2018 Hunting District 313 Elk survey (Gardiner to 6-Mile Creek)

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This survey was conducted as part of the Northern Yellowstone Cooperative Wildlife Working Group (NYCWWG) survey, in which Yellowstone National Park (YNP) and Montana Fish Wildlife and Parks (MFWP) simultaneously survey the entire Yellowstone northern range to obtain a total count of the northern Yellowstone elk herd. MFWP staff surveys the area north of Yellowstone Park within Hunting District 313 (HD313) except for the area east of Bear Creek which is surveyed by YNP staff.

This report presents and discusses results for Hunting District (HD) 313. Results of the cooperative elk survey covering the entire northern range in Yellowstone National Park and Montana are provided separately in a report prepared by YNP.

The purpose of this survey is to monitor overall population trends. Demographic trends, including bull and calf ratios, are determined by helicopter survey normally conducted in March.

Summary: A total of 5,738 elk were observed in Hunting district 313, and 3 elk were observed in HD 316. The count of 5,738 elk observed within HD313 during this years' survey is the highest number of elk observed in HD313 since 1999 (Table 2) and is above the objective range of 3,000 – 5,000 elk specified by the Elk Management Plan for HD 313. We observed 3,750 elk in the subunit north of Dome Mountain, which is above the objective of 2,000-3,000 elk for this subunit. We observed 1,988 elk within the Gardiner Basin portion of HD313 this year; this is above the 20-year average of 957 elk that have wintered in this area. The count of 5,741 elk north of YNP represents 76% of the entire 2018 northern Yellowstone count of 7,579 elk.

Methods: The HD313 survey was conducted on January 15, 2018, between 8:16am and 3:22pm. MFWP pilot Neil Cadwell flew and helped spot and classify elk, FWP biologist Karen Loveless counted all groups and classified elk. Survey conditions varied from fair to good. Low clouds in the morning interfered with the survey and light was poor, however conditions improved once the clouds lifted mid-morning. Snow cover was 100% for the upper elevations but patchy in the lower elevations. Winds were calm for most of the survey and temperatures ranged 19° – 25°. All groups of elk were counted from the air. Efforts were made to classify all groups of elk for mature bulls, except for large groups or residential areas.

Results: A total of 5,738 elk were observed in HD313, including 3,750 (67%) north of Dome Mountain, 1,358 (22%) on the east side of the Gardiner Basin and 630 (11%) on the west side of Gardiner Basin (Table 1). We observed above average elk numbers in most subunits, however the distribution of elk among the subunits in HD313 is typical of what has been observed in recent years. An additional 3 elk were observed in HD 316 in Hellroaring Creek for a total of 5,741 elk observed north of YNP.

A total of 130 brow-tined bulls were observed in HD313, representing 2.3% of elk observed. Due to low clouds in the morning we were not able to fly the upper elevations where most bulls are observed until later in the day, so sightability of bulls is considered poor for this survey. Within YNP an additional 390 brow-tined bulls were observed, for a total of 520 total brow tined bulls across the northern range, representing 6.8% of all elk observed across YNP and MT combined. A classification survey will be conducted in March to determine age structure and ratios of bulls in the population.

On January 14 we surveyed HD 317, which borders HD313 to the north. We observed 695 elk just north of the HD313 boundary in the Emigrant Peak area, many of which are likely associated with the northern Yellowstone elk herd. We classified all groups in the Emigrant Peak area for brow-tined bulls resulting in a total of 60 brow-tined bulls among the 695 elk observed (See HD 317 survey report).

Population Trends and Distribution: The count of 5,738 elk observed within HD313 during this years' survey is the highest number of elk observed in HD313 since 1999 (Table 2) and is above the objective range of 3,000 – 5,000 elk specified by the Elk Management Plan for HD 313. We observed 3,750 elk in the subunit north of Dome Mountain, which is above the objective of 2,000-3,000 elk for this subunit. We observed 1,988 elk within the Gardiner Basin portion of HD313 this year; this is above the 20-year average of 957 elk that have wintered in this area. The count of 5,741 elk north of YNP represents 76% of the entire northern Yellowstone count of 7,579 elk. The proportion of the herd observed north of the Park is similar to migrations that have been observed in recent years, except for an unusually high proportion of the herd (89%) observed north of the Park in 2017. Prior to 2006, typically less than 50% of the herd migrated north of the Park to winter (Table 3).

Harvest Management

Antlerless Harvest: In response to declining elk numbers during the 2000's (Figure 2), antlerless harvest was progressively restricted in HD313, including substantial reduction of the Gardiner Late Hunt in 2005, and closure of the Gardiner Late Hunt following the 2009 season. The long-term decline in elk numbers has stabilized, and we have observed increases in elk numbers and improved calf recruitment since 2015. With the recent increase in elk numbers, antlerless harvest opportunity has been slightly increased in HD313, with 60 antlerless permits issued in 2016, and 150 HD317 antlerless B licenses are valid on private lands north of Dome Mountain in HD 313 to address conflicts in that area. With elk numbers above objective, and ongoing conflicts with livestock operations in the north end of the district, increased opportunity for antlerless harvest will be recommended.

Bull Harvest: Due to sustained low calf recruitment during 2002-2013, combined with an increasing trend the proportion of the bull population harvested since the mid-2000's, we observed a decline in brow-tined bull ratios as well as a decline in mature (6-point and greater) bulls in the population (see 2017 northern Yellowstone elk classification report). To address this, the season structure was changed in 2012 to require unlimited permits for hunting bulls in HD313. Beginning in 2014 the unlimited brow-tined bull permits were changed to first-choice only. These changes were not effective in reducing bull harvest (Table 2). Beginning in 2016 the rifle season was shortened to 3-weeks with brow-tined bull harvest allowed on a general license, and a limited draw permit-only opportunity for brow-tined bulls was established during the last 2 weeks of the rifle season. The objective of this season structure is to reduce harvest of bulls and recover bull ratios to within 20% of the long-term average and manage for a diverse age structure within the bull population. The initial season with this regulation was successful at substantially reducing bull harvest, with 103 bulls harvested in 2016 as compared to 472 bulls harvested in 2015. Population modelling indicated that it would take at minimum 5 years to recover bull ratios and age structure in the population with the new season structure in place. Population bull ratios will be determined during a late winter classification survey, and results of that survey will be used to assess progress towards recovery of the bull population.

Figure 1. Location and group size of elk observed during aerial survey of HD313 on January 15, 2018

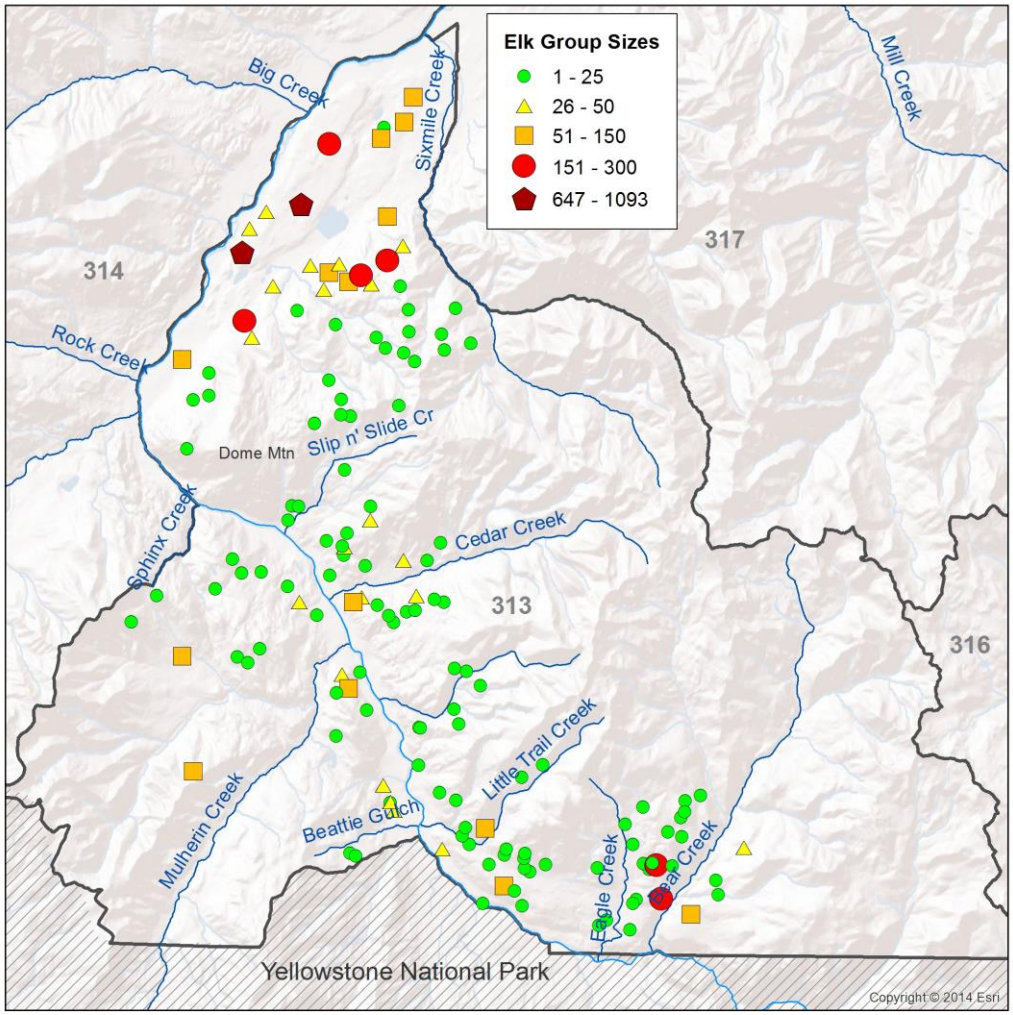

Figure 2. Trends for northern Yellowstone elk, including total northern range elk herd count, and numbers of elk observed in HD 313 during late winter surveys 1990-2017. Data are missing for some years because surveys were not conducted, or survey conditions were poor.

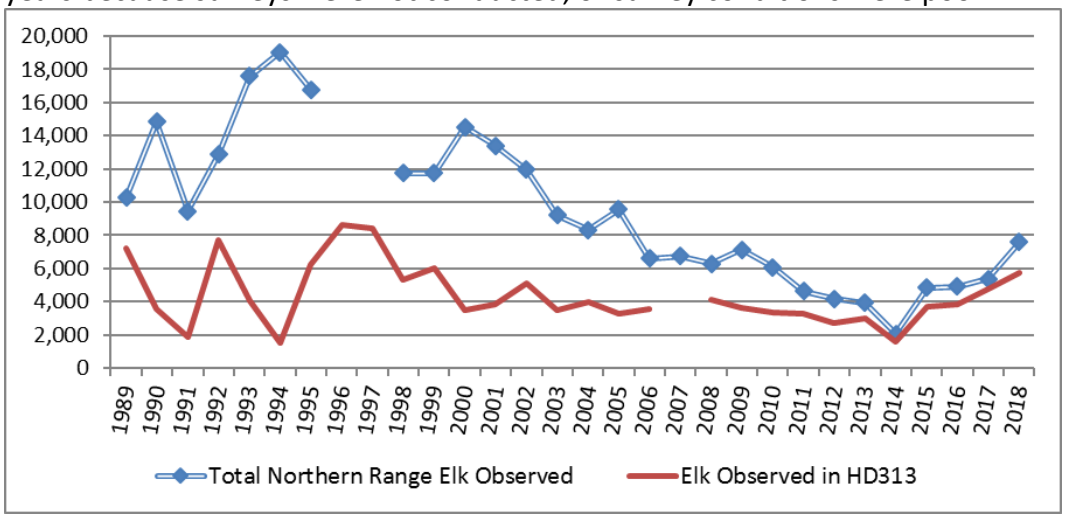

Table 1. Distribution of elk by herd unit in HD 313 as observed during aerial surveys 2009 – 2018 and 20-year averages. (Survey conditions were poor in 2014, and data are not available for 2010.)

Subunit:	2009	2011	2012	2013	2015	2016	2017	2018	20-yr Ave
North of Dome Mtn.	**2797**	**2496**	**1558**	**2132**	**2352**	**2460**	**3298**	**3750**	**2599**
Gardiner Basin									
Dome Mtn to Slip n' Slide Crk	*99*	*84*	*13*	*22*	*0*	*18*	*13*	*22*	*28*
Slip n' Slide to Cedar Crk	*28*	*88*	*223*	*67*	*120*	*156*	*169*	*211*	*122*
Cedar to Little Trail Creek	*101*	*261*	*56*	*9*	*178*	*200*	*333*	*389*	*166*
LittleTrl-BearCrk	*93*	*67*	*417*	*329*	*330*	*397*	*376*	*616*	*200*
Deckard Flats-Crevice	*97*	*37*	*29*	*83*	*128*	*96*	*122*	*120*	*87*
East Gardiner Basin Subtotal	418	537	738	510	756	867	1013	1358	562
YNP-MolHeronCrk	*8*	*14*	*116*	*20*	*54*	*45*	*127*	*272*	*88*
MolHeronCrk-SphinxCrk	*288*	*256*	*351*	*338*	*552*	*386*	*338*	*358*	*308*
West Gardiner Basin Subtotal	296	270	467	358	606	431	465	630	396
Gardiner Basin Subtotal	**714**	**807**	**1205**	**868**	**1362**	**1298**	**1478**	**1988**	**957**
HD316 (Hellroaring Creek)								**3**	
HD313 TOTAL	**3511**	**3303**	**2763**	**3000**	**3714**	**3758**	**4776**	**5738**	**3543**

Table 2. Total elk harvest in HD313 for license years (Fall) 1999 – 2016, and elk survey results for winters 2000-2018. "Total Northern Range Elk" is the number of elk counted across the entire Yellowstone northern range, including within Yellowstone National Park and within HD313/316 in Montana. "Migration Size" is the proportion of the total herd count that was observed within HD 313.

Fall/Winter	Total Northern Range Elk	Elk Observed in HD313	Migration Size	Late Hunt Harvest	General Season Harvest	Total Harvest	Total Antlerless Harvest	Total Bull Harvest
1999/00	14,539	3,500	24%	940	43	983	852	131
2000/01	13,400	3,833	29%	1221	143	1364	1132	229
2001/02	11,969	5,104	43%	1103	51	1154	1020	134
2002/03	9,215	3,494	38%	718	182	900	700	200
2003/04	8,335	3,990	48%	702	23	725	620	105
2004/05	9,545	3,243	34%	457	87	544	421	123
2005/06	6,588	3,549	54%	132	291	423	124	299
2006/07	6,738	**	**	124	449	573	120	453
2007/08	6,279	4,088	65%	103	140	243	102	141
2008/09	7,109	3,638	51%	127	140	267	145	122
2009/10	6,070	3,359	55%	91	163	254	126	128
2010/11	4,635	3,266	70%	0	379	379	88	291
2011/12	4,174	2,734	66%	0	216	216	61	155
2012/13	3,915	3,000	77%	0	186	186	18	168
2013/14*	2,063	1,587	77%	0	187	187	22	165
2014/15	4,844	3,714	77%	0	349	349	34	315
2015/16	4,912	3,804	77%	0	509	509	37	472
2016/17	5,349	4,776	89%	0	155	155	52	103
2017/18	7,579	5,738	76%	0	**	**	**	**

*Survey conditions were poor, count was not reliable

** No survey was completed or data not available