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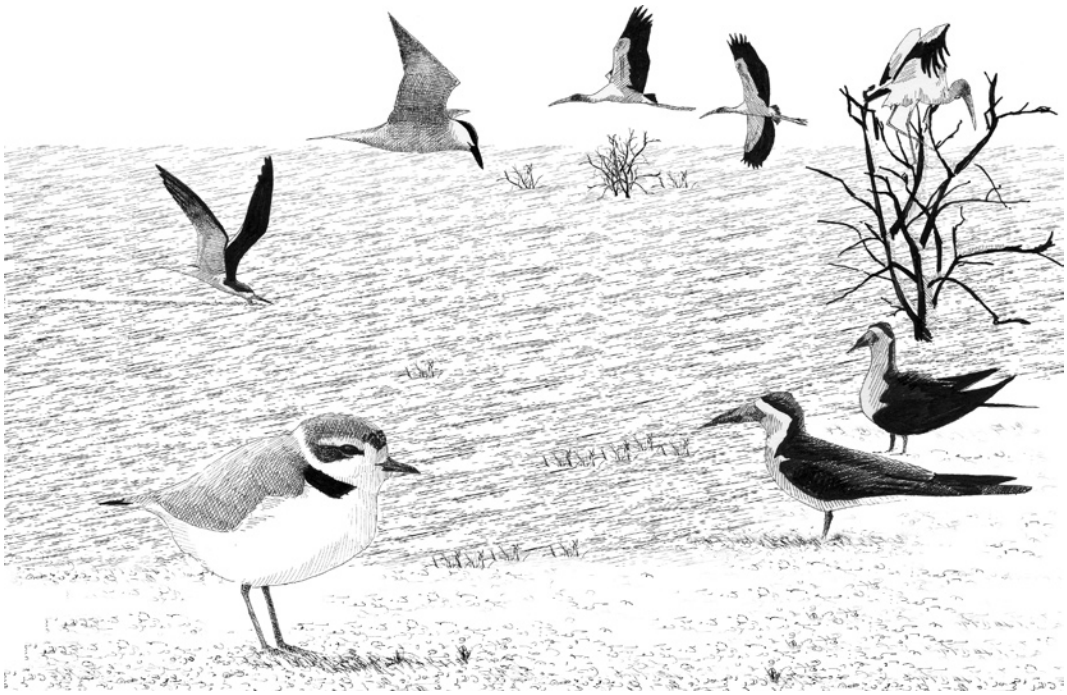
Species Accounts



Andy Birch

PDF of Lesser Sandhill Crane account from:

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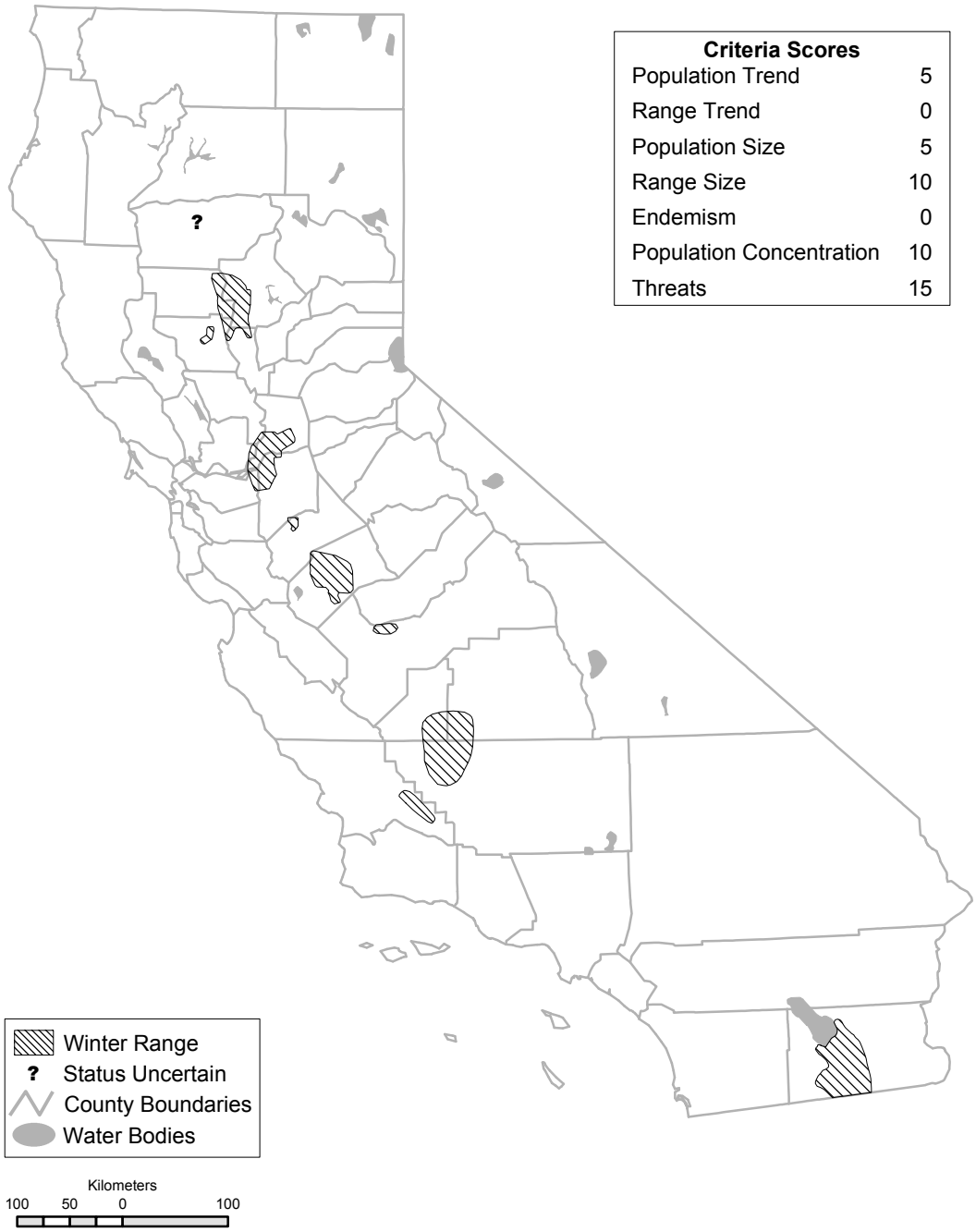
LESSER SANDHILL CRANE (*Grus canadensis canadensis*)

Carroll D. Littlefield



Winter range of the Lesser Sandhill Crane in California; large numbers shift over considerable distances within the primary range in the Central Valley in fall and winter. Major concentration areas are in Merced County and the Sacramento–San Joaquin River Delta, but cranes also winter regularly in the Sacramento Valley, San Joaquin River NWR area (Stanislaus Co.), Tulare Basin, Carrizo Plain, and, locally in small numbers, the Imperial Valley south of the Salton Sea. Occurs more widely during migration.

Special Concern Priority

Currently considered a Bird Species of Special Concern (wintering), priority 3. Not included on CDFG's (1992) unprioritized list, but the Sandhill Crane (*Grus canadensis*), including the Greater (*G. c. tabida*; now listed as state threatened) and Lesser (*G. c. canadensis*), was on the original list (Remsen 1978, 3rd priority).

Breeding Bird Survey Statistics for California

Does not breed in California.

General Range and Abundance

The Sandhill Crane is polytypic, with six described subspecies; recent genetic work, however, has suggested not all are valid (Rhymer et al. 2001, Jones et al. 2005). The Florida (*G. c. pratensis*), Mississippi (*G. c. pulla*), and Cuban (*G. c. nesiotes*) subspecies are nonmigratory and restricted to the southeastern United States and Cuba (Johnsgard 1983). The Lesser (*G. c. canadensis*), Greater (*G. c. tabida*), and Canadian (*G. c. rowani*) are migratory and collectively breed in remote, scattered locations from northeastern Siberia east to Hudson Bay and south to northeastern California, northwestern Colorado, southern Manitoba, and the Great Lakes states; in winter, they occur from California, the southwestern states, and northern Mexico east to southern Georgia and Florida (Drewien and Lewis 1987).

The Lesser Sandhill Crane consists of two recognized populations: the midcontinent population (MCP), not relevant to California, and the Pacific Flyway population (PFP), which breeds in southern Alaska and winters mainly in California's Central Valley. Prior estimates put the global population of Lessers at about 375,000 individuals: 350,000 in the MCP (Krapu 1981), 25,000 in the PFP (Littlefield and Thompson 1982). About 90% of the PFP (eastern segment, about 23,000 individuals) use an interior migration route to and from Alaska; the remainder (coastal segment; about 2000 individuals) migrate along or near the coast (Herter 1982, Littlefield and Thompson 1982). In autumn, major staging areas for cranes en route to California are the grain-growing regions of eastern Washington (Littlefield and Thompson 1982); in spring, some northbound birds stage in California, but most do so to the north, particularly in southeastern Oregon.

Although data from recent midwinter aerial waterfowl surveys suggest wintering cranes have more than doubled in the Central Valley (Trost and Drut 2003), these data should be viewed with skepticism, given it is biologically impossible for an increase of this magnitude to occur in a single year as implied. An unexplained "stair-step" (abrupt) increase occurred between 1995 and 1996 (17,096 vs. 38,852), and such an increase generally means either changes in survey methods, personnel, or area of coverage, or overzealous use of expansion factors. Because of the difficulty in aerially surveying Sandhill Cranes (R. C. Drewien pers. comm.; Littlefield 2003, pers. obs.), population estimates presented in Trost and Drut (2003) are inflated, and should be reduced from 47,000 to perhaps 35,500, with 70% of these Lessers.

Seasonal Status in California

The Lesser Sandhill Crane is a winter resident and migrant in California from mid-September (mainly Oct) to early April (most depart late Feb–early Mar; Littlefield 1999, pers. obs.). In fall and winter, large numbers of cranes shift considerable distances between areas of concentration in the Central Valley (Littlefield and Thompson 1982).

Historic Range and Abundance in California

Grinnell and Miller (1944) described the Lesser Sandhill Crane as chiefly a "more or less common migrant," with flocks wintering in the San Joaquin and Imperial valleys, and at least formally in the Los Angeles region. They noted an obvious reduction in aggregate numbers in the prior 30 years and that "thousands" were no longer seen. Definitive records of wintering at that time were from San Rafael, Marin County, and San Francisco in the 1840s; Los Banos, Merced County; Corcoran, Kings County; Riverside and Corona, Riverside County; and the south end of Salton Sea, Imperial County. These authors judged that sight records from the Colorado River valley, at least in part, likely pertained to this subspecies.

No estimates of historic numbers are available. The status is clouded, as most early-day ornithologists either did not differentiate between subspecies or misidentified them; this also was at a time when crane numbers were being reduced by market hunting. For Sandhill Cranes in general, Newberry (1857) stated that in the winter of 1854–55 cranes were abundant on the prairies of California and were always for sale in the markets of San Francisco, where they were highly esteemed as food. By 1880, market hunting was excessive in California, and the slaughter was not stopped until passage of the Migratory Bird

Treaty Act of 1918. After 30 years of continual market hunting, perhaps few cranes remained in the state (Littlefield 1993). There is evidence the population had begun to recover in the 1920s. McLean (1930), for example, noted 400 at Los Banos on 13–14 March 1929, but it was not until the 1940s that the subspecies was again described as common, at least in localized areas. Abbott (1940) stated Lessers were "fairly common" in the Imperial Valley near the Salton Sea in the winter of 1939–40; based on specimen evidence *canadensis* far outnumbered *tabida*.

Recent Range and Abundance in California

Despite some local extirpations, population reductions, and geographic shifts in abundance, the overall wintering range of Lessers in California may be virtually the same today as it was in 1944 (see map). First reports of Lessers in the Sacramento Valley and Carrizo Plain in the 1950s likely reflect just an increase in recent knowledge rather than a range expansion.

More thorough study, however, has shown that during fall and winter large numbers of cranes shift over considerable distances within the Central Valley (Littlefield and Thompson 1982). Most Lessers concentrate near Merced NWR in autumn, but later some disperse to the northwest and others to the southeast (Littlefield and Thompson 1982). From 1989 to 1998, the mean date for peak numbers at Merced NWR was 3 November (SD = 12 days, range = 23 Oct–22 Nov, n = 8 yrs); dispersal generally occurs after mid-November. In winter 1969–70, for example, 828 Lessers were on the Sacramento–San Joaquin River Delta on 14 December, but the number had increased to 4100 by 7 January, whereas 1011 had reached the Carrizo Plain, San Luis Obispo County, by 24 November, 1439 by 17 December, and 2763 by 25 January (Littlefield and Thompson 1982).

Through the 1940s and 1950s, Lesser Sandhill Crane numbers increased substantially. At Merced NWR, 2000 were estimated in 1951; then numbers ranged from 1500 in 1952 to 21,500 in 1958 (Littlefield and Thompson 1982). No recent information is available for Stanislaus County (west of Modesto), but numbers of Lessers recorded on the Faith-Mapes ranches earlier include 2600 on 4 November 1969 and 2037 on 18 February 1971 (C. D. Littlefield unpubl. data). Their center of abundance is still Merced County, but in recent years more seem to have shifted northwest to the Sacramento–San Joaquin River Delta. Only 4100 were recorded there in 1970, but Christmas Bird Count (CBC) data suggest 10,000–15,000 now may be wintering in San Joaquin County, at least in some years (*tabida* also commonly winter there). In the south at the Carrizo Plain, where cranes have wintered at least since 1955 (Walkinshaw 1973), mean wintering numbers declined from 3979 cranes (SD = 1095, range = 3431–5765, n = 7 yrs) for the period 1983–1989 to 903 for 1990–2000 (SD = 910, range = 2–2900, n = 9 yrs; L. Saslaw, Bakersfield BLM, pers. comm.). However, at nearby Pixley NWR, Tulare County, cranes have increased from <100 in the late 1970s to 2000–5000 since the mid-1990s (D. Hart, Kern NWR, pers. comm.). Small numbers of cranes (typically <300, but up to approximately 1500 in Feb 2006), presumably including some Lessers, currently winter regularly east of Mendota, Fresno County, primarily along Yuba Rd. between the San Joaquin River and Highway 180 (J. Davis in litt.).

Seasonal status of the Lesser Sandhill Crane is poorly documented for the Sacramento Valley. The subspecies formerly wintered near Red Bluff, Tehama County (e.g., 173 on 5 Nov 1970), but CBC data suggest cranes stopped wintering in that area after 1992 (first recorded in 1952). Up to 500 cranes wintered north of Red Bluff, at least in the 1970s and 1980s, with birds roosting nightly in the Table Mountain area in the Jelly's Ferry–Bend district and foraging in the day north to the Anderson bottoms and south to the Antelope Creek and Cone Ranch area (S. Laymon in litt.). Although local residents in the early 1990s reported cranes still commonly wintered in the grassland regions between Red Bluff and Chico, Butte County, it is uncertain if this is still the case (B. Deuel in litt.). Some southward shifting was suggested by an observation of 248 Lessers from 27 January–4 February 1992 in the Butte Sink, 32 km south-southwest of Chico, where they had not been seen earlier in the season or in the past; elsewhere in the sink, only 26 other Lessers were known to have wintered (Littlefield 1993, unpubl. data). Cranes now winter in the northern Sacramento Valley mainly on the east side between the Sacramento River and Highway 99 from south of Chico south through the Butte Sink area (J. Snowden and J. Silveira in litt.); they also winter in a few areas west of the Sacramento River in Glenn and Colusa counties, but virtually all of these are *tabida* (Littlefield 1993, 2002).

The subspecies' status in the Imperial Valley apparently has changed since 1940 (see above);

only two Lessers were recorded there in the winter of 1969–70, four in 1970–71, and none in 1971–72 and 1975–76. Numbers of *canadensis* increased in the 1990s, with 30 wintering in 1992–93 and 45 in 1993–94, though they were still far outnumbered by *tabida*. Although one *canadensis* was near Blythe, Riverside County, on 31 January 1976 (Littlefield and Thompson 1982), Lessers apparently do not winter regularly in the Colorado River valley, where *tabida* dominates (Pacific Flyway Council 1995).

In fall, there are no major staging areas for Lessers in California, but in spring fair numbers stage in at least Modoc County at Surprise Valley, Big Valley, and near Goose Lake (C. D. Littlefield unpubl. data).

Ecological Requirements

Sandhill Cranes are omnivores that consume invertebrates, amphibians, reptiles, small mammals and birds, and a variety of plant parts (Walkinshaw 1973). Waste grains and other seeds are dominant foods in winter. Waste grains consumed include milo, corn, wheat, rice, barley, and oats (Madsen 1967; Guthery 1972; Walkinshaw 1973; Littlefield 1986, 2002). All of these crops are grown in California, but rice, wheat, and corn predominate. At Merced NWR, Lessers' feeding habitats include burned grasslands, pastures, mowed unharvested corn, unaltered and tilled corn stubble, recently plowed winter wheat, alfalfa, disced barley, resprouting clover, ungerminated trapper peas, milo, and burned rice stubble (refuge narrative reports, 1986–1993). Field use percentages for 14,755 Lessers in Merced County in the winter of 1969–70 were alfalfa 51.1%, corn 18.7%, milo 16.6%, grasslands 8.7%, wheat stubble 4.5%, and cotton 0.4% (unpubl. data).

Elsewhere in California, Lessers consume waste corn, recently planted barley, wheat, and to a minor extent rice, in Stanislaus, San Joaquin, San Luis Obispo, and Butte counties, respectively. Throughout the Central Valley, they frequently use grazed or mowed grasslands after the onset of winter rains, primarily to obtain invertebrates, which are necessary for daily activities and other physiological functions (Reinecke and Krapu 1986). During spring migration, Lessers use mostly mowed and grazed meadows, whereas in autumn they forage primarily in harvested grain fields.

Lesser Sandhill Cranes use pastures, moist grasslands, alfalfa fields, and shallow wetlands for loafing sites. In the winter of 1977–78, cranes on the Carrizo Plain used grasslands with many rain-filled ephemeral ponds adjacent to Soda Lake. In drier winters, however, cranes loafed along the shoreline of this highly alkaline lake (Gernon 1978).

Roost sites are in a variety of wetland habitats, where cranes spend the night standing in shallow water. Sites in California have included rain-pooled agricultural fields, shallow freshwater lakes and ponds, alkaline lakes, and channels of shallow rivers. Water depths at roost sites generally range from 3 to 15 cm, but at one roost at San Luis NWR, Merced County, it was 22 cm (unpubl. data). Though roost sites are usually within 2–4 km of feeding fields, cranes will use sites at greater distances; for example, birds have fed on wheat fields 10 km from roosts on the Carrizo Plain (Gernon 1978). The number of roost sites varies, depending on crane dispersal patterns. Roosting areas early in the season are confined primarily to Merced NWR and the Sacramento–San Joaquin River Delta, where several wetlands may be used on a given night (unpubl. data). No data are available on roosting areas for Lessers in the Sacramento Valley; however, a local resident near Red Bluff in 1970 reported they roosted on sandbars in the Sacramento River.

Threats

Perhaps the greatest threat to Lesser Sandhill Cranes in California is changing agricultural practices in the Central Valley, where extensive feeding habitat has been, and continues to be, lost. Preferred crane foraging habitats of grainfields, irrigated pastures, and grasslands continue to decrease as orchards, vineyards, and vegetable crops increase. In Butte County from 1959 to 1996, orchards increased from 10,028 to 27,209 ha, whereas corn declined from 4271 to 607 ha and barley from 14,575 to 1093 ha. Although rice hectares increased through the 1990s (Butte County Agriculture Reports), *canadensis*, unlike *tabida*, is not attracted to rice fields (pers. obs.). Changing cropping patterns may have caused Lessers in the Sacramento Valley to shift their winter use south of Tehama County. In Tehama from 1989 to 1998, fruit and nut crops increased from 12,526 to 13,266 ha as grain crops declined from 3547 to 2348 ha; meanwhile, grassland hectares remained unchanged (Tehama County Agricultural Reports). Grasslands formerly may have been an important habitat for Lessers in Tehama. In the Sacramento–San Joaquin River Delta in the 1990s, barley and milo had mostly disappeared and irrigated grasslands had declined (10,769 to 9676 ha), but the extent of corn was

little changed (San Joaquin County Agricultural Reports). Conversely, vineyards increased from 18,785 to 31,093 ha in 1991–1998, and in Sacramento County they more than doubled in three years (Littlefield and Ivey 2000). In Merced County, though vineyards and orchards increased by only 2660 ha (1990–1998), tomatoes, Sudan grass, and sugar beets (crops rarely used by cranes) increased from 7753 to 16,005 ha. Of special concern, irrigated grassland decreased from 33,603 to 23,684 ha, but alfalfa increased slightly from 30,733 to 31,368 ha. In addition, corn decreased (4798 to 2530 ha), except for that used as silage (Merced County Agricultural Reports). Changing agricultural practices for some crops remaining in abundance may reduce their value to cranes. Except for some roosting and loafing use, deeply flooded grainfields are generally shunned by cranes, which, unlike ducks and geese, are inefficient in finding submerged seeds (Littlefield 2002). In addition, many hectares of corn now being planted are being harvested as silage for local dairies (D. Hart, Kern NWR, pers. comm.). For threats throughout the range of the PFP, see Littlefield (1999).

Management and Research Recommendations

- Protect and enhance favorable grain crops and provide unharvested corn and milo plots on federal, state, and other conservation lands used by Lesser Sandhill Cranes in the Central Valley. Consider purchase or easements on major feeding areas in Merced, San Joaquin, and other counties where major crane use areas are discovered or established.
- Encourage farmers to delay discing grain crop stubble until after February, as deep discing buries waste grains. Similarly, encourage farmers and wildlife agency personnel to delay burning or flooding of grain stubble until late February. Also encourage private landowners in northeastern California to maintain meadow habitat used by migrant cranes in spring.
- Protect and enhance shallow, sparsely vegetated wetlands within 2–4 km of major crane feeding areas to provide favorable roosting and loafing sites. Limit all hunting activities within 0.4 km of crane roost sites and other use areas, and, where possible, restrict human access.
- Manage 20%–40% of grasslands in major crane use areas with cattle grazing to provide foraging sites for cranes.
- To avoid collisions, reroute any utility corridor proposed through crane use areas.
- Conduct research on changing land-use practices in the Central Valley and their impact on food availability and habitat of Lesser Sandhill Cranes, and assess patterns and causes of winter movements.
- Refine knowledge of the distribution of the subspecies in California.

Monitoring Needs

Lesser Sandhill Crane counts should be conducted in the San Joaquin Valley in late October and early November. The wintering population should be monitored every three to five years. All surveys need to differentiate Lessers from other subspecies. Numbers of Lessers wintering in the Sacramento Valley should be assessed once major use areas have been better defined. Data on population recruitment should be collected annually in early fall (Oct–Nov).

Acknowledgments

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