BREEDING BY A TWO-YEAR OLD SANDHILL CRANE

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Most animal species do not reproduce before a given age and cannot reproduce after a certain age (Dempster 1975). It is necessary to know age at first breeding to understand the population dynamics of a species (Caughley 1977). Studies have shown that Sandhill Cranes first breed at 3 or 4 years of age (R.C. Drewien unpubl. data, Littlefield and Ryder 1968, Walkinshaw 1973). Here we describe nesting in 1985 by a 2-year-old Greater Sandhill Crane (*Grus canadensis tabida*) on Modoc National Wildlife Refuge (N.W.R.), California.

The 2543-ha Modoc N.W.R. surrounds the confluence of the north and south forks of the Pit River in Modoc County, adjacent to the town of Alturas in extreme northeastern California. Geographically, the refuge is situated on the western edge of the Great Basin Desert at an elevation of 1322 m. Several habitat types are represented on Modoc N.W.R., including freshwater lakes and ponds, farmland and irrigated meadows, sagebrush and juniper upland, and riparian corridors. The refuge contains the largest number of nesting Sandhill Cranes on public land in California (Littlefield 1981).

In 1982, the Central Valley population of Greater Sandhill Cranes was placed on the U.S. Fish and Wildlife Service Region 1 Sensitive Species List (USFWS 1982). Because of the downward trend in the size of the Sandhill Crane population, increased emphasis was placed on the gathering of baseline data on crane production at Modoc N.W.R. Research involved monitoring of nest success and banding of chicks.

On 14 June 1983, we banded a locally hatched 5-week-old crane chick in the Town Field of Modoc N.W.R. We placed U.S. Fish and Wildlife Service band 519-96615 above the tibiotarsal joint of the crane's left leg. This crane was later captured 3.2 km south of its original capture site on Modoc N.W.R. by means of a rocket net on 22 May 1985. It was then banded with three colored plastic bands, allowing it to be identified individually at a distance. The bird was released, and later the same day we observed it on a nest in the northeast Sharkey Field of Modoc N.W.R., 1 km west of the rocket net capture site. On the basis of its behavior, smaller size, and longer time spent at the nest relative to its mate, we believed the crane to be female (Littlefield and Ryder 1968).

On the day of discovery the nest contained one egg measuring 9.21 cm × 5.28 cm. The nest was in an irrigated meadow vegetated primarily with rushes (*Juncus* sp.) and sedges (*Carex* sp.) that reached a maximum height of 40 cm. The nest itself was composed of *Juncus*. On 4 June 1985 the nest contained two eggs. The eggs hatched successfully by 23 June 1985, as evidenced by inner shell membranes and shell fragments found in the nest. Both adults, unaccompanied by chicks, were observed throughout July, indicating the chicks died before fledging. We did not determine the cause of death.

Haley (1983) studied 67 pairs of Sandhill Cranes of known age and found that they began pairing at 3.5 years (range 3.5-6.5) and did not raise young until they reached 6.5 years. Our observation is the first of a Sandhill Crane forming a pair bond and becoming a parent at 2 years of age. Breeding at such a young age is perhaps in part the bird's response to a healthy environment that has not yet reached its carrying capacity of nesting cranes.

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