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INFECTIOUS BURSAL DISEASE IN WILD POPULATIONS OF TURKEYS AND SANDHILL CRANES: PRELIMINARY FINDINGS

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Abstract: Captive-reared whooping cranes (*Grus americana*) released into Florida for the resident reintroduction project experienced unusually high mortality and morbidity during the 1997-1998 and 2001-2002 release seasons (Spalding et al. 2008). Infectious bursal disease virus (IBDV) serotype 2 is currently under investigation as the factor that precipitated the mortality events. A small percentage of whooping cranes have been exposed to IBDV in the captive setting. However, many more are being exposed post-release, and prevalence of exposure seems to increase with age or length of time the birds are in the wild in Florida (Spalding et al. 2008). The goals of this study were to provide baseline data on the potential for exposure of whooping cranes to IBDV from other wildlife reservoirs, and to provide information needed to make informed decisions about protocols and management to ensure this virus does not impact the recovery of the endangered whooping crane.

First we investigated whether wild exposure was possible by monitoring specific pathogen free chickens on whooping crane release sites in central Florida during the 2003-2004 and 2004-2005 release seasons. We determined serum neutralizing antibody titers to IBDV serotype 2, and considered titer levels ≥1:32 indicative of exposure. Four of 8 sentinel chickens at a Lake County site and 2 of 7 sentinel chickens at a Polk County site became exposed to IBDV serotype 2.

Secondly we investigated what wild bird reservoirs may be involved in post-release exposure by analyzing 222 blood samples from wild turkeys (*Meleagris gallopavo*) and 41 blood samples from sandhill cranes (*G. canadensis*) in 9 counties in northern and central Florida and 2 counties in southern Georgia. Whooping cranes from the resident flock have been observed in all counties in Florida where blood samples were collected. Thirteen percent of wild turkeys were exposed to the virus (median = 1:3, range = 1:0 to 1:256). Seroprevalence (% samples at each site with titer level ≥ 1:32) ranged from 0% to 64%, with only one site having no detectable evidence of exposure. Ten percent of sandhill cranes captured were exposed to the virus (median = 1:8, range = 1:0 to 1:128). Therefore, there appears to be potential for whooping cranes, both resident and migratory, to come in contact with wild birds that have been exposed to this virus.

To gain further insight into prevalence of exposure and length of time the virus has been present in wild sandhill cranes of Florida, 108 archived serum samples collected in Alachua County (northern Florida) and Osceola County (central Florida) from May 1992 to March 1998 were tested for antibodies to IBDV serotype 2. Overall, 46% of samples had titer levels high enough to indicate exposure (median = 1:16, range = 1:0 to 1:1024). In Alachua County, 54% of birds were exposed (n = 55, median = 1:32, range = 1:2 to 1:1024). The earliest evidence of exposure came from samples collected on May 7, 1992. In Osceola County, 38% of birds were exposed (n = 53, median = 1:16, range = 1:0 to 1:256). The earliest evidence of exposure came from samples collected on October 1, 1992. Although we were unable to demonstrate that sandhill cranes in Florida were exposed to IBDV prior to the introduction of captive-reared cranes, we did determine that the virus has been present in wild birds of Florida for at least 16 years.

Preliminary findings from the archived sandhill crane samples suggest that there is an age effect on seroprevalence in the population. Sixty-three percent of adult samples (n = 41, median = 1:64, range = 1:4 to 1:1024), 56% of subadult samples (n =

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36, median = 1:32, range = 1:2 to 1:128), and 13% of juvenile samples (n = 31, median = 1:4, range = 1:0 to 1:64) had titer levels high enough to indicate exposure. These findings are consistent with chicks having a shorter exposure time and immature immune system. The presence of higher seroprevalence and higher titers in older birds suggests that there is constant re-exposure or that birds remain carriers of the virus.

LITERATURE CITED

Spalding, M. G., H. S. Sellers, B. K. Hartup, and G. H. Olsen. 2008. A wasting syndrome in released whooping cranes in Florida associated with infections bursal disease virus titers. Proceedings of the North American Crane Workshop 10:176.

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