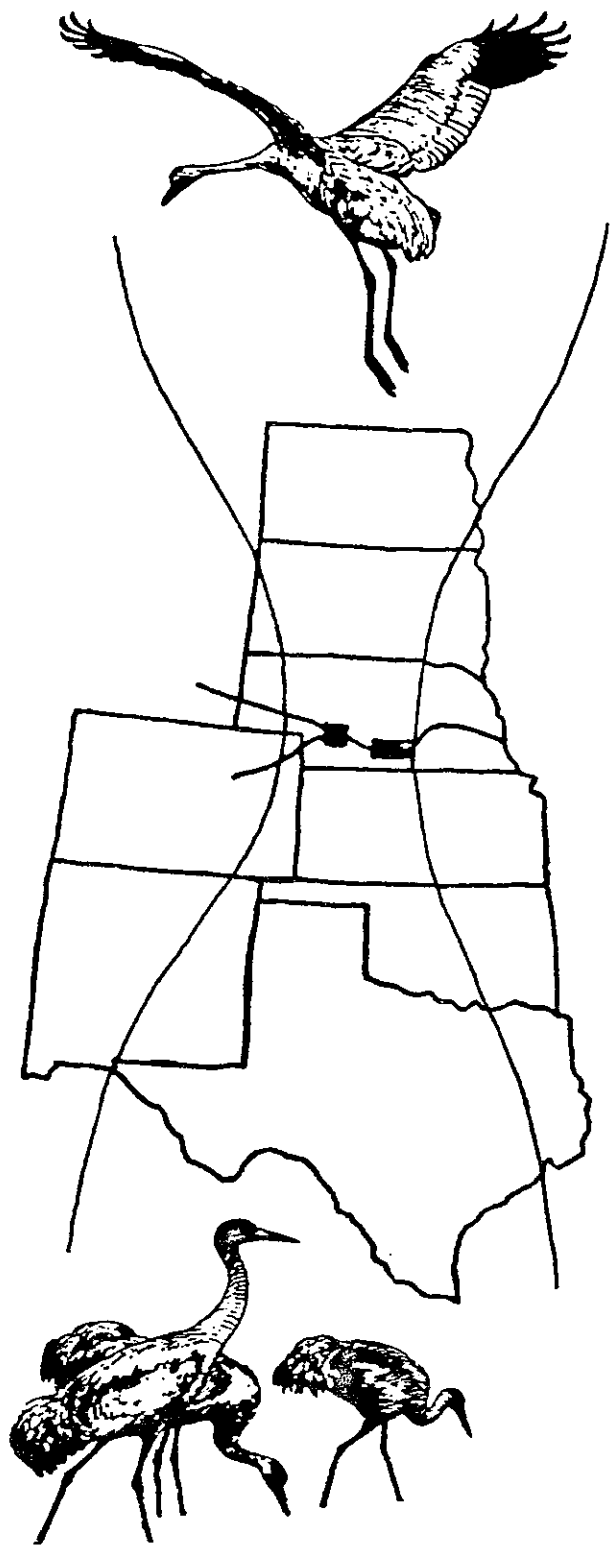


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#2

COORDINATED SPRING SURVEY OF  
MID-CONTINENT SANDHILL CRANES

1993



1993

COORDINATED SPRING MID-CONTINENT SANDHILL CRANE SURVEY

SURVEY DATES: 23-24 March 1993

SURVEY PERSONNEL:

Aerial Survey

Observer/pilot - J. Solberg, USFWS, MBMO, Klamath Falls, OR  
Observer - James S. Walter, USFWS, MBMO, LaCrosse, WI  
Photographer - James Bredy, USFWS, MBMO, Laurel, MD

Ground Surveys - Areas and Coordinators

North Dakota - S. Kohn (NDGFD) - John Cornely (USFWS)  
South Dakota - S. Vaa (SDGFP) - John Cornely (USFWS)  
Nebraska - J. Gabig (NGPC) - John Cornely (USFWS)  
Kansas - M. Kraft (KDWP) - John Cornely (USFWS)  
Texas - J. Roberson (TPWD) - Jeff Haskins (USFWS)

ABSTRACT: The 1993 coordinated spring survey of mid-continent sandhill cranes was conducted 23-24 March 1993 with no procedural changes from 1992. Aerial crew personnel changes since 1992 involved only the right side observer. The aerial portion of the survey, conducted in Nebraska's Platte and North Platte river valleys, provided an estimated 378,900 (photo corrected) sandhill cranes. Outside aerial coverage boundaries, observers in the Official Survey Area (OSA) of Nebraska, Kansas, and Texas recorded an additional 68,000 cranes for a total combined index of 446,900. This represents a 6% increase since 1992. The current three-year average (1991-93) of photo-corrected aerial counts from Nebraska's Platte River valley is 375,300.

METHODS: Methods used during the 1993 coordinated survey were similar to those used in 1992 and include coverage changes adopted by the Central Flyway - Central Management Unit (CMU) in 1985. Ground portions of the survey were conducted by various field personnel and coordinated by state and federal individuals (Table 5). Observations were forwarded to the Flyway Biologist (Klamath Falls, OR) for inclusion in the final report. The aerial portion of the survey was completed by USFWS personnel and continued to utilize an ocular, line transect sampling scheme. Coverage is divided into 10 strata sampled at a rate of approximately 25%. For the twelfth consecutive year the survey employed sub-sampling of crane flocks using 35mm oblique photography. The photos are used to quantify flock estimate errors and provide observer specific correction factors. Correction factors are applied to the aerial portion of the coordinated effort which has provided the major component (85-100%) of the mid-continent sandhill crane index in past years.

North Dakota weather provided temperatures in the mid-30's to the 50's. Skies varied from clear to scattered and south winds up to 30 mph prevailed. Southwestern and central North Dakota had some open water with wetlands in the remaining majority of the state mostly frozen. Snow cover was present across the entire state with the exception of the southwest.

**RESULTS:** The 1993 combined estimate of mid-continent sandhill cranes is 446,900 (Table 1). Included are 378,900 (photo corrected) birds from aerial counts in Nebraska. Additionally, Nebraska (16,800 outside aerial coverage area), Kansas (37,700), and Texas (13,500) all supplied contributions to the total. The 1993 index increased 6% since 1992 and is the highest recorded since 1988. The current 3-year average (1991-93) using the photo-corrected Nebraska aerial portion is 375,300. This 3-year average falls within the range of 343,000 - 465,000 as outlined in the Central Migratory Shore and Upland Game Bird Technical Committee's "Management Guidelines for Mid-Continent Sandhill Cranes," Revised March 1993 (Table 4). Tables 2 and 3 present indices and standard errors for aerial counts in all years of ocular transect survey design. Table 2 reflects the initiation of photo correction in 1982.

**DISCUSSION:** The timing of first arrivals of sandhill cranes into Nebraska was near normal in early to mid - February. These birds arrived during one of the few warming periods during the cold-wet winter of 1992-93. Cold temperatures, wind and precipitation returned following these first arrivals and persisted through the first 20 days of March. During this time, weather/habitat conditions slowed and even reversed crane migration. As a result of the late spring weather and the delayed migration, peak crane numbers had not occurred in Nebraska by the time of the survey. Both air and ground observers noted cranes moving into Nebraska on the 23rd. The Nebraska aerial crew added nearly 16,000 cranes to the Nebraska "Other" total. The majority of these birds were encountered in the afternoon and south of the aerial coverage boundary. Some birds were on the ground outside the strata boundaries while others appeared to be arriving from the south (as opposed to being "local" birds soaring). At times, we were able to see steady flocks traveling northbound for distances 10 to 15 miles south of the strata boundaries. Cranes were included in the Nebraska "Other" total after determining that they probably had not been encountered by Nebraska ground observers. Muddy roads restricted travel for some ground observers in Nebraska who tallied only 770 birds. Additional support of the incomplete migration at the time of survey is further evidenced by the distribution and number of cranes encountered south of Nebraska on 3/23.

In Kansas, a record 37,700 sandhill cranes were observed in the area of Quivera NWR. It was stated that this estimate was conservative as cranes were leaving their wetland roost when observers arrived. It should also be noted that this area is approximately 150 miles due south of the Kearney/Grand Island stretch of the Platte River. Considering this short distance

Table 1. Distribution of sandhill cranes within the mid-continent region during the coordinated spring survey, 1974-93 (rounded to nearest 100).

DATE	MO <sup>1</sup>	SD <sup>2</sup>	NEBRASKA				KS	CO <sup>3</sup>	OK <sup>4</sup>	MN <sup>5</sup>	TX	TOTAL			
			Central Platte Valley		Other							ME other KS, OK, CO,			
			Ocular cruise	Ocular transect	Ocular trans. w/photo correction	Vert.photo transect						Ocular cruise (uncorrected)	Ocular transect (photo corrected)	Ocular transect	Ocular transect (photo corrected)
3/24-31/74	0	0	162,600(92%) <sup>6</sup>	-	-	9,000	1,900	400	-	3,200	177,100	-	-	-	-
3/25-30/75	0	0	223,600(98%)	-	-	2,300	900	100	100	Tr	227,500	-	-	-	-
3/22-26/76	0	0	147,500(97%)	-	-	2,800	300	100	1,000	1,000	152,500	-	-	-	-
3/13-23/77	0	300	173,400(79%)	-	-	1,100	1,600	400	12,500	30,700	220,000	-	-	-	-
3/20-24/78	0	0	149,800(94%)	188,600(93%)	-	2,200	700	-	2,300	4,900	159,900	198,700	-	-	-
3/20-29/79	0	0	223,400(95%)	203,600(97%)	-	2,600	1,100	1,500	0	0	209,300	209,300	-	-	-
3/24-4/15/80	Tr <sup>7</sup>	-	-	254,400(96%)	-	5,000	4,100	100	500	1,400	234,500	265,500	-	-	-
3/22-28/81	0	0	-	248,900(86%)	-	8,300	11,200	0	0	21,800	290,400	290,400	-	-	-
3/22-27/82	0	Tr	-	348,000(95%)	417,300(95%)	490,100(96%)	2,000	2,800	100	7,800	367,800	367,800	-	-	437,100
3/25-26/83	0	0	-	306,300(96%)	343,400(97%)	4,100	200	200	200	7,000	317,800	317,800	-	-	354,900
3/25-30/84	0	Tr	-	222,700(91%)	261,800(93%)	18,100	900	-	Tr	800	263,600	263,600	-	-	282,700
3/25-26/85	-	-	-	378,100(96%)	514,800(97%)	11,500	3,000	-	1,100	1,200	393,800	393,800	-	-	530,500
3/25-26/86	Tr	Tr	-	317,000(99%)	353,000(99%)	1,000	200	-	-	2,100	320,300	320,300	-	-	356,300
3/24-26/87	0	0	-	383,600(100%)	416,100(100%)	-	-	-	-	400	384,000	384,000	-	-	416,500
3/21-25/88	0	0	-	386,900(98%)	463,500(98%)	-	Tr	-	-	7,700	394,600	394,600	-	-	471,200
3/28-29/89	0	200	-	391,400(100%)	392,000(100%)	100	1,000	-	-	800	393,900	393,900	-	-	393,900
3/27-28/90	Tr	Tr	-	386,000(94%)	412,200(94%)	11,000	5,200	-	-	10,300	412,500	412,500	-	-	438,700
3/25-26/91	0	200	-	297,800(100%)	340,600(100%)	100	800	-	-	200	298,900	298,900	-	-	341,700
3/19-25/92	200	Tr	-	257,700(95%)	406,500(97%)	12,200	300	-	-	1,100	271,300	271,300	-	-	428,100
3/23-24/93	0	60	-	253,800(97%)	378,900(85%)	16,800	37,700	-	-	13,500	321,800	321,800	-	-	446,900

<sup>1</sup> Utilizing various survey techniques within Nebraska's central Platte Valley.

<sup>2</sup> No survey.

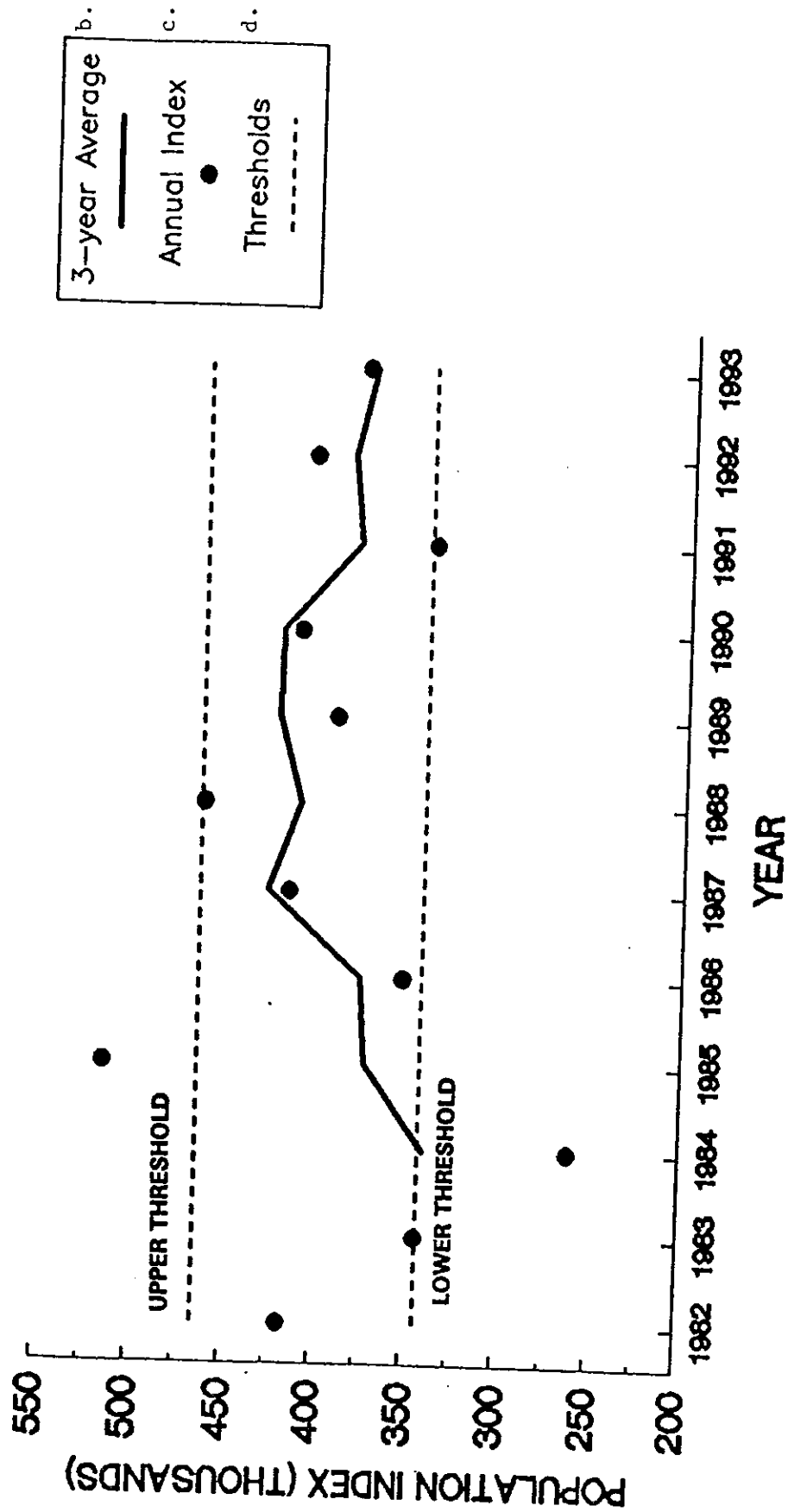
<sup>3</sup> Less than 50.

<sup>4</sup> Percent of total M-C population index.

<sup>5</sup> Crane sightings for North and South Dakota from 1985 and later are noted (overflight monitoring purposes) but not included in totals.

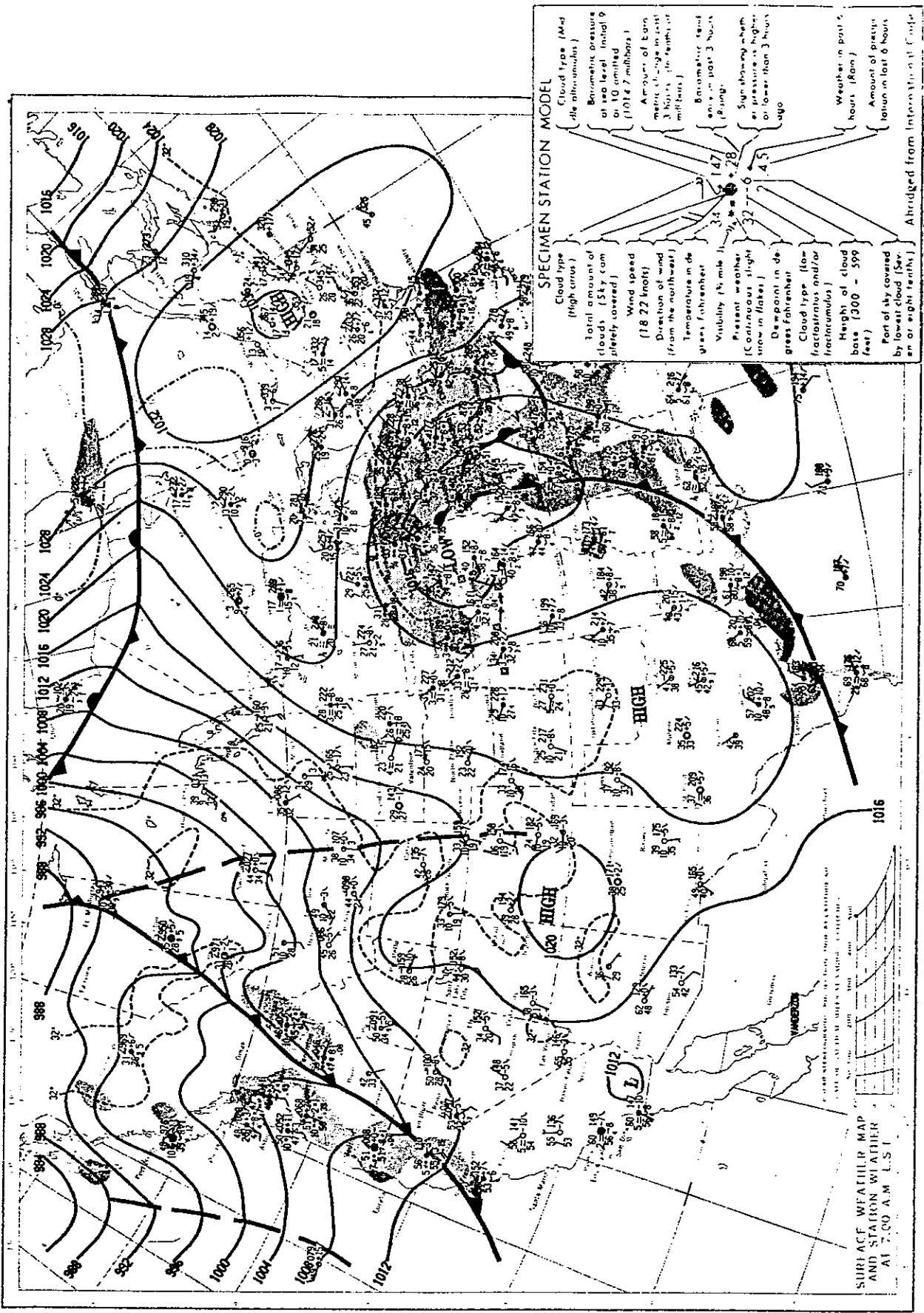
<sup>6</sup> CO, OK, MN were eliminated from the official Survey Area in 1985 by the Central Flyway CRU.

Table 4. Photo-corrected Spring Indices of Mid-Continent Sandhill Cranes (Nebraska aerial portion only)<sup>a</sup>.



a. From: "Management Guidelines for Mid-Continent Sandhill Cranes" Revised March 1993.  
 b. Calculated using photo-corrected Nebraska aerial portion only.  
 c. Nebraska aerial portion only (photo-corrected).  
 d. as defined in "Management Guidelines for Mid-Continent Sandhill Cranes" Revised March 1993.

Figure 1. Surface weather map of the United States - 23 March 1993.



Map provided by NWS.

## Coordinated Spring Mid-Continent Sandhill Crane Survey

### Distribution

Central Management Unit Technical Committee	11
Chief, MBMO, Washington, D.C.	1
Chief, Branch of Operations, MBMO, Washington, D.C.	1
Central Flyway Representative, Golden, CO	1
Chief, Branch of Surveys, MBMO, Laurel, MD	1
Wildlife Biologist, Waterfowl Harvest Surveys, MBMO, Laurel, MD	1
Chief, Section of Waterfowl Population Surveys, Portland, OR	1
Flyway Biologists, MBMO, Laurel, MD	3
Flyway Biologist, MBMO, La Crosse, WI	1
Flyway Biologists, MBMO, Lafayette, LA	2
Flyway Biologist, MBMO, Golden, CO	1
Flyway Biologists, MBMO, Klamath Falls, OR	2
Project Leader, Waterfowl Investigations, USFWS, Juneau, AK	1
Region 6 - USFWS (Regional Director and Migratory Bird Coordinator)	2
Region 2 - USFWS (Regional Director and Migratory Bird Coordinator)	2
Region 7 - USFWS (Regional Director and Migratory Bird Coordinator)	2
Project Leader, Rainwater Basin WMD, Kearney, NE	1
Whooping Crane Coordinator, USFWS, Albuquerque, NM	1
Director, Northern Prairie Wildlife Research Center, Jamestown, ND	1
Doug Johnson, Northern Prairie Wildlife Research Center, Jamestown, ND	1
Gary Krapu, Northern Prairie Wildlife Research Center, Jamestown, ND	1
John Steiner, Northern Prairie Wildlife Research Center, Jamestown, ND	1
State Supervisor, ES, USFWS, Grand Island, NE	1
Nick Lyman, Nebraska Game & Parks Commission, North Platte, NE	1
Director, Western and Northern Region, CWS, Edmonton, AB	1
Population Management Biologist, CWS, Saskatoon, SK	1
Jack Smith, CWS, Saskatoon, SK	1
Librarian, CWS, Saskatoon, SK	1
Provincial Waterfowl Biologist, Winnipeg, MB	1
Provincial Waterfowl Biologist, Saskatoon, SK	1
Provincial Waterfowl Biologist, Edmonton, AB	1
Gary Lingle, Platte River Trust, Grand Island, NE	1
Ken Strom, National Audubon Society, Gibbon, NE	1
Richard S. Miller, Yale University, New Haven, CT	1