Pinedale Anticline Project Area 2020 Annual Mule Deer Update

Prepared for:

Pinedale Anticline Project Office

Prepared by:

Kerry Gold

Wyoming Game and Fish Department

Overview

- Pinedale Anticline Project Area (PAPA)/Mesa mule deer
  - Portion of the Sublette mule deer herd wintering annually on the Pinedale Anticline Project Area (PAPA)

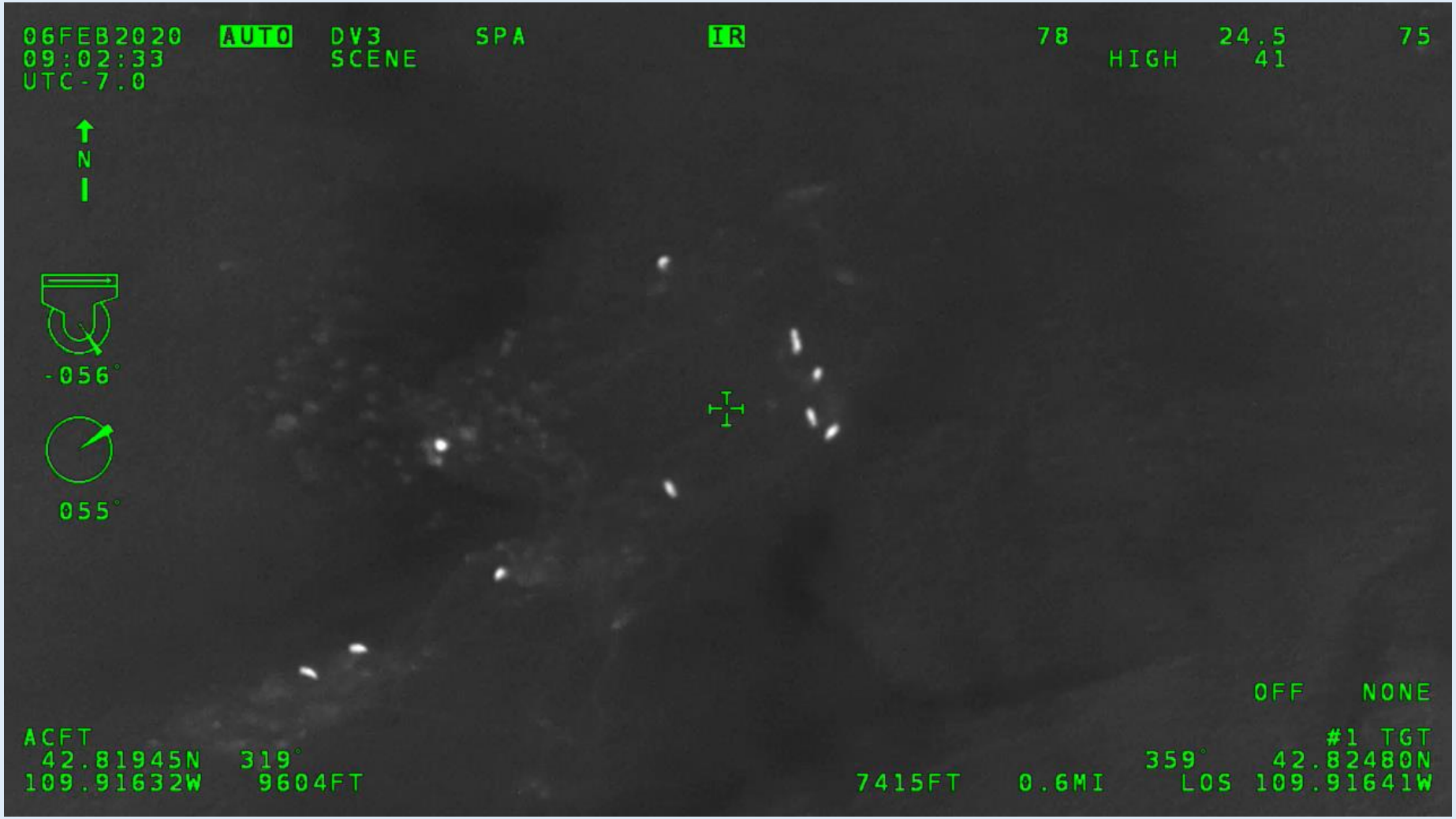
- 2008 Bureau of Land Management Record of Decision (ROD)- Wildlife Monitoring and Mitigation Matrix (WMMM)
  - **15% change in any year, or cumulatively over all years, compared to reference area (Sublette mule deer herd unit)**- Averages of 2004-05 and 2005-06 winters
  - PAPA baseline = 2,856
  - Sublette baseline = 24,165

- Winter 2019-20 Mesa mule deer monitoring
  - Mesa mule deer abundance decreased 15% from baseline
  - Sublette mule deer abundance decreased 14% from baseline
  - Mitigation threshold not met

Methods

- 2007-2017 January, February and March (Sawyer 2018)
  - Helicopter surveys of 68mi² of core mule deer winter range (PAPA)
  - 34-46 1mi² quadrats systematically flown, all deer counted
  - Ryegrass-Soapholes 33mi² reference area added 2006-07- 23 quadrats flown
- 2018-2021 Aerial infrared flight surveys- early February
  - PAPA (45,700 acres) and Ryegrass-Soaphole reference area (30,700 acres)
  - Potentially more accurate, reduced disturbance to wintering deer, reduced costs, increased surveyor safety
- Calculations
  - Updated Mesa (PAPA) and Sublette reference herd estimate (Wyoming Game and Fish Department) compared to baseline estimates to calculate rate of change

Methods

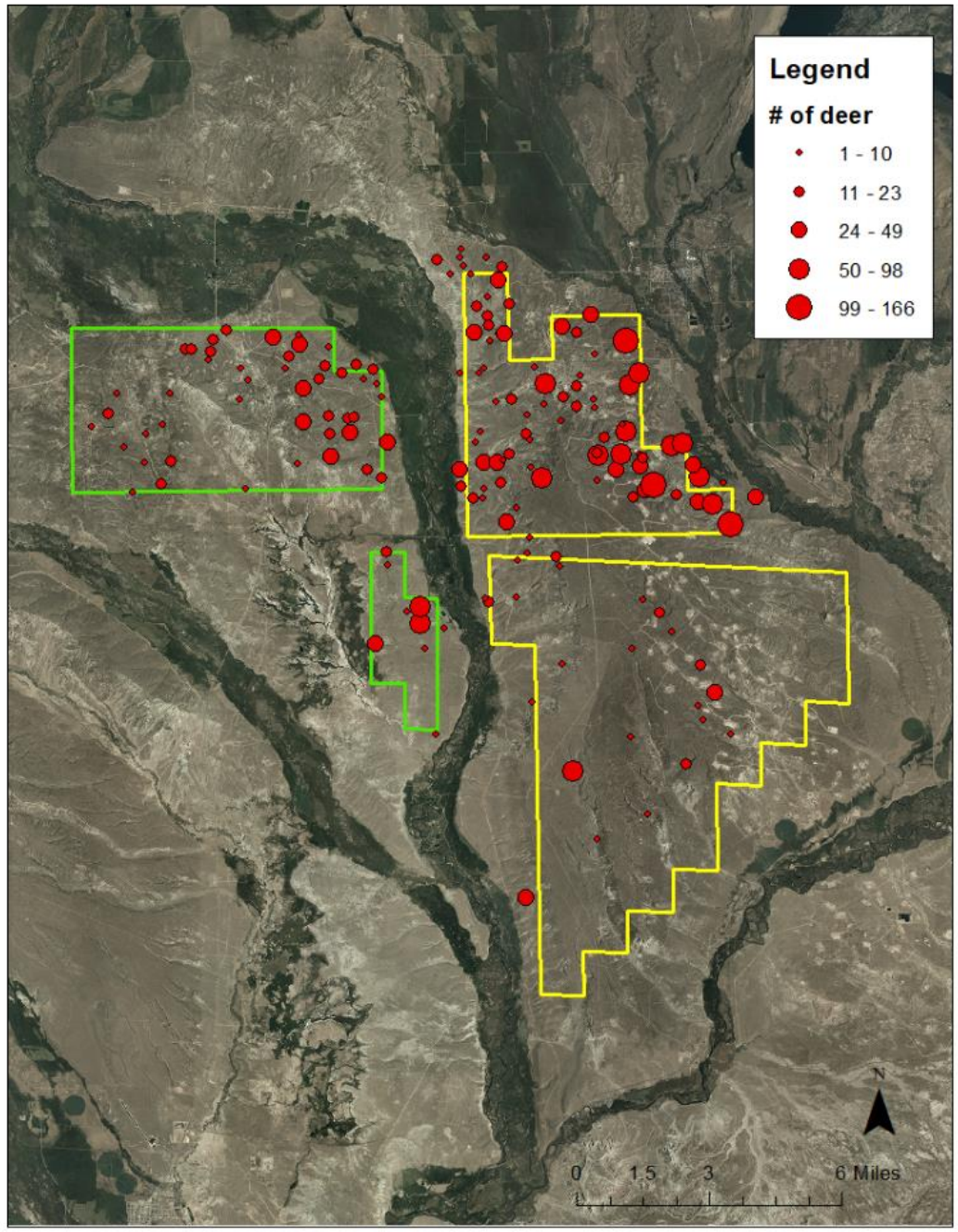

06FEB2020
09:02:33
UTC-7.0
AUTO
DV3
SCENE
SPA
IR
78
HIGH
24.5
41
75
N
-056°
055°
OFF
NONE
ACFT
42.81945N
109.91632W
319°
9604FT
#1 TGT
359°
42.82480N
7415FT
0.6MI
LOS
109.91641W

Results

- 2,435 deer detected in the PAPA

Winter	Mesa (PAPA) mule deer		
	Estimate	SE	% Change
baseline[a]	2,856	n/a	baseline
2006-07	3,156	470	10%
2007-08	3,638	424	27%
2008-09	3,850	322	35%
2009-10	2,088	325	-27%
2010-11	2,318	212	-19%
2011-12	2,553	210	-11%
2012-13	2,652	220	-7%
2013-14	2,405	243	-16%
2014-15	3,121	325	9%
2015-16	3,030	266	6%
2016-17	3,027	192	6%
2017-18[d]	1,495	n/a	-48%
2018-19	2,369	n/a	-17%
2019-20	2,435	n/a	-15%

- 15% decrease from baseline



Results

- Mesa mule deer decreased 15% from baseline
- Sublette mule deer decreased 14% from baseline
- Relative change = -1%
- 15% cumulative change threshold <u>not met</u>

Winter	Mesa			Sublette Herd Unit			Relative % Change	Threshold Exceeded ?
	Estimate	SE	% Change	Estimate	SE	% Change		
baseline [a]	2,856	n/a	baseline	24,165	n/a	baseline	n/a	baseline
2006-07	3,156	470	10%	24,699	n/a	2%	8%	NO
2007-08	3,638	424	27%	27,200	n/a	13%	14%	NO
2008-09	3,850	322	35%	26,732	n/a	11%	24%	NO
2009-10	2,088	325	-27%	24,630	n/a	2%	-25%	YES
2010-11	2,318	212	-19%	23,426	n/a	-3%	-16%	YES
2011-12	2,553	210	-11%	20,652	n/a	-15%	4%	NO
2012-13	2,652	220	-7%	21,969 [b]	n/a	-9%	2%	NO
2013-14	2,405	243	-16%	22,900	n/a	-5%	-11%	NO
2014-15	3,121	325	9%	26,337 [c]	n/a	9%	0%	NO
2015-16	3,030	266	6%	28,976	n/a	17%	-14%	NO
2016-17	3,027	192	6%	28,509	n/a	16%	-10%	NO
2017-18 [d]	1,495	n/a	-48%	17,299	n/a	-28%	-20%	YES
2018-19	2,369	n/a	-17%	19,838	n/a	-18%	1%	NO
2019-20	2,435	n/a	-15%	20,846	n/a	-14%	-1%	NO

Table 1. Mule deer abundance estimates, standard errors (SE), and percent change for Mesa and Sublette herds- baseline winter through winter 2019-20 (baseline to winter 2017-18 table values based on findings by Sawyer (2018)). Mitigation thresholds were met in winters 2009-10, 2010-11, and 2017-18.

a Original ROD used 2,856 as Mesa deer baseline from averaging 2004-05 and 2005-06 winters (BLM 2008)
b WGFD switched from POP2 model to spreadsheet model (Saywer 2008)
c Sublette herd expanded to include hunt area 131 (Steamboat) by WGFD, population estimation methods unchanged
d PAPA and Reference mule deer surveys changed from helicopter to aerial infrared surveys

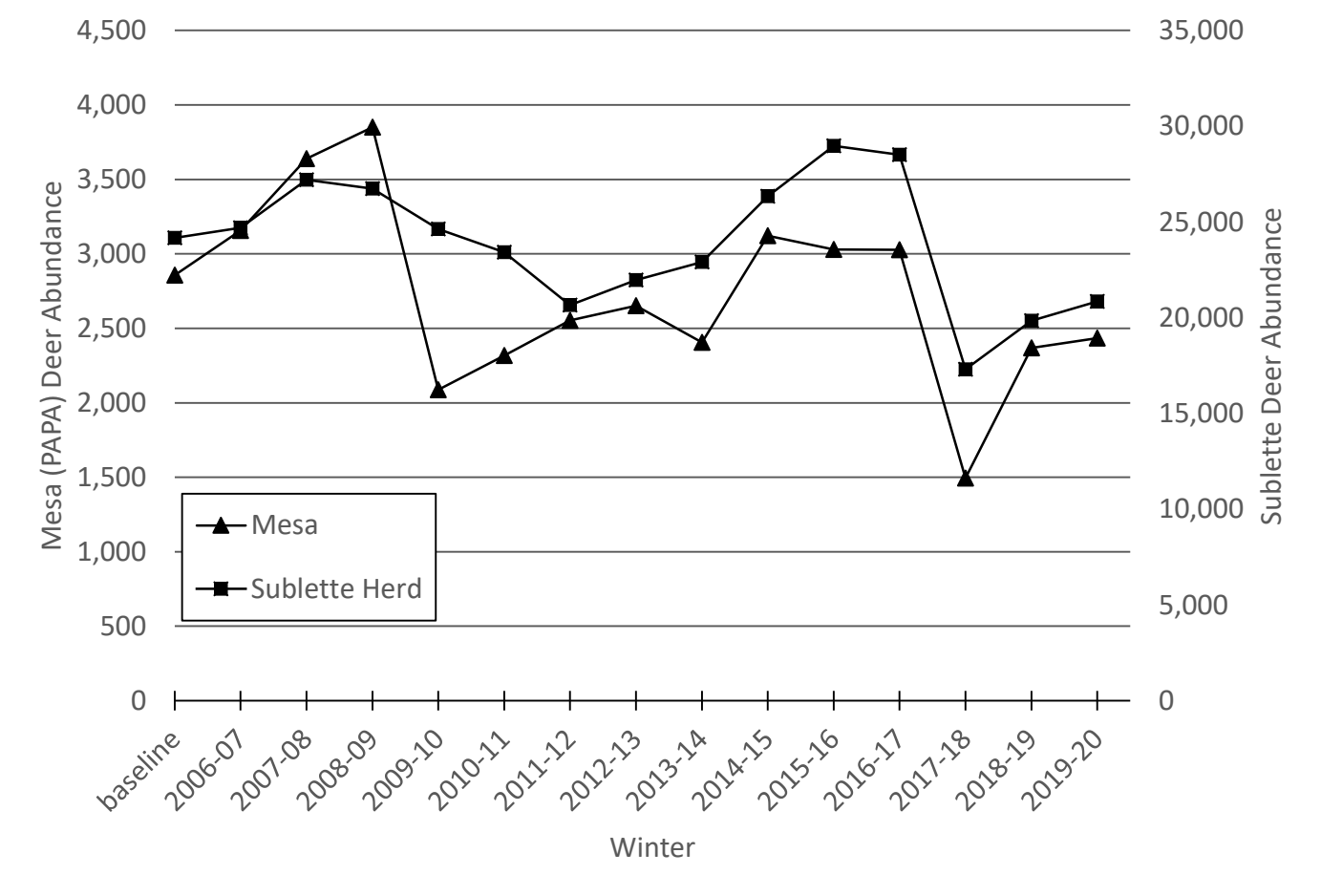
Results

- Mesa (PAPA) herd and Sublette reference herd both increased from 2018-19 winter.
- 15% decline threshold not met

Winter	Mesa		Sublette Herd Unit		Relative % Change	Threshold Exceeded?
	Estimate	% Change	Estimate	% Change		
2018-19	2,369	n/a	19,838	n/a	n/a	n/a
2019-20	2,435	3%	20,846	5%	n/a (-2%)	NO

Discussion

- Sublette winter fawn mortality (WGFD)
  - Possibly stabilizing after severe 2016/17 winter
    - 2016-17= 81% (high above average)
    - 2017-18= 8% (below average)
    - 2018-19= 50% (above average)
    - **2019-20= 37%**
- Sublette herd estimates (December)
- Mesa herd estimates (February)
- Large drop in abundance in 2017-18 due to severe 2016-17 winter
- Winter 2019-20 had less snow and colder temperatures



References

- Bureau of Land Management [BLM]. 2000. Record of Decision: Environmental Impact Statement for the Pinedale Anticline Natural Gas Field Exploration and Development Project. Pinedale Field Office, Wyoming.
- Bureau of Land Management [BLM]. 2008. Record of Decision: Final Supplemental Environmental Impact Statement for the Pinedale Anticline Natural Gas Field Exploration and Development Project. Pinedale Field Office, Wyoming.
- Freddy, D. J., G. C. White, M. C. Kneeland, R. H. Kahn, J. W. Unsworth, W. J. deVergie, V. K. Graham, J. H. Ellenberger, and C. H. Wagner. 2004. How many mule deer are there? Challenges of credibility in Colorado. Wildlife Society Bulletin 32:916-927.
- Gold, K. 2019. Mule Deer Monitoring in the Pinedale Anticline Project Area: 2019 Annual Update. Wyoming Game and Fish Department, Cheyenne, Wyoming, USA.
- Gold, K. 2020. Mule Deer Monitoring in the Pinedale Anticline Project Area: 2020 Annual Update. Wyoming Game and Fish Department, Cheyenne, Wyoming, USA.
- Sawyer, H. 2018. Mule Deer Monitoring in the Pinedale Anticline Project Area: 2018 Annual Update. Western EcoSystems Technology, Inc., Laramie, Wyoming.
- Thompson, W. L, G. C. White, and C. Gowan. 1998. Monitoring Vertebrate Populations. Academic Press, Sand Diego, California, USA.

Questions?