

**Summary report**  
**Pronghorn antelope abundance survey in south-central  
Washington**

**March 16-17, 2017**

**Yakama Nation Wildlife**

**Washington Department of Fish and Wildlife**



Photo by Mark Vekasy

**Jared Oyster - Wildlife Biologist, WDFW**

**David Blodgett III – Wildlife Biologist, YNWP**

**Gabe Swan – Wildlife Biologist, YNWP**

**Rich Harris – Section Manager, WDFW**

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## **SUMMARY**

By the start of the 20<sup>th</sup> century, pronghorn antelope had become extirpated from Washington. Ninety-nine pronghorns were reintroduced onto the Yakama Reservation, Washington in 2011; these pronghorns have since dispersed from their release locations and increased in abundance. We conducted aerial surveys on March 16-17, 2017 in Benton, Klickitat, and Yakima Counties in south-central Washington, both on the Yakama Reservation and off the Reservation. The objective of the survey was to obtain a minimum population estimate for pronghorn. We counted a total of 116 pronghorns during our aerial survey and an additional 5 from ground surveys, for a total minimum population estimate of 121 pronghorns. The true abundance is likely to be underestimated because small group sizes made detecting pronghorns difficult and they may reside in locations outside of our survey area. Despite the harsh winter of 2016-2017, there is little evidence that the pronghorn population has declined since 2015. Human-induced mortality must be kept low to protect this small population. The Yakama Nation and Washington Department of Fish and Wildlife (WDFW) consider that the population will require a few more years of growth before recreational harvest should be considered.

## **INTRODUCTION**

Paleontological and archeological evidence indicates that pronghorn antelope (*Antilocapra americana*) were historically present in Washington (Lyman 2007), but were never abundant relative to other ungulates in the area (Lyman 2007). Pronghorn had become extirpated from Washington by the beginning of the 20<sup>th</sup> century (Taylor and Shaw 1929). In the winter of 2011, 99 pronghorns were translocated onto the Yakama Reservation from central Nevada (Yakama Nation [<https://www.ynwildlife.org/pronghorn.php>]). Since the release,

pronghorn have dispersed off of the Yakama Reservation (Swan 2011) and have grown slightly in abundance (Oyster et al. 2015). The first survey of pronghorn in south-central Washington since the 2011 reintroduction was conducted in 2015 (Oyster et al. 2015). That survey estimated a total minimum of 132 pronghorns (71 on the reservation and 61 off the reservation), suggesting an estimated growth rate of 7.5% per year. The pronghorns had spread south into Klickitat and Benton counties, Washington. The objective of the 2017 pronghorn survey was to reassess the status of the population and to provide information on how to guide management of pronghorn in the future.

### STUDY AREA

Our survey was conducted in portions of Benton, Klickitat, and Yakima counties in southcentral Washington (Fig. 1). The dominant habitat types are a mix of croplands (primarily winter wheat and crops with center pivot irrigation), Conservation Reserve Program (CRP) land, grazed rangeland, and shrub-steppe communities. In the central Basin of Washington, the winter of 2016-2017 was the coldest in over 30 years, with above average snowfall (NOAA 2017).

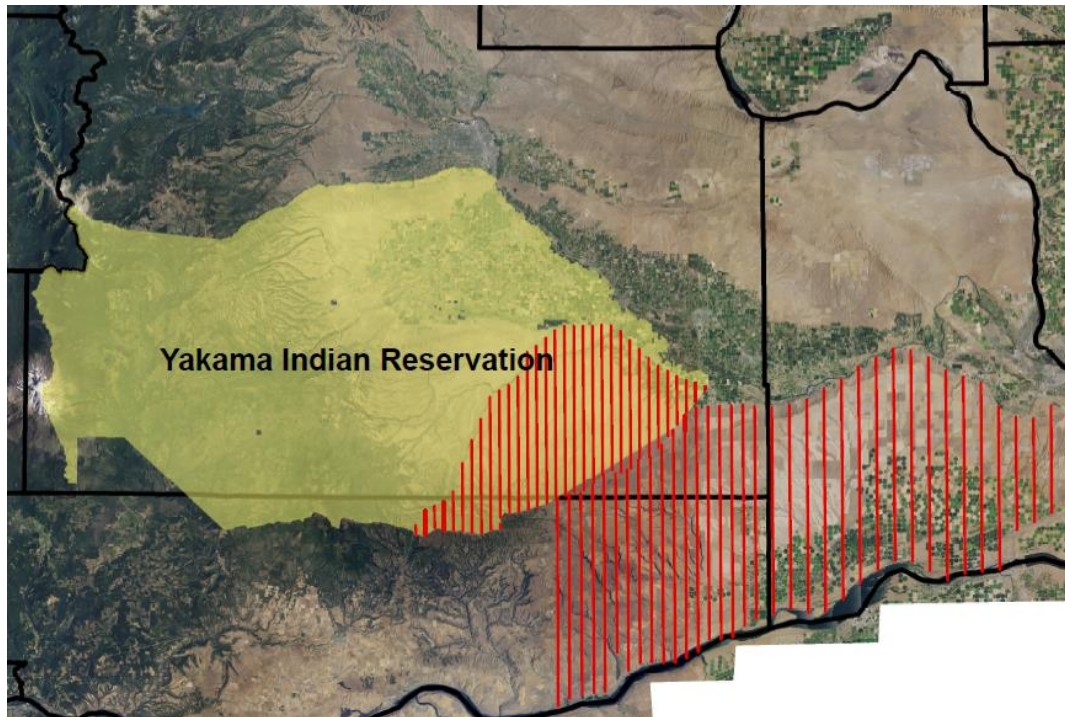


**Figure1.** The survey area (red) including portions of Benton, Klickitat, and Yakima counties.

### METHODS

We used a strip transect method, flying parallel transects in a north-south direction (Fig. 2). Transects were established prior to the survey in ArcGIS 10.1 (Environmental Systems Research Institute, Inc., Redlands, CA). Transects were spaced at 1.6 km apart on the Yakama Reservation, 2 km apart in Klickitat/Yakima Counties, and 3 km apart in Benton County. Transects with shorter spacing were selected based on higher perceived pronghorn abundance in

that area, and because terrain and vegetation in Yakima County (uneven, characterized by shrubs) made it more difficult to detect pronghorn than the typically flat terrain with agricultural fields in Benton County.



**Figure 2.** Transects (red) flown in search of pronghorn, March 16-17, 2017.

We conducted aerial surveys in a Cessna 182 fixed-wing aircraft at an approximate speed of 80—90 knots and at 100—150 meters above ground level. A ground survey crew, conducted by the Safari Club International (SCI), was actively searching for pronghorn concurrently with the aerial survey. When the ground crew detected a pronghorn group, they relayed the location to the aerial crew. The aerial crew then obtained a second count of that group from the plane to ensure a full count. We had 3 observers positioned in the plane: the front right, back right, back left; the pilot was seated in the front left. The main duty of the pilot was flight safety and remaining near the transect line; however, we included any pronghorns he detected in our count as well.

We began our survey at the western-most transect in Klickitat County and continued

west through all the transects in Benton County. The transects over the Yakama Reservation were flown last. When we observed a pronghorn group we left the transect and recorded: (1) a waypoint, (2) the total number of pronghorns, (3) the number of distinguishable bucks, (4) any pronghorns with collars or ear tags, (5) the observer that detected the pronghorns, (6) pronghorn activity (e.g. standing, bedded etc.), and (7) habitat type (crop, Conservation Reserve Program lands, or range). Bucks, does, and fawns are not as easily distinguished during the winter as other times of year. Nevertheless, we documented the number of bucks we were confident in identifying within each group. We surveyed for about 6 hours in Klickitat/Yakima County, 4.5 hours in Benton County, and 3.5 hours over the Yakama Reservation. We also recorded the number of coyotes (*Canis latrans*) detected during the survey. Surveys were conducted March 16-17, 2017.

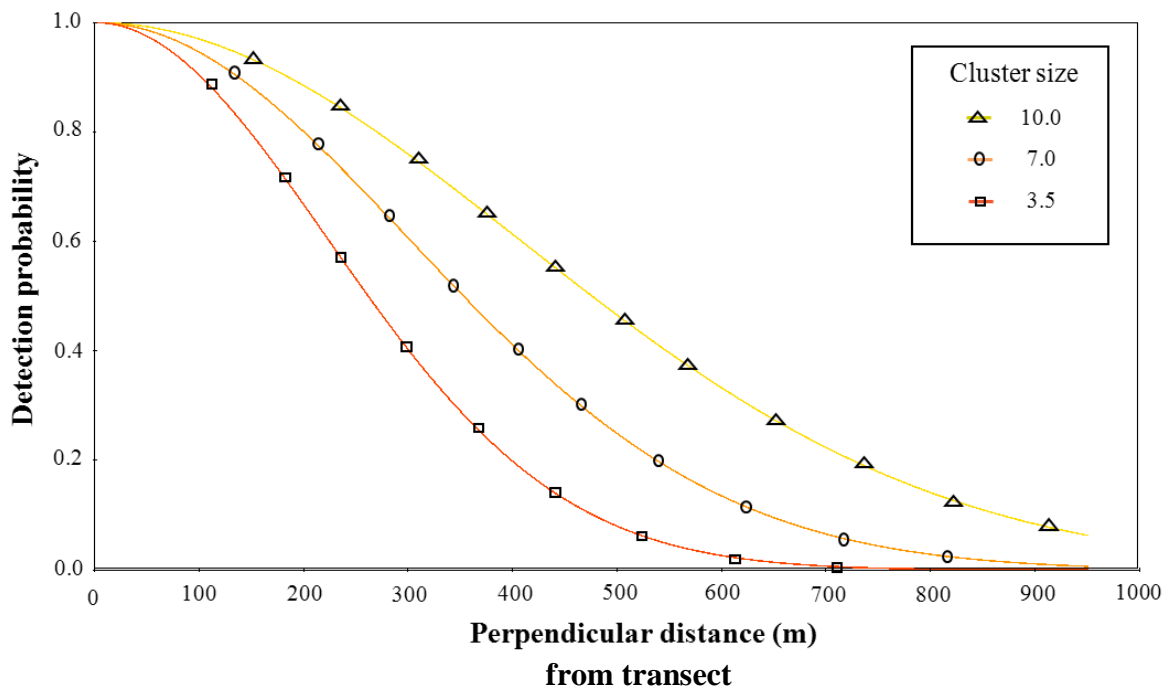
## **RESULTS**

We detected 19 pronghorn groups, a total of 116 animals, 44 of which were on the Yakama Reservation, 72 of which were south and/or south-east of the Reservation. One additional group of 5 pronghorns was observed from the ground, outside of the surveyed area (west of US Highway 97). Combining this ground observation with those from the aerial surveys results in a minimum count of 121 pronghorns. Twenty-two (20%) pronghorns were classified as bucks. Of the 12 aerial detections southeast of the Reservation, 7 were in non-irrigated cropland, and 5 were in rangelands. All detections on the Reservation were in rangelands.

Mean group size was 6.1; group sizes varied from 1 to 16. We did not identify any pronghorn wearing collars or eartags. We counted a total of 37 coyotes during the survey: 18 in the Klickitat/Yakima County portion, 15 in Benton County, and 4 on the Yakama Reservation.

## **MANAGEMENT IMPLICATIONS**

Pronghorn form large groups during winter months. When temperatures warm and new vegetation begins growing, pronghorn split up into smaller groups (O’Gara and Yoakum 2004, Bernt 1976). We had planned surveys several times beginning in late January, but were never able to conduct them do to unsafe flying conditions. Smaller pronghorn group sizes, typical of our mid-March timing, have a lower detection probability than larger groups (Fig. 3; Oyster 2014).



**Figure 3.** Adapted from Oyster (2014). Detection function curves for 3 different pronghorn group sizes in western Kansas, summer 2012.

Thus, our overall count may be lower than what it could have been if the survey had been conducted earlier, in mid-winter, when pronghorn groups are typically larger. Ideally, future pronghorn surveys should be conducted in December or January. Pronghorns also may have been missed if located in areas outside our survey area. Despite these potential negative biases, we detected 10 more pronghorns (9% more) than we had during our 2015 aerial survey.

Additionally, although we benefited from ground crews during survey reported here, ground-

based effort was lower than those that augmented our aerial survey in 2015 (in part, because the 2017 survey was scheduled in haste due to weather complications, when many from the ground crew were busy at other events). Lower levels of concurrent survey effort from ground crews and from public sightings may have contributed to a negative bias. Despite the harsh winter of 2016-2017, there is little evidence that the pronghorn population in this part of Washington State has decreased since the last survey in 2015.

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). Therefore, buck:doe ratios from our survey are likely underestimated and should be considered cautiously.

Coyotes can be effective predators of pronghorn adults (Bright and Hervert 2005) and fawns (Gregg et al. 2001). High coyote densities have been shown to have a direct impact on fawn survival (Berger et al. 2008). If there is a high coyote density relative to pronghorn density, they could effectively limit population growth by consuming a large proportion of pronghorn fawns every year (Holling 1965, Berger et al. 2008, Gregg et al. 2001)). For example, coyotes killed 72% (75 of 104) of collared fawns in south-central Oregon (Gregg et al. 2001) Although we saw more coyotes in 2017 than we did in 2015, this should not be interpreted that coyote densities were definitively higher in 2017, because we did not make a concerted effort to record all coyote sightings in 2015. In 2015, we began to record coyote sightings as an afterthought after a few groups were seen. Furthermore, the pilot in 2017 was an avid and experienced coyote hunter and he detected many of the coyotes.

Contacts made by the SCI ground crew with local landowners indicated that the majority of landowners viewed pronghorn favorably. However, there are some landowners that are still intolerant of having pronghorns on the landscape. For pronghorns to become self-sustaining and secure, it will be important to assure that human-induced mortality (e.g., from poaching or poor fence construction) remains low, and that any conflicts with agricultural use are minimized so as to maintain landowner acceptance. Both the Yakama Nation and WDFW consider that the population will require at least a few more years of growth before recreational harvest should be considered. Although recent surveys from Yakama Nation biologists indicate that the feral horse (*Equus caballus*) population has declined during the last few years, there is still likely competition between horses and pronghorns. Although horses and pronghorn do not overlap substantially in diet, indirect impacts likely exist (Gooch et al. 2017). Potential conflicts between pronghorns and feral horses should be investigated and described. If possible, it would also be desirable to assess genetic diversity in this herd to help understand the usefulness of additional transplants (Stephen et al. 2005)

## **ACKNOWLEDGMENTS**

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