

2010

# CAUSES OF EMBRYONIC DEATH IN CAPTIVE WHOOPING CRANES

JULIA N. LETOUTCHAIA

*Michigan State University*

KELLY MAGUIRE

*International Crane Foundation*

BARRY K. HARTUP

*International Crane Foundation*

Follow this and additional works at: <http://digitalcommons.unl.edu/nacwgproc>

 Part of the [Behavior and Ethology Commons](#), [Biodiversity Commons](#), [Ornithology Commons](#), [Population Biology Commons](#), and the [Terrestrial and Aquatic Ecology Commons](#)

---

LETOUTCHAIA, JULIA N.; MAGUIRE, KELLY; and HARTUP, BARRY K., "CAUSES OF EMBRYONIC DEATH IN CAPTIVE WHOOPING CRANES" (2010). *North American Crane Workshop Proceedings*. 130.

<http://digitalcommons.unl.edu/nacwgproc/130>

This Article is brought to you for free and open access by the North American Crane Working Group at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in North American Crane Workshop Proceedings by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

## CAUSES OF EMBRYONIC DEATH IN CAPTIVE WHOOPING CRANES

**JULIA N. LETOUTCHAIA**, College of Veterinary Medicine, Michigan State University, East Lansing, MI 48824, USA

**KELLY MAGUIRE**, International Crane Foundation, E-11376 Shady Lane Road, Baraboo, WI 53913, USA

**BARRY K. HARTUP**, International Crane Foundation, E-11376 Shady Lane Road, Baraboo, WI 53913, USA

**Abstract:** In 2001, the International Whooping Crane Recovery Team and the Whooping Crane Health Advisory Team re-emphasized the need for analysis of embryonic deaths within captive breeding flocks to identify preventable deaths and promote increased production of chicks for release programs. We conducted a retrospective study of egg necropsy reports to identify causes of death among developing whooping crane (*Grus americana*) embryos from captivity. Records from 44 egg necropsies conducted at the International Crane Foundation (ICF) between 2001 and 2008 were reviewed. The eggs were of captive origin (ICF,  $n = 40$ ; Patuxent Wildlife Research Center,  $n = 3$ ; Calgary Zoo,  $n = 1$ ). All necropsies included gross examinations; few were amenable to histopathological analysis due to advanced autolysis. The primary causes of death included embryo malposition ( $n = 7$ , 16%), hemorrhage/trauma ( $n = 7$ , 16%), natural incubation failure ( $n = 5$ , 11%), artificial incubation failure ( $n = 4$ , 9%), and miscellaneous ( $n = 2$ , 5%). Many of the necropsies did not reveal a specific cause of death ( $n = 19$ ; 43%). Most of the embryos ( $n = 24$ , 54%) died in the last third of incubation. The most common cause of death in late stage embryos was malpositioning (29% of late stage embryonic deaths). Unfortunately, our study did not reveal many preventable conditions that would boost hatchability if corrected. The underlying causes of malpositioning are difficult to discern, as turning rates, position and nest environment may vary between the different species and individual cranes used to incubate whooping crane eggs at ICF. The occurrence of hemorrhage or traumatic membrane rupture is likely caused by mechanical stress to the eggs despite the great care of handlers to avoid injury. On a positive note, infectious disease does not appear to be a risk factor for embryonic mortality in captive whooping cranes at ICF.

### PROCEEDINGS OF THE NORTH AMERICAN CRANE WORKSHOP 11:192

**Key words:** cranes, embryo, Gruidae, *Grus americana*, malposition, mortality.

---