

**Summary Report 2023**  
**Pronghorn antelope abundance survey in south-central**  
**Washington**

Washington Department of Fish and Wildlife  
Yakama Nation Wildlife



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## **SUMMARY**

By the start of the 20<sup>th</sup> century, pronghorn antelope were extirpated from Washington. The Yakama Nation reintroduced pronghorn onto the Yakama Reservation in Washington, releasing 198 animals from 2011 to 2019. These pronghorn dispersed from their release locations and increased in abundance according to biennial surveys. We conducted a fifth biennial aerial survey on Jan 26-27, 2023 in parts of Benton, Klickitat, and Yakima counties in south-central Washington, including parts of the Yakama Reservation. The objective of the survey was to obtain a minimum population estimate for pronghorn. We counted a total of 212 pronghorn from the air, which was a decrease from the 2021 count of 250 animals. True abundance is likely greater due to challenges in detecting all pronghorn groups. This remains a relatively small population and there is currently no legal harvest of the species under regulations of the Washington Department of Fish and Wildlife (WDFW) and Yakama Nation.

## **BACKGROUND**

Paleontological and archeological evidence indicates that pronghorn antelope (*Antilocapra americana*) were historically present in Washington but were never abundant relative to other ungulates in the area (Lyman 2007). Pronghorn were extirpated from Washington by the beginning of the 20<sup>th</sup> century (Taylor and Shaw 1929). In the winter of 2011, 99 pronghorn were translocated onto the Yakama Reservation from central Nevada (Yakama Nation 2011). In October 2018 and January 2019, two more releases added 50 and 49 pronghorn, respectively, to augment the growing herd. Surveys of this population occurred in Feb 2015, March 2017, Feb 2019, and Mar 2021. These surveys indicated that the population was slowly growing and that about half of the population spent winters on the reservation and the other half on private lands (Oyster et al. 2015, 2017; Fidorra et al. 2019, 2021).

The objective of the 2023 pronghorn survey was to reassess the status of the population and provide a minimum population estimate to guide management of pronghorn in the future for both the Yakama Nation and WDFW.

## STUDY AREA

The survey took place in portions of Benton, Klickitat, and Yakima counties in south-central Washington (Fig. 1). The dominant habitat types include dryland wheat agriculture, Conservation Reserve Program (CRP) land, grazed rangeland, and shrub-steppe communities of

sagebrush and bunch grass, and degraded steppe invaded by cheatgrass (*Bromus tectorum*).

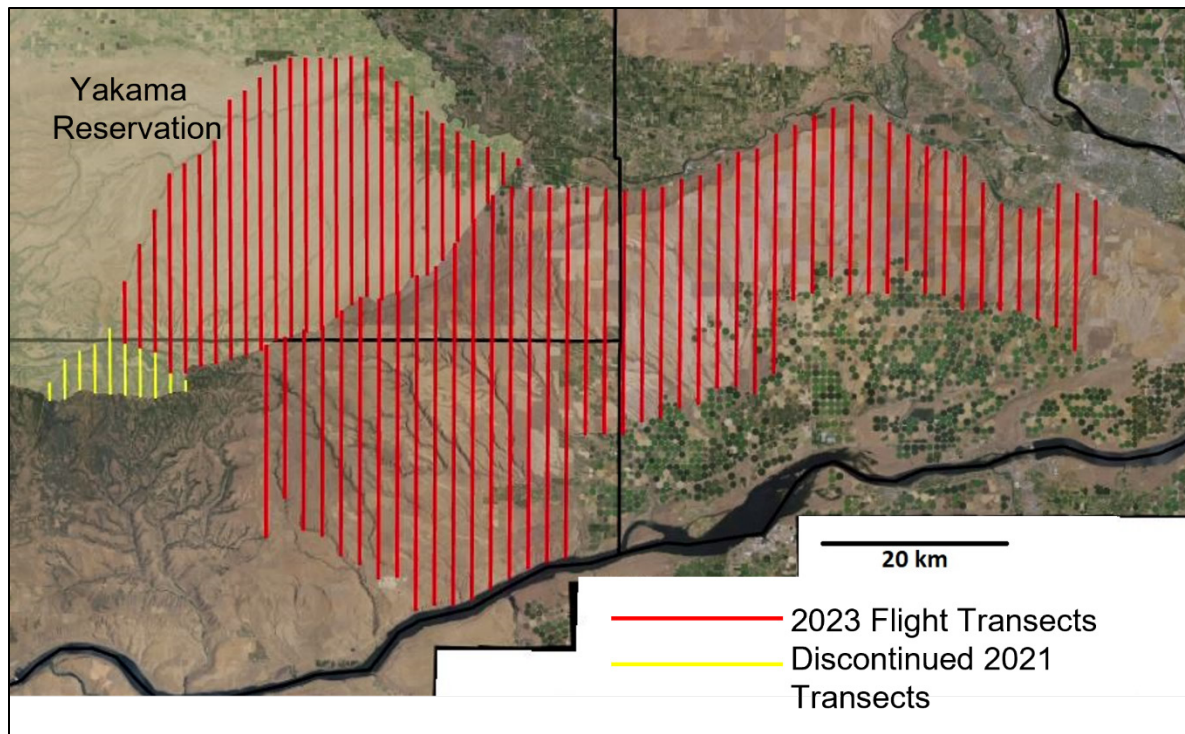
Large areas of irrigated agriculture are excluded from the survey as early surveys and GPS collar data indicated rare use of this cover type by pronghorn in the area.

## METHODS

Abundance surveys have been conducted every other winter, typically January to March of odd years. Parallel strip transects were flown in a north-south direction (Fig. 2). Transects were spaced at 1.6 km apart on the Yakama Reservation and 2 km apart off the reservation. Transects with narrower spacing were selected based on higher perceived pronghorn abundance and because terrain and vegetation on the Yakama Reservation (uneven & characterized by more shrubs) make pronghorn detection more difficult compared to the typically flat terrain containing agricultural fields. In 2023 we excluded forested high elevation portions of the southern edge of the Yakama Reservation, eliminating 35 km of survey transect for time savings.



**Figure 1: The survey area (red) including portions of Benton, Klickitat, and Yakima counties.**



**Figure 2: Flight Transects planned for pronghorn survey in south-central WA, 2023.**

We conducted aerial surveys in a Cessna 182 fixed-wing aircraft at an approximate speed of 90 knots at 100 – 150 meters above ground level. We had two observers in the plane, plus the pilot in the front left seat. When we observed a pronghorn group, we left the transect and recorded the total number of pronghorn in the group and a waypoint for time and location. A ground survey crew of Safari Club International (SCI) volunteers actively searched for pronghorn concurrently with the aerial survey. When the ground crew detected a pronghorn group, they recorded location and number and relayed the information to the aerial crew. If possible, the aerial crew obtained a count of that group from the plane. If the flight crew appeared to miss a group found by the ground crew, the best ground count of the animals was added to the survey data.

## RESULTS

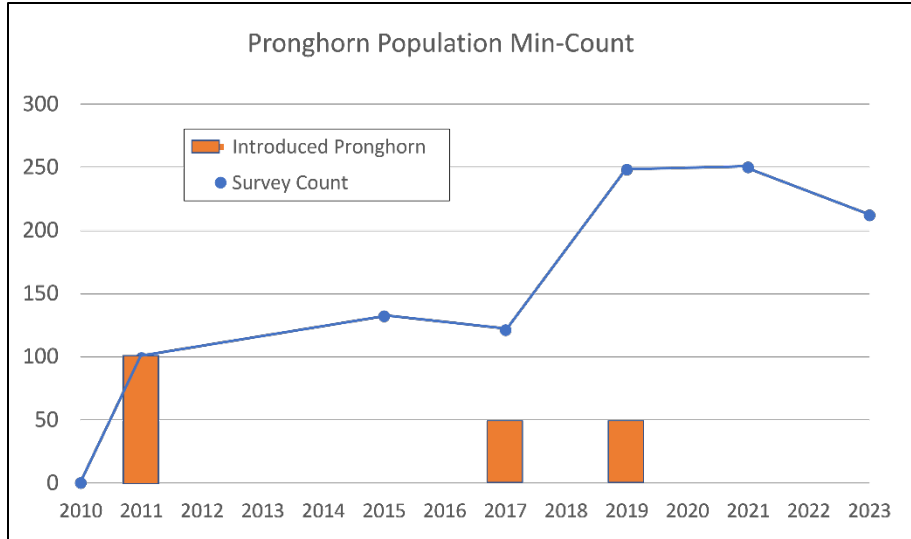
The survey was completed on January 26 and 27, 2023, except for four partial transects in southern Klickitat County where fog prevented surveys (Fig 4). The agriculture-dominated

portions in the north part of the Yakama Reservation where pronghorn have not been detected were also excluded to save time and fuel costs. The ground was clear of snow except small patches in the upper elevation transects in Klickitat County and on the Yakama Reservation. It was mostly sunny on both survey days with good visibility. Fog in Pasco delayed the crew for two hours on the first day, but we then began our survey at the western-most transect in Klickitat County and continued east the first day ending near Prosser, WA. The remaining transects in Benton County were flown at the start of day two followed by the Yakama Reservation. Total flight time for the survey was 13.7 hrs. Excluding refuel stops at Sunnyside and ferry time, the Yakama Reservation took ~3.5hrs to survey, transects west of Prosser took ~4.5hrs, and east of Prosser took ~3hrs.

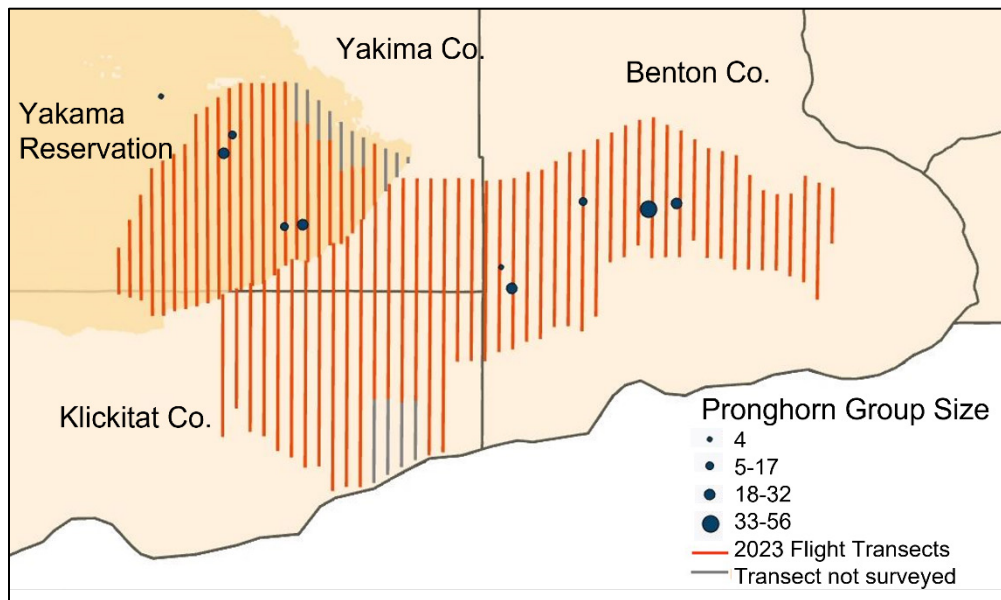
**Table 1: Flight details of aerial pronghorn surveys in south-central WA.**

Year	Date	Vendor	Aircraft	Flight time	Comments
2015	Feb 25-26	Inter-State	Cessna 182	10.4hrs	
2017	Mar 16-17	Baker	Cessna 182	15.9hrs	Weather delay to Mar.
2019	Feb 6-7	Inter-State	Cessna 182	13.9hrs	
2021	Mar 2-3	Inter-State	Cessna 182	16.2hrs	Did not fly 5 of the transects.
2023	Jan 26-27	Bergstrom	Cessna 182	13.7hrs	

We detected a total of 212 pronghorn in 10 groups (Fig 3; Fig 4). Mean group size was 21.2 with group sizes ranging from 4 to 56 (Table 2). Eighty-one pronghorn (38%) were on the Yakama Reservation. One group of 17 pronghorn observed from the ground in Benton County were not initially detected during the flight, but ground crews redirected the aircraft to their location. The four partial transects that could not be surveyed due to fog cover a location where pronghorn have been reported in spring and may hold uncounted groups. Unlike past flights, ground surveys on the Yakama Reservation were not conducted, and the aircraft was used to search the West Satus area (off transect) where four pronghorn were added to the flight total.



**Figure 3: South-central Washington pronghorn population based on counts from survey efforts compared to the total number of introduced individuals.**



**Figure 4: Pronghorn group locations and flight transects during 2023 flight survey.**

**Table 2: Pronghorn survey results from winter flights in south-central WA, 2015-2023.**

Year	Date	Total Pronghorn	Groups	Avg. Group Size	Group Size Range	# Added by Ground Crew
2015	Feb 25-26	132	15	7.1	1-27	26
2017	Mar 16-17	121	19	6.1	1-16	5
2019	Feb 6-7	248	8	31.0	3-97	55
2021	Mar 2-3	250	34	7.0	1-24	34
2023	Jan 26-27	212	10	21.2	4-56	17

## **DISCUSSION**

### **Survey Methods**

Population counts occur in winter as pronghorn form large groups in winter that are easier to spot than smaller groups (Figure 5; Oyster 2014). When temperatures warm and new vegetation begins growing, pronghorn split up into smaller groups (O’Gara and Yoakum 2004, Bernt 1976), which has occurred by March in this area (Oyster et al. 2017). This year was the earliest we have flown the survey and pronghorn were found in a few large groups.

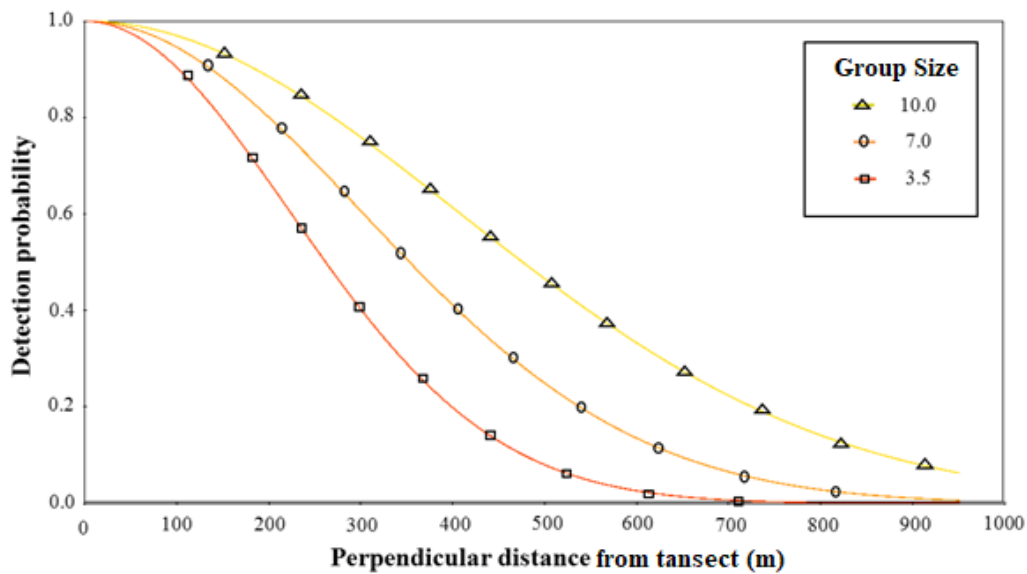
The downside is that missing a group can greatly impact our inference regarding the population size, and the small number of detections makes it challenging to apply statistical methods such as distance sampling in a meaningful way. Our survey efforts confirm that detection from the plane is imperfect, with ground observations supplementing flight data each year (Table 2). This year, ground crews watched the plane fly directly over a group without detecting the animals. This was due to a blind spot directly in front of and below the plane. Pronghorn are challenging to detect, with one study showing that only < 50% of moderate sized groups are detected past 500m from the plane (Fig 5; Oyster 2014). Because we currently space transects 1.5-2km apart, our methods depend upon searching 750-1000m from the plane.

While current survey efforts likely provide an adequate index of the population, several options exist to improve detection and our population count. These include: a) delaying surveys

until spring green-up (March/April) when visual detection of animals may be easier, though pronghorn groups are more dispersed; b) delay surveys until groups are dispersed to increase number of detections to model detection rates; c) flying transects in closer intervals (i.e., 1km spacing), which could improve detection but increase flight time; d) change from a Cessna to a R-44 helicopter with much improved forward visibility and reduced blind-spot, which would likely double costs; e) collar enough individuals that groups include a collared animal to assist in locating. While these and other methods could be explored, maintaining the current protocols is likely sufficient for current management and monitoring.

Yakama staff flew off-transect to search the West Satus area and detected an expected group of pronghorn there. Future surveys should include formal transects west of Hwy 97 on the Yakama Reservation.

This year we contracted Bergstrom Aircraft out of Pasco to complete the flight with pilot Monte Ladow. This improved survey logistics as there was no commute time from Baker City or Pullman areas, and weather at these distant airports did not impact the survey.



**Figure 5. Detection function curves for three different pronghorn group sizes in western Kansas, summer 2012. Adapted from Oyster (2014).**



Pronghorn does and fawns are not easily distinguished during this time of year because fawns are nearly full-grown. Yearling bucks are also difficult to distinguish from does and fawns because their horns (~ 7 inches) are only about as long as their ears (5-6 inches), and their dark cheek patches are only about 50% the size they attain during the pre-rut and rut (O’Gara and Yoakum 2004). Furthermore, classifying animals from the air would increase risk from low level maneuvering and push animals across the landscape that could contact fences or traffic. Therefore, we did not attempt to estimate buck:doe ratios.

We benefited from SCI ground crews during survey efforts as a group of 17 animals would have otherwise been missed from the air. We recommend continuing ground survey efforts during the flight and increasing scouting 1-2 days before the survey as well.

### **Pronghorn Population**

The 212 pronghorn observed during the survey represent a minimum count for south-central Washington population, and it is likely that more animals exist in this landscape as detection of pronghorn can be challenging during flights. This population is considered a closed population with no known movements across the Columbia River to the south where populations reside in Oregon, or north to populations reintroduced in north-central Washington by the Colville Tribe. The 2023 count was lower than the 2021 count of 250 pronghorn, but we believe this does not represent a concerning decline. It is worth noting that the spring of 2021 was exceptionally dry and could have impacted Pronghorn reproductive success as was evidenced in deer by lower fawn:doe ratios during fall 2021 surveys in the Columbia Basin (Atamian et al. 2021). Also, Klickitat County experienced a sizable outbreak of Adenovirus Hemorrhagic Disease (AHD) during summer 2022. Pronghorn are susceptible to AHD, although no known cases were documented in Washington. No additional augmentations are planned at this time.

## **CONCLUSION**

Our minimum count of the south-central pronghorn population was 212, indicating a small decline from the 2021 count. The population continues to maintain itself naturally but is still small and considered sensitive to adult mortality including roadkill, harsh winter conditions, and changing habitat and land use. Biennial survey flights have been a positive cooperative undertaking and should be a continued priority for the WDFW, Yakama Tribe, and SCI partners.

## **ACKNOWLEDGMENTS**

We are especially thankful to the Safari Club International Volunteers for coordinating and conducting ground surveys, especially Deb and Doug Barrett. We thank Bergstrom Aircraft pilot Monte Ladow for safe and effective flying during the survey, and flight observer Casey Heemsah for his help during the aerial survey.

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