

2001

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FOLK, MARTIN J.; NESBITT, STEPHEN A.; and SPALDING, MARILYN G., "INTERACTIONS OF SANDHILL CRANES AND WHOOPING CRANES WITH FOREIGN OBJECTS IN FLORIDA" (2001). *North American Crane Workshop Proceedings*. 91.

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INTERACTIONS OF SANDHILL CRANES AND WHOOPING CRANES WITH FOREIGN OBJECTS IN FLORIDA

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Abstract: During studies of Florida sandhill cranes (*Grus canadensis pratensis*), greater sandhill cranes (*G. c. tabida*), and whooping cranes (*G. americana*) in Florida, we documented cases where these birds were in contact with human-produced objects that resulted in injury or death. We describe >40 instances in which cranes collided with powerlines or fences, became entangled in string or fishing line, or ingested foreign objects. The effect of human-produced objects on crane populations, particularly small populations, may be significant.

PROCEEDINGS NORTH AMERICAN CRANE WORKSHOP 8:195-197

Key words: entanglement, Florida, ingested foreign body, injuries, mortality, power line collision, sandhill cranes, whooping cranes.

Many wildlife species are impacted by interactions with human-related objects in the environment. Brown pelicans (*Pelecanus occidentalis*) are especially susceptible to ingestion of and/or entanglement with fish hooks or monofilament line (Johnson and Sloan 1975, Schreiber 1978). Collisions with powerlines and fences were a major source of mortality of whooping cranes in the Aransas/Wood Buffalo and Rocky Mountain populations (Lewis 1995). Few publications are available that describe nonhunting mortality of cranes (Windingstad 1988).

METHODS

In the course of field studies (1980-99) of Florida sandhill cranes, eastern greater sandhill cranes, and whooping cranes, we observed evidence of encounters between these cranes and foreign objects. Many of these birds were uniquely marked and could be identified individually. In some cases the birds were captured and the objects removed. Otherwise, the birds were observed in field situations and their behavior was documented.

RESULTS

Entanglement

We observed 3 whooping cranes and 1 sandhill crane with line wrapped around a leg. The line on 2 of the whooping cranes and 1 of the sandhill cranes was ≤ 10 lbs test monofilament; the line was wrapped around 1 foot and leg. The line on the leg of the third whooping crane was cotton string. The monofilament line was difficult to see unless we approached unusually close (<2.5 m) and used binoculars or

a spotting scope. We initially suspected the presence of fishing line because of changes in the birds' behavior, including limping and reduced activity. We captured all 4 birds and removed the line. The line was wound tight around the lower leg and toes, apparently restricting blood flow. There was swelling of the foot and leg distally from the constriction. All birds recovered from the line entanglement. However, 1 whooping crane lost its hallux and another had permanent scarring and swelling on the lower leg. The sandhill crane lost the middle toe of its right foot.

Two whooping cranes were recovered from barbed-wire fences. The first had 1 foot entangled between 2 high strands; the bird was able to stand on 1 leg while the other leg was behind it and at about a 30° angle above horizontal. The bird had a temporarily dislocated hip, laceration of the skin of its feathered tibia, and swelling of the foot. It was treated in captivity (the hip realigned itself; the skin was sutured and observed until it healed) and released after 1 month. The second whooping crane that was caught in a barbed-wire fence was freed from the fence (by the owner of the ranch) and recovered in the wild.

Woven-wire fences (also known as hog-wire fences) are commonly erected with a single strand of barbed-wire running across the top. We have found 2 sandhill cranes entangled in woven-wire fences; in both cases, a foot was trapped between the barbed-wire strand and the top of the hog-wire. Apparently the cranes were flying over the fence and landed too close, resulting in a leg caught between the strands. One sandhill crane was electrocuted when it became entangled in an electric fence.

One whooping crane became entrapped between several concrete feed troughs. The bird apparently panicked or was attacked by other cranes and in the process of entrapment

suffered a compound fracture of its tarsometatarsus. The bird was taken into captivity but died during surgery. It most likely would not have been suitable for release had it survived the surgery.

Impalement

Cranes are curious by nature and will stab at things with their bills. As a result, numerous items have become caught on the bills of sandhill and whooping cranes. One whooping crane spent a day with a shotgun shell jammed on its bill, and several whooping cranes were observed for short periods of time with flattened aluminum cans on their bills.

Sandhill cranes have been observed with a plastic wad from a shotgun shell, a toy tractor wheel, the core of a golf ball, and rubber o-rings on their bills. One with a rubber band on its bill visited a home where it was being fed regularly. The band held its bill closed 4 days before the bird could be captured and the object removed. An adult male sandhill crane that people fed at the Kissimmee Municipal Airport had a nickel-sized rubber o-ring jammed midway on its upper bill, but the bird was able to eat. After several weeks the bird still had the ring stuck on its mandible, which was now 2–3 cm shorter than the lower bill. Ultimately the bird was captured with a hand net and the ring was removed. The bill had not lengthened after several weeks, but the bird was eating handouts from the airport personnel. Several months later the airport staff reported that the bird was killed by a plane on the runway.

Numerous sandhill cranes on a vegetable farm were observed with shreds of "plastic mulch" on their bills. The material, similar in thickness and texture to plastic trash bags, was used in long rows to conserve moisture and reduce weed growth around the vegetables. The cranes probed through the material while feeding and often had shreds of plastic stuck on their bills. A banded sandhill crane which spent considerable time with shreds of mulch on its bill was captured, and scar-like markings on the bill were evident. In none of these situations did it appear that the cranes were prevented from eating or drinking normally. However, in the cases of the more firmly affixed items, unless the object fell off spontaneously, the birds would have died without human intervention.

Collisions/Powerline Strikes

Five whooping cranes died from contact with powerlines: 2 died of electrocution/trauma in 2 different years under the same set of powerlines across an open field. After the second death, we examined the lines and determined that the configuration was such that the hot wires were too near the neutral/ground wire, resulting in the bird brushing 2 lines and shorting out the circuit. The power company was alerted to

the problem and corrected it. We have observed cranes brushing powerlines in the past; if they do not span 2 conductors or a conductor and a neutral, the injury, if any, is limited to trauma.

Three whooping cranes from a flock died of electrocution/trauma when they flew into a powerline in the dark. It is possible that the birds had been disturbed from their roost and did not see the lines.

On 19 December 1997, we located a whooping crane's radio transmitter attached to a powerline. The leg band was of the wrap-around type, and was firmly attached to the lower strand of a 2-strand low-voltage line about 8 m above ground level. We do not know how the crane (which survived unharmed) became entangled in the line and transfer the radio from its leg to the wire without serious injury. The radio was so securely attached to the powerline that utility personnel had to break the band to remove the radio from the line.

Dozens of Florida sandhill cranes are injured or killed annually on Florida roads. Of 122 sandhill cranes examined, 15 were hit by vehicles and another 6 were struck by vehicles and/or collided with powerlines. One dead whooping crane recovered from a roadside may have struck a powerline and/or a vehicle.

Ingested Items

For unknown reasons, whooping cranes routinely ingest metal fragments and other hard (glass or plastic) items. Ingestion of galvanized metal objects may have resulted in zinc toxicosis (Spalding et al. 1997) in Florida whooping cranes. One bird with lead in its stomach had significantly elevated liver lead concentrations when it died. Sandhill cranes, by contrast, rarely ingest metal items. Only 3 (1%) of 212 sandhill crane stomachs contained metal.

Sharp objects present potential physical hazards to the bird's gastrointestinal tract. We observed that a whooping crane had roosted away from its group, had not been foraging as intently as the others, was rather inactive, and displayed peculiar postures suggesting that the bird was straining to regurgitate something. We were able to capture it with a hand net. The bird had swallowed a fishing lure that became lodged in the upper esophagus. The lure, which contained 2 treble hooks, was surgically removed, and the bird was held in captivity several weeks until its weight increased. The bird was released back into its cohort and survives to date.

Miscellaneous

Two sandhill cranes apparently (based on necropsy) died from electrocution associated with lightning. The dead birds were recovered near a barbed-wire fence that probably

conducted the electricity. Cattlemen in Florida report losing livestock to lightning on a regular basis.

One sandhill crane survived being shot with an arrow. The crane was shot as it flew over some boys, and the arrow lodged in the skin of the wing close to the body. The arrow was about half way through the skin and was in a vertical position as the bird stood or walked. The bird could function normally, except it probably could not sit. The crane carried the arrow for several weeks before the arrow worked its way out. People that fed the bird on a routine basis found the arrow lying in their yard.

DISCUSSION

The importance of injuries and deaths associated with foreign objects is not easy to quantify and interpret. Ideally a sample from a population will accurately reflect the population mortality rate and causes of mortality. However, sampling is often biased because some forms of mortality will be over-represented (roadkills) while others will be less detectable (predation). Of 122 sandhill cranes carcasses examined, 39 (32%) probably died from contact with foreign objects. Roadkills and powerline collisions constituted another 54% (21 of 39 cases), but these are probably over-represented because such carcasses are relatively obvious in the environment.

Our data for whooping cranes are not directly comparable with those from sandhill cranes because the whooping cranes were monitored more intensively, and there are inherent differences between the species in their vulnerability to certain hazards. Of 116 mortalities of whooping cranes, 6 died as a result of collisions and entanglements; 6 more might have died had they not been "rescued." Another 6 died following ingestion of metal. For this small, intensively-monitored population, perhaps 10–15% have been impacted by foreign objects. Predation by bobcats (*Lynx rufous*) remains the primary source of mortality in whooping cranes reintroduced in Florida, primarily affecting birds within 1 year post-release. Injury and mortality associated with foreign objects, by contrast, occur in all age classes. Human intervention/management can reduce this impact. Prior to shipment to the Florida release sites, captive whooping cranes

are routinely radiographed to detect metal in their stomachs. The metal is removed through endoscopic or conventional surgical procedures (Olsen et al. 1996) prior to shipment. Two recommendations (Nesbitt 1996) may reduce entanglement with fences. First, construct barbed-wire fences with 3 rather than 4 or 5 strands and affix the bottom strand 46 cm above the ground. Second, construct woven-wire fences with framed walk-throughs (60 cm high by 46 cm wide) spaced every 0.5 km.

ACKNOWLEDGMENTS

We thank Steve Schwikert, Jim Schmidt, Kathy Sullivan, and Tom Miller for assistance collecting data. Thanks to Jeff Gore, Glenn Olsen, Don Wood, and an anonymous reviewer for comments on the manuscript.

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