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SANDHILL CRANE WINTERING ECOLOGY IN THE SACRAMENTO-SAN JOAQUIN DELTA, CALIFORNIA

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Abstract: We studied wintering sandhill crane (*Grus canadensis*) ecology in 2002–2003 in the Sacramento-San Joaquin Delta of California, focusing on Staten Island, a corporate farm which was acquired by The Nature Conservancy and managed to promote sustainable agriculture that is beneficial to wildlife. Our purpose was to define habitat conservation needs for cranes, including the state-threatened greater subspecies (*G. c. tabida*). Research was conducted through intensive surveys by vehicle of crane foraging and roosting behavior. We estimated that about 1,500 greater sandhills used Staten Island, which is a significant portion of the Central Valley Population of greater sandhill cranes and Staten Island supported 36% of all crane foraging use in the Delta region through the entire winter. Use of crops shifted in response to availability, with cranes showing highest preference for wheat. Corn, however, was the most important crop through the entire winter. Our estimates of winter home ranges of color-marked greater sandhills averaged $1.7 \text{ km}^2 \pm 0.52 \text{ SD}$ ($n = 39$) while flight distances from roost sites to foraging areas averaged 1.4 km. In contrast, marked lesser sandhill cranes (*G. c. canadensis*) indicated much larger winter ranges (mean $18.6 \text{ km}^2 \pm 5.32 \text{ SD}$; $n = 39$) and foraged much further from roost sites. Another relevant finding in our study was strong site fidelity of greater sandhills. Some color-marked greater sandhill cranes are known to have used the same local wintering areas for at least 18 years, highlighting the importance of maintaining these traditional use areas. Other results demonstrate that crane welfare could be enhanced by provision of crane-compatible crops and roost sites in close proximity, implementing crane-friendly agricultural practices, and minimizing disturbance.

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Key words: agriculture, California, sandhill crane, wintering ecology.
