

Pronghorn Population Monitoring within the Pinedale Anticline Project Area: 2023 Annual Update

Prepared for:

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Table of Contents

Overview.....	1
Methods.....	1
Results.....	2
Discussion.....	3
References.....	4

List of Tables

Table 1. Abundance estimates for PAPA pronghorn and Sublette reference herd from winter 2009–10 to 2022–23.

List of Figures

Figure 1. Map of the 2019–20 PAPA pronghorn survey area and groups of pronghorn detected.

Figure 2. Graph of abundance estimates for PAPA pronghorn and Sublette reference herd from winter 2009–10 to 2022–23.

Overview

As a result of the 2008 Record of Decision for the natural gas exploration and development in the Pinedale Anticline Project Area (PAPA), the Wildlife Monitoring and Mitigation Matrix (WMMM) was developed to define parameters of PAPA pronghorn (*Antilocapra americana*) abundances to quantitatively monitor for changes throughout development. According to the WMMM, a 15% decline in abundance within any year or cumulatively over all years from winter 2009–10 relative to abundance changes in the larger Sublette herd would trigger mitigation responses (BLM 2008). What follows is a report on aerial infrared monitoring results and comparative analyses for the winter of 2022–2023.

Methods

For each winter from 2009–10 to 2016–17, pronghorn abundance was estimated using fixed wing aircraft aerial line transects in January, February, and March as described by Sawyer (2018). Surveys were conducted by flying 300–400 feet above ground in line transects spaced ½ mile apart while counting and recording all groups detected with GPS and video recording all groups greater than 50 pronghorn to measure group size later in an office setting (Sawyer 2018). More detailed descriptions of previous survey methods may be found in LeBeau and Hiler (2017).

The three fixed wing aircraft surveys were replaced by aerial infrared surveys in the winter of

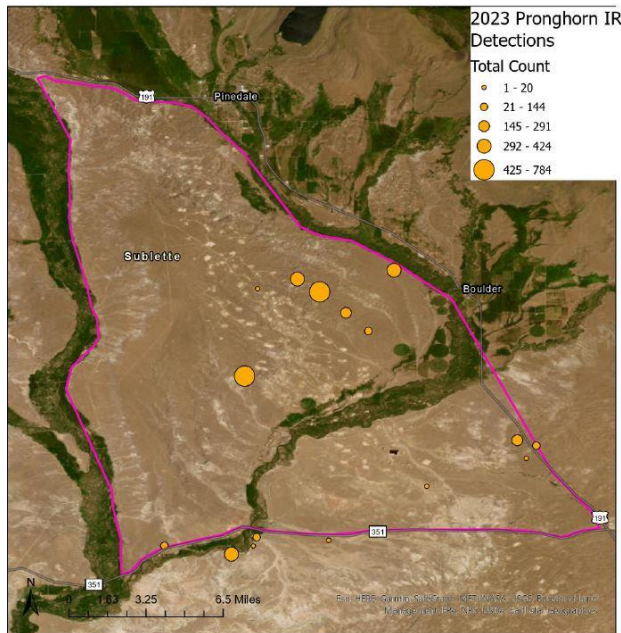


Figure 1. Map of the PAPA pronghorn survey area depicting eight different groups of pronghorn detected. Sizes of circles indicating groups increase with group size.

2017–18 to reduce disturbance to pronghorn, increase accuracy, increase surveyor safety, and reduce costs (Sawyer 2018). Infrared surveys for 2022–23 were conducted by Owyhee Air Inc. from the morning of February 5 to the morning of February 8 in early mornings and afternoons by flying over the 119,600 acres pronghorn treatment area at 100mph, 2,000 feet aboveground in ¼ mile transects. All pronghorn encountered were documented with video, real-time counts, and geographical coordinates (Figure 1).

To determine if a mitigation threshold had been met as defined by the ROD (BLM, 2008), PAPA pronghorn and Sublette reference herd 2022 abundances from Wyoming Game and Fish Department (WGFD) were compared to their respective baseline

estimates to determine rates of change. Population estimates for the Sublette Pronghorn Herd Unit are derived using a semi-constant survival model periodically grounded by stratified line-transect flight estimates. Results were then compared to conclude if a cumulative 15% decline threshold had been met by the PAPA pronghorn relative to the reference herd. Abundances for

both herds from the previous year’s (2021–22) survey were compared to 2022–23 abundances to determine if the PAPA herd experienced a decrease greater than 15% over the year compared to the Sublette herd.

Results

From February 5–8, 2023, Owyhee Air Research observed 3,220 pronghorn within the survey area, with 2,047 being observed within the PAPA boundary. Detected pronghorn consisted of groups numbering between 1 and 784 individuals.

Compared to the baseline population of 1,533, as outlined in the 2008 Record of Decision, the 2022-23 detections represents a 110% population increase. The total population for the Sublette pronghorn herd, post-harvest 2022, was estimated to be 43,200 animals and represented a decline of 27% when compared to the 2009 baseline population of 59,000. Therefore, a net 137% population difference was observed for the 2022–23 monitoring period and the threshold of a cumulative 15% population decline was not met (Table 1).

Table 1: Abundance estimates for Pinedale Anticline Project Area pronghorn and Sublette reference herd, beginning winter 2009–10 through winter 2022–23. Mitigation thresholds were not reached within the study period.

^aEstimate and SE is average of 2-3 surveys conducted during that winter timeframe (Lebeau and Hiler 2017, Sawyer 2018). ^bSurveys changed from 2-3 fixed wing aircraft surveys to aerial infrared surveys. ^cWGFD changed population models from POP2 to spreadsheet methods (Sawyer 2018). ^dWGFD changed population models from spreadsheet model (Sawyer 2018) to an Integrated Population Model (IPM) for herd population estimation.

Winter	PAPA			Sublette Herd Unit			Relative % Change	Threshold Exceeded?
	Estimate	SE	% Change	Estimate	SE	% Change		
baseline	1,533 ^a	761	baseline	59,000	n/a	baseline	n/a	baseline
2010–11	1,036 ^a	825	-32%	37,800	n/a	-36%	4%	NO
2011–12	1,861 ^a	388	21%	40,000	n/a	-32%	54%	NO
2012–13	1,567 ^a	672	2%	34,000 ^c	n/a	-42%	45%	NO
2013–14	2,409 ^a	359	57%	31,300	n/a	-47%	104%	NO
2014–15	5,347 ^a	1251	249%	32,000	n/a	-46%	295%	NO
2015–16	4,998 ^a	919	226%	38,000	n/a	-36%	262%	NO
2016–17	2,335 ^a	798	52%	37,800	n/a	-36%	88%	NO
2017–18	2,345 ^b	n/a	53%	36,000	n/a	-39%	92%	NO
2018–19	2,234	n/a	46%	37,500	n/a	-36%	82%	NO
2019–20	3,010	n/a	96%	35,100	n/a	-41%	137%	NO
2020–21	3,708	n/a	142%	38,000	n/a	-36%	177%	NO
2021–22	5,147	n/a	236%	40,195	n/a	-32%	268%	NO
2022–23	3,220	n/a	110%	43,200 ^d	n/a	-27%	137%	NO

Discussion

The WMMM outlines that a mitigation trigger is met if there is a 15% decline in PAPA pronghorn abundance within any given year or cumulatively over all survey years, when compared to the Sublette reference herd over the same time period. This past year the PAPA

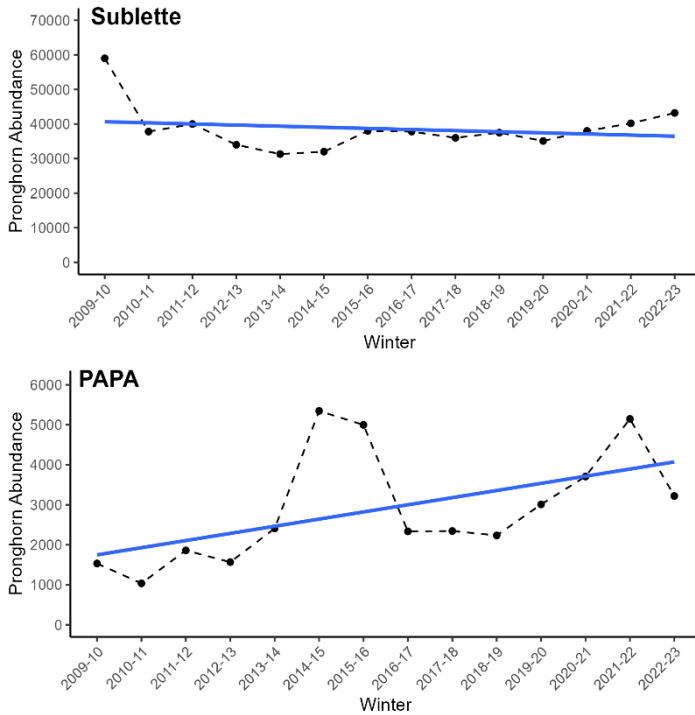


Figure 2: Abundance estimates and associated trend line for Pinedale Anticline Project Area pronghorn and Sublette reference herd, beginning winter 2009–10 through winter 2022–23.

the Sublette pronghorn herd indicates that mortality is large and widespread. WGFD biologists are operating under the assumption that the total pronghorn population will be less than 11,000 animals and are adjusting harvest quotas in response. The impacts of these unprecedented levels of mortality will take years to fully understand and for the population to recuperate.

pronghorn population experienced a 37% population decrease when compared to the estimated population in 2022 (Table 1, Figure 2). However, with a cumulative change of 137% between the PAPA subpopulation and the Sublette herd and a 110% population increase when comparing the February PAPA population to the baseline population estimate, no mitigation trigger has been met for 2023.

This past winter, the Sublette pronghorn herd experienced a historically severe winter and an outbreak of pneumonia attributed to *Mycoplasma bovis*, a newly emerging disease in Wyoming and wild ungulates. Pronghorn residing on the PAPA were among the most heavily impacted from this novel disease.

While the true percent mortality rate attributed to *Mycoplasma bovis* and winter conditions is still to be calculated, >75% mortality of a WGFD collared subsample of

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