

Colorado Chapter of Backcountry Hunters & Anglers

Wild Lands and Wildlife Report GMUG National Forests

The Colorado chapter of Backcountry Hunters & Anglers (CO BHA) is one of 51 BHA chapters in the United States and Canada. Backcountry Hunters & Anglers is an organization that is focused on our public lands and waters because of the access they afford and the habitat they provide. These are the cherished wild places that restore our spirits and provide the solace of solitude. They're where we go to challenge ourselves in pursuit of adventure and game. They are strongholds of important wildlife habitat and fisheries, places where a range of species – everything from elk and mule deer to grouse, waterfowl and native trout – can grow to maturity and thrive.

The opportunities to experience the natural world made possible by our public lands are unparalleled and their importance to wildlife unequalled. Colorado has approximately 24 million acres of public lands and over 100,000 river miles. The Grand Mesa, Uncompahgre, and Gunnison (GMUG) National Forests provide essential habitat for a wide variety of wildlife and fish, and it is a National destination for hunting and fishing as well as wildlife watching. As hunters and anglers we seek opportunities to enjoy large backcountry habitats in pursuit of fish and game, as well as the solitude and challenge of experiencing large intact landscapes.

CO BHA members share a deep concern about our backcountry lands and waters. The pressures of an exploding population of public land users utilizing more capable technologies has led to significant impacts to wildlife and the habitat they depend on, as well as diminished opportunities for the public to experience truly wild places. Once finite habitat is developed, it is effectively taken out of inventory forever. With foresight and long-term vision, one can see that habitat is much harder to restore in the future than to conserve purposefully in the present.

CO BHA works to address these destructive trends in order to protect our outdoor heritage and to assure that future generations of hunters and anglers can enjoy the same genuine, backcountry opportunities we know today. We believe in managing wildlife and wild public lands as a public trust and a priceless resource. We believe in keeping undeveloped public lands truly wild and in the conservation of wildlife habitats and the species that depend on them. CO BHA uses education, advocacy and hard work to promote access to and conservation of public lands and waters, fish and wildlife habitat, the North American Model and principles of fair chase.

This report provides a landscape-level analysis of wild lands and big game habitat to identify priority areas for wildlife conservation within the GMUG National Forests. Our primary species of interest in this assessment include populations of elk, mule deer and bighorn sheep and the seasonal ranges, production areas, and the migration corridors and routes necessary to perpetuate those populations. Priority areas identified for conservation are recommended for inclusion in the Roadless and Wildlife Management Area designations in the forest plan revision. We also are recommending specific management Objectives, Guidelines, and Standards appropriate for these Management Areas and for other big game seasonal ranges, production areas and migration routes present within the GMUG National Forests.

We are committed to continuing our active engagement with the GMUG planning staff and line officers and collaborating with other interest groups to incorporate these principles in the development of the

forest plan revision. By implementing these recommendations, the GMUG can go a long way toward maintaining the wildlife and wild places so valued by its residents and visitors.

Current Status of Wild Lands

The Draft Forest Plan indicates that 46 percent of the GMUG is currently designated as Wilderness, Special Management Areas or Roadless. The Wilderness Areas within the GMUG include approximately 553,343 acres of primarily high elevation alpine habitat, and the two congressionally designated Special Management Areas include approximately 27,815 acres within the Tabeguache and Roubideau canyons of the Uncompahgre Plateau.

Existing wilderness, Special Management Areas, and CO Roadless Areas on the GMUG Forest, as well as the adjacent BLM Wilderness Study Areas and National Conservation Areas provide higher levels of protection from energy development and other resource extraction than general forest and public lands. Designated wilderness and Special Management Areas on the Forest prohibit the construction of motorized and mechanized use of roads and trails within their boundaries. These designated areas provide the foundation of our remaining wild lands and backcountry.

There is a total of 79 Roadless Areas categorized under the Colorado Roadless Act as General Roadless, North Fork Coal, and Upper Tier within the boundaries of the GMUG located in various habitats throughout the Forest. Total acres within those designated CO Roadless Areas are 901,072.

CO Roadless Areas

General Roadless	North Fork Coal	Upper Tier
827,681 acres	13,478 acres	59,913 acres
91%	1%	6%

Several management activities and uses are authorized under the provisions of the CO Roadless Act with slight variations by Roadless category for tree harvest and temporary road construction for local access to reduce fire hazard in Wildland Urban Interface, access and maintain energy and water infrastructure, and to access some coal reserves in North Fork Valley. The Act also specified under Other Activities that **“(e) Trails.** Nothing in this subpart shall affect the current or future management of motorized and non-motorized trails in Colorado Roadless Areas. Decisions concerning the management or status of motorized and non-motorized trails within Colorado Roadless Areas under this subpart shall be made during the applicable forest travel management processes. **(f) Motorized access.** Nothing in this subpart shall be construed as limiting the authority of the responsible official to approve existing and future motorized access not requiring road construction or reconstruction in Colorado Roadless Areas associated with grazing permits, special use authorizations, and other authorizations. **(g) Livestock grazing.** The authority to issue livestock grazing permits on national forest system lands within a Colorado Roadless Area is not affected by this subpart; however, no new temporary or forest roads shall be authorized through grazing permits issued after July 3, 2012”.

Under the provisions of the CO Roadless Act, the presence of permanent roads and large-scale timber harvest has been prevented. However, as demonstrated by our map and table of existing trails within Roadless Areas, the character and integrity of Roadless Areas on the GMUG Forest have been

cumulatively altered by the presence of motorized and non-motorized trails. Based on our analysis, a majority of CO Roadless areas on the GMUG currently contain established mountain bike trails, ATV and motorcycle trails, and snowmobile trail systems, particularly on the Grand Mesa, Gunnison Basin, and northwestern portion of the Uncompahgre Plateau. In many areas those trail systems have fragmented larger undisturbed landscapes, impacting big game habitats, security areas and migration corridors, and shifted their primitive character to developed recreation.

Our vision for the GMUG forest plan would include the retention and enhancement of the existing wilderness, Special Management Areas, and Colorado Roadless Areas where resource management is focused on the recovery of T&E and sensitive plants and animals, resolving conflicts between wildlife and livestock, and actively maintaining and improving habitat for wildlife and fish outside designated wilderness. Developed recreation and trails would avoid or be extremely limited in these areas to prevent habitat fragmentation and limit the degree of human disturbance to retain their primitive character. Recreation and trails development on other parts of the Forest would be based upon desired Recreation Opportunity Spectrum (ROS) designations and a landscape-scale strategy that provides for the seasonal habitat needs of wildlife and is implemented under comprehensive travel management plans.

Big Game Seasonal Habitats, Production Areas, and Migration Routes

Large scale, intact expanses of connected habitat are essential to the perpetuation of big game populations. The basic elements of habitat include forage, cover, and water within reasonable proximity, and enough space to support a viable population. Seasonal variation in forage quality and availability influence the distribution and concentration of big game, as well as their movement patterns.

Big game summer ranges support 90 percent of the population between spring green-up and the first heavy snowfall of the winter. Production areas are located within summer range or the transition ranges between winter and summer habitats. During the late winter and early spring, bighorn sheep will move to lambing grounds and give birth to their lambs. Cow elk give birth to their calves between mid-May and the end of June. Some cows seek traditional calving areas while others seek isolated habitats for calving. Mule deer tend to give birth to their fawns later in June and July on transition range between their winter and summer ranges. Between the months of June and August, animals will concentrate on summer ranges that provide high quality forage, security, and a lack of disturbance to meet the high energy demands of lactation, raising their young, antler or horn growth, and general preparation for the rigors of fall and winter.

Summer habitat is especially important for big game animals in recovering from winter weight loss, birthing and rearing of the young, antler or horn growth, building fat reserves for the coming winter, and maintaining movement and connectivity between diurnal and seasonal habitats. With regard to ungulate survival, it has been shown that reserves accumulated during summer months are critical to winter survival for deer (Parker, et al. 1999) and forage intake and nutritional quality during August and September can determine winter survival for elk calves (Cook et al. 1996). Trainer (1971) reported that relatively low rates of reproduction in elk were due to the inability of elk cows to maintain energy (fat) reserves.

Big game winter ranges support 90 percent of the population between the first heavy snowfall and spring green-up. Variations in forage quality and availability due to snowpack further concentrate big

game on lower elevation winter ranges and windswept or southern aspects. During this time ungulates need to minimize energy expenditure to enable survival when forage is scarce and lower in quality. Big game animals are highly vulnerable to stress and disturbance during the winter and early spring when they have limited energy reserves and are struggling to maintain body condition.

Management and research have shown that winter range quality and quantity is one of the primary limiting factors for big game population performance (CPW 2020). Severe winter events over the past several decades have had significant impacts on big game populations. Human recreation and development, which are occurring at unprecedented levels in Colorado, increasingly overlap with, fragment and impact big game seasonal habitats. Limiting seasonal recreational activities to mitigate impacts to big game while they are on their seasonal ranges or production areas has been a standard best management practice on public lands that must continue to be effectively implemented.

Maintaining connectivity and migration routes between seasonal habitats as well as the areas that serve as stopover or recovery habitat during migration is essential for conserving wildlife populations into the future. Wildlife migration corridors and patterns are important linkages between at least two significant habitat areas, enabling migration and breeding opportunities. Wildlife corridors and routes come in different shapes and sizes and can consist of existing and intact swaths of habitat, or relatively undisturbed landscapes.

Big game habitats and movement patterns have been identified and mapped by Colorado Parks and Wildlife (CPW) under their Species Activity Mapping (SAM) program. The process involves capturing the knowledge and experience of State and federal agency field personnel for wildlife populations in the areas they work. This mapping process was initiated in the 1980s and is updated every four years to reflect the most current information based on field experience, observations and knowledge of animal movements and locations. The decades of expert, on-the-ground knowledge contributed by CPW field personnel is invaluable. This institutional knowledge is augmented with other data such as annual winter classification flight data locations and radio/GPS collar data from various studies. Collar data is displayed with the current mapped seasonal ranges to verify, edit and update the SAM maps. The criteria used to define big game seasonal ranges, production areas, migration routes and corridors for elk, mule deer, and bighorn sheep are located in Appendix A.

Recreation Effects to Wildlife Habitat and Populations

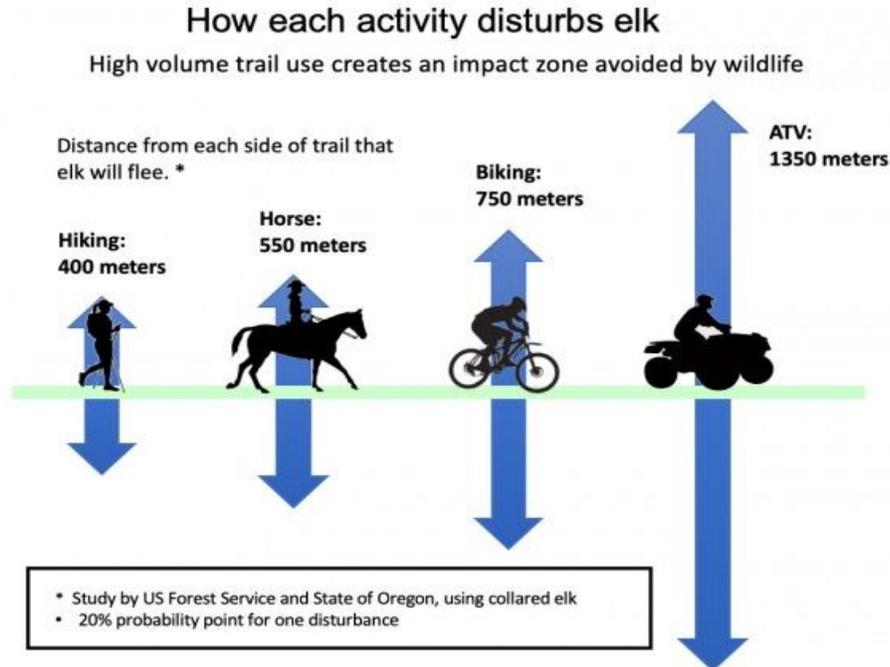
Wildlife habitat capability is analogous to the theoretical carrying capacity of a landscape and is dependent upon the presence of sufficient elements of forage, cover, water, space, and their arrangement on the landscape to support a viable population of wildlife. However, depending on the level of human-caused disturbance, not all available habitats will be utilized. Habitat effectiveness is a measure of the degree to which those elements of habitat are free from human-caused disturbances, and therefore attractive to wildlife use.

The ecological impacts from roads and trails are well documented in the literature (Trombulak et al 2000, Hebblewhite 2008). The construction and maintenance of roads and trails results in a direct loss and degradation of wildlife habitat capability caused by the removal of vegetation and fragmentation of large blocks of continuous habitat or by inhibiting wildlife movement, as well as through the behavioral avoidance (indirect impacts) by wildlife (Sawyer et al 2017).

Habitat effectiveness is a result of how big game responds to recreation activities on roads and trails. Contrary to popular opinion, elk and deer generally do not habituate to hiking or mountain biking (Wisdom et al 2004, Wisdom 2018, Taylor and Knight 2003, Naylor et al. 2009). Impacts to wildlife from trail use are often negative and are associated with increased direct disturbance and displacement from optimal habitat (Larson et al 2016). Avoidance of recreationalists effectively decreases the habitat capability or carrying capacity of an area (Taylor and Knight 2003). The location of recreation activities has a significant effect on the magnitude of the impact. For big game, the greatest impact occurs when those activities occur within seasonal concentration areas and production areas, as well as the migration corridors and routes connecting those areas.

Elk

The effects of roads, trails and recreational activities on elk have been extensively studied and well documented beginning with Perry, C., and R. Overly 1977, Lyon, L. J. 1979, and others. Those and subsequent studies have clearly demonstrated that elk will avoid roads and trails and human activities associated with them. Wisdom et al 2018 reported that over 30 studies from the past five decades have reported displacement distances from motorized travel on forest roads 0.5-1.5km (2018). Elk responded to increasing road and trail activity, avoiding areas 51-400m from trails when trail activity reached 1-2 users/hr; which increased to 401-800m when trail activity reached ~12 users/hr (Rogala et al 2011). Key findings from studies on elk responses to recreation found that elk avoided people and trails associated with ATV use, mountain biking, hiking, and horseback riding (Wisdom and Johnson 2019). Avoidance was strongest in response to ATV use, followed by mountain biking, and was less strong in response to hiking and horseback riding.



They also found that in response to these recreation activities, elk moved to areas where they were less likely to encounter recreationists. Elk stayed hidden from human view as part of their avoidance behavior. Extensive forest thinning increased the field of view and, therefore, the distances elk

maintained from recreationists. Increased movement and flight added energetic costs and decreased foraging times which can affect animal health and diminish their ability to reproduce.

A variety of research has demonstrated this phenomenon and the need to provide security areas for elk on public lands to ensure reasonable elk survival and hunting opportunity. A security area, according to the best available literature, is any area that will hold elk during periods of stress – no matter how temporary – because of geography, topography, vegetation, or a combination of those features. Hills et al. (1991) recommended elk security areas should be a nonlinear block of hiding cover greater than 250 acres in size and greater than ½ mile from any open road. Collectively these blocks must equal 30 percent of the analysis unit. Recent research by Ranglack et al. (2017) recommended even larger security areas on public lands with high hunting pressure if the goal was to maintain or increase elk populations and hunter opportunity. Their recommendations include managing for areas with ≥ 13 percent canopy cover that are ≥ 0.57 mi from motorized routes, and identifying and managing for areas of high nutritional resources within these areas to create security areas on public lands during archery season. During the rifle season, they recommend managing for areas with ≥ 9 percent canopy cover that are ≥ 0.31 mi from motorized routes, and are $\geq 5,000$ ac. Lastly, given increased elk avoidance of motorized routes with higher hunter effort, they recommend that to maintain elk on public lands, managers consider increasing the amount of security in areas that receive high hunter effort, or hunting seasons that limit hunter effort in areas of high motorized route densities.

Several studies have confirmed that human disturbance causes elevated heart rates in elk, resulting in increased energy expenditure (Ward and Cupal 1979, Lieb 1981, Chabot 1991). Human disturbances on big game winter range from recreation, including hiking, snowshoeing, snow/fat biking, skiing and snowmobiling, cause changes in elk behavior by causing them to flee and altering their feeding, resting and travel patterns. When an elk is disturbed, it foregoes foraging in favor of hiding until the disturbance has ended. Elk that are disturbed frequently will waste much needed energy resources and lose critical foraging time, resulting in lower food intake and higher energy expenditure (Naylor et al 2009). Elk that are disturbed repeatedly can be displaced into areas of lower quality habitat (Cassirer et al 1992) or adjacent private lands.

Mule Deer

In contrast to elk, mule deer showed less measurable response to various recreational trail (off-road) use (Wisdom et al. 2004). Movement response increased slightly during periods of all four off-road activities except ATV riding. Deer may well be responding to human activity on trails with fine-scale changes in habitat use rather than substantial increases in movement rates and flight responses. For example, it is possible that deer may respond to that activity by seeking dense cover, rather than running from the activity. If mule deer are spending more time in dense cover, in reaction to any of the off-road activities, this could result in reduced foraging opportunities and a subsequent reduction in opportunities to put on fat reserves during summer that are needed for winter survival.

The amount of activity on roads as measured by the number of vehicle passes per day resulted in greater displacement distances from roads for mule deer (Sawyer et al 2009). As few as two to six vehicle passes per day resulted in an observed average displacement distance of 2.61km (1.61mi). Sawyer's study reported 6 to 12 and 86 to 90 vehicle passes per day resulted in mule deer displacement distance from roads at an average of 4.30 and 7.79 km respectively. Sawyer concluded that displacement of mule deer may be reduced by achieving a reduction in daily traffic volume.

Winter range forage and habitat for mule deer is becoming increasingly limited in Colorado and has decreased over time due to residential development, livestock grazing, and recreation. Mule deer are highly vulnerable to stress and recreational disturbance during the winter and early spring when they have limited energy reserves and are struggling to maintain body condition (Thompson and Henderson 1998). Ungulates need to minimize energy expenditure to enable survival during this time when food is scarce and lower in quality (Moen 1978).

Bighorn Sheep

Bighorn sheep inhabit alpine habitats and exhibit behavior patterns that are extremely rigid and ritualized, and are essential to population persistence (Geist 1971). Studies suggest that bighorns do not adjust well to disruptions of these patterns; consequently anthropogenic (human) disturbance may contribute to population declines (Geist 1971, Krausman 1983, Krausman et al. 1995, Weidmann and Bleich 2014).

Bighorn sheep are highly sensitive to disturbance by hikers, particularly during spring and summer (Dunaway 1971, King 1985, Papouchis et al. 2001). Bighorns are also sensitive to vehicle disturbance, showing increased heart rates at close ranges to vehicles and roads (MacArthur 1979) and avoiding high use road corridors despite the availability of potential suitable habitat (Papouchis 2001). Bighorn sheep use of mineral licks by both individuals and groups is negatively affected by human and road-related disturbance (Keller and Bender 2007).

Bighorn sheep spend significantly less time grazing, more time scanning and congregate in smaller group sizes in areas of high human use (Sproat 2012). Rams are generally more sensitive to disturbance in autumn during the mating season, and females flee at greater distances in spring during lambing season (Papouchis 2001). Spring harassment can be particularly harmful to pregnant or lactating ewes in terms of energy costs, as rapid growth by lambs and lactation by ewes demand high amounts of energy (Moen 1981). Both fidelity to historic lambing areas and formation of nursery bands with exposed, precocial offspring, make bighorn sheep particularly vulnerable to disturbance near lambing areas (Beecham 2007), where moderate to high levels of human recreation activity may exclude bighorn females from their preferred habitat (Longshore et al 2013) during critical spring months (Thompson and Longshore 2007). Recreation and human presence near lambing sites may be detrimental to bighorn populations, leading to declines in recruitment and abundance (Graham 1980, MacArthur et al. 1982, Etchberger et al. 1989, Weidmann and Bleich 2014).

Bighorn sheep avoid winter backcountry recreation routes with both low and high intensity of use, even where they overlap with high quality winter habitat. Bighorn sheep are highly sensitive to human disturbance during winter and displacement from critical winter ranges and increase daily movement rates relative to recreation when resources are limited due to snow and cold temperatures (Courtenmach 2014, Jorgenson 1988, Legg 1998). This effective loss of winter habitat could potentially lead to less available forage, reduced productivity, density-dependence effects, and demographic consequences (Beale and Monaghan 2004). Off-trail, unpredictable human activity represents a disturbance to wintering sheep through a heightened perception of predation risk (Frid and Dill 2002).

Route Density

Route density is an important consideration to maintain habitat effectiveness and use by wildlife particularly within mule deer, elk, and bighorn sheep habitats. When route densities increase to the point that the predicted behavioral avoidance zone overlaps or intersects with another route, habitat effectiveness is severely reduced or eliminated, resulting in habitat compression (Wisdom and Johnson 2019). When wildlife avoids routes and recreation activities, their habitat is compressed. This is a form of habitat loss, similar to the well-documented effects of roads and traffic on elk and other wildlife. Habitat compression on public land can displace elk from seasonal concentration and production areas to less productive habitats or adjacent private lands. In many cases, trail systems on public lands are continually expanded or connected to other trails in the area with other Forest-system or user-developed trails, causing further habitat loss and degradation from increased route density.

The cumulative effects of multiple routes with intersecting and overlapping avoidance buffers can impact a substantially larger area compared with the habitat loss from direct disturbance from the miles of routes. Friair's et al 2008 research determined that road densities of less than 0.5km/km² (0.31miles/sq. mile) maintained high probability of elk occurrence, and densities of 1-1.5km/km² (0.6 – 1.0 miles/sq. mile) accounted for the biggest potential to alter elk behavior. Based on the documented displacement and avoidance buffer distances from roads and trails published in the literature, maintaining or reducing route densities to less than 1 mile per sq. mile should help to maintain habitat function (J. Holst, CPW pers. com.). The application of avoidance, minimization, and mitigation measures such as seasonal closures will be necessary to maintain habitat effectiveness as route density increases beyond this level.

Habitat Connectivity and Migration Routes

Many big game species exhibit annual migrations by moving along traditional routes between seasonal ranges, often associated with plant phenology and weather (Lendrum et al. 2014). Big game migrations consist of animals transitioning between winter and summer habitats. Big game animals typically migrate from higher elevations in the summer to lower elevations as winter approaches. In the spring, they migrate from winter range back to summer range, following the spring green up.

Colorado's big game is no exception. CPW has been observing big game migrations for decades and documenting these movement corridors and routes. Big game animals have a high degree of fidelity to these movement corridors. Wildlife professionals, through observation, research and GPS tracking of movements, continue to identify where big game migrations are occurring across the landscape.

Major highways and their associated fences, large urban and energy developments, and high-density trail systems can be impermeable movement barriers to wildlife species that desire to cross in order to access food and habitat resources. Habitat fragmentation caused by roads, trails, timber harvest or wildfires can reduce the integrity of migration routes and become semi-permeable barriers to migration. Here in Colorado, habitat fragmentation and loss threaten the well-being and even the survival of many big game populations (CPW 2020). While habitat loss refers to the simple elimination of habitat, fragmentation occurs when habitat is divided into smaller, more isolated patches. Both are the result of land-use changes and human development, and both reduce the amount of suitable area available to wildlife species, separating wildlife populations in ways that may affect the population's health, impact its genetic viability, and interrupt migration routes. Calf elk and deer fawn survival rates are directly indicative of these impacts.

Maintaining connectivity and migration routes between seasonal habitats, as well as the areas that serve as stopover or recovery habitat during migration, is essential for conserving wildlife populations into the future. Wildlife migration corridors and patterns are important linkages between at least two significant habitat areas, enabling migration, and breeding opportunities. Wildlife corridors and routes come in different shapes and sizes and can consist of existing and intact swaths of habitat or relatively undisturbed landscapes.

Big Game Production Areas and Population Trends

The impacts of recreation activity can exacerbate the long-term effects on big game population productivity. Impacts to wildlife from trail use are often negative and are associated with increased direct disturbance and displacement from optimal habitat (Larson et al 2016). Due to avoidance of human activities associated with roads and trail-based recreation, big game animals will increase their daily activity levels and movements, which reduce the time spent feeding or resting (Cuiti et al 2012, Naylor et al 2009, Wisdom et al 2004). This increased energy expenditure, decreased forage intake, and displacement to areas with poorer quality forage results in a decrease in body condition, which affects individual health, survival and reproduction (Bender et al 2008, Johnson et al 2004).

Displacement from desired habitat into areas of potentially lesser quality forage can have cumulative effects on long-term body condition (Preisler et al. 2006). Dietary protein is particularly important for maintaining body condition during winter; diets containing much less than 5 percent crude protein would fail to meet the animals' metabolic requirements for protein and result in decreased rates of carbohydrate digestion (Hobbs et al 1981). Body condition and winter weight loss by pregnant females is directly correlated with birth weight and subsequent growth (Thorne et al. 1976). Several studies show that undernutrition affects reproduction, birth mass, and survival of young, resulting in negative population trends (Thorne et al. 1976, Houston 1982, Smith and Anderson 1998, in Canfield et al. 1999). Even low levels of disturbance from human recreation have been demonstrated to negatively impact big game during winter months and decrease survival.

To manage big game populations, CPW uses a “management by objective” approach for each Data Analysis Unit (DAU). A DAU is the geographic area that represents the year-around range of a big game herd and delineates the seasonal ranges of a specific herd, while keeping interchange with adjacent herds to a minimum. A DAU includes the area where the majority of the animals in a herd complete their life cycle. Most DAUs are composed of multiple Game Management Units (GMUs), which are designed to distribute hunters within the DAU. In a few cases, only one GMU makes up a DAU.

Management of DAUs is guided by Herd Management Plans (HMPs), which contain target ranges for population size and herd composition for each population. The purpose of a HMP is to integrate CPW's management objectives with the concerns of other land management agencies and interested members of the public in determining how a big game herd in a specific geographic area (DAU) should be managed. CPW attempts to balance the biological capabilities of the herd and its habitat with public demand for wildlife recreational opportunities.

The primary metrics defined within each HMP are the desired population objective range within the DAU, and the desired sex ratio for that population (e.g., the number of males per 100 females). These numbers are referred to as the population objective and the sex ratio objective, respectively. CPW surveys big game populations in the winter, when snow concentrates animals at lower elevations. CPW

conducts aerial post-hunt herd inventories for mule deer and elk to estimate sex ratios and age ratios (young/100 females.) These ratios are utilized, along with survival rates, to estimate population sizes and trends using population models.

A review of current CPW population data (CPW 2020) and approved HMPs that include lands within the GMUG provide an indication of the current status, trend, and productivity of our big game herds. Big game Data Analysis Units and Game Management Units affected are shown on the following table.

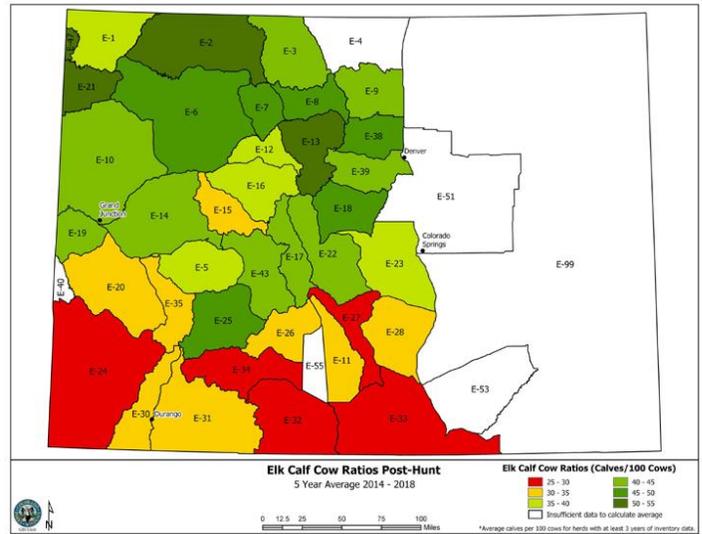
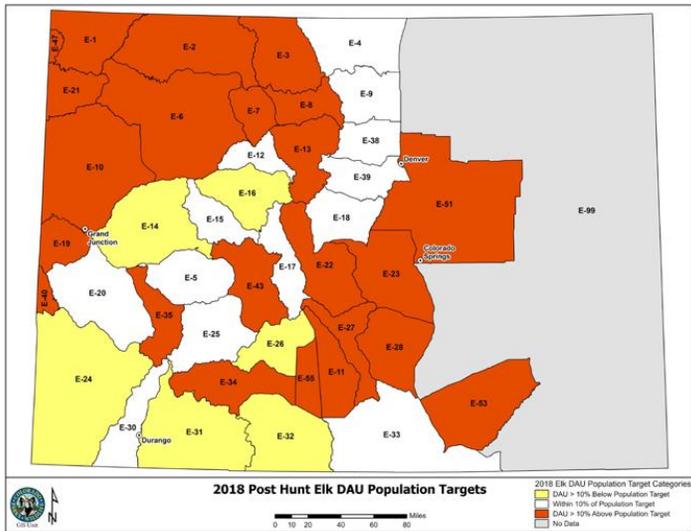
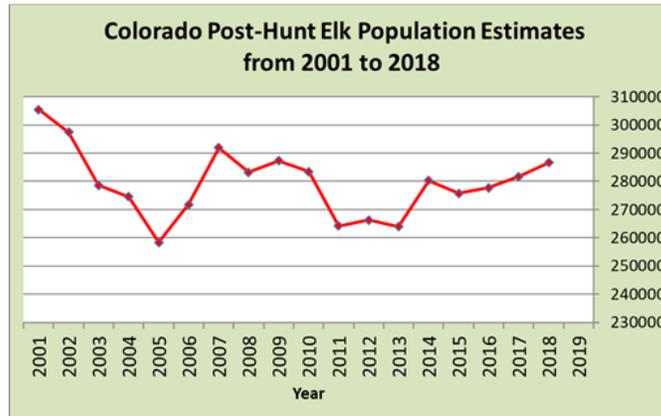
Big Game DAUs and GMUs Affected										
Mule Deer			Elk			Bighorn Sheep				
DAU Name	DAU Number	GMU	DAU Name	DAU Number	GMU	DAU Name	DAU Number	GMU		
Grand Mesa North	D-12	41	Grand Mesa	E-14	41	San Juans West	RBS-21	S-21		
		411			411			S-33		
		42			42					
South Grand Mesa	D-51	52			421	Central San Juans	RBS-22	S-22		
		411			52			S-36		
		521			521			S-52 S-53		
Glade Park	D-18	40			Glade Park	E-19	40			
North Fork	D-20	53, 63			West Elk Mountains	E-5	53, 54, 63			*
West Elk	D-21	54								
Taylor Park	D-22	55 551			Fossil Ridge	E-43	55, 551			S-13 S-25
Groundhog	D-24	70, 71, 711	Disappointment Creek	E-24	70, 71, 711, 72, 73			S-26 S-54 S-69		
Powderhorn	D-25	66, 67	Lake Fork	E-25	66, 67			S-70 S-62		
Uncompahgre Plateau	D-19	61, 62	Uncompahgre Plateau	E-20	61, 62					
Cimarron	D-40	65	Cimarron	E-35	64, 65					

*CPW has historically managed bighorn populations at the GMU level. Only 2 DAUs have been designated during the development of recent HMPs.

In the 2020 Big Game Winter Range and Migration Corridors Report published by CPW, the following graphs depict 10-year herd population trend, with maps displaying population status in relation to HMP population objectives and five-year average herd productivity for mule deer and elk.

Based on published data in this State wide report and the Herd Management Plans that have been finalized, several trends are apparent. Elk populations throughout most of Colorado are at or above HMP objectives except for those DAUs in the southern and southwest portions of the State. One of the primary indicators is poor calf/cow ratios causing declining recruitment. Ratios of calves/100 cows are

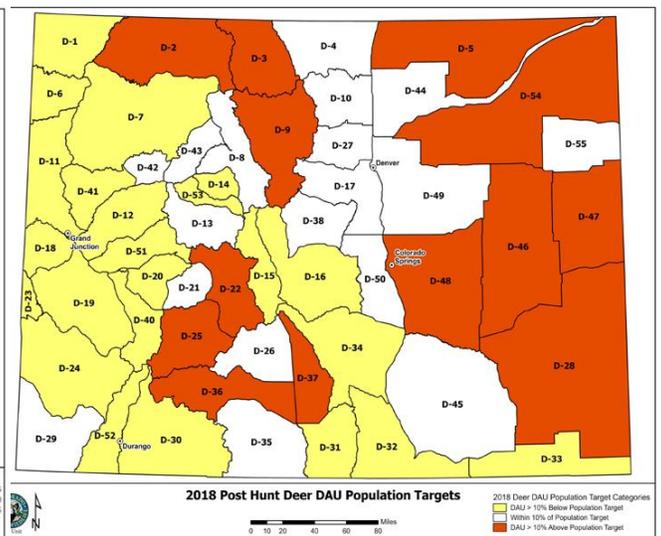
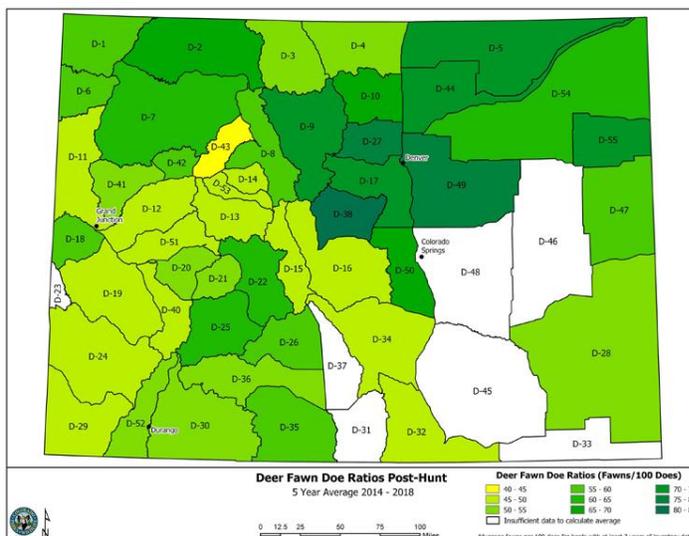
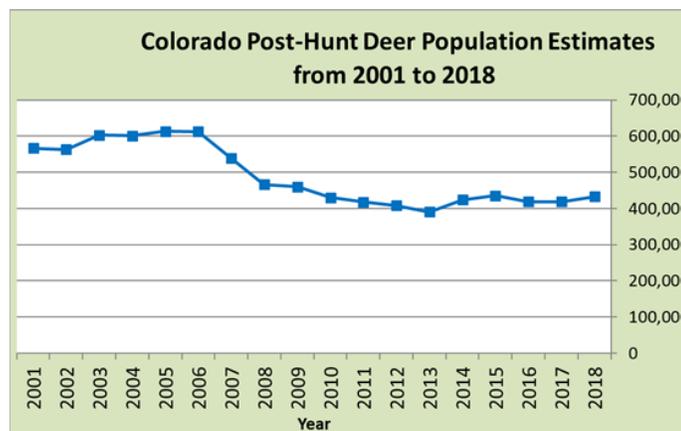
an index of annual calf production and survival to mid-winter, which is an indicator of the “fitness” of the herd. Southwest Colorado has seen some of the largest declines in calf ratios. Consequently, CPW has reduced cow elk harvest in the Southwest Region to less than half of what it was in 2004, from 9,800 in 2004 down to 4,400 in 2018. Most HMPs cite the loss of winter range to human and energy development as primary causes for this decline, as well as the exponential growth in public land recreation causing habitat fragmentation and disturbance.



DAU		Population	
		2018 Estimate Relative to HMP Objective	Calf/Cow Ratio
Grand Mesa	E-14	Below	40-45/100
Glade Park	E-19	Above	No Data
West Elk Mountains	E-5	At Objective	35-40
Fossil Ridge	E-43	Above	40-45

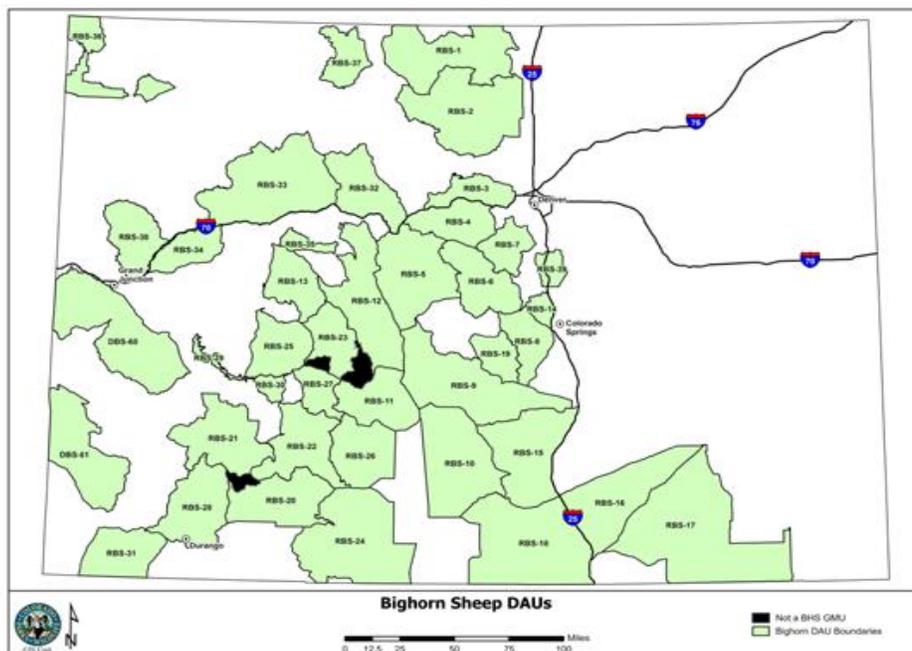
Disappointment Creek	E-24	Below	25-30
Lake Fork	E-25	At Objective	45-50
Uncompahgre Plateau	E-20	At Objective	30-35
Cimarron	E-35	Above	30-35

Mule deer herds have been declining in Western Colorado since the 1970s, as well as in other Western states. Mule deer populations face more threats than ever, including loss of habitat from development, highways bisecting migration routes, human recreational disturbance, fire suppression, competition from elk, disease, invasive weeds replacing preferred forage plants, and predation (CPW 2014). CPW intensively monitors annual adult doe survival and winter fawn survival. Ratios of fawns/100 does are an index of annual fawn production and survival to December, which is an indicator of the “fitness” of an individual herd. The ratio of mule deer fawns/100 does has been declining since the early 1970s. Anything that lowers adult doe and fawn survival will likely result in further declines in any mule deer populations that are already declining (CPW 2020).

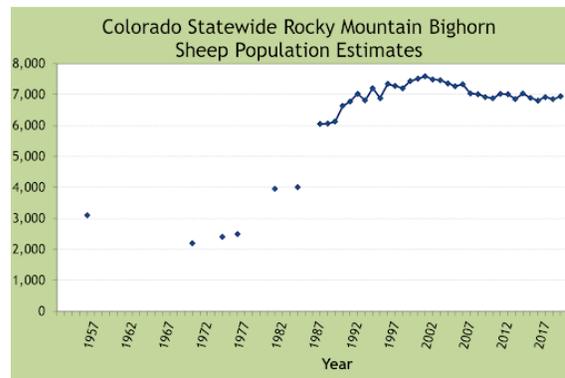


DAU	Population	2018 Estimate Relative to HMP Objective	Fawn/Doe Ratio
Grand Mesa North	D-12	Below	45-50/100
South Grand Mesa	D-51	Below	45-50
Glade Park	D-18	Below	55-60
North Fork	D-20	Below	50-55
West Elk	D-21	At Objective	50-55
Taylor Park	D-22	Above	55-60
Groundhog	D-24	Below	45-50
Powderhorn	D-25	Above	55-60
Uncompahgre Plateau	D-19	Below	45-50
Cimarron	D-40	Below	45-50

Current big game management in Colorado is based on Game Management Units (GMUs) and Data Analysis Units (DAUs). Colorado has traditionally used DAUs as the basis for managing populations of deer, elk, pronghorn, moose, bears, and mountain lions but not for managing bighorn sheep or mountain goats. Bighorn sheep and mountain goats historically have been managed on a GMU basis (CDOW 2009). Two DAU plans have been recently developed and finalized for bighorn sheep populations, which include lands within the boundaries of the GMUG. RBS – 21 includes GMU S-21 (Cow Creek) and S-33 (Lake Fork/Pole Mountain) in the Western San Juans, and RBS-22 includes GMU S-22 (San Luis Peak), S-36 (Bellows Creek), S-52 (Rock Creek), and S-53 (Bristol Head) in the Central San Juans.



Based on early accounts by trappers and explorers, Rocky Mountain bighorn sheep were common in Colorado prior to settlement in the mid-1800s. Available evidence indicates Rocky Mountain bighorns were widely distributed and occupied suitable habitat across a range of elevations throughout the state. With increased settlement and mining booms, bighorn numbers declined rapidly in the late 1800s, likely as a result of subsistence and market hunting, habitat fragmentation and conversion, and disease transmission from domestic sheep to bighorn. Concerns about declining bighorn populations resulted in bighorn sheep becoming a protected species in Colorado in 1885. They are currently listed as a sensitive species by the BLM and Forest Service. By the early 1900s, bighorn sheep in Colorado only existed in isolated, remnant populations. Many herds were subsequently extirpated or significantly reduced in numbers and then supplemented with transplanted bighorns from other herds to reestablish and increase remaining populations. The result has been an overall increase in bighorn populations in Colorado since those efforts began.



The wild sheep population in RBS-21 is native (Tier 1 Status) to this region, and one of the few remaining indigenous herds in the State. Over the last 100-125 years, this population likely has been reduced significantly and it is probable that many sub-herds were extirpated. Early population estimates for the Ouray-Cow Creek herd (S-21) were summarized by Wallace (1940) and Bear and Jones (1970) that go back as far as 1921 when “1000 mountain sheep” were believed to live in the “Ouray District.” This estimate was used until 1923 when the herd started to show signs of a severe decline that was attributed to a loss of winter range due to mining and housing development, as well as to disease associated with domestic livestock. Comprehensive population estimates are lacking in agency records; however, in 1956, there was reported to be approximately 140 sheep in S-21 (Moser 1962). By the late 1970s and early 1980s the Ouray herd was estimated to be between 150 and 200 animals. By 1983, another noticeable decline in lamb recruitment and population size occurred. Lungworm and pneumonia were speculated to be the primary factors for that decline. By 1987, the population was estimated at only 40 animals, but by the mid-1990s the population appeared to have increased to an estimated 80 with an increasing trend. The post-hunt population estimate for S-21 in 2010 was 150. Based on recent aerial surveys the S-21 population is probably closer to 250-300 bighorns (CPW 2012).

Bear and Jones (1973) provide crude survey information for S-33 that dates back to the 1940s. Wallace (1940) reported that the pre-1940s bighorn population on Pole Creek Mountain may have been as high as 150 animals. However, in 1969, a ground survey yielded only 4 ewes, 3 lambs and 1 yearling on the southeast side of Pole Creek Mountain. In 1971, an estimated 70 sheep were reported in the Lake Fork and Henson Creek drainages. Assuming Wallace’s (1940) estimates are accurate one might conclude that there were hundreds of wild sheep occupying what is now S-33 during the mid-twentieth century. A paucity of population data exists between the 1940’s and the 1980’s, but apparently the population had

declined during that time. In the late 1980s, wildlife managers estimated the S-33 bighorn population at 60 animals. An apparent disease related die-off took place in 1989, further reducing the population, and from 1990 through 2003 the population was estimated at 20-25 animals. A noticeable increase in the population began to occur around 2004, at which point an estimated 60 animals were thought to reside in the unit. Based on more recent aerial survey information, the population estimate for S-33 was increased to 90 animals in 2006, and again to 150 animals in 2010 (CPW 2012).

Bighorn sheep in RBS-21 continue to be threatened by loss of winter habitat resulting from human development and activity, competition for prime habitats with domestic livestock, and mortality resulting from disease(s) and parasites introduced by domestic livestock (CPW 2012). Burgeoning recreational use in this unit is of concern, especially where it coincides with limited winter range and lambing grounds.

The bighorn sheep population within RBS-22 is indigenous to the area; however, the current population size is likely well below what it was historically. As a supplemented native population, RBS-22 meets the criteria for Tier 2 designation. Wildlife managers continue to consider this DAU a regional priority for several reasons: (1) The S-22 sub-herd is native, was historically one of the most prolific sheep herds in the state and has never specifically been the focus of transplant efforts. Transplanted animals have made their way into the GMU through association with native sheep, but the core S-22 herd has remained relatively "pure." (2) Records indicate that bighorn sheep were native to the other three GMUs in this DAU, and transplants were the only viable method of reintroducing animals to their historic range following extirpation (CPW 2013).

RBS-22 contains great expanses of suitable habitat that likely supported a much larger herd of wild sheep prior to European settlement. Though poorly documented, most accounts suggest that historically one population of bighorn sheep inhabited an overall range that included GMUs S-22, S-36, S-52 and S-53. The northern reaches of this DAU (i.e., S-52) would have provided excellent winter range habitat for bighorn sheep migrating from higher elevations; the same is true of the southern reaches between Creede and South Fork. The greater La Garita/San Juan region includes some of the most productive bighorn habitats in the state, and it is logical to assume that bighorn populations were connected historically at a much grander scale.

Population estimates have been inconsistently reported over time and have varied from a high of 380 in 1988 to a low near 100 animals in 2001. The trend for the overall RBS-22 population has been stable to decreasing over the last five years due to poor lamb recruitment. The DAU contains large expanses of suitable habitat that should be capable of supporting a considerably larger population of wild sheep. In this DAU, bighorns inhabit a variety of habitat types, from high elevation alpine ecosystems to lower elevation aspen/mixed conifer/fescue communities. For some sheep groups, altitudinal migrations occur in response to snow accumulation and forage availability, while other sheep spend the majority of the year at high or low elevations without noteworthy migrations.

The RBS-22 Bighorn Sheep Management Plan thoroughly documents the occurrence of large-scale die offs of bighorn sheep due to disease transmission from domestic sheep to bighorn. Population declines documented historically in RBS-22 have been attributed to respiratory disease. In 1989-1990, the S-52 sub-herd suffered an all age-class die-off that nearly extirpated the population. Though poorly documented, it was believed that this die-off may have extended into the S-22 population as well. The S-52 population never recovered following this die-off, and despite transplant efforts in 2002, the herd still appears plagued by disease issues and is declining. An epizootic occurred in S-36 four years after the

S-52 occurrence. In 1993, substantial bighorn mortality was observed in S-36 due to *Pasteurella hemolytica* induced pneumonia. A second, all-age class mortality event occurred in the early 2000s, which was followed by depressed lamb recruitment. Presently S-36 appears to be slowly recovering from the disease onset nearly 20 years ago, although lamb:ewe ratios remain below optimal levels for population growth.

Additional threats identified the concern with escalating recreation use on winter range and lambing areas. Increasing human activity may perpetuate high densities of bighorn in areas where they seek refuge from disturbance. Several specific recreational activities and geographic areas are of concern to wildlife managers in this unit. San Luis Peak is one example. San Luis is 14,014 feet in elevation, drawing the attention of recreationists interesting in climbing peaks over 14,000 feet. Hikers access the peak from several areas, but the Stewart Creek trail likely receives the most concentrated use. Longtime residents of the Gunnison Valley have sometimes described San Luis Peak as an “ant-hill” when explaining the level of bighorn sheep use that used to occur there (i.e., many bighorns could be seen on San Luis Peak on any given day). Bighorn still may be found on San Luis Peak, but it is typically few animals, low on the west side where hiker pressure is less. Other nearby areas such as Organ Mountain and Stewart Creek proper are historically important bighorn habitats; Organ Mountain continues to be one of the most noteworthy lambing and nursery areas in S-22.

Growing use of the Colorado Trail through the La Garita Mountains is also of concern to wildlife managers. Anecdotal reports over time suggest that big game use in general is declining in the headwaters of drainages throughout the La Garitas. Some folks attribute these declines to increasing levels of use of the Colorado Trail. Big game animals, including bighorn sheep, rely on access to the highest quality forage throughout the growing season. During the spring and summer, these animals follow the “green-line” to higher elevations in step with plant phenology in order to capitalize on the most highly digestible and nutritious forage possible. Subalpine and alpine vegetation is integral for building winter fat reserves for migratory big game. Limiting access to these habitats, through displacement by human recreation or other land uses, will be detrimental to big game populations over time (CPW 2013).

Big Game Habitat Integrity and Connectivity

Colorado’s human population is currently around 5.7 million people and is projected to reach nearly 8.5 million people by 2050, according to the Colorado’s State Demography Office (CDOLA, 2018). Although the majority of growth will occur on the Front Range and existing urban areas, growth will likely continue in many counties across the state. The most growth outside of the Front Range will probably include counties along the western I-70 corridor and in the southwest corner of the state (CDOLA, 2016). The primary threats associated with a growing human population include habitat loss, degradation and fragmentation caused by increasing residential and commercial development, recreation activities, and road density (CPW 2020). There is a finite amount of available land to accommodate a growing human population, housing needs, increasing visitors and recreation while also maintaining healthy and sustainable big game habitats and populations.

Our analysis affirms the greatest impacts to big game habitats and movement are associated with the larger urban areas, mountain resorts, and towns surrounding the GMUG that are experiencing the most widespread and intensive development. Associated with those population centers and resort communities are continually expanding networks of recreational trails on BLM and National Forest

lands, particularly within areas mapped as elk and mule deer winter range, winter concentration areas, severe winter range, and the migration corridors and routes that are used to migrate to summer ranges. This trend in recreational trail development has further expanded into elk, mule deer, and bighorn sheep summer range, summer concentration, and production areas on the GMUG and adjacent National Forests.

Both the BLM and Forest Service have instituted seasonal closures within some big game seasonal ranges to mitigate the effects of disturbance to wildlife from trails-based recreation. Unfortunately compliance with those seasonal restrictions is often poor due to the lack of agency presence to enforce those regulations. The seasonal closures may also be directed at one or more types of recreation, such as mountain biking, which does not prevent other uses such as hiking, dogs off-leash, cross-country skiing, snowshoeing, etc. It is also common to see mountain bike trails being constructed without agency approval (referred to as social trails) to expand or connect approved trail systems, as well as trails constructed in entirely new locations without any agency review or approval.

The public lands and waters within and adjacent to the GMUG provide an essential role in maintaining large, uninterrupted blocks of connected habitat and stream networks that are crucial to perpetuating our populations of wildlife and fish. However, the increasing trend in recreational development and use on the GMUG and BLM public lands is cumulatively impacting wildlife habitat integrity and connectivity and contributing to declines in our big game populations. This same trend in recreational development is having significant impacts upon the ability to sustain our hunting opportunities and the economic benefits to our local communities.

Priority Landscapes Recommended for Wildlife Management Area (WMA) Designation

The preliminary draft of the GMUG forest plan includes several resource Management Area designations that emphasize different resource uses and activities within the General Forest framework. Some Management Areas would provide various levels of land protection and/or conservation but do not necessarily consider or emphasize their values for wildlife habitat and sustainable hunting opportunities. The lands proposed for additional wilderness would provide protection of these values but also require an act of Congress to be officially designated. The lands included in the Colorado Roadless Act continue to be subject to more trail development and degradation of those values without additional management standards and guidelines to retain or enhance those values.

CO BHA believes it is urgent to address the cumulative impacts of recreation and purposely direct management toward the conservation of our remaining wild lands and wildlife habitat within the areas we have identified as Wildlife Management Areas (WMAs). We believe this is necessary in order to retain habitat integrity and connectivity within the GMUG and the adjacent public lands that is essential to perpetuating our wildlife populations. Not doing so now will only preclude the opportunity for us and the next generations to implement those actions in the future.

The Preliminary Draft of the GMUG Forest Plan included a description of the Forest-Wide Desired Condition for Big Game (FW-DC-SPEC-14). That description, with our suggested modifications highlighted in the original text is as follows: “Relatively undisturbed areas provide habitat blocks **well represented throughout the Forest that provide functional security areas with abundant forage and cover** for populations of big game and other species. **Habitat blocks and their associated** migration and

movement corridors are **avoided by roads and trails** and provide **effective** cover to allow for relatively unabated movement of big game species across the landscape. See also Chapter 3, Wildlife Management Area section, Ecosystems FW-DC ECO-06, and Native Species Diversity FW-OBJ-SPEC-03”.

In addition, the Preliminary Draft included the following Desired Condition for Wildlife Management Areas (MA-3.2): MA-DC-WLDF-01: Large blocks of diverse habitat are relatively undisturbed by routes, providing security for the life history, distribution, and movement of many species, including big-game species. Habitat connectivity is maintained or improved as fragmentation by routes is reduced. See also Native Species Diversity FW-OBJ-SPEC-03.

In order to achieve both of these Desired Conditions we utilized Arc GIS to spatially evaluate the relationships between existing roads and trails and big game seasonal habitats, production areas, and migration corridors on the GMUG and adjacent BLM public lands. As a stakeholder in the Gunnison Public Lands Initiative (GPLI), CO BHA endorses GPLI management consensus recommendations within Gunnison County. We believe these recommended management area designations including Wilderness additions and Special Management Areas will provide important gains in protection of our wild lands and wildlife habitats. We fully endorse the Wildlife Management Area recommendations submitted by Colorado Parks and Wildlife in 2019 with suggested boundary adjustments and additions where no overlap with GPLI consensus recommendations occur. Where overlap does occur we believe GPLI recommendations will provide important gains in wildlife protection consistent with CPW WMA recommendations and direct recreation use to limit wildlife impacts more broadly throughout the planning area within Gunnison County. In addition to endorsing CPW WMA recommendations and GPLI consensus recommendations as described above, we have identified 15 more WMAs based upon our analysis of big game habitat and backcountry hunting values, as well as current Forest and BLM travel management plans that we are recommending.

We are providing a map of the Suggested Wildlife Management Areas that depicts recommendations from GPLI, CPW, and BHA. Basic information and rationale for the WMA recommendations are summarized in the table of BHA Wildlife Management Areas.

Recommended Management Objectives, Guidelines, Standards

Forest Wide Direction

Forest Wide direction applies to all public lands within the boundaries of the GMUG.

General Species Diversity:

- FW-OBJ-SPEC-03. The objective includes suggested actions to achieve habitat restoration or enhancement for native species. Two actions that need to be included in this Objective are recreational development and transportation/travel management. Both of these actions have significant effects on habitat capability and effectiveness.

- FW-STND-SPEC-00. Roads and trails will be designed and located to minimize fragmentation of seasonal wildlife habitats and production areas, and prevent any alignment with migration routes and corridors.
- FW-STND-SPEC-00. Open road and trail densities and human activities will be reduced and/or seasonally restricted in areas where they are causing wildlife habitat fragmentation and displacement of big game from preferred habitats and seasonal concentration areas.

Big Game Species:

Suggested modifications to the Desired Condition for Big Game Species is highlighted in the original text:

- FW-DC-SPEC-14: “Relatively undisturbed areas provide habitat blocks **well represented throughout the Forest that provide functional security areas with abundant forage and cover** for populations of big game and other species. **Habitat blocks and their associated** migration and movement corridors are **avoided by roads and trails and** provide **effective** cover to allow for relatively unabated movement of big game species across the landscape. See also Chapter 3, Wildlife Management Area section, Ecosystems FW-DC ECO-06, and Native Species Diversity FW-OBJ-SPEC-03”.
- FW-OBJ-SPEC-00: A complementary objective for this component of the plan would be to “encourage big game animals to utilize preferred habitats and seasonal concentration areas on public lands.”
 - The supporting Guideline from the Draft Forest Plan would be FW-GDL-SPEC-18: To improve elk distribution, 30–100% of a sub-watershed should provide wildlife security habitat (patches of >250 acres).

The Desired Conditions and Guidelines need to be further supported by the following Standards and Guidelines:

- FW-GDL-SPEC-00. Develop landscape-level mapping to identify priority blocks of seasonal habitats, production areas and the migration corridors necessary to connect them.
- FW-GDL-SPEC-00. Initiate projects to restore and enhance habitat conditions within the priority habitat blocks and migration corridors identified.
- FW-GDL-SPEC-00. Prevent permanent road construction and recreational trail development within priority blocks and migration corridors.
- FW-STND-SPEC-00: Vegetation treatments on big game winter range will promote and maintain early seral conditions.
- FW-STND-SPEC-00: Open road and trail density will be minimized and seasonal restrictions on public access and activities will be utilized to prevent disturbance to big game on seasonal concentration and production areas. See also FW-STD-SPEC-17.
- FW-STND-SPEC-00: Vegetation treatments on big game summer range will provide diverse mosaics of cover and forage, with a majority of the area in cover.

Other modifications and additions include the following:

- FW-GDL-SPEC-17: Should be a Standard. Seasonal restrictions on activities in big game production areas and winter ranges are effective mitigation measures and have been standard operating procedure on the GMUG. The seasonal restrictions must also be a Forest-wide Standard that applies to all activities, including recreation activities.
 - Big Game Winter Range – No activities between Dec. 1 and May 1.
 - Elk Calving Areas – No activities between May 15 and July 1.
 - Bighorn Sheep Lambing Areas – No activities from May 1 to June 30 for Rocky Mountain bighorn sheep and Feb. 28 to May 1 for desert bighorn sheep.

Recreation:

The preliminary draft includes two Desired Conditions for recreation on the GMUG along with supporting Objectives, Guidelines, and Standards. In addition, the GMUG is proposing its “Desired ROS (Recreation Opportunity Spectrum) for winter and summer” in map form.

In general, we think there are other Desired Conditions for recreation that would improve integration with other activities and uses while preventing impacts to other resources on the Forest, and the Desired ROS is weighted too heavily on Semi-primitive motorized and Semi-primitive non-motorized recreation and should have more Primitive recreation designated outside established wilderness.

- FW-DC-REC-00: Recreation is integrated with other resource values and multiple uses of the Forest. Trail development avoids lands identified as Colorado Roadless Areas, big game seasonal concentration areas, production areas and migration corridors, and is limited within Primitive and Semi-Primitive ROS settings.
- FW-GDL-REC-00: Trail development is concentrated in areas close to communities where open road and trail densities and human activities are already high. Development of travel management plans are based upon landscape-scale strategy that provides for the retention and enhancement of large blocks of intact landscapes that provide for the seasonal habitat needs and wildlife movement.
 - FW-STND-REC-00: Trail development is emphasized in Rural, Roaded Natural and Rural ROS settings as well as High-use Recreation Management Areas (MA4.2) and Mountain Resorts (MA4.1).
 - FW-STND-REC-00: Open road and trail density and designated recreational use within Semi-Primitive Motorized and Non-motorized ROS settings will be based on the best available science and implemented through site-specific travel management plans.
 - FW-STND-REC-00: All classes of electric-assist bicycles (e-bikes) will be authorized on open roads and motorized trails only.
 - FW-STND-REC-00: Colorado Roadless Areas (MA3.1) and Wildlife Management Areas (MA3.2) will have minimal trail development or be managed for Primitive ROS.
 - FW-STND-REC-00: Minimize trail development and designate snowmobile routes within big game winter range. Utilize seasonal area closures to mitigate disturbance from winter recreation activities.

Management Area Direction

Management Area direction is specific to the areas designated as such within the Forest Plan and is in addition to Forest Wide direction.

Wilderness and Areas where Natural Processes Dominate (MA 1)

We agree entirely with the stated Desired Conditions, Objectives, Standards and Guidelines for Wilderness and Areas where Natural Processes Dominate (MA 1). These areas are the gold standard for fish and wildlife habitat and backcountry hunting and fishing opportunities. These designated and potential wild lands must retain their wilderness character for us and future generations.

Recommended Wilderness (MA 1.2)

The preliminary draft includes approximately 22,400 acres recommended for wilderness across the entire GMUG, all of it in areas contained within the San Juan Wilderness Bill. While we enthusiastically endorse this wilderness bill, the preliminary draft ignores tens of thousands of acres that were recommended by the GMUG in 2006 in the last public revision process, as well as endeavors such as the Community Conservation Proposal and the Gunnison Public Lands Initiative.

We provided specific comments on the Wilderness Evaluation to the GMUG planning team in September of 2018. Members of BHA have been actively involved in community-based initiatives and continue to advocate for additional land conservation and wilderness designation. Some of the Wildlife Management Areas recommended by us or the CPW may coincide with lands retaining their wilderness character.

Colorado Roadless Areas (MA 3.1)

As stated in the preliminary draft, "Management within Colorado Roadless Areas will be consistent with the Colorado Roadless Rule, 36 CFR 294 Subpart D - Colorado Roadless Area Management." The preliminary draft includes one Desired Condition (MA-DC-CRA-01) for Colorado Roadless Areas but no supporting Objectives, Standards or Guidelines other than referencing the final rule. It is vitally important to reflect the provisions of the final rule in accompanying plan direction and to include additional direction to meet the other resource values and objectives specific to the GMUG.

We suggest the following additions:

- MA-OBJ-CRA-00: Tree harvest and permanent road construction are prohibited within Colorado Roadless Areas except for local access or management provisions in the final rule:
 - to reduce fire hazard in WUI;
 - to access and maintain energy and water infrastructure;
 - to access some coal reserves in North Fork Valley.

- MA-OBJ-CRA-00: Colorado Roadless Areas are integrated with Desired Conditions for Ecosystem Integrity, Species Diversity, and Wildlife Management Areas.
 - MA-STND-CRA-00: Colorado Roadless Areas are prioritized for retention of key ecosystem characteristics and functional terrestrial habitats.
 - MA-STND-CRA-00: Colorado Roadless Areas are highlighted for retention of core wildlife habitats and big game seasonal habitats, production areas and migration corridors.

- MA-STND-CRA-00: New recreational trail development will avoid Colorado Roadless Areas to improve habitat effectiveness and be managed for Primitive ROS.
- MA-STND-CRA-00: Existing trail density within Colorado Roadless Areas (MA3.1) will not be expanded or be reduced to maintain Roadless area qualities and solitude.

Wildlife Management Area (MA 3.2)

The draft plan includes the following Desired Condition:

- MA-DC-WLDF-01: Large blocks of diverse habitat are relatively undisturbed by routes, providing security for the life history, distribution, and movement of many species, including big-game species. Habitat connectivity is maintained or improved as fragmentation by routes is reduced. See also Native Species Diversity FW-OBJ-SPEC-03.

This Desired Condition should be supplemented or replaced by the Forest-Wide Desired Condition we have recommended for Big Game, as modified:

- FW-DC-SPEC-14: Relatively undisturbed areas provide habitat blocks **well represented throughout the Forest that provide functional security areas with abundant forage and cover** for populations of big game and other species. **Habitat blocks and their associated** migration and movement corridors are **avoided by roads and trails and** provide **effective** cover to allow for relatively unabated movement of big game species across the landscape.

The draft plan includes the following Standard:

- MA-STND-WLDF-02: To provide security habitat for wildlife species by minimizing impacts associated with roads and trails, there shall be no net gain in system routes, both motorized and non-motorized, where areas are already in exceedance of the 1 mile per square mile limit as calculated within this management area boundary. Within the Flattops Wildlife Management Area on the Gunnison Ranger District, there shall be no new trail development. Exception: This does not apply to administrative routes.

The concept of no net gain in system routes (defined as the combination of all system roads and trails), with an objective of 1 mile per section, is an adequate Standard where open road and trail density is at or below that objective, but not where it already exceeds 1 mile per section. We believe this is more appropriate as an objective rather than a standard, and we include additional standards as follows:

- MA-STND-WLDF-00: Route decommissioning and seasonal route and area closures will be utilized to reduce habitat fragmentation and disturbance where route density exceeds 1 mile per section.
- MA-STND-WLDF-00: Roads and trails will be designed and located to minimize fragmentation of seasonal wildlife habitats and production areas, and prevent any alignment with migration routes and corridors.
- MA-STND-WLDF-00: Open road and trail densities and human activities will be reduced in areas where they are causing wildlife habitat fragmentation and displacement of big game from seasonal concentration areas and production areas.

- MA-STND-WLDF-00: Minimize trail development and designate snowmobile routes within big game winter range. Utilize seasonal route and area closures to mitigate disturbance from winter recreation activities.

Appendix A

CPW Species Activity Mapping Definitions

Elk

SUMMER RANGE: That part of the range of a species where 90% of the individuals are located between spring green-up and the first heavy snowfall, or during a site specific period of summer as defined for each DAU (Data Analysis Unit). Summer range is not necessarily exclusive of winter range; in some areas winter range and summer range may overlap.

SUMMER CONCENTRATION AREA: Those areas where elk concentrate from mid-June through mid-August. High quality forage, security, and lack of disturbance are characteristics of these areas to meet the high energy demands of lactation, calf rearing, antler growth, and general preparation for the rigors of fall and winter.

PRODUCTION AREA: That part of the overall range of elk occupied by the females from May 15 to June 15 for calving. (Only known areas are mapped and this does not include all production areas for the DAU).

WINTER RANGE: That part of the overall range of a species where 90 percent of the individuals are located during the average five winters out of ten from the first heavy snowfall to spring green-up, or during a site specific period of winter as defined for each DAU.

WINTER CONCENTRATION AREA: That part of the winter range of elk where densities are at least 200% greater than the surrounding winter range density during the average five winters out of ten from the first heavy snowfall to spring green-up, or during a site specific period of winter as defined for each Data Analysis Unit.

SEVERE WINTER RANGE: That part of the range of a species where 90 percent of the individuals are located when the annual snow pack is at its maximum and/or temperatures are at a minimum in the two worst winters out of ten. The winter of 1983-84 is a good example of a severe winter.

MIGRATION CORRIDOR: A specific mappable site through which large numbers of animals migrate and loss of which would change migration routes.

MIGRATION PATTERN: A subjective indication of the general direction of the movements of migratory ungulate herds.

Mule Deer

SUMMER RANGE: That part of the overall range where 90% of the individuals are located between spring green-up and the first heavy snowfall. Summer range is not necessarily exclusive of winter range; in some areas winter range and summer range may overlap.

CONCENTRATION AREA: That part of the overall range where higher quality habitat supports significantly higher densities than surrounding areas. These areas are typically occupied year round and are not necessarily associated with a specific season. Includes rough break country, riparian areas, small drainages, and large areas of irrigated cropland.

WINTER RANGE: That part of the overall range where 90 percent of the individuals are located during the average five winters out of ten from the first heavy snowfall to spring green-up, or during a site specific period of winter as defined for each DAU. Winter range is only delineated for migratory populations.

WINTER CONCENTRATION AREA: That part of the winter range where densities are at least 200% greater than the surrounding winter range density during the same period used to define winter range in the average five winters out of ten.

SEVERE WINTER RANGE: That part of the overall range where 90% of the individuals are located when the annual snow pack is at its maximum and/or temperatures are at a minimum in the two worst winters out of ten.

MIGRATION CORRIDOR: A specific mappable site through which large numbers of animals migrate and loss of which would change migration routes.

MIGRATION PATTERN: A subjective indication of the general direction of the movements of migratory ungulate herds.

Bighorn Sheep

OVERALL RANGE: The area which encompasses all known seasonal activity areas within the observed range of a bighorn sheep population.

SUMMER RANGE: That part of the overall range where 90% of the individuals are located between spring green-up and the first heavy snowfall. Summer range is not necessarily exclusive of winter range; in some areas winter range and summer range may overlap.

SUMMER CONCENTRATION AREA: Those areas where bighorn sheep concentrate from mid-June through mid-August. High quality forage, security, and lack of disturbance may be characteristic of these areas to meet the high energy demands of lactation, lamb rearing, horn growth, and general preparation for the rigors of fall and winter.

PRODUCTION AREA: That part of the overall range of bighorn sheep occupied by pregnant females during a specific period of spring. This period is May 1 to June 30 for Rocky Mountain bighorn sheep and February 28 to May 1 for desert bighorn sheep.

WINTER RANGE: That part of the overall range where 90 percent of the individuals are located during the average five winters out of ten from the first heavy snowfall to spring green-up, or during a site specific period of winter as defined for each DAU.

WINTER CONCENTRATION AREA: That part of the winter range where densities are at least 200% greater than the surrounding winter range density during the same period used to define winter range in the average five winters out of ten.

SEVERE WINTER RANGE: That part of the winter range where 90% of the individual animals are located when the annual snowpack is at its maximum and/or temperatures are at a minimum in the two worst winters out of ten. Not all populations exhibit migratory behavior during severe winters, many will stay within the defined winter range regardless of conditions. Thus, some populations may not have a mapped severe winter range distribution.

MIGRATION CORRIDOR: A specific mappable site through which large numbers of animals migrate and loss of which would change migration routes.

MIGRATION PATTERN: A subjective indication of the general direction of the movements of migratory ungulate herds.