

# Piceance Basin<sup>1</sup> Predator Management Plan Overview



## ADDRESSING EARLY MULE DEER FAWN SURVIVAL IN THE PICEANCE BASIN

The Piceance Basin in northwest Colorado (GMU 22) represents winter range supporting the largest migratory mule deer population in Colorado. This area has been the focus of research and monitoring efforts since the late 1940's and represents one of the best documented mule deer populations in North America. Previous CPW Research efforts conducted during the 1980s through mid-1990s documented a high density population (mean winter density = 63/km<sup>2</sup>) that appeared to be primarily limited by winter severity and forage conditions on winter range. During the early 1990s, this population declined to about 1/3 of the previous winter range density (mean winter density = 23/km<sup>2</sup>), likely due to exceeding the forage capacity on winter range to support the previously high deer densities.

Thirteen years later (January 2008), another CPW research effort was initiated to address mule deer/energy development interactions in the Piceance Basin, where similar information is now being collected to provide comparisons to mule deer demographic data from the 1980s and early 1990s. In comparing data between the 2 time periods (1982-1990 before the decline and 2008-present), December fawn weights have increased (averaging 8.6 lbs heavier), winter fawn survival (December - June) has more than doubled (averaging 0.716 versus 0.351), and winter starvation has become rare (<3% of collared fawns), which was common during the 1980s (averaging 33% annually), but early winter fawn recruitment (December fawn counts) has declined from about 73 fawns/100 does to 49 fawns/100 does. Higher winter fawn weights, survival, and low starvation frequency suggests mule deer in the Piceance Basin are no longer limited on winter range, but lower December fawn counts has limited this population's ability to recover to historic levels. Similarly high fawn survival and low winter fawn counts have also been documented in other Colorado mule deer DAUs that have experienced previous population declines.

Because winter fawn survival is high, but overall fawn recruitment (# of fawns becoming adults) is low, CPW proposes to understand early fawn survival from birth until December. CPW has been addressing newborn (neonate) fawn survival in the Piceance Basin the past 4 years. Thus far, neonate survival has been relatively low (~40%) and largely due to predation (44% of collared fawns), but managers have been unable to confirm whether predation is limiting overall fawn survival or fawns dying from predation are weaker, on average, and would otherwise likely have died prior to adulthood. To address the reason for lower December fawn counts in the Piceance Basin and identify potential management options, CPW proposes to continue monitoring newborn fawn survival for another 3 years and reduce predator densities (black bears and cougars) during the spring fawning period to evaluate this approach for increasing early fawn survival. This information will indicate if predation is most limiting or if maternal or fetal condition predisposes fawns to lower survival and ultimately reduces their recruitment as adults. Conditions in the Piceance Basin are comparable to other western Colorado mule deer populations and this information will likely be applicable to declining deer herds in the western third of the state.

Approach: CPW proposes to monitor fawn survival on two adjacent birthing (parturition) areas over the next 3 years, one receiving predator reduction and the other without any predator reduction efforts (Figure 1).

To be most effective in applying predator reduction to sufficiently reduce predation rates the Western Association of Fish and Wildlife Agencies Mule Deer Working Group (2012) suggests focusing on relatively small areas during critical survival periods when habitat and climate factors are non-limiting. Thus, CPW proposes to focus predator control efforts on a relatively small summer range parturition area on the Roan Plateau (1,277 km<sup>2</sup>) during May and June just prior to and during the fawn birthing period. CPW will compare survival rates to an un-manipulated parturition area to the east between Meeker and Rifle; newborn mule deer fawn survival in the absence of predator control has been documented in these areas from 2011 - 2013. Because the predator reduction area consists primarily of private lands (mostly energy companies) and hunting seasons are not available during the spring, specialized contractors will conduct predator control efforts. Predator control efforts will focus on black bears and mountain lions because these species have been connected to predation of at least 25% of the collared fawns monitored since 2011; predation from all other predators is typically ~10%. Cougar and black bear removal methods employed will consist of cage traps, culvert traps, foot snares, and trailing hounds for capture and a firearm will be used for euthanasia. Predator control personnel will make every effort to salvage all black bear and cougar carcasses for CPW disposal (gall bladders, skulls, claws and hides) or distribution (meat). CPW anticipates predator removal levels to range between 5-10 cougars and 10-20 black bears annually. Higher removal levels are possible and could be as high as 15 cougars and 25 black bears. While the objective is to reduce cougar and black bear densities in this focal area, overall densities at the Data Analysis Unit scale should be minimally influenced. The proposed reductions in predator densities also coincide with the current management objectives in this rural area to maintain relatively low predator densities for enhancing big game populations and reducing livestock conflicts. CPW will consider predator reduction effective if fawn predation rates from black bears and mountain lions is reduced by  $\geq 20\%$  (from ~50% to  $\leq 30\%$ ) and a subsequent increase in fawn survival is documented.

<sup>1</sup>Between Meeker and Rifle

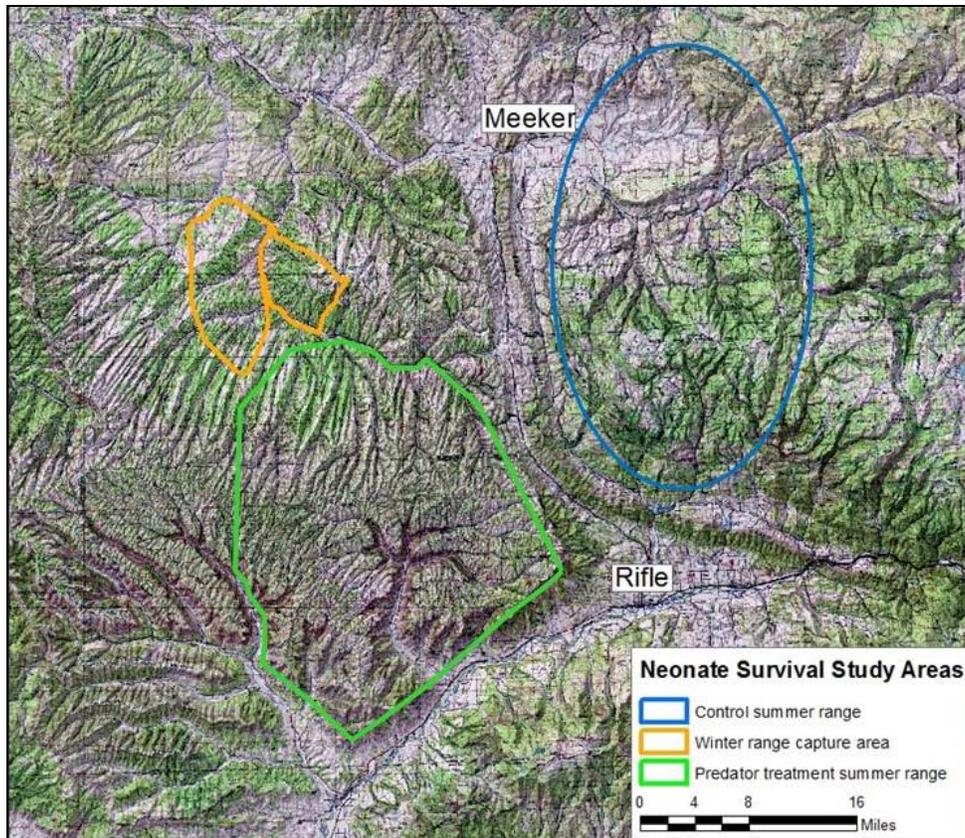


Figure 1. Mule deer winter and summer ranges, Piceance Basin, northwest Colorado. Pregnant adult females on winter range (orange boundary) will receive vaginal implant transmitters to facilitate neonate capture and collaring efforts in the predator treatment area (green boundary). Neonates in the control area (blue boundary) will be opportunistically captured to provide survival rate comparisons between summer ranges with and without focused predator reduction.