MOUNTAIN LION DATA ANALYSIS UNIT L-7
MANAGEMENT PLAN

GAME MANAGEMENT UNITS
10, 11, 211, 12, 13, 131, 231, 21, 22, 23, 24, 30, 31, 32 and 33

Northwest Region

Prepared for:
Colorado Division of Wildlife

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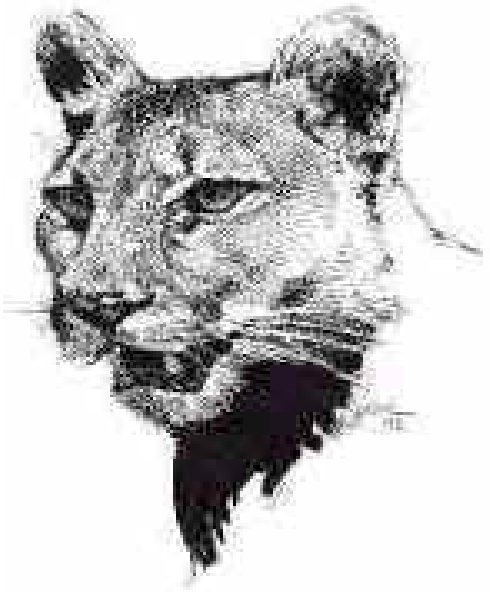

November 2004

DESCRIPTION OF DAU, HABITAT AND PAST MANAGEMENT

Location and Habitat

Mountain lion Data Analysis Unit (DAU) L-7 is located in Northwest Colorado within Mesa, Garfield, Rio Blanco, Moffat and Routt Counties (Figure 1). The DAU includes the Colorado, White and Yampa River drainages. Habitat varies from the cold desert communities at approximately 4,600 feet in elevation to high mountain peaks at nearly 12,000 feet in the Flattop Wilderness Area near Meeker. The habitat is considered to be some of the best mountain lion habitat in Colorado. The DAU is 8,129 square miles in size with land primarily under control by Federal land management agencies including Bureau of Land Management (48.2%), US Forest Service (12.9%), National Park Service (1.4%), various state agencies (2.9%) and private landowners (34.6%).

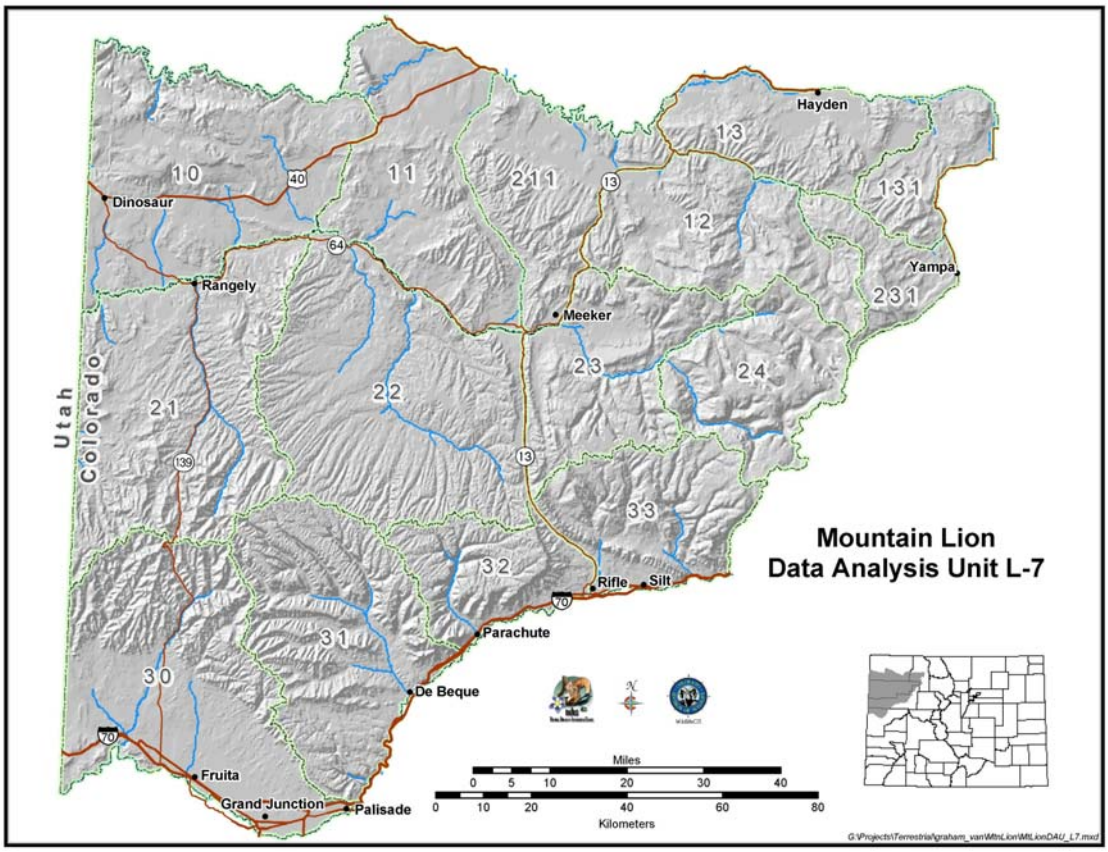

Figure 1. Mountain lion DUA L-7 boundary and GMUs.

It is composed of 15 Game Management Units and is one of the largest lion DAUs in the state.

In order to more efficiently manage the lion population in this area, the CDOW has combined two lion DAUs in to one large unit. L-7 is now composed of old lion DAUs L-7 and L-8. Previously, L-7 did not include GMUs 30, 31, 32, and 33. Mountain lion social habits and movement patterns did not fit well with the old southern boundary of L-7 that was essentially the divide between the Colorado and White River drainages. Lion movements across the top of the Bookcliffs and the Roan Plateau allowed for significant interchange of lion in this area. We feel the new DAU will provide for better management of lion in this area. The decision was made to apply the old designation of L-7 to the new DAU boundaries. Presently, CDOW is not using the designation L-8 to apply to any lion population.

MANAGEMENT HISTORY:

Statewide lion season dates are from January1 through March 31 and from the first day after the close of the regular deer and elk seasons until December 31. New harvest quotas begin on January 1 of each year.

According to the first mountain lion management guidelines report for L-7 (CDOW 1999), "No formal estimate of the lion population has been made in the DAU (old D-7 boundary). It is believed that, determined by indicators such as sightings, tracks, and harvest rate, the population has increased over the last 10 years. This may be, in part, driven by the higher removal rate of mature males, thus losing the natural population control influence they exert."

Past management goals, while not specifically documented in the initial DAU plans (called management guidelines) for old L-7 and L-8, were to maintain lion populations at a stable levels. In some portions of the DAU, lion damage to domestic livestock has been significant and damage control kill was as high as 26 lion in 1992. Much of the damage has been done to domestic sheep.

In the initial plan there were some comments regarding a "concern that the increased quotas have de-stabilized the population, actually increasing numbers of young lions which are more prone to cause (livestock damage) problems. Considering the recent large increases and the lack of those quotas being met, no changes should be sought in the near future with quotas by unit being held at the present level."

Mountain Lion Management Approach

In the last year (2003-2004), the CDOW has developed a defined approach to management of lion populations. The first strategy is termed managing for a **stable-increasing** population. The second is termed management designed to **suppress** a population.

In 2003, the CDOW and Colorado Wildlife Commission indicated that the management strategy for the DAU L-7 would be characterized as a population with a management goal of suppression.

Harvest and Management Statistics

The CDOW has assembled pertinent management data going as far back as 1980 (Appendix A). Data includes harvest, quotas, success rates, and harvest by sex of animal. Information is also available that includes similar information for animal damage control kills and other mortality such as road kills.

Mountain lion annual harvest (Figure 2) as well as quotas (Figure 3) has increased substantially over the last 25 years. Eleven lions were harvested in 1980 and the number increased to a high of 144 in 1998. In 2003, the harvest was 81 lion. Average harvest for the most recent five years was 92 animals and for the most recent 10 years was 102.

Quotas have also increased over the last 25 years. The DAU harvest quota was 37 in 1980 and 191 in 2004. The highest quota of 196 occurred in 1999 and 2000.

Female lion have composed approximately 43% of the total harvest for the last 5 years. Fifty-four percent of the lion harvest was female in 1998, which was the highest ever recorded.

Populations

The L-7 lion population projection is based primarily on two factors; defining the area of suitable lion habitat within the 8,129 square miles DAU and applying a probable lion density for that same area. Due to their low relative density, secretive nature and the subsequent lack of quality field methods for estimating population sizes for lions as outlined by researchers (Anderson 1983, Logan and Sweanor 2001), the L-7 estimate could not be based on quantitative field observations within the DAU. It is however, based on a synthesis of lion densities from other published studies in the western U.S. as well as geographic information systems (GIS) data on habitat and spatial variables.

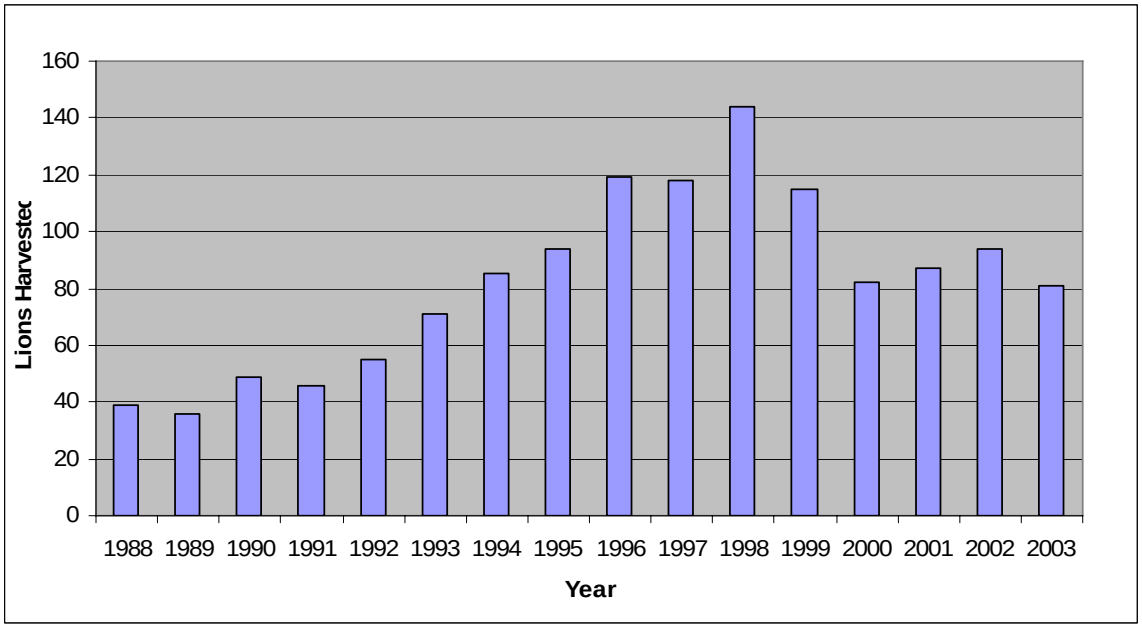

Figure 2. Mountain lion harvest in DAU L-7, 1988-2003.

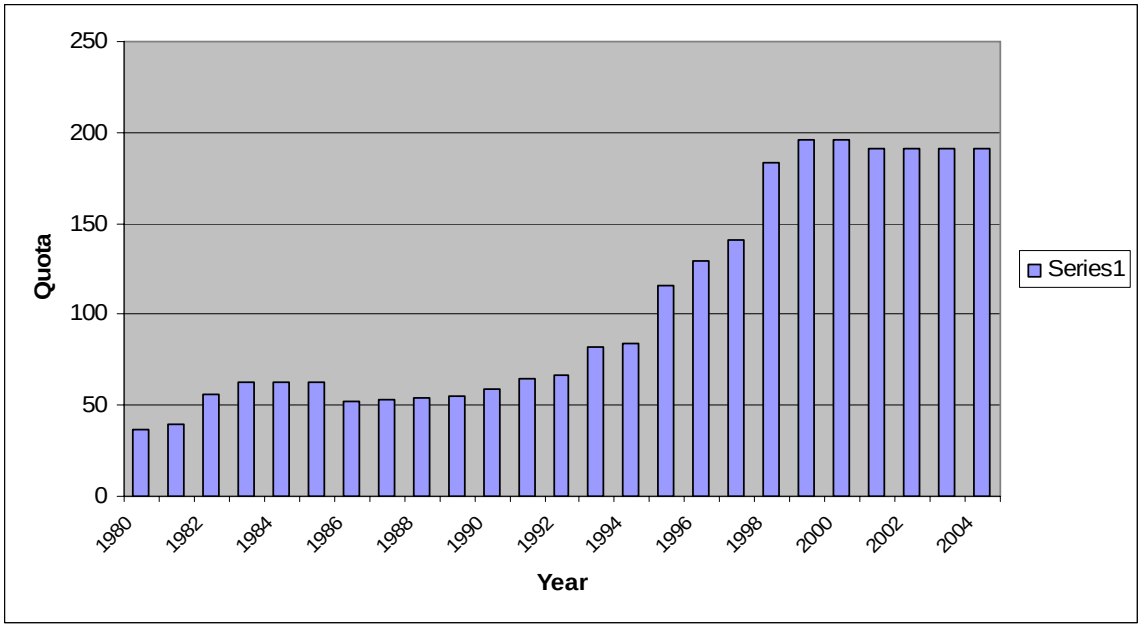

Figure 3. Mountain lion quotas in DAU L-7, 1980-2004.

In almost all cases in Colorado, lion habitat overlaps with the range of their principle food source, mule deer. However, in western Colorado, elk provide an additional prey base for lion. Recently, elk research projects conducted by CDOW in the Rifle area and field observations by CDOW personnel and ranchers confirm elk kills by lion are not unusual. Mule deer, elk and Rocky Mountain bighorn sheep winter range (Figure 4) encompass much of the DAU. Deer and elk populations in this DAU are, in much of the DAU, at or above long-term DAU population objectives. Given the constraints and exclusions outlined above, the total area in the population projection calculations was 7,939.5 mi^2.

Based on a comprehensive review of lion research literature, Logan and Sweanor (2001) offer a range of lion densities observed on projects from throughout the western United States. Given the similarities between Colorado and states/provinces such as Wyoming, New Mexico, Alberta, British Colombia and Idaho, densities were extrapolated from those studies to arrive at a low density estimate of 2.0 lions/100 km^2 and a high density estimate of 4.6 lions/100 km^2 in L-7. In addition the CDOW used these data to develop a medium population density of 3.0 lion per 100 km^2. Multiplying these high, medium and low densities by a given area of lion habitat generates a population estimate.

Although current literature supports the range from 2.0 to 4.6 lion per 100 km^2, there is reason to believe that prey densities and prey species composition in Colorado is somewhat higher and different than those described in the supporting reports. Colorado's elk populations are the highest anywhere in the United States and provide alternate prey for the lion's main food base of mule deer. Colorado is initiating, in 2004, an intensive (approximately 10 years) mountain lion population study on the Uncompahgre Plateau to document lion densities. However, until this or other information is available, we will continue to use the standard lion densities presented here in our population estimates. We suspect our prey densities are higher, to much higher than those reported in other studies and we think when the more precise numbers for Colorado are developed, our current lion population assessments will be demonstrated to be low estimates.

Age structure within the total L-7 population was also calculated based on a formula generated from the existing lion literature (Logan and Sweanor 2001). Both Logan and Sweanor (2001) and Ross and Jalkotzy (1992) reported that kittens, or dependent young, comprised approximately 33-34% of the total population. It is difficult to obtain data on adult sex ratios, but literature indicates that a 1:1 ratio is a reasonable estimate. In our population for D-7, male harvest is slightly higher than female. However, due to the nature of males in a lion population, they may be somewhat more susceptible to natural mortality.

The calculated population point projection as based on overall analysis of available lion habitat and prey densities is 859 lion (Table 1). For the point projection estimate, we mapped areas of high, medium and low lion densities and used these data to estimate the population (Figure 4). Overall habitat in L-7 can be subjectively rated as being excellent to good due to terrain, vegetation, and historic lion harvest as well as known preferred lion habitat in Colorado.

We also determined a possible population range of between 946 and 411 lion based on total acreage in the DAU below 10,500 ft elevation and high and low lion densities.

Table 1. Estimated mountain lion population in DAU L-7.

Population Range	Population	Males	Females	Subadults	Cubs
High Density	946	248	248	129	322
Low Density	411	108	108	56	140
Point Projection	859	225	225	117	292

In L-7, winter range lion habitat is defined as areas below 10,500 ft. in elevation and does not include those seasonal habitat areas which are unavailable to lion during winter month where snow accumulations limit the presence of a prey base. The only area in L-7 above 10,500 feet is in the Flattops Wilderness area east of Meeker. Snow accumulations in that area eliminate the prey base of deer and elk during the most severe portions of the winter forcing lion to move to lower elevations.

Estimates of male and female winter home range size vary widely between studies in western North America. Males clearly have larger home ranges, often with minimal overlap of other males, while females tend to have smaller home ranges with a tolerance for more same-sex overlap. In many cases one male's home range boundaries will include several female ranges. Female winter home range estimates between some study areas span an order of magnitude; in British Columbia winter ranges were observed at 28 km^2 in Idaho 90 km^2 and in Utah 207 km^2. Male estimates on winter range in Idaho were 126 km^2 while researchers in Utah again observed much larger

home ranges averaging 503 km^2. The current and past research in Colorado has generated overall annual home range estimates which don't allow comparison to available winter range calculations.

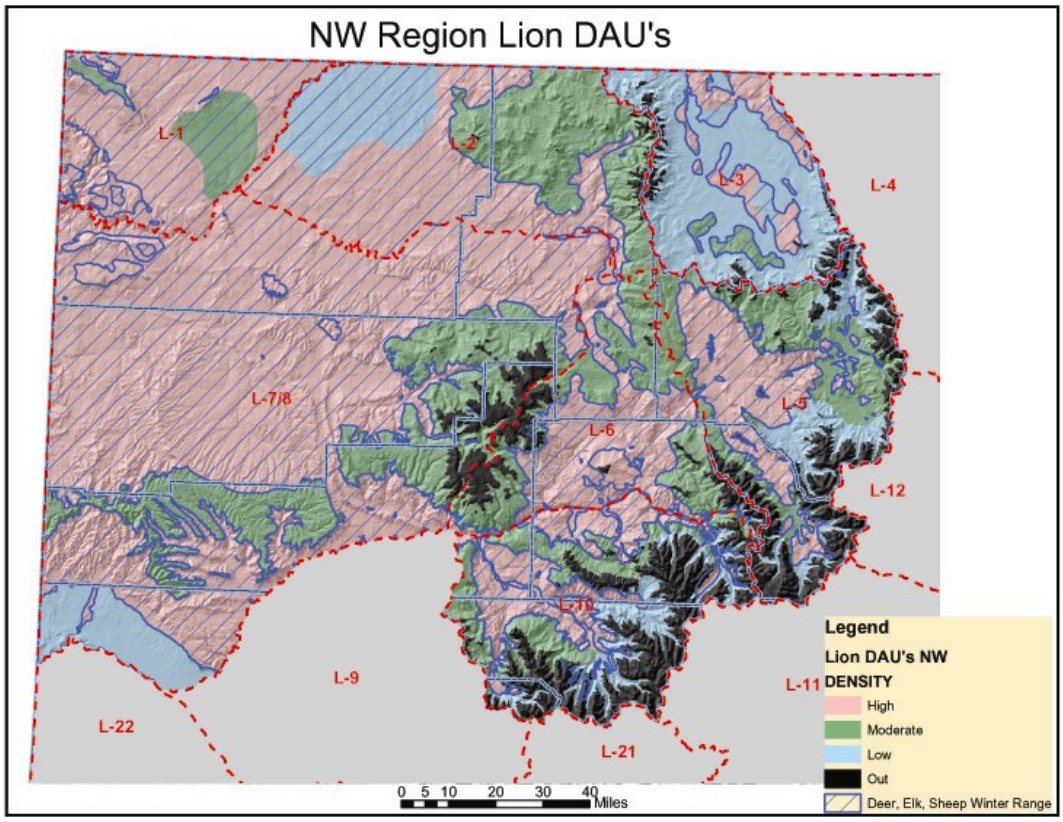

Figure 4. Mountain lion density estimates across DAU L-7.

Population Management Alternatives and Outcomes

Harvest Potential

Using the portion of the projected population that is huntable (adults and sub-adults), an acceptable level of overall mortality within a DAU can be estimated. Logan and Sweanor (2001) suggest that the level of hunting and non-hunting mortality can be gauged relative to the rate of population growth. They further suggest that managers can use the rate of growth documented at 11% by Logan as an acceptable annual mortality assuming managers have a reliable estimate of the lion population and that the population is increasing. Neither of the parameters is known definitely in L-7. Thus, it is important to maintain conservative caution when generating an estimate of a harvest level that the population can support. Current CDOW guidance (J. Apker, pers. comm..) is to use 8-15% of the huntable population to provide a range of acceptable harvest for populations managed for sustained recreational opportunity and a stable-increasing lion population. Logan and Sweanor have documented the high resiliency of lion populations and have recorded a 28% growth rate in a treatment area following a period of high lion removal rates. Thus, the CDOW suggests that for population control, managers may have to apply rates of removal at or exceeding 28% of the population for a period of

several years to suppress a population.

The best estimate of lion population is this DAU is 859 animals. The estimated number of huntable lion is 567, which excludes kittens.

Two management options are available for mountain lion management guidelines: stable-increasing and suppression.

Stable-Increasing Population Management

Using a harvest rate of 12% (average of 8% and 15%) applied to a huntable population of 567 lion would result in an annual harvest of 68 male and female lion.

Suppression Management

A suppression management strategy results in a decline in the overall numbers in a population, rather than the population remaining stable or increasing. Using a harvest rate of 28% applied to a huntable population of 567 would result in an annual harvest of 159 mountain lion.

The current average 5-year DAU harvest is 92 lion, which is a 16.2% harvest rate. This rate of removal is 35% greater than 12% rate used for a stable-increasing population. Thus, indications are that the current management has tended to suppress the population in this DAU. However, the suppression intensity tends to be less aggressive than the upper suggested limit of 28%.

Non-hunting Mortality – Annual Estimate

Non-hunting lion mortality has varied over the years. For the last five years, the average has been four per year. This has been equally divided between damage control and other mortality. Other mortality mostly includes road kill lion.

Non-hunting mortality has been as high as 33 lions in 1992. Twenty-six of these were killed during damage control programs, almost entirely for domestic sheep losses.

The current expectation is that non-hunting mortality will be maintained within the five-year average for the foreseeable future. Therefore, this estimate will be integrated into the preferred management strategy for this DAU. If increased lion mortality from non-hunter sources is observed over several subsequent years, then future hunter mortality objectives will be modified to reflect the predicted impacts to the population due to this factor.

Game Damage Objective

Game damage payments in L-7 have been some of the highest in Colorado for a number of years. The largest portion of the damage has been to domestic sheep. The 5-year average claims totals $22,562, with 95.5%, 2.9% and 1.5% of the losses attributed to sheep, other livestock, and cattle, respectively.

In 1997, claims were paid totaling $119,853. That year 922 domestic sheep were killed by lions.

The number of damage claims has decreased dramatically since 1995. In 2003 there were only two claims filed. It is likely that this decrease is, in large part, due to reductions in domestic sheep numbers in the DAU. The number of claims also has declined because the CDOW started doing a better job of investigation of claims and hired claims investigators to verify losses to lions. The CDOW is not responsible for damage caused by coyotes and it was thought that some paid claims may have been due to losses by coyotes. The Colorado Wildlife Commission began a more detailed analysis of claims to further substantiate damage caused by mountain lions.

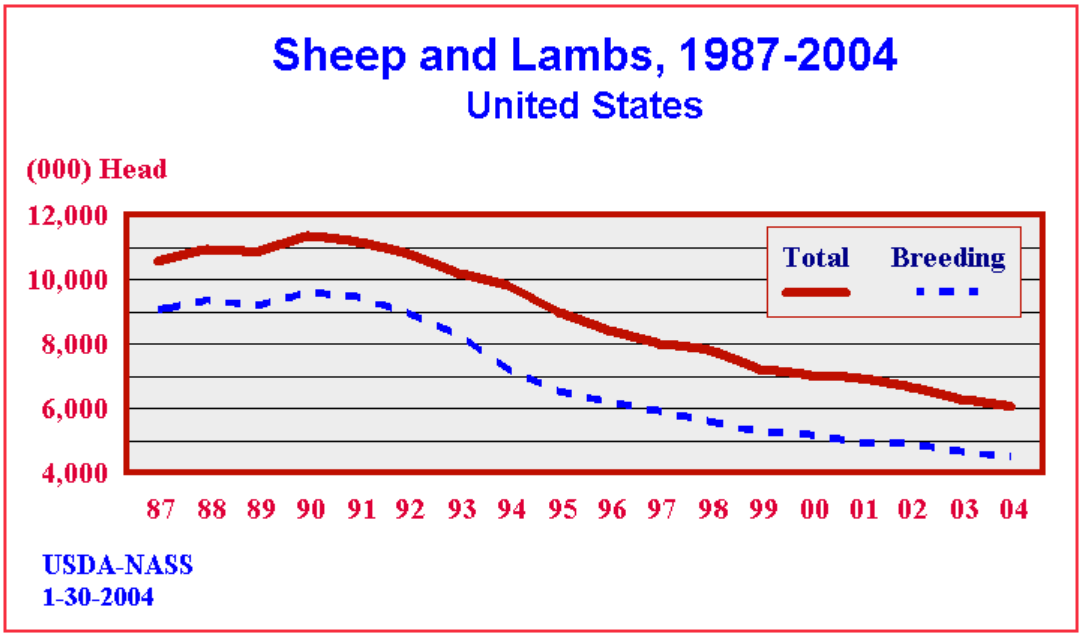

Figure 5. Sheep and lamb production in the United States in recent years, U.S. Department of Agriculture statistics.

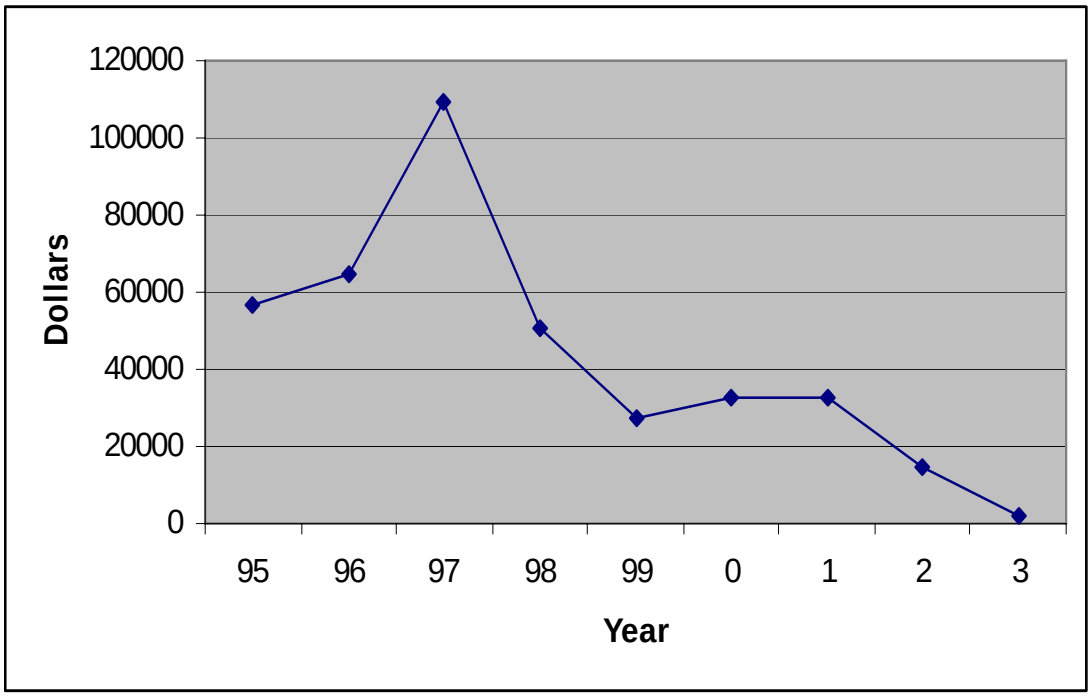

Figure 6. Amount (dollars) of domestic sheep damage claims paid annually in DAU L-7 between 1995 and 2003.

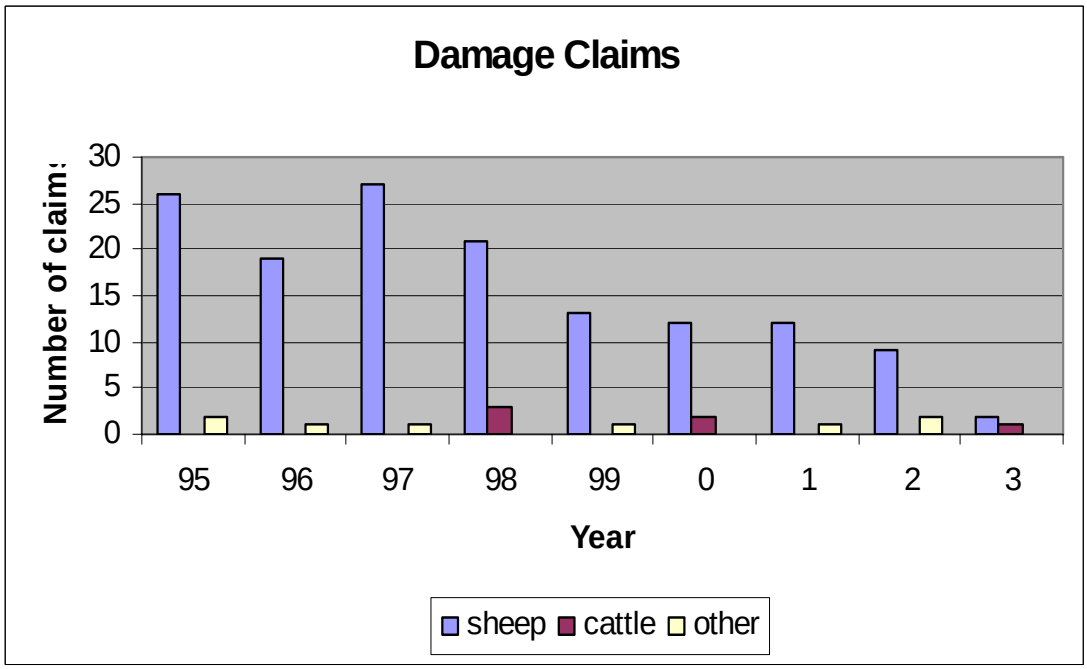

Figure 7. Number of game damage claims filed from 1995-2003.

Barriers and Strategies

Game damage should be managed by targeting offending lions on an as needed basis.

The CDOW has an effective working relationship with the United State Wildlife Services agency including a contract for annual damage control assistance.

Claims can be minimized through effective communication with landowners and CDOW.

Monitoring

Monitoring of game damage claims will occur on an annual basis. Significant increases in game damage may induce harvest objective changes. Most likely the GMU quota will be amended to focus harvest in the area of damage.

Human Conflict Objectives

There is no formal number of allowable human/lion conflicts outlined for L-7.
Human conflicts with mountain lion in this DAU have been rare but random observations of mountain lion are on the increase. Road kill lion along the I -70 corridor and along Highway 13 have occurred in the past. As the human population increases, along the I-70 corridor human - mountain lion interaction will likely increase. Education of the public on how to live in lion country appears to be the most successful method of reducing both depredation and non-depredation conflicts.

A survey and project summary report by Zinn and Manfredo (1996) studied societal preference for Mountain Lion management along the Front Range of Colorado. The study measured people's beliefs, opinions, preferences and behaviors towards mountain lions. Although the CDOW lacks similar data from the west slope, several conclusions are still pertinent and advisable. The summary report recommends, "Education and public information regarding mountain lions and their interactions with humans should continue to be a key component of the CDOW's mountain lion management strategies" Zinn and Manfredo (1996).

The report also indicates that "education may serve to widen the range of acceptable management options available to wildlife managers" Indications are that the public tends to believe that capture and relocation of mountain lion is a ready option, while at the same time they do not accept frightening lion with rubber bullets or scare devices as an option. Educational information should help the public better understand other control options available including increased lion hunting and controlled mountain lion hunts. This survey also reinforced the idea that the CDOW's information campaign regarding living with lions has been successful.

Barriers & Strategies

CDOW will continue to provide the public information on human safety and how to live with lions. This is will be accomplished through programs, printed literature, and through informal contact by local CDOW district wildlife managers. As needed, the CDOW will continue to conduct workshops for public agencies, law enforcement personnel, and concerned public groups.

Monitoring

Monitoring of mountain lion – human interactions will be accomplished through annual review of the CDOW's conflict reports. Specific instances will be handled according to

CDOW policy.

Key Management Issues

Public input on lion management was sought as part of this DAU plan revision process. Scoping meetings were held in Craig on 8/11/2004 and Grand Junction on 8/12/2004. This information will be used as a portion of the decision process in the selection of a preferred management strategy for L-7.

Comments received from the public meeting are presented in Appendix B. The CDOW also provided forms for those wishing to submit written comments. A PowerPoint presentation was made by CDOW which provided background information similar to the information contained in this management plan.

Those attending the public meetings were interested in maintain viable mountain lion populations across the state. There was common support for a female sub-quota which would limit the harvest of adult females in the DAU. Generally, lion hunters feel the current harvest levels are not too high, but there is concern about possible over-harvest in GMU 22. The concern in GMU 22 is that the high harvest has adversely impacted the lion population there and hunters support a CDOW recommendation for a reduction in the quota in this GMU. GMU 22 is easily hunted due to the number of roads which provide good access for hunters.

Some lion hunters are concerned about out-of-state hunters adversely impacting populations due to their indiscriminate harvest, harvest of young females and poor hunting ethics. Further, the out-of-state hunters have no connection to the land and no real interest in the maintenance of viable populations.

CDOW management issues are similar to pubic issues. CDOW concerns revolve around maintenance of healthy lion populations that include a range of age classes, sex ratios in balance with lion social habits, and reproduction and survival rates that are adequate for maintenance of a population.

Management of hunting opportunity is an important issue since this activity has the greatest single impact on a lion population. The potential exists that populations may be over-harvested if annual harvest quotas are not balanced with biological potential of the population. Therefore, adherence to management strategies developed in this plan as well and the collection of annual harvest and other pertinent biological data is essential for sound management.

Game damage, as discussed earlier in this plan, is an ongoing issue that must be addressed in a balanced approach and in a cooperative manner with livestock operators.

Preferred Management Strategy – Moderate Suppression

The preferred management strategy for L-7 is to manage lion at an annual mortality rate, including hunting and non-hunting, in a range between 15% and 20% of the huntable population (Table 2). This rate of removal would be considered light to moderate suppression and uses the population point projection of 859 (567 huntable) lion as the basis for the recommendation.

Hunter harvest objectives, regulated by the current quotas system, will be established annually based on previous year's harvest success, the number of lions harvested in the DAU and other non-hunting mortality factors. The non-hunting mortality should be included in the total mortality recommended for the DAU. The process of setting quotas outside the DAU plan allows for flexibility in setting annual harvest objective in response to changing factors affecting the lion population.

The present quota system will remain in effect. This quota system allocates a limited number of licenses to each game management unit and once the quota is filled in the GMU it is closed to further hunting.

The long-term goal is to maintain healthy lion populations that can sustain annual sporting harvest while maintaining low damage levels and near zero human conflict levels.

Emphasis on mountain lion management will be placed on the lion population within the DAU rather by GMU. Total DAU harvest should be the guiding factor influencing annual mortality, since research has shown lion populations are a landscape wildlife species and not confined to smaller geographic areas such as a single GMU.

The current five-year average annual harvest has been 92 lion in the DAU. The 10-year average harvest has been 102 lion.

Mountain lion populations appear fairly resistant to moderately high levels of harvest as indicated by Anderson's (2003) research. The caveat being, that "adjacent populations facilitate recovery through immigration and that adult female survival provides female recruitment" (Anderson 2003).

Table 2. Number of lion harvested at variable mortality rates under a suppression management strategy.

Annual Mortality Rate	15%	16%	17%	18%	19%	20%	28%
Hunter Harvest	81	87	92	98	104	109	155
Non-hunt Mort.	4	4	4	4	4	4	4
Total Mortality	85	91	96	102	108	113	159

Anderson (2003) also stated, "The most likely factor to inhibit cougar population reduction from harvest is limited hunter access creating local refuges. In these situations, inaccessibility will dictate the degree of resiliency in that population to hunter harvest…"

With the above caveat in mind, a geographic review of DAU L-7 shows the existence of large areas where no lion hunting or very limited lion hunting occurs. Dinosaur National

Monument provides a large area along the northern border of the DAU. In GMUs 30 and 31 the BLM has closed large areas in the Bookcliffs to winter travel for protection of wintering deer and elk and in some areas for protection of wild horses. These areas include the Little Bookcliffs and the Coal Canyon areas. Privately owned Parachute Creek offers a large area where very little lion hunting occurs. Large portions of the Flattops wilderness areas are suitable habitat for mountain lion, and much of the acreage identified in the White River Forest Plan, as designated as roadless areas and is mid to low elevation lands that also contain good mountain lion habitat.

Monitoring

Anderson (2003) in his study of the sex and age characteristics of cougar populations documented that, "population decline followed predictable removal patterns of the more vulnerable/ abundant classes until the least vulnerable class, adult females were most abundant in the harvest", and that, "Moving from harvests consisting primarily of sub-adults to adult males and finally to adult females suggests previous population decline"

Therefore, if the percentage of adult females in the harvest begins to increase, and the average age of females in the harvest begins to decline, then harvest adjustments would be warranted until male lions and sub adult lions comprised the majority of the harvest, which would indicate a recovering lion population.

Population monitoring will be accomplished primarily from data collected as a part of the mandatory check of lions harvested. The estimated age of the animal will be determined using techniques outlined by Anderson and Lindzey (2000). Specifically, priority should be given to evidence of previous lactation, annuli aging of premolars, presence of a canine ridge and presence or absence of foreleg bars (Anderson 2003).

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Ross, P. I. and M. G. Jalkotzy. 1992. Characteristics of a hunted population of cougars in southwestern Alberta. Journal of Wildlife Management. 56(3):417-426.

Zinn, H. C. and M. J. Manfredo. 1996. Societal preferences for mountain lion management along Colorado's Front Range. Human Dimensions in Natural Resources Unit Report No. 28, Colorado State University, Fort Collins, CO.

Appendix A. Quota, harvest and other mortality statistics for DAU L-7, 1980-2003.

DAU L-7	GMUs: 10, 11, 211, 12, 13, 131, 231, 21, 22, 23, 24,30,31,32,33	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	5-Yr AVG	10-Yr. Avg
	GMU 10 Harvest Quota	5	5	6	6	6	6	4	4	4	4	4	4	4	5	5	5	6	6	8	14	14	14	14	14	14		
	GMU 11 Harvest Quota	3	3	5	5	5	5	4	4		3	6	8	8	8	8	10	10	12	16	16	16	16	16	16	16		
	GMUs 11, 211 Harvest Quota									5																		
	GMU 211 Harvest Quota										3	6	6	6	6	6	8	11	13	17	17	17	17	17	17	17		
	GMUs 12,13 Harvest Quota	1	2	2	2	2	2	1	2	2	2	2	4	4	6	6												
	GMU 12 Harvest Quota																6	8	10	13	18	18	18	18	18	18		
	GMU 13 Harvest Quota																4	5										
	GMU 13 W of Hayden Divide Rd Harvest Quota																		5	12	12	12	12	12	12	12		
	GMU 13 E of Hayden Divide Rd (add 131 in '99) Harvest Quota																		3	8	10	10	5	5	5	5		
	GMU 21 Harvest Quota	6	6	6	6	6	6	6	6	6	6	6	6	6	8	8	10	12	12	16	16	16	16	16	16	16		
	GMUs 22,23 Harvest Quota	4	4	5				5	5	5	5	5	5															
	GMU 22 Harvest Quota				5	5	5							5	8	8	14	18	20	26	26	26	26	26	26	26		
	GMUs 23, 24 Harvest Quota													2	4	6												
	GMU 23 Harvest Quota				5	5	5										7	7	8	10	10	10	10	10	10	10		
	GMU 24 Harvest Quota																2	2	2	3	3	3	3	3	3	3		
	GMU 30 Harvest Quota	6	8	8	8	8	8	8	8	8	8	8	8	8	11	11	15	15	15	15	15	15	15	15	15	15		
	GMU 31 Harvest Quota	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	10	10	10	12	12	12	12	12	12	12		
	GMU 32 Harvest Quota	4	4	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10		
	GMU 33 Harvest Quota	4	4	10	10	10	10	8	8	8	8	6	8	8	10	10	15	15	15	17	17	17	17	17	17	17		
	DAU Harvest Quota	37	40	56	63	63	63	52	53	54	55	59	65	67	82	84	116	129	141	183	196	196	191	191	191	191	193	172.5
	% of Quota Achievement	30%	78%	75%	57%					72%	65%	83%	71%	82%	87%	101%	81%	92%	84%	79%	59%	42%	46%	49%	42%	#REF!	48%	67%
	total male	4	19	24	22					27	23	31	25	36	43	52	53	72	63	69	53	45	52	64	44			
	total female	7	12	18	14					12	13	18	21	19	28	33	41	47	55	75	62	37	35	30	37			
	Total Hunter Harvest	11	31	42	36	0	0	0	0	39	36	49	46	55	71	85	94	119	118	144	115	82	87	94	81	#REF!	92	102
	% of Female in Harvest	64%	39%	43%	39%	Data Not Available by DAU				31%	36%	37%	46%	35%	39%	39%	44%	39%	47%	52%	54%	45%	40%	32%	46%	#REF!	43%	44%
	Total Control Kill - Male										0	1	1	7	1	4	4	1	7	0	2	1	0	1	0			
	Total Control Kill - Female										0	0	2	6	0	2	4	0	3	0	1	1	0	2	0			
	Total Control Kill										0	1	3	13	1	6	8	1	10	0	3	2	0	3	0	#REF!	2	
	Total other mortality - male										1	1	1	0	0	0	2	3	2	0	1	0	0	3	0			
	total other mortality -female										1	0	0	5	3	3	4	3	3	1	1	0	0	1	0			
	Total Other Mortality										2	1	1	7	3	4	6	6	5	1	2	0	0	4	3	#REF!	2	
	DAU Total Mortality - Male	4	19	24	22	0	0	0	0	27	24	33	27	43	44	56	59	76	72	69	56	46	52	68	44	#REF!	53	
	DAU Total Mortality - Female	7	12	18	14	0	0	0	0	12	14	18	23	30	31	38	49	50	61	76	64	38	35	33	37	#REF!	41	
	DAU Total Mortality	11	31	42	36					39	38	51	50	75	75	95	108	126	133	145	120	84	87	101	84	#REF!	95	
	% of Female in Total DAU Mortality	64%	39%	43%	39%	Data Not Available by DAU				31%	37%	35%	46%	41%	41%	40%	45%	40%	46%	52%	53%	45%	40%	33%	46%	#REF!	43%	44%