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## WHOOING CRANE NEST BUILDING IN SOUTHWEST INDIANA

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**Abstract:** The first documented case of whooping crane (*Grus americana*) nest building in Indiana is described. During spring 2015, a pair of whooping cranes did not leave their wintering grounds in Gibson County, Indiana, to return to their summering area in Wisconsin. Three nest platforms were discovered after the death of the female crane. To date, this is the only documented example of a whooping crane pair in the reintroduced Eastern Migratory Population (EMP) building nest platforms outside of Wisconsin. Although fidelity to the core nesting areas in Wisconsin is strong, and natal dispersal is usually <30 km, this example from Indiana shows that whooping cranes in the EMP may have the potential to pioneer nesting areas far outside of core reintroduction areas.

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**Key words:** breeding outside core range, Eastern Migratory Population, *Grus americana*, Indiana, nest building, nest platform, whooping crane.

The native range of the whooping crane (*Grus americana*) includes the state of Indiana, for which a small number of early historical records exist (Allen 1952, Austin et al. 2019). Butler (1898) was convinced that whooping cranes nested in the Grand Kankakee Marsh in northwestern Indiana before it was drained in the late 1800s. Despite this, no breeding evidence from Indiana has been described, and whooping cranes were extirpated from the state and the eastern United States by the early 1900s (Allen 1952, Mumford and Keller 1984). In 2001 a reintroduction effort began releasing captive-reared whooping cranes into the wild with the goal of establishing an Eastern Migratory Population (EMP) of whooping cranes nesting in Wisconsin and migrating through Indiana on their route to wintering areas in Florida (Urbanek et al. 2014a). Beginning in 2007, some individuals from this population demonstrated shortstopping, or wintering north of Florida, and as of 2021, one-third of the population spent at least 3 months of the nonbreeding season in Indiana (Urbanek et al. 2014a, Teitelbaum et al. 2016, Thompson et al. 2022).

In April 2015, a pair of whooping cranes did not migrate north to Wisconsin but stayed in their wintering area in southwestern Indiana. These birds built 3 nest platforms in the area prior to the death of the female crane. We describe the first evidence of whooping crane nest building in Indiana and the first record of

a whooping crane pair from the EMP building nest platforms outside of Wisconsin.

The whooping cranes described herein (male 12-09 and female 14-09) were costume-reared in 2009 at Patuxent Wildlife Research Center in Maryland and trained to migrate south in fall by following an ultralight aircraft from Necedah National Wildlife Refuge (NWR), Wisconsin, to St. Marks NWR, Florida (Urbanek et al. 2014a). Before their release, both cranes were banded with a unique combination of colored leg bands and a VHF radio transmitter (Advanced Telemetry Systems, Isanti, MN, USA) so that their movements could be monitored. Before spring 2015, neither crane had been confirmed nesting, although the female and her previous mate built nest platforms in Wisconsin in the spring of 2012 and 2013, but with no evidence of eggs. The crane pair began associating and formed a pair bond during fall 2014, then spent most of the winter at Tern Bar Slough Wildlife Diversity Area (herein, Tern Bar Slough), a remote 340-ha prairie-wetland complex in Gibson County that is owned and managed by the Indiana Division of Fish and Wildlife.

Whooping cranes usually depart southern Indiana in March and begin to lay eggs in Wisconsin in late March and early April (Urbanek et al. 2010b, Thompson et al. 2022); however, on 30 March 2015, the pair was observed in a remote area of Tern Bar Slough. Because of their presence past the typical migratory window and the availability of suitable nesting habitat, no crane observations were made in the weeks after this date to avoid disturbing the pair during the sensitive period

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early in the nesting cycle. The whooping crane pair was seen at Tern Bar Slough again on 16 April 2015, but then on 20 April the male was observed there alone, making repeated alarm calls.

On 22 and 29 April, searches on foot were conducted for the missing female and any evidence of nesting activity. During the first search, the male behaved conspicuously, flying circles around the large wetland complex and alarm calling regularly; however, on 29 April he was not vocalizing and his behavior appeared normal. In the remote area where the pair had been seen in March and April, 1 nest platform was found on 22 April and the carcass of the female and other 2 nest platforms were found on 29 April (Figs. 1-3). The nest platforms were spaced over a ~2.78-ha area, in shallow water (18-23 cm), and densely constructed from standing dead sedges (*Cyperaceae*). Nest platform dimensions were measured at water level, where the surface of the water met the main mass of vegetation from each platform. Mean dimensions of the nest platforms were 125×207 cm. An estimated 6-m area around each nest platform was mostly cleared of vegetation, creating a halo-like effect. The area beyond the first 2 nest platforms was mostly open, consisting of standing dead sedges and few scattered small cottonwood (*Populus deltoides*) saplings (Figs. 1-2); however, the third nest platform was in a small open area surrounded by young cottonwoods. Unlike the first 2 nest platforms that were flat across the top, the surface material of this third platform was clumped and displaced (Fig. 3). No eggs or eggshell fragments were found; however, the water surrounding the nest platform was turbid and no underwater search by feel was conducted. About a dozen scattered white feathers in the water around the nest platform led to the carcass of the female submerged in shallow water 6.4 m north of the third platform. The head and upper two-thirds of the neck were missing, but the rest of the skeleton was intact and unbroken, and the remiges were still attached. The bands and nonfunctional radio transmitter remained on the legs.

Based on the earlier observations of the cranes and the state of the carcass, the death was estimated to have occurred on 17 or 18 April. A necropsy was conducted by the U.S. Geological Survey National Wildlife Health Center and the final report indicated predation or scavenging of the carcass. A more detailed analysis could not be completed due to the poor condition of the carcass (Lankton 2015).

On 4 May 2015, the male crane was observed at Necedah NWR, Wisconsin, on traditional EMP whooping crane breeding grounds; however, by 26 May he had returned to the area around Tern Bar Slough where he remained for 11 months until at least 4 April 2016. In 2016 and subsequent years, the male summered in Juneau County, Wisconsin, and continued to spend much of the winter around Tern Bar Slough.

Annually since 2012, one-third of the EMP has spent 3 or more months of the nonbreeding season in Indiana (Urbanek et al. 2014a, Teitelbaum et al. 2016, Thompson et al. 2022). Important wintering habitat for whooping cranes in Indiana includes private agricultural fields and protected wetlands, including Jasper-Pulaski Fish and Wildlife Area (FWA), Goose Pond FWA, Muscatatuck NWR, the Cane Ridge Wildlife Management Area (WMA) of Patoka River NWR, and Tern Bar Slough (Thompson 2018; WCEP, unpublished data). Cane Ridge WMA and Tern Bar Slough are adjacent properties in a remote area just east of the Wabash River. This area seasonally floods and is surrounded by approximately 7,500 ha of agricultural lands, restored wetlands, borrow pits, and an aboveground freshwater reservoir. Although sandhill cranes (*Grus canadensis*) are sporadically found in this area in winter, they typically depart for their northern breeding grounds by the end of March, and there are no known nesting records within 80 km (Castrale et al. 1998, Castrale and Gillet 2022, eBird 2022, A. J. Kearns, personal observation).

The habitat surrounding the Indiana whooping crane nest platforms is congruent with that of historic nest records described in Allen (1952), as well as nests observed in the EMP and other whooping crane populations in modern times (Timoney 1999, Strobel and Giorgi 2017, Barzen 2019). These 3 nest platforms were found in the remote interior of a 528-ha shallow water emergent wetland complex that is closed to public access; therefore, human disturbance at this site is rare. The nearest road is infrequently traveled and 565-770 m from the nest platform locations, and the interior of the wetland where the platforms were located is obscured by vegetation and topography and not visible from the road.

The 3 nest platforms found at Tern Bar Slough (Figs. 1-3) are comparable to whooping crane nests observed elsewhere, including on the breeding grounds of the EMP in Wisconsin. Water depth at the nest platforms was shallow with a mean depth of 20.33 cm,



**Figure 1.** One of 3 nest platforms built by whooping cranes in southwestern Indiana. This nest was in 23 cm of shallow water and measured 124 x 236 cm at water level.



**Figure 2.** One of 3 nest platforms built by whooping cranes in southwestern Indiana. This nest was in 20 cm of shallow water and measured 150 x 142 cm at water level. The remains of an American coot (*Fulica americana*) were on the nest.



**Figure 3:** One of 3 nest platforms built by whooping cranes in southwestern Indiana. This nest was in 18 cm of shallow water and measured 109 × 234 cm at water level. The carcass of the female whooping crane was submerged beneath shallow water 6.4 m north of this nest (circled area).

which is somewhat shallower than mean water depth around nests observed at Necedah NWR (33 cm; Strobel and Giorgi 2017), in Florida (29.11 cm; Dellinger 2019), and at Wood Buffalo National Park (25.4 cm; Kuyt 1981). The size and shape of the Tern Bar Slough nest platforms resemble those described in other accounts of whooping crane nests in Wood Buffalo National Park (Walkinshaw 1973) and Wisconsin (H. L. Thompson, unpublished data). Like nest platforms described in other accounts, surrounding vegetation was broken or pulled up at the roots, leaving a narrow halo (5-7 m) of cleared space around each nest platform (Allen 1952, Walkinshaw 1973). Furthermore, the pair built 3 nest platforms, which is not unusual for whooping cranes, which occasionally build more than 1 nest platform before egg laying (Folk et al. 2005, Urbanek and Lewis 2020).

Although no eggs or eggshells were recovered at Tern Bar Slough, it is possible that the female had laid eggs. The approximate date of the female's death was 17 or 18 April, by which most of the whooping crane pairs in the EMP have laid eggs (Urbanek et al. 2014b, Thompson et al. 2022). At 6 years old, this pair

of whooping cranes was sexually mature and capable of producing eggs. In the EMP of whooping cranes, a female usually lays her first egg at age 3 or 4 years (mean 3.92 years, Urbanek et al. 2010a;  $3.7 \pm 0.2$  years, Thompson et al. 2021).

In this example from Indiana, a pair of whooping cranes built 3 nest platforms more than 650 km south of their reintroduction area at Necedah NWR. Although the habitat at Tern Bar Slough closely resembles nest site descriptions found in Allen (1952), there are no other records of whooping crane pairs with nest platforms, eggs, or chicks in Indiana or the neighboring states of Illinois, Ohio, and Michigan (Allen 1952, Austin et al. 2019). This is likely due to strong natal philopatry to breeding areas caused by innate homing, low population sizes, and abundant available nesting habitat in core areas (Johns et al. 2005, Urbanek et al. 2014b). However, despite these inherent barriers, this example provides evidence that young pioneering pairs from the EMP could establish breeding sites in suitable habitat far outside of their known historic nesting range or areas of reintroduction, particularly if the population grows.

Other species of birds have successfully expanded their nesting range through the initial efforts of pioneering individuals (Johnson 1994, Winkler et al. 2017), including the related greater sandhill crane (*Grus canadensis tabida*), which has recolonized much of its historic nesting range in the Midwest (Meine and Archibald 1996). Furthermore, there are recent examples of long-distance natal dispersal in reintroduced populations of whooping cranes. During springs 2016-2021 a breeding pair from the EMP nested in far northwestern Wisconsin, 306 and 358 km from the male's and female's respective natal areas (Thompson et al. 2021). In addition, in springs 2020-2021, a male whooping crane nested with a sandhill crane in southern Michigan, 414 km from his natal site (Thompson et al. 2022). Lastly, in spring 2021 2 pairs of whooping cranes from the Louisiana Non-migratory Population nested in Texas, 152 and 173 km from their respective natal site in Louisiana (U.S. Fish and Wildlife Service 2021; E. K. Szyszkoski, Louisiana Department of Wildlife and Fisheries, personal communication). All of these whooping cranes were successful at hatching chicks despite the long distance between their natal and nesting areas. Although the occurrence would be rare, it seems likely that another young pair of whooping cranes from the EMP will attempt to nest outside of Wisconsin.

Wetlands are essential habitat for whooping cranes and many other imperiled species. Within the historic range of the whooping crane, wetlands have been destroyed on a massive scale. For example, over 85% of Indiana's wetlands have been lost in the last 200 years (Indiana Department of Environmental Management 2021). In the face of current threats such as climate change, land development, and human population growth, more wetlands on public and private land should be restored and protected.

If whooping cranes are not limited to nesting in historical or reintroduction areas, then there are nesting opportunities available to this imperiled species where large blocks of productive emergent marsh remain within their range. Conservationists and property managers in areas like these, especially when the areas host whooping cranes for extended periods during summer, winter, and migration, should consider the possibility that whooping cranes could nest and should prioritize these sites, so they are protected from development and disturbance.

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## LITERATURE CITED

- Allen, R. P. 1952. The whooping crane. National Audubon Society Research Report 3. National Audubon Society, New York, New York, USA.
- Austin, J. E., M. A. Hayes, and J. A. Barzen. 2019. Revisiting the historic distribution and habitats of the whooping crane. Pages 25-88 in J. B. French, Jr., S. J. Converse, and J. E. Austin, editors. Whooping cranes: biology and conservation. Biodiversity of the world: conservation from genes to landscapes. Academic Press, San Diego, California, USA.
- Barzen, J. A. 2019. Ecological implications of habitat use by reintroduced and remnant whooping crane populations. Pages 327-352 in J. B. French, Jr., S. J. Converse, and J. E. Austin, editors. Whooping cranes: biology and conservation. Biodiversity of the world: conservation from genes to landscapes. Academic Press, San Diego, California, USA.
- Butler, A. W. 1898. The birds of Indiana. Pages 515-1187 in W. S. Blatchley, editor. Twenty-second annual report. Indiana Department of Geology and Natural Resources, Indianapolis, Indiana, USA.
- Castrale, J. S., E. M. Hopkins, and C. E. Keller. 1998. Atlas of breeding birds of Indiana. Indiana Department of Natural Resources, Indianapolis, USA.
- Castrale, J. S., and A. T. Y. Gillet. 2022. Second atlas of breeding birds of Indiana. Indiana Department of Natural Resources, Indianapolis, USA.
- Dellinger, T. A. 2019. Florida's nonmigratory whooping cranes. Pages 179-194 in J. B. French Jr., S. J. Converse, and J. E. Austin, editors. Whooping cranes: biology and conservation. Biodiversity of the world: conservation from genes to landscapes. Academic Press, San Diego, California, USA.

- eBird. 2022. eBird: an online database of bird distribution and abundance. Cornell Lab of Ornithology, Ithaca, New York, USA. <<http://www.ebird.org>>. Accessed 19 Jan 2022.
- Folk, M. J., S. A. Nesbitt, S. T. Schwikert, J. A. Schmidt, K. A. Sullivan, T. J. Miller, S. B. Baynes, and J. M. Parker. 2005. Breeding biology of reintroduced non-migratory whooping cranes in Florida. *Proceedings of the North American Crane Workshop* 9:105-109.
- Indiana Department of Environmental Management. 2021. Indiana's wetland resources. <<https://www.in.gov/idem/wetlands/2333.htm>>. Accessed 18 Feb 2021.
- Johns, B. W., J. P. Goossen, E. Kuyt, and L. Craig-Moore. 2005. Philopatry and dispersal in whooping cranes. *Proceedings of the North American Crane Workshop* 9:117-125.
- Johnson, N. K. 1994. Pioneering and natural expansion of breeding distributions in western North American birds. *Studies in Avian Biology* 15:27-44.
- Kuyt, E. 1981. Population status, nest site fidelity, and breeding habitat of whooping cranes. Pages 119-225 in J. C. Lewis and H. Masatomi, editors. *Crane research around the world*. International Crane Foundation, Baraboo, Wisconsin, USA.
- Lankton, J. S. 2015. Diagnostic services case report 26451. National Wildlife Health Center, U.S. Geological Survey, Madison, Wisconsin, USA.
- Meine, C. D., and G. W. Archibald, editors. 1996. Sandhill crane. Pages 103-121 in *The cranes: status survey and conservation action plan*. International Union for Conservation of Nature and Natural Resources, Gland, Switzerland.
- Mumford, R. E., and C. E. Keller. 1984. *The birds of Indiana*. Indiana University Press, Bloomington, USA.
- Strobel, B. N., and G. F. Giorgi. 2017. Nest-site selection patterns of coexisting sandhill and whooping cranes in Wisconsin. *Journal of Fish and Wildlife Management* 8:588-595.
- Teitelbaum, C. S., S. J. Converse, W. F. Fagan, K. Bohning-Gaese, R. B. O'Hara, A. E. Lacy, and T. Mueller. 2016. Experience drives innovation of new migration patterns of whooping cranes in response to global change. *Nature Communications* 7:12793.
- Thompson, H. L. 2018. Characteristics of whooping crane home ranges during the nonbreeding season in the Eastern Migratory Population. Thesis, Clemson University, Clemson, South Carolina, USA.
- Thompson, H. L., A. J. Caven, M. A. Hayes, and A. E. Lacy. 2021. Natal dispersal of whooping cranes in the reintroduced eastern migratory population. *Ecology and Evolution* 11:12630-12638.
- Thompson, H. L., N. M. Gordon, D. P. Bolt, J. R. Lee, and E. K. Szyszkoski. 2022. Twenty-year status of the eastern migratory whooping crane reintroduction. *Proceedings of the North American Crane Workshop* 15:34-52.
- Timoney, K. 1999. The habitat of nesting whooping cranes. *Biological Conservation* 89:189-197.
- Urbanek, R. P., L. E. A. Fondow, and S. E. Zimorski. 2010a. Survival, reproduction, and movements of migratory whooping cranes during the first seven years of reintroduction. *Proceedings of the North American Crane Workshop* 11:124-132.
- Urbanek, R. P., S. E. Zimorski, A. M. Fasoli, and E. K. Szyszkoski. 2010b. Nest desertion in a reintroduced population of migratory whooping cranes. *Proceedings of the North American Crane Workshop* 11:133-141.
- Urbanek, R. P., E. K. Szyszkoski, and S. E. Zimorski. 2014a. Winter distribution dynamics and implications to a reintroduced population of migratory whooping cranes. *Journal of Fish and Wildlife Management* 5:340-362.
- Urbanek, R. P., S. E. Zimorski, E. K. Szyszkoski, and M. M. Wellington. 2014b. Ten-year status of the eastern migratory whooping crane reintroduction. *Proceedings of the North American Crane Workshop* 12:33-42.
- Urbanek, R. P., and J. C. Lewis. 2020. Whooping crane. Version 1.0 in Poole, A. F., editor. *Birds of the world*. Cornell Lab of Ornithology, Ithaca, New York, USA. <<https://birdsoftheworld.org/bow/species/whocra/>>. Accessed 23 Dec 2020.
- U.S. Fish and Wildlife Service. 2021. Historic first as whooping cranes found nesting in Texas. Press release. <[https://www.fws.gov/news/ShowNews.cfm?ref=historic-first-as-whooping-cranes-found-nesting-in-texas&\\_ID=36885&Source=iframe](https://www.fws.gov/news/ShowNews.cfm?ref=historic-first-as-whooping-cranes-found-nesting-in-texas&_ID=36885&Source=iframe)>. Accessed 19 Oct 2021.
- Walkinshaw, L. H. 1973. *Cranes of the world*. Winchester Press, New York, New York, USA.
- Winkler, D. W., F. A. Gandoy, J. I. Areta, M. J. Iliff, E. Rakhimberdiev, K. J. Kardynal, and K. A. Hobson. 2017. Long-distance range expansion and rapid adjustment of migration in a newly established population of barn swallows breeding in Argentina. *Current Biology* 27:1080-1084.