TRUMPETER SWAN POPULATION STATUS

There were 54 Trumpeter Swan nests reported in 2017 and 2018 and 55 nests reported in 2019. Additional efforts to survey Iowa swan nests in 2020 resulted in 119 trumpeter swan nest attempts tallied. No formal nest monitoring occurred during the 2021 breeding season, but a monitoring strategy will be developed as part of the forthcoming Trumpeter Swan Management Plan. 135 nest attempts were tallied in 2022 (Figure 2). Since 1998, 958 known trumpeter swan nests have occurred in Iowa (Table 3).

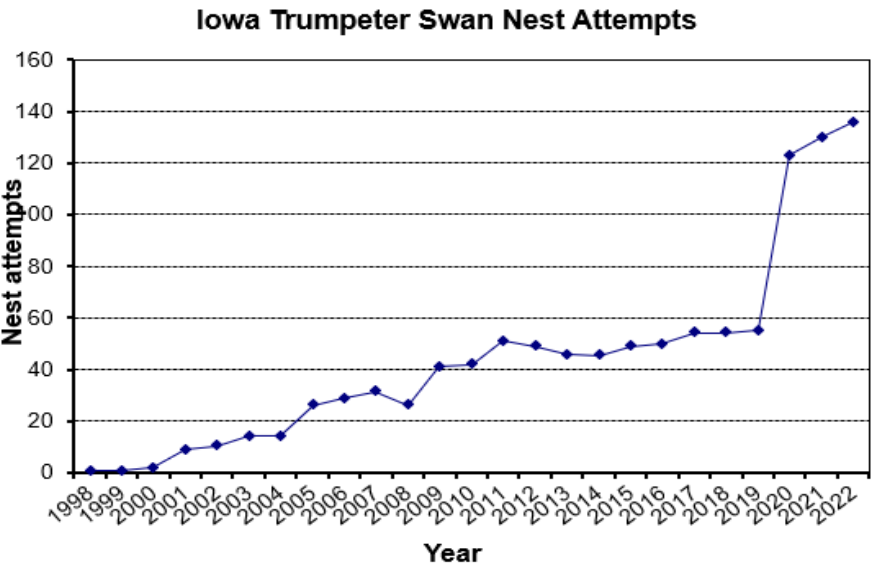


Figure 2. Iowa Trumpeter Swan nest attempts by year

Table 3. Wild free flying Trumpeter Swan nest attempts and total number of released swans, 1997-2022.

Year	Nest Attempts	# of Broods	# Hatched	Mean brood	~# Fledged	Adult Total	Captive Released	Mid-Winter Count	Annual % Change in Winter Count	Estimated Population
1994	0	0	0		0		4			
1995	0	0	0		0		14			
1996	0	0	0		0		31			
1997	0	0	0		0		35			
1998	1	1	3	3.0	3		57			

Year	Nest Attempts	# of Broods	# Hatched	Mean brood	~# Fledged	Adult Total	Captive Released	Mid-Winter Count	Annual % Change in Winter Count	Estimated Population
1999	1	1	5	5.0	0		42			
2000	2	2	5	2.5	3		91			
2001	9	7	26	3.7	19		83			
2002	10	8	37	4.6	27		63			
2003	14	12	53	4.4	36		82			
2004	14	9	44	4.9	36		75			
2005	26	19	87	4.6	67	86	113			total= 266 (Pop Survey Estimate)
2006	29	22	80	3.6	52		85			
2007	31	27	103	3.8	60		73			
2008	26	22	91	4.1	55		65			
2009	41	37	120	3.2	80		71			
2010	42	27-39	112	4.4	84	156	57			total= 297 (Pop Survey Estimate)
2011	51	50	230	4.6	161		51			
2012	49	43	170	3.9	119		20			
2013	46	37	114	4.7	94		20	458		
2014	45	38	122	4.4	90		18	582	27.1	
2015	49	46	185	4.0	136		18	1121	92.6	total= 339 (Pop Survey Estimate)
2016	50	47	188	4.0	138		4	1823	62.6	
2017	54	49	196	4.0	149		13	1219	-33.1	
2018	54	48	192	4.0	145		13	2470	102.6	
2019	55	50	200	4.0	152		20	3918	58.6	
2020	123	97	436	1.5	305		0	3080	-21.4	
2021							19	3164	2.7	
2022	136						0	2716	-14.2	
Total	958	655	2755	4.8	1994		1237			

Spring flooding accounts for 5-10% of annual nest loss. Nesting attempts, nest success, and cygnet survival was reportedly down in 2021 due in part to drought conditions in many parts of the state. 2022 and 2023 seemed to be more normal nesting years. Higher cygnet mortality was recorded in previous years with dry wetland conditions in the fall and increased cases of lead poisoning. Due to dry wetland conditions, we expect higher cygnet mortality in the fall of 2021- 2023. Also of note, several pairs of swans released in Iowa are now nesting in Southern Minnesota and Wisconsin.

A total of 2,716 trumpeters were tallied in 40 out of 99 counties during the mid-winter waterfowl survey in January 2023.

The winter count was down from 3,164 trumpeters tallied in January 2022 (Table 4). In some years, it appears the colder temperatures and harsher winter weather in MN and WI may force additional swans south into Iowa. If swans can find open water and food, many of them will remain in Iowa throughout the winter. These “winter” sites have provided many people with viewing opportunities of these “charismatic mega-fauna.” The DNR and many Iowans are very excited about the future of Trumpeter Swans in the state and expect their numbers to remain strong as they continue to expand their breeding range.

Table 4. Counts of wintering Trumpeter Swans in Iowa, 1997-2022.

Year	Beemers*	Atlantic*	Boock*	Severe*	Mason City*	Fertile Quarry	Cedar Rapids	Ames	Est total # in state
1997	5								
1998	4								
1999	4								
2000	4								
2001	25								
2002	25	26							75
2003	35	22							100
2004	61	24	15						100
2005	74	24	15		13				
2006	75	33							200
2007	84	37							
2008	100	50	12	35					
2009	150	50							
2010	100	32	25	36	0				193
2011	300	60	33	44	0				437
2012	160	45		65		52	23		747 Midwinter survey
2013	160	39	20	55		20			458 Midwinter survey
2014	286	40		40	11			40-61	582 Midwinter survey
2015	155	60							1121 Midwinter survey
2016	360	135							1823 Midwinter survey
2017	350	76		22	12	13			1219 Midwinter survey
2018	110	140		55	124			129	2470 Midwinter survey
2019	180	191		40	60	140		199	3918 Midwinter survey
2020	125	115		55	40	375		64	3080 Midwinter survey
2021	76	91		65	40	600	35	150	3164 Midwinter survey
2022	60	52		40	22	35	2	200	2716 Midwinter survey

*Beemer's Pond, 5 miles W of Webster City, IA, Hamilton County

*Atlantic Quarry, 1 mile NW of Atlantic, IA, Cass County

*Boock's Wetland, 4 miles N of Wheatland, IA, Clinton County

*Laurie Severe Pond, 2 miles S of Nora Springs, IA, Floyd County

*Mason City, 1 miles S of Mason City, IA, Cerro Gordo County

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LITERATURE CITED

Jones, O, T Shirley, D Hoffman, A Buckardt Thomas, and T Harms. 2022. 2022 Trumpeter Swan Nest Survey. Iowa Department of Natural Resources unpublished report.