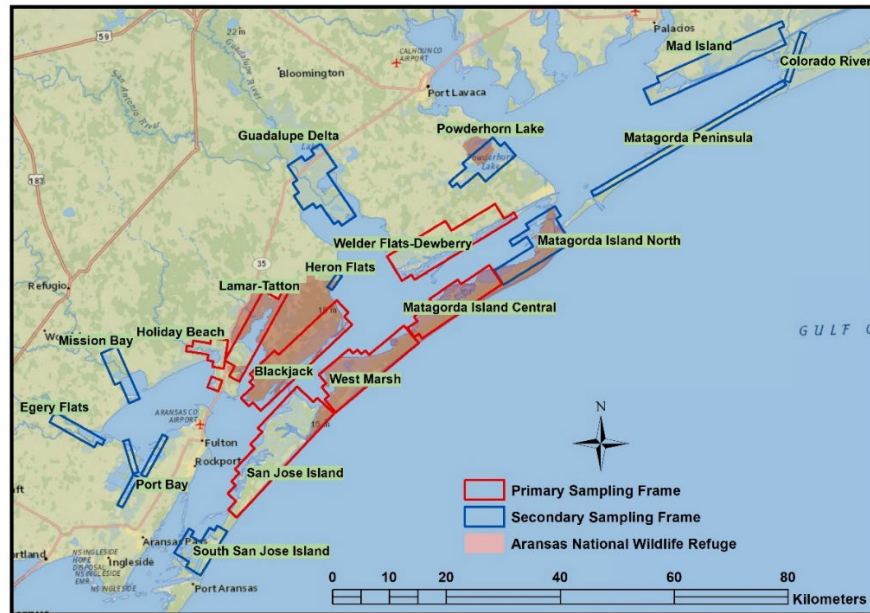


## Whooping Crane Survey Results: Winter 2021–2022

543 Wild Whooping Cranes Estimated (95% CI = 426.5–781.8)

The U.S. Fish and Wildlife Service estimated the abundance of whooping cranes in the Aransas-Wood Buffalo population for the winter of 2021–2022. Survey results indicated 543 whooping cranes (95% CI = 426.5–781.8; CV = 0.182) inhabited the primary survey area (Figure 1). This estimate included at least 31 juveniles (95% CI = 20.2–50.8; CV = 0.255) and 196 adult pairs (95% CI = 153.4–282.9; CV = 0.182). Recruitment of juveniles into the winter flock was 6.1 chicks (95% CI = 4.0–9.1; CV = 0.209) per 100 adults.



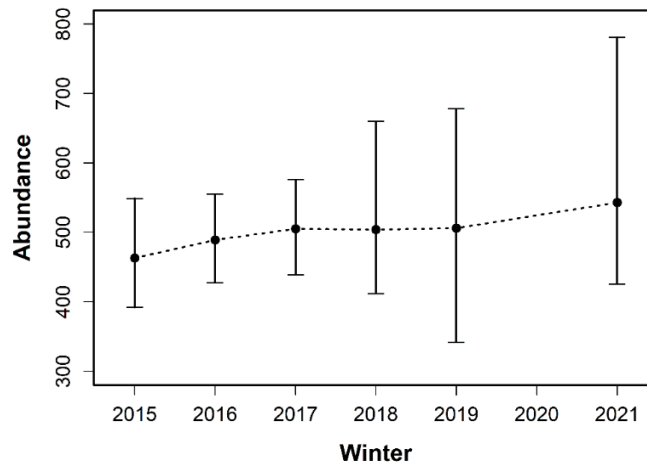
**Figure 1. The sampling area used to monitor whooping crane abundance on their wintering grounds along the Texas coast of the Gulf of Mexico, USA.**

During winter 2021–2022, the U.S. Fish and Wildlife Service conducted surveys in late-January through early-February using a Quest Kodiak aircraft. The primary survey areas (approximately 160,125 acres; Figure 1) were surveyed six-times during January 25–February 2, 2022. The secondary survey areas (approximately 110,950 acres; Figure 1) were surveyed twice during January 28–30, 2022.

The long-term growth rate in the whooping crane population has averaged 4.4% ( $n = 81$ ; 95% CI = 1.81–6.92%). The population remained stable from winter 2017–2018 to winter 2019–2020, but it has grown over the last two years (Table 1). The Canadian Wildlife Service reported 50 whooping crane chicks were fledged at Wood-Buffalo National Park in summer 2021. We estimated at least 31 juveniles (95% CI = 20.2–50.8) on the wintering grounds. However, our juvenile abundance estimate is likely biased low since winter surveys are conducted in late-January after juvenile plumage color is less distinct from adults.

During the survey period, some whooping cranes were observed outside of the primary survey areas. Table 2 provides our best understanding of whooping cranes outside the primary survey areas during the survey period. We cannot ascertain if all or some of these birds moved in and out of the primary

survey area during the survey period. Therefore, some unknown number of birds may be missed while others counted.



**Figure 2. Time-series of whooping crane abundance estimates and 95% confidence intervals for the Aransas-Wood Buffalo population beginning in winter 2015–2016.**

**Table 1. Preliminary whooping crane abundance estimates for the Aransas-Wood Buffalo population on their wintering grounds, winter 2015–2016 through winter 2021–2022.**

| Survey year <sup>a</sup> | Survey month | Aircraft | Abundance <sup>b</sup> | CV    | 95% LCL | 95% UCL | No. assumed beyond primary survey area <sup>c</sup> |
|--------------------------|--------------|----------|------------------------|-------|---------|---------|---|
| winter 2015–2016         | March        | Kodiak   | 463                    | 0.095 | 392     | 549     | 8   |
| winter 2016–2017         | March        | Kodiak   | 489                    | 0.116 | 428     | 555     | 6   |
| winter 2017–2018         | February     | Kodiak   | 505                    | 0.069 | 439     | 576     | 21  |
| winter 2018–2019         | February     | Kodiak   | 504                    | 0.122 | 412     | 660     | 12  |
| winter 2019–2020         | January      | Kodiak   | 506                    | 0.168 | 342     | 678     | 29  |
| winter 2021–2022         | January      | Kodiak   | 543                    | 0.182 | 426     | 781     | 38  |

<sup>a</sup> Due to the COVID-19 pandemic, surveys were not conducted during winter 2020–2021.

<sup>b</sup> Estimated whooping crane abundance in the primary sampling area using aerial surveys and hierarchical distance sampling. CV = coefficient of variation, LCL = lower confidence limit, and UCL = upper confidence limit.

<sup>c</sup> Provides our best understanding of the number of whooping cranes, at the time of the aerial surveys, that were outside of the primary survey areas. This information was based on data from Texas Whooper Watch, eBird reports, iNaturalist reports, the whooping crane GPS tracking study, and aerial surveys conducted in the secondary survey areas.

The survey protocol contains guidelines for promoting secondary survey areas into the primary survey areas. During winter 2019–2020, we observed enough whooping crane groups in the Holiday Beach survey area to promote it into the primary survey area. The Holiday Beach survey area is now part of the primary survey area. The boundaries of the secondary survey areas were also modified so that survey effort in non-habitat areas was minimized (i.e., open water or brushy uplands). We added Heron Flats as a new secondary survey area this year, and we observed enough whooping crane groups to promote it into the primary survey area starting during winter 2022–2023. Also, we observed enough

whooping crane groups to promote South San Jose Island into the primary survey area starting winter 2022–2023.

**Table 2. Whooping cranes documented outside of the primary survey area during January 25–February 2, 2022.**

| General area  | Data source                         | Adults | Chicks | Total | Notes   |
|---|-------------------------------------|--------|--------|-------|---|
| Aransas County<br>(near Lamar, Texas and<br>Goose Island State Park,<br>and residential area) | eBird                               | 4      | 0      | 4     | 22 reports of 2 to 6<br>birds between January<br>24–31, 2022. The<br>median count is used.                              |
| Nueces County<br>(near Leonabelle Turnbull<br>Birding Center)                                 | eBird                               | 2      | 0      | 2     | 4 reports of a pair<br>during January 29–31,<br>2022  |
| Wharton and Colorado<br>counties, Texas   | GPS tracking study                  | 4      | 1      | 5     | Used flooded<br>agricultural areas<br>throughout winter   |
| Matagorda Island North<br>(secondary survey area)   | GPS tracking study<br>Aerial Survey | 2      | 1      | 3     | Family group detected<br>during aerial survey<br>on January 28, 2022<br>and a single crane on<br>January 30, 2022       |
| Powderhorn Lake<br>(secondary survey area)  | GPS tracking study<br>Aerial Survey | 4      | 1      | 5     | Family group and a<br>pair detected during<br>aerial survey on<br>January 30, 2022                                      |
| Guadalupe Delta<br>(secondary survey area)  | Aerial Survey                       | 4      | 2      | 6     | Family group detected<br>during aerial survey<br>on January 28, 2022<br>and 2 family groups<br>on January 30, 2022      |
| Heron Flats<br>(secondary survey area)  | Aerial Survey                       | 2      | 0      | 2     | Pair detected during<br>aerial survey on<br>January 28, 2022  |
| Mad Island<br>(secondary survey area)   | Aerial Survey                       | 4      | 2      | 6     | 2 family groups<br>detected during aerial<br>surveys on January 28<br>& 30, 2022  |
| Port Bay<br>(secondary survey area)   | Aerial Survey                       | 1      | 0      | 1     | A single detected<br>during aerial survey<br>on January 30, 2022  |
| South San Jose<br>(secondary survey area)   | Aerial Survey                       | 4      | 0      | 4     | 2 pairs detected<br>during aerial survey<br>on January 29, 2022,<br>and a pair plus 2<br>singles on January 30,<br>2022 |

*The data and results presented in this report are preliminary and subject to revision. This information is distributed solely for the purpose of providing the most recent information from aerial surveys. This information does not represent and should not be construed to represent any U.S. Fish and Wildlife Service determination or policy.*

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