COLORADO
Parks and Wildlife
Department of Natural Resources

Glenwood Springs Service Center
0088 Wildlife Way
Glenwood Springs, CO 81601
P 970.947.2920 | F 970.947.2936

March 6, 2017

Peter Wadden
Watershed Education Coordinator
Community Development-Environmental
Town of Vail

Peter,

As per your request I have put together what information the Colorado Parks and Wildlife have available to provide you with as much guidance as possible on the sustainability of wildlife populations within the Gore Valley. As we discussed over the phone it is very difficult to break out wildlife information on small areas. Using the available information I have tried to make as specific as possible to the Gore Valley. Part of the problem is the Gore Valley is covered by 2 different game management units (GMU), GMU 36 on the north side and GMU 45 on the south side.

For road kill information I have put together the information for 3 years (2014-2016). It is important to remember that road kill data is very preliminary since many animals are able to get away from the highway before dying and are never counted. Also Colorado state law allows for the public to possess certain road killed animals and often these animals are picked up before they are counted. You will also notice that many small mammals are not even mentioned as there is no data for them. This information is attached below.

The number of bears that are removed or put down by CPW due to human/bear conflicts is very dependent on weather patterns and public perceptions. I again used data from 3 year (2014-2016). I don't have the data for the number of calls the Vail PD took on bear complaints for this period but I believe you can get these from the PD.

2014 CPW put down 2 bears in Vail.

2015 and 2016 no bears were removed or put down.

I used the same years for lion conflicts. Lion conflicts have really become an issue the in the last 2 years. Prior to 2015 I might get 5-10 calls per year about the public seeing

lions in or around the Town of Vail with most of these being just the public reporting a sighting. However in 2016 I received 18 calls within the Town of Vail and 2 of these were for dogs that were killed by lions. Many of these calls were about the public encountering lions while out with their dogs and concerns that their dogs were at risk of being attacked by the lion. In 2016 CPW did remove and put down 1 lion from the Town of Vail.

Deer and Elk:

CPW conducts annual big-game classification flights to determine age structure, sex ratios, reproductive success, and population estimates for each data analysis unit (DAU). These DAUs cover large geographic areas, and trying to extract information at a much smaller scale drastically decreases the accuracy of the estimates.

A drawback to using historical count data to estimate impacts on wildlife is the amount of confounding variables that influence a species at the population level. Examples include weather, disease, population management at the DAU level for big-game species, and development/human disturbance. These factors can increase the difficulty of defining impacts by using animal abundance before and after development.

It is becoming increasingly apparent to wildlife and land managers that human disturbance to wildlife in the form of recreation is taking a toll on wildlife and on habitat by reducing functionality. In areas experiencing high levels of recreation, animals tend to spend less time foraging and resting and more time traveling. Mountain biking and ATV use may create the highest levels of disturbance for mule deer and elk (Naylor et al. 2008). Behavioral changes such as these occurring in summer range habitat may result in an overall decrease in animal fitness, which often negatively affects reproductive success and winter survival.

Examples of these within the Gore Valley are the request for additional biking and hiking trail from Spraddle Creek to Booth Creek, the Vail Trail expansion on the south side of the Gore Creek, the increase in summer activities on Vail Mtn., the request for the expansion of Gold Peak racing area and the overall push to make the valley a full 4 season recreation destination.

Elk:

Fortunately for elk we have a current study done in Game Management Unit (GMU) 45 from 1995 to 2005 that looked at impacts on elk calving/recruitment from human disturbance. For the elk populations I put together some information using baseline information we have from the elk study done in the Eagle Valley from 1995 to 2005. This study was done in GMU 45 and was to determine impacts on elk calving from human disturbance, (Phillips and Alldredge 2000, Shively et al. 2005). The study done

at Beaver Creek and Vail demonstrated that calf/cow ratios for elk declined by approximately 40% (from 64.6 calves per 100 cows to 39.8 calves per 100 cows) as a result of human induced disturbance during the calving season (Phillips and Alldredge 2000, Shively et al. 2005). Reproduction levels during the treatment period were determined to be insufficient to maintain a stable elk population. The second half of the study involved removing the human disturbance component. With the human disturbance removed the calf/cow ratios rebounded to their pre treatment levels.

We used the radio collared elk and age and sex ratio counts done from helicopter to determine the elk population in GMU 45. The baseline years were 1994, 1996, 1997 (1995 counts were not used because the flight time was reduced by approximately 50%). These are the 3 years that we have Lincoln indexes, which provides us with 3 years of data to obtain an average on the % of the population we actual count during a flight. The average % of the population we counted based on these 3 years is 41.8%. During this period (1994 to 2015) we have had the same observer (except for 2013) and have had relatively the same number of flight hours each year (from 3.5 to 4 hours).

The average population for the 3 years of baseline (1994, 1996, 1997) was 1771 elk.

The average population for the last 3 years is (2012, 2013, 2014) was 604 elk.

That is a 63% drop in population levels (1167 less elk). From 1998 to 2015 there has been 13 years that we have been below the baseline population level. The classification counts for 2013 and 2014 (162 elk) and 2015 (149 elk) were the lowest counts since 1975.

Deer in GMU 45 and 36.

We are not as fortunate with deer as we don't have any current studies to provide Lincoln indexes for the % of the deer population we count during aerial age and sex ratios. So I used harvest data. The Data Analysis Unit (DAU) for deer is D8 and it covers Units 35, 36, and 45.

Harvest GMU 45

From 1955 to 1962 the harvest went from 205 deer to 500 deer respectively with 1962 being the highest harvest (500) ever in GMU 45. The harvest has never again hit 500 deer.

From 2010 to 2014 (I am missing 2013) the harvest went from 60 deer to 127 deer respectively. This is confounded by the fact that we now have totally limited deer licenses now.

Harvest GMU 36

From 1955 to 1962 harvest went from 553 deer to 1947 deer respectively, with 1962 again having the highest harvest of 1947 deer. The harvest has never again hit 1947 deer.

From 2010 to 2014 (I am missing 2013) the harvest went from 157 deer to 318 deer respectively. Again like GMU 45 this in confounded by total limited deer limited licenses.

But if you compared those periods there has been greater than a 3 fold reduction in deer harvest in BGU 45 and up to a 6 fold reduction in deer harvest in GMU 36 since 1962.

The DAU plan for D8 has shown a steady decline in population since the 1980's. For most of the 1980's the DAU population objective was 26,000 deer, in 1988 it was reduced to 21,000 deer and in 2008 it was reduced to 13,500 to 16,500 deer. These population objectives were reduced based on several factors (loss of habitat, increased recreation pressure, weather, predators and quality of habitat).

In the early 1970's Colorado Division of Wildlife researcher Dale Reed completed a study looking at the impact of I-70 on deer migration at Mud Springs (just east of Dowd Jct.). There was a concrete box culvert placed under I-70 to provide a migration route for deer. The study on the Mud Springs deer underpass showed about 39% of the Mud Springs deer population failed to pass through the underpass.

Below is some information from a 1975 report on deer impacts from the start of Vail.

Land use changes in the form of rapid increases in human in-habitation, activity and the construction of I-70 in the Eagle Valley have contributed to a substantial decline in deer numbers. The extent of this reduction is best expressed by changes in numbers of deer harvested in the two periods, 1959 to 1963 and 1969 to 1973 and comparison of these changes with those of the state as a whole.

The percentage decrease in the annual deer harvest in Eagle County between the two time periods was greater than that for the State as a whole, 52.8% and 47.8%, respectively. During this time, the Eagle County contribution to the State's deer harvest declined from 6.2% to 4.6%, and Eagle County's ranking dropped from an average of 5th place to 6th. It is also interesting to note that the decline in the number of deer harvested was greater in Game Management Unit 45, 63.7%, than for any other unit in Eagle County. GMU 45 includes Vail Village, the Vail Ski Area and many related developments, nearly all of which have been developed subsequent to the 1959-63 comparison period.

Bighorn Sheep:

There is only one population of bighorn sheep in the Gore Valley. An important part of the winter range for this herd is within or adjacent to the Town of Vail and I-70 in the east Vail area. This herd is considered a native herd although there was a transplant of 7 sheep done in 1948. In the 1950's the population was estimated to be 30, in the 1990's the population was estimated to be 80-100; the current population estimate is 40. The population has not recovered since the hard winter of 2007-2008. The reasons for the lack of recovery are not clear cut. There are numerous factors that could cause this; disease, lack of winter habitat, poor quality habitat from the lack of habitat management (no fires), predators and increased recreation pressure. We have not detected any increase in disease. Whatever the cause, the populations has been unable to rebound from the winter 2007-2008.

Mountain Goats:

There is only one population of goats in the Gore Valley. This herd spends its time far above the boundaries of town really does not use habitat adjacent to the town of Vail. However the population for this herd has been in decline for the last 4-6 years.

Moose:

The moose population in the Gore Valley (and all of Eagle County) has been increasing. Moose started showing up regularly in the Gore Valley around 1983. This increase was a result of moose moving from the North Park area. Moose have the ability to winter in much greater snow depths than do deer or elk, plus moose are able to utilize forage of a larger diameter. Moose also are not as prone to being disturbed by human activities as are deer and elk. Moose are more willing and able to stand and even defend their turf from human disturbance than are deer and elk. These factors combined have allowed the moose population to increase. However these same factors may be the same reasons that the moose population is close to reaching its "political" capacity as calls on moose in yards, town, or on recreation trails increase and there is a greater push by some to reduce the moose population because of these conflicts.

Peregrine Falcon:

Peregrine falcons have established at least one nest site within the Gore Valley in the last decade. The nest site has been fairly well buffered from human activities that could impact its success. However the increase in hiking, biking trails along with the increasing pressure to further develop the ski area for summer recreation could impact the success of this nest.

Black Bears:

Black bears have seen an increase in their population over the last 2 decades. The development of the Gore Valley has resulted in an increase in food sources and limited the impact from fall berry crop failures on the recruitment of bear cubs. Human trash, pet food, bird feeders, and planting of fruit producing landscaping have significantly increased the available food sources for black bears especially during critical periods. Some would consider this to be a success while others would not. The increase of human induced food sources has resulted in numerous bear/human conflicts. Although the conflicts have not resulted in any serious human injuries they have resulted in the death of numerous bears over the last 20 years (this includes road kill).

Mountain Lions:

Mountain lions have seen an increase in their population levels over the last decade. As with bears part of this increase in lion population can be linked to an increase in available prey species caused by the development of the Gore Valley. The same food sources mentioned in the section on black bears play a role in providing food for lions. The populations of raccoons, red fox, marmots, and various species of small mammals have increased from this boost in food availability due to human development. Along with the increase in human population, the population of household pets (cats and dogs) has increased. Lions have utilized household pets as another food source. This has resulted in an increase in human/lion conflicts. Although the conflicts have not resulted in any serious human injuries they have resulted in the death of several lions over the last 10 years (this includes road kill).

Gore Creek:

I think you have a fairly good picture of Gore Creek from all of the recent studies the town has been doing. As a fishery the lower half of Gore Creek is holding its own and still has all four species of trout. However as the studies the done by the town on Gore Creek show the creek is in trouble and without significant improvements in the overall health of the creek the fishery could easily decline. The upper section of Gore Creek and Black Gore Creek are not doing as well and could be further impacted from proposed improvements to I-70 on Vail Pass.

The possibility of the greater impact to Gore Creek is probably more related to weather patterns and the need for additional water for human use and snowmaking. Changes in weather patterns and runoff events could easily have the most significant long term impact on the watershed. The push to increase recreational events on Gore Creek and to manipulate the stream channel to allow for additional recreation activities or to extend the season of use could all have significant impacts on the ability of Gore Creek to function as a quality fishery.

Is the Gore Valley sustainable for wildlife?

I am sure there are other species that could be discussed but the data to provide defensible comments on these species is lacking.

You first have to define what sustainable is when it comes to wildlife. Is it having a token population or is it having a robust population? Does a population in decline qualify? If the human/wildlife conflicts continue and wildlife is always the loser even on public lands is that sustainable?

I don't see the wildlife populations in the Gore Valley as sustainable with the current level of development, recreational, and conflict pressure placed on wildlife. The species that are increasing generally have adapted to living next to people. These same species also generate extensive complaints from the public about human/wildlife conflicts or damage to property. Recreation is a driving economic force in Gore Valley and the surrounding communities. Theses recreational activities occur throughout the year and there is a push to increase recreational activities within the Gore Valley. As these demands for recreational opportunities continue to grow they result in higher impacts on natural resources, and potential increases in habitat fragmentation. Quality wildlife habitat includes food, water, shelter, space, and connectivity, which is critical to maintaining healthy wildlife populations. Large blocks of contiguous habitat are most likely to promote the long-term sustainability of a species. Habitat becomes fragmented as land use changes break the landscape into smaller more distinct "patches." These patches may not provide fundamental habitat requirements resulting in a diminished carrying capacity for the species across the landscape. Wildlife living within fragmented habitat is more vulnerable to stochastic population declines stemming from disease, increased rates of predation, or habitat loss or modifications.

Most wildlife managers agree, with support from the scientific literature, that recreation has the potential to impact wildlife distribution and abundance (Goldstein et al 2010, Naylor et al. 2008, Keller and Bender 2007, Taylor and Knight 2003, Papouchis 2001, Joslin and Youmans 1999, Valdez and Krausman 1999). The "zone of influence" (ZOI) of recreational activities for wildlife may extend for some distance beyond the actual activity and will vary depending on habitat composition, topography, and a species' tolerance of human disturbance. I have attached an example of an analysis CPW did for the Town of Avon showing the impact from the development of a biking and hiking trail. Has you can see from Figure 1 the development of 3 trails in the Metcalf drainage results in the loss of the entire drainage as effective mule deer habitat with just a 100 meter buffer on the trails. When you look at Figure 3 & 4 for elk at 500 and 1500 meter buffers you see the impacted area is substantial. You could run a similar analysis on the trails within the Gore Valley.

When you review the discussion on deer, elk and bighorn sheep populations in the Gore Valley there is nothing on the horizon that is going to allow us to significantly increase those populations. These populations have been in decline for at least the last decade and often longer. The ability to do large scale habitat improvement projects for big game is becoming increasing difficult. Part of the issue is often the best habitat project is a controlled burn. As the residents in East Vail showed in the mid 1990's they have no stomach to have a controlled burn done behind their homes. The project to improve and increase the winter range for bighorn sheep was killed because they were unwilling to consider a controlled burn no matter how many fire trucks were available to protect their property in the event of the fire coming down hill.

The demand within the Gore Valley for federal lands is overwhelming, whether it is to acquire them for employee housing, develop recreational trails in every drainage, add new commercial recreational events or to develop a four season resort with every type of recreational activity imaginable. All these uses impact wildlife and there is very little thought on how it will impact the available wildlife habitat or wildlife populations. The desire to manipulate the natural conditions in order to extend the ski and rafting season has a significant impact on wildlife. As we discussed in the Avon analysis, stress and behavioral changes are often not considered when looking at wildlife impacts. Just having habitat is not enough the habitat must be available and useable for wildlife.

With the continual decline in most big game species within the Gore Valley over the last 36 years there is little reason to assume that this pattern will change to the point where you would consider these population to be sustainable and/or robust in perpetuity.

If you need anything else please feel free to let me know.

Sincerely,

Bill Andree
District Wildlife Manager - Vail