

1992

ISOLATION-REARING OF SIBERIAN CRANE CHICKS AT THE INTERNATIONAL CRANE FOUNDATION

Meenakshi Nagendran
North Dakota State University

Robert H. Horwich

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](#)

Nagendran, Meenakshi and Horwich, Robert H., "ISOLATION-REARING OF SIBERIAN CRANE CHICKS AT THE INTERNATIONAL CRANE FOUNDATION" (1992). *North American Crane Workshop Proceedings*. 316.
<http://digitalcommons.unl.edu/nacwgproc/316>

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.

ISOLATION-REARING OF SIBERIAN CRANE CHICKS AT THE INTERNATIONAL CRANE FOUNDATION

MEENAKSHI NAGENDRAN, *Zoology Department, North Dakota State University, Fargo, ND 58105.*

ROBERT H. HORWICH, *RD 1, Box 96, Gays Mills, WI 54631.*

Abstract: Three Siberian crane (*Grus leucogeranus*) chicks hatched in the summer of 1987 at the International Crane Foundation (ICF), Baraboo, Wisconsin, were raised in near-complete isolation from humans. The chicks were exposed to species-specific models, vocalizations, a costumed "parent" and a role-model adult Siberian crane housed in an adjacent pen. Attachment to costumed "parent," interchick interaction, and reactions to humans were measured and compared with those aspects of sandhill crane behavior under similar rearing conditions.

Proc. 1988 N. Am. Crane Workshop

Sandhill crane (*G. canadensis*) chicks have been successfully reared in isolation from humans and released into the wild (Horwich 1986; Horwich et al. 1992; Wood & Anderson 1992). An instance of pair bonding has also been recorded in the wild between a sandhill crane that was "isolation-reared" and a wild sandhill crane (G. Archibald pers. comm.), suggesting that isolation-rearing may be a viable technique for bolstering wild populations of crane species that are declining.

Earlier attempts at the International Crane Foundation (ICF) to rear Siberian crane chicks in isolation from humans were not very successful. The chicks did not display any wariness of humans, unlike their sandhill counterparts reared under similar conditions. In 1987, another attempt was made to rear Siberian crane chicks in near complete isolation from humans, with more stringent controls imposed.

METHODS

Eggs laid by Siberian cranes in May 1987, at the ICF, were removed 1 or 2 days after laying and placed under sandhill cranes to be incubated. After 3 weeks (the incubation period for Siberian crane eggs is 29 days), they were transferred to artificial incubators. Subsequently, taped Siberian crane brood calls were played to the eggs from 3 days prior to hatching (May-June), and the embryos' peeping responses were monitored. Three

chicks hatched and were moved to a new indoor-outdoor pen, where they remained for the next 4 months. Here they were routinely exposed to a costumed "parent" (a human dressed in a costume to resemble a Siberian crane), and a Siberian crane hand puppet (Horwich 1986; Horwich et al. 1992). Had there been more chicks to be reared in isolation, more than 1 costumed "parent" would have been required to watch over the chicks during exercise and other socialization events.

They were also exposed to a life-size Siberian crane brooding model housed in the same pen as the chick and an adult Siberian crane housed in an adjacent pen.

The costumed "parent," along with the hand puppet and the taped brood calls, elicited feeding, drinking, and following responses from the chicks. The "parent" also introduced the chicks to new foraging areas. "Parent"-chick interactions averaged 9 hours per day.

These procedures generally follow Horwich's (1986; Horwich et al. 1992) in a successful sandhill crane release experiment in 1985. Exceptions were that brooding models were not removed from the chicks' pens until the chicks were 1+ months old, and exposure to humans was avoided until the chicks were 2+ months old.

Behavioral observations employed focal animal sampling (Altmann 1974), with an emphasis of sampling during morning hours, for 30 min and 1 hr sessions. Many hours of informal observations

were also recorded. These results have not yet been statistically analyzed and should be viewed as preliminary.

RESULTS AND DISCUSSION

Attachment to Costumed Parent

The chicks' attachment to their costumed "parent" ranged from very close attachment followed by apparent disinterest, and then increased reattachment. Up to 1 month of age chicks followed their "parent" very closely during walks and would start calling in distress if their "parent" was out of sight. As foraging and exploring behaviors became more pronounced, the following response dwindled to a point of apparent disinterest. If accosted by anything unfamiliar (e.g. seeing a stray dog, a human at a distance, parked and moving vehicles, etc.) the chicks would run to their "parent" or would run back to their familiar pens. Chicks nearly always kept their "parent" in sight. When distance between the "parent" exceeded 10 m, the chick would return to "parent" in response to brood calls. While distractions were common in familiar areas, following responses were highest in unfamiliar or infrequently used areas. At about 3 months of age, as chicks approached fledging, attachment to "parent" again intensified, and following responses in familiar areas were again comparable to that elicited in unfamiliar or infrequently used areas. Proximity to "parent" was indicative of attachment to "parent," with a close following response being attached to "parent," and distraction and disinterest in following "parent" being a reflection of the chick's relative independence.

Attachment to "parent" further intensified after fledging, including frequent beak to beak contact with the puppet, frequent interaction with costume by pulling at its attached feathers, and persistent following and food begging calls. This parental reattachment period is similar to the regressive periods observed in a variety of mammals (Horwich 1974) and sandhill cranes (Horwich, MS). The recycling of other behaviors has additionally been observed in sandhill (Voss 1976) and red-crowned cranes (*G. japonensis*) (Horwich 1987). By the end of November these behaviors had intensified further (ICF pers. comm.). In the wild, these enhanced behaviors would relate to pre-migration and migration periods (Sauey 1985). Whenever the chicks rested or slept, they settled down either next to or within 5 m of the "parent." The chicks nor-

mally pecked the "parent" in a gentle manner. However, when a chick was redirecting aggression, it commonly grabbed the costume and feathers attached to the costume and shook them vigorously. The "parent" never grabbed or attacked the chick in any manner.

Attachment to Brood Model

Attachment to brood model persisted until the time the model was removed (1+ months of age). The oldest chick attempted to get on to the model's back many times during the first few days after hatching but was unsuccessful. But the second and third (youngest) chicks were observed sleeping on their respective models' backs from the very first day. When taped brood calls were played chicks responded by running around the model, jumping on top of the model excitedly, or feeding and drinking. Under normal circumstances, chicks pecked lightly at the model's beak and feathers. Often the chicks were observed sleeping under the model's wings. Until about 1 month old, chicks responded to their neighboring chick's taped brood calls by displaying agitation, pacing and constantly pecking at the fence that divided their pens. The chick in whose pen the brood call tape was being played responded similarly, pacing the fence and furiously pecking the fence trying to reach the chick on the other side. Often during these periods the chicks would peck at their respective models rather forcefully, redirecting their aggression in this manner. This interchick aggression dissipated in intensity as the chicks grew older.

Presence of the model did not deter chicks from following the "parents" around, suggesting that a moving "parent" was more attractive than a stationary model. During several weeks in the summer of 1987, the average daily temperature was > 90°F. Often at these times, chicks were very reluctant to emerge from their pens. This behavior was particularly noticed when chicks were 1+ months old, coinciding with when the chicks were relatively independent and their following response was at the lowest level.

Interchick Interaction

Interchick aggression that could result in injury (usually to subordinate chicks) lasted up to about 60 days of age. Aggression was most intense during their first month and began dissipating afterward as their dominance hierarchy developed. The oldest chick was the most aggressive, followed by

the second and then the youngest. Often, when a dominant chick was unable to directly attack a subordinate, aggression would be redirected at the "parent" by pecking and furiously shaking the feathers on the costume.

Subordinate chicks would retaliate but never were able to successfully drive off the more dominant ones. Socialization of chicks, during which time chicks came in physical contact with each other, was allowed only in the presence of the "parent" in order to avoid any fatalities. Socialization was allowed between 2 chicks at any given time, and the first time that all 3 chicks could safely be left together was in late July. The oldest and youngest chicks appeared to be more aggressive than the second chick. Once a clear dominance hierarchy was established between the chicks it persisted throughout the study, until September 1987.

Chicks attempted to fly together, with 1 chick initiating a flight and the others following. Pre-flight behaviors included incessant pre-flight calls, outstretched neck and pre-flight posture. After flight attempts, the chicks would walk back quickly to the starting point and repeat the entire procedure. On windy days chicks spent considerable time in flight attempts and associated behaviors.

The chicks and the adult Siberian crane appeared to be curious about each other, but aggressive interaction was never observed.

Reaction to Humans

The chicks' first exposure to humans was an induced negative one and occurred in August. All 3 chicks were housed together at this time, and in succession the "parent" led a chick to an area where aviculturists rushed in and grabbed the "parent" and the chick, for clipping of primaries. As soon as each chick saw a human enter, it started calling in distress and tried to rush back to shelter. All 3 chicks voiced distress calls throughout the time they were restrained. There were no signs of rejecting their "parent" immediately after this traumatic incident.

Their second exposure to humans was 1 month after the first, and during this incident the "parent" was not present. The chicks rushed off to a far corner of the pen, distress calling, and tried to fly, but were restrained by the overhead flight netting. They appeared stressed by the incident. This capture was to move the chicks to their new housing unit, and once completed, the "parent" appeared but was viewed with some apprehension by the chicks with the chicks not rushing up to the "par-

ent" as normally observed. The chicks appeared nervous and would not approach their "parent." However, once the taped brood call was played the chicks appeared to relax and approached the "parent." It was 2 hr before the chicks settled into their new living quarters, feeding and drinking on their own without being coaxed by their "parent." Since then the chicks were exposed to humans daily as aviculturists fed and watered the birds.

Their curiosity towards humans increased steadily thereafter as indicated by their peering into the indoor unit of their pens while the aviculturists were there. However, when approached by humans, all 3 chicks would retreat to a far corner of the pen and voice distress calls. Similar behavior was observed during the chicks' third negative exposure to humans, the annual health check.

From the time the chicks were moved to their new facility, they were exposed to humans and human voices every day, but exposure to their "parent" was limited to a few hours each week (until late November). Even though "parent"-chick interaction time was limited to a few hours, an increase in attachment to "parent" was observed. This time period (September-November) corresponds to the pre-migration and migration period in the wild, a highly vulnerable period in a chick's life.

CONCLUSIONS

Siberian crane chicks displayed similar behaviors to sandhill crane chicks reared by the same technique, but were less wary of humans than their sandhill counterparts. In an evolutionary context, this behavior might have evolved from a paucity of large predators on the Siberian Tundra. If this rearing technique were to be employed to bolster wild populations of Siberian cranes, it might be beneficial to minimize human contact during the rearing process and make any exposures to humans negative ones. Complete isolation from humans would perhaps be best with 1 or 2 negative human exposures. The results suggest that interspecies behavioral differences in cranes should be carefully considered when employing this hand-rearing technique.

When released into the wild, sandhill crane chicks became incorporated into the wild flock quite readily (Horwich 1986; Horwich et. al.). In all likelihood Siberian crane chicks would behave similarly.

ACKNOWLEDGMENTS

This project was part of a larger project funded by the Chapman Foundation of the American Museum of Natural History, the Sigma-Xi Foundation, North Dakota State University, and a gift from the International Crane Foundation. Sincere thanks are extended to the entire staff at the ICF, especially the avicultural staff, for their support and encouragement during and after this project. Sincere thanks are also extended to Dr. G.L. Nuechterlein, Dr. D.P. Buitron, Dr. J.W. Grier, and Mr. D.J. Twedt for reviewing this manuscript and providing invaluable comments to improve it.

LITERATURE CITED

- Altmann, J. 1974. Observational study of behavior: sampling methods. *Behavior* 49:227-267.
- Horwich, R.H. 1974. Regressive periods in primate behavioral development with reference to other mammals. *Primates* 15:151-178.
- Horwich, R.H. 1986. Reintroduction of sandhill cranes to the wild. *ICF Bugle* 12(4):1, 4-5.
- Horwich, R.H. The use of surrogate parental models and age periods in a successful release of sandhill crane chicks into the wild. MS.
- Horwich, R.H. 1987. Behavioral development in the red-crowned crane (*Grus japonensis*). *Zoo Biol.* 6:379-398.
- Horwich, R.H., J.C. Wood & R.K. Anderson. 1992. Successful release of sandhill crane chicks hand-reared with artificial stimuli. *These Proceedings.*
- Sauey, R.T. 1985. The range, status, and winter ecology of Siberian crane (*Grus leucogeranus*). Ph.D. Thesis, Cornell Univ., Ithaca, N.Y., 428p.
- Voss, K.S. 1976. Ontogeny of behavior of greater sandhill crane. Pp. 252-262 in J.C. Lewis (ed.), *Proc. Int. Crane Workshop*, Okla. State Univ.
- Wood, J.C. & R.K. Anderson. 1992. Behavior and movements of isolation-reared sandhill cranes. *These Proceedings.*