



U.S. Fish & Wildlife Service

Status and Harvests of Sandhill Cranes 2024

Mid-continent, Rocky Mountain, Lower Colorado River Valley and Eastern Populations



Acknowledgments

This report provides population status, recruitment indices, harvest trends, and other management information for the Mid-Continent (MCP), Rocky Mountain (RMP), Lower Colorado River Valley (LCRVP), and Eastern (EP) populations of sandhill cranes. Information was compiled with the assistance of many biologists from across North America. We acknowledge the contributions of: P. Thorpe, T. Liddick, and J. Drahota, and D. Collins for conducting annual aerial population surveys; R. Schultheis, J. McKinney, J. Hewitt, P. Smith, R. Murano, O. Fitzsimmons, and N. Smith for conducting MCP ground surveys; D. Collins and R. Vanausdall for conducting the RMP productivity survey; K. Fleming for conducting the U.S. Federal harvest surveys for the MCP; S. Olson and L. Harding for compiling population and harvest information collected on sandhill cranes in the Pacific Flyway; R. Pierce for compiling population information for the EP; and D.S. Benning, R.C. Drewien, J.A. Dubovsky, and D.E. Sharp for their career-long commitment to sandhill crane management. We especially want to recognize the support of the state and provincial biologists in the Central, Pacific, and Mississippi Flyways for the coordination of sandhill crane hunting programs and the distribution of crane hunting permits, and their assistance in conducting annual cooperative surveys and sharing harvest data. Thanks to D. Collins and T. Cooper for reviewing an earlier draft of this report.

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This report contains annual estimates of migratory bird abundance, harvest, and hunter participation and activity. Due to the large volume of data, the number of years, and geographic areas involved, the data tables may be large and complex. Readers that may need help reading and interpreting the data, or that may need data presented in an alternative format to facilitate reading and interpretation, should contact the author at mark_seamans@fws.gov.

Division of Migratory Bird Management sandhill crane reports are available online at <https://www.fws.gov/library/collections/sandhill-crane-population-status-reports>

STATUS AND HARVESTS OF SANDHILL CRANES

MID-CONTINENT, ROCKY MOUNTAIN, LOWER COLORADO RIVER VALLEY and EASTERN POPULATIONS 2024

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Abstract: The U.S. Fish and Wildlife Service, working with partners, annually assesses the population status and harvest of four populations of sandhill cranes: the Mid-continent, Rocky Mountain, Lower Colorado River Valley, and Eastern populations. Annual abundance estimates of the Mid-Continent Population (MCP) of sandhill cranes were relatively stable from 1982 to the mid-2000s. Some of the MCP annual indices have increased in recent years and are more variable interannually compared to historic values. However, the spring 2024 estimate of abundance for sandhill cranes in the Central Platte River Valley (CPRV), Nebraska, corrected for visibility bias, was 420,840 birds, which was 67% less than the 2023 estimate of 1,259,199 birds. The photo-corrected average of the most recent 3 years of data (2022–24) was 788,505, which was well above the established population-objective range of 350,000–475,000 cranes. All Central Flyway states, except Nebraska, allowed crane hunting in portions of their states during 2023–24. An estimated 32,409 Central Flyway hunters participated in these seasons, which was 38% higher than the number that participated in the previous season. Hunters harvested 72,599 MCP cranes in the U.S. portion of the Central Flyway during the 2023–24 season. The fall 2023 pre-migration survey for the Rocky Mountain Population (RMP) counted 27,267 cranes, 46% higher than the count from 2022. The 3-year average was 23,287 sandhill cranes, which exceeds the established population objective of 17,000–21,000 for the RMP. Hunting seasons during 2023–24 in portions of Arizona, Idaho, Montana, New Mexico, Utah, and Wyoming resulted in a harvest of 1,411 RMP cranes, a 16% decrease from the previous year's harvest. The Lower Colorado River Valley Population (LCRVP) survey results indicated a 9% increase from 2023 (4,719 birds) to 2024 (5,156 birds). The 3-year average was 4,554 LCRVP cranes, which is above the population objective of 2,500 birds. The Eastern Population (EP) sandhill crane fall survey index for 2023 (110,646) was a 3% increase from the previous year, and well above the objective of 30,000 cranes for this population. A total of 868 cranes were harvested in Alabama, Kentucky, and Tennessee during the 2023–24 season, which was 20% lower than last year.

Introduction

The MCP, numerically the most abundant of all North American crane populations, is comprised of lesser (*Antigone canadensis canadensis*) and greater (*A. c. tabida*) subspecies of sandhill cranes. The breeding range extends from northwestern Minnesota, northern Ontario, and western Quebec, then northwest through Arctic Canada, Alaska, and into eastern Siberia. The MCP wintering range includes western Oklahoma, New Mexico, southeastern Arizona, Texas, and northern portions of Mexico (Fig. 1). Extensive spring aerial surveys on major concentration areas that are corrected for observer visibility bias provide annual indices of abundance that are used to estimate population trends. These surveys are conducted in late March, at a time when cranes that wintered in Mexico, Arizona, New Mexico, and Texas usually have migrated northward to spring staging areas along the Platte River in Nebraska, but before spring "break-up" conditions allow cranes to move into Canada (Benning and Johnson 1987). The MCP Cooperative Flyway Management Plan (Central, Mississippi and Pacific Flyway Councils 2018) established population thresholds for changing harvest regulations that are based on an objective of maintaining sandhill crane abundances at 1982–2005 levels (i.e., spring index of 349,000–472,000 [$\bar{x} = 411,000 \pm 15\%$]), rounded up to the nearest 5,000 birds. Sandhill crane hunters are required to obtain either a sandhill Crane hunting permit and/or register under the Harvest Information Program (HIP) to hunt MCP cranes in the U.S. portion of the Central Flyway, Minnesota in the Mississippi Flyway, and Alaska in the Pacific Flyway. The permits or HIP registration records provide the sampling frame to conduct annual harvest surveys. In Canada, the harvest survey is based on the sales of Federal Migratory Bird Hunting Permits, which are required for all crane hunters.

The RMP is comprised exclusively of greater sandhill cranes that breed in isolated river valleys, marshes, and meadows of the U.S. portions of the Central and Pacific Flyways (Drewien and Bizeau 1974). The highest nesting concentrations are in western Montana and Wyoming, eastern Idaho, Colorado, and Utah. The RMP migrates through the San Luis Valley (SLV) in Colorado and winters primarily in the Middle Rio Grande Valley, New Mexico, with smaller numbers wintering in the southwestern part of New Mexico, in southeastern Arizona, and at several locations (~14) in the Northern Highlands of Mexico (Fig. 2). During 1984–96, the RMP was monitored at spring stopover areas in the SLV. However, cranes from the MCP also began using this area, which confounded estimates of RMP abundance. In 1995, a fall pre-migration (September) survey replaced the spring count as the primary tool for monitoring population change. The RMP Cooperative Flyway Management Plan established a population objective (17,000–21,000 birds), and identifies surveys used to monitor recruitment and harvest levels that are designed to maintain a stable abundance (Pacific Flyway Council and Central Flyway Council 2016). The plan contains a formula for calculating allowable annual harvests consistent with the goal of staying within the range of the population objective. All sandhill crane hunters in the range of the RMP must obtain a state permit to hunt cranes, which provides the sampling frame for independent harvest estimates and allows for assignment of harvest quotas by state. In many areas, harvest estimates are supplemented by periodic mandatory check-station reporting.

The LCRVP is numerically the least abundant of the six migratory populations of sandhill cranes recognized in the U.S. (Drewien et al. 1976, Drewien and Lewis 1987). The LCRVP is comprised exclusively of greater sandhill cranes that breed primarily in northeastern Nevada and southwest Idaho, with smaller numbers in parts Utah (Fig. 3), and winters largely in the Colorado River Valley of Arizona and Imperial Valley of California (Grisham et al. 2018). LCRVP cranes are thought to have the lowest recruitment rate of any sandhill crane population in North America (Drewien et al. 1995). In the fall, these cranes leave breeding areas during late September-early October,

congregate at several staging areas, and migrate through eastern Nevada to wintering areas. Wintering areas historically extended south along the Colorado River to near its delta with the Gulf of California. However, the current wintering distribution is concentrated at Cibola National Wildlife Refuge, on areas just north of the Cibola National Wildlife Refuge belonging to the Colorado River Indian Tribes in southwestern Arizona, areas within and near the Sonny Bono Salton Sea NWR in southern California, and the Gila River in Arizona. Collectively, these areas are believed to winter more than 90% of the total cranes in the LCRVP. Spring migration is generally initiated as early as the first week of February. Since 1998, an aerial cruise survey has been conducted that covers the four main winter concentration areas.

The EP, which consists of greater sandhill cranes, has rebounded from near extirpation in the late 1800's (Walkinshaw 1949, 1973; Leopold 1949). Management actions, such as regulating take and the protection and restoration of habitat, allowed this population to increase to a level that exceeded 30,000 cranes by 1996 (Meine and Archibald 1996). Most EP cranes breed across the Great Lakes region (Wisconsin, Michigan, Ontario, and Minnesota); however, the range of this population is currently expanding in all directions (Fig. 4) (Lacy et al. 2015) with some range overlap with the MCP now occurring (Wolfson et al. 2017). By early fall, EP cranes leave their breeding grounds and congregate in large flocks on traditional staging areas throughout the breeding range. During migration, EP cranes use traditional stopover areas which include Jasper-Pulaski Fish and Wildlife Area in northwest Indiana and Hiwassee State Wildlife Refuge in southeast Tennessee. Historically, EP cranes primarily wintered in southern Georgia and throughout Florida (Walkinshaw 1973, Lewis 1977, Tacha et al. 1992, Meine and Archibald 1996). Recent annual Midwinter Survey data, conducted by state and federal agencies, show substantial numbers of cranes wintering farther north into Kentucky, Tennessee, and even Indiana in some years (2013–2020 U.S. Fish and Wildlife Service [unpublished data], Fronczak et al. 2017, Urbanek 2018).

Mid-Continent Population of sandhill Cranes

Sport hunting seasons for MCP cranes were not allowed in the U.S. during 1918–60. In the Central Flyway, areas open to hunting were gradually expanded during 1961–74, but since that time have remained relatively stable. Operational hunting seasons are now held annually in portions of Colorado, Kansas, Montana, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, and Wyoming. Nebraska is the only Central Flyway state that does not have a sandhill crane sport hunting season. Areas open to crane hunting in the Central Flyway during 2023–24 are shown in Fig. 5. Beginning in 2010, Minnesota, a Mississippi Flyway state, opened a limited hunt in the northwest portion of the state.

During 1961–74, hunters gradually improved their knowledge of sandhill cranes and improved their hunting success. During 1975–85, a tradition of sandhill crane hunting became established. Together with improvements in equipment (decoys, calls, clothing, blinds, etc.) and a shift from pass-shooting and hunting on roosts to decoy-hunting in fields, crane hunter success increased (Sharp and Vogel 1992). Dubovsky and Araya (2008) found that in the late 1990s and early 2000s hunters were more successful in harvesting 2 or 3 cranes per day than they were during the early 1980s. Average seasonal bags declined in the Central Flyway during the late 1990s and early 2000s, but during the last several seasons have increased to levels observed in the late 1980s to late 1990s (Fig. 12).

For most states, sandhill crane seasons began in relatively small areas, and expanded incrementally in subsequent years as experience with the seasons was gained. For example, sandhill crane seasons in North Dakota resumed in 1968 after being closed following the signing of the Migratory Bird Treaty Act in 1918. During 1968–79, the number of counties open for crane hunting increased from 2 to 8 and increased to 30 during 1980–92 and were grouped into two zones that were west of Highway 281. Beginning in 1993, the zones were eliminated, and Federal frameworks were fully utilized for the designated hunting area (Sharp and Cornely 1997). In 2001, designated hunt areas in North Dakota and Texas were expanded, with the new areas having reduced frameworks of 37 days compared to 58 in other areas and a reduced daily bag. In 2014, North Dakota increased season length in the eastern zone to 58 days but kept the 2-bird daily bag limit; harvest data suggested there would be negligible effects on that segment of the population. Kansas was the most recent Central Flyway state to initiate a crane hunting season in 1993. Initially, crane hunting was open only in portions of 17 counties, but by 2003 the area was expanded to 62 counties, essentially the entire western portion of the state (Sharp et al. 2010). Also, during early years of these seasons, bag limits and shooting hours often were more restrictive than Federal frameworks allowed. Beginning in the 2019–20 season, South Dakota moved their hunt boundary eastward from where it had been historically.

MCP harvest areas have remained relatively consistent from year to year; however, the levels of harvest vary with respect to many factors including changes in hunting pressure, land use, and environmental factors. Most shifts in annual harvests occur locally, but large-scale changes in harvest distributions also have occurred. Since the late 1990s, the annual harvest has generally declined in North Dakota and, until recently, increased in Saskatchewan (Tables 5A and 6). Causal factors for these changes have not been determined but are likely different because birds staging in Saskatchewan are largely from the West-central Canada-Alaska breeding affiliation whereas those in North Dakota are from the East-central Canada-Minnesota breeding affiliation (Krapu et al. 2011). Increased hunting pressure in Saskatchewan, mainly by non-resident U.S. hunters (Araya et al. 2010), has likely contributed to increases in harvests whereas declines in harvests in North Dakota appear to be more complex and involve several interrelated factors, likely including changes in hunting pressure, land-use changes, and environmental conditions. More recently, in Texas the interest in crane hunting has increased, with the number of hunters and annual harvest approximately doubling from 2016 to 2023 (Table 3A).

The MCP included at least 510,000 sandhill cranes in March 1982, the last extensive survey involving high-altitude vertical photography of major spring migration staging concentrations. Beginning in 1982, an intensive photo-corrected ocular-transect survey of Nebraska's Central Platte River Valley (CPRV) and ocular assessments from other spring staging areas have been used to monitor the annual status and trends for this population (Table 1). Use of the CPRV count in the development of annual harvest recommendations relies on the premise that a high proportion (>90%) of the MCP are in the CPRV at the time of the annual survey. Recent research with radio-tracked birds suggests that the proportion of MCP cranes in the CPRV during the survey varies by year (Pearse et al. 2015). Annual variability in weather patterns can reduce the percentage below 90% in some years. However, conducting the survey a few days earlier or a few days later likely would not result in a 'better' count (i.e., a higher proportion of birds being in the CPRV), because birds migrate into and out of the area continuously (Pearse et al. 2015).

The count from the March 2024 survey for MCP was 420,840 cranes (Table 1, Fig. 6) in the CPRV (Thorpe 2024) which was 67% less than the 2023 estimate. The natural log-transformed annual photo-corrected estimates for the CPRV portion of the survey suggest an increasing population trend ($P = 0.01$) since 2006 with higher counts in several of the recent surveys (Fig. 7); however,

estimates also have more interannual variability in recent years relative to historic values, resulting in a weak fit of the trend to the data ($R^2 = 0.38$). The 3-year-average index for photo-corrected estimates in the CPRV during the most recent three years that surveys have been conducted (2022-24) was 788,505 cranes, which is well above the management objective level (350,000-475,000) for this population (Fig. 8). Due to COVID restrictions the survey was not completed in 2020, and ground counts used to correct aerial counts were not done in 2021.

Since 1975, special sandhill Crane Hunting Permits, or more recently HIP certification, have been required for crane hunters participating in seasons in the Central Flyway. Additionally, a limited MCP sandhill crane hunt was offered in Minnesota starting in 2010, for which a state-issued permit is required for hunters to participate. A sample of these permittees is mailed questionnaires soon after the completion of each hunting season. The resulting responses enable estimation of hunting activities and success (Martin 2007). Estimated numbers of hunters registering as sandhill crane hunters in Texas has been increasing since 1997 when crane hunting was included in the combination licenses issued by the state, with a record high of 122,553 permits issued in 2008. In 2009, Texas revised their licensing system and crane hunters now must go to selected locations to obtain their permit, which resulted in a 91% decrease in the number of permits issued to individuals in 2009 compared to 2008. Thus, the number of crane hunters in Texas likely did not decrease as suggested by the number of permits issued; rather, the number of hunters classified as crane hunters by the Texas registration process declined. For the 2019-20 season, Oklahoma did not provide information needed to estimate hunter activity and harvest in time to conduct surveys of their hunters; thus, no estimates of the number of hunters or their harvest of cranes is available. For seasons after 2019–20 Oklahoma reported the number of permits as they did prior to 2019, with the addition of hunters who received a free online crane hunting permit (Table 2A). These free permits were not previously in the HIP sample of Oklahoma crane hunters, and their inclusion resulted in a large increase in the number of hunters for these seasons. The number of crane hunters in Texas increased 99% from 2019 to 2020 (Table 3A) and appears to be the result of crane hunting becoming more popular in the state over the past decade. During the 2023–24 season in the Central Flyway, 98,325 hunters were either HIP-certified or obtained crane hunting permits, which were not limited in number (Tables 2A, 2B), with 32,409 of these individuals hunting at least one time (Tables 3A, 3B, Fig. 9). The number of active hunters in the Central Flyway during the 2023–24 season was a 38% increase from the previous year (Fig. 9). During 2023–24, the number of hunters in Texas comprised 66% of all sandhill crane hunters in the Central Flyway (Table 3A). Outside of the Central Flyway, Minnesota issued 1,560 permits for the 2023–24 season and had 843 active hunters (a 10% increase in permits and 6% decrease in active hunters from the 2022–23 season).

Federal frameworks for most areas in the Central Flyway allow daily bag/possession limits of 3/9, which most states selected. Portions of North Dakota, Texas and Minnesota have had lower bag and possession limits of 2/6; the bag/possession limit in Minnesota was lowered to 1/3 beginning with the 2018-19 season. Specific dates selected by states in the Central Flyway and Minnesota for 2023-24 were like those of previous hunting seasons (Table 4).

An index to crippling-loss rate (number of cranes lost/[number of cranes lost + retrieved]) in the U.S. portion of the Central Flyway has declined ($R^2 = 0.91$, $P < 0.01$) from over 16% in 1975 to a preliminary estimate of 1.3% during the most recent hunting season (Fig. 10). During the 2023–24 season the number of days afield per hunter (2.74) was 23% higher than that of the previous year (Fig. 11) and was 9% lower than the long-term average of 3.00. The preliminary estimate of seasonal bag per hunter was 2.26 birds (Fig. 12), which is 2% higher than the long-term average of 2.22. The preliminary estimate of retrieved and unretrieved mortality associated with the sport

harvest in the Central Flyway was 31% higher than the previous year's estimate (Fig. 13). The increasing trend ($R^2 = 0.71$, $P < 0.01$) in Central Flyway harvest of MCP cranes during 1975–2023 likely is related to improved knowledge of crane behavior, hunting techniques, and hunter success (Sharp and Vogel 1992, Dubovsky and Araya 2008), and increased numbers of cranes available for harvest in recent years due to growth in the MCP as well as an increase in the number of crane hunters.

Cranes from the MCP also occur in Alaska, Canada, Mexico and the RMP hunt areas in Arizona, New Mexico (Tables 5A, 5B). Estimates for the 2023–24 sport harvest in Canada (Alberta, Manitoba, and Saskatchewan) were not available at the time this report was completed; historic estimates are provided in Table 6. For Alaska, sandhill cranes harvested in Game Management Units (GMUs) 11-13 and 18-26 are believed to be MCP cranes, while cranes harvested in GMUs 1-10 and 14-17 are assumed to be Pacific Coast Population cranes. There also is some intermingling of MCP cranes with RMP cranes in portions of New Mexico and Arizona; however, periodic bag checks allow estimates of harvests for each population. The total estimated MCP harvest in Alaska and in the RMP hunt areas in Arizona, New Mexico was 2,366 cranes for 2023–24. In the 13th year of Minnesota's sandhill crane hunt the harvest (876 cranes) increased by 2% from the previous year. No annual harvest surveys are conducted in Mexico, but annual MCP harvests probably are <10% of the retrieved harvest in the U.S. and Canada (R. Drewien and D. Nieman, personal communication). This assumed low level of harvest was supported by an independent assessment of harvest in Mexico (Kramer et al. 1995). Because harvest estimates for Canada were not available, the 2023–24 estimates of retrieved and unretrieved kill of MCP cranes by sport hunters throughout their range was not calculated. Historic information is provided in Tables 7A and 7B, and Fig. 14.

To assess the relative rates of change between population size (abundance) and harvest, we periodically assess trends in these parameters. We used linear regression on the natural log-transformed values for these variables for the years 1982-2024 for abundance and 1982-2022 for harvest. Because >10% of the MCP occurs outside the CPRV in the spring of some years, we combined the photo-corrected counts in the CPRV with the ocular cruise estimates from areas outside the CPRV for analyses of population abundance. For harvest, we used only the estimates of 'retrieved' harvest for the Central Flyway, Minnesota, and MCP cranes harvested in hunt areas in Arizona and New Mexico, Alaska, and Canada, because crippling-loss rates for the latter three areas are unknown and there are no empirical estimates of harvest from Mexico. Regression of the log-transformed values indicate a significant slope for the abundance values ($P < 0.01$; $R^2 = 0.38$; slope = +1.7% per year change), suggesting an increasing trend in the abundance of cranes over the time frame. The regression of the harvest values also indicates an increase in the rate of harvest over that same time ($P < 0.01$; $R^2 = 0.74$; slope = +2.7% per year) (Fig. 15). These results suggest that the annual change in harvest is increasing faster than the rate of growth in crane abundance.

Subsistence harvest levels of MCP sandhill cranes historically were poorly documented. However, the 1997 U.S./Canada Migratory Bird Treaty Amendment identified improvements that should be made to sandhill crane harvest-monitoring programs in both the U.S. and Canada. Harvest surveys conducted during 2006–2017 on the Yukon-Kuskokwim (Y-K) Delta, Alaska, reported an average MCP harvest of 2,896 adults and fledged young and an average of 1,183 eggs (data from Naves and Keating 2019). The harvest estimate for birds is relatively similar to the 1985-2005 average (Wentworth 2007) of 3,151 adults and fledged young taken by subsistence hunters on the Y-K Delta, but that for eggs is 124% higher than the 1985-2005

average of 528 eggs. Efforts are being made to gather additional information on subsistence harvests for the remainder of Alaska, Siberia, and Canada.

Rocky Mountain Population of Greater sandhill Cranes

The RMP was not hunted in the U.S. from 1918–80. Arizona initiated the first modern-day season in 1981. Since that time hunting programs have been guided by a cooperative management plan, including a harvest strategy that has been periodically updated and endorsed by the Central and Pacific Flyways (Kruse et al. 2008). The harvest strategy for the RMP calculates an allowable harvest based on crane survey counts and recruitment relative to the population objective. Thus, allowable harvest changes annually based on the status of the birds.

Counts conducted in the SLV during the spring migration suggested that the number of RMP cranes was relatively stable during 1984–96 (Table 8). However, survey biologists found that these estimates contained increasing numbers of the MCP (lesser subspecies). An adjustment, using ground-derived proportions, was made to correct for the lesser subspecies but was not a viable approach for the long-term (Benning et al. 1996). In 1996, the survey was discontinued (Table 8). In 1997, an attempt was made to survey these cranes during the fall (October) in the SLV, but MCP cranes also were present at that time. Biologists concluded that neither a spring nor a fall count in the SLV would result in a reliable index to the abundance of the RMP. As an alternative, a cooperative 5-state September pre-migration staging-area survey, experimentally tested in 1987 and 1992, has been ongoing operationally since 1995. Because there appears to be minimal commingling of RMP cranes with cranes from other populations during that time, the September pre-migration survey for the RMP appears to be a good alternative to either a spring or fall survey in the SLV and was designated as the official count for the RMP in 1997 (Table 9). Although operational in 1995 and 1996, the survey was variable in timing and survey effort. What appears to be lower population estimates (Table 9) in 1995 and 1996 is likely more an artifact of inconsistent survey effort (R. Drewien, personal communication).

The Cooperative Flyway Management Plan (Pacific Flyway Council and Central Flyway Council 2016) recommends using the most recent three-year average of the September survey to determine status of the RMP. The 2023 September pre-migration survey counted 27,267 cranes, a 46% increase from the count in 2022 (Thorpe et al. 2023) (Table 9). The average count from the most recent 3 years was 23,287, which was 2% higher than the previous 3-year average (22,744) and exceeds the range of the established population objective (17,000–21,000) (Fig. 18).

During 1986–95, important breeding areas in the Intermountain West experienced extremely dry conditions and indices of recruitment (% juveniles) were low (generally between 4–6%) (Fig. 19). A return to more favorable breeding conditions during 1996–99 resulted in higher recruitment rates (8–12%), but drier conditions resulted in lower production during 2000–02. Since 2003 recruitment rates generally have been above-average due to improved wetland habitats and favorable spring and summer breeding conditions. The 2023 recruitment rate of 11.8% (42% above the long-term [1972–2022] average of 8.3) suggested above average nesting conditions, but a mean brood size of 1.06 (Collins and Vanausdall 2023) indicated the opposite in 2023.

Special limited hunting seasons during 2023–24 resulted in a harvest of 1,411 RMP sandhill cranes (Tables 10A, 10B), which was 16% less than last year (Fig. 16). Based on the surveys conducted last fall which resulted in 3-year (2021–23) average values that were lower for

abundance but higher for recruitment (Figs. 18, 19), management guidelines allow for a maximum allowable take of 3,003 birds during the 2024-25 hunting season, an 18% increase from that for the 2023–24 season.

Lower Colorado River Valley Population of Greater sandhill Cranes

The LCRVP is the smallest of the migratory populations of sandhill cranes in North America. The range of this population is believed to overlap ranges with the Rocky Mountain and Central Valley populations. Historically, winter counts of the LCRVP were not well-coordinated or conducted using a consistent methodology. However, efforts have been made to standardize areas surveyed and the timing of the survey to obtain more accurate counts and increased ability to determine trends in population abundance. Beginning in 1998, a coordinated winter aerial cruise survey with a fixed-wing aircraft has been conducted at the four major wintering areas: Cibola NWR, Colorado River Indian Tribal lands, Sonny Bono Salton Sea NWR, and the Gila River. Collectively, these counts are believed to contain >90% of the total number of cranes in this population. The counts are not corrected for cranes present but not seen by aerial crews, and therefore have unknown bias and precision. The fixed-wing aircraft survey was again conducted in 2024. The survey counted 5,156 cranes in 2024, a 9% increase from the previous year's count of 4,719 cranes (Table 11, Fig. 20). The recent 3-year average for the winter count is 4,554 cranes.

The LCRVP was not hunted after the signing of the Migratory Bird Treaty Act in 1918. In 2007, the Service completed an Environmental Assessment entitled "Proposed hunting regulations for the Lower Colorado River Valley Population of Greater sandhill Cranes in the Pacific Flyway" (U.S.D.I. 2007). In 2008, the Service determined that a small allowable harvest (about 30) could be allowed on this population in years when the 3-year average of winter counts exceeded 2,500. The hunting season is guided by a cooperative management plan (Pacific Flyway Council 1995) which includes methodology for determining allowable harvests and allocation of the harvest. Once a hunting season is initiated, this season would be experimental for 3 years. After the 3 years, the season would be reviewed and revised if necessary.

A limited youth hunting season for this population was conducted during 2010 in Arizona, the only state that has hunted these cranes. No LCRVP cranes were harvested. The Pacific Flyway currently has no plans to conduct hunts for LCRVP cranes.

Eastern Population of Greater sandhill Cranes

In 1979, the U.S. Fish and Wildlife Service initiated a coordinated fall index survey of historic EP migratory staging areas in the Mississippi and Atlantic Flyways. This survey is conducted annually in late October by volunteers and agency personnel who count the number of cranes at staging areas throughout the EP range. Overall, the survey documented a long-term increasing trend in EP cranes with an average growth rate in the population of 3.9% per year (1979-2009) (Amundson and Johnson 2010). A more recent analysis indicates the growth rate has increased to 4.4% per year (U.S. Fish and Wildlife Service, unpublished data). The most recent fall count from 2023 was 110,646, which was 3% higher than the 2022 index of 107,164. The 3-year average is 102,613 (Table 12, Fig. 21). This index is not a statistically designed population estimate; however, the index does reasonably represent a conservative population estimate for EP cranes.

In 2010, the Mississippi and Atlantic Flyway Councils endorsed a management plan for EP cranes (Ad Hoc Eastern Population sandhill Crane Committee 2010). One of the plan's provisions included guidelines for potential harvest of this population when the 3-year average of the fall survey is above 30,000 cranes. Kentucky and Tennessee initiated experimental hunting seasons in 2011 and 2013, respectively; the season in Kentucky became operational in 2015 and that for Tennessee in 2017. Alabama initiated an experimental season beginning in the 2019-20 season (Table 13), and the season became operational in the 2023-24 season. Hunting seasons for this population of sandhill cranes are allowed between September 1 and January 31 and have a maximum length of 60 days. Actual season dates have been from early-December to late-January in Kentucky and late November to late January in Tennessee and Alabama (Table 13). During recent years, the seasons in each state have extended from early December through the end of January. According to the hunt plan, the number of tags a state can issue cannot exceed 10% of the state's five-year average peak crane abundance. Each tag allows a hunter to harvest one crane. Hunters in all three states are required to complete mandatory crane identification training, tag and report harvested birds, and complete a post-season survey. In the 2023–24 season, Kentucky issued 991 tags to hunters, who harvested 71 cranes (Table 14)(J. Brunjes, Kentucky Department of Fish and Wildlife Resources, personal communication). Tennessee issued 2,500 tags to hunters and 475 cranes were harvested in 2023–24 (Table 14) (J. Feddersen, Tennessee Wildlife Resources Agency, personal communication). Alabama issued 2,250 tags to hunters in 2023-24 and 322 cranes were harvest harvested (S. Maddox, Alabama Department of Conservation and Natural Resources, personal communication) (Table 14). The total number of Eastern Population sandhill cranes harvested during 2023–24 hunting season was 868 birds, which was 20% less than last year.

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Table 1. Annual spring abundance indices for the Mid-Continent Population of sandhill cranes. Estimates presented for: (1) the Central Platte River Valley (CPRV), NE; (2) other areas in Nebraska outside the CPRV and in other states; and (3) total combined estimates.

| Year | CPRV Ocular Cruise Transect | CPRV Ocular Transect | CPRV Photo Corrected Ocular Transect Annual | CPRV Photo Corrected Ocular Transect 3-Year AVG | Other NE | KS | TX | CO ^a | OK ^{a,b} | NM ^a | WY ^b | Total Ocular Cruise Transect | Total Ocular Transect | Total Photo Corrected Ocular Transect Annual | Total Photo Corrected Ocular Transect 3-Year AVG |
|------|-----------------------------|----------------------|---|---|----------|--------|--------|-----------------|-------------------|-----------------|-----------------|------------------------------|-----------------------|--|--|
| 1974 | 162,600 | | | | 9,000 | 1,900 | 3,200 | 0 | 400 | | 0 | 177,100 | | | |
| 1975 | 223,600 | | | | 2,300 | 900 | tr | 500 | 100 | | 100 | 227,500 | | | |
| 1976 | 147,500 | | | | 2,800 | 300 | 800 | 0 | 100 | | 1,000 | 152,500 | | | |
| 1977 | 173,400 | | | | 1,100 | 1,600 | 30,700 | 0 | 400 | | 12,500 | 220,000 | | | |
| 1978 | 149,800 | 188,582 | | | 2,200 | 700 | 4,900 | 0 | 0 | | 2,300 | 159,900 | 198,682 | | |
| 1979 | | 203,574 | | | 2,600 | 1,100 | 0 | 500 | 1,500 | | 0 | | 209,274 | | |
| 1980 | 223,400 | 254,417 | | | 5,000 | 4,100 | 1,400 | 0 | 100 | | 500 | 234,500 | 265,517 | | |
| 1981 | | 248,882 | | | 8,300 | 11,200 | 21,800 | 500 | 0 | | 0 | | 290,682 | | |
| 1982 | | 347,996 | 417,263 | | 7,100 | 2,000 | 7,800 | 2,800 | 0 | | 100 | | 367,796 | 437,063 | |
| 1983 | | 306,316 | 343,378 | | 4,100 | 200 | 7,000 | 0 | 200 | | tr | | 317,816 | 354,878 | |
| 1984 | | 222,710 | 261,802 | 340,814 | 18,100 | 900 | 800 | 0 | 1,100 | | tr | | 243,610 | 282,702 | 358,214 |
| 1985 | | 378,127 | 514,763 | 373,314 | 11,500 | 3,000 | 1,200 | | | | | | 393,827 | 530,463 | 389,348 |
| 1986 | | 317,025 | 353,040 | 376,535 | 1,000 | 200 | 2,100 | | | | | | 320,325 | 356,340 | 389,835 |
| 1987 | | 383,581 | 416,058 | 427,954 | 0 | tr | 400 | | | | | | 383,981 | 416,458 | 434,420 |
| 1988 | | 386,853 | 463,457 | 410,852 | 0 | 0 | 7,700 | | | | | | 394,553 | 471,157 | 414,652 |
| 1989 | | 391,353 | 391,995 | 423,837 | 100 | 1,000 | 800 | | | | | | 393,253 | 393,895 | 427,170 |
| 1990 | | 385,950 | 412,154 | 422,535 | 11,000 | 5,200 | 10,300 | | | | | | 412,450 | 438,654 | 434,569 |
| 1991 | | 297,831 | 340,645 | 381,598 | 100 | 800 | 200 | | | | | | 298,931 | 341,745 | 391,431 |
| 1992 | | 257,709 | 406,457 | 386,419 | 12,200 | 300 | 1,100 | | | | | | 271,309 | 420,057 | 400,152 |
| 1993 | | 253,799 | 378,883 | 375,328 | 16,800 | 37,750 | 13,500 | | | | | | 321,849 | 446,933 | 402,912 |
| 1994 | | 395,543 | 477,215 | 420,852 | 14,600 | 0 | 0 | 2,400 | | | | | 410,143 | 491,815 | 452,935 |

a CO, OK, and NM were eliminated from the Official Survey Area in 1985 by the CF CMU.

b The 2018 revision to the Management Plan added OK and WY to counts for determination of the percentage of cranes in the Central Platte River Valley.

c Survey not conducted due to COVID-19 pandemic and associated travel restrictions.

Table 1 (continued)

| Year | CPRV Ocular Cruise Transect | CPRV Ocular Transect | CPRV Photo Corrected Ocular Transect Annual | CPRV Photo Corrected Ocular Transect 3-Year AVG | Other NE | KS | TX | CO ^a | OK ^{a,b} | NM ^a | WY ^b | Total Ocular Cruise Transect | Total Ocular Transect | Total Photo Corrected Ocular Transect Annual | Total Photo Corrected Ocular Transect 3-Year AVG |
|------|-----------------------------|----------------------|---|---|----------|---------|--------|-----------------|-------------------|-----------------|-----------------|------------------------------|-----------------------|--|--|
| 1995 | | 273,376 | 326,181 | 394,093 | 30,400 | 0 | 0 | 6,700 | | | | | 303,776 | 356,581 | 431,776 |
| 1996 | | 318,514 | 519,984 | 441,127 | 7,600 | 0 | 0 | 3,900 | | | | | 326,114 | 527,584 | 458,660 |
| 1997 | | 350,932 | 534,630 | 460,265 | 16,200 | 100 | 0 | | | | | | 367,232 | 550,930 | 478,365 |
| 1998 | | 337,203 | 530,848 | 528,487 | 13,600 | 100 | 0 | | | | | | 350,903 | 544,548 | 541,021 |
| 1999 | | 219,794 | 284,858 | 450,112 | 3,500 | 100,000 | 0 | | | | | | 323,294 | 388,358 | 494,612 |
| 2000 | | 484,585 | 490,118 | 435,275 | 16,900 | 26,100 | 500 | | | | | | 528,085 | 533,618 | 488,841 |
| 2001 | | 387,336 | 413,498 | 396,158 | 10,500 | 42,300 | 3,500 | | | | | | 443,636 | 469,798 | 463,925 |
| 2002 | | 309,029 | 315,044 | 406,220 | 17,100 | 15,100 | 1,200 | | 5,800 | | | | 342,429 | 348,444 | 450,620 |
| 2003 | | 300,918 | 348,023 | 358,855 | 24,800 | 4,100 | 3,800 | | | | | | 333,618 | 380,723 | 399,655 |
| 2004 | | 365,370 | 426,534 | 363,200 | 17,700 | 1,200 | 2,200 | | 100 | | | | 386,470 | 447,634 | 392,267 |
| 2005 | | 412,285 | 491,915 | 422,157 | 27,100 | 2,900 | 8,700 | | 2,600 | | | | 450,985 | 530,615 | 452,991 |
| 2006 | | 178,564 | 216,810 | 378,420 | 70,000 | 2,100 | 5,500 | | | | | | 256,164 | 294,410 | 424,220 |
| 2007 | | 307,094 | 384,118 | 364,281 | 20,400 | 3,600 | 5,900 | | | | | | 336,994 | 414,018 | 413,014 |
| 2008 | | 474,051 | 545,884 | 382,271 | 24,500 | 1,100 | 0 | | | | | | 499,651 | 571,484 | 426,637 |
| 2009 | | 457,436 | 565,257 | 498,420 | 29,900 | tr | 10,800 | | | | | | 498,136 | 605,957 | 530,486 |
| 2010 | | 455,104 | 691,534 | 600,892 | 17,600 | 1,300 | 28,000 | | | | | | 502,004 | 738,434 | 638,625 |
| 2011 | | 347,501 | 482,797 | 579,863 | 18,800 | 3,500 | 14,300 | | 4,700 | | | | 384,101 | 519,397 | 621,263 |
| 2012 | | 253,783 | 339,642 | 504,658 | 12,900 | tr | 4,200 | | | | | | 270,883 | 356,742 | 538,191 |
| 2013 | | 745,854 | 867,061 | 563,167 | 16,080 | 279 | 9,740 | | 1,800 | | | | 771,953 | 893,160 | 589,766 |
| 2014 | | 402,228 | 617,903 | 608,202 | 24,390 | 5,996 | 7,534 | | 239 | | | | 440,148 | 655,823 | 635,242 |

a CO, OK, and NM were eliminated from the Official Survey Area in 1985 by the CF CMU.

b The 2018 revision to the Management Plan added OK and WY to counts for determination of the percentage of cranes in the Central Platte River Valley.

c Survey not conducted due to COVID-19 pandemic and associated travel restrictions.

Table 1 (continued)

| Year | CPRV Ocular Cruise Transect | CPRV Ocular Transect | CPRV Photo Corrected Ocular Transect Annual | CPRV Photo Corrected Ocular Transect 3-Year AVG | Other NE | KS | TX | CO ^a | OK ^{a,b} | NM ^a | WY ^b | Total Ocular Cruise Transect | Total Ocular Transect | Total Photo Corrected Ocular Transect Annual | Total Photo Corrected Ocular Transect 3-Year AVG |
|-------------------|-----------------------------|----------------------|---|---|----------|-------|--------|-----------------|-------------------|-----------------|-----------------|------------------------------|-----------------------|--|--|
| 2015 | | 326,053 | 386,471 | 623,812 | 24,545 | 4,479 | 37,121 | | 2,195 | | | | 392,198 | 452,616 | 667,200 |
| 2016 | | 272,250 | 405,716 | 470,030 | 11,218 | 261 | 16,500 | | 175 | | | | 300,229 | 433,695 | 514,045 |
| 2017 | | 436,671 | 568,369 | 453,519 | 18,674 | 180 | 9,193 | | 16 | | | | 464,718 | 596,416 | 494,242 |
| 2018 ^b | | 516,397 | 1,005,612 | 659,899 | 12,137 | 1,058 | 23,906 | | 932 | | 3,475 | | 557,905 | 1,047,120 | 692,410 |
| 2019 ^b | | 633,839 | 945,996 | 839,992 | 16,818 | 2,423 | 39,460 | | 777 | | 4,140 | | 697,457 | 1,009,614 | 884,383 |
| 2020 ^c | | | | | | | | | | | | | | | 924,289 |
| 2021 ^b | | 487,418 | 782,462 | 911,357 | 9,394 | 1,422 | 38,123 | | 0 | | 4,512 | | 536,339 | 835,851 | 964,195 |
| 2022 ^b | | 464,933 | 685,476 | 804,645 | 23,911 | 727 | 13,869 | | 115 | | 3,650 | | 503,407 | 730,472 | 858,646 |
| 2023 ^b | | 686,716 | 1,259,199 | 909,046 | 6,661 | 662 | 11,872 | | 68 | | 6,100 | | 705,895 | 1,284,563 | 950,295 |
| 2024 ^b | | 330,587 | 420,840 | 788,505 | 10,431 | 0 | 2,475 | | 37 | | 9,705 | | 343,506 | 443,448 | 819,494 |

a CO, OK, and NM were eliminated from the Official Survey Area in 1985 by the CF CMU.

b The 2018 revision to the Management Plan added OK and WY to counts for determination of the percentage of cranes in the Central Platte River Valley.

c Survey not conducted due to COVID-19 pandemic and associated travel restrictions.

Table 2A. Federal Mid-Continent sandhill crane permits issued in the Central Flyway (CF) and Minnesota.

| Year | CO | KS | MT | NM | ND | OK | SD | TX | WY | CF | |
|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------------|------------------|----------------------|-------|---------|-------|
| | | | | | | | | | | Total | MN |
| 1975 | 401 | | 158 | 1,225 | 4,172 | 171 | 198 | 5,482 | 56 | 11,863 | |
| 1976 | 341 | | 117 | 1,195 | 4,137 | 265 | 200 | 5,060 | 37 | 11,352 | |
| 1977 | 374 | | 82 | 1,452 | 6,294 | 519 | 134 | 4,897 | 48 | 13,800 | |
| 1978 | 343 | | 209 | 956 | 5,798 | 620 | 98 | 5,198 | 52 | 13,274 | |
| 1979 | 528 | | 159 | 1,288 | 4,949 | 470 | 63 | 5,098 | 43 | 12,598 | |
| 1980 | 437 | | 118 | 1,082 | 5,754 | 510 | 240 | 5,239 | 33 | 13,413 | |
| 1981 | 397 | | 53 | 1,022 | 5,796 | 466 | 197 | 5,297 | 30 | 13,258 | |
| 1982 | 528 | | 147 | 962 | 4,714 | 750 | 579 | 4,650 | 40 | 12,370 | |
| 1983 | 575 | | 175 | 706 | 8,033 | 909 | 528 | 7,317 | 63 | 18,306 | |
| 1984 | 538 | | 113 | 721 | 7,436 | 1,187 | 544 | 6,838 | 43 | 17,420 | |
| 1985 | 555 | | 143 | 710 | 6,802 | 1,102 | 656 | 7,417 | 59 | 17,444 | |
| 1986 | 617 | | 99 | 595 | 8,926 | 1,073 | 705 | 7,258 | 25 | 19,298 | |
| 1987 | 610 | | 128 | 502 | 8,778 | 1,213 | 517 | 6,289 | 30 | 18,067 | |
| 1988 | 512 | | 162 | 480 | 6,214 | 1,472 | 437 | 7,053 | 38 | 16,368 | |
| 1989 | 434 | | 172 | 430 | 6,128 | 1,717 | 524 | 8,066 | 25 | 17,496 | |
| 1990 | 389 | | 143 | 533 | 7,268 | 1,725 | 646 | 11,994 | 22 | 22,720 | |
| 1991 | 501 | | 238 | 602 | 3,353 | 1,618 | 668 | 11,142 | 25 | 18,147 | |
| 1992 | 498 | | 303 | 582 | 3,760 | 1,397 | 721 | 9,848 | 18 | 17,127 | |
| 1993 | 411 | 575 | 336 | 541 | 4,572 | 1,277 | 708 | 10,407 | 37 | 18,864 | |
| 1994 | 427 | 567 | 320 | 547 | 4,790 | 1,561 | 636 | 10,515 | 49 | 19,412 | |
| 1995 | 571 | 711 | 351 | 564 | 5,242 | 1,323 | 650 | 10,755 | 42 | 20,209 | |
| 1996 | 612 | 837 | 369 | 499 | 5,570 | 1,391 | 677 | 11,334 | 41 | 21,330 | |
| 1997 | 572 | 997 | 325 | 454 | 4,934 | 1,393 | 757 | 37,365 ^b | 46 | 46,845 | |
| 1998 | 4,937 ^b | 1,088 | 270 | 449 | 6,082 | 1,385 | 951 | 32,523 ^b | 49 | 42,797 | |
| 1999 | 4,847 ^b | 1,235 | 279 | 516 | 6,050 | 1,438 | 810 | 33,380 ^b | 52 | 48,607 | |
| 2000 | 5,169 ^b | 1,084 | 283 | 493 | 7,451 | 1,333 | 721 | 44,719 ^b | 58 | 61,311 | |
| 2001 | 5,869 ^b | 1,374 | 253 | 509 | 8,078 | 1,315 | 680 | 49,410 ^b | 72 | 67,560 | |
| 2002 | 5,644 ^b | 1,279 | 303 | 496 | 8,245 ^c | 1,186 | 619 | 37,558 ^b | 54 | 55,384 | |
| 2003 ^a | 5,854 ^b | 1,206 | 273 | 471 | 6,030 ^c | 1,000 | 563 | 43,199 ^b | 50 | 58,646 | |
| 2004 ^a | 5,784 ^b | 1,180 ^c | 308 | 548 | 5,788 ^c | 780 ^c | 307 | 52,161 ^b | 61 | 66,917 | |
| 2005 ^a | 5,766 ^b | 805 ^c | 281 | 494 | 7,441 ^c | 698 ^c | 490 | 51,511 ^b | 68 | 67,554 | |
| 2006 ^a | 4,792 ^b | 826 ^c | 265 | 512 ^d | 7,410 ^c | 615 ^c | 445 ^e | 70,968 ^b | 78 | 85,911 | |
| 2007 ^a | 4,931 ^b | 598 ^c | 238 | 480 ^d | 7,442 ^c | 731 ^c | 390 ^e | 101,382 ^b | 58 | 116,250 | |
| 2008 ^a | 5,772 ^b | 655 ^c | 272 | 677 ^d | 6,501 ^c | 736 ^c | 398 ^e | 122,553 ^b | 73 | 137,637 | |
| 2009 ^a | 4,038 ^b | 540 ^c | 139 | 862 ^d | 7,774 ^c | 1,029 ^c | 693 ^e | 11,332 ^b | 62 | 26,469 | |
| 2010 ^a | 4,280 ^b | 508 ^c | 283 | 701 ^d | 8,375 ^c | 1,055 ^c | 410 ^e | 12,560 ^b | 86 | 28,258 | 1,954 |
| 2011 ^a | 783 ^b | 801 ^c | 311 | 575 ^d | 8,024 ^c | 1,104 ^c | 356 ^e | 13,905 ^b | 86 | 25,945 | 1,342 |
| 2012 ^a | 801 ^b | 571 ^c | 186 | 859 ^d | 8,519 ^c | 451 ^c | 343 ^e | 14,083 ^b | 102 | 25,915 | 1,032 |
| 2013 ^a | 856 ^b | 735 ^c | 288 | 404 ^d | 9,085 ^c | 2,278 ^c | 421 ^e | 18,369 ^b | 106 | 32,542 | 1,086 |
| 2014 ^a | 848 ^b | 787 ^c | 356 | 368 ^d | 4,692 ^c | 660 ^c | 390 ^e | 20,105 ^b | 433 | 28,639 | 1,216 |
| 2015 ^a | 787 ^b | 1,040 ^c | 404 | 365 ^d | 4,543 ^c | 510 ^c | --- ^f | 22,033 ^b | 454 | 30,136 | 1,199 |
| 2016 ^a | 841 ^b | 1,055 ^c | 376 | 416 ^d | 3,956 ^c | 559 ^c | 171 ^e | 23,962 ^b | 569 | 31,905 | 1,139 |
| 2017 ^a | 913 ^b | 1,075 ^c | 604 | 534 ^d | 4,006 ^c | 714 ^c | 224 ^e | 26,312 ^b | 646 | 35,028 | 1,125 |
| 2018 ^a | 954 ^b | 1,218 ^c | 676 | 2,413 ^d | 4,102 ^c | 642 ^c | 237 ^e | 29,668 ^b | 392 | 40,302 | 1,091 |
| 2019 ^a | 1,019 ^b | 1,456 ^c | 1,013 ^b | 2,818 ^d | 3,839 ^c | --- ^g | 242 ^e | 32,841 ^b | 714 | 43,942 | 1,073 |
| 2020 ^a | 1,107 ^b | 1,970 ^c | 1,005 ^b | 2,763 ^d | 5,168 ^c | 11,513 ^c | 210 ^e | 38,832 ^b | 619 | 63,187 | 1,288 |
| 2021 ^a | 1,170 ^b | 2,343 ^c | 1,385 ^b | 2,362 ^d | 4,440 ^c | 11,904 ^c | 289 ^e | 45,013 ^b | 621 | 69,527 | 1,479 |
| 2022 ^a | 9,194 ^b | 2,270 ^c | 562 ^b | 3,471 ^d | 5,544 ^c | 12,536 ^c | 250 ^e | 52,568 ^b | 1,182 | 87,577 | 1,424 |
| 2023 ^a | 9,608 ^b | 2,556 ^c | 1,315 ^b | 3,522 ^d | 5,772 ^c | 13,953 ^c | --- | 60,795 ^b | 804 | 98,325 | 1,560 |

a Preliminary

b Harvest Information Program (HIP) or a point-of-sale electronic record (without cost) used to identify crane hunters in lieu of a special sandhill crane hunting permit

c States began charging a fee for crane hunting permits which reduces the number of permits issued to hunters that only hunt cranes.

d NM uses a combination of electronic and paper permits.

e SD uses a special question in their HIP questionnaire to identify sandhill crane hunters; TX hunters can only obtain crane permits in selected locations.

f All hunters put in stratum "did not hunt" or "no" in state HIP sample frame, so no estimate is available.

g Hunters name and address data not supplied, so no estimate is available.

Table 2B. Decadal and long-term annual averages of federal Mid-Continent sandhill crane permits issued in the Central Flyway (CF) and Minnesota.

| Years | CO | KS | MT | NM | ND | OK | SD | TX | WY | CF Total | MN |
|--------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------------|-----------|
| 1975-79 | 397 | | 145 | 1,223 | 5,070 | 409 | 139 | 5,147 | 47 | 12,577 | |
| 1980-89 | 520 | | 131 | 721 | 6,858 | 1,040 | 493 | 6,542 | 39 | 16,344 | |
| 1990-99 | 981 | 859 | 293 | 529 | 5,162 | 1,451 | 722 | 17,926 | 38 | 27,606 | |
| 2000-09 | 5,362 | 955 | 262 | 554 | 7,216 | 942 | 531 | 58,479 | 63 | 74,364 | |
| 2010-19 | 1,208 | 925 | 450 | 945 | 5,914 | 886 | 310 | 21,384 | 359 | 32,261 | 1,226 |
| 2020-23 | 5,270 | 2,285 | 1,067 | 3,030 | 5,231 | 12,477 | 187 | 49,302 | 807 | 79,654 | 1,438 |
| 1975-2023 | 2,142 | 1,095 | 334 | 933 | 6,077 | 1,964 | 452 | 25,842 | 172 | 38,515 | 1,286 |

Table 3A. Estimated active Mid-Continent sandhill crane hunters in the Central Flyway (CF) and Minnesota. Active hunters are those permittees reporting hunting cranes 1 or more times.

| Year | CO | KS | MT | NM | ND | OK | SD | TX | WY | CF | |
|-------------------|-------|-----|-----|-------|-------|------------------|------------------|--------|-----|--------|-----|
| | | | | | | | | | | Total | MN |
| 1975 | 226 | | 69 | 806 | 2,896 | 80 | 117 | 2,733 | 22 | 6,949 | |
| 1976 | 203 | | 68 | 752 | 1,328 | 148 | 80 | 2,497 | 16 | 5,092 | |
| 1977 | 189 | | 40 | 921 | 4,126 | 339 | 77 | 2,329 | 27 | 8,048 | |
| 1978 | 190 | | 86 | 836 | 3,776 | 334 | 50 | 2,390 | 21 | 7,683 | |
| 1979 | 275 | | 61 | 745 | 3,225 | 307 | 29 | 2,356 | 13 | 7,011 | |
| 1980 | 216 | | 50 | 625 | 3,387 | 275 | 160 | 2,439 | 12 | 7,164 | |
| 1981 | 216 | | 23 | 598 | 3,315 | 269 | 103 | 2,543 | 14 | 7,081 | |
| 1982 | 138 | | 56 | 386 | 2,429 | 342 | 260 | 1,553 | 8 | 5,172 | |
| 1983 | 211 | | 64 | 253 | 3,551 | 384 | 225 | 2,435 | 20 | 7,143 | |
| 1984 | 206 | | 51 | 301 | 3,189 | 467 | 208 | 2,380 | 19 | 6,821 | |
| 1985 | 187 | | 37 | 216 | 2,383 | 372 | 168 | 2,613 | 12 | 5,988 | |
| 1986 | 106 | | 17 | 178 | 3,095 | 299 | 149 | 1,991 | 5 | 5,840 | |
| 1987 | 113 | | 29 | 133 | 2,529 | 358 | 120 | 1,942 | 5 | 5,229 | |
| 1988 | 117 | | 48 | 171 | 1,779 | 531 | 78 | 2,497 | 11 | 5,232 | |
| 1989 | 74 | | 52 | 152 | 2,018 | 492 | 153 | 2,805 | 6 | 5,752 | |
| 1990 | 101 | | 33 | 180 | 2,614 | 395 | 172 | 4,130 | 6 | 7,631 | |
| 1991 | 153 | | 69 | 220 | 1,674 | 370 | 139 | 3,231 | 3 | 5,859 | |
| 1992 | 96 | | 95 | 182 | 1,776 | 330 | 153 | 2,655 | 7 | 5,294 | |
| 1993 | 87 | 294 | 97 | 218 | 2,223 | 357 | 140 | 3,602 | 5 | 7,023 | |
| 1994 | 93 | 293 | 79 | 211 | 2,497 | 456 | 151 | 3,350 | 11 | 7,141 | |
| 1995 | 154 | 393 | 118 | 211 | 2,408 | 331 | 143 | 3,707 | 6 | 7,471 | |
| 1996 | 91 | 382 | 82 | 166 | 2,744 | 355 | 169 | 3,356 | 9 | 7,354 | |
| 1997 | 67 | 452 | 68 | 124 | 2,386 | 264 | 178 | 4,515 | 10 | 8,064 | |
| 1998 | 96 | 480 | 43 | 155 | 2,785 | 345 | 237 | 4,022 | 10 | 8,173 | |
| 1999 | 133 | 533 | 60 | 204 | 2,444 | 375 | 173 | 2,699 | 8 | 6,629 | |
| 2000 | 192 | 430 | 64 | 160 | 2,481 | 223 | 209 | 3,180 | 11 | 6,950 | |
| 2001 | 202 | 555 | 72 | 173 | 2,934 | 391 | 145 | 3,554 | 13 | 8,039 | |
| 2002 | 175 | 517 | 85 | 166 | 2,407 | 237 | 144 | 4,037 | 15 | 7,783 | |
| 2003 ^a | 236 | 495 | 60 | 244 | 2,271 | 64 | 114 | 4,821 | 10 | 8,315 | |
| 2004 ^a | 315 | 539 | 93 | 252 | 2,491 | 265 | 79 | 5,121 | 16 | 9,171 | |
| 2005 ^a | 280 | 274 | 90 | 233 | 3,370 | 259 | 165 | 5,383 | 24 | 10,078 | |
| 2006 ^a | 144 | 445 | 71 | 245 | 3,272 | 243 | 144 | 5,531 | 25 | 10,120 | |
| 2007 ^a | 158 | 255 | 82 | 241 | 3,145 | 166 | 57 | 5,685 | 19 | 9,808 | |
| 2008 ^a | 191 | 283 | 84 | 239 | 2,815 | 255 | 64 | 6,338 | 24 | 10,293 | |
| 2009 ^a | 159 | 213 | 50 | 286 | 3,546 | 371 | 63 | 3,179 | 67 | 7,934 | |
| 2010 ^a | 302 | 182 | 93 | 192 | 3,474 | 332 | 52 | 4,187 | 29 | 8,843 | 964 |
| 2011 ^a | 138 | 449 | 95 | 206 | 3,733 | 418 | 44 | 2,712 | 41 | 7,836 | 643 |
| 2012 ^a | 139 | 214 | 59 | 270 | 3,332 | 160 | 54 | 2,972 | 39 | 7,239 | 410 |
| 2013 ^a | 118 | 235 | 94 | 276 | 3,326 | 638 | 91 | 5,473 | 35 | 10,286 | 485 |
| 2014 ^a | 89 | 151 | 88 | 252 | 1,743 | 231 | 56 | 5,145 | 70 | 7,825 | 401 |
| 2015 ^a | 126 | 334 | 115 | 263 | 1,430 | 158 | --- ^b | 3,241 | 78 | 5,745 | 424 |
| 2016 ^a | 144 | 332 | 113 | 310 | 1,504 | 219 | 39 | 6,746 | 96 | 9,503 | 471 |
| 2017 ^a | 221 | 710 | 98 | 360 | 1,562 | 246 | 71 | 7,066 | 305 | 10,639 | 397 |
| 2018 ^a | 178 | 457 | 175 | 416 | 1,626 | 258 | 73 | 8,807 | 94 | 12,084 | 383 |
| 2019 ^a | 174 | 554 | 152 | 549 | 1,124 | --- ^c | 41 | 10,072 | 138 | 12,804 | 333 |
| 2020 ^a | 216 | 735 | 229 | 505 | 1,752 | 3,722 | 52 | 19,999 | 177 | 27,387 | 480 |
| 2021 ^a | 251 | 818 | 358 | 498 | 1,633 | 3,116 | 71 | 14,240 | 116 | 21,101 | 632 |
| 2022 ^a | 768 | 504 | 240 | 579 | 2,272 | 1,947 | 50 | 16,822 | 347 | 23,529 | 898 |
| 2023 ^a | 1,244 | 888 | 639 | 1,145 | 3,029 | 3,566 | 300 | 21,343 | 255 | 32,409 | 843 |

^a Preliminary^b All hunters put in stratum "did not hunt" or "no" in state HIP sample frame, so no estimate is available.^c Hunter name and address data not supplied, so no estimate is available.

Table 3B. Decadal and long-term annual averages of active Mid-Continent sandhill crane hunters in the Central Flyway (CF) and Minnesota.

| Years | CO | KS | MT | NM | ND | OK | SD | TX | WY | CF Total | MN |
|--------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------------|-----------|
| 1975-79 | 217 | | 65 | 812 | 3,070 | 242 | 71 | 2,461 | 20 | 6,957 | |
| 1980-89 | 158 | | 43 | 301 | 2,768 | 379 | 162 | 2,320 | 11 | 6,142 | |
| 1990-99 | 107 | 404 | 74 | 187 | 2,355 | 358 | 166 | 3,527 | 8 | 7,064 | |
| 2000-09 | 205 | 401 | 75 | 224 | 2,873 | 247 | 118 | 4,683 | 22 | 8,849 | |
| 2010-19 | 163 | 362 | 108 | 309 | 2,285 | 296 | 58 | 5,642 | 93 | 9,280 | 491 |
| 2020-23 | 620 | 736 | 367 | 682 | 2,172 | 3,088 | 118 | 18,101 | 224 | 26,107 | 713 |
| 1975-23 | 202 | 432 | 98 | 347 | 2,589 | 543 | 121 | 5,029 | 48 | 9,236 | 555 |

Table 4. Season dates (month/day) for the hunting of Mid-continent sandhill cranes in the Central Flyway states and Minnesota.

| Year | CO | KS Central Zone ¹ | KS West Zone ² | MT ¹ | MT ² | NM | ND Area 1 | ND Area 2 | OK | SD | TX Area A | TX Area B | TX Area C | WY | MN |
|------|-------------|------------------------------------|---------------------------------|-----------------|-----------------|-------------|--------------|--------------|-------------|-------------|--------------|--------------|--------------|-------------|----|
| 1960 | - | - | - | - | - | 01/01-01/30 | - | - | - | - | - | - | - | - | - |
| 1961 | - | - | - | - | - | 11/04-12/03 | - | - | - | - | 11/04-12/03 | - | - | - | - |
| 1962 | - | - | - | - | - | 11/03-12/02 | - | - | - | - | 11/03-12/02 | - | - | - | - |
| 1963 | - | - | - | - | - | 11/02-12/01 | - | - | - | - | 11/02-12/01 | - | - | - | - |
| 1964 | - | - | - | - | - | 10/31-11/29 | - | - | - | - | 10/31-11/29 | - | - | - | - |
| 1965 | - | - | - | - | - | 10/30-11/28 | - | - | - | - | 10/30-11/28 | - | - | - | - |
| 1966 | - | - | - | - | - | 10/29-11/27 | - | - | - | - | 10/29-11/27 | - | - | - | - |
| 1967 | 10/01-10/30 | - | - | - | - | 11/04-01/02 | - | - | - | - | 11/04-01/02 | - | - | - | - |
| 1968 | 10/01-10/30 | - | - | - | - | 11/02-12/28 | 11/09-12/08 | - | 12/14-01/02 | 11/09-12/08 | 11/02-12/28 | 12/14-01/02 | - | - | - |
| 1969 | 10/04-11/02 | - | - | - | - | 11/01-12/28 | 11/08-12/07 | - | 12/13-01/11 | 11/08-12/07 | 11/01-12/28 | 12/13-01/11 | - | - | - |
| 1970 | 10/03-11/01 | - | - | - | - | 10/31-01/10 | 11/14-12/13 | - | 12/05-01/10 | 11/14-12/13 | 10/31-01/10 | 12/05-01/10 | - | - | - |
| 1971 | 10/02-11/07 | - | - | - | - | 10/30-01/30 | 11/13-12/02 | - | 12/04-01/30 | 11/13-12/02 | 10/30-01/30 | 12/04-01/30 | - | - | - |
| 1972 | 10/01-11/05 | - | - | 10/01-11/06 | - | 11/03-01/31 | 11/11-12/10 | - | 12/02-01/28 | 11/11-12/10 | 10/28-01/28 | 12/02-01/28 | - | 10/07-11/05 | - |
| 1973 | 10/01-11/05 | - | - | 09/29-11/04 | - | 10/27-01/27 | 11/10-12/09 | - | 12/01-01/27 | 11/10-12/09 | 10/27-01/27 | 12/01-01/27 | - | 10/13-11/11 | - |
| 1974 | 10/01-11/05 | - | - | 09/28-11/03 | - | 10/26-01/26 | 11/09-12/08 | - | 11/30-01/26 | 11/09-12/08 | 10/26-01/26 | 11/30-01/26 | - | 10/12-11/10 | - |
| 1975 | 10/04-11/08 | - | - | 10/04-11/09 | - | 10/25-01/25 | 11/08-12/07 | - | 11/29-01/25 | 11/08-12/07 | 10/25-01/25 | 11/29-01/25 | - | 10/11-11/09 | - |
| 1976 | 10/02-11/06 | - | - | 10/02-11/07 | - | 10/30-01/30 | 11/06-12/05 | - | 11/27-01/23 | 11/06-12/05 | 10/30-01/30 | 12/04-01/30 | - | 10/09-11/07 | - |
| 1977 | 10/01-11/06 | - | - | 10/01-11/06 | - | 10/29-01/29 | 09/07-09/11 | - | 11/26-01/22 | 09/07-09/11 | 11/01-01/31 | 12/05-01/31 | - | 10/08-11/06 | - |
| 1978 | 09/30-11/05 | - | - | 09/30-11/05 | - | 10/28-01/28 | 09/07-09/11 | - | 11/25-01/21 | 09/07-09/11 | 10/31-01/31 | 12/05-01/31 | - | 10/07-11/05 | - |
| 1979 | 10/13-11/18 | - | - | 09/29-11/04 | - | 10/27-01/27 | 09/07-09/11 | - | 11/24-01/20 | 09/07-09/11 | 10/30-01/30 | 12/04-01/30 | - | 10/13-11/18 | - |
| 1980 | 10/11-11/16 | - | - | 10/04-11/09 | - | 10/30-01/31 | 09/06-09/14 | 09/06-09/10 | 11/22-01/18 | 09/20-09/28 | 10/31-01/31 | 12/05-01/31 | - | 10/11-11/16 | - |
| 1981 | 10/10-11/15 | - | - | 10/03-11/08 | - | 10/31-01/31 | 09/05-09/20 | 09/05-09/13 | 11/22-01/18 | 09/20-09/28 | 10/31-01/31 | 12/05-01/31 | - | 10/03-11/08 | - |
| 1982 | 10/02-11/28 | - | - | 10/02-11/28 | - | 10/31-01/31 | 09/04-09/19 | 09/04-09/12 | 10/23-01/23 | 10/02-11/11 | 10/30-01/30 | 12/04-01/30 | - | 09/25-11/21 | - |
| 1983 | 10/01-11/27 | - | - | 11/01-11/27 | 11/01-11/27 | 10/29-01/28 | 09/10-11/06 | 09/10-09/30 | 10/22-01/22 | 10/01-11/06 | 11/12-02/12 | 12/03-02/12 | 01/14-02/12 | 09/24-11/20 | - |
| 1984 | 09/29-11/25 | - | - | 09/29-11/25 | 11/01-11/25 | 10/27-01/27 | 09/08-11/04 | 09/08-09/28 | 10/13-01/13 | 09/29-11/04 | 11/10-02/10 | 12/01-02/10 | 01/12-02/10 | 09/22-11/18 | - |
| 1985 | 09/28-11/24 | - | - | 09/28-11/24 | 11/01-11/24 | 10/26-01/26 | 09/07-11/03 | 09/07-09/27 | 10/12-01/12 | 09/28-11/03 | 11/09-02/09 | 11/30-02/09 | 01/11-02/09 | 09/21-11/17 | - |
| 1986 | 10/04-11/30 | - | - | 10/04-11/30 | 11/01-11/30 | 10/25-01/25 | 09/06-11/02 | 09/06-10/03 | 10/11-01/11 | 09/28-11/02 | 11/08-02/08 | 11/29-02/08 | 01/03-02/08 | 09/20-11/16 | - |
| 1987 | 10/03-11/29 | - | - | 10/03-11/29 | 10/03-11/29 | 10/24-01/24 | 09/05-11/01 | 09/05-10/02 | 10/10-01/17 | 09/26-11/01 | 11/14-02/14 | 11/28-02/07 | 01/02-02/07 | 09/19-11/15 | - |
| 1988 | 10/01-11/27 | - | - | 10/01-11/27 | 10/01-11/27 | 10/22-01/22 | 09/10-11/06 | 09/10-09/30 | 10/22-01/22 | 09/24-10/30 | 11/12-02/12 | 11/26-02/05 | 01/07-02/12 | 09/17-11/13 | - |
| 1989 | 09/30-11/26 | - | - | 09/30-11/26 | 09/30-11/26 | 10/21-01/21 | 09/09-11/05 | 09/09-09/29 | 10/21-01/21 | 09/30-11/05 | 11/11-02/11 | 12/02-02/11 | 01/06-02/11 | 09/16-11/12 | - |
| 1990 | 09/29-11/25 | - | - | 09/29-11/25 | 09/29-11/25 | 10/20-01/20 | 09/08-11/04 | 09/08-10/14 | 10/20-01/20 | 09/29-11/04 | 11/10-02/10 | 12/01-02/10 | 01/05-02/10 | 09/15-11/11 | - |
| 1991 | 09/28-11/24 | - | - | 09/28-11/24 | 09/28-11/24 | 10/19-01/19 | 09/07-11/03 | 09/07-10/13 | 10/19-01/19 | 09/28-11/03 | 11/09-02/09 | 12/07-02/09 | 01/04-02/09 | 09/15-11/11 | - |
| 1992 | 10/03-11/29 | - | - | 09/26-11/22 | 09/26-11/22 | 10/17-01/17 | 09/05-11/01 | 09/05-10/11 | 10/17-01/17 | 09/26-11/01 | 11/14-02/14 | 12/05-02/14 | 01/02-02/07 | 09/15-11/11 | - |
| 1993 | 10/02-11/28 | 11/06-01/02 | - | 09/25-11/21 | 09/25-11/21 | 10/16-01/16 | 09/11-11/07 | 09/11-11/07 | 10/16-01/16 | 09/25-10/31 | 11/13-02/13 | 12/04-02/13 | 01/08-02/13 | 09/15-11/11 | - |
| 1994 | 10/01-11/27 | 11/05-01/01 | - | 09/24-11/20 | 09/24-11/20 | 10/15-01/15 | 09/10-11/06 | 09/10-11/06 | 10/15-01/15 | 09/24-10/30 | 11/12-02/12 | 12/03-02/12 | 01/07-02/12 | 09/15-11/11 | - |
| 1995 | 09/30-11/26 | 11/04-12/31 | - | 09/23-11/19 | 09/23-11/19 | 10/31-01/31 | 09/09-11/05 | 09/09-11/05 | 10/22-01/18 | 09/23-11/19 | 11/11-02/11 | 12/02-02/11 | 01/06-02/11 | 09/14-11/10 | - |

KS¹ Central Zone: East of the West Zone Boundary to the line of OK/KS state line headed north on I-35 to I-135, I-70 to US 81 to the NE state line.

KS² West Zone: KS/NE State Line south along US 283, KS road 24, KS -18 to US 183 to KS - 1 to the KS/OK state line.

MT¹ Central Flyway portion of MT, except that area south of I-90 and west of the Bighorn River and Sheridan Co.

MT² Sheridan County, MT.

Table 4 (continued)

| Year | CO | KS Central Zone ¹ | KS West Zone ² | MT ¹ | MT ² | NM | ND Area 1 | ND Area 2 | OK | SD | TX Area A | TX Area B | TX Area C | WY | MN |
|------|-------------|------------------------------------|---------------------------------|-----------------|-----------------|-------------|--------------|--------------|-------------|-------------|--------------|--------------|--------------|-------------|-------------|
| 1996 | 10/05-12/01 | 11/02-12/29 | - | 09/28-11/24 | 09/28-11/24 | 10/31-01/31 | 09/07-11/03 | 09/07-11/03 | 10/26-01/26 | 09/28-11/24 | 11/09-02/09 | 11/30-02/09 | 01/04-02/09 | 09/14-11/10 | - |
| 1997 | 10/04-11/30 | 11/01-12/28 | - | 10/04-11/30 | 10/04-11/30 | 10/31-01/31 | 09/06-11/02 | 09/06-11/02 | 10/25-01/25 | 09/27-11/23 | 11/08-02/08 | 11/29-02/08 | 01/03-02/08 | 09/13-11/09 | - |
| 1998 | 10/03-11/29 | 11/07-01/03 | - | 10/03-11/29 | 09/12-09/20 | 10/31-01/31 | 09/05-11/01 | 09/05-11/01 | 10/24-01/24 | 09/26-11/22 | 11/07-02/07 | 11/28-02/07 | 01/02-02/07 | 09/12-11/08 | - |
| 1999 | 10/02-11/28 | 11/06-01/02 | - | 10/02-11/28 | 09/11-09/19 | 10/30-01/30 | 09/11-11/07 | 09/11-11/07 | 10/30-01/30 | 09/25-11/21 | 11/13-02/13 | 12/04-02/13 | 01/08-02/13 | 09/11-11/07 | - |
| 2000 | 10/07-12/03 | 11/04-12/31 | - | 09/30-11/26 | 09/09-09/17 | 10/31-01/31 | 09/16-11/12 | 09/16-11/12 | 11/04-02/04 | 09/23-11/19 | 11/11-02/11 | 12/02-02/11 | 12/30-02/04 | 09/09-11/05 | - |
| 2001 | 10/07-12/03 | 11/03-12/30 | - | 09/29-11/25 | 09/08-09/16 | 10/31-01/31 | 09/15-11/11 | 09/15-10/21 | 11/03-02/03 | 09/22-11/18 | 11/10-02/10 | 12/01-02/10 | 12/29-01/20 | 09/15-11/11 | - |
| 2002 | 10/05-12/01 | 11/02-12/29 | - | 09/28-11/24 | 09/07-09/15 | 10/31-01/31 | 09/21-11/17 | 09/21-10/27 | 11/09-02/09 | 09/21-11/17 | 11/09-02/09 | 11/30-02/09 | 12/21-01/19 | 09/14-11/10 | - |
| 2003 | 10/04-11/30 | 11/01-12/28 | - | 09/27-11/23 | 09/06-09/14 | 10/31-01/31 | 09/20-11/16 | 09/20-10/26 | 10/25-01/25 | 09/27-11/23 | 11/01-02/01 | 11/22-02/01 | 12/20-01/18 | 09/13-11/09 | - |
| 2004 | 10/02-11/28 | 11/06-01/02 | - | 09/25-11/21 | 09/11-09/19 | 10/31-01/31 | 09/18-11/14 | 09/18-10/24 | 10/30-01/30 | 09/25-11/21 | 11/06-02/01 | 11/27-02/01 | 12/18-01/16 | 09/18-11/14 | - |
| 2005 | 10/01-11/27 | 11/09-01/05 | - | 09/24-11/20 | 09/10-09/18 | 10/31-01/31 | 09/17-11/13 | 09/17-10/23 | 10/29-01/29 | 09/24-11/20 | 11/05-02/05 | 11/26-02/05 | 12/24-01/29 | 09/17-11/13 | - |
| 2006 | 09/30-11/26 | 11/08-01/04 | - | 09/23-11/19 | 09/09-09/17 | 10/31-01/31 | 09/16-11/12 | 09/16-10/22 | 10/28-01/28 | 09/23-11/19 | 11/04-02/04 | 11/24-02/04 | 12/23-01/28 | 09/16-11/12 | - |
| 2007 | 10/02-12/02 | 11/07-01/03 | - | 09/22-11/18 | 09/08-09/16 | 10/31-01/31 | 09/15-11/11 | 09/15-10/21 | 10/27-01/27 | 09/22-11/18 | 11/04-02/04 | 11/24-02/04 | 12/23-01/28 | 09/15-11/11 | - |
| 2008 | 10/04-11/30 | 11/05-01/01 | - | 09/27-11/23 | 09/06-09/21 | 10/31-01/31 | 09/20-11/16 | 09/20-10/26 | 10/25-01/25 | 09/27-11/23 | 11/08-02/08 | 11/28-02/08 | 12/20-01/25 | 09/13-11/09 | - |
| 2009 | 10/03-11/29 | 11/11-01/07 | - | 09/26-11/22 | 09/05-09/20 | 10/31-01/31 | 09/19-11/15 | 09/19-10/25 | 10/24-01/24 | 09/26-11/22 | 11/07-02/07 | 11/27-02/07 | 12/19-01/24 | 09/19-11/15 | - |
| 2010 | 10/02-11/28 | 11/10-01/06 | - | 09/25-11/21 | 09/11-09/26 | 10/31-01/31 | 09/18-11/14 | 09/18-10/24 | 10/23-01/23 | 09/25-11/21 | 11/06-02/06 | 11/26-02/06 | 12/18-01/23 | 09/18-11/14 | 09/04-10/10 |
| 2011 | 10/01-11/27 | 11/09-01/05 | - | 09/24-11/20 | 09/10-09/25 | 10/31-01/31 | 09/17-11/13 | 09/17-10/23 | 10/22-01/22 | 09/24-11/20 | 11/05-02/05 | 11/25-02/05 | 12/24-01/29 | 09/17-11/13 | 09/03-10/09 |
| 2012 | 09/29-11/25 | 11/07-01/03 | - | 09/29-11/25 | 09/8-09/30 | 10/31-01/31 | 09/15-11/11 | 09/15-10/21 | 10/20-01/20 | 09/22-11/18 | 11/03-02/03 | 11/23-02/03 | 12/22-01/27 | 09/15-11/11 | 09/15-10/21 |
| 2013 | 10/05-12/01 | 11/06-01/02 | - | 09/28-11/24 | 09/07-09/29 | 10/31-01/31 | 09/14-11/10 | 09/14-11/10 | 10/19-01/19 | 09/28-11/24 | 11/02-02/02 | 11/22-02/02 | 12/21-01/26 | 09/14-11/10 | 09/14-10/20 |
| 2014 | 10/04-11/30 | 11/05-01/01 | - | 10/04-11/30 | 09/13-10/05 | 10/31-01/31 | 09/14-11/10 | 09/14-11/10 | 10/18-01/18 | 09/27-11/23 | 11/01-02/01 | 11/21-02/01 | 12/20-01/25 | 09/13-11/09 | 09/13-10/19 |
| 2015 | 10/03-11/29 | 11/11-01/07 | - | 10/03-11/29 | 09/12-10/04 | 10/31-01/31 | 09/19-11/15 | 09/19-11/15 | 10/24-01/24 | 09/26-11/22 | 10/31-01/31 | 11/20-01/31 | 12/19-01/24 | 09/19-11/15 | 09/12-10/18 |
| 2016 | 10/01-11/27 | 11/09-01/05 | - | 10/01-11/27 | 09/10-10/02 | 10/29-01/29 | 09/17-11/13 | 09/17-11/13 | 10/22-01/22 | 09/24-11/20 | 10/29-01/29 | 11/18-01/29 | 12/17-01/22 | 09/17-11/13 | 09/10-10/16 |
| 2017 | 09/30-11/26 | 11/08-01/04 | - | 09/30-11/26 | 09/09-10/08 | 10/28-01/28 | 09/16-11/12 | 09/16-11/12 | 10/21-01/21 | 09/23-11/19 | 10/28-01/28 | 11/24-01/28 | 12/16-01/21 | 09/16-11/12 | 09/16-10/22 |
| 2018 | 09/29-11/25 | 11/07-01/03 | - | 09/29-11/25 | 09/01-10/28 | 10/27/01/27 | 09/15-11/11 | 09/15-11/11 | 10/20-01/20 | 09/22-11/18 | 10/27-01/27 | 11/23-01/27 | 12/15-01/20 | 09/15-11/11 | 09/15-10/21 |
| 2019 | 10/05-12/01 | 11/06-01/02 | - | 09/28-11/24 | 09/01-10/27 | 10/26-01/26 | 09/14-11/10 | 09/14-11/10 | 10/26-01/26 | 09/28-11/24 | 10/26-01/26 | 11/22-01/26 | 12/14-01/19 | 09/14-11/10 | 09/14-10/20 |
| 2020 | 10/03-11/29 | 11/11-01/07 | 10/17-12/13 | 10/03-11/29 | 09/01-10/30 | 10/24-01/24 | 09/19-11/15 | 09/19-11/15 | 10/24-01/24 | 09/26-11/22 | 10/31-01/31 | 11/27-01/31 | 12/19-01/24 | 09/12-11/08 | 09/19-10/25 |
| 2021 | 10/02-11/28 | 11/10-01/06 | 10/16-12/12 | 10/02-11/28 | 09/01-10/30 | 10/30-01/30 | 09/18-11/14 | 09/18-11/14 | 10/23-01/23 | 09/25-11/21 | 10/30-01/30 | 11/26-01/30 | 12/18/01/23 | 09/11-11/07 | 09/18-10/24 |
| 2022 | 10/01-11/27 | 11/09-01/05 | 10/15-12/11 | 10/01-11/27 | 09/01-10/30 | 10/29-01/29 | 09/17-11/13 | 09/17-11/13 | 10/22-01/22 | 09/24-11/20 | 10/29-01/29 | 11/25-01/29 | 12/17-01/22 | 09/10-11/06 | 09/17-10/23 |
| 2023 | 09/30-11/26 | 11/08-01/04 | 10/21-12/17 | 09/30-11/28 | 09/01-10/30 | 10/28-01/28 | 09/16-11/12 | 09/16-11/12 | 10/21-01/21 | 09/23-11/19 | 10/28-01/28 | 11/24-01/21 | 12/16-01/21 | 09/09-11/05 | 09/16-10/22 |

KS¹ Central Zone: East of the West Zone Boundary to the line of OK/KS state line headed north on I-35 to I-135, I-70 to US 81 to the NE state line.

KS² West Zone: KS/NE State Line south along US 283, KS road 24, KS -18 to US 183 to KS - 1 to the KS/OK state line.

MT¹ Central Flyway portion of MT, except that area south of I-90 and west of the Bighorn River and Sheridan Co.

MT² Sheridan County, MT.

Table 5A. Estimated retrieved harvests of Mid-Continent sandhill cranes in the Central Flyway states, and states outside the Central Flyway (AZ, NM, AK, MN).

| Year | CO | KS | MT | NM | ND | OK | SD | TX | WY | Central Flyway | AZ ^d | NM ^d | AK ^{b,c} | MN ^e | Outside Total | U.S. Total |
|------|-----|-------|-----|-------|-------|-------|-----|--------|----|----------------|-----------------|-----------------|-------------------|-----------------|---------------|------------|
| 1975 | 91 | | 16 | 911 | 2,122 | 142 | 86 | 6,123 | 6 | 9,497 | | | 1,094 | 1,094 | 10,591 | |
| 1976 | 106 | | 29 | 858 | 52 | 200 | 12 | 6,122 | 14 | 7,393 | | | 637 | 637 | 8,030 | |
| 1977 | 39 | | 18 | 1,456 | 4,078 | 410 | 47 | 6,094 | 9 | 12,151 | | | 471 | 471 | 12,622 | |
| 1978 | 106 | | 36 | 1,089 | 2,777 | 389 | 19 | 5,720 | 10 | 10,146 | | | 239 | 239 | 10,385 | |
| 1979 | 129 | | 14 | 1,170 | 2,733 | 397 | 19 | 5,917 | 0 | 10,379 | | | 517 | 517 | 10,896 | |
| 1980 | 68 | | 16 | 1,019 | 2,245 | 363 | 130 | 6,305 | 6 | 10,152 | | | 809 | 809 | 10,961 | |
| 1981 | 92 | | 11 | 907 | 2,395 | 397 | 78 | 6,245 | 9 | 10,134 | 20 | | 383 | 403 | 10,537 | |
| 1982 | 49 | | 21 | 335 | 2,469 | 535 | 212 | 4,295 | 0 | 7,916 | 62 | | 1,160 | 1,222 | 9,138 | |
| 1983 | 70 | | 28 | 354 | 6,471 | 373 | 177 | 5,471 | 15 | 12,959 | 17 | | 1,540 | 1,557 | 14,516 | |
| 1984 | 85 | | 15 | 414 | 4,367 | 433 | 139 | 5,811 | 7 | 11,271 | 23 | | 1,986 | 2,009 | 13,280 | |
| 1985 | 82 | | 7 | 334 | 4,650 | 416 | 101 | 7,184 | 2 | 12,776 | 48 | | 1,197 | 1,245 | 14,021 | |
| 1986 | 33 | | 1 | 250 | 6,563 | 392 | 99 | 5,149 | 0 | 12,487 | 108 | 184 | 539 | 831 | 13,318 | |
| 1987 | 86 | | 15 | 159 | 5,334 | 957 | 99 | 6,117 | 3 | 12,770 | 127 | 318 | 836 | 1,281 | 14,051 | |
| 1988 | 68 | | 18 | 372 | 3,815 | 1,061 | 100 | 7,330 | 8 | 12,772 | 172 | 127 | 1,241 | 1,540 | 14,312 | |
| 1989 | 25 | | 33 | 319 | 4,656 | 1,003 | 194 | 7,400 | 9 | 13,639 | 126 | 138 | 545 | 809 | 14,448 | |
| 1990 | 87 | | 44 | 377 | 6,804 | 698 | 165 | 9,865 | 1 | 18,041 | 114 | 259 | 918 | 1,291 | 19,332 | |
| 1991 | 224 | | 31 | 593 | 4,580 | 604 | 128 | 6,916 | 3 | 13,079 | 172 | 235 | 677 | 1,084 | 14,163 | |
| 1992 | 84 | | 103 | 505 | 4,654 | 478 | 141 | 6,455 | 13 | 12,433 | 139 | 54 | 640 | 833 | 13,266 | |
| 1993 | 112 | 602 | 95 | 506 | 6,985 | 826 | 110 | 8,769 | 0 | 18,005 | 113 | 178 | 201 | 492 | 18,497 | |
| 1994 | 143 | 767 | 56 | 357 | 6,235 | 1,167 | 239 | 7,233 | 4 | 16,201 | 86 | 153 | 648 | 887 | 17,088 | |
| 1995 | 208 | 990 | 156 | 673 | 7,017 | 1,091 | 170 | 10,322 | 1 | 20,628 | 124 | 111 | 812 | 1,047 | 21,675 | |
| 1996 | 91 | 933 | 58 | 332 | 6,639 | 1,066 | 166 | 7,816 | 10 | 17,111 | 114 | 78 | 1,205 | 1,397 | 18,508 | |
| 1997 | 168 | 1,167 | 45 | 248 | 6,545 | 600 | 189 | 10,800 | 4 | 19,766 | 171 | 45 | 870 | 1,086 | 20,852 | |
| 1998 | 64 | 1,362 | 17 | 258 | 7,967 | 645 | 454 | 9,054 | 10 | 19,831 | 114 | 55 | 1,042 | 1,211 | 21,042 | |
| 1999 | 56 | 1,275 | 29 | 321 | 5,748 | 879 | 184 | 8,469 | 8 | 16,969 | 92 | 101 | NA* | 193 | 17,162 | |
| 2000 | 363 | 590 | 15 | 311 | 5,081 | 552 | 374 | 8,208 | 10 | 15,504 | 166 | 100 | 985 | 1,251 | 16,755 | |
| 2001 | 257 | 1,033 | 43 | 297 | 5,173 | 713 | 478 | 6,999 | 7 | 15,000 | 154 | 106 | 936 | 1,196 | 16,196 | |
| 2002 | 294 | 1,067 | 23 | 342 | 2,852 | 490 | 160 | 7,837 | 22 | 13,087 | 197 | 92 | 844 | 1,133 | 14,220 | |

^a Preliminary^b A proportion of the Alaskan harvest is composed of lesser sandhill cranes from the Pacific Coast Population^c Harvest data are from state harvest surveys for only the MCP portion of the state, except in 1977-81, 1986, 1991, and 1998-99 where federal MQS state totals are prorated by the long-term percent MC cranes; data from 2000 forward are MC portion from HIP.^d The MC harvest for AZ and NM represents MC sandhill cranes that were harvested in RMP areas and are not represented in the CF MC sandhill Crane Federal Harvest Survey^e Minnesota initiated a hunt in the NW portion of state.^g HIP sample frame from state was incomplete, so no estimate was calculated.

* No estimate is available.

Table 5A (continued)

| Year | CO | KS | MT | NM | ND | OK | SD | TX | WY | Central Flyway | AZ ^d | NM ^d | AK ^{b,c} | MN ^e | Outside Total | U.S. Total |
|-------------------|-----|-------|-----|-------|-------|--------|------------------|--------|-----|----------------|-----------------|-----------------|-------------------|-----------------|---------------|------------|
| 2003 ^a | 230 | 942 | 49 | 617 | 4,564 | 200 | 166 | 11,560 | 7 | 18,335 | 155 | 162 | 331 | | 648 | 18,983 |
| 2004 ^a | 92 | 856 | 54 | 350 | 3,967 | 441 | 67 | 8,715 | 4 | 14,546 | 192 | 167 | 435 | | 794 | 15,340 |
| 2005 ^a | 265 | 471 | 65 | 578 | 3,721 | 511 | 190 | 12,446 | 16 | 18,263 | 227 | 175 | 388 | | 790 | 19,053 |
| 2006 ^a | 96 | 1,341 | 12 | 682 | 3,906 | 538 | 202 | 10,834 | 20 | 17,631 | 201 | 245 | 314 | | 760 | 18,391 |
| 2007 ^a | 149 | 516 | 51 | 427 | 4,501 | 272 | 163 | 12,511 | 20 | 18,610 | 268 | 331 | 596 | | 1,195 | 19,805 |
| 2008 ^a | 32 | 453 | 73 | 483 | 4,179 | 493 | 83 | 17,169 | 24 | 22,989 | 138 | 329 | 1,249 | | 1,716 | 24,705 |
| 2009 ^a | 58 | 447 | 34 | 584 | 4,436 | 737 | 96 | 8,882 | 8 | 15,282 | 305 | 332 | 245 | | 882 | 16,164 |
| 2010 ^a | 115 | 293 | 95 | 432 | 4,752 | 940 | 91 | 12,069 | 25 | 18,812 | 253 | 421 | 1,204 | 830 | 2,708 | 21,520 |
| 2011 ^a | 68 | 908 | 51 | 297 | 3,733 | 808 | 64 | 8,493 | 20 | 14,442 | 151 | 367 | 335 | 765 | 1,618 | 16,060 |
| 2012 ^a | 77 | 437 | 30 | 388 | 3,019 | 401 | 185 | 10,309 | 41 | 14,887 | 300 | 341 | 1,360 | 407 | 2,408 | 17,295 |
| 2013 ^a | 47 | 771 | 77 | 326 | 4,137 | 1,085 | 109 | 14,991 | 41 | 21,584 | 138 | 161 | 930 | 378 | 1,607 | 23,191 |
| 2014 ^a | 41 | 176 | 114 | 269 | 2,924 | 390 | 85 | 11,740 | 37 | 15,776 | 151 | 123 | 1,123 | 247 | 1,644 | 17,420 |
| 2015 ^a | 98 | 1,005 | 91 | 267 | 2,133 | 302 | --- ^f | 8,283 | 28 | 12,207 | 311 | 132 | --- ^g | 212 | 655 | 12,862 |
| 2016 ^a | 102 | 873 | 111 | 660 | 2,507 | 538 | 183 | 18,196 | 83 | 23,253 | 292 | 404 | 1,036 | 287 | 2,019 | 25,272 |
| 2017 ^a | 280 | 1,440 | 85 | 641 | 3,466 | 559 | 165 | 19,559 | 263 | 26,458 | 435 | 399 | 793 | 196 | 1,823 | 28,281 |
| 2018 ^a | 102 | 1,127 | 73 | 701 | 3,424 | 718 | 119 | 22,526 | 33 | 28,823 | 587 | 284 | 705 | 129 | 1,705 | 30,528 |
| 2019 ^a | 131 | 1,160 | 82 | 1,326 | 1,764 | --- | 43 | 29,607 | 82 | 34,195 | 187 | 264 | 659 | 179 | 1,289 | 35,484 |
| 2020 ^a | 229 | 1,718 | 95 | 1,520 | 2,998 | 8,974 | 146 | 55,871 | 182 | 71,733 | 651 | 671 | 1,409 | 472 | 3,203 | 74,936 |
| 2021 ^a | 212 | 2,012 | 339 | 1,336 | 4,470 | 7,791 | 109 | 43,217 | 79 | 59,565 | 722 | 345 | 1,577 | 563 | 3,207 | 62,772 |
| 2022 ^a | 371 | 631 | 237 | 1,721 | 3,465 | 3,164 | 75 | 45,419 | 233 | 55,316 | 736 | 269 | 794 | 863 | 2,662 | 57,978 |
| 2023 ^a | 145 | 1,559 | 371 | 2,516 | 5,419 | 10,199 | 275 | 51,956 | 159 | 72,599 | 585 | 389 | 1,392 | 876 | 3,242 | 75,841 |

^a Preliminary

^b A proportion of the Alaskan harvest is composed of lesser sandhill cranes from the Pacific Coast Population

^c Harvest data are from state harvest surveys for only the MCP portion of the state, except in 1977-81, 1986, 1991, and 1998-99 where federal MQS state totals are prorated by the long-term percent MC cranes; data from 2000 forward are MC portion from HIP.

^d The MC harvest for AZ and NM represents MC sandhill cranes that were harvested in RMP areas and are not represented in the CF MC sandhill Crane Federal Harvest Survey

^e Minnesota initiated a hunt in the NW portion of state.

^f All hunters put in stratum "did not hunt" or "no" in state HIP sample frame, so no estimate is available.

^g HIP sample frame from state was incomplete, so no estimate was calculated.

* No estimate is available.

Table 5B. Decadal and long-term annual averages of harvest of Mid-Continent sandhill cranes in the Central Flyway states (CO, KS, MT, NM, ND, OK, SD, TX, and WY), states outside the Central Flyway (AZ, NM, AK, MN).

| Years | CO | KS | MT | NM | ND | OK | SD | TX | WY | Central Flyway Total | AZ ^d | NM ^d | AK ^{b,c} | MN ^e | Outside Total | U.S. Total |
|-----------|-----|-------|-----|-------|-------|-------|-----|--------|-----|----------------------|-----------------|-----------------|-------------------|-----------------|---------------|------------|
| 1975-79 | 94 | | 23 | 1,097 | 2,352 | 308 | 37 | 5,995 | 8 | 9,913 | | | 592 | | 592 | 10,505 |
| 1980-89 | 66 | | 17 | 446 | 4,297 | 593 | 133 | 6,131 | 6 | 11,688 | 78 | 192 | 1,024 | | 1,171 | 12,858 |
| 1990-99 | 124 | 1,014 | 63 | 417 | 6,317 | 805 | 195 | 8,570 | 5 | 17,206 | 124 | 127 | 779 | | 952 | 18,159 |
| 2000-09 | 184 | 772 | 42 | 467 | 4,238 | 495 | 198 | 10,516 | 14 | 16,925 | 200 | 204 | 632 | | 1,037 | 17,961 |
| 2010-19 | 106 | 819 | 81 | 531 | 3,186 | 638 | 116 | 15,577 | 65 | 21,044 | 281 | 290 | 905 | 389 | 1,748 | 22,791 |
| 2020-23 | 239 | 1,480 | 261 | 1,773 | 4,088 | 7,532 | 151 | 49,116 | 163 | 64,803 | 674 | 419 | 1,293 | 694 | 3,079 | 67,882 |
| 1975-2023 | 127 | 933 | 65 | 636 | 4,255 | 1,174 | 148 | 12,947 | 33 | 19,947 | 220 | 228 | 848 | 457 | 1,313 | 21,260 |

Table 6. Estimated retrieved harvests of Mid-Continent sandhill cranes in Canada.

| Year | AB | MB | SK | Total |
|-------------|-----------|-----------|-----------|--------------|
| 1971 | 0 | 228 | 2,715 | 2,943 |
| 1972 | 0 | 113 | 2,030 | 2,143 |
| 1973 | 0 | 683 | 3,592 | 4,275 |
| 1974 | 0 | 58 | 6,641 | 6,699 |
| 1975 | 0 | 162 | 5,744 | 5,906 |
| 1976 | 0 | 857 | 1,726 | 2,583 |
| 1977 | 0 | 846 | 507 | 1,353 |
| 1978 | 0 | 1,103 | 416 | 1,519 |
| 1979 | 0 | 1,108 | 762 | 1,870 |
| 1980 | 0 | 1,395 | 5,581 | 6,976 |
| 1981 | 0 | 1,298 | 4,730 | 6,028 |
| 1982 | 0 | 1,178 | 3,728 | 4,906 |
| 1983 | 0 | 1,190 | 4,970 | 6,160 |
| 1984 | 0 | 1,192 | 5,169 | 6,361 |
| 1985 | 0 | 1,256 | 6,792 | 8,048 |
| 1986 | 0 | 1,557 | 8,398 | 9,955 |
| 1987 | 0 | 1,786 | 6,129 | 7,915 |
| 1988 | 0 | 1,682 | 5,434 | 7,116 |
| 1989 | 0 | 2,255 | 4,275 | 6,530 |
| 1990 | 0 | 1,821 | 5,275 | 7,096 |
| 1991 | 0 | 1,494 | 5,432 | 6,926 |
| 1992 | 0 | 1,455 | 5,243 | 6,698 |
| 1993 | 0 | 1,076 | 4,145 | 5,221 |
| 1994 | 0 | 1,214 | 4,917 | 6,131 |
| 1995 | 0 | 1,286 | 7,046 | 8,332 |
| 1996 | 0 | 1,514 | 6,097 | 7,611 |
| 1997 | 0 | 1,479 | 7,120 | 8,599 |
| 1998 | 0 | 1,557 | 8,635 | 10,192 |
| 1999 | 0 | 1,511 | 7,626 | 9,137 |
| 2000 | 0 | 1,474 | 9,169 | 10,643 |
| 2001 | 0 | 1,868 | 8,199 | 10,067 |
| 2002 | 0 | 2,064 | 7,138 | 9,202 |
| 2003 | 0 | 2,344 | 7,906 | 10,250 |
| 2004 | 0 | 2,613 | 9,022 | 11,635 |
| 2005 | 0 | 3,284 | 9,004 | 12,288 |
| 2006 | 0 | 3,625 | 8,430 | 12,055 |
| 2007 | 0 | 3,429 | 8,608 | 12,037 |
| 2008 | 0 | 2,907 | 9,048 | 11,955 |
| 2009 | 0 | 2,504 | 5,772 | 8,276 |
| 2010 | 0 | 2,710 | 8,065 | 10,775 |
| 2011 | 0 | 3,303 | 10,018 | 13,321 |
| 2012 | 0 | 3,290 | 8,786 | 12,076 |
| 2013 | 0 | 3,468 | 9,971 | 13,439 |
| 2014 | 0 | 3,653 | 11,922 | 15,575 |
| 2015 | 0 | 3,659 | 11,010 | 14,669 |
| 2016 | 0 | 3,800 | 10,704 | 14,504 |
| 2017 | 0 | 2,945 | 12,745 | 15,690 |
| 2018 | 0 | 3,144 | 11,491 | 14,635 |
| 2019 | 0 | 2,687 | 13,346 | 16,033 |
| 2020 | 700 | 2,034 | 5,387 | 8,121 |
| 2021 | 687 | 2,190 | 9,877 | 12,754 |
| 2022 | 604 | 2,409 | 10,521 | 13,534 |
| 2023 | | | | |

Table 7A. Annual sport hunting mortality estimates for the Mid-Continent Population of sandhill cranes in North America.

| Year | Central Flyway | Other Survey Area Total | Canada | Mexico ^b | Unretrieved No. America ^c | Total |
|---------------------|----------------|-------------------------|--------|---------------------|--------------------------------------|--------|
| 1975 | 9,497 | 1,094 | 5,906 | 1,650 | 3,615 | 21,762 |
| 1976 | 7,393 | 637 | 2,583 | 1,061 | 2,240 | 13,915 |
| 1977 | 12,151 | 471 | 1,353 | 1,398 | 2,657 | 18,030 |
| 1978 | 10,146 | 239 | 1,519 | 1,190 | 2,450 | 15,544 |
| 1979 | 10,379 | 517 | 1,870 | 1,277 | 2,383 | 16,425 |
| 1980 | 10,152 | 809 | 6,976 | 1,794 | 3,656 | 23,386 |
| 1981 | 10,134 | 403 | 6,028 | 1,657 | 3,398 | 21,619 |
| 1982 | 7,916 | 1,222 | 4,906 | 1,404 | 2,906 | 18,355 |
| 1983 | 12,959 | 1,557 | 6,160 | 2,068 | 4,177 | 26,921 |
| 1984 | 11,271 | 2,009 | 6,361 | 1,964 | 3,957 | 25,562 |
| 1985 | 12,776 | 1,245 | 8,048 | 2,207 | 4,160 | 28,436 |
| 1986 | 12,487 | 831 | 9,955 | 2,327 | 4,493 | 30,093 |
| 1987 | 12,770 | 1,281 | 7,915 | 2,197 | 3,989 | 28,151 |
| 1988 | 12,772 | 1,540 | 7,116 | 2,143 | 3,788 | 27,359 |
| 1989 | 13,639 | 809 | 6,530 | 2,098 | 3,968 | 27,044 |
| 1990 | 18,041 | 1,291 | 7,096 | 2,643 | 4,725 | 33,796 |
| 1991 | 13,079 | 1,084 | 6,926 | 2,109 | 3,792 | 26,990 |
| 1992 | 12,433 | 833 | 6,698 | 1,996 | 3,364 | 25,325 |
| 1993 | 18,005 | 492 | 5,221 | 2,372 | 3,869 | 29,959 |
| 1994 | 16,201 | 887 | 6,131 | 2,322 | 3,544 | 29,085 |
| 1995 | 20,628 | 1,047 | 8,332 | 3,001 | 4,712 | 37,720 |
| 1996 | 17,111 | 1,397 | 7,611 | 2,612 | 4,335 | 33,066 |
| 1997 | 19,766 | 1,086 | 8,599 | 2,945 | 4,805 | 37,201 |
| 1998 | 19,831 | 1,211 | 10,192 | 3,123 | 5,047 | 39,405 |
| 1999 | 16,969 | 193 | 9,137 | 2,630 | 4,109 | 33,038 |
| 2000 | 15,504 | 1,251 | 10,643 | 2,740 | 4,356 | 34,494 |
| 2001 | 15,000 | 1,196 | 10,067 | 2,626 | 4,295 | 33,184 |
| 2002 | 13,087 | 1,133 | 9,202 | 2,342 | 3,722 | 29,487 |
| 2003 ^a | 18,335 | 648 | 10,250 | 2,923 | 4,392 | 36,549 |
| 2004 ^a | 14,546 | 794 | 11,635 | 2,698 | 4,296 | 33,969 |
| 2005 ^a | 18,263 | 790 | 12,288 | 3,134 | 5,042 | 39,518 |
| 2006 ^a | 17,631 | 760 | 12,055 | 3,045 | 5,224 | 38,715 |
| 2007 ^a | 18,610 | 1,195 | 12,037 | 3,184 | 4,959 | 39,985 |
| 2008 ^a | 22,989 | 1,716 | 11,955 | 3,666 | 4,985 | 45,311 |
| 2009 ^a | 15,282 | 882 | 8,276 | 2,444 | 4,004 | 30,888 |
| 2010 ^a | 18,812 | 2,708 | 10,775 | 3,230 | 5,158 | 40,682 |
| 2011 ^a | 14,442 | 1,618 | 13,321 | 2,938 | 4,641 | 36,961 |
| 2012 ^a | 14,887 | 2,408 | 12,076 | 2,937 | 4,944 | 37,252 |
| 2013 ^a | 21,584 | 1,607 | 13,439 | 3,663 | 4,971 | 45,264 |
| 2014 ^a | 15,776 | 1,644 | 15,575 | 3,300 | 5,129 | 41,423 |
| 2015 ^{a,e} | 12,207 | 655 | 14,669 | 2,753 | 4,546 | 34,831 |
| 2016 ^a | 23,253 | 2,019 | 14,504 | 3,978 | 5,120 | 48,874 |
| 2017 ^a | 26,458 | 1,823 | 15,690 | 4,397 | 6,022 | 54,390 |
| 2018 ^a | 28,823 | 1,705 | 14,635 | 4,516 | 5,565 | 55,245 |
| 2019 ^a | 34,195 | 1,289 | 16,033 | 5,152 | 6,029 | 62,697 |
| 2020 ^a | 71,733 | 3,203 | 8,121 | 8,306 | 7,071 | 98,434 |
| 2021 ^a | 59,565 | 3,207 | 12,754 | 7,553 | 7,144 | 90,222 |
| 2022 ^a | 55,316 | 2,662 | 13,534 | 7,151 | 5,291 | 83,955 |
| 2023 ^{a,f} | 72,599 | 3,242 | | | | |

^a Preliminary^b Unknown harvests (Mexico) were assumed to be 10% of harvests in the U.S. and Canada.^c Unretrieved kill as reported by hunters is used for the Central Flyway; for the remainder of harvest areas, it is assumed to be 20% of retrieved harvests.^d There is no estimate available for AK in that year.^e Estimates (except Canada) biased low because of HIP sampling issues that led to estimates of zero harvest in SD and AK.^f Estimates for Canada, Mexico, North America, and Total not calculated because data for Canada was not available.

Table 7B. Decadal and long-term annual averages of annual sport hunting mortality estimates for the Mid-Continent Population of sandhill cranes in North America.

| Year | Central Flyway | Other Survey Area Total | Canada | Mexico | Unretrieved No. America | Total |
|-----------|----------------|-------------------------|--------|--------|-------------------------|--------|
| 1975-79 | 9,913 | 592 | 2,646 | 1,315 | 2,669 | 17,135 |
| 1980-89 | 11,688 | 1,171 | 7,000 | 1,986 | 3,849 | 25,693 |
| 1990-99 | 17,206 | 1,036 | 7,594 | 2,575 | 4,230 | 32,558 |
| 2000-09 | 16,925 | 1,037 | 10,841 | 2,880 | 4,528 | 36,210 |
| 2010-19 | 21,044 | 1,748 | 14,072 | 3,686 | 5,213 | 45,762 |
| 2020-23 | 64,803 | 3,079 | 11,470 | 7,670 | 6,502 | 90,870 |
| 1975-2023 | 19,947 | 1,336 | 9,223 | 2,935 | 4,397 | 36,677 |

Table 8. Spring population indices for Rocky Mountain sandhill cranes in the San Luis Valley, Colorado, 1984-96.

| Year | Raw Count | Adjusted for Estimation Bias ^a | Adjusted by Removal of Lesser sandhill Cranes ^b | Other Areas | Index | Survey Condition |
|------|-----------|---|--|-------------|--------|------------------|
| 1984 | 10,962 | 14,488 | 13,562 | 550 | 14,112 | POOR |
| 1985 | 18,393 | 21,773 | 20,382 | 0 | 20,382 | GOOD |
| 1986 | 14,031 | 14,031 | 13,135 | 20 | 13,155 | POOR |
| 1987 | 13,561 | 15,661 | 14,660 | 0 | 14,660 | POOR |
| 1988 | 17,510 | 17,510 | 16,381 | 22 | 16,403 | POOR |
| 1989 | 17,302 | 18,389 | 17,004 | 0 | 17,004 | GOOD |
| 1990 | 20,851 | 24,593 | 21,221 | 275 | 21,496 | GOOD |
| 1991 | 19,990 | 18,405 | 16,045 | 175 | 16,220 | GOOD |
| 1992 | 23,516 | 23,516 | 19,999 | 9 | 20,008 | GROUND |
| 1993 | 17,576 | 17,576 | 16,478 | 1,260 | 17,738 | POOR |
| 1994 | 17,229 | 16,036 | 15,063 | 203 | 15,266 | FAIR |
| 1995 | 25,276 | 23,390 | 20,229 | 0 | 20,229 | GOOD |
| 1996 | 23,019 | 26,379 | 22,737 | 1,010 | 23,747 | GOOD |

^a Raw estimate adjusted by photography for estimation bias.

^b Population estimate adjusted to remove the number of lesser sandhill cranes (non-RMP cranes).

Table 9. Fall pre-migration population indices for Rocky Mountain sandhill cranes, 1987–2023.

| Year | UT | CO | ID | WY | MT | TOTAL | 3-Year AVG |
|---------------------|-------|-------|--------|-------|--------|--------|------------|
| 1987 | 1,578 | 1,443 | 10,686 | 2,327 | 1,447 | 17,481 | |
| 1992 | 2,810 | 3,181 | 5,801 | 2,248 | 5,264 | 19,304 | |
| 1995 | 1,528 | 2,284 | 6,864 | 1,671 | 3,681 | 16,028 | |
| 1996 | 1,849 | 1,255 | 8,334 | 2,526 | 2,974 | 16,938 | |
| 1997 ^{a,b} | 2,450 | 1,604 | 8,132 | 2,255 | 3,595 | 18,036 | 17,001 |
| 1998 | 2,185 | 1,273 | 8,067 | 3,162 | 3,415 | 18,102 | 17,692 |
| 1999 | 2,292 | 1,102 | 8,761 | 4,205 | 3,141 | 19,501 | 18,546 |
| 2000 | 2,416 | 749 | 9,337 | 3,890 | 3,598 | 19,990 | 19,198 |
| 2001 | 1,522 | 666 | 7,160 | 2,626 | 4,585 | 16,559 | 18,683 |
| 2002 | 1,869 | 1,355 | 7,698 | 3,038 | 4,843 | 18,803 | 18,451 |
| 2003 | 2,546 | 745 | 7,822 | 3,446 | 4,964 | 19,523 | 18,295 |
| 2004 | 2,239 | 1,410 | 7,152 | 3,072 | 4,637 | 18,510 | 18,945 |
| 2005 | 2,646 | 1,052 | 7,668 | 3,911 | 5,588 | 20,865 | 19,633 |
| 2006 ^c | | | | | | NS | 19,633 |
| 2007 ^d | 2,401 | 1,743 | 8,262 | 3,907 | 6,509 | 22,822 | 20,732 |
| 2008 ^e | 3,708 | 1,080 | 6,123 | 3,826 | 6,419 | 21,156 | 21,614 |
| 2009 | 2,283 | 1,162 | 6,934 | 3,613 | 6,329 | 20,321 | 21,433 |
| 2010 | 3,242 | 985 | 5,776 | 3,726 | 7,335 | 21,064 | 20,847 |
| 2011 | 1,498 | 1,347 | 5,029 | 2,978 | 6,642 | 17,494 | 19,626 |
| 2012 | 2,109 | 413 | 3,432 | 3,587 | 5,876 | 15,417 | 17,992 |
| 2013 | 2,732 | 1,594 | 5,228 | 3,588 | 7,218 | 20,360 | 17,757 |
| 2014 | 2,783 | 1,258 | 6,064 | 3,008 | 6,555 | 19,668 | 18,482 |
| 2015 | 3,698 | 1,089 | 6,454 | 3,596 | 9,493 | 24,330 | 21,453 |
| 2016 ^f | 3,298 | 1,135 | 5,445 | 4,879 | 7,507 | 22,264 | 22,087 |
| 2017 | 2,994 | 1,658 | 4,066 | 3,725 | 7,149 | 19,592 | 22,062 |
| 2018 | 2,770 | 1,908 | 4,469 | 5,101 | 7,553 | 21,801 | 21,219 |
| 2019 | 3,106 | 1,879 | 4,428 | 4,366 | 7,511 | 21,290 | 20,894 |
| 2020 | 3,222 | 1,446 | 5,096 | 6,608 | 9,264 | 25,636 | 22,909 |
| 2021 | 3,889 | 3,141 | 3,091 | 6,059 | 7,783 | 23,963 | 23,630 |
| 2022 | 2,330 | 1,526 | 3,957 | 3,975 | 6,844 | 18,632 | 22,744 |
| 2023 | 5,631 | 1,740 | 4,200 | 5,527 | 10,169 | 27,267 | 23,287 |

^a Incomplete survey efforts in years prior might have resulted in lower estimates; the official count begins in 1997.

^b In October 1997, a special survey was also conducted in the SLV, Colorado and other areas, which resulted in a total of 27,090 Rocky Mountain and Mid-Continent cranes being counted.

^c In 2006, the survey was not conducted due to mechanical issues with the survey plane. The 3-yr Avg for 2006 is calculated using 2003-05.

^d The 3-yr average for 2007 was calculated using 2004, 2005, and 2007 because there was no survey in 2006.

^e The 3-yr average for 2008 was calculated using 2005, 2007, and 2008 because there was no survey in 2006.

^f Beginning 1n 2016 Wyoming added six new survey areas as allowed in the management plan.

Table 10A. Estimated retrieved harvests of the Rocky Mountain Population of sandhill cranes, 1981–2023.

| Year | AZ | ID | MT | NM | UT | WY | Total |
|-------------------|-----|-----|-----|-----|-----|-----|------------------|
| 1981 | 21 | | | | | | 21 |
| 1982 | 9 | | | | | 143 | 152 |
| 1983 | 37 | | | | | 154 | 191 |
| 1984 | 41 | | | | | 101 | 142 |
| 1985 | 42 | | | | | 138 | 180 |
| 1986 | 24 | | | | | 195 | 219 |
| 1987 | 62 | | | | | 190 | 252 |
| 1988 | 39 | | | 310 | | 128 | 477 |
| 1989 | 46 | | | 483 | 54 | 125 | 708 |
| 1990 | 9 | | | 79 | 35 | 58 | 181 |
| 1991 | 44 | | | 47 | 48 | 101 | 240 |
| 1992 | 39 | | 42 | 147 | 28 | 168 | 424 |
| 1993 | 61 | | 45 | 297 | 34 | 115 | 552 |
| 1994 | 27 | | 40 | 416 | 27 | 150 | 660 |
| 1995 | 33 | | 41 | 270 | 32 | 78 | 454 |
| 1996 | 27 | 20 | 49 | 236 | 30 | 65 | 427 |
| 1997 | 22 | 136 | 62 | 114 | 34 | 84 | 452 |
| 1998 | 37 | 120 | 59 | 180 | 54 | 94 | 544 |
| 1999 | 21 | 190 | 71 | 198 | 69 | 124 | 673 ^a |
| 2000 | 37 | 193 | 91 | 257 | 77 | 159 | 814 ^b |
| 2001 | 26 | 278 | 86 | 288 | 60 | 142 | 880 |
| 2002 | 42 | 194 | 47 | 164 | 57 | 132 | 636 |
| 2003 | 34 | 146 | 48 | 169 | 53 | 72 | 522 |
| 2004 | 30 | 143 | 49 | 189 | 62 | 123 | 596 |
| 2005 | 50 | 188 | 46 | 236 | 87 | 116 | 723 |
| 2006 | 9 | 236 | 51 | 327 | 103 | 194 | 920 |
| 2007 | 43 | 211 | 68 | 276 | 101 | 138 | 837 |
| 2008 | 24 | 185 | 83 | 379 | 149 | 162 | 982 |
| 2009 | 70 | 254 | 116 | 603 | 190 | 195 | 1,428 |
| 2010 | 56 | 253 | 98 | 547 | 149 | 182 | 1,285 |
| 2011 ^c | 36 | 261 | 84 | 522 | 91 | 161 | 1,155 |
| 2012 ^c | 81 | 275 | 121 | 417 | 96 | 134 | 1,124 |
| 2013 ^c | 38 | 135 | 83 | 241 | 73 | 74 | 644 |
| 2014 | 26 | 134 | 121 | 183 | 86 | 101 | 651 |
| 2015 | 67 | 166 | 137 | 145 | 72 | 104 | 691 |
| 2016 | 74 | 258 | 140 | 453 | 192 | 158 | 1,275 |
| 2017 | 68 | 198 | 150 | 449 | 203 | 193 | 1,261 |
| 2018 | 102 | 253 | 154 | 678 | 130 | 189 | 1,506 |
| 2019 | 38 | 166 | 181 | 530 | 137 | 141 | 1,193 |
| 2020 | 61 | 172 | 148 | 170 | 200 | 114 | 865 |
| 2021 | 63 | 277 | 163 | 629 | 223 | 194 | 1,549 |
| 2022 | 69 | 273 | 174 | 710 | 167 | 277 | 1,670 |
| 2023 | 49 | 235 | 138 | 607 | 167 | 215 | 1,411 |

^a RMP sandhill cranes (40) were also taken as part of research project in the San Luis Valley, CO

^b RMP sandhill cranes (20) were also taken as part of research project in the San Luis Valley, CO

^c Harvest includes crippling loss.

Table 10B. Decadal and long-term annual averages of retrieved harvests of the Rocky Mountain Population of sandhill cranes.

| Years | AZ | ID | MT | NM | UT | WY | Total |
|-----------|----|-----|-----|-----|-----|-----|-------|
| 1981-89 | 36 | | | 397 | 54 | 147 | 260 |
| 1990-99 | 32 | 117 | 51 | 198 | 39 | 104 | 461 |
| 2000-09 | 37 | 203 | 69 | 289 | 94 | 143 | 834 |
| 2010-19 | 59 | 210 | 127 | 416 | 123 | 144 | 1,078 |
| 2020-23 | 60 | 239 | 156 | 529 | 189 | 200 | 1,374 |
| 1981-2023 | 43 | 198 | 93 | 332 | 96 | 140 | 734 |

Table 11. Winter counts of Lower Colorado River Valley Population of sandhill cranes in Arizona and California, 1998–2024.

| Year | Cibola National Wildlife Refuge | Colorado River Indian Tribe | Salton Sea National Wildlife Refuge | Gila River | Total | 3-Year AVG |
|-------------------|---------------------------------|-----------------------------|-------------------------------------|------------|-------|------------|
| 1998 | 775 | 596 | 351 | 178 | 1,900 | |
| 1999 | 1,200 | 511 | 325 | 163 | 2,199 | |
| 2000 | 820 | 1,259 | 235 | 252 | 2,566 | 2,222 |
| 2001 | 961 | 952 | 350 | 134 | 2,397 | 2,387 |
| 2002 | 1,003 | 168 | 417 | 52 | 1,640 | 2,201 |
| 2003 | 1,200 | 455 | 430 | 0 | 2,085 | 2,041 |
| 2004 | 1,341 | 354 | 521 | 312 | 2,528 | 2,084 |
| 2005 | 1,513 | 457 | 476 | 191 | 2,637 | 2,417 |
| 2006 | 1,141 | 673 | 493 | 360 | 2,667 | 2,611 |
| 2007 | 2,322 | 809 | 295 | 450 | 3,876 | 3,060 |
| 2008 ^a | 115 | NS | 687 | 413 | 1,215 | 3,060 |
| 2009 ^b | 289 | 1,216 | 603 | 293 | 2,401 | 2,981 |
| 2010 ^c | 266 | 729 | 904 | 365 | 2,264 | 2,847 |
| 2011 | 553 | 636 | 899 | 327 | 2,415 | 2,360 |
| 2012 | 1,097 | 474 | 924 | 151 | 2,646 | 2,442 |
| 2013 | 1,629 | 344 | 671 | 434 | 3,078 | 2,713 |
| 2014 | 1,981 | 591 | 641 | 140 | 3,353 | 3,026 |
| 2015 | 676 | 720 | 688 | 452 | 2,536 | 2,989 |
| 2016 | 631 | 631 | 862 | 292 | 2,416 | 2,768 |
| 2017 | 940 | 636 | 819 | 321 | 2,716 | 2,556 |
| 2018 | 1,076 | 330 | 775 | 215 | 2,396 | 2,509 |
| 2019 | 1,171 | 192 | 1,062 | 497 | 2,922 | 2,678 |
| 2020 | 1,497 | 20 | 1,105 | 319 | 2,941 | 2,753 |
| 2021 | 4,812 | 0 | 954 | 117 | 5,883 | 3,915 |
| 2022 | 941 | 1,248 | 1,226 | 372 | 3,787 | 4,204 |
| 2023 | 864 | 2,186 | 1,532 | 137 | 4,719 | 4,796 |
| 2024 | 2,792 | 1,520 | 735 | 109 | 5,156 | 4,554 |

NS = No survey was conducted.

^a In 2008, the survey was not complete. The 3-YR average for that year was calculated using 2005-07.

^b In 2009, the 3-YR average was calculated with 2006, 2007 and 2009 due to an incomplete survey in 2008.

^c In 2010, the 3-YR average was calculated with 2007, 2009, and 2010 due to an incomplete survey in 2008.

Table 12. Fall abundance index for Eastern Population of sandhill cranes, 1979–2023.

| Year | Abundance | 3-YR Average |
|-------------------|-----------|--------------|
| 1979 | 14,385 | |
| 1980 | 15,808 | |
| 1981 | 11,943 | 14,045 |
| 1982 | 13,879 | 13,877 |
| 1983 | 16,148 | 13,990 |
| 1984 | 16,363 | 15,463 |
| 1985 | 16,170 | 16,227 |
| 1986 | 17,043 | 16,525 |
| 1987 | 22,342 | 18,518 |
| 1988 | 26,086 | 21,824 |
| 1989 | 22,785 | 23,738 |
| 1990 | 23,792 | 24,221 |
| 1991 | 24,685 | 23,754 |
| 1992 | 26,656 | 25,044 |
| 1993 | 26,187 | 25,843 |
| 1994 | 26,783 | 26,542 |
| 1995 | 33,774 | 28,915 |
| 1996 | 29,753 | 30,103 |
| 1997 | 27,641 | 30,389 |
| 1998 | 37,827 | 31,740 |
| 1999 | 33,583 | 33,017 |
| 2000 | 33,105 | 34,838 |
| 2001 ^a | NS | 34,838 |
| 2002 ^b | 31,575 | 32,754 |
| 2003 ^c | 29,300 | 31,327 |
| 2004 | 28,822 | 29,899 |
| 2005 | 37,708 | 31,943 |
| 2006 | 37,529 | 34,686 |
| 2007 | 37,943 | 37,727 |
| 2008 | 44,110 | 39,861 |
| 2009 | 60,028 | 47,360 |
| 2010 | 49,647 | 51,262 |
| 2011 | 76,028 | 61,901 |
| 2012 | 86,989 | 70,888 |
| 2013 | 64,213 | 75,743 |
| 2014 | 82,694 | 77,965 |
| 2015 | 94,676 | 80,528 |
| 2016 | 70,858 | 82,743 |
| 2017 | 69,989 | 78,508 |
| 2018 | 97,073 | 79,307 |
| 2019 | 89,504 | 85,522 |
| 2020 | 94,961 | 93,846 |
| 2021 ^d | 90,029 | 91,498 |
| 2022 | 107,164 | 97,385 |
| 2023 | 110,646 | 102,613 |

NS = No survey conducted

^a In 2001, the survey was not conducted. The 3-YR average for that year was calculated using data from 1998-2000.

^b In 2002, the 3-YR average was calculated with 1999, 2000 and 2002 since the survey was not conducted in 2001.

^c In 2003, the 3-YR average was calculated with 2000, 2002 and 2003 since the survey was not conducted in 2001.

^d Illinois and Maryland began participating in the survey in 2021.

Table 13. Season dates (month/day) for the hunting of Eastern Population sandhill cranes.

| Year | Kentucky | Tennessee | Alabama |
|------|-------------|--------------------------|--------------------------|
| 2011 | 12/17-01/15 | No Season | No Season |
| 2012 | 12/15-01/13 | No Season | No Season |
| 2013 | 12/14-01/12 | 11/28-01/01 | No Season |
| 2014 | 12/13-01/11 | 11/22-11/23; 11/29-01/01 | No Season |
| 2015 | 12/12-01/10 | 11/28-11/29; 12/05-01/01 | No Season |
| 2016 | 12/17-01/15 | 12/03-01/12; 01-16-01/29 | No Season |
| 2017 | 12/16-01/14 | 12/02-01/28 ^a | No Season |
| 2018 | 12/03-01/27 | 12/01-01/27 ^b | No Season |
| 2019 | 12/02-01/26 | 12/07-01/27 ^c | 12/03-01/05; 01/16-01/31 |
| 2020 | 12/07-01/31 | 12/05-01/31 ^d | 12/04-01/03; 01/11-01/31 |
| 2021 | 12/07-01/31 | 12/04-01/30 ^d | 12/02-01/09; 01/17-01/31 |
| 2022 | 12/07-01/31 | 12/03-01/31 ^d | 12/03-01/08; 01/16-01/31 |
| 2023 | 12/07-01/31 | 12/02-01/30 ^d | 12/02-01/07; 01/15-01/30 |

a In the Southeast Zone, the season was closed from 01/12-01/14.

b In the Southeast Zone, the season was closed from 01/18-01/20.

c In the Southeast Zone, the season was closed from 01/17-01/19.

d In the Southeast Zone, the season was closed from 01/15-01/17.

e In the Southeast Zone, the season was closed from 01/14-01/16.

Table 14. Estimated harvest and number of permits sold for Eastern Population sandhill cranes, 2011–2023.

| Year | KY Harvest | KY Tags Issued ^a | TN Harvest | TN Tags Issued ^a | AL Harvest | AL Tags Issued ^a | Total Harvest | Total Permits Issued |
|----------------|------------|-----------------------------|------------|-----------------------------|------------|-----------------------------|---------------|----------------------|
| 2011 | 50 | 534 | No Season | No Season | No Season | No Season | 50 | 534 |
| 2012 | 92 | 570 | No Season | No Season | No Season | No Season | 92 | 570 |
| 2013 | 87 | 570 | 350 | 1,200 | No Season | No Season | 437 | 1,770 |
| 2014 | 96 | 704 | 393 | 1,200 | No Season | No Season | 489 | 1,904 |
| 2015 | 75 | 694 | 161 | 1,200 | No Season | No Season | 236 | 1,894 |
| 2016 | 171 | 672 | 586 | 1,200 | No Season | No Season | 757 | 1,872 |
| 2017 | 119 | 660 | 830 | 2,319 | No Season | No Season | 949 | 2,979 |
| 2018 | 60 | 1,432 | 555 | 2,711 | No Season | No Season | 615 | 4,143 |
| 2019 | 96 | 1,237 | 746 | 2,958 | 291 | 1,200 | 1,133 | 5,395 |
| 2020 | 65 | 1,035 | 630 | 2,700 | 391 | 1,200 | 1,086 | 4,935 |
| 2021 | 117 | 1,029 | 484 | 2,500 | 234 | 1,200 | 835 | 4,729 |
| 2022 | 180 | 1,148 | 640 | 2,500 | 265 | 1,200 | 1,085 | 4,848 |
| 2023 | 71 | 991 | 475 | 2,500 | 322 | 2,250 | 868 | 5,741 |
| Average | 98 | 867 | 532 | 2,090 | 301 | 1,410 | 664 | 3,178 |

^a Each tag allows a hunter to take one crane.

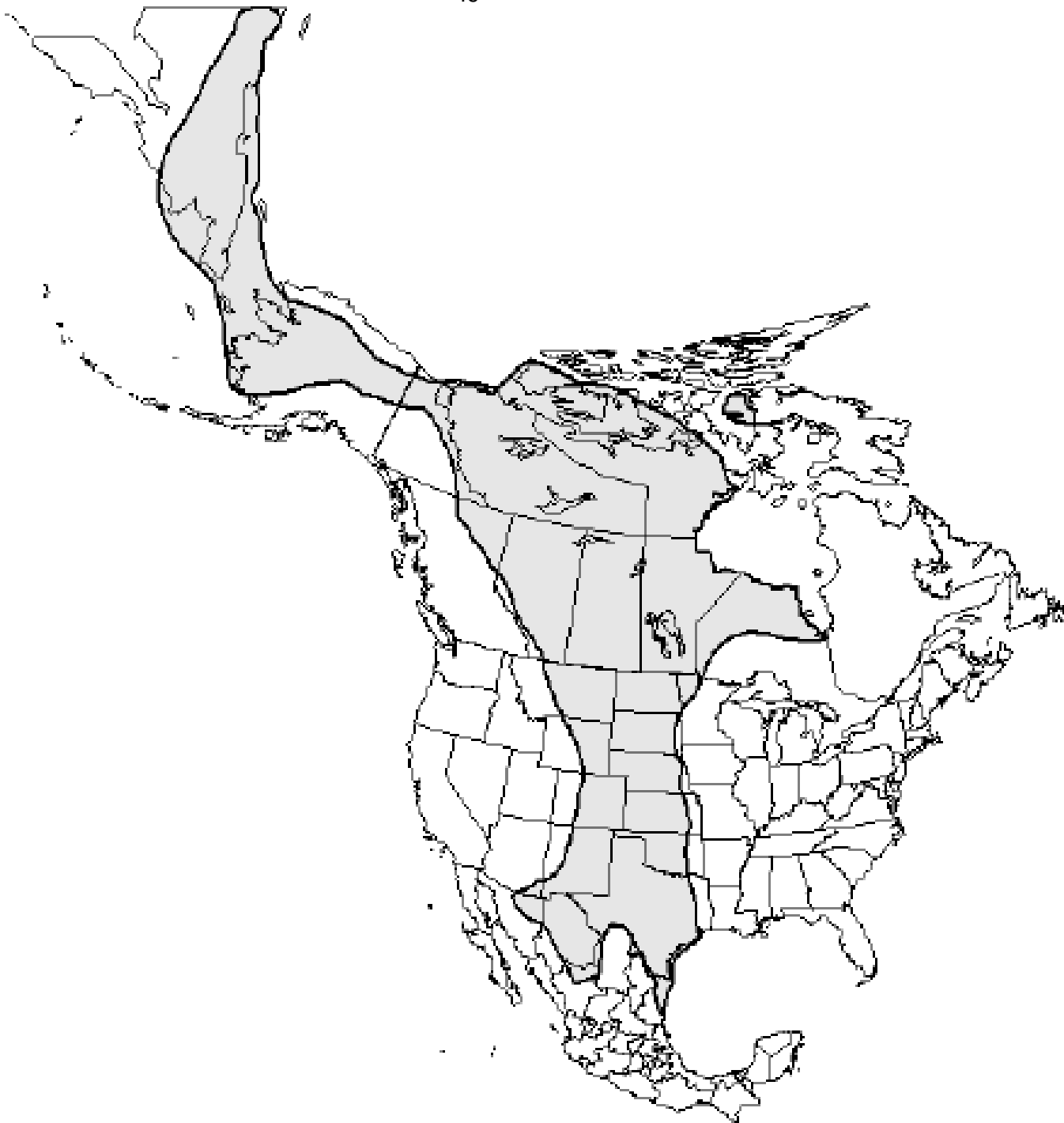


Figure 1. Primary wintering and breeding range and the approximate migration corridor of Mid-Continent sandhill cranes (based on figures in Tacha et al. 1994, Krapu et al. 2011).



Figure 2. Approximate range of the Rocky Mountain Population of Greater sandhill Cranes (Tacha et al. 1994, Drewien et al. 1996).

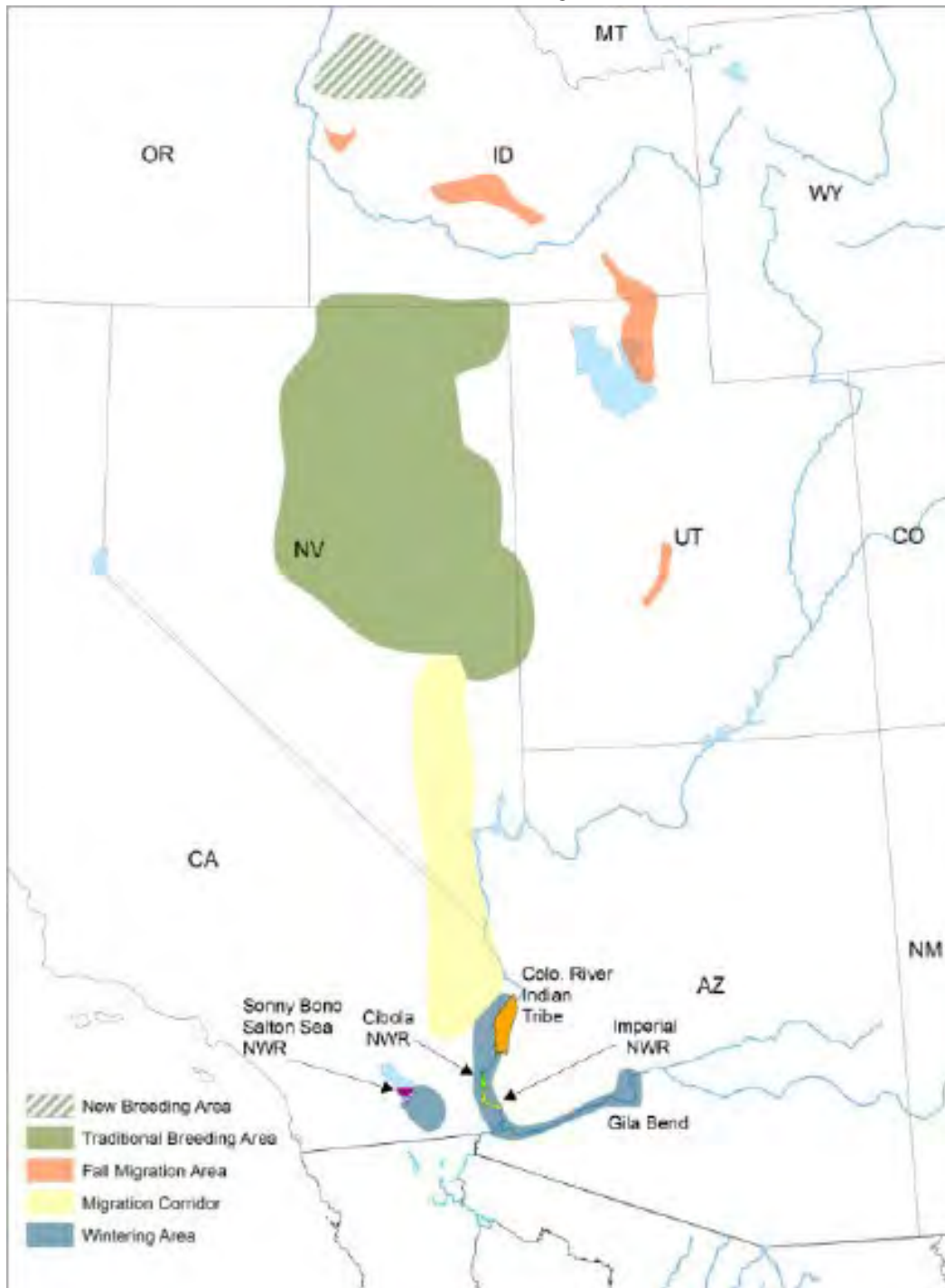


Figure 3. Approximate range of the Lower Colorado River Valley Population of Greater sandhill Cranes (based on Pacific Flyway Council [1995] and recent satellite telemetry information [D. Collins and K. Kruse, U.S. Fish and Wildlife Service, unpublished data]).

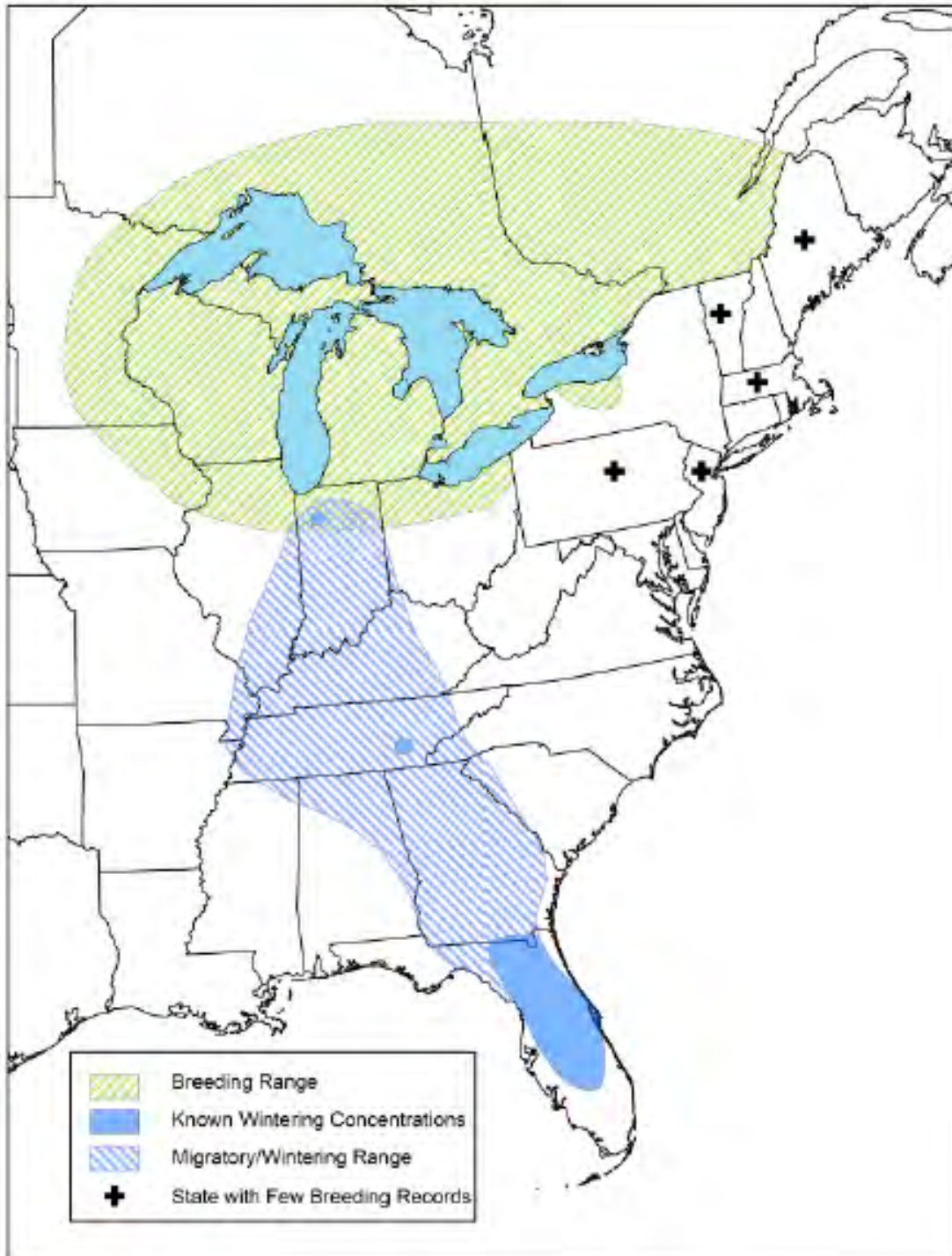


Figure 4. Approximate range of Eastern Population sandhill cranes based on various data sources including satellite telemetry data, breeding bird atlas records, and unpublished location information from knowledgeable individuals.

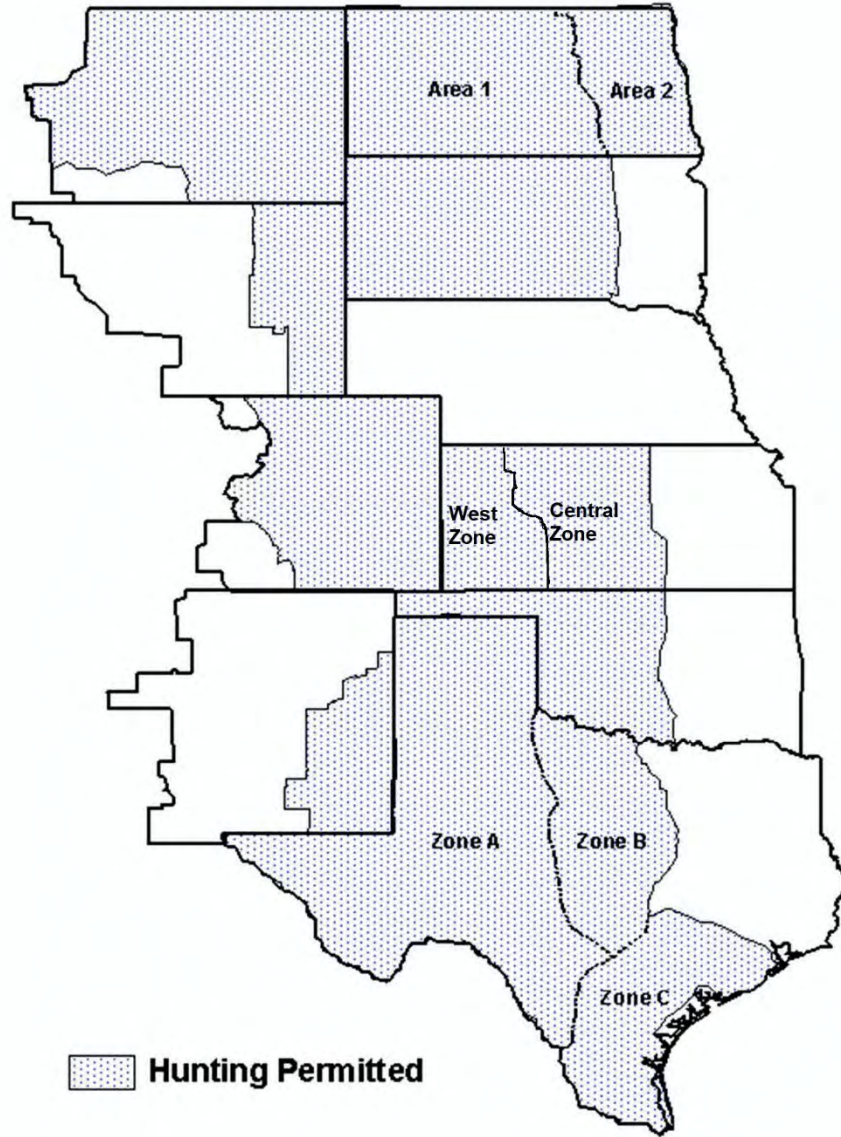


Figure 5. Areas open to the hunting of Mid-continent sandhill cranes by Federal frameworks in the Central Flyway states, 2023-24.

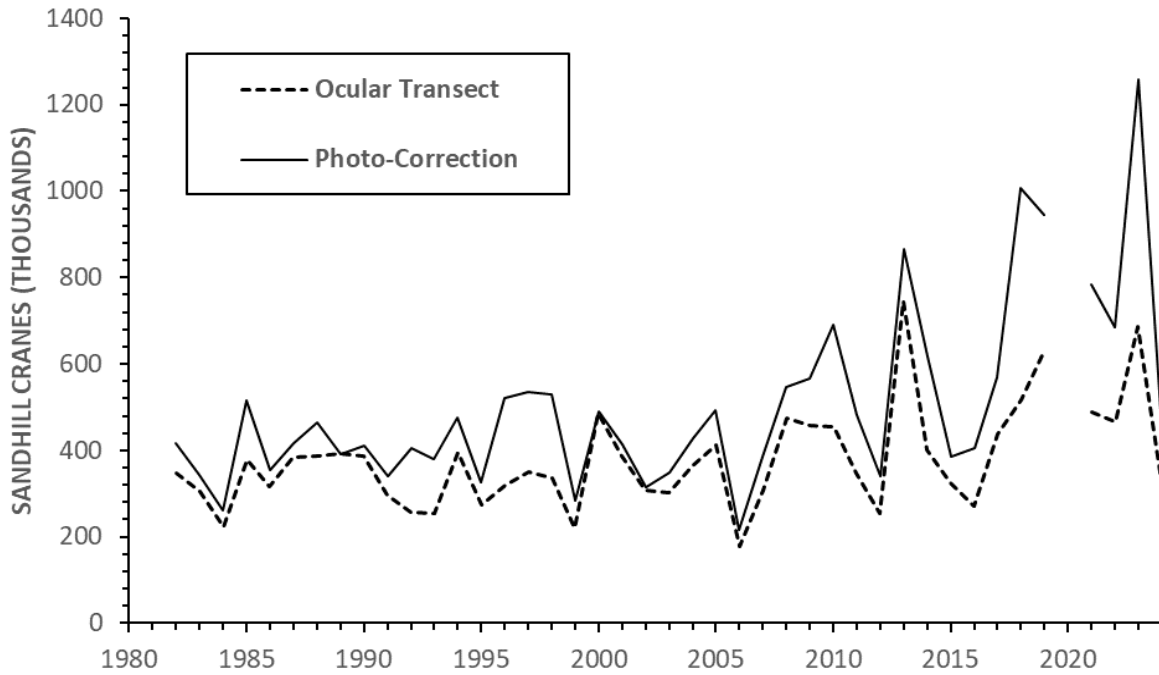


Figure 6. Spring population indices for Mid-Century sandhill cranes on the Central Platte River Valley, Nebraska. Survey was not conducted in 2020.

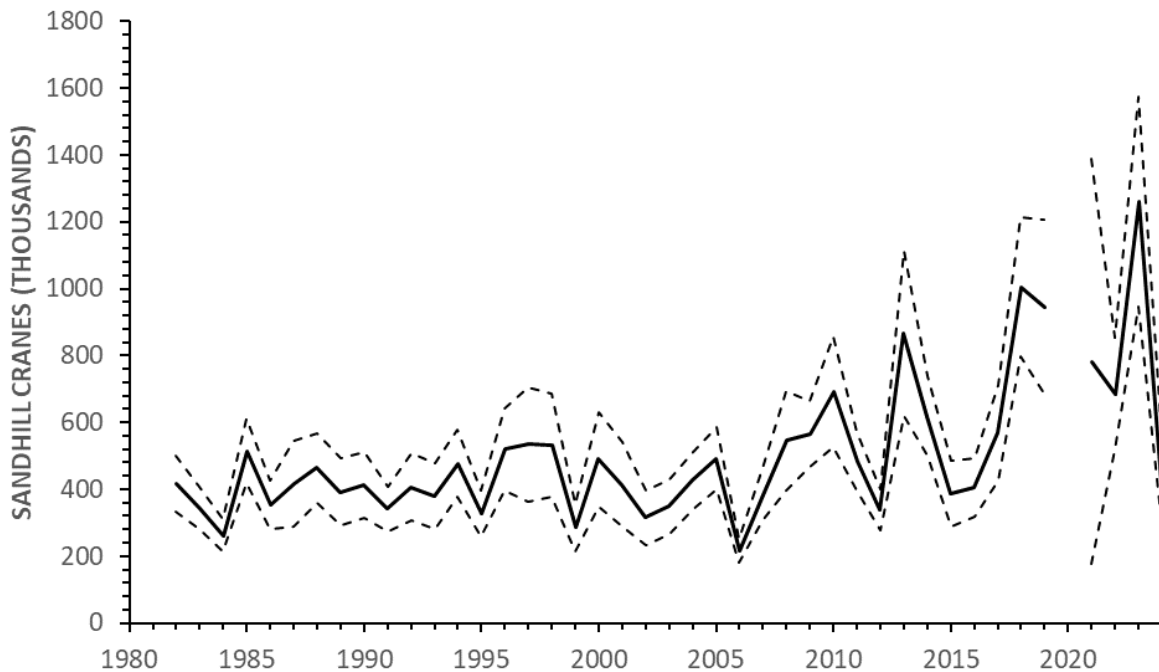


Figure 7. Photo-corrected spring population estimates (solid line) and the 95% confidence intervals (dashed lines) for Mid-Century sandhill cranes on the Central Platte River Valley, Nebraska. The survey was not conducted in 2020.

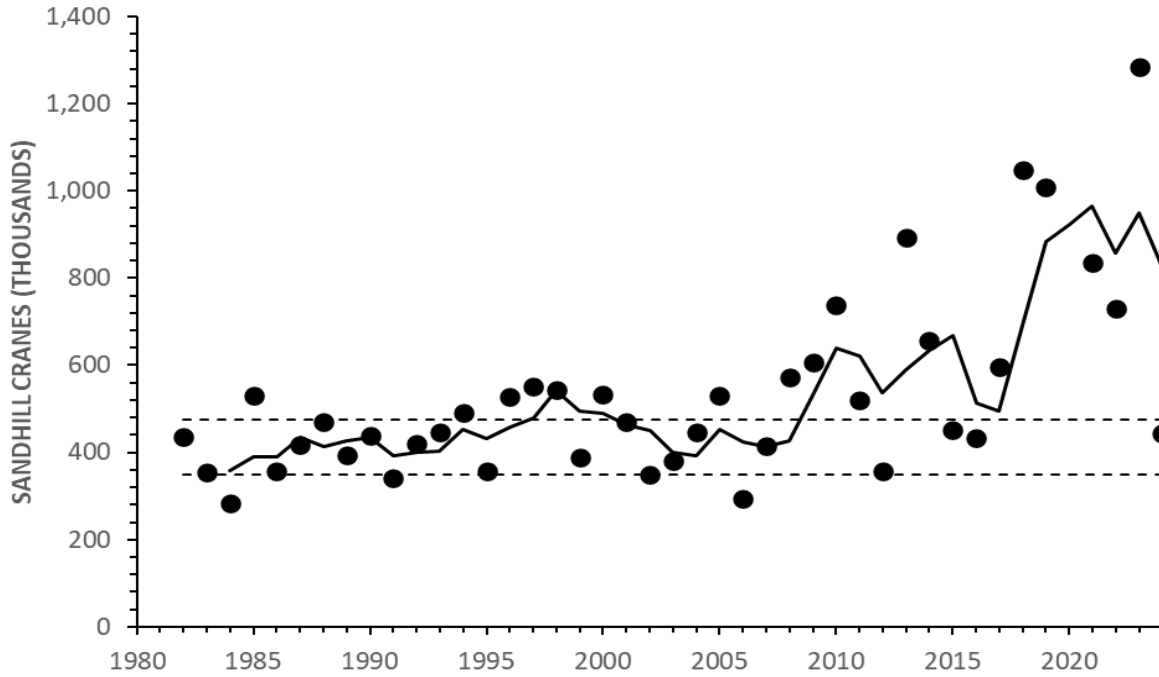


Figure 8. Annual and three-year average photo-corrected ocular transect spring population indices and population objective thresholds for Mid-Centiment sandhill cranes.

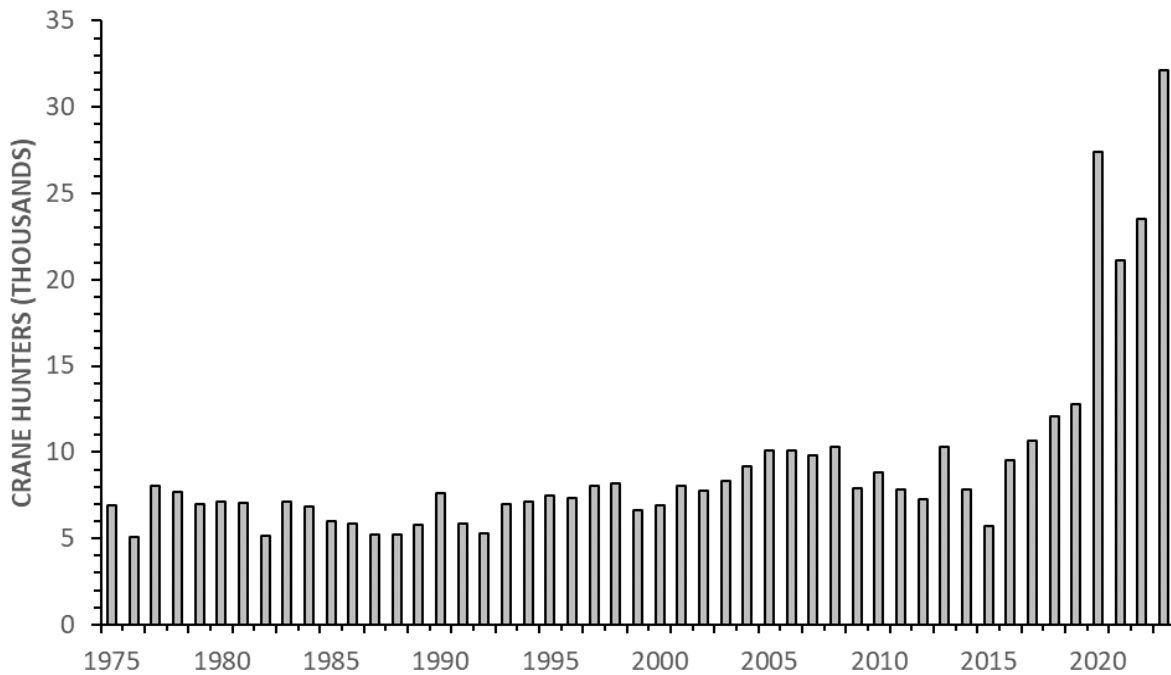


Figure 9. Active Mid-Centiment sandhill crane hunters in the U.S. portion of the Central Flyway.

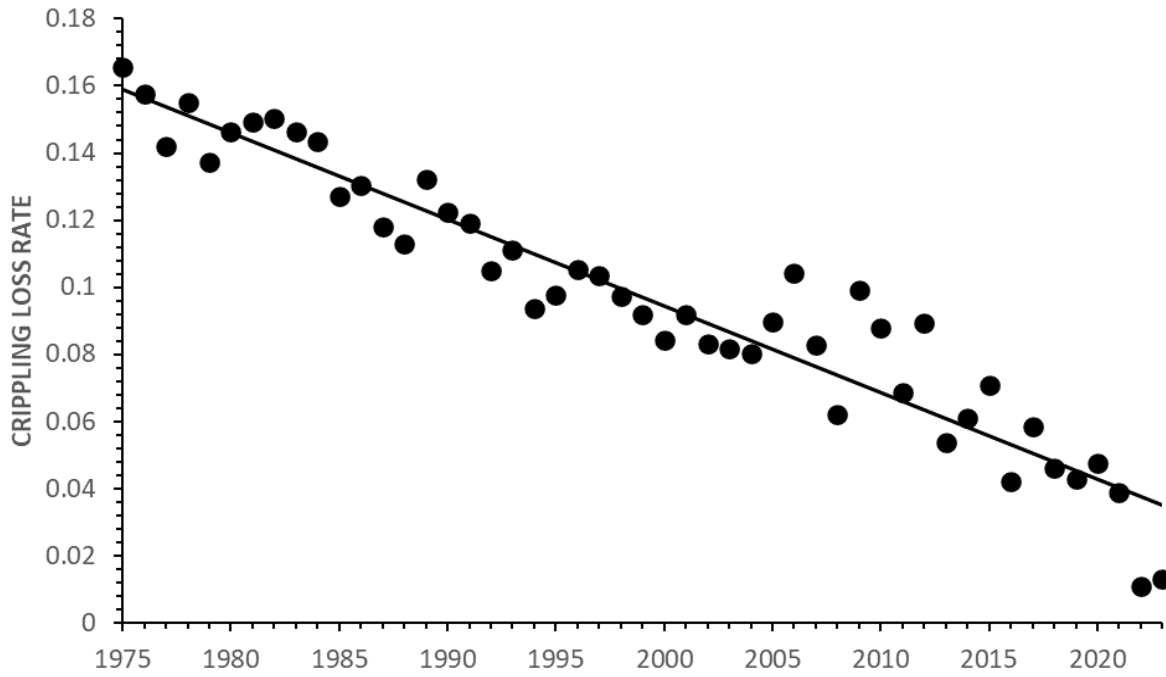


Figure 10. Crippling-loss rate (number lost/[number retrieved + lost]) of Mid-Continent sandhill cranes in the U.S. portion of the Central Flyway.

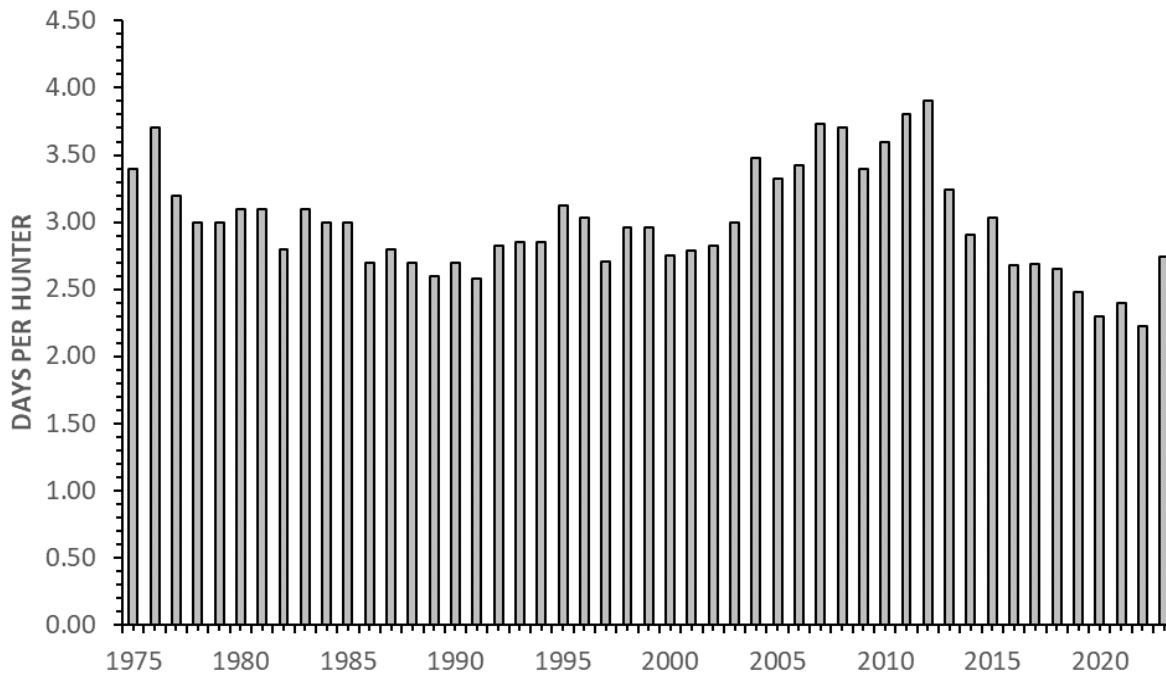


Figure 11. Average number of hunting days afield reported by active Mid-Continent sandhill crane hunters in the U.S. portion of the Central Flyway.

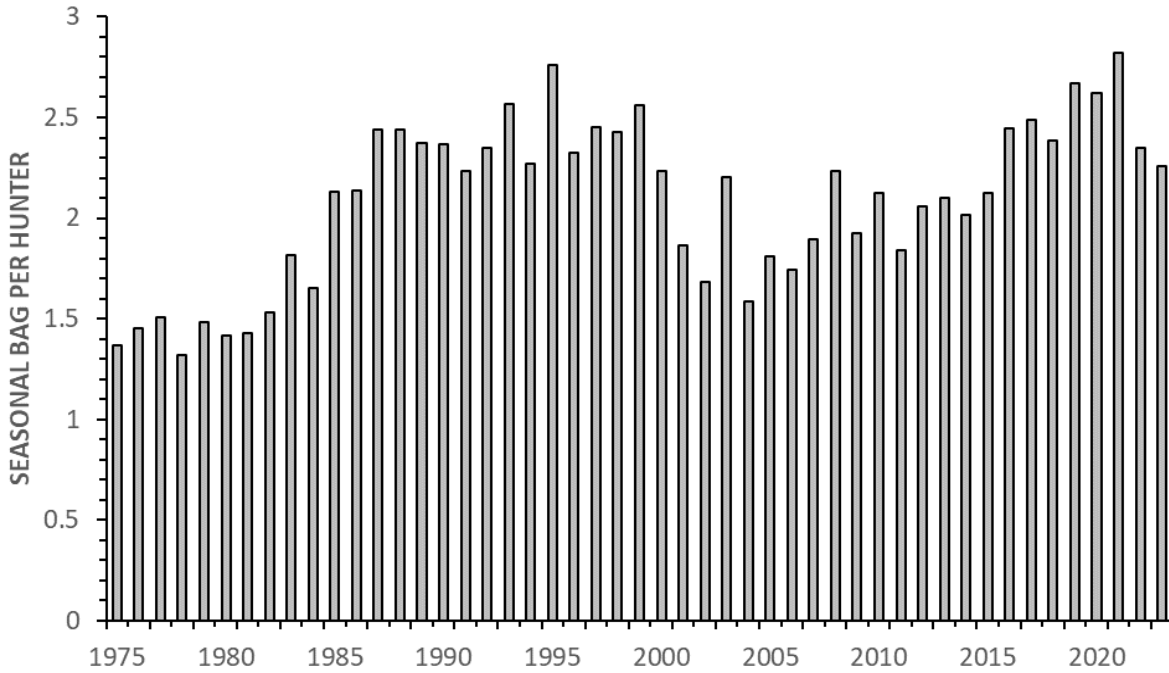


Figure 12. Seasonal bag per Mid-continent sandhill crane hunter in the U.S. portion of the Central Flyway.

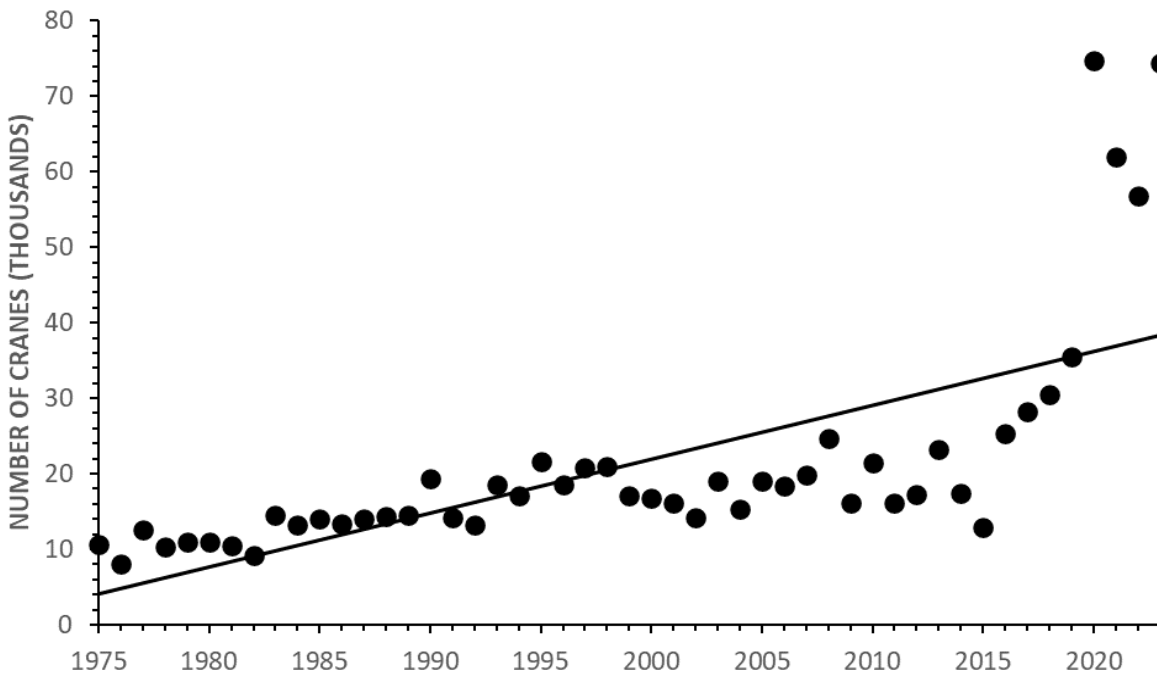


Figure 13. Estimated hunting mortality (retrieved plus unretrieved) of Mid-continent sandhill cranes in the U.S. portion of the Central Flyway.

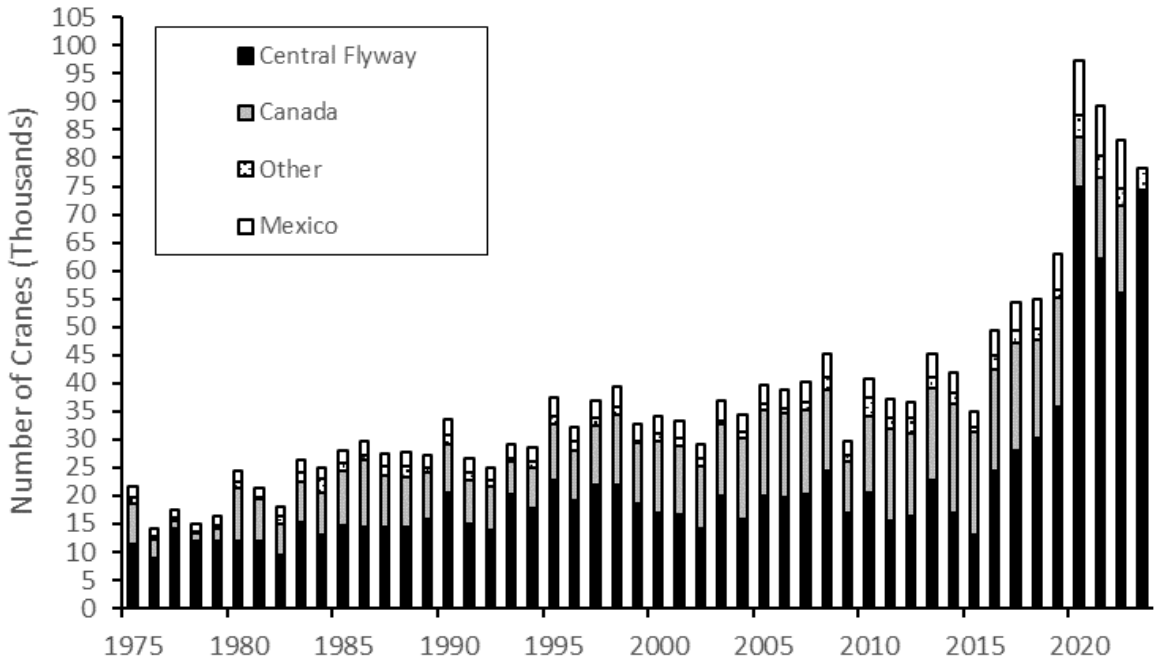


Figure 14. Estimated hunting mortality (retrieved plus unretrieved) of Mid-Centinent sandhill cranes in North America. Data unavailable for Canada and Mexico for 2023.

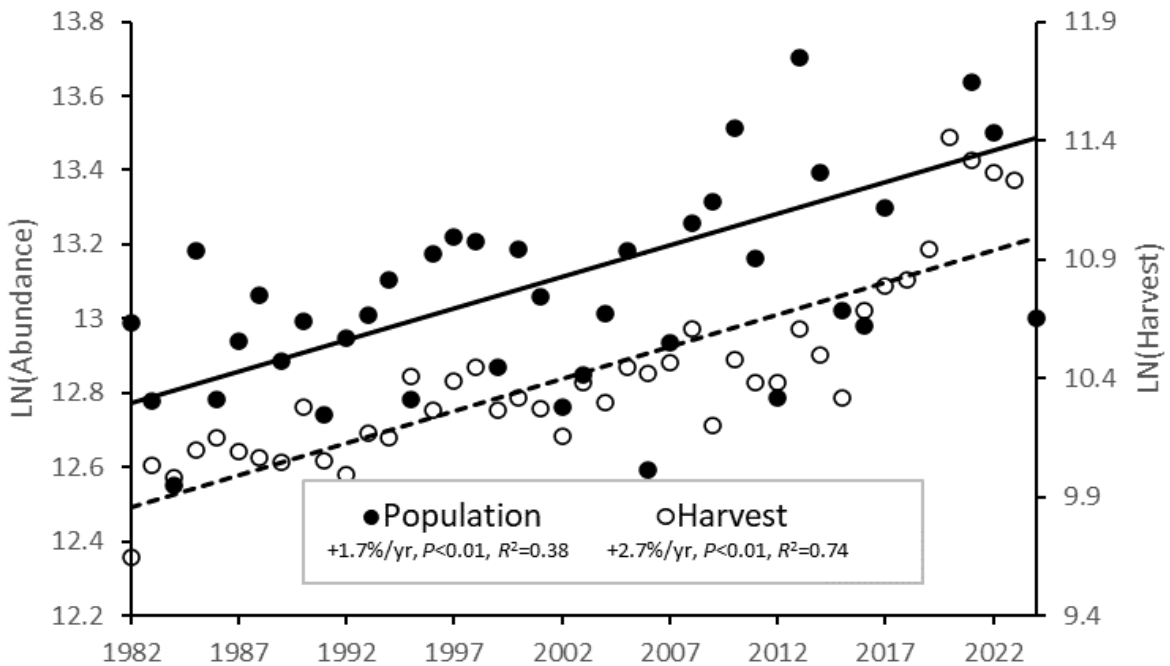


Figure 15. Relationship between indices of abundance and harvest of Mid-Centinent sandhill cranes. Data unavailable for Canada and Mexico for 2023.

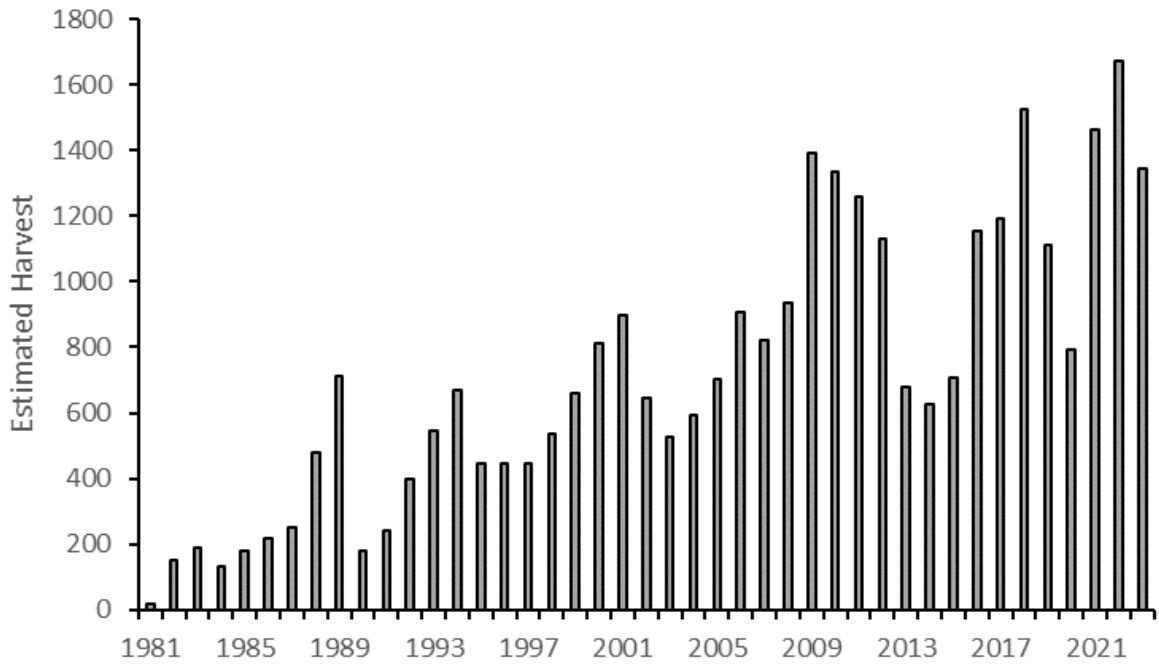


Figure 16. Estimated harvest of Rocky Mountain Population sandhill cranes.

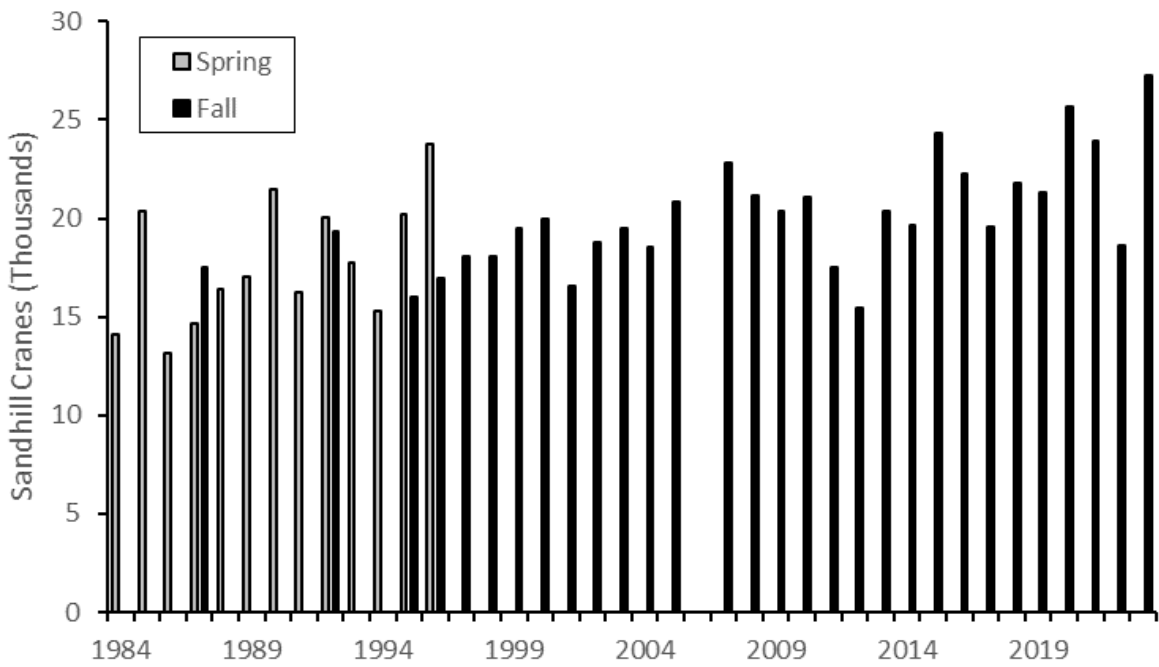


Figure 17. Abundance indices for the Rocky Mountain Population of sandhill cranes.

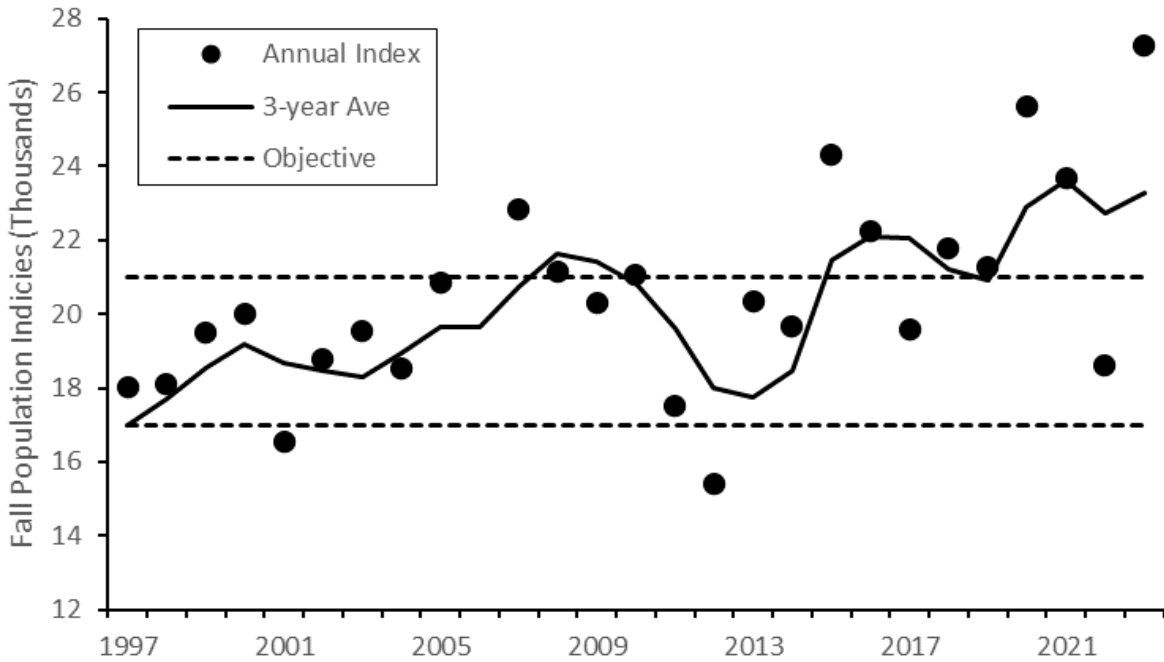


Figure 18. Annual and three-year average of fall pre-migration abundance indices for the Rocky Mountain Population of sandhill cranes.

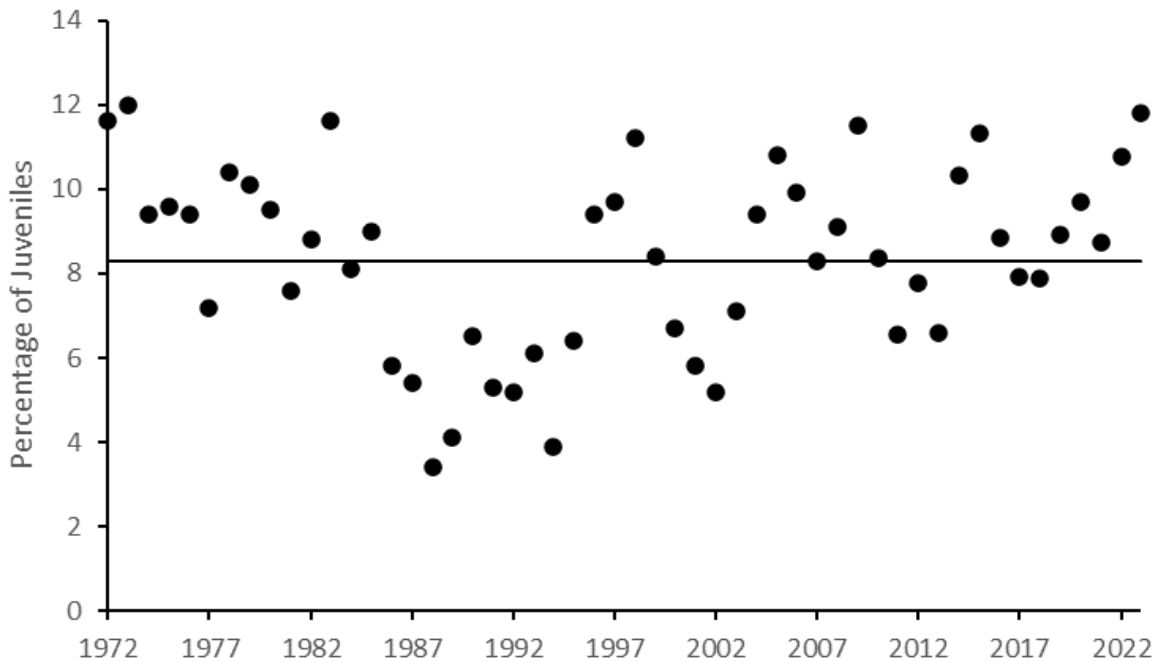


Figure 19. Annual indices for recruitment (% juveniles) of the Rocky Mountain Population of sandhill cranes. Solid line indicates the long-term (1972-2022) average of 8.3.

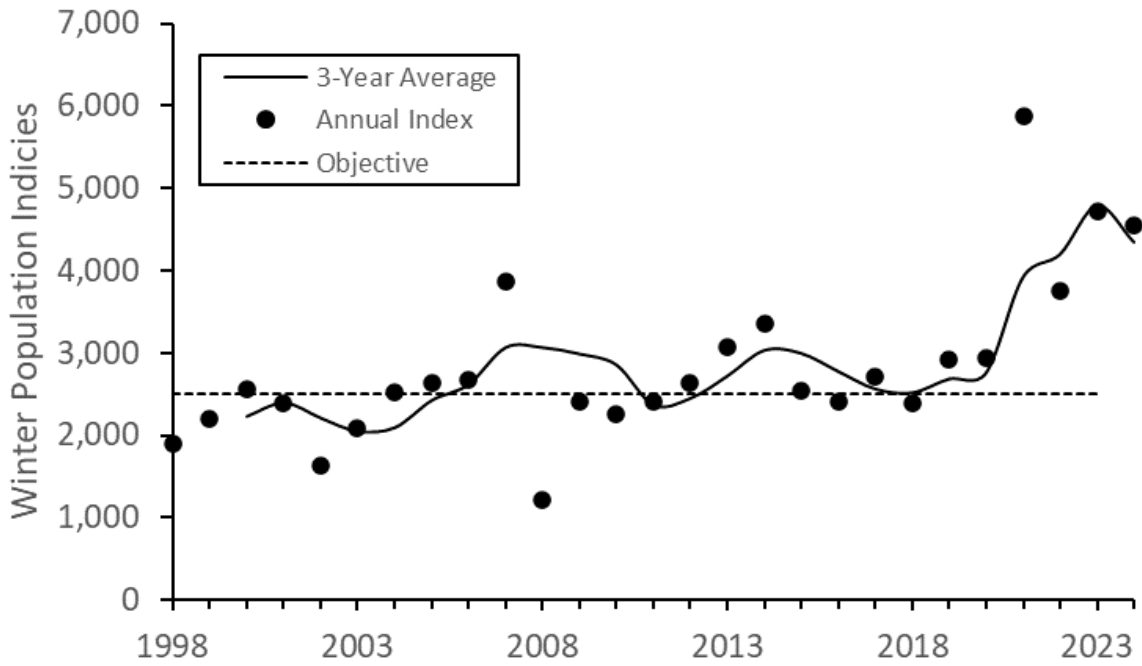


Figure 20. Annual and three-year average of winter counts of the Lower Colorado River Valley Population of sandhill cranes in Arizona and California.

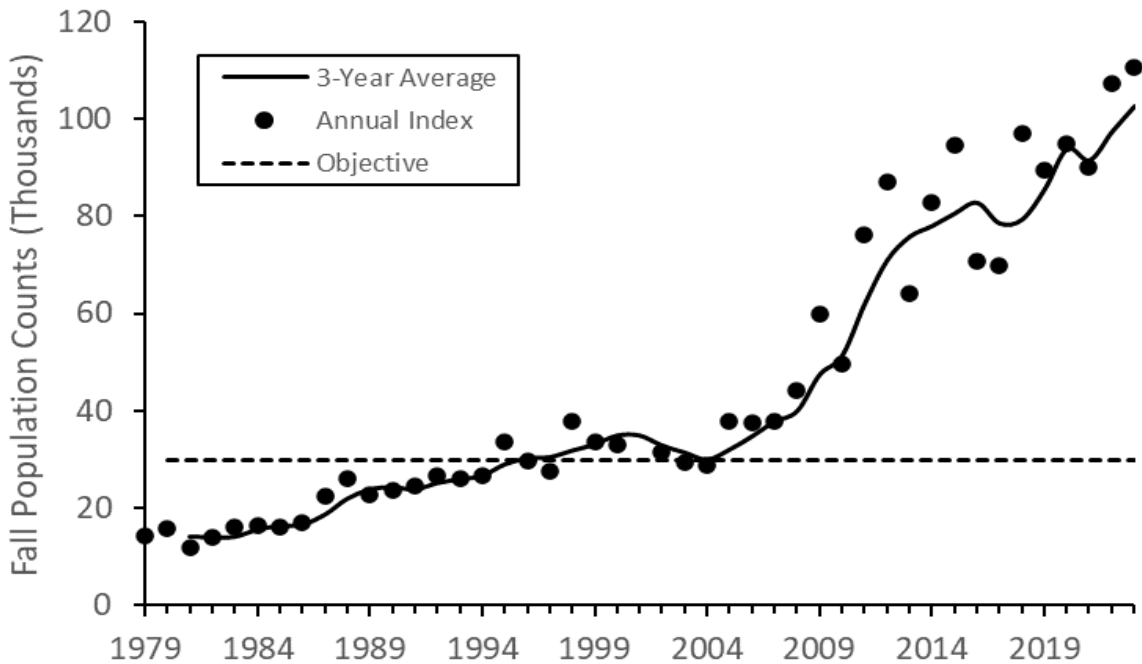


Figure 21. Annual and three-year average of fall counts of the Eastern Population of sandhill cranes.

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