

E16 (44,444,45,47)																				
Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		
Elk Population Estimate	6,760	5,950	7,700	7,450	7,200	7,560	7,100	7,930	7,110	7,340	6,490	6,550	4,610	6,060	6,180	6,970	7,597	8,511		
Total Elk Hunters (Tags issued)	7,864	7,011	6,931	7,397	7,139	7,220	7,190	7,524	7,604	6,813	6,498	5,114	4,780	3,087	2,020	2,949	2,822	2,729		
Total Elk Harvest	1,624	1,521	1,478	1,422	1,282	1,309	1,153	1,152	1,072	863	821	561	579	503	318	463	378	423		
											29	27	22	22	20	18	20	24		

Eagle County Population	2000	2005	2010	2015	2020
	41,659	47,530	52,197	52,576	54,960

Previous (1988) Population Objective: 5,100
Current (2013) Population Objective: 5,500-8,500
Previous Sex Ratio Objective: 20 bulls per 100 cows
Current Sex Ratio Objective: 18-30 bulls per 100 cows

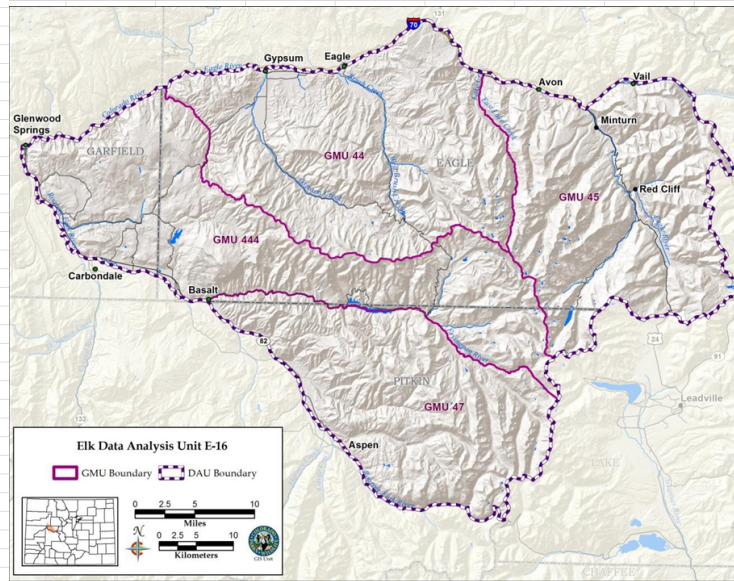
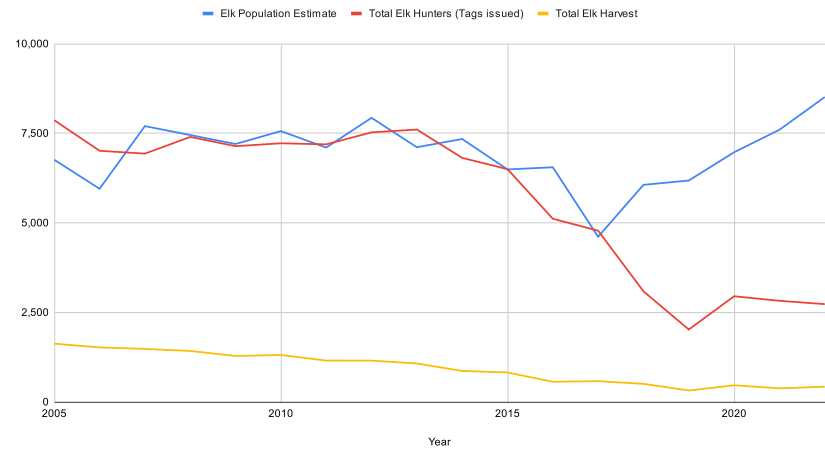
Statement Copied and Pasted from 2013 CPW E16 Management Plan

Since 1988, the elk in E-16 have been managed for a population objective of 5,100 animals. Through the 1990s and early 2000s, the herd numbers increased to over 10,000 elk. To reduce the population toward the 1988 population objective, liberal antlerless licenses were provided to achieve increased cow elk harvest. This management strategy has allowed the population to be reduced to what is currently estimated at 7,100 elk.

Favorable weather through most of the 1980s and 1990s, combined with limited public access in portions of the DAU, and increased developments resulting in lower harvest than desired, contributed to the elk population growing well above the herd's population objective.

To reduce the population toward the objective, a number of measures have been taken to encourage cow harvest. Since 1995, an early cow season has been in place in GMU 45 to achieve some additional harvest in that unit. In 1998, over-the-counter/unlimited either-sex licenses for 2nd and 3rd seasons were available instead of limited antlerless licenses. However, the following year, 2nd and 3rd seasons were reverted back to limited antlerless and over-the-counter bull licenses. Antlerless license quotas were raised in the early 2000s (Figure 11). Antlerless harvest did increase initially, but in part because of large private lands that function as refuges for elk, there is a limit to the amount of harvest possible. As license quotas were raised, success rate dropped off somewhat and many licenses went unsold. Antlerless license quotas were reduced in the mid-2000s to match demand for licenses with a realistically achievable amount of antlerless harvest. Since 2002 antlerless licenses in E-16 have been "List B" licenses, i.e., they can be purchased as a 2nd license. Also, to focus some harvest on private lands and redistribute elk onto public lands, private-land-only (PLO) antlerless licenses have been available in the DAU since 1993. Under the current season structure, PLO antlerless licenses in E-16 are valid from mid-August to mid-January.

E16 Elk Population Estimate, Total Elk Hunters and Total Elk Harvest



E12 (35,36,361)																					
Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022			
Elk Population Estimate	6,130	5,230	4,760	4,080	3,780	3,640	3,760	4,030	3,730	3,730	3,850	3,590	3,120	3,730	3,910	3,710	4,092	3,780			
Total Elk Hunters (Tags issued)	5,053	6,727	6,642	6,192	5,515	5,236	3,973	3,661	4,041	3,764	3,688	3,655	3,624	3,389	2,861	2,949	3,021	2,776			
Total Elk Harvest	897	1,161	1,113	1,025	945	966	587	526	561	550	524	387	368	437	332	368	233	342			
Bull/Cow Ratio												38	34	27	25	28	21	21	24		

Eagle County Population	2000	2005	2010	2015	2020
	41,659	47,530	52,197	52,576	54,960

Previous (1988) Population Objective: 2,950
Current (2013) Population Objective: 3,000-4,600
Previous Sex Ratio Objective: 16 bulls per 100 cows
Current Sex Ratio Objective: 22-44 bulls per 100 cows

Statement Copied and Pasted from 2013 CPW E12 Management Plan

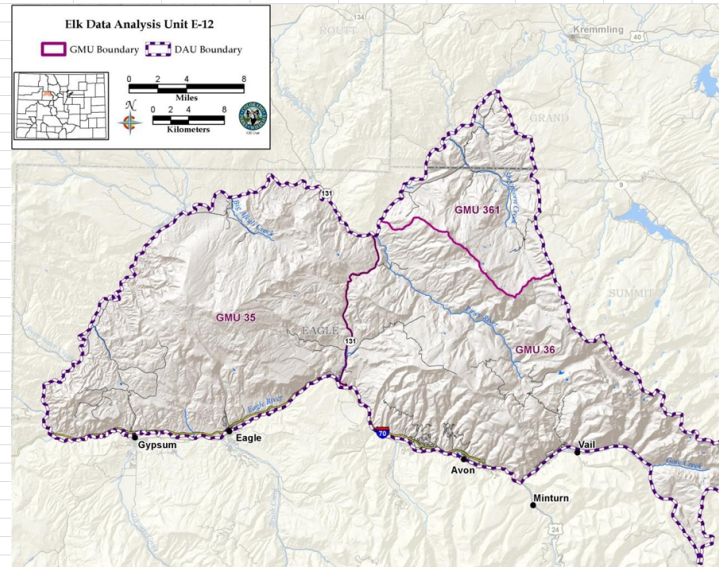
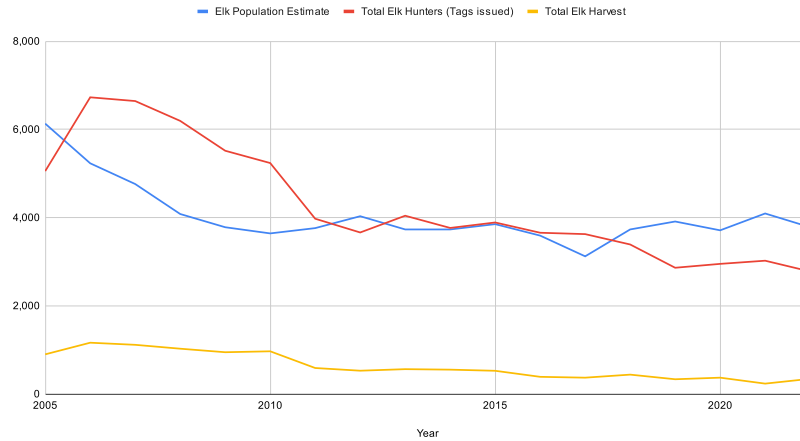
Since 1988, the population objective for E-12 has been 2,950 elk. Through the 1990s and early 2000s, the herd numbered between an estimated 5,000-6,800 elk. To reduce the population toward the herd management objective, liberal antlerless harvest has been promoted to achieve cow harvest. Since the early 2000s, the elk population has been reduced and is currently estimated to be 3,800 elk.

Favorable weather through most of the 1980s and 1990s, combined with limited public access, large private land refuges, and increased developments resulting in less harvest than desired, contributed to the elk population growing well above the herd's population objective.

To reduce the population toward the objective, a number of measures have been taken to encourage cow harvest. In 1998, over-the-counter/unlimited either-sex licenses for 2nd and 3rd seasons were available instead of limited antlerless licenses. However, because many spikes were being shot, the following year, 2nd and 3rd seasons were reverted back to separate limited antlerless and over-the-counter bull licenses. Antlerless license quotas were raised through the early 2000s (Figure 11). Antlerless harvest did increase initially, but in part because of large private lands that function as refuges for elk, there is a limit to the amount of harvest possible.

As license quotas were raised, success rate dropped off somewhat and many licenses went unsold. Antlerless license quotas were reduced in the mid-2000s to match demand for licenses with a realistically achievable amount of antlerless harvest. Since 2002 antlerless licenses in E12 have been "List B" licenses, i.e., they can be purchased as a 2nd license. Also, to focus some harvest on private lands and redistribute elk onto public lands, private-land-only (PLO) antlerless licenses have been available in the DAU since 1993. Under the current season structure, PLO antlerless licenses in E-12 are valid from mid-August to mid-January. There is also a late season which was instituted in 1990 in GMU 35, and expanded to include GMU 36 in 2000. In 2010, GMU 361 was created to alleviate trespass issues in this GMU during the late season. Presently, the late season runs from the day after Thanksgiving for 10 days in all 3 GMUs, plus mid-December to mid-January in GMUs 35 and 36. This season attracts many youth hunters who did not fill their tags during earlier seasons.

E16 Elk Population Estimate, Total Elk Hunters and Total Elk Harvest



Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Mule Deer Population Estimate	3,500	4,000	3,700	3,200	3,660	2,560	1,950	1,890	2,130	2,190	2,090	2,210	2,300	2,380	2,320	2,070	2,160	2,220	2,190	2,230
Total Mule Deer Hunters (Tags issued)	636	754	807	605	474	585	529	512	376	372	309	338	345	253	250	225	235	286	269	275
Total Mule Deer Harvest	265	164	96	86	103	124	98	136	70	55	91	139	130	118	108	106	115	114	146	158
Buck/Doe Ratio								38	41	44	44	44	48	42	41	40	40	38	36	38

Eagle County Population	2000	2005	2010	2015	2020
	41,659	47,530	52,197	52,576	54,960

Previous (1995) Population Objective: 7,000
Current (2020) Population Objective: 1,500-3,500
Previous Buck/Doe Ratio: 35 bucks per 100 does
Current Sex Ratio Objective: 35-45 bucks per 100 does

Statements Copied and Pasted from 2020 CPW D14 Management Plan
 This DAU has been managed to provide the highest quality buck hunting experience, defined as accessibility to public land with very low hunting pressure and a higher opportunity to harvest a mature animal. Drawing a 3rd or 4th season buck license in this unit is often perceived as a "once-in-a-lifetime" hunt opportunity.
 When the current boundary of DAU D-14 was established in 1995, the population objective was set at 7,000 deer and the sex ratio objective was set at 35 bucks per 100 does. Since that time, the estimated population size has always been below objective, ranging from approximately 2,070 to 4,070 deer, or about -42% to -70% below the population objective. The population grew slightly in the early 2000s but then declined again from 2004-2008. Since 2008, the population has averaged 2,240 deer, or -68% below objective. The 2018 post-hunt population estimate is 2,070 deer.

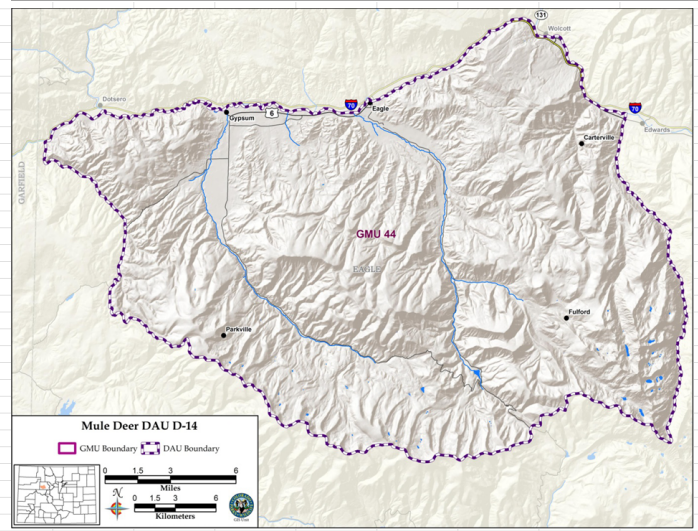
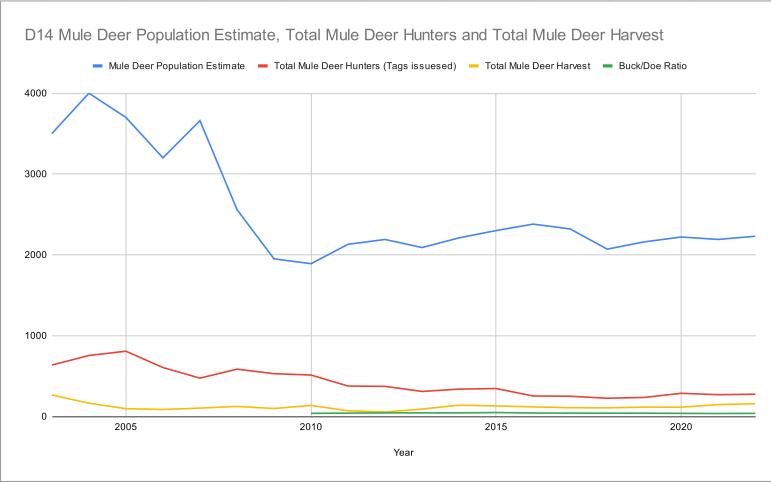
Although the herd's objectives were established in 1995, D-14 has never had a formal written management plan. Given the significant changes in land use and the deer herd's current and potential performance, an update of D-14's management objectives is overdue.

The post-hunt 2018 D-14 population estimate was approximately 2,070 deer and the previous population objective was 7,000 deer. In the 24 years since the previous objective was set, D-14 has never come close to achieving that population size and the past 10+ years of extremely conservative deer licenses have not resulted in any increase in population. The new population objective range under this current herd management plan will be 1,500-3,500 deer. This population objective is believed to be reasonably achievable under current habitat and land use conditions. The new sex ratio objective will be 35-45 bucks per 100 does. This objective will continue to provide high quality buck hunting in the unit, but not be too high to pose problems with the health of the herd and its ability to recover from weather events or be resilient against disease outbreaks and other stressors.

The major issues for this deer herd involve the cumulative effects of decades of human population growth and impacts of human activities on deer habitat in the Eagle River Valley. The result has been a loss of habitat quantity and quality and less solitude from human disturbance. The unit's carrying capacity for mule deer has declined compared to conditions in past decades when the previous objectives were set over 2 decades ago. Significant issues include habitat loss and fragmentation from land development, declining habitat condition, and impacts of human recreation on deer. Other management concerns include the need to balance competing herd management objectives, potential for chronic wasting disease, and preference point "creep" over time.

Prior to 1980, the former boundaries of GMU 44 covered what is currently GMUs 44 and 444, and the whole area was managed as one DAU, D-14. In 1980, this GMU was split into the current GMUs 44 and 444, but continued to be managed as DAU D-14. During most of the 1980's the population objective was 18,000 deer. In 1988, the population objective was reduced to a more realistic and achievable level of 12,300 deer. After GMU 44 became a totally limited license area in 1992, it was deemed necessary to make GMU 444 a separate DAU. This was accomplished in 1995, when DAU D-53 was created, containing GMU 444. The old population objective of 12,300 for both GMUs combined was split between the two new DAUs with D-14 being 7,000 and D-53 being 5,300 deer.

When D-14 was established in 1995, the population objective was set at 7,000 deer. Since that time, the estimated population size has always been below objective, ranging from approximately 2,070 to 4,070 deer, or about -42% to -70% below the objective (Figure 13). Much of mule deer management is largely dependent on the combined influences of winter severity and harvest levels. The population grew slightly in the early 2000s but then declined again from 2004-2008, possibly due to increase in both buck and doe harvest (see "Hunting Licenses and Harvest Statistics" section below). Severe winters occurred in both 2007-08 and again in 2011-12 potentially adding to decreased herd health and vigor. Licenses were reduced from the mid- through late 2000s, leading to a stabilization of the population at a low level. Since 2009, the population has averaged 2,240 deer, or -68% below objective. The 2018 post-hunt population estimate was 2,070 deer.



D8 (15, 35, 36, 45, 361)

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Mule Deer Population Estimate	22,040	22,810	24,530	20,110	13,850	14,800	14,640	14,760	15,710	14,760	17,570	16,540	16,670	13,730	13,720	12,480	13,220	14,463	13,665	
Total Mule Deer Hunters (Tags Issued)	6,035	6,072	5,921	6,068	2,138	2,160	2,191	2,347	2,531	3,058	2,902	3,402	4,637	5,473	5,154	4,962	3,482	3,736	3,659	
Total Mule Deer Harvest	2,602	2,350	1,928	2,017	600	676	802	945	993	1,351	1,214	1,286	1,549	1,730	1,451	1,276	1,075	1,376	1,215	
Buck/Doe Ratio							30	32	35	34	38	38	34	27	30	30	22	21	21	
Does Harvested													303	371	479	362	189	47	251	170
Bucks Harvested												947	1,158	1,191	1,065	1,082	1,028	1,111	1,033	
Fawns Harvested												36	22	58	16	5	0	12	13	
Total Harvest												1,286	1,551	1,728	1,443	1,276	1,075	1,374	1,216	

Eagle County Population	2000	2005	2010	2015	2020
	41,659	47,530	52,197	52,576	54,960

Previous (2009 plan) Population Objective: 13,500-16,500
Current (2020) Population Objective: 10,000-14,000
Previous Buck/Doe Ratio: 26-30 bucks
Current Sex Ratio Objective: 26-30 bucks

Statements Copied and Pasted from 2020 CPW D8 Management Plan

In the 2009 herd management plan, CPW lowered D-8's population objective to account for the changing landscape and set an objective range of 13,500-16,500 deer. Over the past 10 years of managing for this population objective, the population has fluctuated within the objective range, both almost exceeding and after dropping below the range. We have adjusted license quotas widely in both directions to attempt to stabilize the population within objective range. D-8's most recent population estimate in 2019 is 12,476 deer, which is below the current objective range. The herd's sex ratio objective was set in the 2009 D-8 plan at a range of 26-30 bucks/100 does. Due to conservative harvest management during the first several years, the buck ratio increased well beyond the objective range. As CPW restored buck license quotas incrementally over the past 10 years, the buck ratio finally appears to have dropped down to within the current objective range in the past few years. The current 3-year (2017-2019) average is 27 bucks/100 does.

D-8 is one of the larger deer herds in the state, but as with many herds in western Colorado, the cumulative impacts of decades of human population growth and the direct and indirect impacts of human activities have continued to diminish both the quality and quantity of habitat and its carrying capacity for deer. Land development, fragmentation by roads and trails, increased human activity on public lands, and suppression of large-scale wildfires have long-term and perhaps even irreversible effects on the landscape. The proliferation of all forms of outdoor recreation on public lands has continued since the 2009 herd management plan. Continued conversion of habitat on private lands into residential housing developments is expected over the next decade or so, especially in the units near Interstate-70, leading to further loss of mule deer winter and summer range habitat. Vehicle traffic also continues to increase as the region's human population grows, and wildlife-vehicle collisions continue to be a concern.

CPW recommends a new population objective range of 10,000-14,000 deer (Alternative 2). This alternative would lower and widen the objective range to ±2,000 deer around a midpoint of 12,000 deer. The current (2009 Plan) objective of 13,500-16,500 deer is likely set too close to the habitat carrying capacity and is also too narrow of a range, making a stable equilibrium population difficult to achieve. Over the past decade, the population swung between both the bottom and top ends of the current objective range, requiring CPW to increase and then drastically decrease license quotas. The proposed wider, reduced objective range of 10,000-14,000 deer would manage for a population level slightly below habitat carrying capacity and would give CPW more latitude in maintaining license quotas at a more consistent level, giving D-8 hunters more predictability from year to year when applying for licenses. CPW would still adjust quotas depending on the trajectory of the population size and where it sits relative to the objective range, but the adjustments may not be as drastic under a wider, lower population objective range compared to the current objective range. CPW recommends maintaining the current sex ratio objective of 26-30 bucks/100 does that was set in the 2009 D-8 Plan. This range is a moderate sex ratio at which the herd is still managed primarily for ample buck hunting opportunity. The maturity of available bucks would be about the same as it currently is. Buck license quotas would likely remain similar to the recent few years' quotas to keep the observed sex ratio within the objective. We expect that by managing for this moderate sex ratio, chronic wasting disease (CWD) prevalence rate in bucks in D-8 will remain below 5%.

D-8 is one of the larger herds in the state, but as with many herds across Colorado, the habitat carrying capacity has declined over the decades, as both quantity and quality of habitat have diminished due to land development, fragmentation by roads and trails, increased human activity on public lands, and suppression of large-scale wildfires. The history of D-8's population in the earlier decades is discussed in more detail in the 2009 DAU Plan (CDOW 2009). In 2009 (but not effective until license year 2010), CPW lowered D-8's population objective to account for the changing landscape and established an objective range, rather than a single-number objective. At that time, objective ranges were a relatively new approach, so the objective was set with a moderate range of ±10% around the midpoint (15,000 ±1,500 deer). However, over the past decade of managing for this population objective range, we have found it to be too narrow to adequately encompass both sources of variability in population estimation. First, there is statistical error in fitting annual field data to a population model. Secondly, there is random variability in environmental conditions; for example, weather conditions influence deer survival as well as hunter success rates. Each year the D-8 model was updated and re-run with a new year of data, the model's results varied by up to approximately ±1,250 animals, meaning that statistical error in models already used up 83% of the 2009 Plan's objective range, leaving only 17% of the objective range to buffer for annual variability in environmental conditions. As D-8's population climbed into objective range and then increased to the upper end of the objective range from 2010-2014, CPW raised license quotas for several years in response. However, soon after, the population declined in recent years down to the bottom end of the objective range and we cut license quotas the past 2 years. This unstable pattern suggests that the population objective range was set too close to the habitat's carrying capacity and/or too narrow to buffer for annual environmental variability. Fawn doe ratios (see Post-Hunt Herd Composition section below), which are indicators of doe reproductive 14 fitness and fawn recruitment, have declined over the past 2 decades, which suggests a population at or just above its habitat carrying capacity. D-8's population estimate as of 2019 is 12,476 deer, which is below the objective range.

Hunting seasons and quotas in prior decades were described in detail in the 2009 DAU Plan (CDOW 2009). In the past decade, deer hunting seasons included archery, muzzleloader, early rifle, 2nd, 3rd, and 4th season licenses. All of these seasons had limited quotas. There are no antler-point restrictions on buck harvest. Doe and either-sex licenses and 2nd season buck licenses have not needed preference points to draw. 3rd season buck licenses have generally been available with 0 preference points, sometimes 1 point for non-residents. Early and 4th season buck licenses have required between 2-16 points, as of the 2019 draw (Table 7). From 2010-2014, as D-8's population increased into the population objective range and reached the upper end of the objective range, we began to increase license quotas, starting with slight increases through 2012 and then larger increases from 2013-2017 (Figure 12). However, then the population began to drop during 2017 and 2018, which were drought years as well as higher harvest years. Doe license quotas were reduced substantially in 2018 and again 2019. Despite these doe license cuts, the post-hunt 2019 population model estimated that D-8 had dropped below objective, which triggered further significant cuts in doe license quotas, down to 10 licenses per hunt code in 2020, as required by the CPW Leadership Team's guidelines on doe license quotas. In the three successive years of doe license cuts, doe quotas reduced by a total of 97% from the recent high of 1,210 doe licenses in 2017, down to a low of 40 doe licenses in 2020. Either-sex license quotas were also reduced in 2019 and 2020. On the other hand, buck license quotas were gradually increased over the past decade (Figure 12) because D-8's buck ratio had been over objective for much of the past decade. These additional buck licenses also partially help to offset the recent cuts in doe and either-sex license hunting opportunity. Within the past few years, we have restored the total buck license quotas for the DAU back up to the levels before the major cuts in 2008, following a severe winter. However, by winter 2019-20, the 3-year average buck ratio has dropped toward the lower end of the sex ratio objective range, so buck license quotas were scaled back in 2020.

E8 Mule Deer Population Estimate, Total Deer Tags and Total Deer Harvest

