

## **Summary Report 2019**

# **Pronghorn antelope abundance survey in south-central Washington**

Yakama Nation Wildlife Washington

Department of Fish and Wildlife



Photo by Mark Vekasy

**Jason Fidorra - Wildlife Biologist, WDFW**

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

**Stefanie Bergh – Wildlife Biologist, WDFW**

**Carly Wickham – Wildlife Biologist, WDFW**

**Rich Harris – Section Manager, WDFW**

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## **SUMMARY**

By the start of the 20<sup>th</sup> century, pronghorn antelope were extirpated from Washington. The Yakama tribe 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 (Oyster et al. 2015, 2017). We conducted a third biennial aerial survey on February 6-7, 2019 in parts of Benton, Klickitat, and Yakima counties in south-central Washington, including the Yakama Reservation and private lands. The objective of the survey was to obtain a minimum population estimate for pronghorns. We counted a total of 225 pronghorns from the air and an additional 23 from ground counts, for a total minimum population estimate of 248 pronghorns. The true abundance is likely to be greater as shallow snow conditions made detecting pronghorns and ground travel difficult. However, this remains a relatively small population and there is currently no legal harvest of the species in areas under the auspices of the Washington Department of Fish and Wildlife or Yakama Nation. The Yakama Nation and WDFW are developing plans regarding future management for this herd.

## **INTRODUCTION**

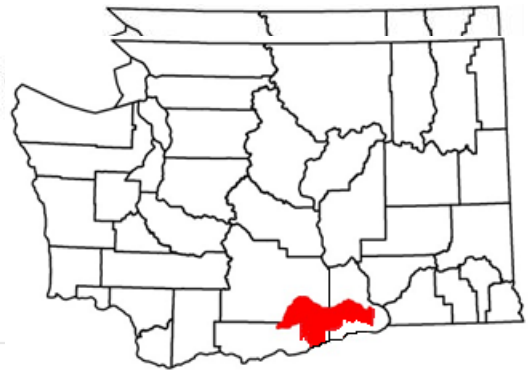
Paleontological and archeological evidence indicates that pronghorn antelope (*Antilocapra americana*) were historically present in Washington but were never abundant relative to other ungulates in the area (Lyman 2007). Pronghorns were extirpated from Washington by the beginning of the 20<sup>th</sup> century (Taylor and Shaw 1929). In the winter of 2011, 99 pronghorns were translocated onto the Yakama Reservation from central Nevada (Yakama Nation 2011). Surveys of this population occurred in Feb 2015 and March 2017. 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). In

October 2018 and January 2019, two more releases added 50 and 49 pronghorn, respectively, to augment the growing herd.

The objective of the 2019 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 southcentral 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*). A large area of irrigated agriculture in southern Benton County was excluded from the survey area this year as past surveys and GPS collar data indicated very rare use of this cover type by pronghorn in Washington.

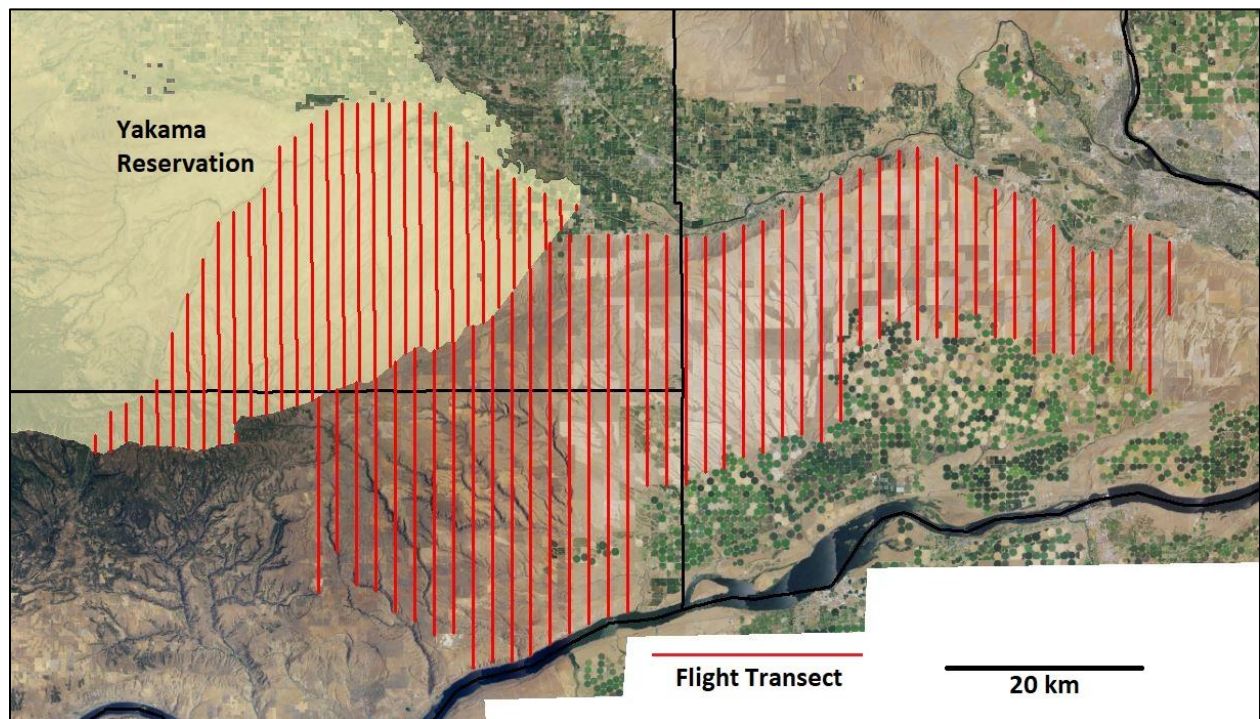


**Figure 1.** The survey area (red) including portions of Benton, Klickitat, and Yakima counties.

## METHODS

Surveys were conducted February 6-7, 2019. We flew parallel strip transects in a north-south direction (Fig. 2). Transects were established prior to the survey in ArcGIS 10.4 (Environmental Systems Research Institute, Inc., Redlands, CA). 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 shrubs) make pronghorn

detection more difficult compared with the typically flat terrain containing agricultural fields. Unlike past surveys, Benton County transects were not spaced at 3km due to perceived limits to detection distance. By removing the irrigated portion of the survey area we could cover more transects over the smaller survey area with similar flight time as previous surveys.



**Figure 2.** Transects flown in search of pronghorn in south-central WA, February 2019.

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 of 2-3 vehicles coordinated by the Safari Club International (SCI) was actively searching for pronghorns concurrently with the aerial survey. When the ground crew detected a pronghorn group, they relayed the location to the aerial crew. If possible, the aerial crew obtained a count of that group from the plane. In addition, Yakama Nation biologists used recent collar GPS data to help locate groups on the reservation. We had two observers in the plane, plus the pilot in the front left seat. 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 east through the first day just past Prosser, WA. The transects over the Yakama Reservation were flown the start of day two, with the rest of Benton County completed on day two starting around 1300 hrs. When we observed a pronghorn group we left the transect and recorded: (1) a waypoint for time and location, (2) the total number of pronghorns, (3) the observer that detected the pronghorns, (4) pronghorn activity (standing, moving, bedded), and (5) the number of identified bucks. Bucks, does, and fawns are not as easily distinguished during the winter as other times of year and this data was incidental.

## RESULTS

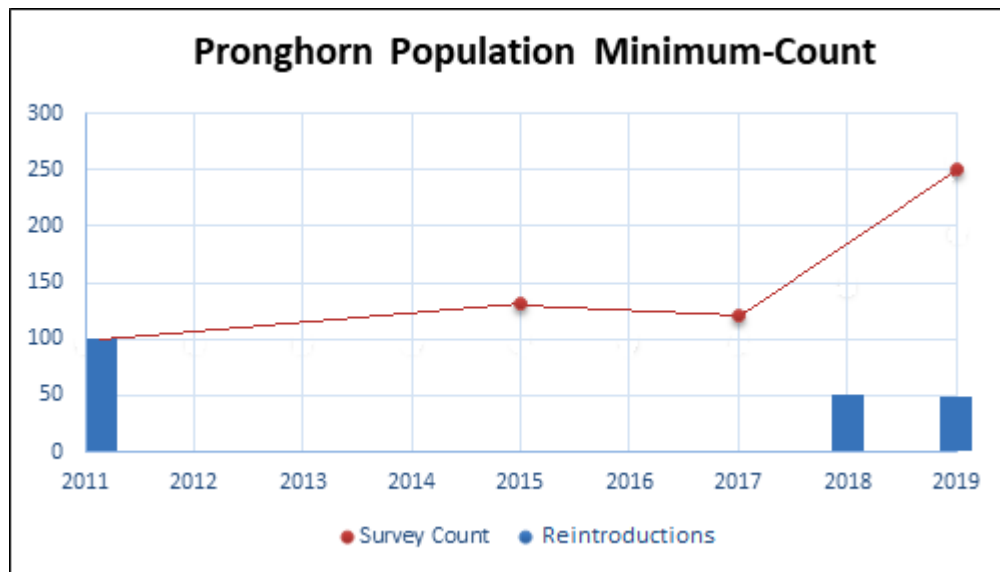
Snow covered the ground of the entire survey area, but was shallow enough that wheat stubble, shrubs, and tumbleweeds could be seen (Appendix A). This created a high contrast pattern across the landscape, which made detection of pronghorn very challenging from the air. Cold overnight temperatures (-5°F/-20°C) between survey days also caused a two hour flight delay in starting the plane on day two. We surveyed for about 5.5 hours in Klickitat/Yakima counties, 5 hours in Benton County, and 3.5 hours over the Yakama Reservation (Table 1).

**Table 1:** Survey dates and flight details of aerial pronghorn surveys in south-central WA.

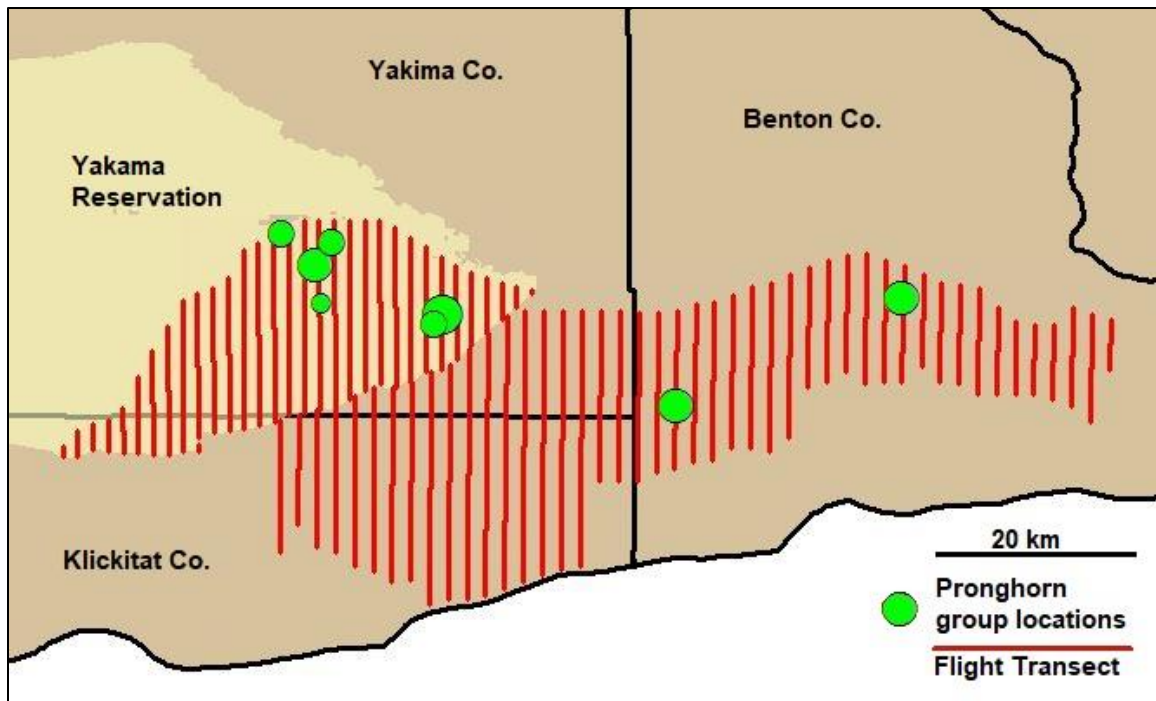
Year	Date	Vendor	Aircraft	Flight time	Comments
2015	Feb 25-26	Inter-State	Cessna 182	10.4hrs	
2017	Mar 16-17	Baker	Cessna 182	15.9hrs	Weather delay to Mar.
2019	Feb 6-7	Inter-State	Cessna 182	13.9hrs	

We detected a total of 248 pronghorns in 8 groups (Figure 3; Figure 4). Mean group size was 31.0 with group sizes ranging from of 3 to 97. Of the total observed, 178 animals were on the

Yakama Reservation and 70 were in Benton County. No animals were observed during flights in Klickitat or Yakima counties outside of the Yakama Reservation. One group of 13 pronghorns observed from the ground on the Reservation were not located during the flight. Ground observations on the Yakama Reservation further confirmed an additional 10 animals in a large group that was underestimated during the flight. Ground crews in Benton County located a group that was missed by the plane during transects. The plane returned to search that area on day two and located one group of 32 animals that would have otherwise been missed. Two additional groups reported in Benton County from the ground were presumed to be part of a large group later counted during the flight survey.



**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 during 2019 flight survey.

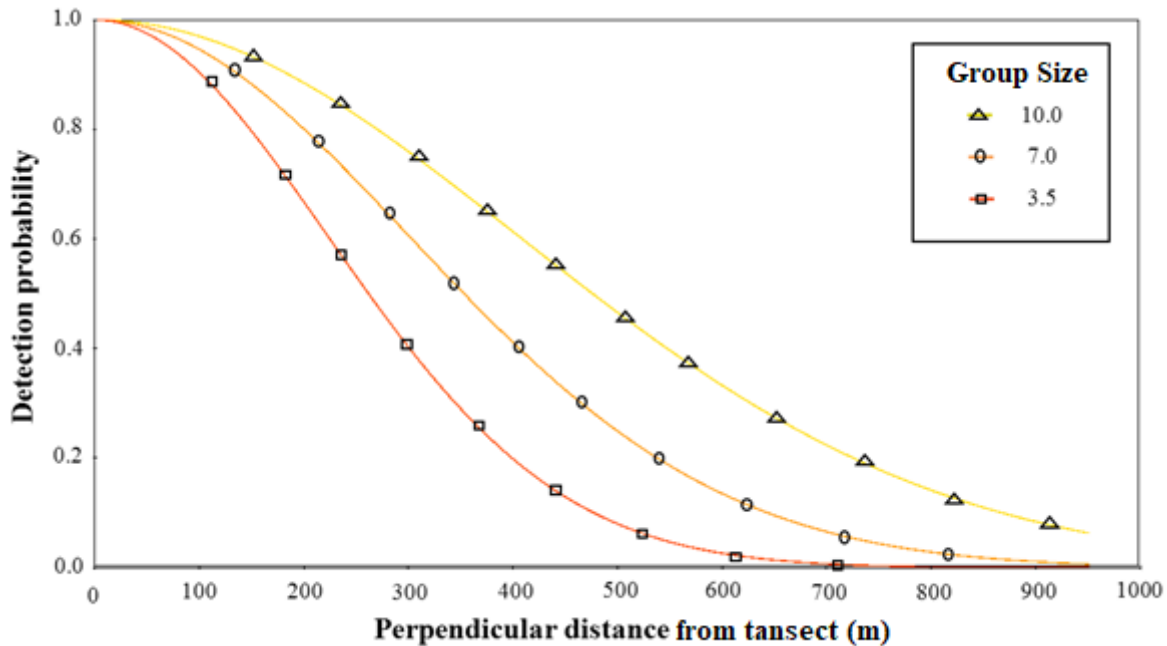
## DISCUSSION

### Survey Methods

This survey occurred in winter as pronghorns form large groups during winter months that are easier to spot than smaller groups (Figure 5; Oyster 2014). When temperatures warm and new vegetation begins growing, pronghorns split up into smaller groups (O’Gara and Yoakum 2004, Bernt 1976), which has occurred by mid-March in this area (Oyster et al. 2017).

Although past survey recommendations suggest pronghorn surveys should be conducted during December or January, scheduling delays placed the survey in early February. As animals were still in large groups, we feel this was a suitable timeframe. However, atypical snow cover appeared the week of the survey and caused detecting pronghorn to be surprisingly challenging. Flight observers missed large groups during initial passes even when they knew pronghorn were

in the area from ground reports or collar data. If possible, future surveys should avoid similar shallow snow conditions that create a high contrast landscape of snow and uncovered vegetation that make it particularly difficult to differentiate pronghorns from landscape features.



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

We decreased the spacing of transects within Benton County from 3km (used in 2017) to 2km, and thus covered more transects than earlier. However, the total flight time in 2019 did not increase from 2017 because we reduced the total survey area by excluding irrigated agriculture. We do not recommend a transect spacing greater than 2km as searching beyond 1000m was difficult at our elevation and detection probability is decreased (Figure 5; 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 pushing of animals across the landscape that could contact fences or roadways. Therefore, we did not attempt to estimate buck:doe ratios from our survey in 2019.

We benefited from SCI ground crews during survey efforts, as 32 animals would otherwise have been missed. Groundwork by Yakama Nation staff added one additional group of 13, plus a more accurate count of a large group that added another 10 animals to the survey. During winter when pronghorn assemble in large groups, missing a group would have a large impact on the count estimate. We recommend continuing ground survey efforts during the flight and increasing scouting 1-2 days before the survey as well. This will also benefit efforts should fog or snow impact visibility in future surveys.

### **Pronghorn Population**

The 248 pronghorn observed during the survey were all detected on the second day so there was very little chance for double counting due to movement. The population of pronghorn in the survey area continues to grow from reintroduction efforts and successful reproduction. Yakama Nation staff have confirmed fawning by monitoring VHF-collared females in spring. We counted 127 more pronghorn than in 2017, over which time 99 animals were released in reintroduction efforts.

This count is a minimum and it is very likely that more animals exist in this landscape. A group of 38 pronghorn counted in Benton County was located in an area where 45 pronghorn were seen the week prior. It seems possible that part of this group was missed during the flight. Detection was challenging with the contrasting snow conditions and it would have been very difficult to detect small groups during the flight (Appendix A). In addition, pronghorn may have

been in areas outside our survey boundary. Reports of up to 25 animals west of Hwy 97 on the Yakama Reservation were made in June 2018 but were not searched for during the survey.

We note that we received reports of pronghorn antelope mortality after this survey was completed, in March 2019. Snows were atypically deep and long-lasting in February 2019, possibly contributing to this mortality. We are unable to revise our estimate at this time, but expect that the population pre-fawning 2019 is somewhat lower than the counts we report here.

## **CONCLUSION**

Biennial survey flights have been a positive cooperative undertaking and should be a continued priority for the WDFW, Yakama Tribe, and SCI partners. The population appears to be growing naturally but is still fairly small and considered sensitive to adult mortality. The Yakama Nation and WDFW are currently both developing plans regarding future management for this herd.

## **ACKNOWLEDGMENTS**

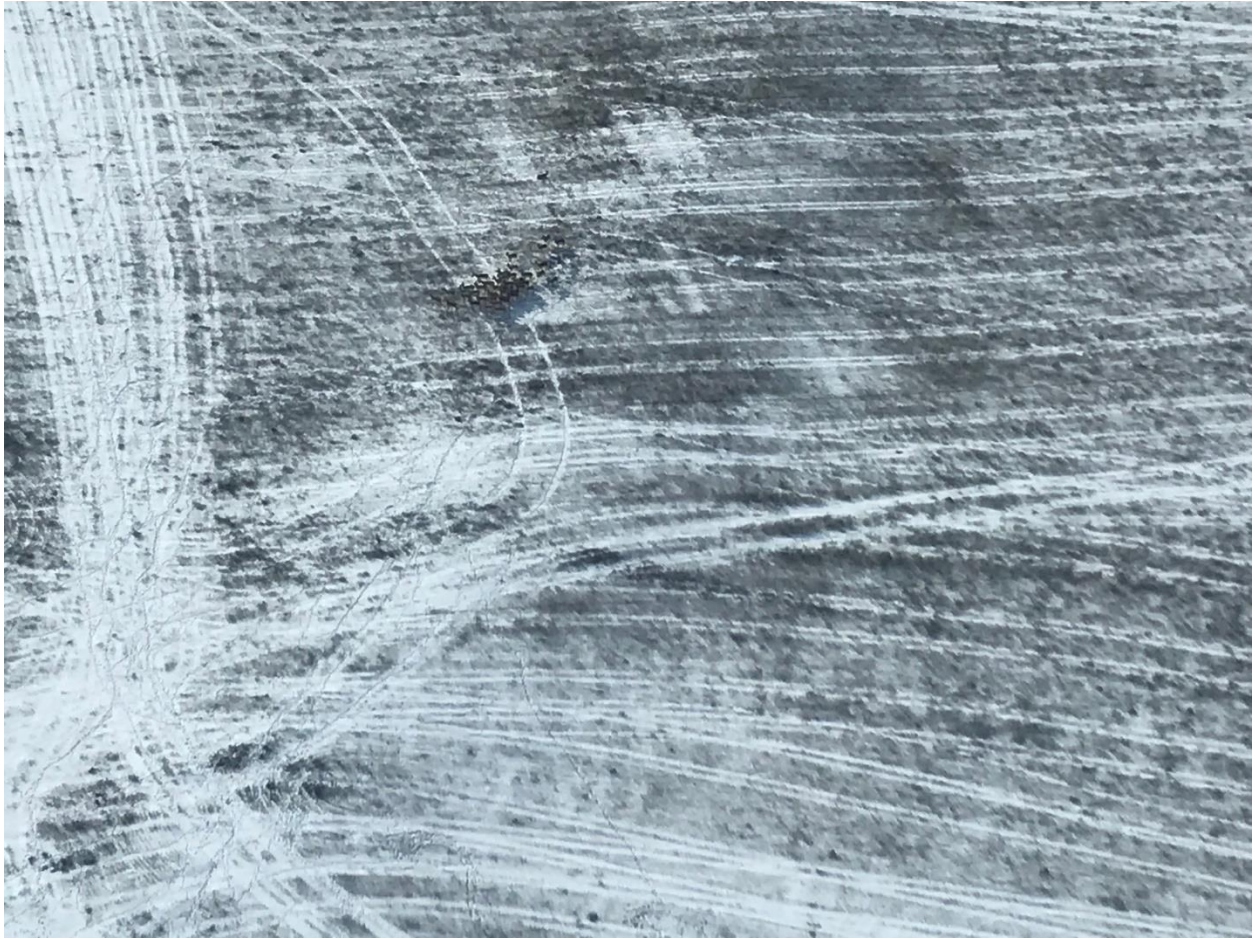
We thank SCI members for coordinating and conducting ground surveys, including Deb Barret, Doug Barret, and Joe Greenhaw. Seth Hulett (WDFW) also provided assistance on the ground. We thank Inter-State Aviation and Brian Elfers for safe and effective flying. Casey Heemsah (YN) and Don Hand (WDFW) were effective observers during the aerial survey. We are grateful to Paul Whelan (WDFW) and Yakama Dispatch for flight following during the survey.

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**Appendix A. Photos of pronghorn and/or typical terrain and snow cover during flight survey in Benton County, February 2019.**



**Figure A1. Group of 38 pronghorn standing in agricultural field.**



**Figure A2. Contrasting pattern of snow and vegetation during flight (no pronghorn in pic).**



**Figure A3. Complex and contrasting visual patterns by snow cover in Benton County.**



**Figure A4. Group of 25+ pronghorn (circled) viewed from plane (top), zoomed in (bottom).**