

California Department of Fish and Game
Job Progress Report

Project Number: W-65-R-3 Project Title: Nongame Wildlife Investigations

Job Number: III-11 Job Title: Sandhill Crane Research and Management

Period Covered: July 1, 1985 - June 30, 1986 Job Type: Survey and Inventory

Summary:

During 1986, a total of 96 breeding pairs of Greater Sandhill Cranes (Grus canadensis tabida) was located at 6 major nesting areas in Modoc and Lassen counties. An additional 11 pairs were found at 9 other sites in Lassen and Modoc counties. Twenty-six sites were surveyed that produced no nesting cranes. Twenty-four young were observed at all sites checked. This total does not include Modoc NWR where reproductive information has not yet been reported. A combined age-ratio of 13.8 (24 young per 174 cranes, breeders + young) was obtained. Non-breeders numbered at least 59 birds. As in 1984 and 1985, efforts were made by staff at Modoc NWR to capture and color-mark a sample of Greater Sandhill Cranes.

Age-ratio data were obtained at Thornton and Butte Sink wintering areas. The 4.0% at Thornton and 4.9% at Butte Sink values are below what is needed to maintain a stable population. Sixty-three color-marked Greater Sandhill Cranes were observed at the Thornton and Butte Sink areas. Aerial and ground surveys were conducted at roosts in the Central Valley.

Two major land purchases were made during 1985-86. Ash Creek Wildlife Area in Big Valley, Modoc County is an important crane breeding area, and Woodbridge Ecological Reserve (formerly El Dorado Gun Club) is an important winter roost area in the Sacramento-San Joaquin Delta.

Background:

In 1978, an interagency task force lead by the U.S. Fish and Wildlife Service, developed management plans for populations of Sandhill Cranes breeding and wintering in the Pacific Coastal region of the United States and Canada.

Based on recommendations contained in the Pacific Flyway Management Plan and the fact that a study of cranes breeding in California was conducted in 1971, surveys were conducted during spring, 1981 to determine the number of nesting pairs and ascertain if any changes had occurred at selected nesting areas since 1971 (Littlefield 1982). A total of 191 pairs was located. Modoc County

contained 110 nesting pairs, more than any other county. The largest single concentration of nesting birds occurred in Surprise Valley, Modoc County, where 44 pairs were counted. Nesting pairs also were found in Lassen, Siskiyou, Shasta, and Plumas counties.

During 1982, a total of 83 pairs of nesting Sandhill Cranes was located at five key breeding areas in northeastern California. The five areas were among 11 considered important to the breeding population in California and had been surveyed during 1971 and 1981. Since 79 percent of the nesting pairs were on private land in 1981, there is a continuing threat of habitat loss through land conversions. Littlefield (1982) recommended that Greater Sandhill Cranes be placed on the California Department of Fish and Game's Endangered Species List if habitat loss causes population decline. It was also recommended that monitoring continue in order to determine population trends. Listing of the Greater Sandhill Crane as a State Threatened bird took place in early 1983 and a monitoring program is being implemented.

In summer, monitoring has occurred at six key breeding areas in northeastern California. These are: In Modoc County - Surprise Valley, Modoc National Wildlife Refuge, Goose Lake, Jess Valley, Ash Valley, and part of the Big Valley; in Lassen County - Big Valley (part). The six areas are deemed vital to the breeding population in California and have been surveyed previously during 1971 and 1981-85. In 1985, a total of 236 adults (118 pairs) apparently made up the breeding population in the areas surveyed. An additional 115 birds either had not attempted breeding or attempted and failed. Of the 25 chicks located, 8 were found in the Surprise Valley, Modoc County.

During the past decade, the Department has made counts of Greater Sandhill Cranes on breeding grounds during waterfowl census. Total counts in breeding and wintering grounds can provide a means to determine population trends. No special effort had been made by the Department to conduct age-ratio counts (a measure of recruitment rate of young into adult population) of Sandhill Cranes in California until December 1979. However, there has been considerable work conducted at Malheur NWR by C. D. Littlefield, U.S. Fish and Wildlife Service crane biologist, during the past decade.

During 1979, an age-ratio of 6.6% immatures was obtained from a total sample of 1,784 cranes in the Thornton Area, and 7.8% (N=663) was obtained for the Gray Lodge Area. The same areas were surveyed in the winter of 1980, with the results being 6.1% (N=1,904) for the Thornton Area and 3.0% (N=450) for the Gray Lodge Area. During 1981, the age-ratio for Greater Sandhill Cranes was 4.6% (N=2,509) at the Thornton Area while no counts were made at Gray Lodge Area. During the period from 23 December 1982 to 4 January 1983, a sample of Lesser and Greater Sandhill Cranes were aged. The age-ratio for Lesser Sandhill Cranes was 3.8% (170 young cranes per 4,447 total cranes aged). Greater Sandhill Cranes had an age-ratio of 4.6% (43 young per 936 total aged). The 1982-83 aging information was collected by University of Alaska, Fairbanks, graduate student Tom Pogson, while Nongame Program personnel were involved in attempts to capture, band and color-mark cranes.

During November, 1982 to mid-March 1983, five Lesser Sandhill Cranes were trapped, color-banded, collared and released at Merced National Wildlife Refuge (NWR), Merced County. Two of three attempts to capture cranes were unsuccessful. Only 5 of 30 birds trapped were retained; the rest escaped capture. Banding and color-marking studies are identified as priority research objectives in Pacific Flyway Technical Committee Management plan for Greater Sandhill Cranes (Schlorff, et al. 1983). These studies are deemed necessary to determine location of breeding and wintering grounds, migration routes, and important stopover and staging areas for Sandhill Cranes throughout the Pacific Flyway.

During winter of 1983-84, age-ratio counts were made of wintering Greater Sandhill Cranes and Lesser Sandhill Cranes (G. c. canadensis) in the Central Valley of California. Counts indicated 7.6% and 6.2% immature Greater Sandhill Cranes at Sacramento Delta and Butte Sink areas respectively. Aerial and ground surveys were conducted by Department staff and graduate student Tom Pogson and Susan Lindstedt. Counts were made at roosting areas in the Delta and the Butte Sink. Also, an unsuccessful attempt was made to capture, band and color-mark a sample of Sandhill Cranes in order to gain information on migratory habits and seasonal habitat use.

Objectives:

The objectives are to conduct research and develop management plans to ensure the survival of Sandhill Crane breeding and wintering populations in California.

Procedures:

Surveys of breeding populations were conducted by visiting native meadow and wetland habitats in northeastern California known to support breeding Greater Sandhill Cranes. Information was gathered on nesting pairs present, habitat association, land ownership, and impacts that may be detrimental to nesting cranes and their habitat. Data on the use of the areas surveyed by non-breeding, sub-adult cranes were also gathered. In addition, several smaller known breeding areas and some potential breeding areas were surveyed from the air during the 1986 N.E. California waterfowl breeding count in June. An additional aerial survey was conducted in July to determine breeding status on several potential breeding areas on public lands in Lassen and Modoc counties.

Survey personnel included student assistant J. Estep, wildlife biologists R. Schlorff and B. Deuel, and Department pilots K. McBride and R. Anthes.

During winter 1979, known concentration areas of Sandhill Cranes were chosen to make age-ratio counts; the same areas have been visited during subsequent survey periods. Large flocks of birds are located and numbers of adult and juvenile Greater Sandhill Cranes and Lesser Sandhill Cranes are tabulated.

Wintering surveys also include roost counts in which both subspecies of cranes are counted as they leave or return to winter roost sites. Winter surveys may include aerial reconnaissance to locate roosts and count cranes and to locate radio-marked birds. The location, behavior and habitat association of color-marked cranes are recorded during winter surveys.

Findings:

The results of 1986 Greater Sandhill Crane breeding ground surveys are listed according to the areas surveyed within the breeding range in California (Figure 1).

SURPRISE VALLEY

The Surprise Valley, east of the Warner Mountains in northeastern Modoc County, has the densest concentration of breeding Greater Sandhill Cranes in the State. The native meadow habitats are found in the area bounded on the west by State Highway 81 and on the east by the shorelines of Lower Lake, Middle Alkali Lake and Upper Lake. Several creeks drain the east slope of Warner Mountains and flow into the Alkali lakes. In addition, there are flowing wells close to the lake shores. This moisture regime provides ideal growth of meadow grass, sedges, and rushes that are suitable for nesting Sandhill Cranes. During June, 1986, a total of 44 breeding pairs of cranes was located. Eight pairs had one chick each, 3 pairs had 2. The age-ratio for the area was 13.7% young per 102 total cranes, young plus breeders). A number of non-breeders or adults that failed in their nesting attempts were found. These cranes were in flocks ranging from 1 to 14 birds with a total of 33 birds. Conversion of native meadow to irrigated alfalfa fields has slowed due to dropping alfalfa prices. Nest destruction due to trampling of cattle continues to be a problem on the remaining meadow. Cattle grazing probably constitutes the greatest threat to nesting cranes. Mowing of native meadows, while also known to destroy nests and young, is probably less significant since meadows are not mowed until mid-July, after most young have left the nest.

MODOC NATIONAL WILDLIFE REFUGE

Refuge personnel report 32 active nests in 1986. Information on reproductive success has not yet been received. Ten juvenile cranes were banded and color-marked. Plans have been made for radiotelemetry studies at the refuge.

LIKELY AREA

The Likely Area breeding ground consists of a series of meadows west of irrigation channels that run north and south along highway 395 from an area south of Modoc NWR south to the town of Likely, Modoc County. This area has supported as many as 14 breeding territories in 1981 (Figure 1). Two pairs were found in 1985. Neither pair had young. This year 2 pairs were again found. One pair had 1 young.

JESS VALLEY

Jess Valley is an isolated valley consisting of a single land holding on the west slope of the south Warner Mountains about 15 miles east of Likely. The area's meadows normally support about five to seven breeding pairs of cranes (Figure 1). Four pairs of adults were found in the area. No young were observed.

GOOSE LAKE AREA

The south shore of Goose Lake, in the area west of Highway 395 and east of the bridge across Goose Lake from the southwestern shore to McGinty point, supports habitat suitable for nesting Sandhill Cranes. The area supported seven pairs in recent years (Figure 1). During 1986, six pairs were located. Two pair has 1 young. This year, due to a conservation easement between the Department of Fish and Game and the owner, cattle have been excluded from the shoreline nesting habitat.

BIG VALLEY AREA

The Big Valley Area consists of a tract of wetland (Big Swamp) and upland habitats between the towns of Adin on the east and Bieber on the west near the Modoc/Lassen county line. Ash Creek and the Pit River provide the water source for the wetland and moist meadow habitats. In the recent past, there was yearly degradation through land conversion and heavy cattle grazing of this area. However, some suitable crane breeding habitat still remains, especially at the west end of the Big Swamp area on the east and west side of the county road between Bieber and Lookout. Landownership changed during 1983 and access was restricted. This resulted in only an incomplete survey for 1984. In 1985, because of inaccessability on the ground, aerial survey data were collected.

There were plans to severely alter the condition of the Big Swamp by digging a series of drainage ditches to drain a major portion of the area where Greater Sandhill Cranes have nested previously. Much of the area adjacent to Big Swamp, particularly on the south side, has been graded, and as of July 1985 was totally denuded of vegetation. This was done apparently in preparation for alfalfa farming. Also, during the aerial survey, several drainage ditches were observed cutting through the swamp area. This would reduce the amount of breeding habitat for cranes in this area. Responding to this threat, the Wildlife Conservation Board was successful in acquiring 11,525 acres of this habitat for about 6 million dollars in late summer 1985. The area is now managed by DFG as Ash Creek State Wildlife Area. Protection of crane nesting areas is a major management goal.

ASH VALLEY

Ash Valley is located midway between Adin and Madeline on Lassen County route 527. The valley consists of meadows and wetlands on a few large cattle ranches.

Most vegetation is still in a natural state and very little land conversion has taken place. The main detriment to cranes is heavy cattle grazing of native meadow habitat. One pair and 3 individuals were found. This is down from 6 pairs in 1985 and 13 pairs in 1984.

Several other sites were surveyed from the ground. Crowder Ranch had 1 pair with 1 young. Warm Springs Valley had 2 pairs and 1 individual. Madeline Plain had 1 pair, and Canby Area had none.

Thirty-one other sites were surveyed from the air. Five of these were surveyed in early June during the N.E. California aerial waterfowl breeding survey. Mountain Meadows, Grasshopper Flat and Baseball Reservoir each had 1 pair. Spaulding Reservoir had 1 adult and 2 young. Honey Lake Valley had no cranes observed. The remaining 26 sites were surveyed in mid-July. This flight was to determine breeding status and to evaluate habitat on small public-owned meadows in Lassen and Modoc counties. No cranes were observed. Because of the late survey date, it is unknown if this reflects non-use of these areas or if birds have left their breeding territories by this time.

Age-ratio counts of Greater Sandhill Cranes were made at several locales in the Thornton and Butte Sink areas of the wintering ground (Table 1). Aerial surveys were conducted to locate radio-tagged cranes from the Malheur National Wildlife Refuge. Of the 20 young cranes radio-tagged at Malheur NWR, only one survived to winter in the Central Valley of California.

Department personnel located 63 color-marked birds and made visual recordings of 2 radio-tagged birds. Sightings were made at locales in the Thornton and Butte Sink areas (Table 2).

Winter roost counts were made on 8 occasions to determine level of use of certain important sites by Sandhill Cranes (Lesser and Greater) (Table 3).

Analysis:

Although there continues to be a small and apparently stable breeding population of Greater Sandhill Cranes existing in portions of northeastern California, it is increasingly evident that agricultural trends of the area are dramatically affecting nesting birds on private lands. In 1981, it was discovered that at least 79% of nesting took place on private lands (Littlefield 1982). This figure has not changed greatly in the past three years. However, with the acquisition of the Big Valley properties an area that supports about 10-15 percent of the state's breeding population has now been transferred from private to public ownership. Of the 6 major areas surveyed in 1986 for breeding cranes, 4 are found on private lands. These lands are threatened with conversion from native meadow to intensive agriculture. This has been the pattern since the 1971 survey and has been especially evident since the 1981 survey.

Habitat acquisition such as at Big Valley, must continue so as to prevent continued loss of the breeding population on private lands. The birds now nesting on public lands may represent the core of what will be the remaining Sandhill Crane population in the next decade. Improved management on public land might offset some of the loss on private lands. However, there is evidence this won't occur on those public lands that are heavily grazed.

In some instances, habitat conditions may be improved on both public and private lands simply by restricting grazing by livestock. Cranes avoid using pastures or meadows that are heavily grazed by cattle. In some instances, cranes may have already established a breeding territory in a meadow prior to cattle grazing, and, as has been observed, nest failures may result when cattle are turned out in summer and disrupt crane breeding activities, trample nests and eggs, or reduce the protective cover of grasses by overgrazing.

A theoretical minimum of 12.0% (C. D. Littlefield, pers. comm.) recruitment (percent of young observed in the sample of adults and young) is required to maintain crane population stability. This is the first year in the last 15 years that a recruitment rate (age ratio) of 12.0% or greater has been obtained (13.8%). Over the previous 14 years neither C. D. Littlefield (making pre-mitigation counts) nor Nongame staff have recorded a recruitment rate (age-ratio) of 12.0% or greater. In 1983-84 and 1984-85 results have been quite a bit lower than the required value. Littlefield has noted a small but steady decline in the number of birds nesting at malheur NWR over this 14 year time period. We have noted loss of nesting habitat in Northeastern California in just the past 5 years. Clearly there are problems that depress recruitment rate and we have identified the major causes to be habitat destruction, disturbance during the nesting season, mower mortality, and predation. However, we seem powerless to significantly affect, let alone turn around the current land-use related trends in crane breeding areas.

Literature Cited:

- Littlefield, C. D. 1982. The Status and Distribution of Greater Sandhill Cranes in California, 1981. State of California, Department of Fish and Game, Wildlife Management Branch, Admin. Rep. 82-1, 27 pp.
- Schlorff, R., G. Herron, G. Kaiser, C. Kebbe, G. Kramer, and C. D. Littlefield, 1983. Pacific Flyway Management Plan for the Central Valley Population of Greater Sandhill Cranes. 28 pp.

Recommendations:

1. Continue winter age-ratio counts of all populations of Sandhill Cranes wintering in California.
2. Continue roost counts on wintering ground.
3. Implement management programs designed to improve survivorship of young cranes on breeding grounds in California.
4. Implement management programs to protect habitat on breeding and wintering ground.
5. Coordinate efforts with other agencies to improve recruitment rates of all crane populations in Pacific Flyway.
6. Continue to enforce laws protecting cranes to reduce mortality on migration routes, wintering areas and breeding grounds.
7. Continue Sandhill Crane banding, color-marking and radio-tagging studies to mark a large sample of Greater Sandhill Cranes on breeding areas.
8. Coordinate efforts with other agencies and researchers to accumulate information on cranes marked on wintering or breeding areas in the Pacific Flyway.

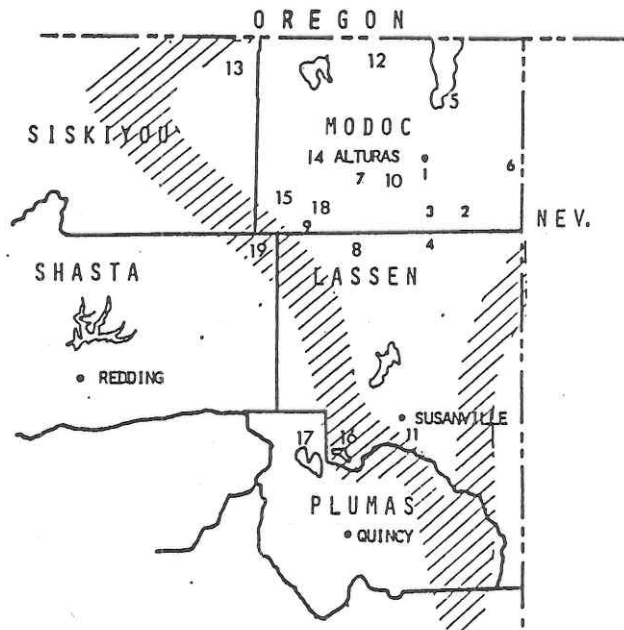
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Figure 1. Comparison of Numbers of Greater Sandhill Crane Nesting Pairs, 1971, 1981-86



Numbers of Nesting Pairs

<u>Location</u>	<u>1971</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>
1. Modoc NWR	16	21	19	26	15	30 ³	32
2. Jess Valley	7	7	5	0	6	7	4
3. Likely	14	9	NC ¹	4	NC	2	2
4. Madeline	1	1	NC	NC	0	1	1
5. Goose Lake	2	7	7	3	9	5	6
6. Surprise Valley	42	44	34	50	34	39	44
7. Canby	2	6	NC	NC	0	1	0
8. Ash Valley	NC	NC	NC	12	13	6	4
9. Big Valley	21	24	18	14	10 ²	13	9
10. Warm Springs Valley	NC	NC	NC	NC	NC	3	2
11. Honey Lake	3	6	NC	NC	NC	2	0
12. Wild Horse Res.	NC	NC	NC	NC	NC	1	NC
13. Butte Valley	NC	NC	NC	NC	NC	1	1
14. Sapaulding Res.	NC	NC	NC	NC	NC	1	1
15. Egg Lake	NC	2	NC	NC	1	4	0
16. Mnt. Meadows	NC	NC	NC	NC	NC	1	1
17. Lake Almanor	NC	1	NC	NC	NC	1	NC
18. Round Valley	2	2	NC	NC	NC	NC	NC
19. Fall River	2	2	NC	NC	NC	NC	NC
TOTALS	112	132	83	98	88	118	107

¹ NC = Not checked

² Incomplete count due to restriction on access to private land.

³ Figure may be high due to lack of information on actual nesting pairs.

Table 1. Summary of age-ratio count results for wintering Greater Sandhill
Cranes during winters of 1983-84, 1984-85, and 1985-86

Sample Area	Year	n ¹	No. Juv.	No. of Juv. & Adults	Age Ratio	SE ²	95% C.I. ³
Thornton	83-84	125	137	1599	0.086	0.008	0.071-0.101
Butte Sink	83-84	35	66	829	0.080	0.011	0.058-0.101
Thornton	84-85	59	83	1645	0.051	0.007	0.037-0.064
Butte Sink	84-85	43	41	1205	0.034	0.005	0.025-0.043
Thornton	85-86	14	74	1845	0.040		
Butte Sink	85-86	2	13	264	0.049		

¹ Sample size; groups aged

² Standard Error of the ratio

³ 95% Confidence Interval

Table 2. Greater Sandhill Crane Band Sightings, 1985-86

Band No./Color	Sighting Location	Date	Remarks	Banding Location	Date	Observer
L R						
Tall W B X80 Y O Fed. 599-01382	Butte Sink - Gray Lodge at Pennington Road	9-27-85	180+ cranes in field	Malheur NWR, OR 2.1 mi. SW H.Q.	4-30-84	Snowden
W G W B A30 White Streamer Fed. 599-01485	Butte Sink - Gray Lodge at Pennington Road	9-27-85	White streamer on left leg	2.1 mi. SW H.Q. Malheur NWR OR.	11-5-82	Snowden
Tall W R "Q" Y B 599-01348 Fed.	Butte Sink - Gray Lodge at Pennington Road	10-3-85	Group of 125 Quincy	1.5 mi. SW H.Q. Malheur NWR OR.	3-31-84	Snowden
G Tall R W P035 599-36517	Butte Sink - Gray Lodge at Pennington Road	9-27-85	Group of 125	Modoc NWR	5-20-85	Snowden
Tall W R Fed. Y 599-01307	Butte Sink - NE boundary of Gray Lodge	10-9-85	Group of 300+ burned rice stubble	Sycan Marsh	7-26-83	Snowden
B Tall W A 24 G Fed. 599-01470	Outside Gray Lodge west boundary	10-9-85	Group of 24 in in shallow marsh	Malheur NWR 8 mi. N. of French- glen	3-20-82	Snowden
Tall W B Fed. B 599-01306	Butte Sink - Gray Lodge at Pennington Road	10-9-85	Group of 300+ burned rice stubble	Sycan Marsh, OR	7-23-83	Snowden
Tall O G w/tape Fed. B	Butte Sink - Llang Seco off 7 mile road	12-30-85	Rice stubble	Sycan Marsh, OR	6-27-84	Snowden

Table 2. Greater Sandhill Crane Band Sightings, 1985-86 (cont'd.)

Band No./Color	Sighting Location	Date	Remarks	Banding Location	Date	Observer
L R						
Y Fed. R 599-36527 Tall R P010	Nelson Shippee X Ericson Butte Sink	1-10-86	Group of 250	Modoc NWR	6-28-85	Snowden
Tall W A33 Blue Flag R B Fed.	Esquan Road at Adams Ranch - Butte Sink	1-28-86	Group of 150+			Snowden
Tall W G A68 Y Fed. 599-01316	Esquan Road at Adams Ranch - Butte Sink	1-28-86	Group of 150 "Bob"	Malheur NWR 8 mi. N. of French- glen	10-12-83	Snowden
R Radio Y Tall O Fed.	Esquan Road at Adams Ranch - Butte Sink	1-18-86	Group of 150			Snowden
Radio Y Tall O B Fed.	Farris Road- Butte Sink	1-31-86	Group of 8			Snowden
W Fed. R 599-01462	West of Goodspeed- Watt - Butte Sink	2-1-86	Group of 100+	Malheur NWR 21 mi. S. of HQ	10-7-81	Snowden
Tall W W x47 O R Fed. 599-01387	M&T Ranch Butte Sink	2-4-86	Group of 37 in rice stubble "Diamond Jack"	Malheur NWR 2 mi. SW of H.Q.	5-4-84	Snowden
Tall W G "T" O Y Fed. 599-01352	Esquan Road - Butte Sink	2-5-86	"Timm"	Malheur NWR 2 mi. SW of H.Q.	3-31-84	Snowden

Table 2. Greater Sandhill Crane Band Sightings, 1985-86 (cont'd.)

Band No./Color	Sighting Location	Date	Remarks	Banding Location	Date	Observer
L R						
Tall W G Fed B 599-01305	Farris Road - Butte Sink	2-11-86	Group of 100+ in rice stubble	Sycan Marsh	7-14-83	Snowden
Tall W B "H" B Y Fed. 599-01349	Durham Slough - Butte Sink	2-18-86	Also near Butte Creek Bridge - 2-4-86 "Honey"	Malheur NWR, OR 2.0 mi. SW of H.Q.	3-31-84	Snowden
Y Radio B Tall O Fed.	Butte Sink - Farris Road	2-11-86				Snowden
Tall R Y R	Gray Lodge - off Pendleton Road	9-27-85	Group of 186± - first obs. in area on 9/18	Modoc NWR		Snowden
Tall W W B	Gray Lodge - off Pendleton Road	9-27-85	As above. Switched mates in 1985	Sycan Marsh, OR	5-16-83	Snowden
Tall W W X46 R B 599-01397	Gray Lodge - off Pendleton Road	9-27-85	As above	Malheur NWR, OR 1 mi. SW Refuge H.Q.	5-17-84	Snowden
Y Tall R Y P022 Fed. AO3 599-36502	Butte Sink - Gray Lodge	10-17-85	Group of 37	Modoc NWR	8-6-84	Schlörff/Estep
* (Brown) Tall W O Y Fed. 599-01473	Butte Sink - Gray Lodge	10-17-85	Group of 8	Malheur NWR, OR 10 mi. W. of French Glen	3-26-82	Schlörff/Estep

Table 2. Greater Sandhill Crane Band Sightings, 1985-86 (cont'd.)

Band No./Color	Sighting Location	Date	Remarks	Banding Location	Date	Observer
L R Fed. Fed.	Woodbridge Ecol. Res.	10-15-85	Not fully flooded yet			Schlорff/Estep
Brn. Fed.	Woodbridge Ecol. Res.	10-15-85				Schlорff/Estep
Tall O Fed.	Woodbridge Ecol. Res.	10-15-85				Schlорff/Estep
B Tall Blk. R Fed. 599-36620	Canal Ranch	11-26-85	White triangle and circle on tall balek in family group with 1 young "Kelly"	Malheur MWR, OR - Lava Beds Field	8-11-85	Schlорff/Estep
Tall W R "X" R R 599-01372 Fed.	Cortopassi Farms	11-26-85	Again on 1-16-86 same location "Bruno"	Malheur MWR, OR	4-23-84	Schlорff/Estep
Tall W O A70 Fed. R 599-01344	Cortopassi Farms	11-26-85	"Pat" Obs. again on 1-16-86--same location	Malheur MWR, OR 2 mi. SW of H.Q.	3-28-84	Schlорff/Estep
Tall W O x63 599-01375 Fed.	Cortopassi Farms	11-26-85	"Denise" again on 1-16-86--same location	Malheur MWR, OR	4-23-84	Schlорff/Estep
R R Fed. 599-01421	Cortopassi Farms	11-26-85	"Joe"--male banded as adult	Malheur MWR, OR 4 mi. NE Buena Vista	8-21-73	Schlорff/Estep

Table 2. Greater Sandhill Crane Band Sightings, 1985-86 (cont'd.)

Band No./Color	Sighting Location	Date	Remarks	Banding Location	Date	Observer
R L						
W O	South Staten Island	11-26-85	Top orange is smaller	Camas Prairie	7/18/84	Schlорff/Estep
G W				Lake Co., OR.		
O				E. of Lakeview		
599-45815 Fed						
O G	South Staten Island	11-26-85	This one is supposed to be dead	Sycan Marsh	7/3/84	Schlорff/Estep
W						
O R						
Fed. 599-45814						
G Tall R	Staten Island	12-4-85	In corn stubble	Modoc NWR	5-23-85	Schlорff/Estep
O P017						
599-36521						
R Fed.	Staten Island	12-4-85		Modoc NWR	6-3-85	Schlорff/Estep
599-36523						
O Tall R						
P014						
Tall W B	Staten Island	12-4-85				Schlорff/Estep
R W (Y)?						
Fed.						
B Fed.	Staten Island	12-4-85		Modoc NWR	6-3-85	Schlорff/Estep
599-36524						
O Tall R						
P013						
Tall W R	Cortopassi Farms	12-4-85	Pair 7 male	Malheur NWR, OR -	3-11-83	Schlорff/Estep
A01				10 mi. NE of French		
599-01491				Glen		

Table 2. Greater Sandhill Crane Band Sightings, 1985-86 (cont'd.)

Band No./Color	Sighting Location	Date	Remarks	Banding Location	Date	Observer
R L						
Y Tall W A28 Fed. O (Brown) 559-01492	Cortopassi Farms	12-4-85	Pair 7 female "Tom"	Malheur NWR, OR -	4-11-84	Schlorff/Estep
Y Tall W A26 R Fed. 599-01480	Cortopassi Farms	12-4-8		Malheur NWR, OR 8 mi. N. of French- glen	5-6-82	Schlorff/Estep
Fed. Fed.	Cortopassi Farms	12-4-85		Malheur NWR, OR	Pre-1969	Schlorff/Estep
Tall W W X17 W R 599-01360 Fed.	Cortopassi Farms west side	1-7-86	Group of 3	Malheur NWR, 2 mi. SW of H.Q.	4-10-84	Schlorff/Estep
Tall W R Fed. W A10 599-01489	Cortopassi Farms west side	1-7-86	Group of 16	Malheur NWR, 8 mi. N. of Frenchglen	3-19-83	Schlorff/Estep
Tall W Y W A12 599-01490	Cortopassi Farms west side	1-7-86	Group of 16	Malheur NWR, 8 mi. N. of Frenchglen	3-19-83	Schlorff/Estep
Tall W Y Fed. G A14 599-01467	Cortopassi Farms west side	1-7-86	Group of 16	Malheur NWR, 8 mi. N. of Frenchglen	3-15-82	Schlorff/Estep
Tall R W B R X44 599-01398	Cortopassi Farms east side	1-7-86	Group of 50	Malheur NWR, 2 mi. SW of H.Q.	5-23-84	Schlorff/Estep
TW B B x50 R 599-36606 Fed.	Cortopassi Farms east side near levee	1-7-86	Not with mate X-59	Malheur NWR, OR - 22 mi SW H.Q.	7-23-84	Schlorff/Estep

Table 2. Greater Sandhill Crane Band Sightings, 1985-86 (cont'd.)

Band No./Color	Sighting Location	Date	Remarks	Banding Location	Date	Observer
R L						
B Tall W 599-01303	Cortopassi Farms east side	1-7-86	Group of 50+	Sycan Marsh	5-20-83	Schlorff/Estep
W Tall W A55 W 599-01494 Fed.	Cortopassi Farms east side	1-7-86	Group of 50+ "Leslie"	Malheur NWR, 8 mi. N. of Frenchglen	5-1-83	Schlorff/Estep
Tall W B X14 R R 599-36601 Fed.	Woodbridge Ecol. Res.	1-16-86	Roosting 1616	Malheur NWR, OR 21 mi. S. of H.Q.	7-19-84	Schlorff/Estep
Tall R W A W R 599-01357	Cortopassi Farms west side	1-16-86	Group of 26 in corn stubble "Ann"	Malheur NWR 2 mi. SW of H.Q.	4-3-84	Schlorff/Estep
Tall Black G Fed. B 599-36616	Cortopassi Farms west side	1-16-86	Group of 26 in corn stubble	Malheur NWR, 8 mi. N. of Frenchglen	4-24-85	Schlorff/Estep
Tall W W A74 W 599-01324 Fed.	Cortopassi Farms east side	1-16-86	Group of 60 "Gary"	Malheur NWR, OR, 8 mi. N. of Frenchglen	8-12-83	Schlorff/Estep
Tall W B x35 R R 599-01371	Cortopassi Farms east side	1-16-86	Group of 60	2 mi. SW of Malheur NWR H.Q.	4-23-84	Schlorff/Estep
Tall O W X10 W R 599-01359	Cortopassi Farms east side	1-16-86	Group of 60	Malheur NWR 2 mi. SW of Malheur NWR H.Q.	4-6-84	Schlorff/Estep
Tall W R A64 O w/Brown Tape 599-01500	Cortopassi Farms	1-16-86	Group of 50+	Malheur NWR, OR 8 mi. N. of French- glen	8-4-83	Schlorff/Estep
Tall W R A01 B 599-01491	Cortopassi Farms	1-16-86		Malheur NWR, OR 8 mi. N. of Frenchglen	4-11-83	Schlorff/Estep

Table 2. Greater Sandhill Crane Band Sightings, 1985-86 (cont'd.)

Band No./Color	Sighting Location	Date	Remarks	Banding Location	Date	Observer
R L						
Tall G W	Cortopassi Farms	1-16-86	"Daisy"	Malheur NWR, 2 mi. SW of HQ	4-13-84	Schlорff/Estep
x30 W						
Fed. R						
599-01362						
Tall W R	Cortopassi Farms	1-16-86	"Quincy"	2 mi. SW of Malheur NWR H.Q.	3-31-84	Schlорff/Estep
"Q" B						
Y Fed.						

Table 3. Winter Roost Counts, 1985-86

<u>Roost</u>	<u>Date</u>	<u>Times</u>	<u>Arriving</u>	<u>Leaving</u>	<u>No. Cranes</u>
Woodbridge Ecol. Res.	10-24-85	1754-1840	X		1824
Woodbridge Ecol. Res.	10-24-85	1648-1740	X		2824
Woodbridge Ecol. Res.	11-14-85	1646-1727	X		171
Woodbridge Ecol. Res.	11-26-85	1632-1711	X		344
Woodbridge Ecol. Res.	1-7-86	1626-1742	X		3580
Woodbridge Ecol. Res.	1-16-86	1606-1738	X		3237
Woodbridge Ecol. Res.	1-28-86	1606-1706	X		2054
Woodbridge Ecol. Res.	2-1-86	1650-1801	X		2852
Woodbridge Ecol. Res.	2-4-86	1704-1826	X		3428
Woodbridge Ecol. Res.	2-6-86	1701-1810	X		3500+