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DEFINITION OF SUBPOPULATIONS WITHIN MID-CONTINENT SANDHILL CRANES: A NUCLEAR APPROACH

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Abstract: The evolution and population dynamics of migratory sandhill cranes (*Grus canadensis*) have been the subject of many studies. Although these previous studies have made significant progress explaining sandhill evolution on a large scale, they have been insufficient to explain the geographically partitioned variation in morphology seen in this species. The objective of this study is to quantify the population structure and/or gene flow within and between migratory sandhills using 12 microsatellite DNA loci and 192 samples collected across three populations. Contrary to the lower rates of gene flow seen between the three major migratory populations, high rates of gene flow seen between subpopulations of the mid-continental population that are geographically adjacent indicate that gene flow is clinal from the Arctic Circle south to the US/Canadian border. Taken in context with precise geographical information, the morphologic and microsatellite DNA variation shows that there is a natural gradation from the arctic nesting lesser sandhills to the non-arctic greater sandhills. Analogous to other arctic nesting birds (e.g., marbled murrelets, common guillemot, and Canadian geese), it is likely that the population structure seen in mid-continental sandhill cranes reflects the result of post-glacial secondary contact.

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