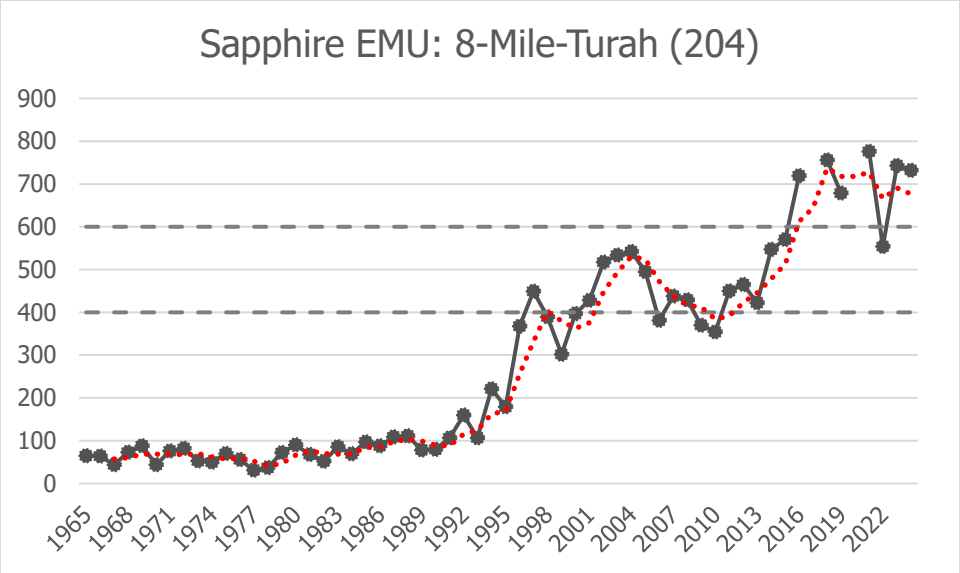
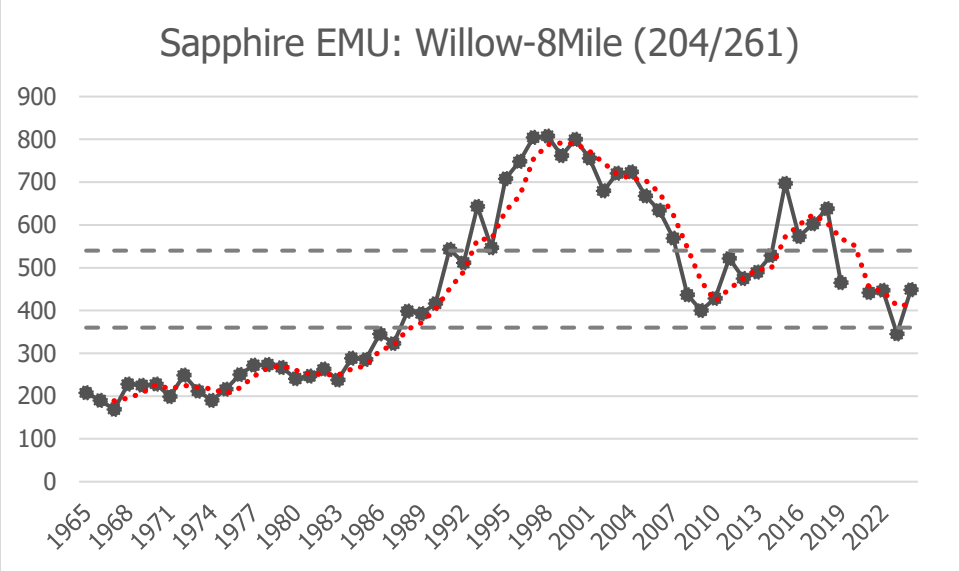
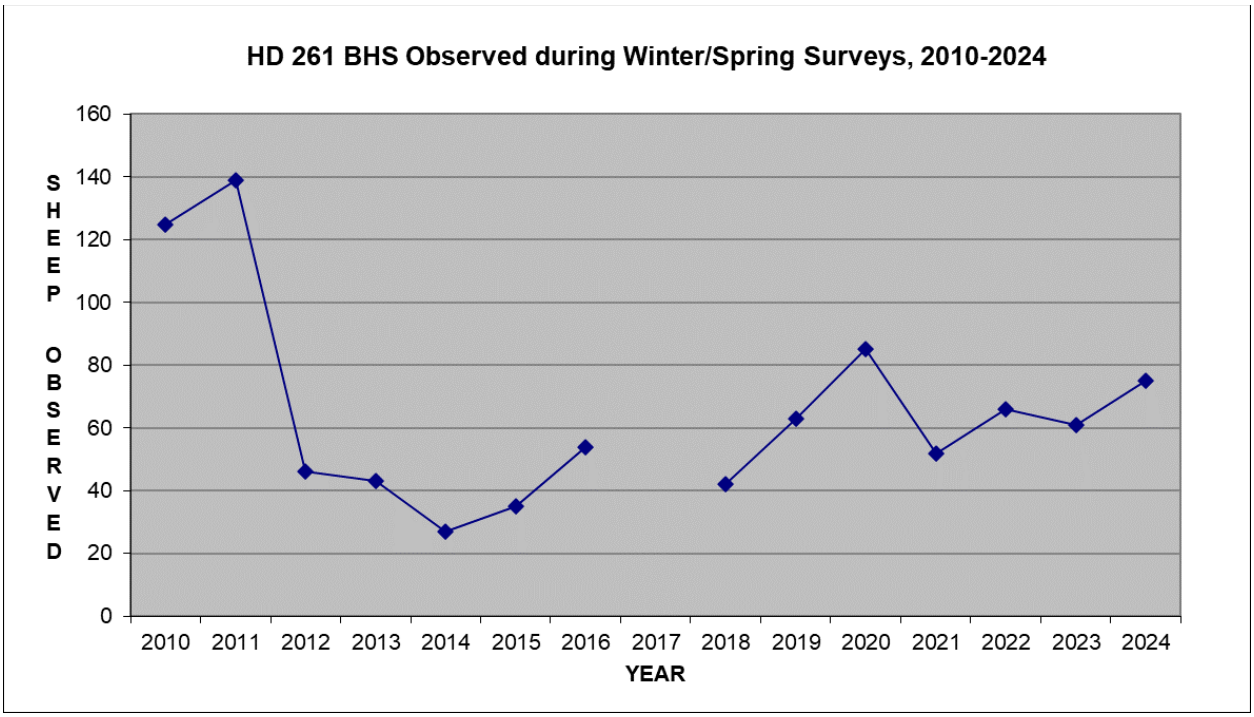
LMU 204

ELK: HDs 204, 261



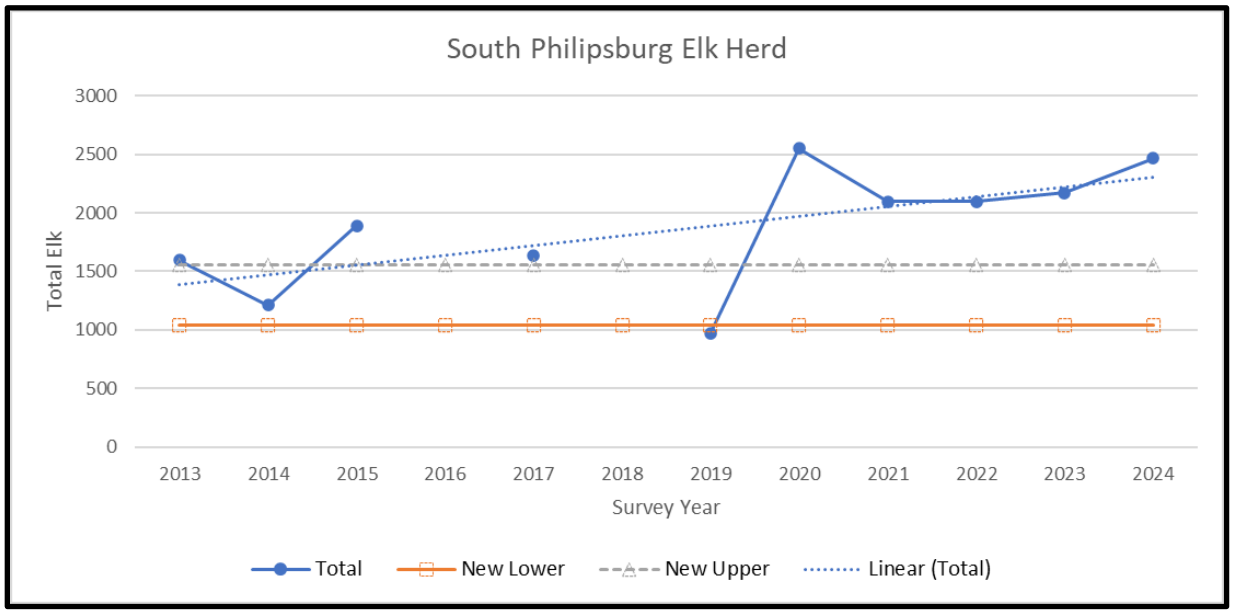


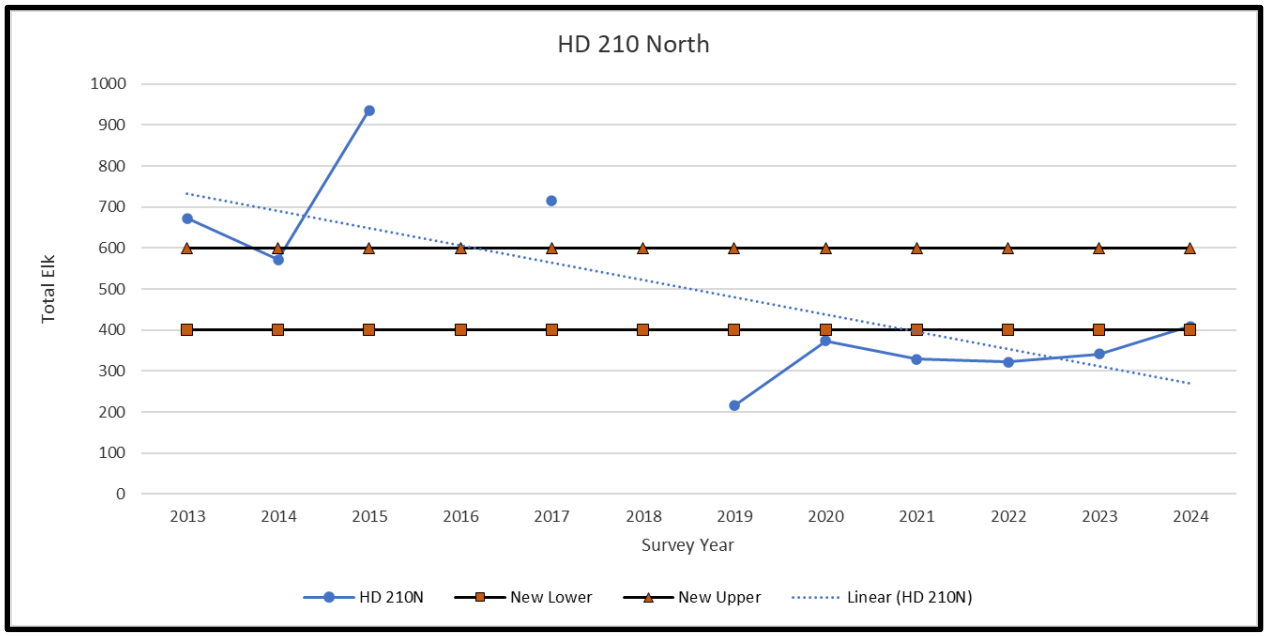
Bighorn: HD 261



LMU 210, 211

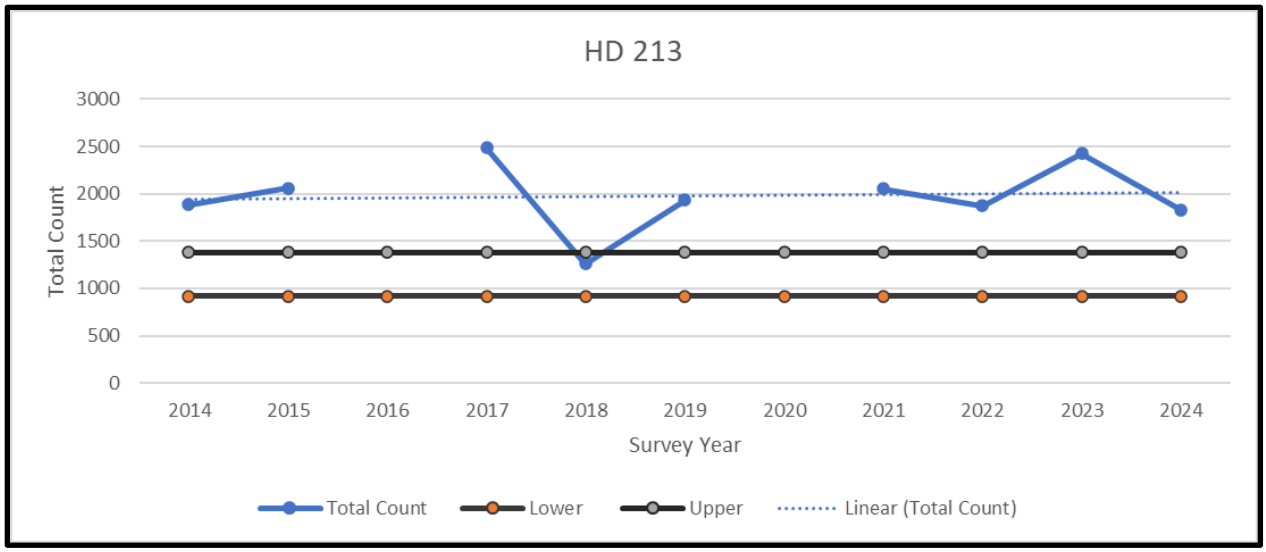
ELK: HDs 210, 211, 212, 216





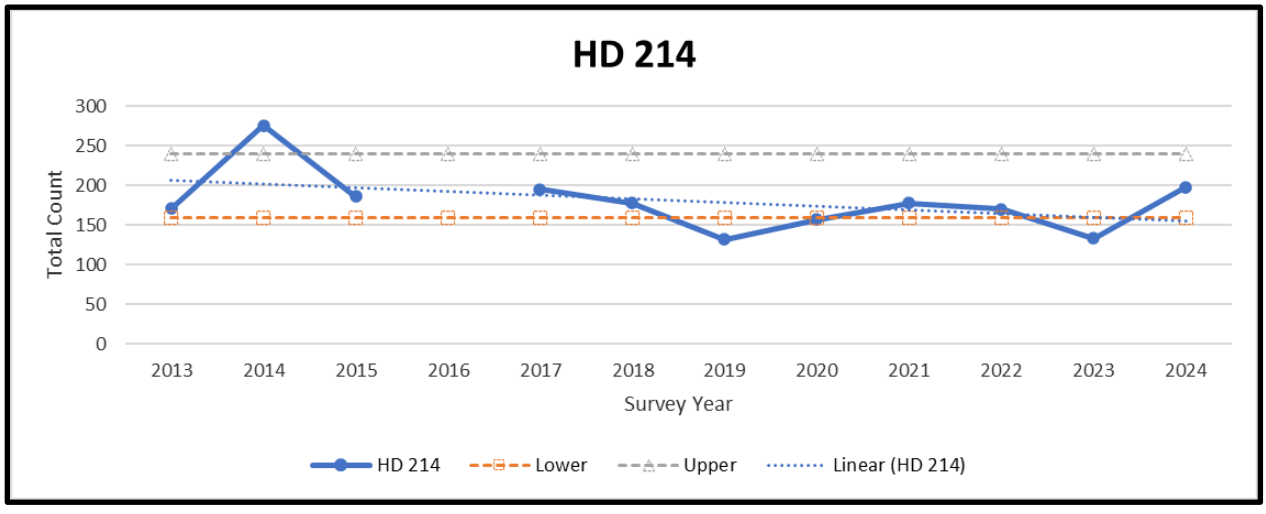
LMU 213

ELK: HD 213



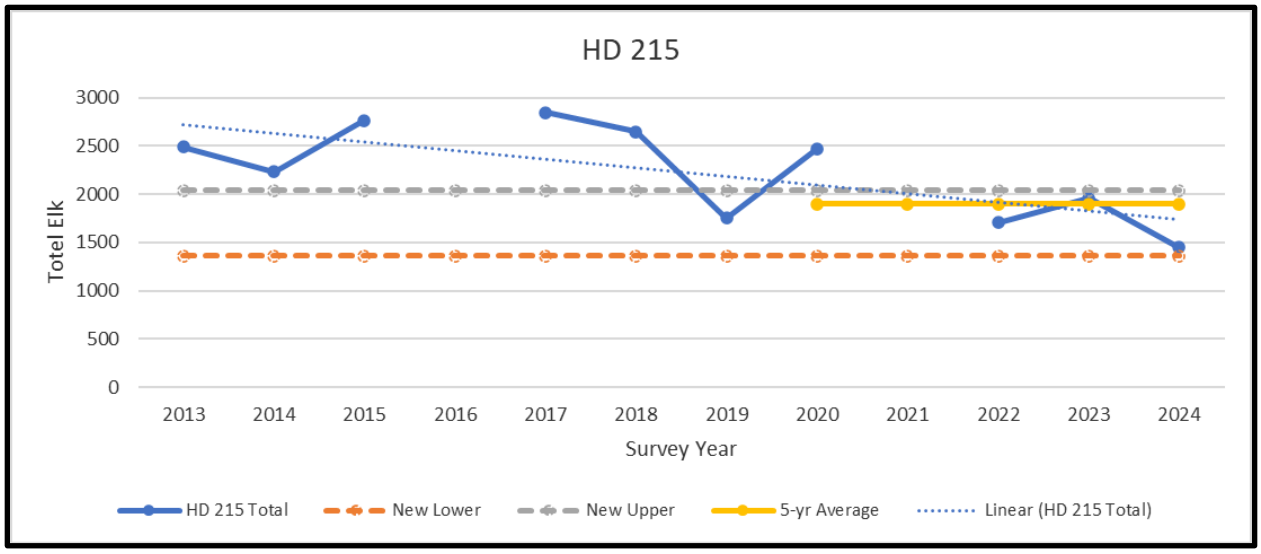
LMU 214

ELK: HD 214



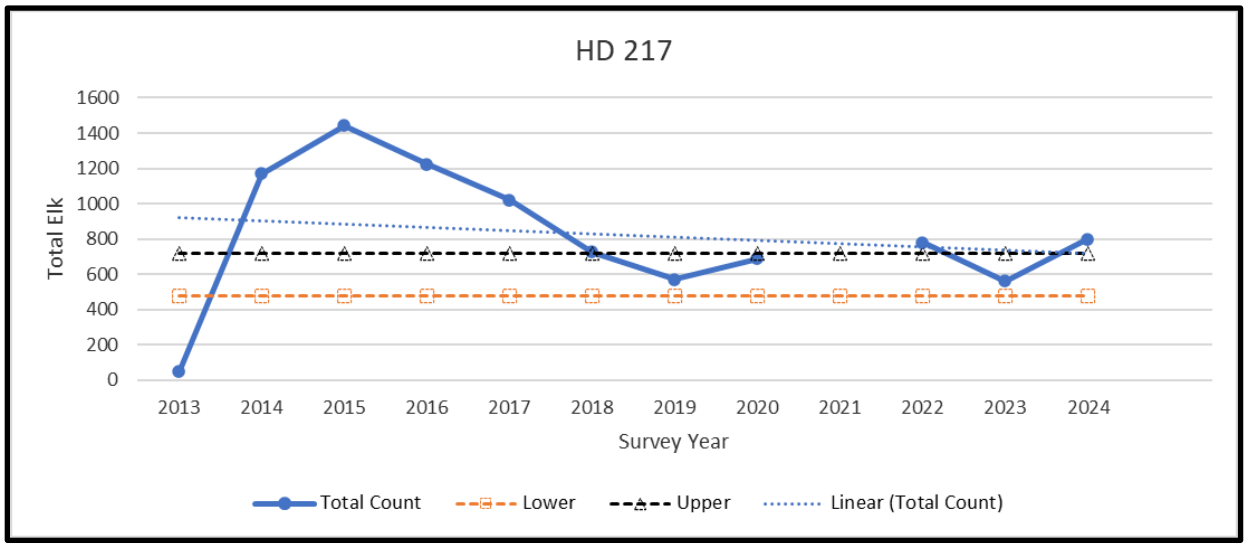
LMU 215

ELK: HD 215



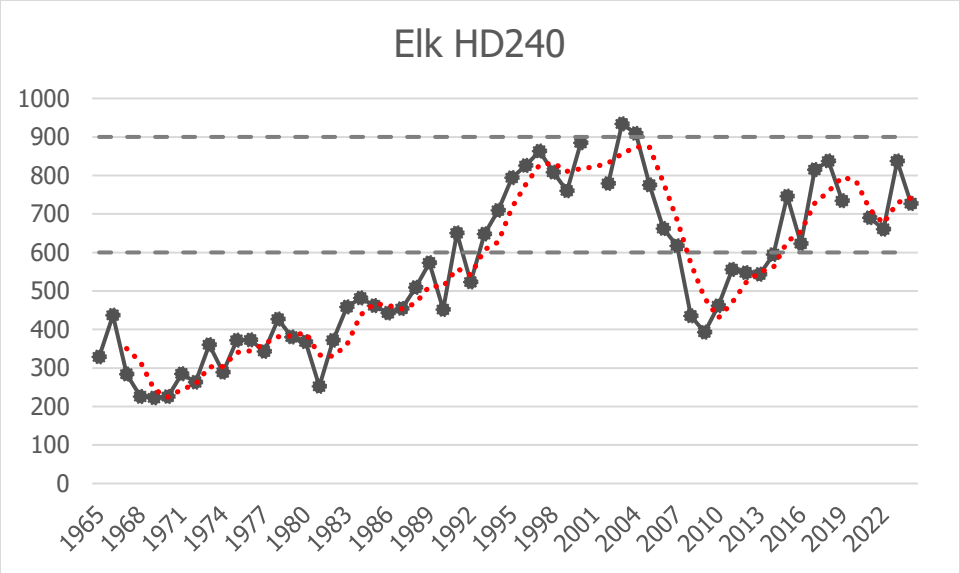
LMU 217

ELK: HD 217



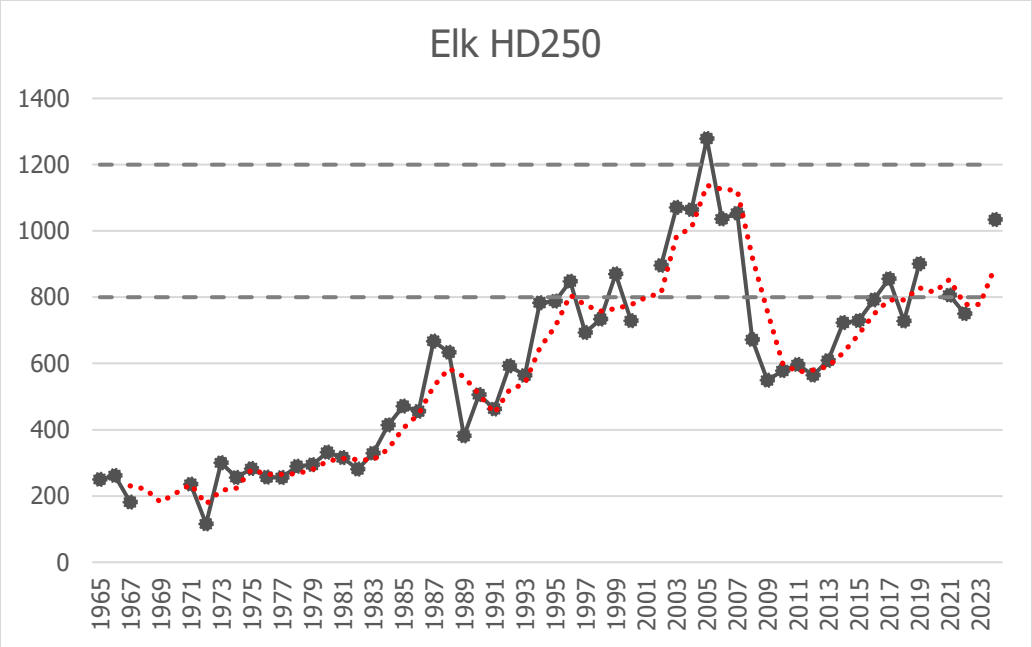
LMU 240

ELK: HD 240

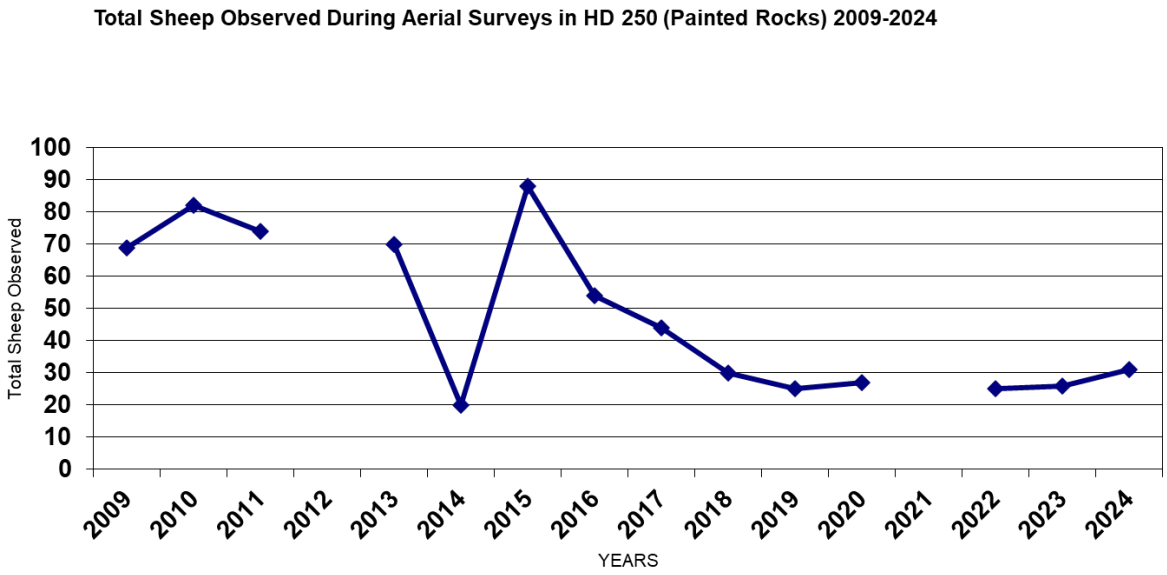


LMU 250

ELK: HD 250

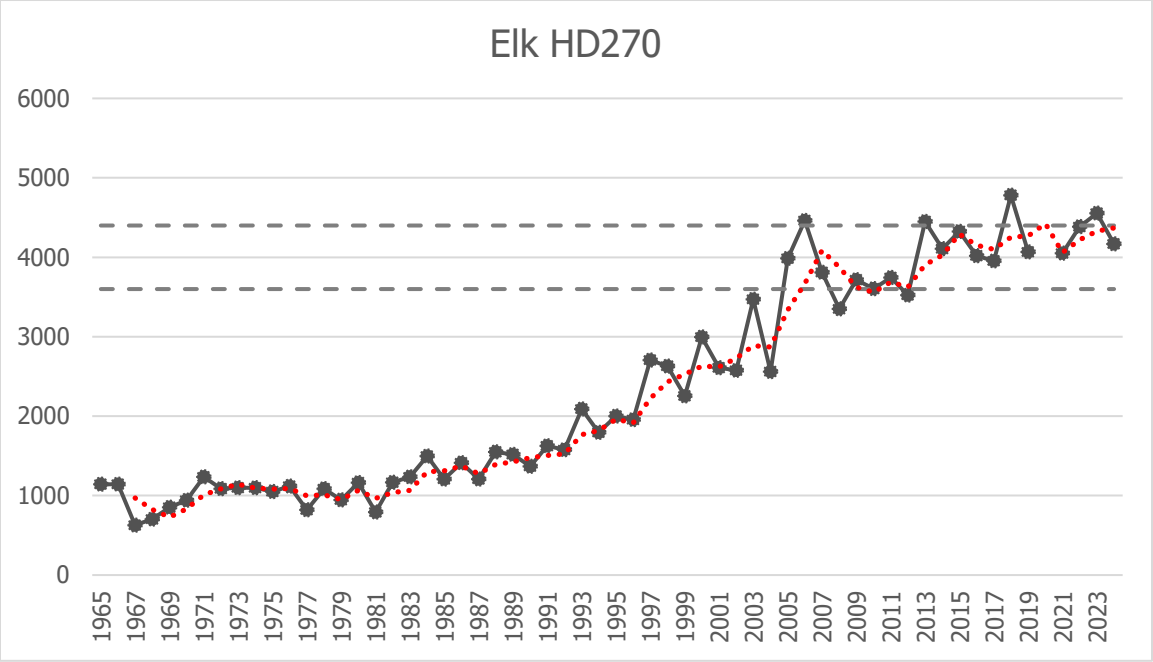


BIGHORN SHEEP: HD 250

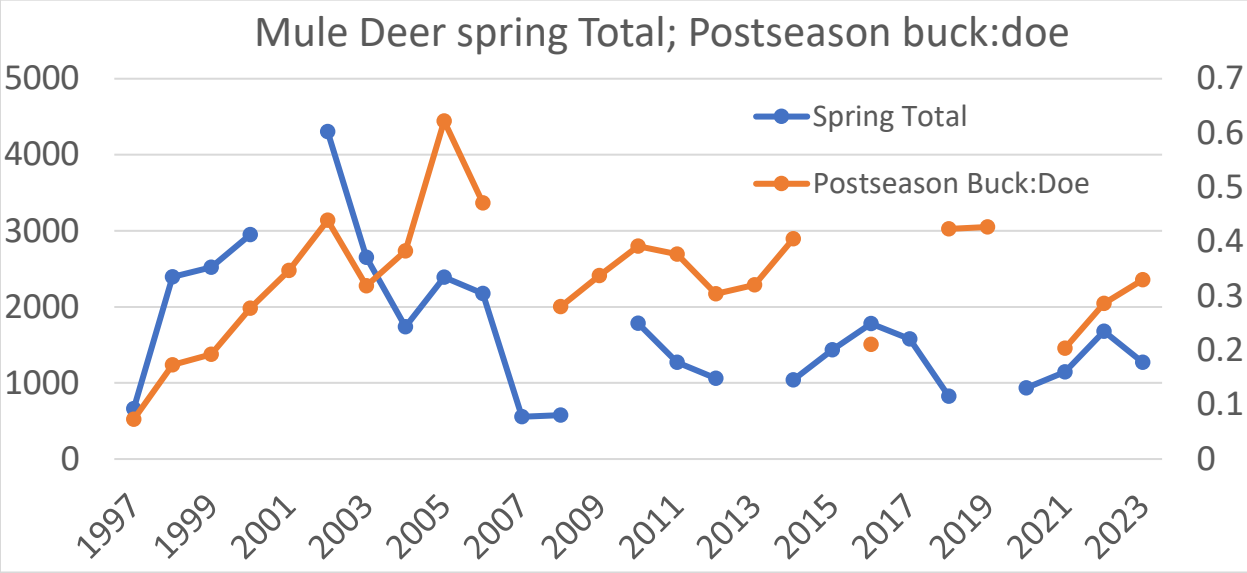


LMU 270

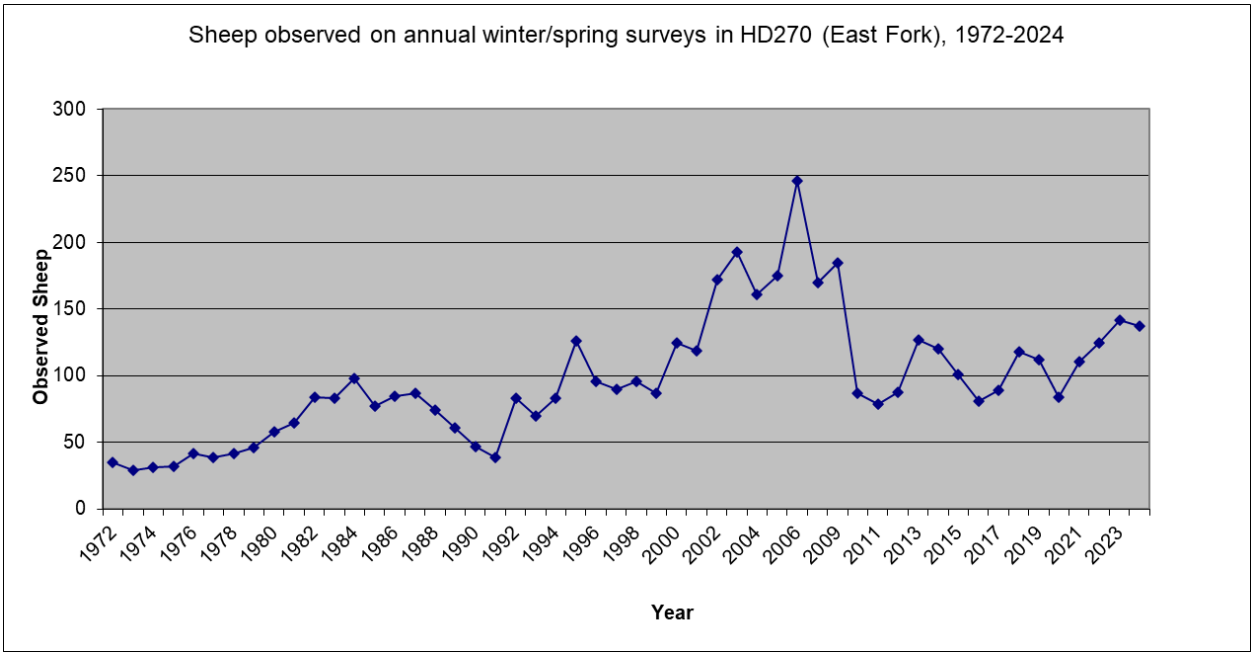
ELK: HD 270



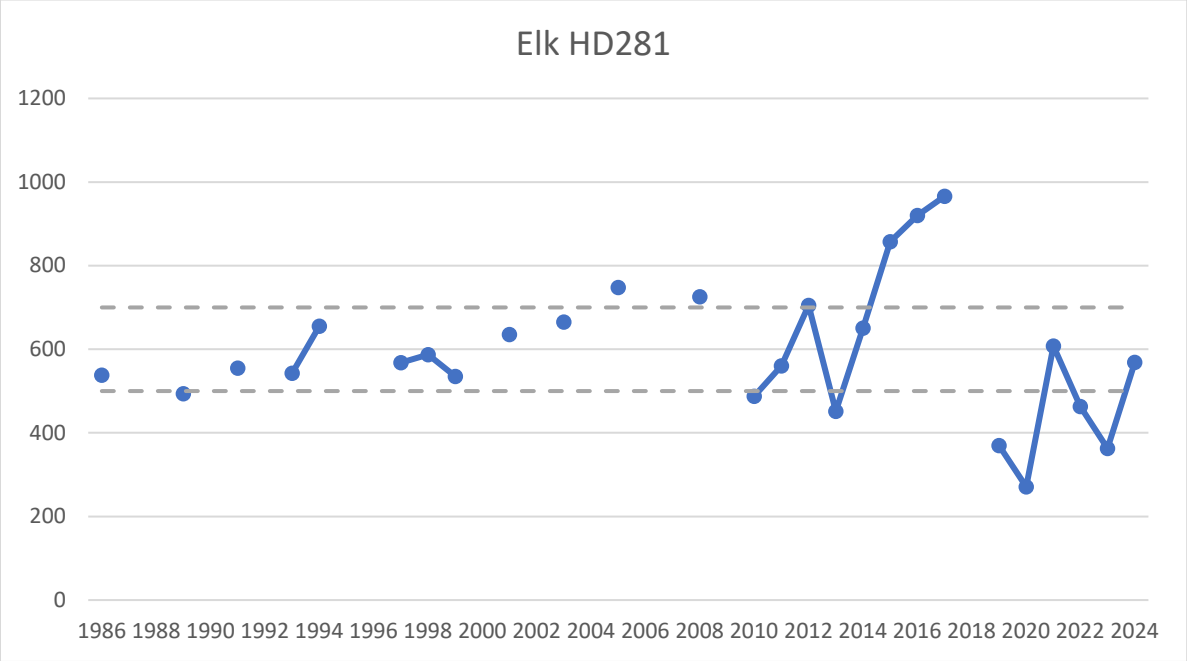
MULE DEER: HD 270

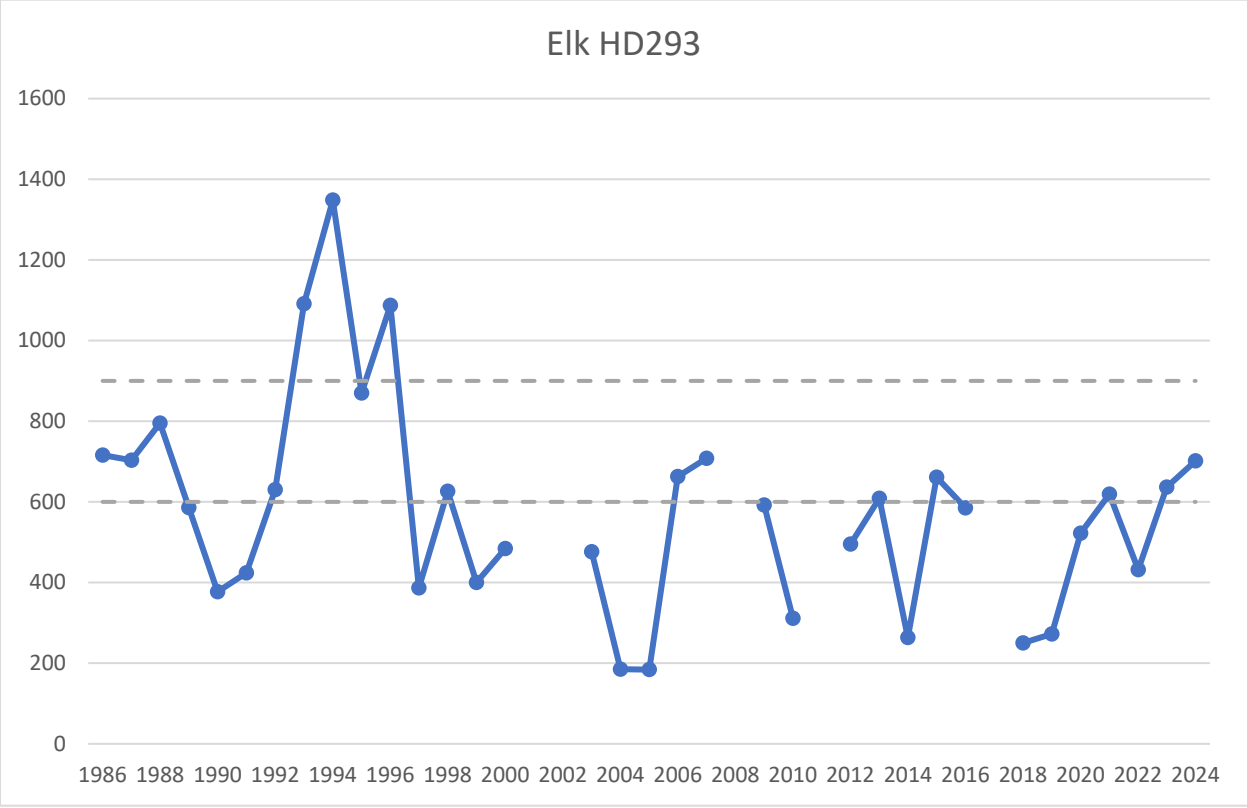


BIGHORN SHEEP: HD 270



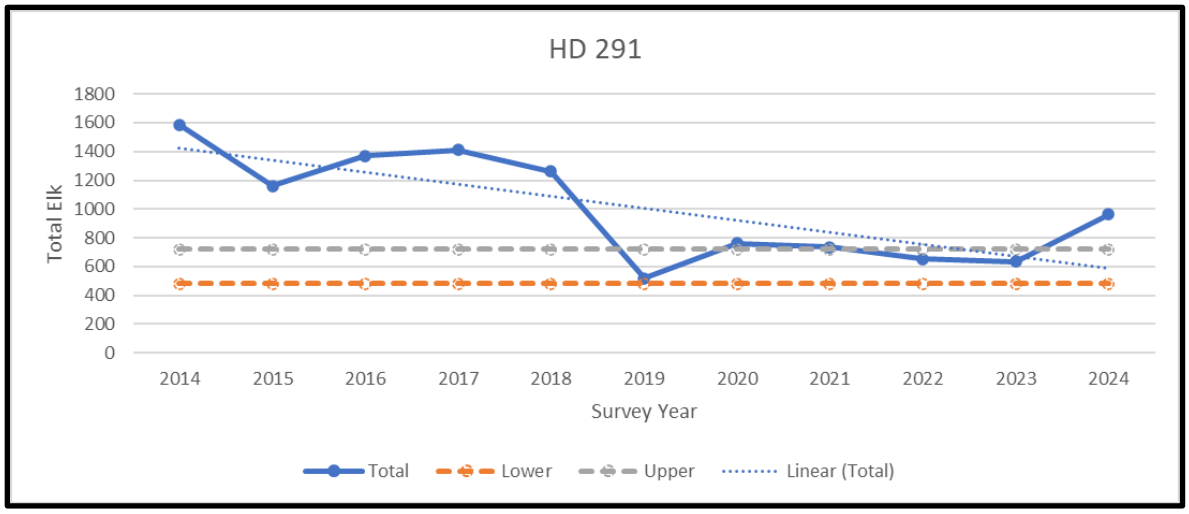
LMU 280

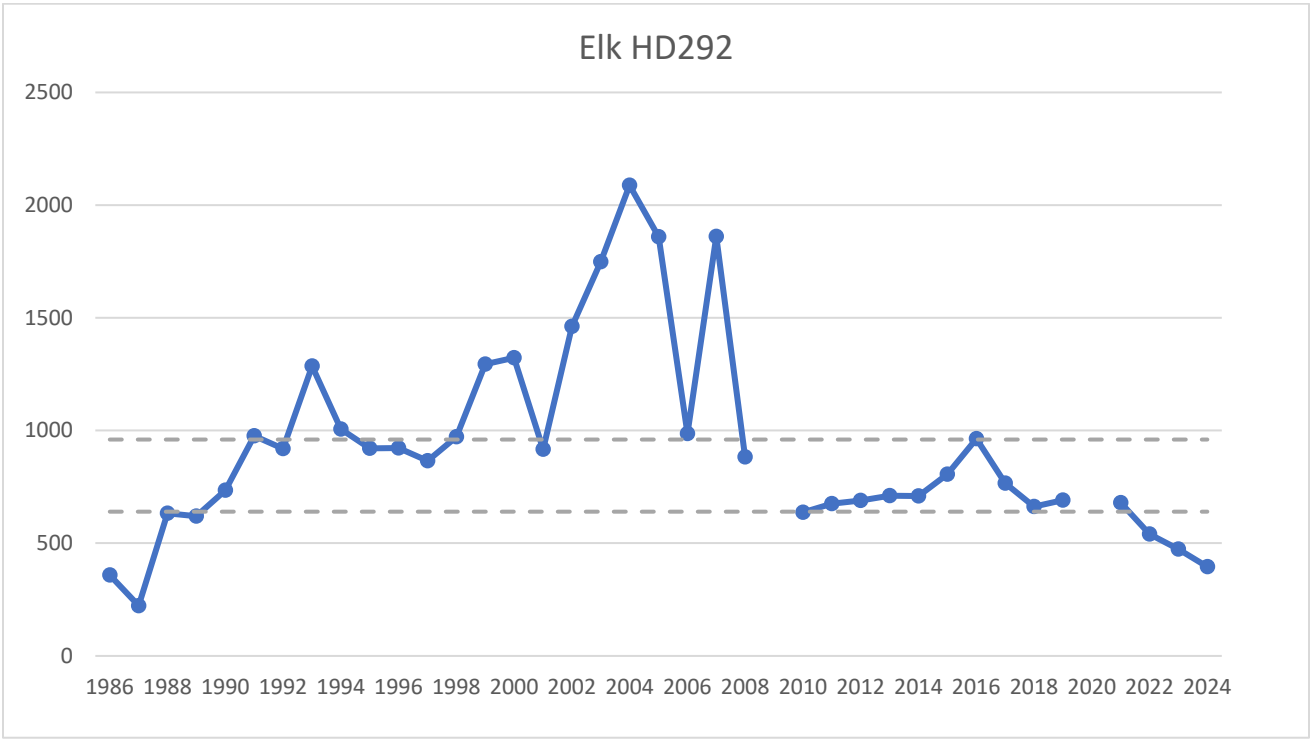

Elk HD281
1200
1000
800
600
400
200
0
1986 1988 1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024

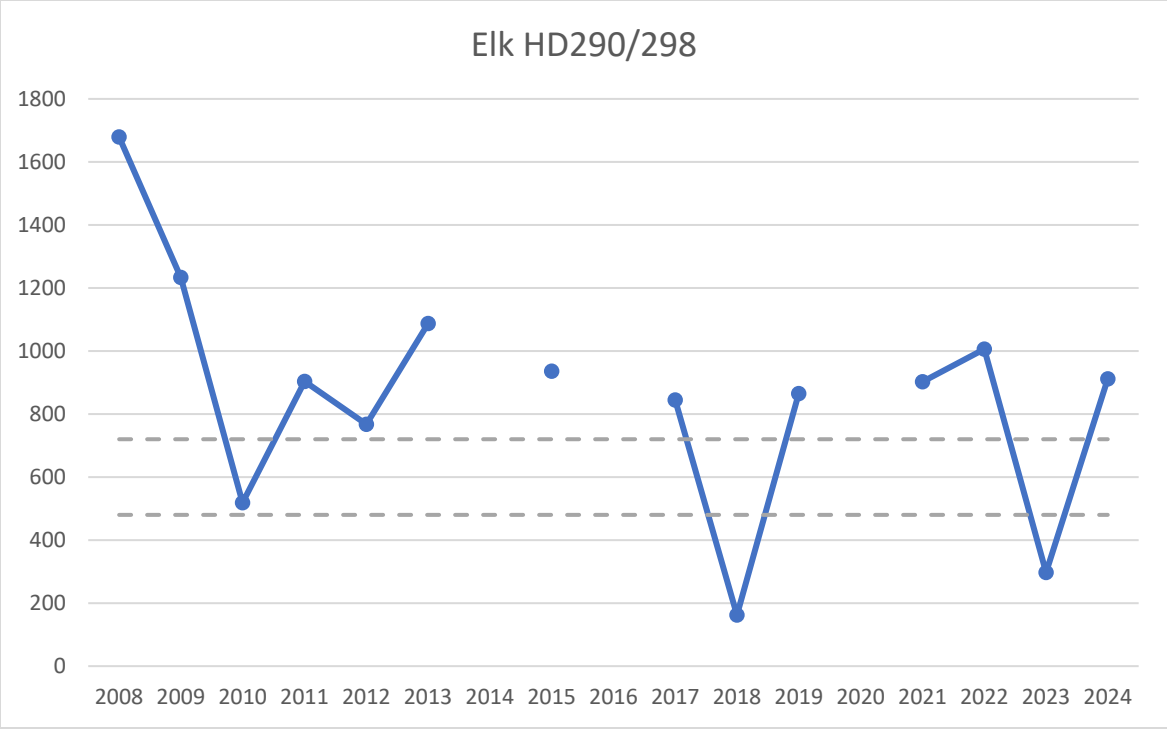

Elk HD293
1600
1400
1200
1000
800
600
400
200
0
1986 1988 1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024

LMU 290

ELK: HDs 290, 291, 292, 298






Elk HD290/298
1800
1600
1400
1200
1000
800
600
400
200
0
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024

Lion Management Unit 318

LMU 318 consists of two deer/elk HDs (318 and 335). For elk, as of 2024, both HDs are considered within their individual population goal ranges, using the 3-year moving average of counts (see Figures 1 and 2). When counts and goal ranges for both are combined, the total area comprising LMU 318 is within population goal range, using the 3-year moving average of counts (see Figure 3).

There is not a mule deer trend area within LMU 318. In this area, mule deer populations are monitored via antlered buck harvest on a General Deer License, which is considered to be an index to population trend. The mule deer goals for this area, according to the 2021 Mule Deer Adaptive Harvest Management Plan, are to maintain antlered buck harvest within 25% of the long-term-average (LTA). The 2023 antlered buck harvest in HD 318 was 94 and was considered within the goal range (see Figure 4). The 2023 antlered buck harvest in HD 335 was 228 and was above the goal range (see Figure 5).

There are no established populations of mountain goat or bighorn sheep in LMU 318.

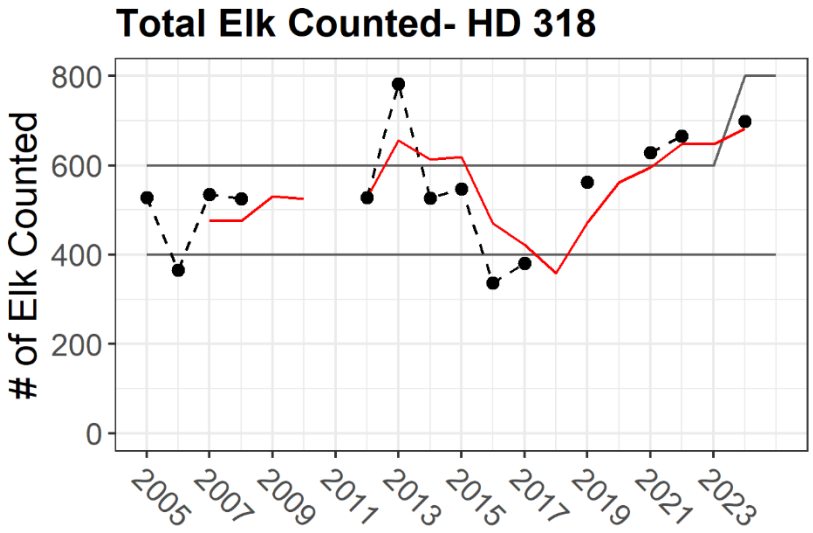


Figure 1. Total elk counted in HD 318 2005-2024. Points show observations from survey flights. The solid red line shows a 3-year moving average. Horizonal solid gray lines show the lower and upper range of the population size goal.

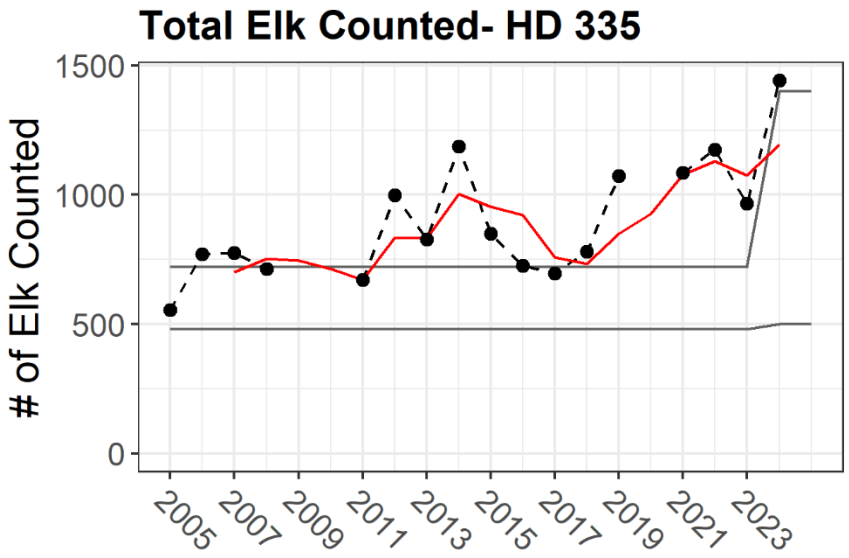


Figure 2. Total elk counted in HD 335, 2005-2024. Points show observations from survey flights. The solid red line shows a 3-year moving average. Horizonal solid gray lines show the lower and upper range of the population size goal.

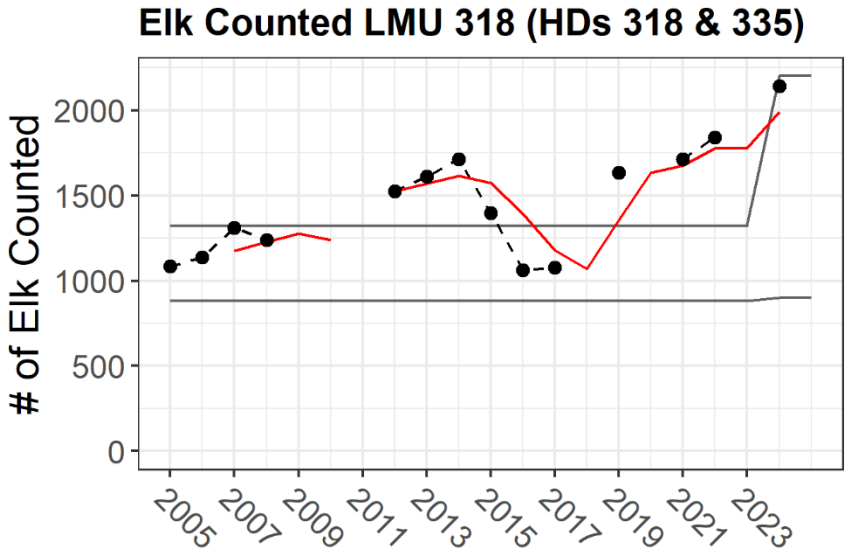


Figure 3. Total elk counted in HDs 318 & 335 (current LMU 318), 2005-2024. Points show observations from survey flights. The solid red line shows a 3-year moving average. Horizonal solid gray lines show the lower and upper range of the combined population size goals. Note: these HDs are presented separately and have goals defined separately within the 2023 Elk Management Plan.

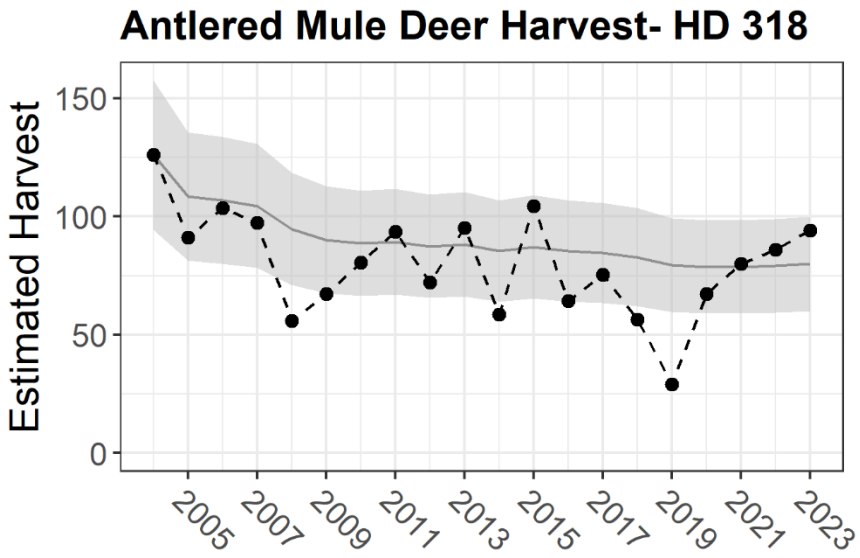


Figure 4. Antlered Buck Mule Deer Harvest in HD 318, 2004-2023. Points show harvest estimates. The solid gray line shows the average of all available data (long-term-average). Gray shaded area is +/- 25% of the long-term-average, and is the goal for antlered buck harvest (AHM 2021).

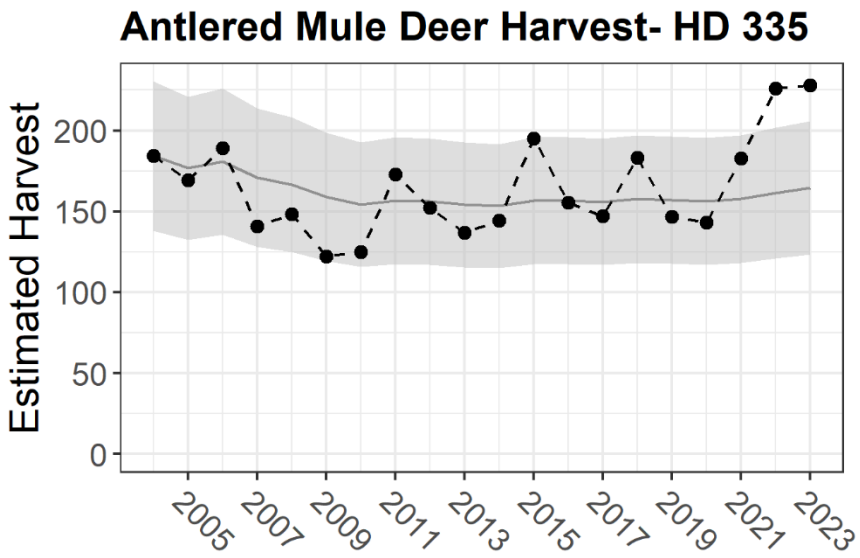


Figure 5. Antlered Buck Mule Deer Harvest in HD 335, 2004-2023. Points show harvest estimates. The solid gray line shows the average of all available data (long-term-average). Gray shaded area is +/- 25% of the long-term-average, and is the goal for antlered buck harvest (AHM 2021).

Lion Management Unit 339

LMU 339 consists of two deer/elk HDs (339 and 343). For elk, these two HDs have a single, combined population goal. The 2024 elk survey was of poor quality and should not be used to infer population trend. Using 2023 count data, the HDs combined would be considered within population goal range, using the 3-year moving average (see Figure 1).

There is a mule deer trend area in LMU 339. During the spring green-up survey in April 2024, we counted 159 total mule deer, which is well below the long-term-average (LTA) of 628 (see Figure 2). The current goal range (defined as +/- 25% LTA) is 471–785. Recruitment estimate this spring was 47 fawns:100 adults, which is slightly above the "standard" range of 20–45 fawns:100 adults as defined in the 2021 Mule Deer Adaptive Harvest Management Plan (see Figure 3).

There is an established bighorn sheep population that inhabits the northeastern portion of LMU 339. During a survey in April 2024, we counted 47 sheep, however survey conditions were not ideal. Consistent surveys have not been conducted in the past, but sheep are opportunistically observed during elk surveys. There are currently radio-collars deployed in this herd for an ongoing research project.

There is no longer an established mountain goat population in LMU 339.

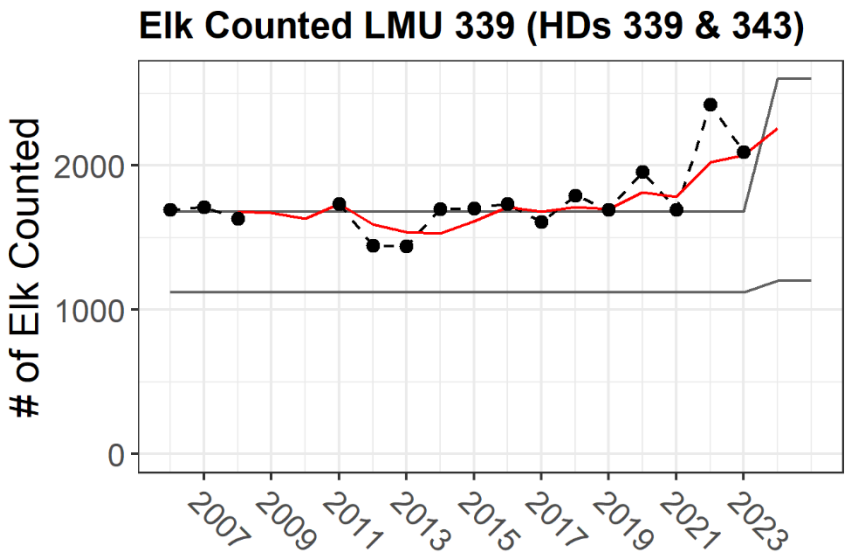


Figure 1. Total elk counted in HDs 339 & 343 (current LMU 339), 2005-2024. Points show observations from survey flights. The solid red line shows a 3-year moving average. Horizonal solid gray lines show the lower and upper range of the population size goal.

MEMORANDUM

TO: Warren Hansen, Regional Wildlife Manager

FROM: Adam Grove, Wildlife Biologist – Townsend

DATE: December 6, 2022

SUBJECT: HD 380 bighorn sheep survey - 2022

An aerial survey of the Elkhorn Mountains (HD 380) was flown for bighorn sheep on the morning of December 3, 2022, in a Department A-star helicopter piloted by Joe Rahn. The survey effort took approximately 1.8 hours with a total flight time of approximately 2.5 hours (approx. 0.1 hrs ferry time, plus 0.6 hrs pilot ferry time from Helena and back). Survey conditions were sunny with light winds and temperatures ranging from 18 to 24 degrees during the survey. The survey primarily focused on areas where bighorn sheep have been observed in the past. Observability conditions were rated as very good for the survey.

This survey is only the second dedicated bighorn sheep survey that has been flown in HD 380 since the major all-age class die-off event occurred back in 2007/08 (see Table 1 for past sheep survey results). The last bighorn sheep only survey was flown back in October of 2014 in a Supercub and was pretty much a bust, as only 10 sheep were observed. In hindsight, October was a poor time of the year to try and fly a bighorn sheep survey. Some bighorn sheep (usually < 15) are typically observed while flying the HD 380 annual post-season or spring mule deer trend survey or while flying the annual HD 380 elk survey. Those surveys are focused on those other species and not focused on finding bighorn sheep.

A total of 51 bighorn sheep (16 rams, 25 ewes, 10 lambs) in five groups were observed during the survey. Group sizes ranged from 1 (single ram) to 22. The lambs per 100 ewes ratio (small sample size) was a fairly healthy 40 lambs per 100 ewes. While we likely missed seeing some sheep, it is quite evident that bighorn sheep numbers in HD 380 haven’t come close to recovering to pre-die-off numbers after 15 years. Small relatively stable remnant bighorn sheep populations often seem to be a by-product of large all-age class die-off events.

Table 1. HD 380 bighorn sheep aerial survey summary.

Year	Rams	Ewes	Lambs	Unclass	Total	Lambs: 100 Ewes	Notes
12/3/2022	16	25	10	0	51	40	Helicopter Survey
10/9/2014			3	7	10		Survey flown in fixed-wing, wrong time of year
4/2/2008	4	15			19		Subsequent to major die-off event
3/30/2007	75	95	27	1	198	28	
4/11/2006	49	65	24	24	162	37	Survey flown in conjunction with MD survey
4/16/2005	48	82	28	5	163	34	Survey flown in conjunction with MD survey
2/20/2004	25	78	29		132	37	
3/18/2003	35	77	32		144	42	
Ave:	**36.0**	**62.4**	**21.9**	**7.4**	**109.9**	**36.4**	

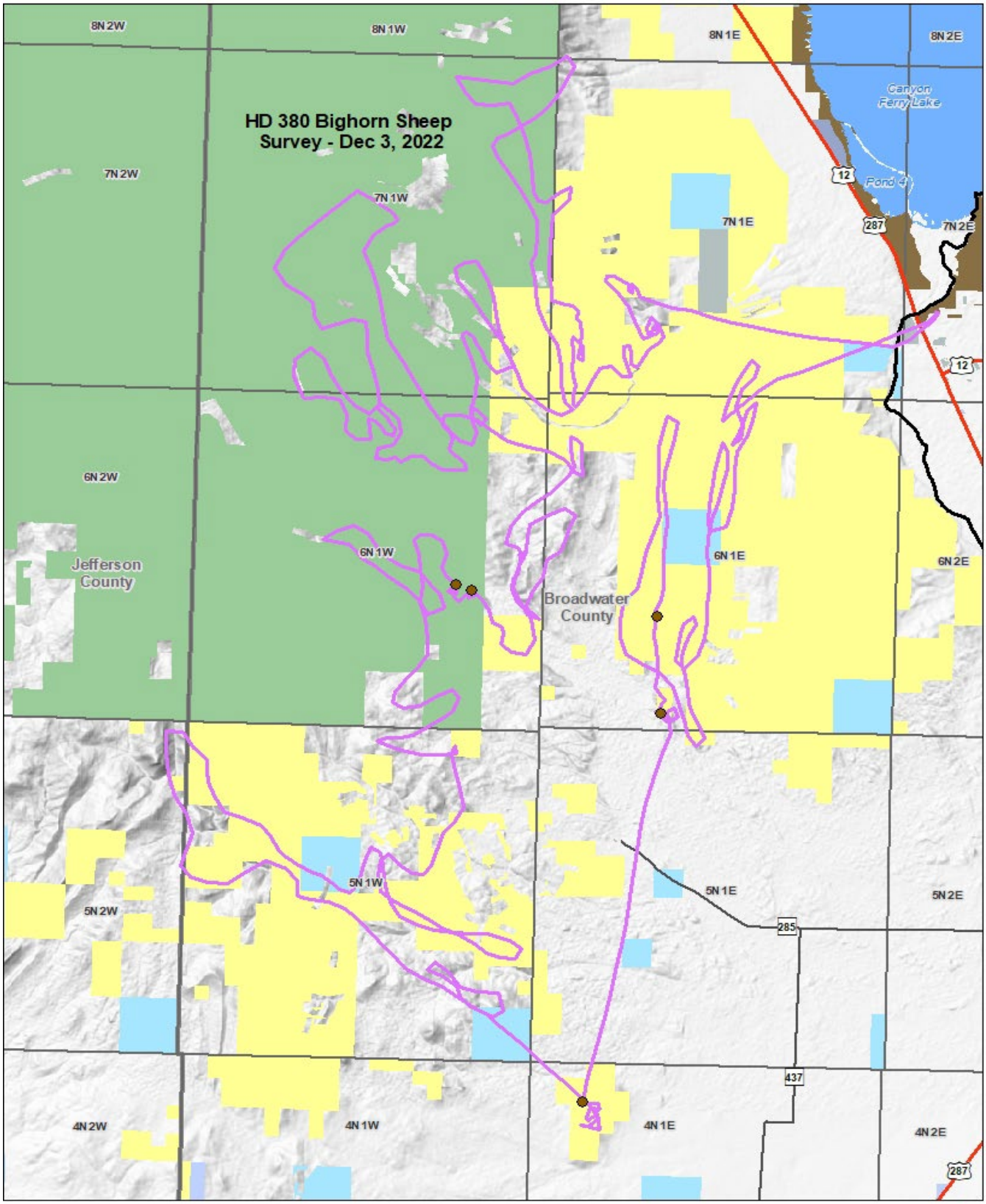


Figure 1. HD 380 bighorn sheep survey flight track (purplish line) and group waypoint locations (brown dots).

MEMORANDUM

TO: File

FROM: Adam Grove, Wildlife Biologist – Townsend

DATE: November 4, 2021

SUBJECT: Elkhorns (HD 380) mountain goat survey

An aerial mountain goat survey was flown in the Elkhorn Mountains (HD 380) on the afternoon of October 19,2021 in FWP's A-Star helicopter piloted by Joe Rahn. The survey was flown after completing the HD 350 mountain goat survey over on the north end of the Big Belt Mountains. The survey effort took approximately 0.8 hours with a total flight time of approximately 1.1 hours (approx. 0.3 hrs ferry time). Survey conditions were sunny skies with light winds at the Helena airport and temperatures on the ground at the airport ranging from 57 to 55 (F) for the survey. Patchy snow cover was the predominate background conditions over most of the survey area. The survey run quality was rated as fair.

The HD was last flown in the late winter of 2018 to get an idea of the winter distribution of mountain goats in the Elkhorns in addition to obtaining a population count. This area has often been surveyed in the summer or early fall in the past. To say that this year's survey results were disappointing would be a major understatement, as we only observed one mountain goat in the Crow Peak area (likely a billy) during the survey. A total of 8 mountain goats (2 billies, 4 adults uncl (likely nannies), 2 kids) were observed during the 2018 survey. Given that observed numbers of goats were both less than 10 when the HD was flown in 2018 and 2014, there has been ongoing concern about the status/viability of the mountain goat population in the Elkhorns (HD 380). It's hoped that there are still more goats in the HD then just the one observed, and that this year's results were just an artifact of a poor survey (timing/background conditions, etc). Observed mountain goat numbers in HD 380 peaked at 50 back in the early 1990s.

There is some desire to augment the mountain goat population in the Elkhorn Mountains (HD 380), as the population is believed to have been at extremely low numbers for quite a few years now and is likely suffering from the effects of inbreeding depression. However, the amount of habitat in the Elkhorns does appear to be limited for goats, as much of the habitat around the higher peaks is just rock with no available forage.

Table 1. HD 380 mountain goat survey data.

Date	Adults	Yearlings	Kids	Unclass.	TOTAL	Kids/100 Adults	Notes
10/19/2021	1				1		
3/13/2018	6		2		8	33.3	
10/9/2014	6	2	1		9	16.7	
9/30/2003					0		A few mtn goats seen on Elkhorn Peak earlier in summer
9/13/1999	17		2		19	11.8	
10/21/1998	4		1		5	25.0	
9/22/1997	28		1		29	3.6	
7/7/1996	23	4	9		36	39.1	
8/30/1993	24	3	6		33	25.0	
9/10/1992	36	7	7		50	19.4	
July, 1982	22	6	10	4	42	45.5	
July, 1981	15	3	4		22	26.7	
July, 1980	20	3	7		30	35.0	
9/13/1977	4				4		
8/13/1976	22	5	3		30	13.6	
8/6/1975	15	1	4		20	26.7	
Ave	**17**	**4**	**4**	**4**	**22**	24.7	

AERIAL TREND COUNT FORM

Survey Run Quality: Fair
Flight Start: 15:44
Flight Stop: 16:47
Survey Start: 15:52
Survey Stop: 16:36
Ferry Time: 0.3 hrs
Total Time: 1.1 hrs
HUNTING DISTRICT: 380
AIRCRAFT: A-Star
Start Lighting: Sunny
End: Sunny
Start Temp: 57 End: 55
DATE: 10/19/21
PILOT: Joe Rahn
OBSERVER: A. Grove
Start Wind Speed: <10 End: <10

Billies	Nannies	Adults	Kids	Yearlings	Unclass.	TOTAL	WP#	Photo#
1						1	9	

COMMENTS: Patchy snow cover resulted in poor background conditions.

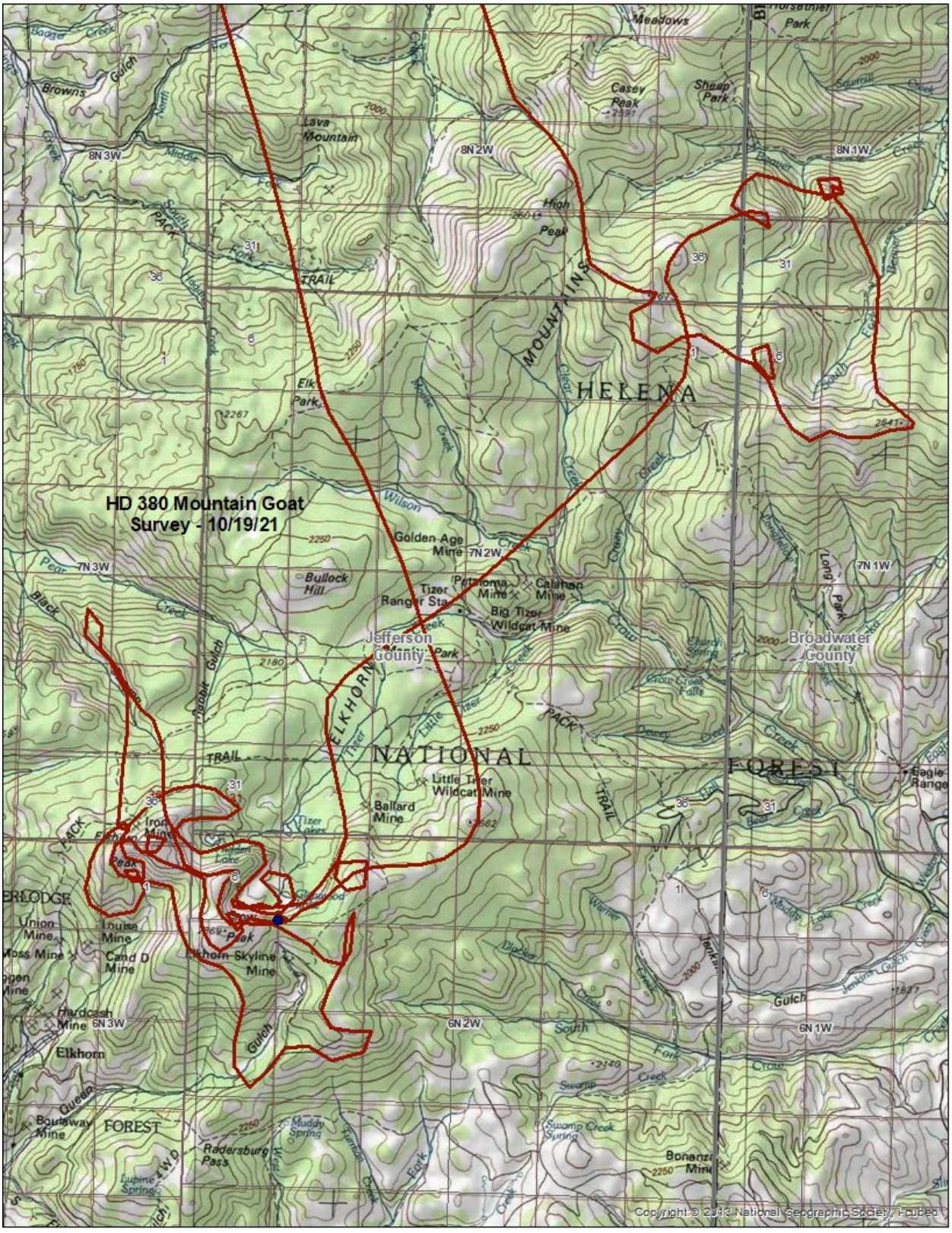


Figure 1. Waypoints and flight track for HD 380 mountain goat survey.

MEMORANDUM

TO: Warren Hansen, Regional Wildlife Manager

FROM: Adam Grove, Wildlife Biologist – Townsend

DATE: April 12, 2024

SUBJECT: HD 380 spring mule deer trend survey results

An aerial trend survey was flown for mule deer in a portion of HD 380 (Elkhorns) on the morning of April 10, 2024, in a FWP Supercub piloted by FWP pilot TJ Reynolds out of Dillon. Historically this survey has been flown in a FWP helicopter, but due to chronic issues with getting the state helicopter to fly the survey in a timely manner, the survey has been flown with a fixed-wing aircraft (Supercub) the last two years.

The spring HD 380 mule deer trend survey generally covers the area from Whitehorse Creek to Johnny's Gulch and includes the Limestone Hills (winter survey area) and USFS areas to the west (see attached map). The amount of USFS area covered is somewhat variable every year depending upon snowmelt, green-up, and how much deer have dispersed from their wintering area in the Limestone Hills.

Survey time was approximately 4.3 hrs with a total flight time of approximately 5.4 hrs. Again, this year, the survey ended later in the day than desired (12:04 P.M.). The start of the survey was delayed approximately 45 minutes because of inclement weather (weather forecast was wrong). In addition, we ended up having to cover a larger survey area than desired, as mid-elevation areas had already melted out and were starting to green up so needed to be flown. As a result, the actual survey time was also longer than desired. Ideally, it would be best if the survey could be completed in 3.0-3.5 hrs and finished by around 10:00-10:15 A.M. to try and catch as many deer groups up and feeding as possible. I may have to look at going back to using the state helicopter if the length of the survey continues to be an issue.

As I mentioned, the survey was delayed approximately 45 minutes due to inclement weather. Survey conditions ranged from mostly cloudy for most of the survey to partly cloudy by the end. Light conditions were variable throughout the survey, and we were dealing with intermittent squalls on the north end of the survey area during the survey. The survey ended up basically being flown backwards of how we normally fly it to deal with the weather situation. Winds were light (< 10 mph) and temperatures at the airport ranged from 35 at the start of the survey to 47 degrees at the end of the survey. The survey area was largely bare, with patchy snow cover at higher elevations within the survey area, and variable green-up conditions depending upon the elevation, aspect, etc. Higher elevations in the Elkhorns still had good snow cover. Deer groups were observed bedded starting about 9:20 A.M. Survey run quality was rated as fair.

Survey results were disappointing to say the least and somewhat unexpected. Only 113 mule deer (92 adults, 21 fawns) in only 14 groups were observed this year, a decrease of

approximately 29% as compared to last year's count of 159 (132 adults, 27 fawns). No deer groups were observed on national forest land even though there were patches of green-up present and there was still good snow cover at higher elevations in the Elkhorns. Feel that we missed seeing a lot of deer potentially either because they had already dispersed from the survey area (possibly to the southwest, as there was still good snow cover at higher elevations to the west in the Elkhorns), or they were possibly bedded in and around trees and just not observed. Had wanted to fly the survey about a week and a half earlier but was unable to get the plane, as the pilot was flying other surveys.

There has been a considerable amount of annual variation in spring counts in the trend area over the years due to survey timing issues, as deer start to disperse to the west or southwest as soon as those areas start to green up or at least melt out. In addition, it should also be noted that the area surveyed in the spring in HD 380 has varied over the years particularly in relation to the south survey boundary, so trend comparisons are somewhat problematic. As mentioned, we flew the Whitehorse Creek to Johnny's Gulch area, which appears to have been the original area established back in 1997 for the current spring trend survey area.

As a result of the considerable variation in spring counts, over the years it has become apparent that from a population trend aspect the best overall counts in HD 380 occur during the post-season survey. We typically observe far fewer deer during the spring survey than we do during the post-season survey. If the sample size is sufficient, the spring survey can give us a good estimate of the fawns per 100 adults ratio coming out of winter, but again the total count results typically aren't good for assessing overall population trend.

This year's number of observed mule deer is approximately 59% below the long-term spring average of 277 observed mule deer. The number of deer observed this spring was approximately 48% lower than the number (214) we observed during the post-season survey. While mule deer numbers in HD 380 are known to be down quite a bit, the low number of mule deer observed during both the post-season and spring survey could also be a function to some extent of the relatively mild winter conditions that saw considerably less snowfall accumulation than normal.

This year's spring fawns per 100 adults ratio of 22.8 was down approximately 44% from this year's post-season ratio of 40.8. Although, this spring's ratio must be taken with a grain of salt given the less-than-ideal sample size of only 113 deer. Outside of a few days of excessively cold weather, the winter was quite mild, so the expectation is that over-winter survival should have generally been good. This year's spring ratio was up approximately 11% from last spring's fawns per 100 adults ratio of 20.5. This spring's fawns per 100 adults ratio (22.8) is down approximately 17% from the long-term spring average of 27.5, but again the small sample size needs to be taken into consideration.

In addition to mule deer, we also observed 5 bighorn sheep (all ewes) and lots of elk during the survey.

Table 1: Mule deer population parameters for HD 380 trend area.

YEAR	POST-SEASON (Total Deer)	FAWNS:100 ADULTS (Post-Season)	SPRING (Total Deer)	FAWNS:100 ADULTS (Spring Recruitment)	BUCKS:100 DOES (Post-Season)
2023/24	214	40.8	113	22.8	12.6
2022/23	285	27.2	159	20.5	7.2
2021/22	256	37.6	145	27.2	9.4
2020/21	236	21.6	117	39.3	14.8
2019/20*	269	29.3			5.6
2018/19	100	17.6	317	16.1	18.1
2017/18	330	34.7	367	19.5	22.5
2016/17	335	43.2	254	31.6	15.8
2015/16	138	40.8	107	35.4	12.6
2014/15	123	36.7	-	-	7.1
2013/14			166	25.0	
2012/13					
2011/12		-	236	20.0	-
2010/11	394	22.6	116	30.3	11
2009/10	464	24.6	166	26.7	6.7
2008/09	437	29.3	375	30.2	8.4
2007/08	556	28.3	514	26.5	11.5
2006/07	786	24.7	463	21.6	18.8
2005/06	593	44.9	177	37.6	14.9
2004/05	787	25.7	233	26.9	11.1
2003/04	461	30.3	366	33.6	15.5
2002/03	422	33.1	381	34.3	7.8
2001/02	556	31	456	23.7	9.9
2000/01	520	31.3	420	23	10.8
Ave ('00-'22/'23)	**402**	**30.7**	**277**	**27.5**	**12.0**

- 2015 Spring survey flown but no deer observed (timing), not indicative of trend

* No spring survey flown due to Covid concerns

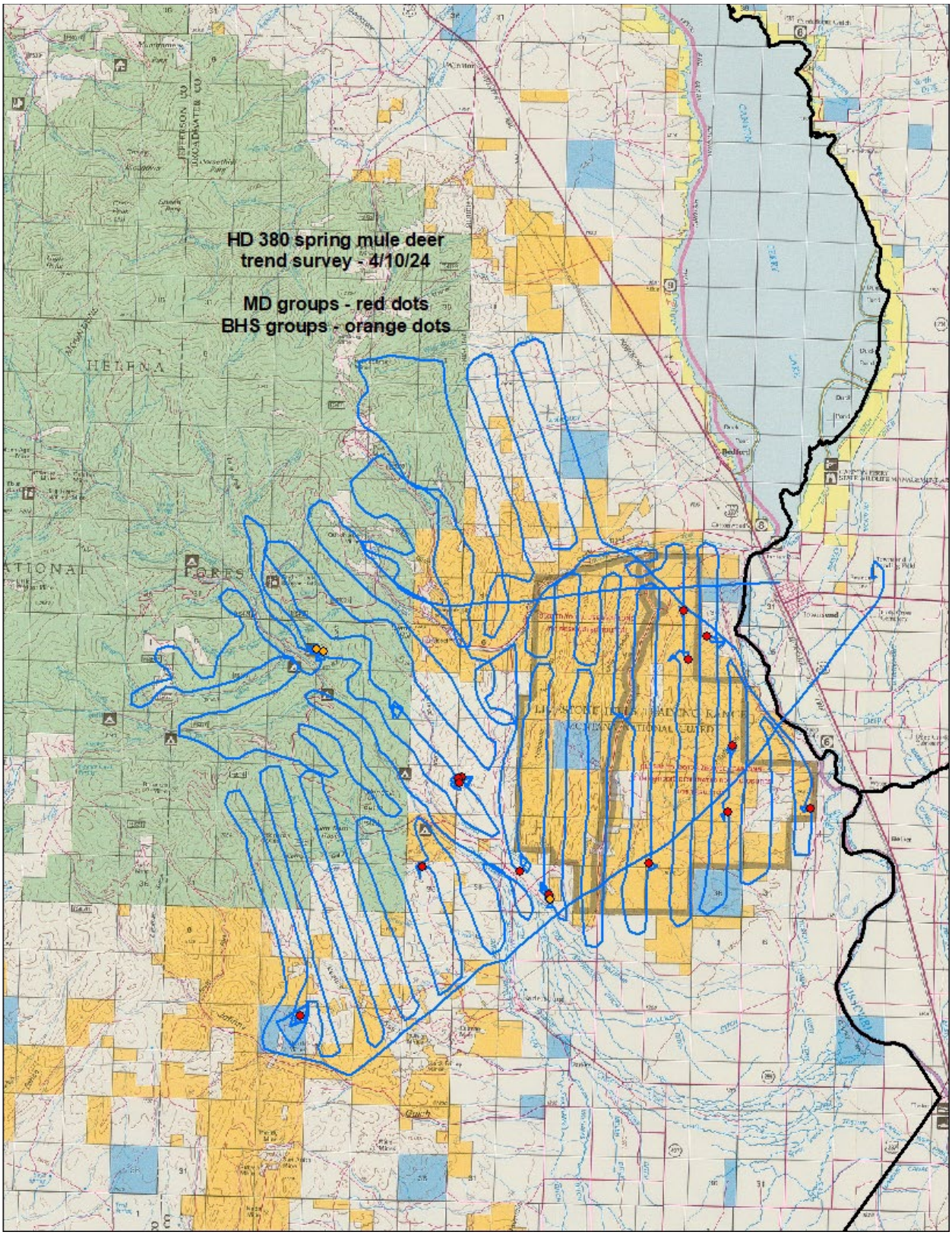


Figure 1. Waypoint locations of observed mule deer (red dots) and bighorn sheep (orange dots) groups along with survey flight track.

MEMORANDUM

TO: Warren Hansen, Regional Wildlife Manager

FROM: Adam Grove, Wildlife Biologist – Townsend

DATE: March 5, 2024

SUBJECT: HD 380 (Elkhorns) elk survey results – 2024

Aerial elk surveys (five flights) of hunting district (HD) 380 were flown on February 10, 16, 17, and 19 (2 flights). The slightly extended amount of time over which the surveys were flown was the result of weather and pilot availability issues. While the somewhat extended amount of time needed to get the HD's survey completed wasn't totally ideal, given how the survey was broken up between geographic areas, I didn't feel that we had groups of elk moving between the different HD 380 survey areas between surveys. Overall survey quality was rated as good.

All surveys were flown in a FWP supercub aircraft piloted by FWP pilot TJ Reynolds based out of Dillon. Total survey time for the five flights was approximately 15.9 hrs with a total flight time of approximately 26.1 hrs which includes 8.3 hrs of pilot ferry time.

The February 10 survey was flown in the morning. However, the start of the survey was delayed approximately one hour and twenty minutes due to fog/low ceiling. Survey conditions were sunny with light winds (winds were stronger aloft than on the ground), complete snow cover, and temperatures ranging from 12 to 26 degrees F (airport temps) during the survey. Most of the groups of elk were observed bedded given the late start. Survey run quality was rated as good.

The February 16 survey was flown in the afternoon because of poor weather conditions in the morning. Survey conditions were sunny with light winds, complete snow cover, and temperatures ranging from 18 to 14 degrees F (airport temps) during the survey. Bull groups were generally observed up and feeding while most of the antlerless groups were bedded in scattered timber. Survey run quality was again rated as good.

Survey conditions for the February 17 morning survey were sunny with light winds, complete snow cover, and cold temps ranging from 0 to 15 degrees F (airport temps) during the survey. Groups observed early in the survey were generally up and feeding while groups observed later in the morning were generally bedded out in the open. Survey run quality was rated as very good.

Survey conditions for the February 19 morning survey were sunny to partly cloudy with light winds, complete snow cover, and temperatures that ranged from 10 to 33 degrees F (airport temps) during the survey. The survey was delayed approximately 20 minutes because of early morning fog issues. Survey run quality was rated as good.
An afternoon survey was also flown on February 19 that covered the very southeast portion of HD 380 and the very southwest portion of HD 390 to account for large group of HD 390 elk that

had crossed U.S. Hwy 287 into HD 380 earlier in the winter. Flew both areas during the same survey to make sure the group didn't get double counted. The HD 390 group of elk was observed in HD 380, but it was felt that the group also contained a group of HD 380 elk that are normally observed in the southwest portion of HD 380, as the group was far larger in size than expected. Survey conditions for the flight were mostly cloudy with generally light winds (winds aloft were stronger in some areas), complete to partial snow cover, and temperatures that ranged from 40 to 37 degrees F (airport temps) during the survey. Survey run quality was rated as fair.

For elk that were counted to the HD 380 total, a total of 1,387 elk (168 BTBs, 37 yrl bulls, 964 cows, 218 calves) were observed in 69 groups during the overall survey (see attached tables and maps). The number of elk observed during the survey represents the **minimum** number of elk known to be in and counted toward the HD 380 total during the survey time-period.

While it was felt we got a pretty good count on brow-tined bulls overall this year with the survey conditions (fairly cold with good snow cover), based on tracks in the snow, it was felt that we probably did miss at least a few bulls in the timber here and there across the HD. It's also likely that on the west side of the HD, in the area between Alhambra and Boulder Hill, we had some elk cross I-15 into either HD 335 or HD 318 earlier in the winter, as I felt that we likely should have seen more elk in that area. For instance, a group of around 65 elk were observed from I-15 in the Boulder Hill area earlier in the winter, but we only observed 23 elk in that area during our aerial survey.

Felt that we might possibly have been missing anywhere from 100-150 elk on the west side of the HD along the I-15 corridor area based on past survey results. It's believed that in recent years we have often been losing some wintering elk (probably from the Prickly Pear and possibly south end of the Sheep Creek herd units) to the west side of I-15. So, more elk are believed to be in HD 380 during other parts of the year particularly on the west side of the HD than what we observe during our winter aerial survey.

We also did not observe a large separate group of elk down on the south/southwest end of HD 380 like we normally do. In recent years this group has typically numbered around 150 or so elk. We did observe a single large group of 401 elk on the southeast side of HD 380. This group is believed to be a combination of a large group (250+?) of HD 390 elk that is known to have crossed U.S. Hwy 287 earlier in the winter (has occurred the last several winters now) into HD 380 and the group of HD 380 elk that we normally observe to the southwest of that location.

The number of elk observed this year in that group (401) compared to last year (213) was likely too big of increase to be accounted for by annual production in the HD 390 group alone. Since there is no way to know exactly how many elk in the group were potentially HD 390 elk and how many were potentially HD 380 elk, the entire group will be assigned to HD 390 for counting purposes this year, even though the group was observed in HD 380. The reason is that the majority of the elk in the group are known to be HD 390 associated elk.

Given the 200-300 or so elk that were believed to be 'missed' and not counted in this year's survey total, this year's survey numbers (minimum count) **are not** believed to be a totally accurate representation of the wintering elk population **trend** in the HD. While overall elk

numbers are believed to be down in the HD and likely slightly below the bottom end of the HD's goal range of 1,700-2,300 observed elk, overall numbers are believed to be somewhat higher than what was actually observed this winter.

Adding the believed 200-300 'missing' elk to this year's observed total of 1,387 would put actual elk numbers in the approximate range of 1,587-1,687 elk for the HD. While that number is much higher than this year's actual observed number, the number would still be below the desired elk goal range of 1,700-2,300 observed elk for the HD. As such, recommendations will be made later this spring to further reduce antlerless elk B-licenses in the HD for the fall of 2024.

At least some elk were observed and counted in seven (technically eight) of the current nine HD herd units this year (Tables 2 & 3). As a result of the boundary change implemented in 2022, what used to be the southeast portion of HD 380 between U.S. Hwy 287 and the Missouri River is now HD 390. As mentioned, a large group of elk from that area (HD 390) that were known to have crossed U.S. Hwy 287 earlier this winter into HD 380 (South End) were observed in HD 380 during our survey (2/19 afternoon survey). As noted previously, that group also likely contained a group of HD 380 elk that are normally observed to the south/southwest of that area. But again, since they were mixed with HD 390 associated group, they will be included in the HD 390 observed elk total and not the HD 380 total for this year, as there is no way to know for sure how many in the group were HD 390 or HD 380 elk.

This year the largest numbers of elk were observed in the North Crow, South Crow, and Devil's Fence herd units. The large cow/calf group that is often observed in the Kimber herd unit was observed to the south on the north end of the North Crow herd unit again this year. Elk that are often found in the Elkhorn herd unit were likely observed on the far west side of the Devil's Fence herd unit this year. As mentioned previously, we likely had some elk from the Prickly Pear and Sheep Creek herd units cross I-15 to the west earlier this winter, and thus were not observed during our survey.

This year's observed calves per 100 cows ratio was 22.6, which is down approximately 17% from last year's ratio of 27.1 calves per 100 cows. The low calves per 100 cows ratio was lower than was expected but was likely mostly a product of the impacts of last year's tough winter on this past year's calf production. This year's ratio was down about 15% from the long-term average of 26.6 calves per 100 cows. Some variation in calves per 100 cow ratios over the years maybe attributable to differences in observers over the years.

There has been considerable variation over the years on the number of bulls, especially the number of brow-tined bulls, observed on an annual basis – likely due to survey timing, weather/temperature conditions, etc. As mentioned previously, we got a pretty good count on the number of brow-tined bulls this year with the good survey conditions. The number of brow-tined bulls observed this year (168) was down approximately 27% from last year's observed total of 231. This year's total was approximately 146% of the long-term average of 115 observed brow-tined bulls.
The number of yearling bulls observed this year (37) was low for a second year in a row. This year's observed number was again likely a product to some extent of the impacts of last year's tough winter on over-winter calf survival. This year's yearling bull total was down

approximately 10% from last year's total of 41 yearling bulls, and this year's total was down approximately 36% from the long-term average of 58 observed yearling bulls. It should be noted that there is always the potential that some yearling bulls are misclassified as cows in the larger cow/calf groups, as even in photos yearling bulls can sometimes be hard to pick out.

This year's total bulls per 100 cows ratio of 21.3 was approximately 18% below last year's ratio of 26.0, but it was still approximately 136% of the long term average ratio of 15.7. Bulls comprised 14.8% of the observed population this year with brow-tined bulls (bulls typically 2.5 yrs or older) comprising 82.0% of the bulls observed. The bull population goal for HD 380 is to maintain a post-season bulls per 100 cows ratio of at least 15 bulls per100 cows (2023 Elk Plan), so that population goal was met this year.

Table 1: Summary of HD 380 observed elk numbers.

ELK AERIAL TREND COUNT SUMMARY FORM														
HUNTING DISTRICT		**380 (data is for 'new' HD 380 effective 2022, result of boundary change with HD 390)**												
DATE	BTBs	YRLG Bulls	COWS	CALVES	Uncl Antler-	UNCL.	TOTAL	Bulls/ 100 Cows	Bulls/ 100 Antlerless	% Bulls of Total	% BTB of Total	% BTB of Bulls	Calves/ 100 Cows	Calves/ 100 Adults
2/10/2024*	168	37	964	218			1,387	21.3	17.3	14.8%	12.1%	82.0%	22.6	18.6
1/30/23	231	41	1,046	283			1,601	26.0	20.5	17.0%	14.4%	84.9%	27.1	21.5
2/25/22	174	63	1,173	384			1,794	20.2	15.2	13.2%	9.7%	73.4%	32.7	27.2
3/12/2021*	77	58	653	230		625	1,643	20.7	15.3	8.2%	4.7%	57.0%	35.2	29.2
3/16/20	100	64	996	281		877	2,318	16.5	12.8	7.1%	4.3%	61.0%	28.2	24.2
3/16/2019*	68	63	852	168		210	1,361	15.4	12.8	9.6%	5.0%	51.9%	19.7	17.1
2/13/18	242	47	1,291	438			2,018	22.4	16.7	14.3%	12.0%	83.7%	33.9	27.7
2/13/17	198	109	1,372	421			2,100	22.4	17.1	14.6%	9.4%	64.5%	30.7	25.1
3/18/16	59	64	1,402	507			2,032	8.8	6.4	6.1%	2.9%	48.0%	36.2	33.2
3/4/15	77	57	1,547	497			2,178	8.7	6.6	6.2%	3.5%	57.5%	32.1	29.6
3/24/14*	14	25	1,083	275		48	1,445	3.6	2.9	2.7%	1.0%	35.9%	25.4	24.5
1/21/13*	107	41	994	295		219	1,656	14.9	11.5	8.9%	6.5%	72.3%	29.7	25.8
2/15/12	155	68	1,206	310			1,739	18.5	14.7	12.8%	8.9%	69.5%	25.7	21.7
3/4/11*	41	26	792	171		82	1,112	8.5	7.0	6.0%	3.7%	61.2%	21.6	19.9
2/28/10*	85	33	1,025	282			1,425	11.5	9.0	8.3%	6.0%	72.0%	27.5	24.7
3/1/09	107	78				2,222	2,407			7.7%	4.4%	57.8%		
2/20/08	177	58	996	246		624	2,101	23.6	18.9	11.2%	8.4%	75.3%	24.7	20.0
2/25/07	165	71	1,387	373		33	2,029	17.0	13.4	11.6%	8.1%	69.9%	26.9	23.0
3/27/06	75	35	455	111		1373	2,049		19.4	5.4%	3.7%	68.2%	24.4	19.6
2/25/05	57	65	1,201	321		39	1,683	10.2	8.0	7.2%	3.4%	46.7%	26.7	24.3
2/12/04	153	45	1,314	279		20	1,811	15.1	12.4	10.9%	8.4%	77.3%	21.2	18.5
2/15/03*	115	21	1,158	191			1,485	11.7	10.1	9.2%	7.7%	84.6%	16.5	14.8
2/15/02	136	88	1,159	307		16	1,706	19.3	15.3	13.1%	8.0%	60.7%	26.5	22.2
2/23/01	136	24	1,373	241			1,774	11.7	9.9	9.0%	7.7%	85.0%	17.6	15.7
2/13/00	142	91	1,122	319		398	2,072	20.8	16.2	11.2%	6.9%	60.9%	28.4	23.5
3/6/99	51	33			1,636		1,720		5.1	4.9%	3.0%	60.7%		
2/6/98	103	80	1,373	258	23		1,837	13.3	11.2	10.0%	5.6%	56.3%	18.8	16.6
2/2/97	56	41			1,979		2,076		4.9	4.7%	2.7%	57.7%		
2/28/96	144	136			2,602	11	2,893		10.8	9.7%	5.0%	51.4%		
1/29/95	115	36			1,748		1,899		8.6	8.0%	6.1%	76.2%		
2/3/94	88	86			1,992		2,166		8.7	8.0%	4.1%	50.6%		
Ave	**115**	**58**	**1124**	**300**	**1663**	**453**	**1,871**	**15.7**	**11.8**	**9.2%**	**6.2%**	**64.4%**	**26.6**	**22.9**
('94-'23)														
HD 380 Obsered Elk Goal Range (1,700 - 2,300)														
*Surveys not reliable indicators of trend because of survey quality or elk movement issues														
Note: Table includes corrections to old survey numbers where errors were discovered, numbers reflect current (2022) HD 380 boundary														

Table 2. Summary of elk observations in Hunting District 380 (2024) by herd segment.

Herd Segment	BTB	Yrl_Bulls	Total Bulls	Cows	Calves	Uncl.	Total
South Crow	34	6	40	227	51	0	318
North Crow	35	16	51	435	94	0	580
Kimber	20	0	0	0	0	0	20
Sheep Creek	28	4	32	107	14	0	153
Prickly Pear	9	0	9	30	4	0	43
Elkhorn	0	0	0	0	0	0	0
Devils Fence	36	11	47	165	55	0	267
Spokane Hills	6	0	6	0	0	0	6
South End	0	0	0	0	0	0	0
Total	**168**	**37**	**205**	**964**	**218**	**0**	**1,387**

Table 3. HD 380 observed elk numbers by herd segment.

Year	South Crow	North Crow	Kimber	Sheep Cr.	Prickly Pear	Elkhorn	Devils Fence	Spokane Hills	Southend*	Total
2024	318	580	20	153	43	0	267	6	0	1387
2023	66	550	22	208	44	115	410	31	155	1601
2022	20	77	417	262	187	18	467	0	346	1794
2021	23	258	290	236	139	0	555	0	142	1643
2020	459	327	301	213	269	97	358	0	294	2318
2019	304	253	247	163	3	31	86	0	274	1361
2018	70	444	257	204	113	155	614	18	143	2018
2017	423	475	188	333	153	82	285	3	158	2100
2016	376	284	344	277	341	139	110	0	161	2032
2015	387	165	291	633	193	76	270	0	163	2178
2014	58	163	344	432	1	0	447	0		1445
2013	0	373	272	311	174	96	430	0		1656
2012	255	229	333	386	319	49	168	0		1739
2011	244	249	257	229	45	57	31	0		1112
2010	314	317	357	217	36	124	43	17		1425
2009	412	635	228	387	368	118	259	0		2407
2008	471	502	367	234	264	6	257	0		2101
2007	261	494	390	277	157	30	359	61		2029
2006	460	514	388	290	309	22	7	59		2049
2005	349	163	442	193	393	60	23	60		1683
2004	439	348	422	209	137	89	147	20		1811
2003	336	244	312	210	182	62	89	50		1485
2002	342	302	301	166	277	122	110	86		1706
2001	541	334	467	97	85	106	91	53		1774
2000	477	423	412	271	296	33	92	68		2072
1999	353	261	448	296	255	2	105	0		1720
Ave	**298**	**335**	**324**	**269**	**190**	**68**	**233**	**21**	**204**	**1810**
('99-'23)										
*Any observations in this area (south of ECMA boundary) prior to 2015 would have been included in Devil's Fence total										

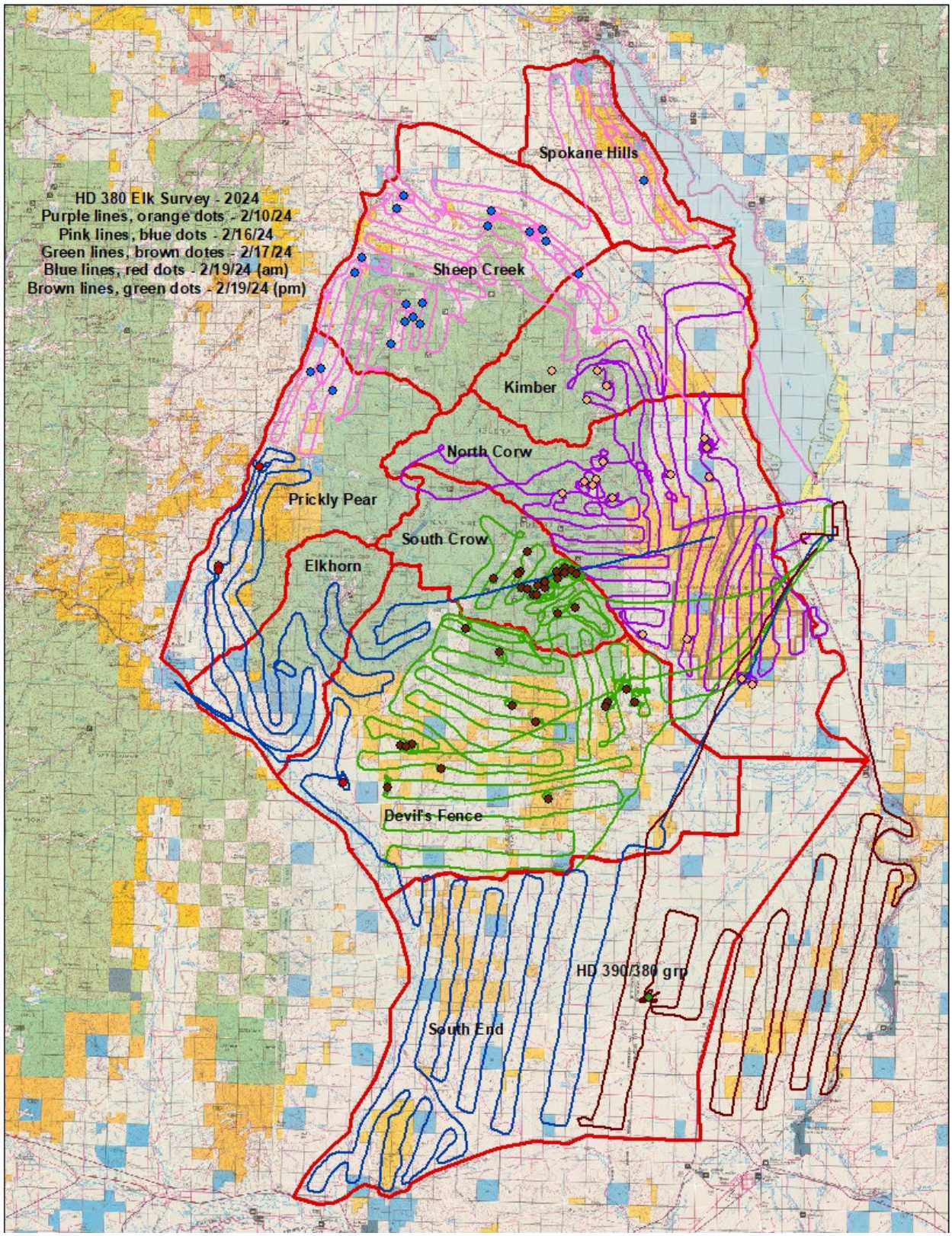


Figure 1. HD 380 flight track (colored lines) and waypoint (colored dots) locations of observed elk groups.

North Big Belt (HD 350) mountain goat survey data.

YEAR	BILLIES	NANNIES	UNCL ADULTS	ADULTS	KIDS	YRLINGS
2021*	1		6	7	1	1
2018	7		18	25	9	1
2015	13	1	16	30	5	1
2010			16	16	1	
2009						
2008			21	21	1	2
2007			22	22	1	2
2006			25	25	5	7
2005			32	32	6	2
2004			37	37	10	6
2003			14	14	5	2
Ave			**22**	**25**	**5**	**3**
'03-'18						

*Survey not reflective of trend, missed seeing a lot of mountain goats, didn't find Avalanche herd

Note: Mountain goat surveys were flown in the Big Belts prior to 2003, but I don't have information or

2023 - 54 mountain goats observed from the ground in late November in Avalanche subherd; estima

TOTAL	BILLIES/100 NANNIES	KIDS/100 NANNIES	KIDS/100 #ADULTS
9			14.3
35			36.0
36			16.7
17			6.3
24			4.8
25			4.5
37			20.0
40			18.8
53			27.0
21			35.7
32			**18.9**

ı where goats were all observed.

ıted to be around 90-100 mtn goats total in HD 350

MEMORANDUM

TO: Warren Hansen, Regional Wildlife Manager

FROM: Adam Grove, Wildlife Biologist – Townsend

DATE: April 19, 2024

SUBJECT: Big Belts spring mule deer survey results for 2024

An aerial spring trend survey was flown for mule deer in portions of HD 391 (Duck Creek to Avalanche, most of survey) and HD 392 (Avalanche to Hellgate area, small portion of survey area) on the morning of April 14, 2024, in a FWP Supercub piloted by FWP pilot TJ Reynolds based out of Dillon. Historically this survey has been flown in a FWP helicopter, but due to chronic issues with getting the state helicopter to fly the survey in a timely manner, the survey has been flown with a fixed-wing aircraft (Supercub) the last two years. Survey time was approximately 3.2 hrs with a total flight time of approximately 5.1 hrs (1.9 hrs of total ferry time including 1.5 hrs pilot ferry time between Townsend and Twin Bridges - plane temporarily based there).

Survey conditions were sunny with light (<10 mph) winds initially that picked up to around 11-15 mph by survey end. Temperatures at the airport ranged from 37 to 64 degrees (F) for the survey, so temps warmed up quite fast during the survey. Green-up conditions were felt to be near optimal. However, the mountains were already relatively free of snow (just didn't get a lot of snow through the winter) with green-up fairly far back in the mountains, so some deer may already have dispersed to higher elevations in places. Observed deer groups were generally observed feeding or bedded in the open. However, as mentioned, temperatures warmed up rapidly during the survey, and deer were observed already bedded by around 8:45. So, if deer bedded in the trees, then they could have been missed. Overall survey run quality was rated as good for the survey.

A total of 283 mule deer (237 adults, 46 fawns) in only 24 groups were observed and classified during the survey. One group accounted for 126 of the deer observed. No post-season survey was flown in the trend area this year, as I was unable to get the state helicopter during the desired survey time-period due to weather and pilot availability issues.

This year's spring total of 283 observed mule deer was down approximately 37% from last year's spring total of 446. The decline was likely due to a combination of numbers being down to some degree from last year (poor fawn recruitment last year) and some deer being missed with how open the mountains were this spring because of the relative lack of snow this winter. Last year's survey was also flown in the late afternoon/evening as compared to this year's morning survey which may have influenced deer observability to some extent. Forecasted afternoon wind/weather conditions during the survey window precluded us from doing a late afternoon/evening survey this year.

This year's observed spring total of 283 is approximately 50% below the long-term spring average ('01-'23) of 563 observed mule deer for the trend area. While over the years there has been a lot of annual variation in spring observed numbers in the trend area likely due to survey timing, area mule deer numbers are believed to still be down, especially on national forest lands. There is also a significant concern on just how representative the trend area is of the HD overall given the hunting access limitations to most of the survey area – poor access to much of the national forest (fronted by private land) and private land within the trend survey area.

Observed mule deer numbers in the trend area haven't come close to the numbers that were observed back in the late 1990s and early 2000s since the spring of 2011 when 744 deer were observed. As usual, few deer groups were observed on National Forest land; although, given the survey conditions this year, we could have simply missed seeing deer that were in the timber, i.e. they were there, but we just didn't see them.

While this spring's fawns per 100 adults ratio of 19.4 was better than last year's ratio of 14.4, it was approximately 23% lower than the long-term spring average of 25.2 fawns per 100 adults. This year's ratio was likely a byproduct of the hard winter of 2022/23 impacts on doe body condition which likely impacted last spring's fawn production and early fawn survival, as this year's winter and early spring were generally pretty mild. As mentioned, the population continues to be down which isn't surprising given that spring recruitment of fawns has been well below the long-term average four out of the last 6 year – byproducts of hard winters and severe droughts during that time frame.

Table 1. Mule deer population parameters for Big Belts trend area.

YEAR	POST-SEASON (Total Deer)	FAWNS:100 ADULTS (Post-Season)	SPRING (Total Deer)	FAWNS:100 ADULTS (Spring Recruitment)	BUCKS:100 DOES
2023/24			283	19.4	
2022/23	269	33.5	446	14.4	15.3
2021/22	114	31.0	224	35.6	16.0
2020/21	153	31.7	272	32.8	18.8
2019/20 - NSprS	166	24.6			17.5
2018/19	118	25.5	340	18.5	19
2017/18	198	42.6	473	15.4	16.2
2016/17	176	53	309	25.6	19.8
2015/16	152	39.8	534	23.2	5.1*
2014/15	82	41.4	308	32.8	13.7
2013/14 - NS					
2012/13 - NS					
2011/12	177	29.3	413	27.5	14.6
2010/11	193	28.2	744	21	10.4
2009/10	287	21.7	298	31.2	14.1
2008/09	283	20.3	602	24.9	12.7
2007/08	241	36.7	814	18.6	23.7
2006/07	578	23.7	647	22.4	20.7
2005/06	263	43.8	296	32.6	8.7
2004/05					
2003/04	346	24.1	910	22.7	14.4
2002/03	627	36.3	977	32.3	15.3
2001/02	558	31.2	761	24.5	14.4
2000/01	420	29.4	1332	22.7	13.6
Average ('00/01 - '22/23')	**270**	**32.4**	**563**	**25.2**	**15.7**
NS - No surveys flown, no spring survey flown in 2020, no post-season survey in 2023/24					
*Survey flown very late, bucks probably had already started to shed antlers, complete survey area not flown					
Results include corrections to previous survey errors.					

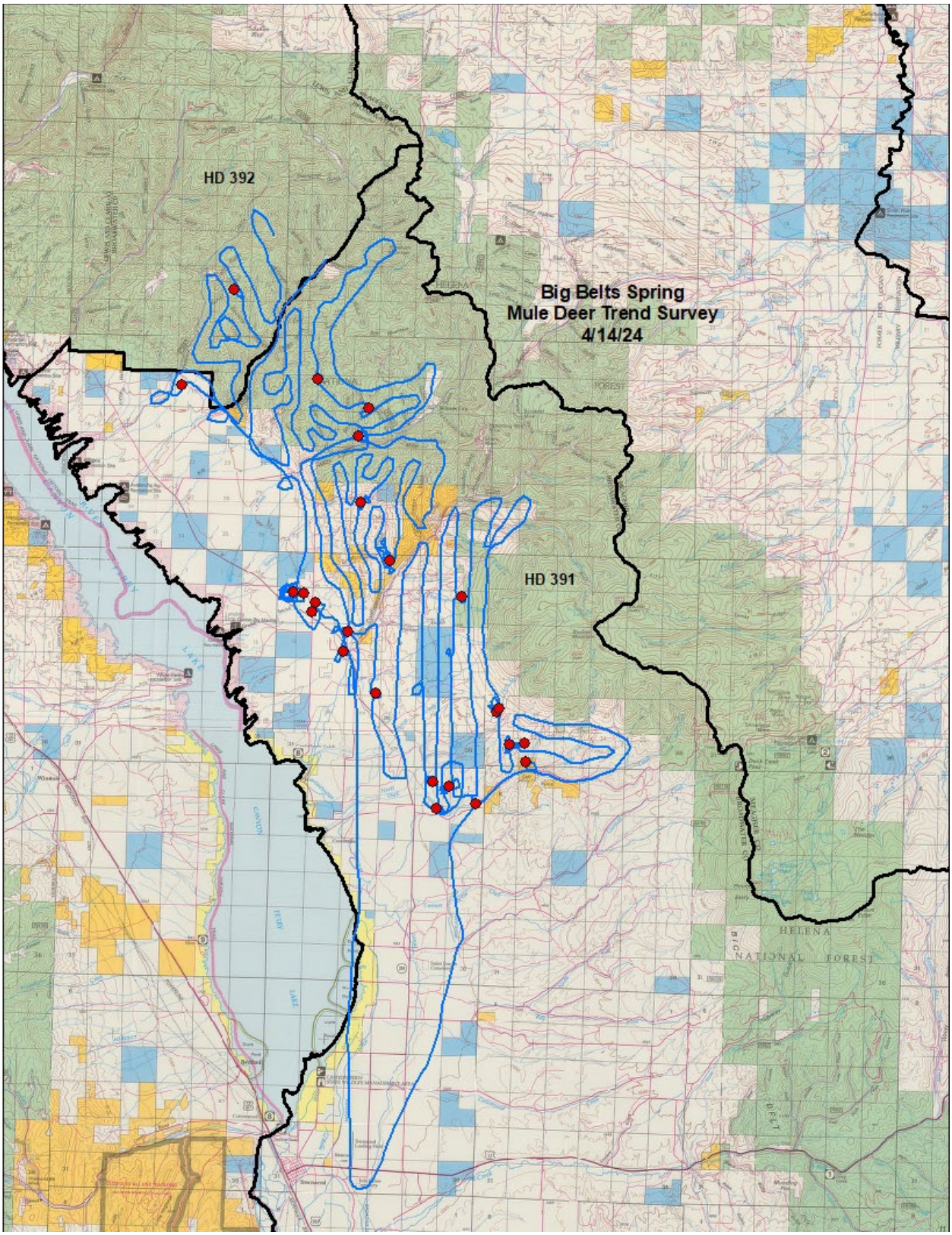


Figure 1. Waypoint locations of observed mule deer (red dots) and survey flight track (blue lines).

MEMORANDUM

TO: Warren Hansen, Regional Wildlife Manager

FROM: Adam Grove, Wildlife Biologist - Townsend

DATE: April 9, 2024

SUBJECT: HD 391 elk survey results – 2024

Aerial elk surveys were flown in HD 391 on the mornings of March 27 (Duck Creek to south boundary) and March 29, 2024 (Duck Creek to north boundary) in a FWP Supercub aircraft operated by FWP pilot TJ Reynolds out of Dillon. Survey time for the March 27 flight was approximately 3.3 hrs with a total flight time of 6.2 hrs (approximately 0.2 hrs ferry time plus 2.7 hrs pilot ferry time back and forth from Dillon to Townsend). Survey time for the March 29 flight was approximately 3.6 hours with a total flight time of 6.3 hrs (approximately 0.3 hrs ferry time plus 2.4 hrs pilot ferry time back and forth from Dillon to Townsend).

Survey conditions for the March 27 flight ranged from mostly cloudy to sunny with light winds (< 10 mph) on the ground initially that increased to around 11-15 mph by survey end. Winds aloft were considerably stronger than on the ground. Temperatures at the airport ranged from 32 to 46 degrees (F) during the survey. Conditions ranged from patchy snow cover to bare ground over the survey area. Between the warm weather, and the presence of nearly a full moon the night before, some bulls may have timbered up early and been missed during the survey. Elk groups observed later in the survey were generally bedded but out in the open. Overall survey run quality was rated as good for the survey.

Survey conditions for the March 29 flight were mostly cloudy with intermittent low cloud cover throughout the survey in areas. The flight was delayed approximately an hour due to fog/low cloud cover. Winds were light (<10 mph) and airport temperatures ranged from 31 to 49 degrees (F) during the survey. Conditions again ranged from patchy snow cover to bare ground. Areas well back into the mountains were already free of snow or had very little snow cover. Cooler temperatures at elevation appeared to keep bull groups out in the open through mid-morning. Elk groups observed later in the survey were again observed bedded but out in the open. Overall survey quality for the run was rated as good.

A total of **2,005** elk (43 brow-tined bulls, 82 yearling bulls, 1,440 cows, 33 calves, 108 unclassified) were observed during the survey in a total of 24 groups. This number represents the minimum known number of elk to be present in the survey area when the survey was flown. Four of the groups exceeded 230 elk with two groups on the south end of the HD exceeding 550 elk each. This year's survey result is believed to be reflective of trend. The 2005 elk observed this year in HD 391 is an approximate increase of 3% over the 1,953 elk observed last year in the HD.

This year's observed number of 2,005 elk is approximately 47% above the long-term average (03'-23') of 1,362 for the current survey area, and the number is approximately 34% above the top end of the current (2023 Elk Plan) population goal range of 1,000-1,500 for the HD.

Of the 2,005 observed elk, 853 elk (31 brow-tined bulls, 50 yearling bulls, 549 cows, 115 calves, 108 unclassified) were observed in the in the area between Duck Creek and the north boundary. This year's observed number is just slightly higher than the 847 elk observed in that area last year, and the number is approximately 22% higher than the current unofficial desired number of 700 elk for that portion of the HD. Although, some of the elk observed on the north end of that survey area could possibly spend at least a portion of the year in HD 392.

A total of 1,152 elk (12 brow-tined bulls, 32 yearlings, 891 cows, 217 calves) were observed on the south end of HD 391 (Duck Creek to south boundary) this year as compared to 1,106 in 2023, an approximate increase of 4%. As noted previously, we observed two separate groups of 550+ elk each on the south end of HD 391 this year. This year's observed south end (Duck Creek to south HD boundary) total of 1,151 is approximately **209%** of the current unofficial desired number of 550 elk for that portion of the HD.

While the availability of elk for harvest to the general public is an issue throughout the HD because of the large number of elk found on private land with little to no public hunting access during the hunting season, the issue is worse on the south end of the HD. What landowner conflicts with elk that exist in the HD currently occur primarily during the winter/early spring (especially during hard winters) on the south end of the HD (occasionally have issues on the north end as well) when elk leave the private properties where they are typically found during the hunting season.

This year's observed calves per 100 cows ratio was 23.1. The ratio was down approximately 29% from last year's ratio of 32.7. This year's ratio was down approximately 17% from the long-term average ratio of 28.6 for the area that constitutes the current HD. Some of the difference over the years may be attributable to a difference in observers over the years.

This year's bulls per 100 cows ratio of 8.7 is down approximately 19% from last year's observed ratio of 10.8 bulls per 100 cows. Some of that may be because we likely missed some bulls in the timber on the south end of the HD given the survey timing and conditions. The low ratio is also just a product somewhat of the very high number of cow elk observed this year. This year's ratio is approximately 61% of the long-term average of 14.3 and is approximately 13% below the population goal of 10 bulls per 100 cows in the HD (2023 Elk Plan). Bulls comprised 6.2% of the total number of observed elk this year which is approximately 78% of the long-term average of 8.0%. The number of brow-tined bulls observed this year (43) was approximately 172% of the long-term average of 25. The number of classified yearling bulls observed this year (82) was down from last year's total of 103 and approximately 5% below the long-term average of 86.

Table 1. HD 391 elk survey summary.

					ELK AERIAL TREND COUNT SUMMARY FORM										
HUNTING DISTRIC	**391 (data is for 'new' HD 391 effective 2016, result of major boundary change)**														
DATE	BTBs	YRLG Bulls	COWS	CALVES	ANTL-	UNCL.	TOTAL	Bulls/ 100 Cows	Bulls/ 100 Antlerless	% Bulls of Total	% BTB of Total	% BTB of Bulls	Calves/ 100 Cows	Calves/ 100 Adults
2024	43	82	1,440	332		108	2,005	8.7	7.1	6.2%	2.1%	34.4%	23.1	21.2
2023	44	103	1,361	445			1,953	10.8	8.1	7.5%	2.3%	29.9%	32.7	29.5
2022	37	49	857	290			1,233	10.0	7.5	7.0%	3.0%	43.0%	33.8	30.8
2021	102	75	507	202		364	1,250	34.9	25.0	14.2%	8.2%	57.6%	39.8	29.5
2020 - NS														
2019*	27	85	538	125		407	1,182	20.8	16.9	9.5%	2.3%	24.1%	23.2	19.2
2018	31	115	1032	361			1,539	14.1	10.5	9.5%	2.0%	21.2%	35.0	30.6
2017	61	166	1046	380		191	1,844	21.7	15.9	12.3%	3.3%	26.9%	36.3	29.9
2016$*	43	123	612	197		404	1,379	27.1	20.5	12.0%	3.1%	25.9%	32.2	25.3
2015	13	96	1,091	351		501	2,052	10.0	7.6	5.3%	0.6%	11.9%	32.2	29.3
2014*														
2013*														
2012	13	121	1,177	337		15	1,663	11.4	8.9	8.1%	0.8%	9.7%	28.6	25.7
2011	18	131	1,242	302			1,693	12.0	9.7	8.8%	1.1%	12.1%	24.3	21.7
2010*	2	63				1070	1,135			5.7%	0.2%	3.1%		
2009	7	63				1,477	1,547			4.5%	0.5%	10.0%		
2008	6	81	777	123		262	1,249	11.2	9.7	7.0%	0.5%	6.9%	15.8	14.2
2007	9	73	885	199			1,166	9.3	7.6	7.0%	0.8%	11.0%	22.5	20.6
2006	2	37	683	157		23	902	5.7	4.6	4.3%	0.2%	5.1%	23.0	21.7
2005	10	56	657	207			930	10.0	7.6	7.1%	1.1%	15.2%	31.5	28.6
2004	6	57	921	136			1,120	6.8	6.0	5.6%	0.5%	9.5%	14.8	13.8
2003	12	49	469	151			681	13.0	9.8	9.0%	1.8%	19.7%	32.2	28.5
Ave	**25**	**86**	**866**	**248**		**471**	**1362**	**14.3**	**11.0**	**8.0%**	**1.8%**	**19.0%**	**28.6**	**24.9**
('03 - '23)														
* - Surveys not felt to be reliable indicator of trend or complete survey of current district not flown														
$- Major hunting district boundary change in 2016														
HD 391 Population Goal: 1,000-1,500														

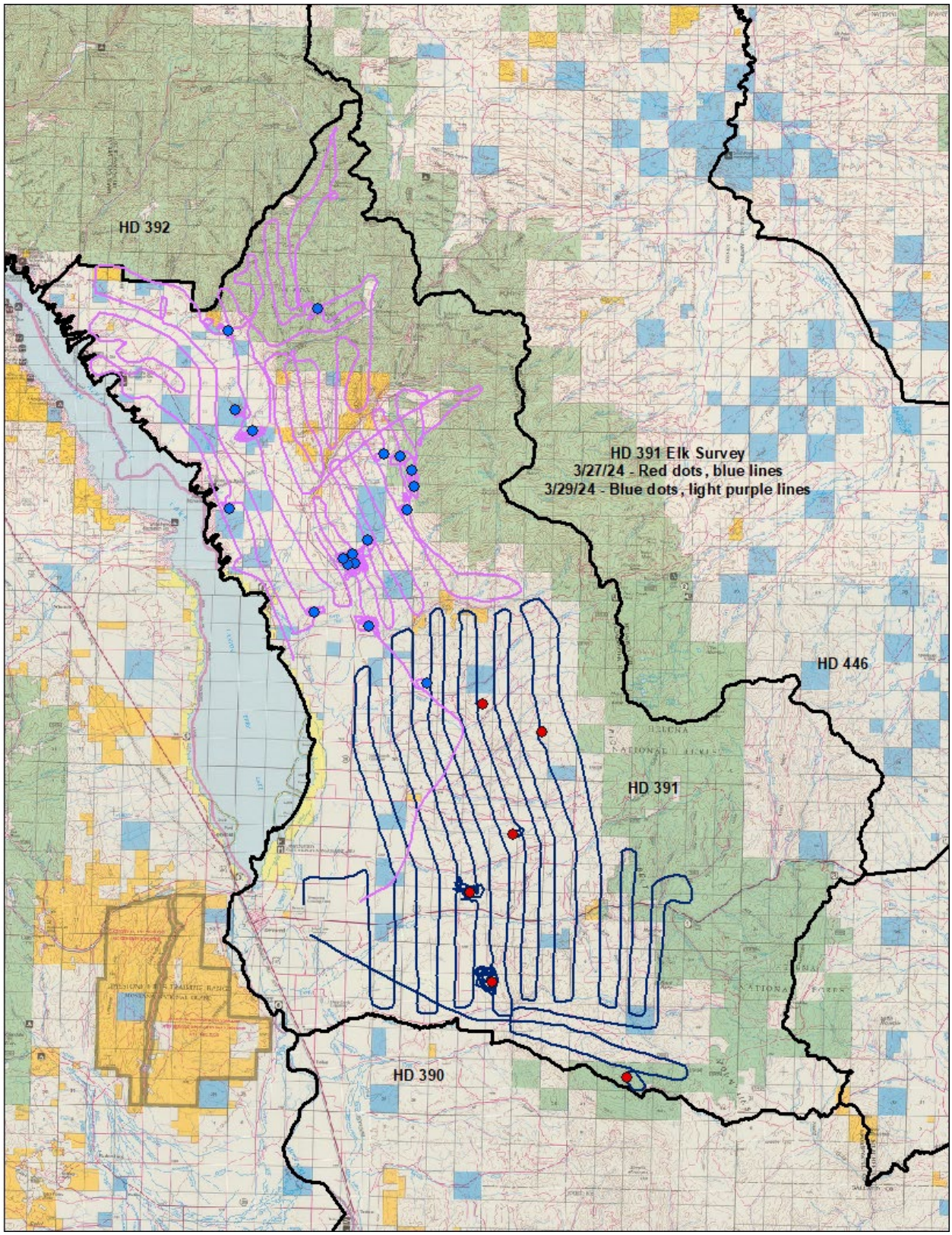


Figure 1. Waypoint locations and track routes for HD 391 elk survey.

MEMORANDUM

TO: Warren Hansen, Regional Wildlife Manager

FROM: Adam Grove, Wildlife Biologist - Townsend

DATE: March 24, 2023

SUBJECT: HD 392 elk survey results – 2023

An aerial elk survey was flown in hunting district (HD) 392 (reconstituted in 2016) on the morning of March 15, 2023, in a Department owned Maule aircraft operated by FWP pilot TJ Reynolds out of Dillon. Survey time for the March 15 survey was approximately 3.3 hrs with a total flight time of 5.5 hrs (approximately 0.5 hrs ferry time plus 1.7 hrs pilot ferry time back and forth from Dillon to Townsend).

Survey conditions for the March 15 flight ranged from mostly cloudy at the start of the survey to partly cloudy and sunny at the end. Light conditions got better as the survey progressed. Winds were light (< 10 mph) and temperatures ranged from 23 to 34 degrees (F) during the survey. Snow cover ranged from complete at higher elevations to patchy at lower elevations. Elk were typically observed bedded (in the open) by a little after 9:00 A.M. Overall survey run quality was rated as good.

Eight groups totally **212 elk** (7 brow-tined bulls, 19 yearling bulls, 159 cows, 27 calves; see attached tables and map) were observed in the HD this year. One lone cow was technically observed in HD 391 but was counted towards the HD 392 total. Given how many fewer elk were observed this year in the HD as compared to last, it's unknown at this point whether or not the survey results are reflective of overall population trend in the HD or not. Over the years there has been quite a bit of variation in the number of elk observed on an annual basis. Where we had good snow cover, particularly at higher elevations, there wasn't any tracks to indicate that we were missing a bunch of elk.

The 212 elk observed this year in the recently 'new' HD 392 (boundary change effective 2016) is approximately 35% below last year's observed number of 325. This year's observed number of 321 elk is approximately 5% below the long-term average (03'-22') of 223. Survey information in Trend Count Summary Form is only for that portion of the old HD 392 that now constitutes the new HD 392, so the results are comparable across years – only have GPS data back to 2003. This year's count is approximately 47% below the current observed point objective of 400 elk (range 320- 480) for the 'new' HD 392. The current observed point objective of 400 elk was the desired number of elk for the north portion (north of Avalanche Gulch) of the old HD 392. Despite having only a minimal amount of general rifle season antlerless elk opportunity (25 B-licenses), we simply can't seem to grow elk numbers in this HD for some reason.

This year's calves per 100 cows ratio was a pretty dismal 17.0 which was approximately 17% below last year's s ratio of 20.6 which was also pretty dismal. This year's ratio is approximately

42% below the long-term average ratio of 29.3 for the ‘new’ HD. This year’s bulls per 100 cows ratio of 16.4 was approximately 78% above last year’s ratio of 9.2 and is approximately 15% below the long-term average of 19.2 (long-term average is affected by two very high years). The percentage of the total observed number of elk comprised of bulls (12.3%) was approximately 16% above the long-term average of 10.6%.

The number of brow-tined bulls observed this year (7) was the most observed in the HD since 2006. For whatever reason, we simply have been unable to find much for brow-tined bulls in HD 392 (current boundary) over the years during our winter surveys even though a considerable number of brow-tined bulls, including older aged brow-tined bulls, are harvested in the HD on an annual basis. We didn’t find any tracks in the snow this year at higher elevations to indicate that we were missing bulls somewhere where we had good snow cover. I’ve come to believe that many of the bulls found in HD 392 during the hunting season winter either on the Beartooth WMA in HD 455 or drop over into HD 446.

AERIAL TREND COUNT FORM

Survey Run Quality: Good
Flight Start: 7:35
Flight Stop: 11:23
Survey Start: 7:46
Survey Stop: 11:03
Ferry Time: 0.5 hrs total
Total Time: 5.5 hrs
HUNTING DISTRICT: 392
AIRCRAFT: Maule
Start Lighting: M.C. End: P.C.-sunny
Start Temp: 23 End: 34
DATE: 3/15/23
PILOT: TJ Reynolds
OBSERVER: A. Grove
Start Wind Speed: <10 End: <10

BTB	Yrl. Bulls	COWS	CALVES	ANTLER-	Unclass.	TOTAL	WP#	Photos
		1				1	1	In HD 391
7	2					9	2	
	4					4	3	
		2				2	4	
	4	38	6			48	5	Y
	4	78	17			99	6	Y
	1	36	3			40	7	N
	2	6	1			9	9	N

Comments on animal behavior, lighting, ground cover, etc: Good complete snow cover to patchy snow cover depending upon elevation, light conditions improved as survey progressed.

Table 1. HD 392 elk survey summary information.

					ELK AERIAL TREND COUNT SUMMARY FORM									
HUNTING DISTRIC	392 (data is for 'new' HD 392 effective 2016, result of major boundary change)													
DATE	BTBs	YRLG Bulls	COWS	CALVES	ANTL-	UNCL.	TOTAL	Bulls/ 100 Cows	Bulls/ 100 Antlerless	% Bulls of Total	% BTB of Total	% BTB of Bulls	Calves/ 100 Cows	Calves/ 100 Adults
3/15/23	7	19	159	27			212	16.4	14.0	12.3%	3.3%	26.9%	17.0	14.6
3/17/22	0	20	218	45		42	325	9.2	7.6	6.2%	0.0%	0.0%	20.6	18.9
3/26/2021*	0	7	105	25			137	6.7	5.4	5.1%	0.0%	0.0%	23.8	22.3
2020*														
3/14/2019*	2	22	107	26			157	22.4	18.0	15.3%	1.3%	8.3%	24.3	19.8
3/25/18	0	25	205	52		7	289	12.2	9.7	8.7%	0.0%	0.0%	25.4	22.6
3/26/2017*	0	23	139	36			198	16.5	13.1	11.6%	0.0%	0.0%	25.9	22.2
3/30/16$*	3	15	131	23		22	194	13.7	11.7	9.3%	1.5%	16.7%	17.6	15.4
2/17/15	3	23	219	86			331	11.9	8.5	7.9%	0.9%	11.5%	39.3	35.1
2014*														
2013*														
2/13/2012*	5	29	45	25			104	75.6	48.6	32.7%	4.8%	14.7%	55.6	31.6
2011*														
2/21/10	0	14				252	266			5.3%	0.0%	0.0%		
3/2/09	0	3				210	213			1.4%	0.0%	0.0%		
2/29/2008*	0	18	118	34			170	15.3	11.8	10.6%	0.0%	0.0%	28.8	25.0
2/25/07	2	24	221	41			288	11.8	9.9	9.0%	0.7%	7.7%	18.6	16.6
3/17/06	10	30	101	43			184	39.6	27.8	21.7%	5.4%	25.0%	42.6	30.5
2/12/05	0	12	131	41			184	9.2	7.0	6.5%	0.0%	0.0%	31.3	28.7
2/22/04	6	22	159	39			226	17.6	14.1	12.4%	2.7%	21.4%	24.5	20.9
2/27/03	2	15	217	70			304	7.8	5.9	5.6%	0.7%	11.8%	32.3	29.9
Ave	**2**	**19**	**151**	**42**		**107**	**223**	**19.2**	**14.2**	**10.6%**	**1.1%**	**7.3%**	**29.3**	**24.3**
('03 - '22)														
* - No survey flown, or survey likely not reliable indicator of trend														
$- Major hunting district boundary change in 2016														
HD 392 Objective: 400 (320 - 480)														

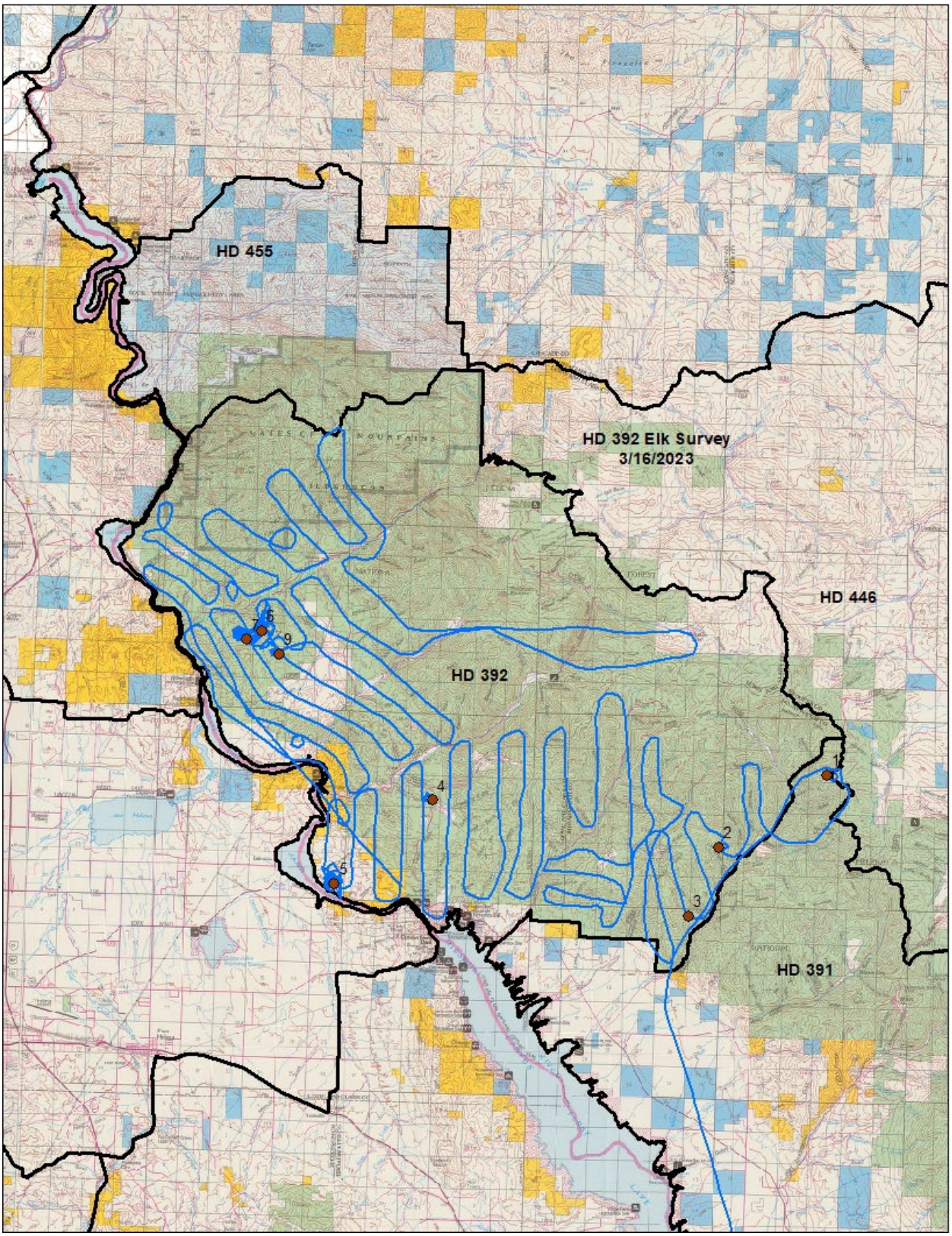


Figure 1. Waypoint locations and track routes of HD 392 elk survey.

FWP Region 4 West-Central lion ecoregion ungulate population trends

LMU 411 (Deer/Elk HD's 411, 412) (BHS - N/A) (MG - N/A)

No MD Trend Area in this LMU.

West-end HD 411/511 elk surveys (West Big Snowy Mountains)[1], 2004 to present.

Survey Year	Total	Total Bulls	Mature Bull	Raghorn	Uncl. BTB	Yearling Bull	Cows	Calves	Uncl. Antlerless	Uncl. All
2004-2005	510	83	23	28	0	32	0	0	427	0
2005-2006	203	24	13	3	0	8	31	6	142	0
2006-2007	310	33	15	8	0	10	47	14	216	0
2007-2008	396	90	46	30	0	14	0	0	306	0
2008-2009	444	61	18	19	0	24	0	0	383	0
2009-2010										
2010-2011										
2011-2012	339	38	4	19	0	15	0	0	301	0
2012-2013	431	73	20	30	1	22	280	78	0	0
2013-2014	398	41	10	11	8	12	78	28	251	0
2014-2015	335	36	11	4	0	21	144	56	56	43
2015-2016	443	27	5	6	0	16	160	79	177	0
2016-2017	535	56	6	19	0	31	322	157	0	0
2017-2018	545	66	24	7	0	35	326	153	0	0
2018-2019	560	52	13	8	0	31	337	171	0	0
2019-2020	745	56	5	7	0	44	457	200	32	0
2020-2021	828	139	34	37	0	68	478	211	0	0
2021-2022	769	165	62	13	20	70	436	168	0	0
2022-2023	892	200	76	54	0	70	570	122	0	0
2023-2024	**807**	**139**	**56**	**37**	**0**	**46**	**546**	**122**	**0**	**0**

[1] Survey area includes portion of HD 411 west of Red Hill Road to Meadow Creek and portion of HD 511 south/east of Meadow Creek to Niel Creek.

[2] Poor weather conditions and incomplete count in 2002.

[3] Count occurred after a large group of mainly antlerless elk crossed Hwy 191 into HD 418: 227 elk (6 spikes, 221 antlerless), plus 29 additional antlerless elk observed on west end HD 411.

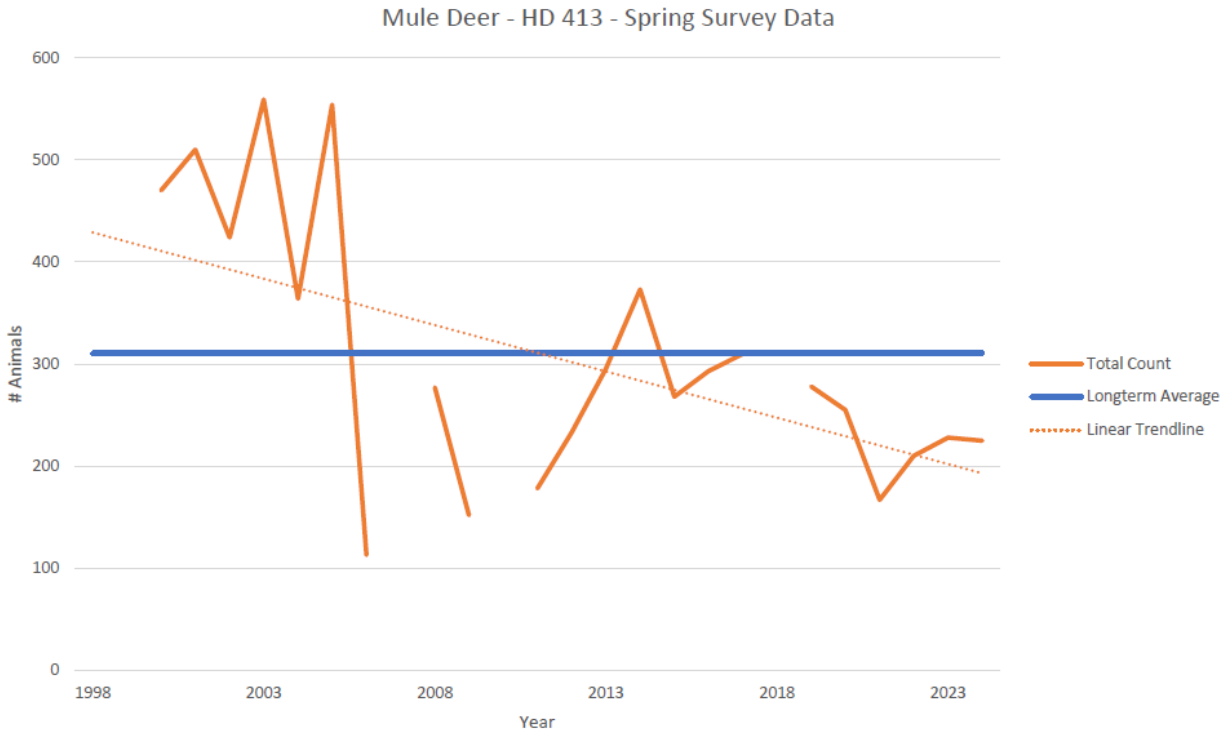
Total elk survey Big and Little Snowy Mountains (HDs 411, 511, and 530). Years all areas were surveyed.

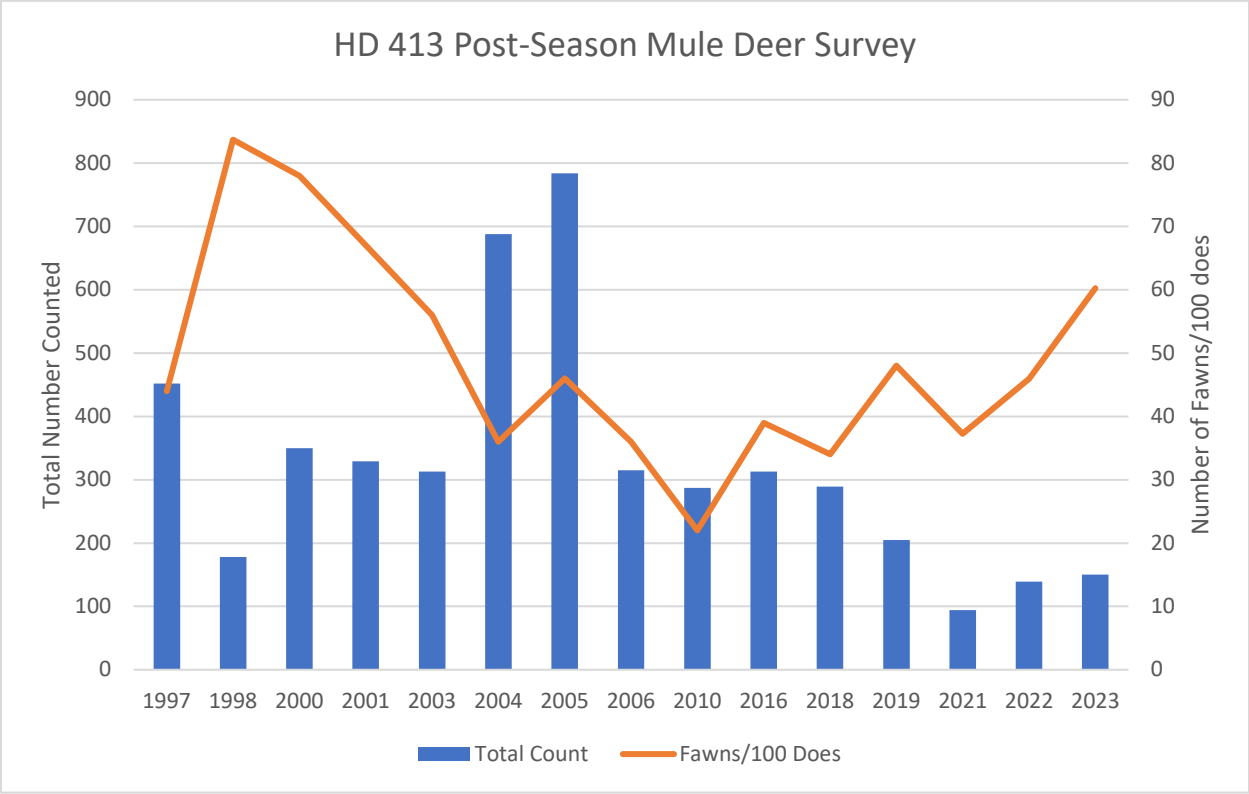
Survey Year	Total	Total Bulls	Mature Bull	Raghorn	Uncl. BTB	Yearling Bull	Cows	Calves	Uncl. Antlerless	Uncl. All
1991-1992	634	113	43	18	40	32	134	41	326	0
1992-1993										
1993-1994										
1994-1995	792	138	65	23	4	46	34	9	505	106
1995-1996	1029	226	75	54	35	62	225	91	487	0
1996-1997										
1997-1998										
1998-1999										
1999-2000	1237	202	60	35	40	67	129	45	861	0
2000-2001										
2001-2002										
2002-2003	1344	262	93	61	42	66	7	4	1071	0
2003-2004	1324	278	45	21	118	94	96	16	934	0
2004-2005	1543	259	46	52	71	90	165	45	1074	0
2005-2006	1763	361	91	75	109	86	146	40	1216	0
2006-2007	1720	262	98	29	62	73	299	109	1050	0
2007-2008	2248	454	161	69	150	74	391	90	841	472
2008-2009										
2009-2010										
2010-2011										
2011-2012										
2012-2013	3992	772	128	81	380	183	669	205	307	2039
2013-2014										
2014-2015	5495	908	111	70	474	253	1130	311	235	2911
2015-2016										
2016-2017	5962	1202	210	88	608	296	764	416	1202	2377
2017-2018										
2018-2019	7201	1244	232	143	501	368	4021	1880	56	0
2019-2020										
2020-2021	9335	2310	587	200	893	630	4878	2035	112	0
2021-2022										
2022-2023	10330	2327	440	253	1098	536	6039	1964	0	0

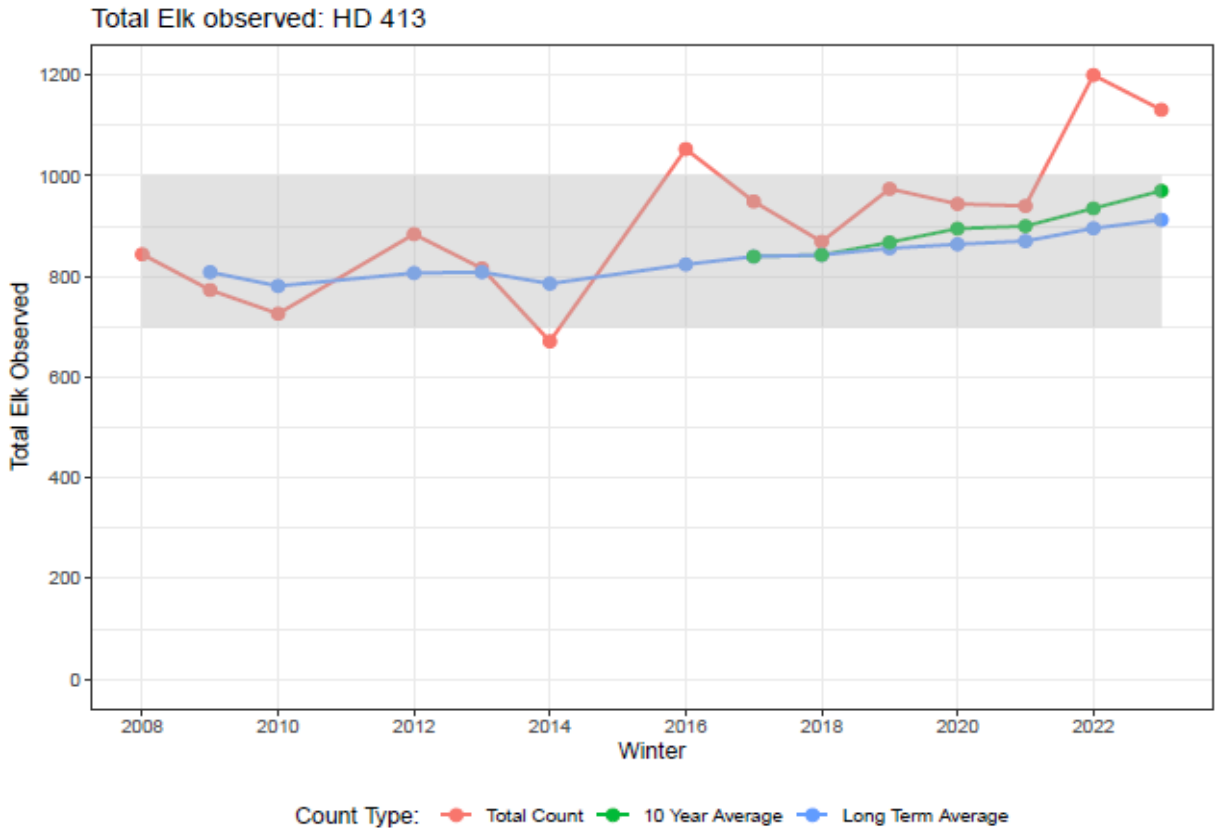
HD 412 Elk surveys, Judiths and Moccasin Mountains, 1987 to present.

Survey Year	----------Judiths----------			----------N & S Moccasins------			----------Total----------		
	Bulls	Cows/Calves	Total	Bulls	Cows/Calves	Total	Bulls	Cows/Calves	Total
1987	29	119	148				29	119	**149**
1989	47	168	215				47	168	**215**
1991	50	170	220				50	170	**220**
1992	58	156	214	4	4	8	62	162	**222**
1993	58	158	216	11	2	13	69	160	**229**
1994	62	173	235	22	12	34	84	185	**269**
1995	74	198	272	13	26	39	87	224	**311**
1996	77	216	293	22	34	56	99	250	**349**
1997	71	198	269	13	19	32	84	217	**301**
1998	49	157	206	10	0	10	59	157	**216**
1999	67	232	299						
2000	19	231	250	0	0	0	19	231	**250**
2001	55	255	310	11	24	35	66	279	**345**
2002	122	254	376	25	31	56	159	285	**432**
2003	72	229	301	24	35	59	96	264	**360**
2004	64	220	284	7	30	37	71	250	**321**
2005	118	228	346	35	32	67	153	260	**413**
2006	141	227	368	10	0	10	151	227	**378**
2007	112	276	388	8	55	63	120	331	**451**
2008	88	264	352	34	27	61	122	291	**413**
2009	99	318	417	33	57	90	132	375	**507**
2012	162	666	828	27	64	91	189	730	**919**
2013	169	604	773	39	51	90	208	655	**863**
2014	135	469	604	75	98	173	210	567	**777**
2015	138	432	540	31	107	138	138	540	**678**
2016	105	528	633	41	61	102	146	589	**735**
2017	148	61	209	17	81	98	165	142	**307**
2018	148	347	497	55	23	78	203	370	**573**
2019	259	180	439	50	41	89	309	221	**528**
2020	237	345	582	35	0	0	272	345	**617**
2021	325	423	748	30	1	31	355	424	**779**
2022	283	415	698	67	0	67	350	642	**992**
2023	326	770	1096	55	37	92	337	657	**1188**
2024	268	904	1172	51	59	110	319	963	**1282**

LMU 413 (Deer/Elk HD 413) (BHS - N/A) (MG - N/A)







Gray shading indicates the population objective range (700−1000) specified in the 2023 Elk Plan.

LMU 416 (Deer/Elk HD's 416, 451, 452) (BHS - N/A) (MG - N/A)

No MD Trend Area in this LMU.

HD 416 Elk Survey Trends, 2004-2023.

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total Elk	1416	1429	725	1303	1410	1240	1012	1089	921	1256	1195	1500	1277	917	940	1729	1816	2321	195	1312
Uncl.	0	0	36	0	0	0	0	0	0	27	293	0	364	0	61	0	0	0	181	750
Uncl. Antlerless	1381	1400	678	1283	1391	1190	1009	1064	884	1199	898	1456	913	775	819	1549	1795	1854		0
Cow	0	27	265	187	0	0	0	0	100	0	284	0	913	84	32	362	0	1347		358
Calf	1033	874	194	792	1045	811	706	799	389	805	551	806	0	494	186	568	1339	371		110
Yrlg Bulls	54	56	45	59	70	41	49	27	54	77	9	62	0	34	25	71	97	42	10	28
BTBS	83	55	55	93	117	86	69	72	71	89	3	130	0	70	24	116	145	94	4	66
Total Bulls	137	111	100	152	187	127	118	99	125	166	12	192	0	104	49	187	242	136		94

*Elk in HD 416 variable winter ranges in adjoining HDs.

HD 451 Elk Survey Trends, 2005-2022.

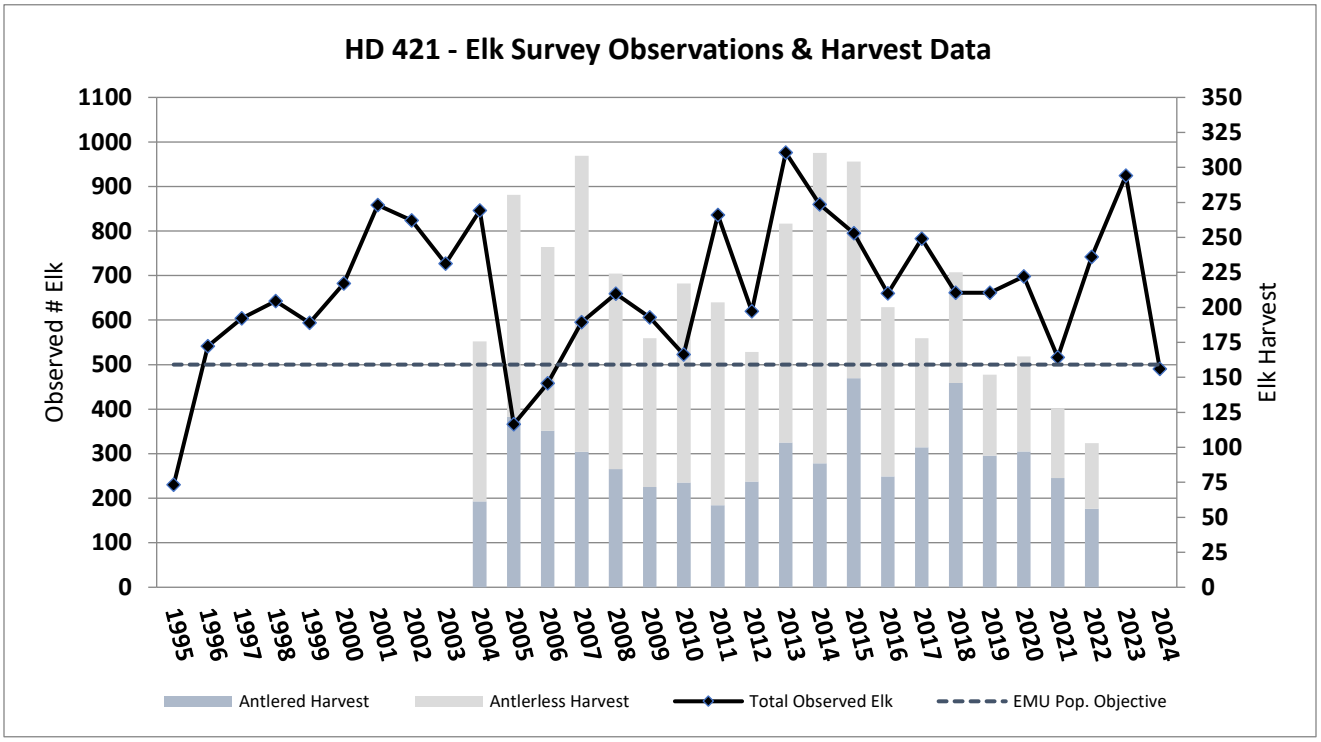
Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total Elk	327	296	-	377	373	607	876	-	897	1926	538	628	57	210	469	26	162	961
Antlered Bull harvest												32	37	50	26	27	28	
Spike Bull Harvest												0	0	0	0	3	0	
% 6 pt+ in bull harvest												50	69	76	45	48	63	
Antlerless Harvest												69	40	31	48	21	16	
Archery Harvest												6	9	17	3	4	10	
Shoulder Calf Harvest												3	6	0	0	4	0	
Shoulder Cow Harvest												40	12	19	12	0	0	
Shoulder Season Total Harvest												43	18	19	12	4	0	
Total Harvest												100	77	81	74	47	44	

HD 452 Elk Survey Trends, 2005-2022.

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total Elk	752	912	1117		833	1192	961	1263	1548	1766	1501	1073	1286	1207	1151	1282	1009	**1683**
Uncl.	-	-	-	-	-	-	-	-	-	1735	388	1073	529	0	268	0	990	
Uncl. Antlerless	735	853	1052	-	748	1118	870	1149	1434	-	952			265	236	1167		1683
Antlered Bull harvest	0	0	0	0	0	0	0	0	0	0	0	133	172	177	114	187	146	
Spike Bull Harvest	0	0	0	0	0	0	0	0	0	0	0	19	9	6	6	7	10	
% 6 pt+ in bull harvest	0	0	0	0	0	0	0	0	25	33	34	38	53	33	35	42	31	
Total Antlerless Harvest	0	0	0	0	0	0	0	0	0	0	329	151	243	255	135	227	189	
Archery Harvest	10	15	13	14	21	36	34	28	31	34	38	32	25	39	42	41	49	
Arch/Gen Antlerless Harvest											206	106	136	136	102	180	126	
Shoulder Calf Harvest											0	6	21	9	0	0	11	
Shoulder Cow Harvest											0	39	87	101	33	47	52	
Shoulder Season Total Harvest											0	45	108	110	33	47	63	
Total Harvest	0	0	0	0	0	0	0	0	0	0	0	285	414	432	249	414	335	

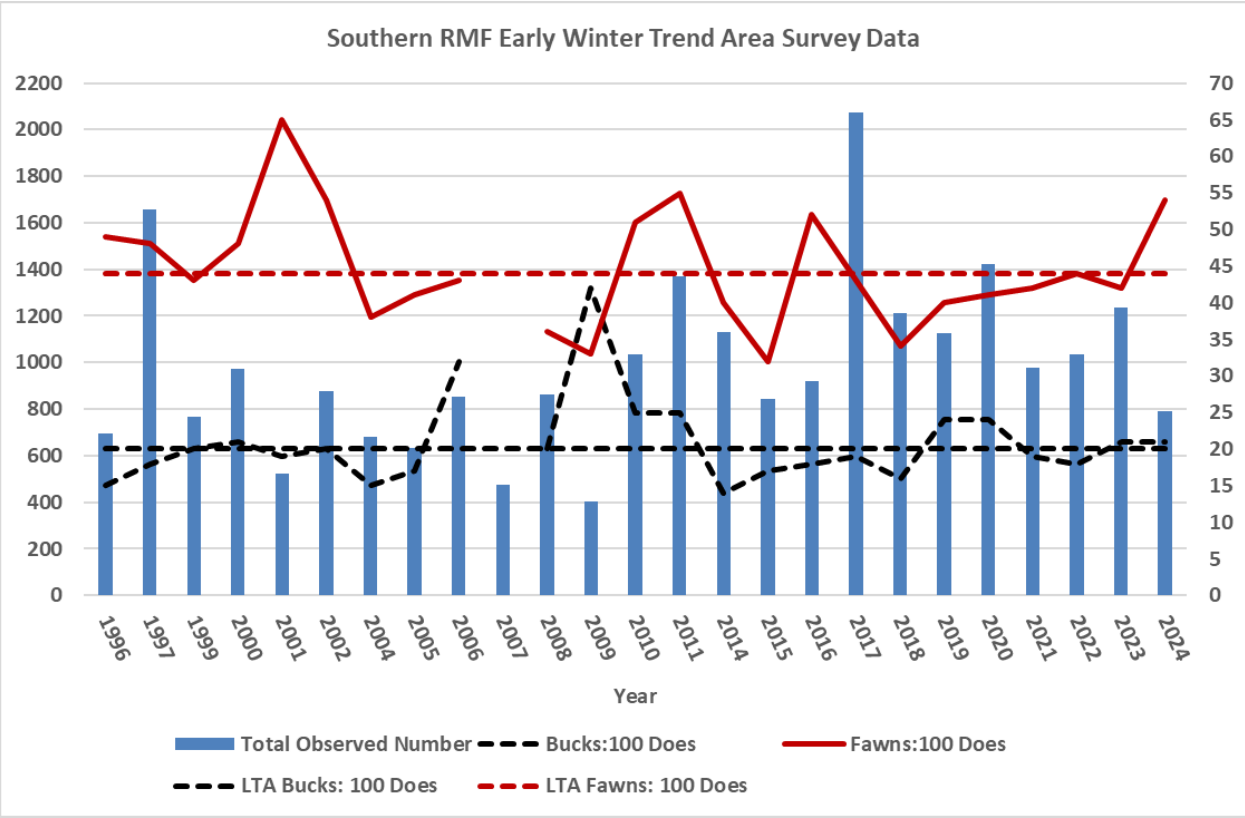
LMU 421 (Deer/Elk HD 421) (BHS - N/A) (MG - N/A)

No MD Trend Area in this LMU.



LMU 422 (Deer/Elk HD's 422, 424, 425, 442, 450) (BHS HD's 421, 422, 423, 424) (MG - HD 442)

MD Trend surveys – portions of HD's 422, 424, 425 & 450



Portions of HDs 422, 424, 425, 442 and 450 - Late winter/early spring aerial mule deer surveys for the southern Rocky Mountain Front, 1999-present. Traditional survey area includes the mtn. foothill area from Ear Mtn. south to Haystack Butte

Year	Adult	Fawn	Unclass.	Total	Spring Fawns/100 Adults
1999	652	248		900	38:100
2000	697	351	36	1084	50:100
2001	567	289		856	51:100
2002	451	154		605	34:100
2003*	297	95		392	32:100
2004	1084	510	22	1616	47:100
2005	624	195	11	830	31:100
2006	1273	377	140	1790	30:100
2007	No	Survey	Completed		
2008	845	209	190	1244	23:100
2009*	413	67	98	578	16:100
2010	1037	321	18	1376	31:100
2011	1528	377	113	2018	25:100
2012	1558	417	88	2063	27:100
2013	1462	410	28	1900	28:100
2014	1104	325	64	1493	29:100
2015	1210	456	108	1774	38:100
2016	1280	478	27	1785	37:100
2017	1027	337	90	1454	33:100
2018	1225	240	112	1577	20:100
2019	1398	268	82	1748	19:100
2020	744	262	21	1027	35:100
2021	1066	354	51	1471	33:100
2022	951	268	48	1267	28:100
2023	848	282	33	1163	33:100
Avg.**	1048	330	71	1439	33:100
2024	903	384	42	1328	43:100

*ground based survey.

** Average based on aerial survey efforts.

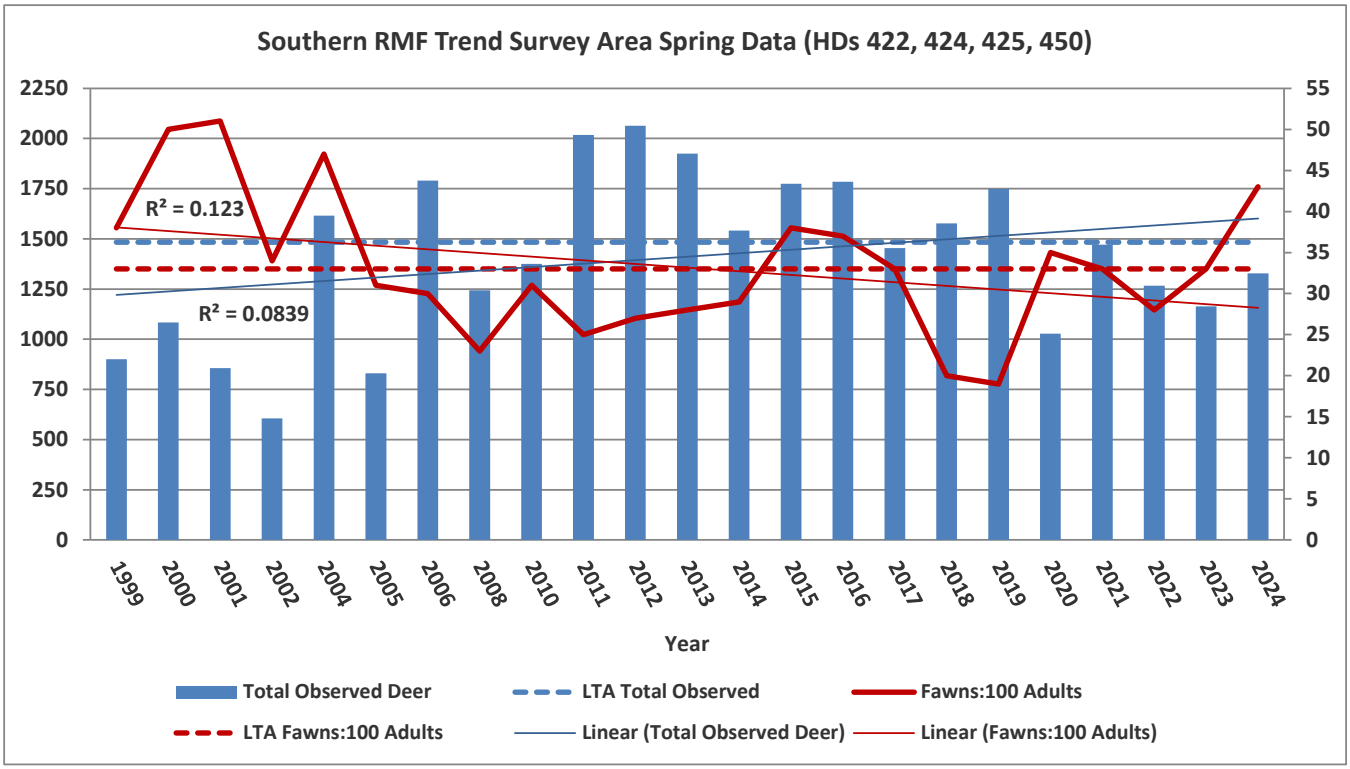


Table 2. HD 442 Total minimum number of mountain goats observed via ground-based survey by year.

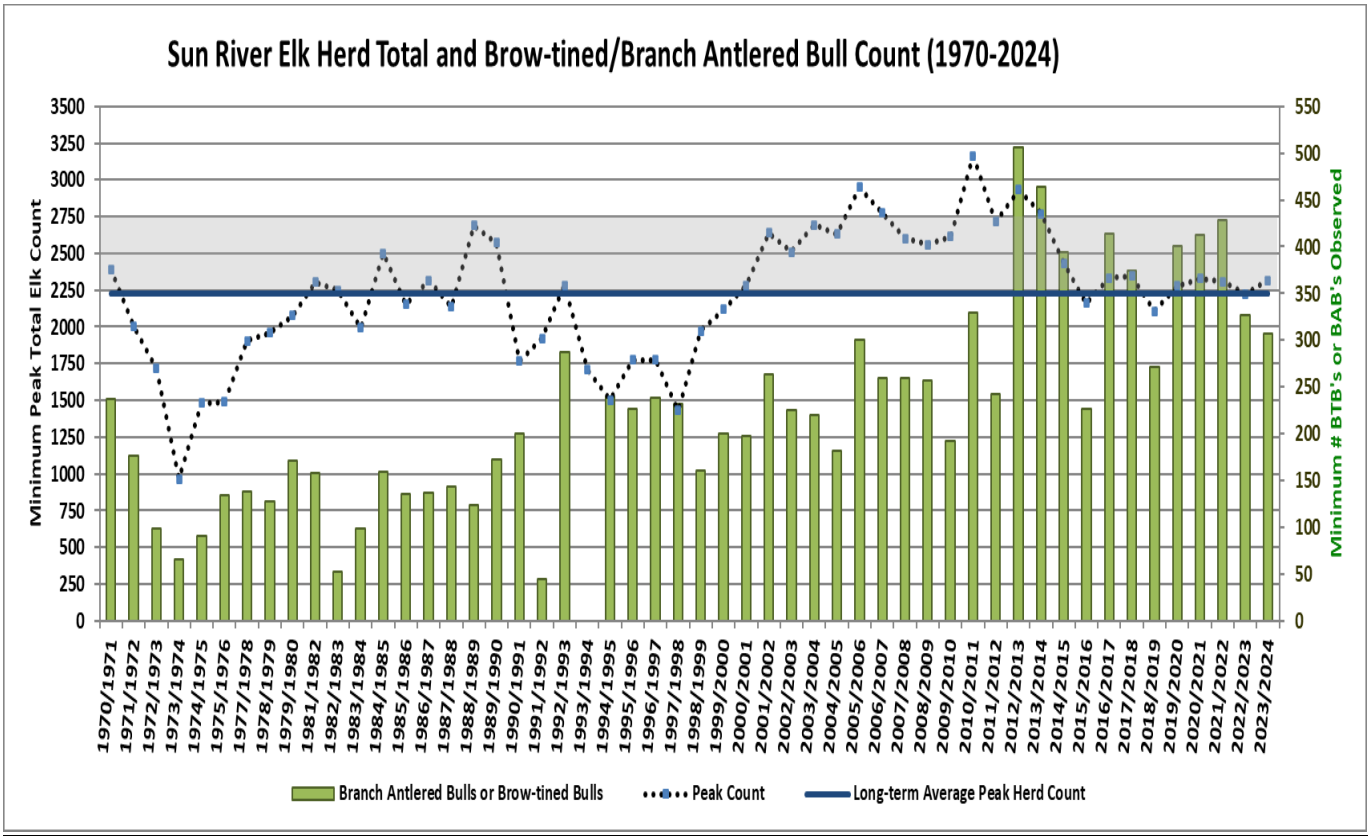
Year	Billy	Nanny	Subadult Billy	Subadult Nanny	Subadult Unclass.	Kid	Unclass. Adult	Unclass.	Total
2020 (Summer – early July)	17	19	2	1	5	11	0	1	56
2021 (Fall – mid-Sept)	4	12	0	1	2	7	4	10	40
2023 (Summer – early July)	13	24	0	0	9	19	3	6	74

HD 450 Winter Elk Survey Observations

(Primarily between the Deep creek and Teton River areas)

Year	Cow	Calf	Spike	Brow-tined Bull	Unclass. Bull	Unclassified All	Total	Calf/Cow Ratios	Bull/Cow Ratios
1996	72	14	7	7			100	0.194	0.194
1997				10		80	90		
1998				31		26	57		
1999			5			80 (20 bulls)	85		
2000			10	20		54	84		
2001			6	31		95	132		
2002			11	19		70	100		
2003	26	12	3	22		35	98	0.462	0.962
2004			5	22		67	94		
2005				12		60	72		
2006	3			27		60	90		
2007			3	4		133	140		
2008	60	16	7	19		105	207	0.267	0.433
2009				5		184	189		
2010	131	16	5	40			192	0.122	0.344
2011	74	25	7	43		273	422	0.338	0.676
2012	163	16	11	37		176	403	0.098	0.294
2013	39	15	6	*		268	328	0.385	0.154
2014	171	39	14	63		163	450	0.228	0.450
2015	195	36	31	54		244	560	0.185	0.436
2016	285	54	32	20**		135	526	0.189	0.182
2017	281	38	19	59		72	469	0.135	0.278
2018	89	22	14	75	1	339	540	0.247	1.011
2019	294	62	33	82		67	538	0.211	0.391
2020	315	50	39	85	3	127	513	0.156	0.403
2021	176	49	32	76	6	218	557	0.278	0.647
2022	213	44	25	32	3	272	589	0.207	0.282
2023	310	49	35	83	0	100	577	0.158	0.381
2024	198	39	33	92	0	167	531	0.196	0.631

*Deep cr. LLC manager observed close to 40 brow-tined bulls before this survey in the Deep creek area, but not observed on this flight.
**limited effort was made to look for bulls in their normal wintering areas.



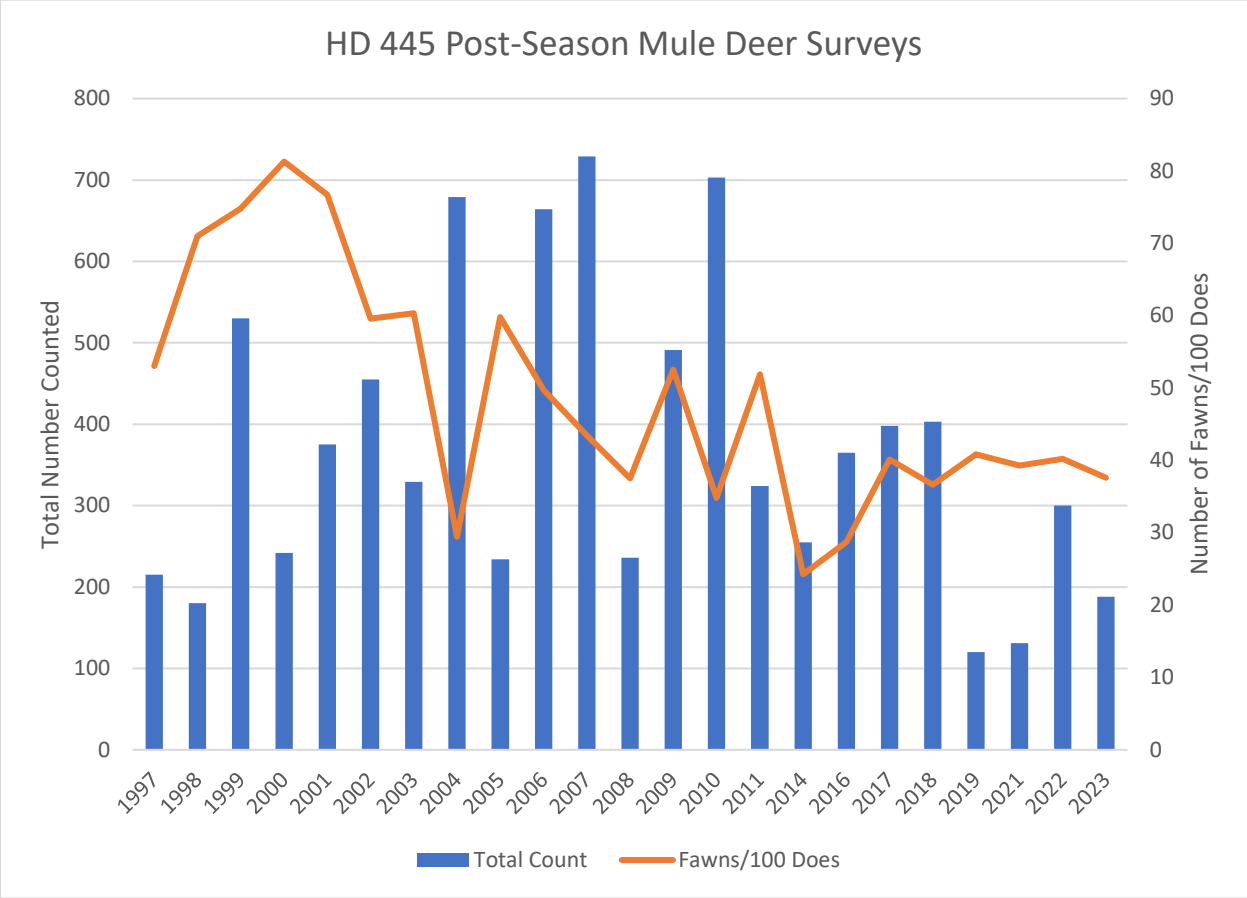
MT FWP Bighorn Sheep Hunting Districts 421-424 Spring Survey Data (2005-2023)

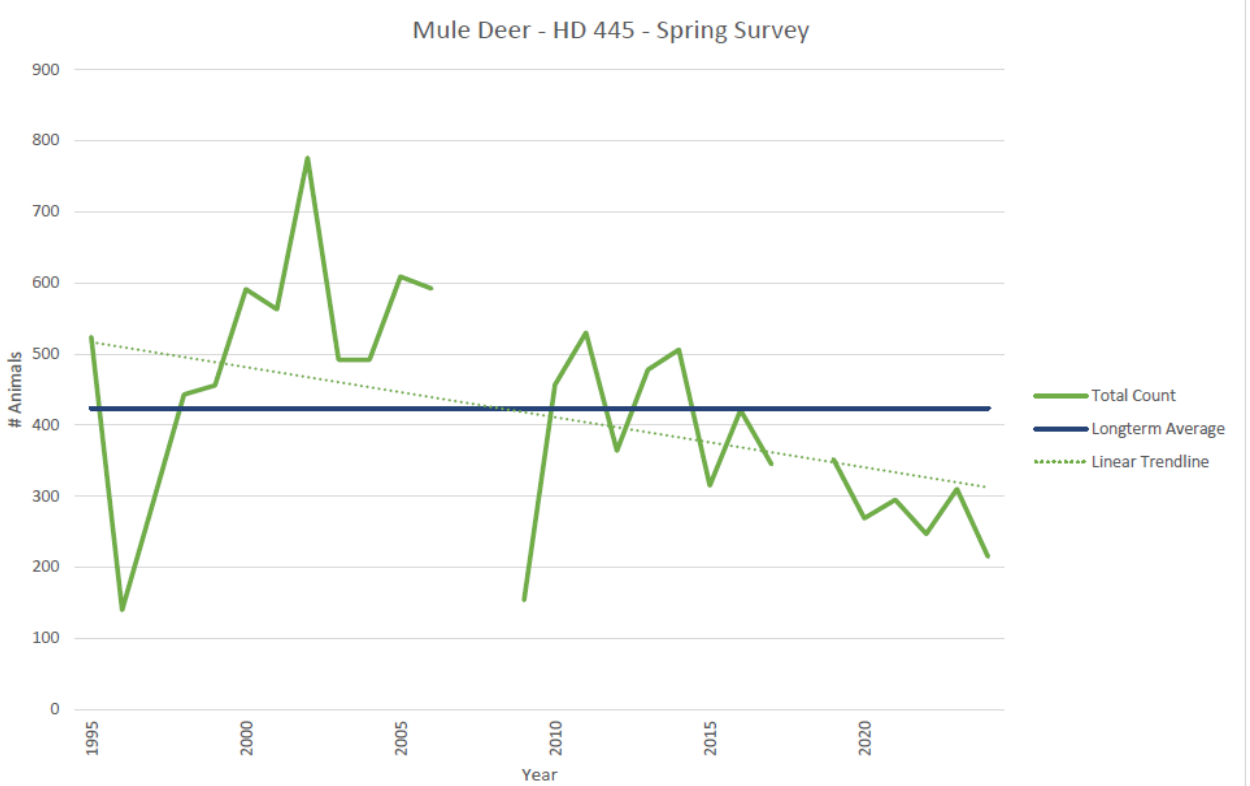
Surveys normally completed in April and are a combination of aerial, hiking, truck and horseback survey efforts. All observations are considered unique individuals with no duplication between and across hunting districts.

CUMULATIVE TOTAL MINIMUM OBSERVATIONS (ALL FOUR HUNTING DISTRICTS COMBINED)

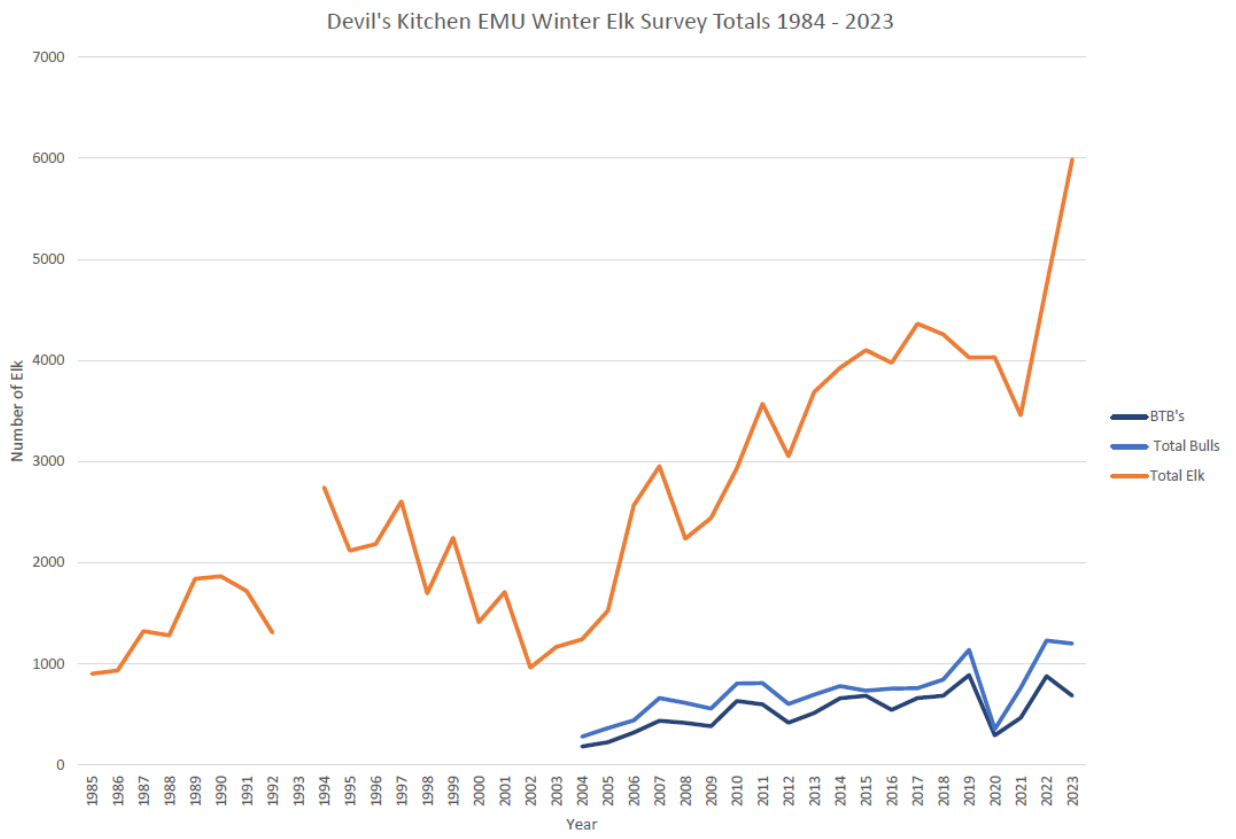
Year	Ewes	Lambs	0 - 1/4 curl rams	1/4 - 1/2 curl rams	1/2 - 3/4 curl rams	3/4+ curl rams	Subtotal 1/2 - 3/4+ curl	Unclass. Rams	Unclass. Total	Total	Total Rams	Rams/100 Ewes	Lambs/100 Ewes
2005	212	85					21	152	342	810	173	0.816	0.401
2006	239	87					60	83	502	950	143	0.598	0.364
2007	370	110					77	92	149	798	169	0.457	0.297
2008	301	68	15	19	29	37	55	6	278	747	106	0.352	0.226
2009	333	80	40	31	36	23	49	44	126	669	174	0.523	0.240
2010	393	108	23	28	54	29	63	108	290	933	239	0.608	0.275
2011	291	14	42	37	53	16	52	36	82	535	184	0.632	0.048
2012	249	10	10	32	44	12	37	22	76	433	120	0.482	0.040
2013	259	16	6	29	83	23	66	22	22	439	163	0.629	0.062
2014	250	20	6	9	60	21	57	18	67	433	118	0.472	0.080
2015	152	15	6	4	58	34	74	18	61	329	120	0.7894	0.0986
2016	201	30	10	10	33	29	51	19	38	351	101	0.5025	0.1493
2017	197	37	8	4	22	19	41	32	49	336	85	0.4315	0.1878
2018	137	41	13	10	17	29	46	16	19	266	85	0.6204	0.2993
2019	148	38	14	20	29	29	47	8	25	303	100	0.6849	0.2602
2020	144	40	13	20	30	10	40	15	41	298	88	0.6111	0.2777
2021	133	44	6	12	19	7	26	0	38	259	44	0.3308	0.3308
2022	176	64	17	16	27	8	35	4	26	334	72	0.4090	0.3636
2023	234	88	33	18	36	12	48	2	19	442	101	0.432	0.376

LMU 445 (Deer/Elk HD's 445, 455, 446) (BHS - HD 455) (MG - HD 453)





HD 453 (Mt. Edith-Boulder Baldy) Survey Data									Harvest	
YEAR	BILLIES	NANNIES	YEARLINGS	KIDS	ADULTS	UNCL	TOTAL	KIDS/100 #ADULTS	Billy	Nanny
2023	**6**	**16**		**6**			**28**	**37**		
2022									0	1
2021									0	0
2020	8	22	5	11	30		46	37	-	-
2020*	**5**	**31**		**12**	**36**	**3**	**51**	**33**	0	1
2019*									1	0
2018*	6	18	6	4	24		34	22	0	0
2017*	5	26	7	10	31		49	32	0	0
2016*	8	31	8	12	39		58	31	1	0
2015									1	0
2014									1	0
2013									0	1
2012			5	8	31		44	22	0	1
2011										
2010			3	9	37		49	23		
2009			3	7	28		38	23		
2008			3	7	21		31	33		
2007			2	8	24		34	31		
2006			1	6	19	1	27	30		
2005					2		2	-		
2004			1	4	21	1	27	18		
2003			1	3	7		11	38		
2002				6	13	13	32	46		
Average ('02-'23)							**35**	**30**		



HD 446 Elk Survey Trends, 2002- Present.

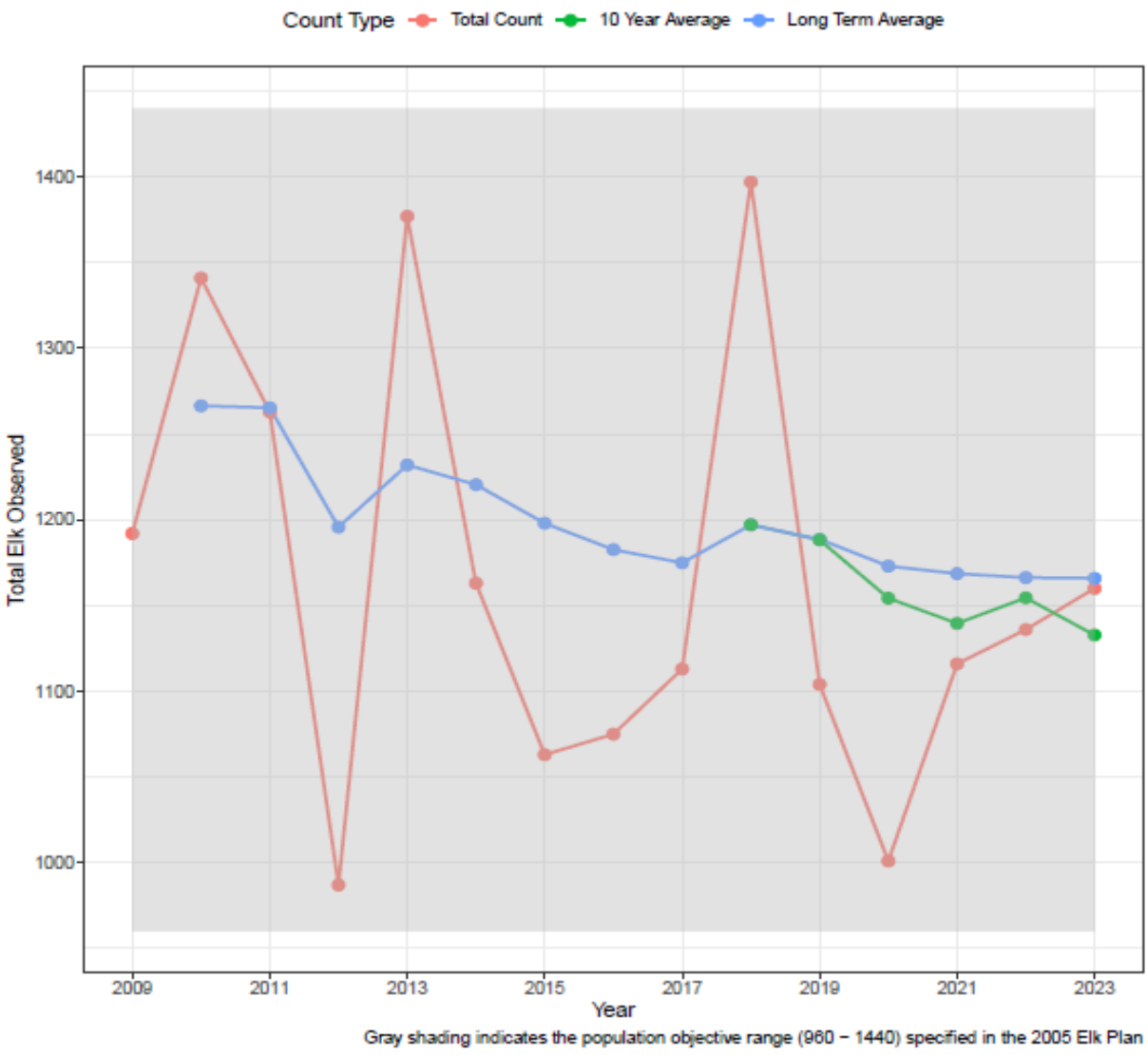
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total Elk	1403	1777	1291	1248	1512	2253		1629	2092	2238	2777	2637	2148	2114	1893	1619	2184	2182	2545	3608	2322
Uncl.	13	370	496	285	5	1324	-	193	2092	777	2229	-	-	606	1893	0	0	1418	617	2876	139
Uncl. Antlerless	1284	755	754	825	1334	716	-	1265	-	1254	386	2387	1820	1280		0	897	276	1746	431	2030
Yrlg Bulls	48	32	23	49	87	84	-	59	-	53	52	150	112	104		131	119	48	100	42	111
BTBS	58	20	13	89	86	125	-	112	-	154	110	100	216	124		187	198	104	82	259	42
Bulls/100 Antlerless	8	7	10	17	13	29	-	14	-	17	42	14	18	18		24	17				
Total Bulls	106	52	36	138	173	209	-	171	-	207	162	250	328	228		318	317	152	182	301	153

HD 455 Aerial Bighorn Sheep Surveys

Year	Date	Sky	Ground	Vehicle	# Observors	Total	0 to 1/4	1/4 to 1/2	1/2 to 3/4	3/4 +	Ewes	Lambs	UNC
2015	4/23/2015	Clear	Late Greenup	Hughes	2	61	0	5	1	6	35	14	0
2015	6/19/2015	Clear	Lush Green	Hughes	2	55	1	4	1	0	36	13	0
2019	4/3/2019	Clear	Late Greenup	Hughes	2	92	1	1	5	11	48	26	0
2020	6/9/2020	Clear	Lush Green	A-Star	2	20	1	1	0	0	14	4	0
2021	5/6/2021	Clear	Late Greenup	A-Star	2	34	4	3	4	3	18	2	0
2022	4/14/2022	Cloudy	Patchy Snow	A-Star	2	84	6	8	7	8	46	9	0
2023	4/12/2023	Clear	Patchy Snow	A-Star	2	92	0	9	6	15	42	19	1
2024	4/14/2024	incomplete	survey	A-Star	2	50	4	7	5	6	25	3	0
Avg						63	2	5	4	6	33	11	0

LMU 448 (Deer/Elk HD's 418, 420, 448) (BHS - N/A) (MG - N/A)

HD's 420/448 Elk Surveys 2009-Present.



HD 418 Elk Surveys, 2008 – Present.