A.6 GREATER SANDHILL CRANE (*GRUS CANADENSIS TABIDA*)

photo courtesty BCAG

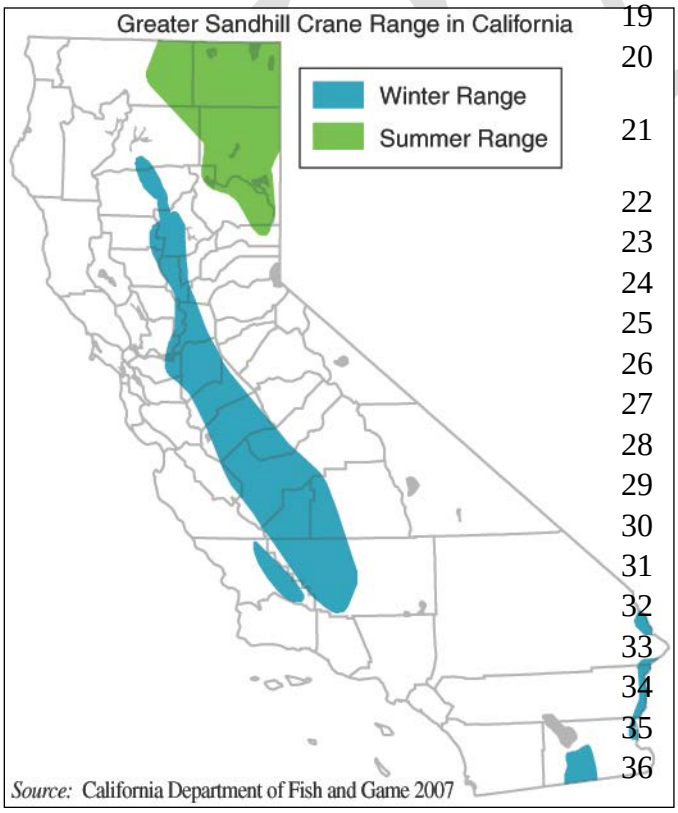
A.6.1 Legal and Other Status

The greater sandhill crane (*Grus canadensis tabida*) is listed as a threatened species under the California Endangered Species Act. The greater sandhill crane has no federal regulatory status.

A.6.2 Species Distribution and Status

A.6.2.1 Range and Status

The greater sandhill crane is one of six subspecies of sandhill crane that exist in North America (Littlefield and Ivey 2000). Three of the six subspecies are non-migratory and occupy ranges in the southeastern United States and Cuba. The other three subspecies are migratory and include the lesser and greater subspecies, both of which are further divided into distinct populations. The greater sandhill crane is divided into five migratory populations, which return to the same breeding territory and wintering sites each year. These include the Eastern Population, the Prairie Population, the Rocky Mountain Population, the Lower Colorado River Population, and the Central Valley Population. The Central Valley Population breeds in northeastern California, central and eastern Oregon, southwestern Washington, and southern British Columbia; and winters in the Central Valley of California (Littlefield and Ivey 2000).



A.6.2.2 Breeding

Approximately 500,000 sandhill cranes are believed to reside in North America. Roughly 62,600 of these are thought to be greater sandhill cranes. An estimated 8,500 of these greater sandhill cranes belong to the Central Valley population (Littlefield and Ivey 2000). Recent breeding surveys recorded 1,151 breeding pairs in Oregon, 465 breeding pairs in California, 20 pairs in Washington, and 11 pairs in Nevada (Ivey and Herziger 2000, Ivey and Herziger 2001, Engler and Brady 2000 in Ivey and Herziger 2001). The number of breeding pairs in British Columbia remains unknown; however, Littlefield and Ivey (2000) report

approximately 2,500 individuals from that area.

The greater sandhill crane breeding distribution (summer range) in California is restricted to the northeastern corner of the state and includes six counties: Siskiyou, Modoc, Shasta, Lassen, Plumas, and Sierra counties (Littlefield 1982, Littlefield 1989, Ivey and Herziger 2001). Ivey and Herziger (2001) found that the greatest number of breeding pairs are in Modoc County (54 percent) followed by Lassen County (26 percent). A total of 91 percent of the breeding pairs were found in Modoc, Lassen, and Siskiyou Counties (Ivey and Herziger 2001).

Early survey efforts were insufficient to accurately estimate the breeding population of the greater sandhill crane; however, major population declines have been noted and attributed to the loss of essential wetland habitats between 1870 and 1915 (Walkinshaw 1949). The first comprehensive greater sandhill crane surveys were conducted in 1971, when 112 pairs were found. This was followed by surveys in 1981 which found 129 pairs, and surveys in 1988 which found 170 pairs. This indicated a positive trend in the breeding population during that period (Littlefield 1982, Littlefield 1989). The next subsequent, and most recent, survey was conducted in 2000 (Ivey and Herziger 2001) when 465 pairs were reported. This reflects an increase of 68 percent since the 1988 survey. Much of that increase could be the result of the protection of traditional nesting areas on state and national wildlife refuges, the lack of hunting, and a variety of management practices.

A.6.2.3 Wintering

Pogson and Lindstedt (1991) identified eight distinct wintering locations in the Central Valley from Chico/Butte Sink on the north to Pixley National Wildlife Refuge near Delano on the south, with over 95 percent occurring within the Sacramento Valley between Butte Sink and the Sacramento-San Joaquin River Delta (Delta). Greater sandhill crane use within this area varies seasonally. This variability could be a function of the winter flooding regime and the availability of food resources. The Butte Sink has been reported to support a large segment of the Central Valley greater sandhill crane population (greater than 50 percent) during October and November. Greater sandhill crane use then shifts to the Delta during December and January, where an estimated two-thirds of the population resides the remainder of the winter (Pogson and Lindstedt 1988, Littlefield and Ivey 2000).

The first exhaustive winter survey was conducted in the mid-1980s (Pogson and Lindstedt 1988). This survey estimated a wintering population of 6,000 birds; however, this estimate was adjusted in the early 1990s to 8,500 birds as a result of additional follow-up survey work in the Sacramento Valley (Littlefield 1993). Although portions of the wintering population have been monitored periodically prior to and since the mid-1980s, no other comprehensive survey has been conducted and information has been insufficient to reliably detect trends.

A.6.2.4 Distribution and Status in the Plan Area

There are no greater sandhill crane breeding areas within the Plan Area. The nearest breeding site is in Plumas County, northeast of the Plan Area. The distribution of greater sandhill crane wintering habitat in the Plan Area is presented in Figure A-6.

The majority of the Sacramento Valley (Chico/Butte Basin) greater sandhill crane wintering area is within the Plan Area. Delineated by Pogson and Lindstedt (1988), this region extends from Chico to the Butte Sink between the Sacramento River and State Route 99. Pogson and Lindstedt (1988) estimated that more than 50 percent of the wintering population (more than 3,000 individuals) used this area during the early portion of the winter season in October/November.

Later in the season (December/January), possibly in response to winter flooding and food resources, many of these birds continued south to the Delta; however, use of the Sacramento Valley continued throughout the winter season. Littlefield (2002) estimates that the Butte Basin frequently supports up to 70 percent of the Central Valley crane population.

Areas of concentration within the Plan Area include the areas south and east of Chico River Road and north of Ord Ferry Road; south of Ord Ferry Road and Pratt-Grant Road, west of Goodspeed-Watt Road, east of Angel Slough and north of Nelson Road; between Nelson and State Route 99 along the Nelson-Blavo Highway; and in the Butte Sink between Butte Creek on the east, Biggs Highway on the north, and Graylodge Wildlife Area on the east (Figure A-6).

A.6.3 Habitat Requirements and Special Considerations

Sandhill cranes are largely birds of open freshwater wetlands. In California, nesting typically occurs in open-grazed meadows; primarily, bulrush or sedge meadows adjacent to grassland or short vegetation uplands (Littlefield and Ryder 1968, Littlefield 1982). While breeding sites occur on state and federal refuges or U.S. Forest Service lands, more than 60 percent occur on private lands (Ivey and Herzinger 2001).

Wintering habitat is found almost entirely in agricultural fields and edges and consists of three primary elements: foraging habitat, loafing habitat, and roosting habitat. Two principal foraging habitat types are used during winter. In the Delta, harvested cornfields are the most commonly used foraging habitat along with harvested wheat, alfalfa, pasture, and fallow fields (Pogson and Lindstedt 1988). In the Butte Basin, harvested rice fields are the most commonly used foraging habitat along with winter wheat, harvested and unharvested corn, fallow fields, and grasslands (Pogson and Lindstedt 1988, Littlefield 2002).

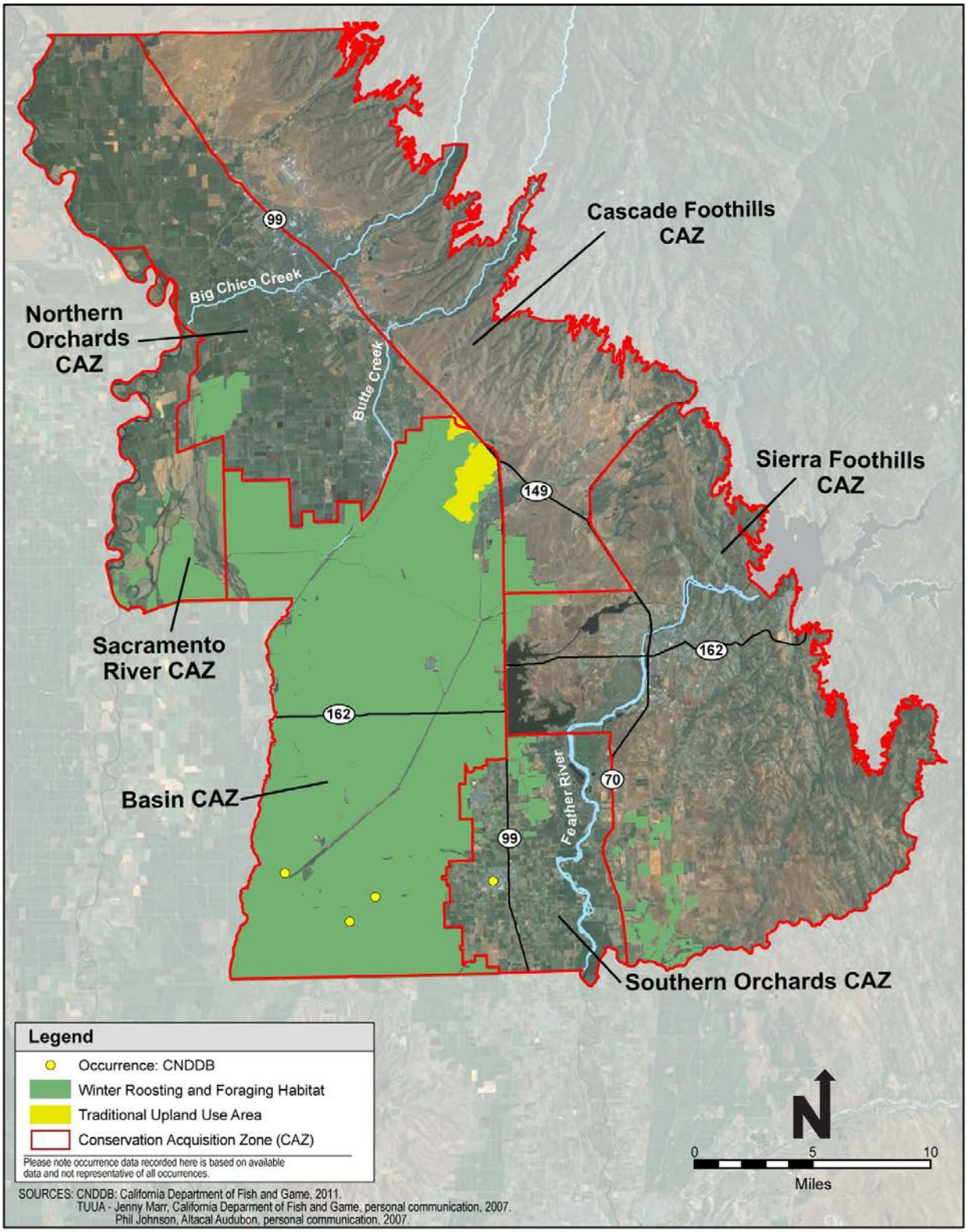


Figure A-6. Greater Sandhill Crane Modeled Habitat and Recorded Occurrences

Loafing generally occurs during midday when birds loosely congregate along agricultural field borders, levees, rice-checks, ditches, or in alfalfa fields or pastures. During the late afternoon and evening, greater sandhill cranes congregate into large, dense communal groups (roost sites) where they remain until the following morning. Roosting habitat typically consists of shallowly flooded open fields or wetlands interspersed with uplands. Roost sites provide protection from predators during the night and are typically within 2 to 3 miles from foraging/loafing areas. Protection and close proximity to food sources make available roosting sites an essential component of winter habitat. When properly managed, greater sandhill crane roost sites are often used for many years.

A.6.4 Life History

A.6.4.1 Seasonal Patterns

Greater sandhill crane nesting in their summer range generally begins in April/May and extends through July/August. By September, the Central Valley greater sandhill crane population begins their southwestern migration and arrives onto the wintering grounds of the Central Valley by late September, where they remain until approximately late February/early March, when they begin their northward migration back to the breeding grounds (Pogson 1990, Tacha et al. 1992). Local winter movements continue throughout the winter season in response to changes in flooded habitat and the availability of food resources. For example, the use of the Butte Basin during the early part of the winter season in October and November and subsequent movement of a large segment of the population into the Sacramento-San Joaquin Delta during December and January (Pogson and Lindstedt 1988, Littlefield 2002).

A.6.4.2 Nest Site Selection

Greater sandhill crane nesting areas are selected based on meadow size, flooding regime, the condition of the meadow and the presence or absence of cattle, meadow vegetation composition, available food resources, and site proximity to human disturbances (Armbruster 1987). Nests are generally constructed as low mounds and are composed of the dominant vegetation found in the nesting area. Nests are sometimes constructed to float in shallow water, but are also constructed on dry ground.

A.6.4.3 Reproduction

Greater sandhill crane females usually lay two eggs. Both the male and female incubate the eggs for a period of 29 to 32 days. Young fledge at 67 to 75 days (Tacha et al. 1992).

A.6.4.4 Foraging Behavior and Diet

Greater sandhill cranes are omnivorous and search for subsurface food items by probing with their bill. They also glean seeds and other foods on the surface (Walkinshaw 1973, Tacha 1987).

Their diet consists of tubers, seeds, grains (particularly corn and rice), small vertebrates (e.g., mice and snakes) and a variety of invertebrates.

A.6.5 Threats

Breeding ground threats include water regime changes that lower the water table; thereby eliminating nesting areas. In addition, cattle grazing can degrade habitat, destroy nests, and disturb nesting birds. Mowing and haying operations can kill young cranes. Wintering ground threats include changes in water availability; the flooding of fields for waterfowl management (reduces crane foraging habitat); conversion of cereal cropland to vineyards or other crop types incompatible for crane use; human disturbances; collision with power lines; and urban encroachment (Littlefield and Ivey 2000).

Greater sandhill cranes are sensitive to the presence of humans and human activities. Greater sandhill cranes do not tolerate regular disturbances, including low-level recreational disturbances (e.g., birding, photography); and levels of disturbance may play a role in habitat selection (Lovvorn and Kirkpatrick 1981). Excessive disturbances have caused cranes to abandon foraging and roosting sites; and repeated disturbance may affect their ability to feed and store the energy needed for survival. Ivey (pers. comm. in Sacramento County 2008) found that cranes generally avoid suitable agricultural foraging habitat near occupied dwellings. Foraging areas within 100 yards of occupied dwellings are not considered suitable (Sacramento County 2008).

It has been noted that merely one pre-dawn disruption can cause cranes to abandon a site (Littlefield and Ivey 2000). Disturbance from hunting also poses a threat to cranes. Hunters accessing hunt areas during pre-dawn hours flush cranes from their roosts and hunter presence can keep cranes from roosting or foraging in an area (Ivey and Herziger 2003). Other human disturbances such as boating, aircraft, and operating equipment for habitat management can cause birds to abandon otherwise suitable habitats. Flooding of agricultural fields for waterfowl hunting also reduces available foraging habitat for wintering cranes.

A.6.6 Relevant Conservation Efforts

Efforts have been made to protect and enhance wintering habitat for greater sandhill cranes. The Woodbridge Ecological Reserve was purchased by and is specifically managed as a crane roosting area by the California Department of Fish and Game. Acquired in 1985, this site continues to be an important crane roost for the wintering population.

Since 1984, a cooperative effort between the California Department of Fish and Game, The Nature Conservancy, the Bureau of Land Management, the Wildlife Conservation Board, and Ducks Unlimited has resulted in acquisition of lands that currently total approximately 40,000 acres on the Cosumnes River Preserve. Portions of the preserve are managed specifically for winter crane use and have attracted up to 20 percent of the greater sandhill crane wintering population at certain times of the wintering season (Littlefield and Ivey 2000).

Several regional conservation plans in the Central Valley region of California already include or have proposed to include the greater sandhill crane as a covered species: the San Joaquin County Multi-species Habitat Conservation and Open Space Plan, the South Sacramento County Habitat Conservation Plan, and the Bay Delta Conservation Plan.

A.6.7 Species Habitat Suitability Model

A.6.7.1 Winter Roosting and Foraging Habitat

Greater sandhill crane winter roosting and foraging habitat includes all managed wetland and rice land cover types within the Plan Area.

A.6.7.2 Assumptions

The greater sandhill crane does not breed in the Plan Area, but the Butte Basin portion of the Plan Area is among the most important wintering areas for the Central Valley population of this subspecies (Pogson and Lindstedt 1988). Managed wetland and rice land cover types encompass the majority of potential crane winter use areas. While greater sandhill cranes use irrigated pasture, this land cover type is excluded from the model because it only occurs in the eastern portion of the Plan Area (east of State Highways 70 and 99) which is not a known crane use area. Greater sandhill cranes will also use irrigated cropland (Littlefield 2002, Pogson and Lindstedt 1991). However, this land cover type is also excluded from the habitat model because in the vicinity of known crane use areas, this land cover type is generally fragmented by orchards and vineyards and thus not likely to be used by cranes.

A.6.7.3 Traditional Upland Use Areas

These areas are delineated on the map based on discussions with experts who have knowledge of greater sandhill crane traditional upland use areas within the Plan Area (Marr pers. comm. and Johnson pers. comm.).

A.6.8 Recovery Plan Goals

A USFWS recovery plan has not been prepared for the greater sandhill crane and recovery goals have not been established for the species; however in 1997, the California Endangered Species Act was amended to explicitly require the California Department of Fish and Game to develop a recovery strategy pilot program for the greater sandhill crane (DFG 2001). A recovery strategy team was assembled, which included representatives from state and federal agencies, local landowners, environmental groups, and species experts, to produce a draft recovery strategy. The strategy includes long-term recovery goals and a range of alternative management goals and activities, with an overall goal to improve the status of the species through a variety of specific habitat protections and other actions so the protections of the California Endangered Species Act will no longer be necessary and delisting can be proposed (DFG 2005). The draft recovery strategy has not been finalized or implemented.

A.6.9 References

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