

Winter Waterbird Survey Report

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The site-specific protocol for monitoring of winter waterbirds for Valle de Oro National Wildlife Refuge (NWR) defines “waterbirds” as including waterfowl, cranes, long-legged wading birds, shorebirds, and secretive marsh birds. For this survey, only cranes and dark and light geese will be monitored. The purpose of this refuge-specific protocol is to estimate the abundance of specific migrating and wintering waterbirds within the cooperators managed agricultural fields at the refuge and other fields. Information from this survey will contribute, in part, to determining the abundance and temporal patterns of waterbirds within the fields of the refuge before, during, and after restoration efforts. The data recorded from this survey will be used to assess environmental conditions and specific waterbird use on the refuge to meet management objectives and goals. Ultimately, information will be incorporated in conservation and habitat management plans for Valle de Oro NWR.

The Valle de Oro NWR waterbird survey route currently consists of a fixed driving route along existing refuge roads. This is subject to change if refuge habitats are restored and trails are established. The refuge was separated into East and West, divided by the Middle Rio Grande Conservancy District Barr Interior Drain running roughly through the center of the property. Then each side was further divided into North and South. Therefore, there are four sampling units at the Refuge: Northeast, Northwest, Southeast, and Southwest.

The protocol employs visual bird counts within mowed and unmown alfalfa and fescue hay fields and fallow fields. These surveys collect site data such as weather and disturbance. Monitoring occurs twice a week, weekly from November – February. Surveys begin at sunrise.

Consistent training on bird identification was given to staff and volunteers, though the Refuge Biologist was lead and did most surveys. Surveys are not conducted in the rain, in the dark, or if visibility is less than 70% (e.g., cloudy, overcast, or foggy) or if winds exceed a Beaufort Wind Index of 5 or higher (30-50 miles per hour).

Please note the following:

There is a large potential for error in this monitoring survey. The below excerpt is mainly taken from the Monitoring Manual for the Integrated Waterbird Management and Monitoring (IWMM) Approach for Nonbreeding Waterbirds, Version 8: February 2015, Introduction, pp. 5.

Detection of [birds] is likely to be imperfect during surveys, thus biasing estimates. Inaccuracy occurs when some individuals are unavailable for detection (e.g., hidden behind vegetation or other birds), when individuals that are available are not perceived by the observers, or when observers under or overestimate extremely large flocks. Many factors can influence detectability, including observer ability and attention, habitat conditions, and weather. Detectability of [birds] may also change during the season due to changing vegetation structure throughout the season; this is especially applicable for agricultural fields and the stage of crop growth. The size of flocks occurring on single survey units will likely vary tremendously across the survey period; in general, observers tend to underestimate flocks of large birds in excess of 2,000 (Boyd 2000), and the degree of bias (of the underestimate) increases as flock size increases. Training may improve the ability of observers to estimate large flocks.

Historically and currently, the refuge is in cooperative agricultural hay production, which unintentionally leaves plant residue and mimics turf-like conditions that attracted flocks of cranes and geese during fall and winter migrations (September to March) in addition to its proximity to the river. In the summer irrigation season (March to October), the shallowly flood irrigated agricultural fields attract flocks of ducks, mainly mallards and shorebirds (e.g., yellowlegs and long-billed curlews).

U.S. Fish and Wildlife Service (USFWS) winter waterbird data from surveys conducted during the 2005-2006, 2013-2019 seasons are outlined in Table 1. Until 2015, crane and geese data were collected based on the availability of NWR System personnel. Survey protocols and timeframes for data collections varied so direct comparisons from year-to-year are not reliable. These snapshots of waterbird abundance serve as a rough baseline from which to analyze the impacts of the management actions of the refuge. During the 2018-19 season, the survey was interrupted by the government shutdown that occurred from December 22, 2018 to January 25, 2019.

Table 1. Winter waterbird numbers on Valle de Oro NWR during the survey period of November to February.

Winter Waterbird Data for Valle de Oro NWR			
Year	Average Number of Dark Geese	Average Number of Light Geese	Average Number of Sandhill Cranes
2005-2006*	1,593	Unknown	Unknown
2013-2014**	Unknown	1,069	201
2015-2016***	1,856	302	110
2016-2017***	1,274	105	464
2017-2018***	1,245	63	502
2018-2019***	777	41	249
*Surveys were conducted for dark geese only; the refuge was still a dairy farm. **Surveys for sandhill cranes and light geese were conducted once a week, November through February, by Bosque del Apache NWR only after the refuge was established. ***Surveys were conducted by the Valle de Oro NWR biologist and trained volunteers; protocols changed from the 2015-2016 survey to the 2017-2018 survey when counts were conducted twice a week during the survey period.			

Restoration Begins

In 2017, water rights were transferred from the northeastern fields to the southeastern fields, to allow for irrigation of the proposed playa wetland and upland restoration to occur in that area; thus, the northeastern fields were left to fallow and only the western and southeastern portions of the refuge were under a cooperative farming agreement until 2018. Beginning in February 2018 and ending in April 2018, in partnership with Bureau of Reclamation, Audubon NM and Coca-Cola, Talking Talons, WildEarth Guardians and Rio Grande Return, and others, the refuge started habitat restoration along its northwestern and southeastern boundaries. Along the northwestern boundary, a number of Rio Grande Cottonwoods (*Populus wislizeni*), willows (*Salix* spp.), and other woody species were planted as a starting basis for the extension of the bosque and riparian habitats of the refuge's proposed habitat restoration plan this continued from February 2019 to April 2019. Furthermore, in the southeastern fields of the refuge, an up to 16 acre playa type wetland was created in the proposed upland section of the refuge.

In the 2018-2019 winter waterbird season, the Cooperator Farmer of the refuge is still actively flood irrigating the western portion of the refuge only. No water resides in the southeastern playa and northeastern fields receive only rain water. Construction of the visitor center in the middle northeastern fields is slated for 2019-2020. It is expected that as habitat restoration continues, diversity of species may increase, and detectability and survey routes will change as habitats become more complex.