# MOUNTAIN LION DATA ANALYSIS UNIT L-9
# MANAGEMENT PLAN

GAME MANAGEMENT UNITS
41, 411, 42, 421, 52, 521, 53, 63

## Northwest and Southwest Regions

Prepared for:
Colorado Division of Wildlife

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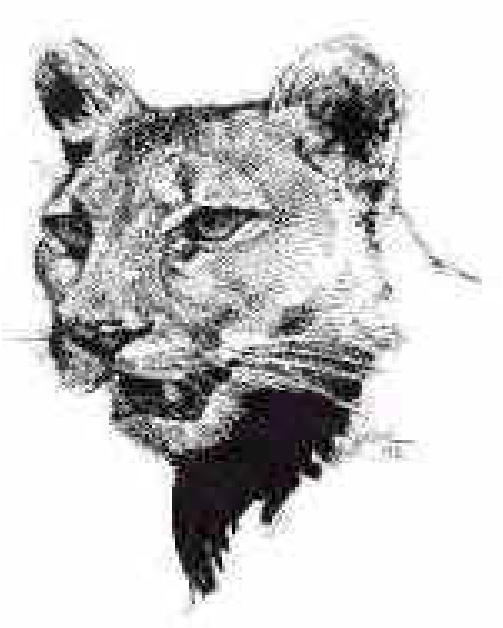

November 2004

## DESCRIPTION OF DAU, HABITAT AND PAST MANAGEMENT

### Location and Habitat

DAU L-9 is located in the Grand Mesa and North Fork of the Gunnison River areas of westcentral Colorado. It is bounded on the north by the Colorado River; on the east by the Divide Creek and Crystal River divide, the Muddy Creek and Crystal River-divide, the North Fork of the Gunnison and the Gunnison River divide and Curecanti Creek; and on the south and west by the Gunnison River, Colorado Highway 92 and Colorado Highway 50. L-9 is located within portions of Mesa, Garfield, Gunnison, Montrose and Delta Counties (Figure 1). Pinyon-juniper woodlands and sagebrush are the dominant vegetation types at lower elevations in the DAU. Oakbrush, serviceberry, and aspen woodlands dominate mid-elevations. Spruce/fir forests are found at the higher elevations. The DAU includes the Colorado and Gunnison River drainages. Habitat varies from the cold desert communities at approximately 4,600 feet in elevation around Grand Junction to high mountain peaks at nearly 13,000 feet in the Raggeds and West Elk Wilderness Areas near Paonia. Black Mesa in the Crawford area is located in the southern portion of the DAU.

The DAU covers 3,243 square miles with land primarily under control by Federal land management agencies including Bureau of Land Management (18.2%), U.S. Forest Service (43.6%), National Park Service (0.6%), various state agencies (0.8%) and private landowners (36.8%).

The DAU is composed of eight Big Game Management Units. In order to more efficiently manage the lion population in this area, the CDOW has reconfigured two adjacent lion DAUs; deleting GMU 64 from L-9 and placing it in DAU L-22. The CDOW feels that this is a more realistic boundary with the Gunnison River being somewhat of a movement barrier for lions. Mountain lion social habits and movement patterns did not fit well with the old boundary. We feel the new DAU will provide for better management of lion in this area. This decision did not change the current CDOW DAU descriptors (L-9 and L-22) used to identify the DAUs. Harvest data as well as other biological information used to manage the population were adjusted to reflect this boundary change in both DAUs.

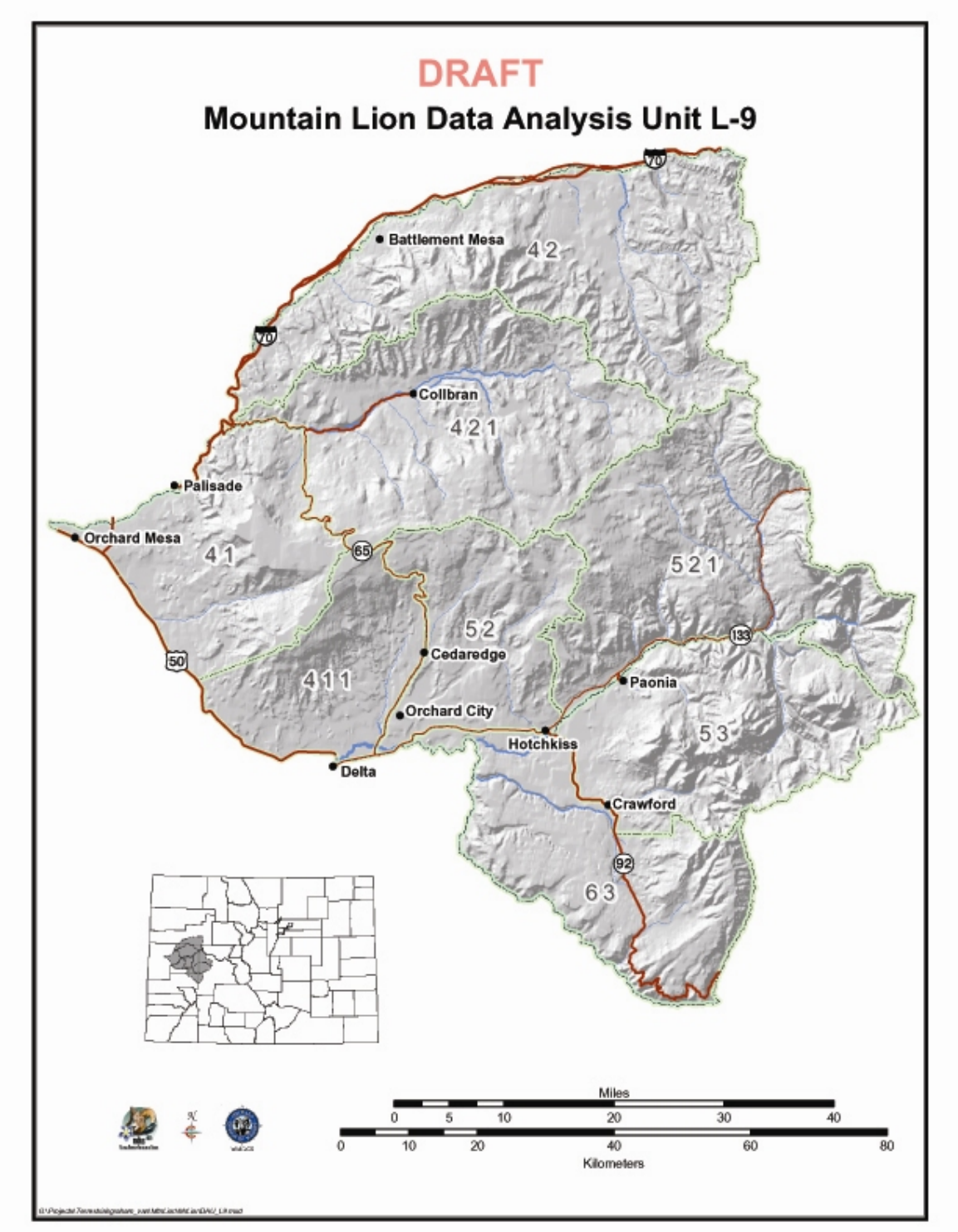


**Figure 1.** Mountain lion DUA L-9 boundary.

## 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.

The mountain lion harvest objective, as stated in the first management plan (which included GMU 64) for this DAU (12/2000), was as follows:

***TOTAL MOUNTAIN LION HARVEST OBJECTIVE:*** *The mountain lion sport harvest in the DAU has steadily increased during the past 11 years (1988-1998). The harvests from 1988 to 1992 ranged from 0 to 7 annually, whereas, the harvests from 1993 through 1998 have ranged from 18 to 36 (1997). There have been 6 reported damage harvests in the DAU during the past 11 years.*

*The harvest quota was 36 in 1996 and 1997 and the quota was filled in 1997. The quota was increased to 44 in 1998 and 25 lions were harvested. The quota was increased again in 1999 to 49, and to 51 in 2000.*

The initial plan indicated *"The current quota seems to be meeting the sportsmen's demands without any adverse impacts to the mountain lion population. Therefore, the annual quota should be maintained at 51. The Division of Wildlife will rely on sport hunting as the primary method to control mountain lion populations in the DAU".*

Past management goals, while not specifically documented in the initial DAU plans (called management guidelines) for L-9, were to maintain lion populations at a stable levels.

**Mountain Lion Management Approach**

In the last year (2003-2004) the CDOW has developed a defined approach to management of lion populations. The first approach 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-9 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 and B). 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 as well as quotas has increased substantially over the last 25 years. No lions were harvested in 1980 and the number increased to a high of 37 in 2002. In 2003, the harvest was 34 lion. Average harvest for the most recent five years was 29 animals and for the most recent 10 years was 25.

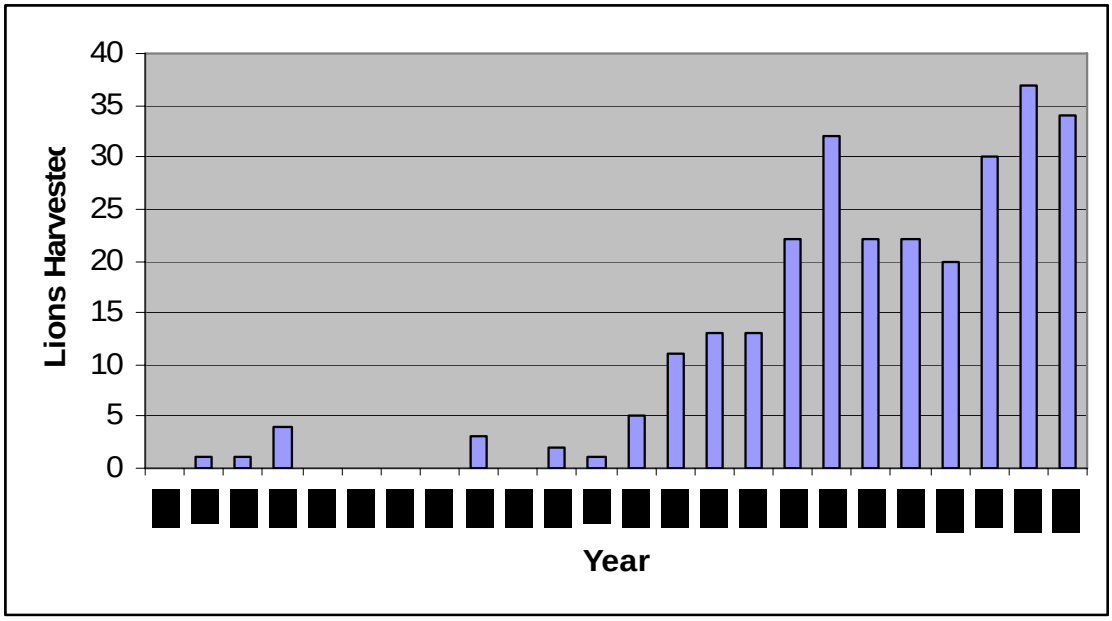


**Figure 2.** Lion harvest in DAU L-9 (statistics not available 84-87).

Quotas have also increase over the last 25 years. The DAU harvest quota was 5 in 1980 and 45 in 2003.

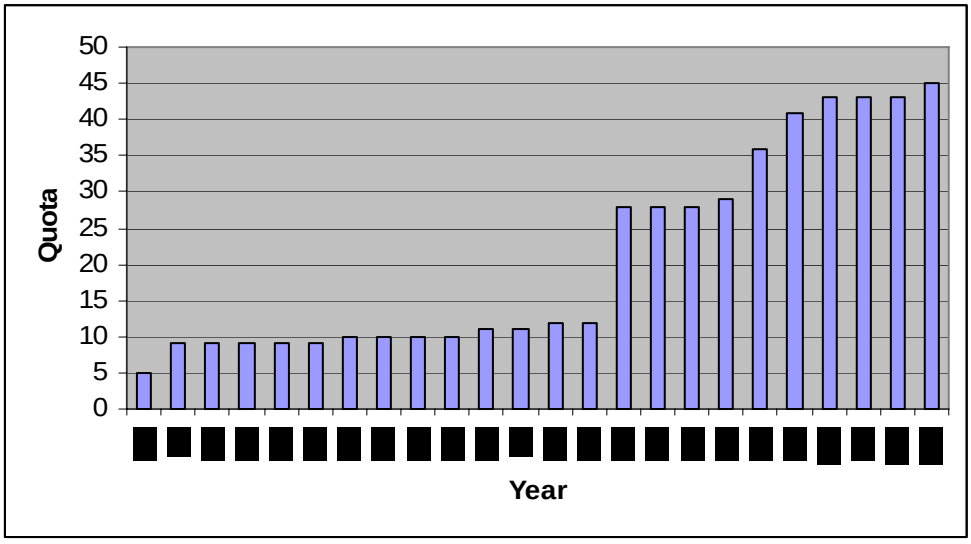


**Figure 3.** Mountain lion quotas in L-9, 1980-2003.

Generally, quotas have increased in a response to demand for licenses. CDOW field managers have felt that the lion population was supporting the increased harvest with no negative impacts to the population.

Female lion have composed approximately 36% of the total harvest for the last three years and 43.8% for the last 10 years. Sixty-four percent of the lion harvest was female in 1998, which was the highest recorded.

**Populations**

The L-9 lion population projection is based primarily on two factors; defining the area of suitable lion habitat within the 3,243 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-9 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.

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 3,120 $mi^2$.

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-9. 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 densities and 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-9 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 L-9, 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 316 lion (Table 1). For the point projection estimate, we mapped areas of high and medium lion densities and used these data to estimate the population (Figure 4). Overall habitat in L-9 can be subjectively rated as 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 372 and 162 lion based on total acreage in the DAU below 10,500 ft elevation and high and low lion densities.

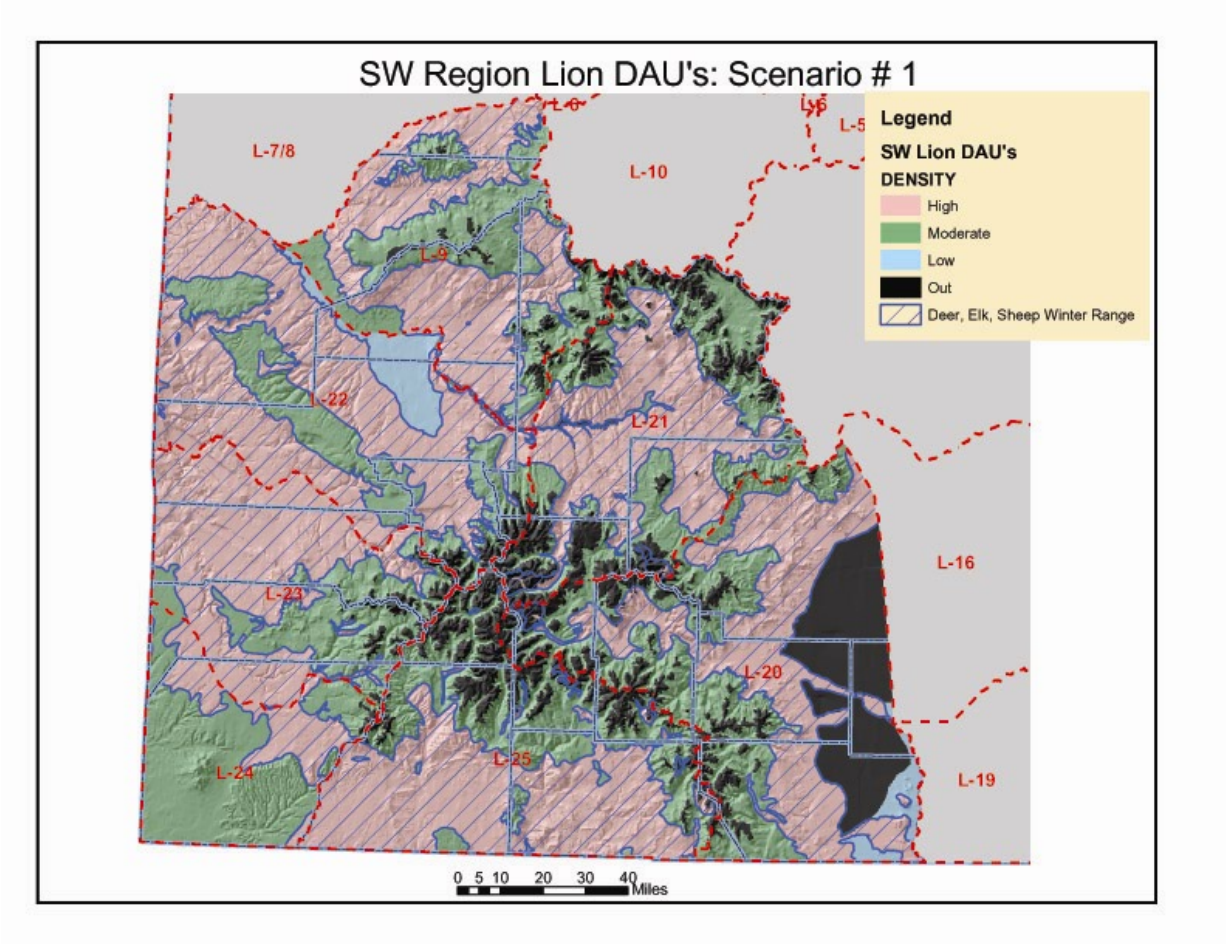


**Figure 4.** Mountain lion DAU boundaries and density estimates for L-9.

In L-9, 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 areas in L-9 above 10,500 feet are on Grand Mesa, in the Raggeds and West Elk Wilderness areas. 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.

**Table 1.** Estimated mountain lion population in DAU L-9.

| Population Range | Population | Males | Females | Subadults | Kittens |
|---|---|---|---|---|---|
| High Density | 372 | 97 | 97 | 51 | 127 |
| Low Density | 162 | 42 | 42 | 22 | 55 |
| Point Projection | 316 | 83 | 83 | 43 | 108 |

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.

## 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 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-9. Thus, it is important to maintain conservative caution when generating an estimate of a harvest level that the population can support. Current CDOW guidance 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 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 316 animals. The estimated number of huntable lion is 209, 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 209 lion would result in an annual harvest of 25 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. Since Logan indicates that a harvest rate of 28% can suppress a population and 12% (range of 8%-15%) will allow it to be stable to increasing, a range between 15+% and 28% would tend to decrease a population.

Using a harvest rate of 28% applied to a huntable population of 209 would result in an annual harvest of 58 mountain lion.

The current average 5-year DAU harvest is 29 lion, which is a 13.8% harvest rate. This rate of removal is 15% 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 is very light and could be considered at levels near stable to increasing and is not close to the upper 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 one per year. This mortality has been mostly due to damage control efforts. Only two lion deaths have been attributed to other mortality in the last 10 years. Non-hunting mortality has only been as high as two lions in any one year.

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-9 have mostly occurred in livestock other than sheep and cattle (Appendix B). The 5-year average claims totals $8,446 with 89.4%, 6.3% and 4.2% of the losses attributed to other livestock, cattle and sheep, respectively.

In 2000, claims were paid totaling $23,927. That year three claims for five animals totaled $22,469. In 2000 and 2001, claims for alpacas totaled $12,500 and $22,000, respectively. Damage losses to sheep were as high as $2,695 in 1993, but have averaged $356 for the past five years. Cattle losses have averaged, for the last five years, $535.

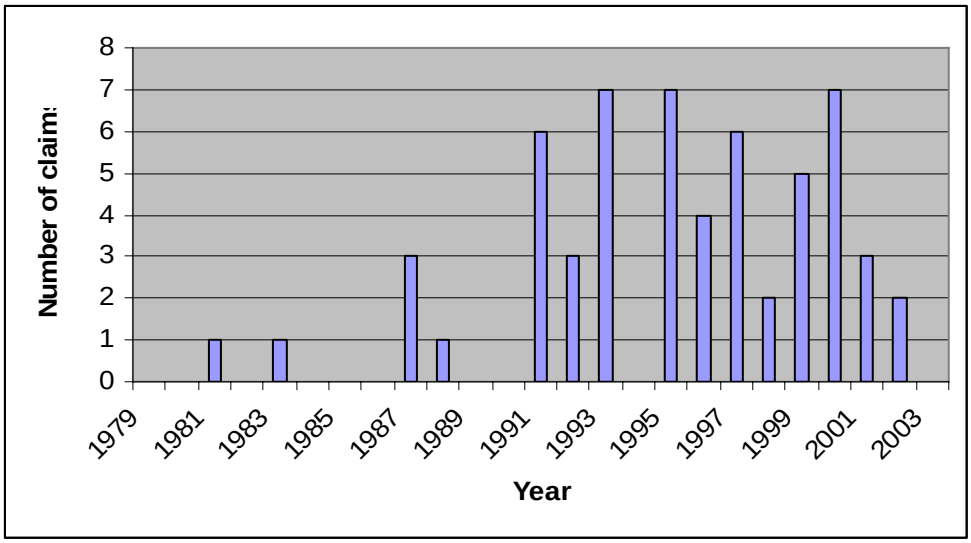


**Figure 5.** Number of game damage claims filed from 1995-2003.

**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-9.
Human conflicts with mountain lion in this DAU have been rare but random observations of mountain lion are on the increase. As the human population increases, human - mountain lion interaction will 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. A public scoping meetings was held in Grand Junction on 8/12/2004 to solicit input for this management plan. Comments were also taken for DAU L-7 at this meeting.

Comments received from the public meeting are presented in Appendix C. 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.

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. Furthermore, it was thought that 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.

**Preferred Management Strategy – Low Suppression**

The preferred management strategy for L-9 is to manage lion at an annual mortality rate, including hunting and non-hunting, in a range between 15% and 19% of the huntable population. This rate of removal would be considered low suppression and uses the population point projection of 316 (209 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 and other mortality factors. 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.

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

| Annual Mortality Rate | 15% | 16% | 17% | 18% | 19% | 28% |
|---|---|---|---|---|---|---|
| Hunter Harvest | 30 | 32 | 35 | 37 | 39 | 58 |
| Non-hunt Mort. | 1 | 1 | 1 | 1 | 1 | 1 |
| Total Mortality | 31 | 33 | 36 | 38 | 40 | 59 |

The current five-year average annual harvest has been 29 lion in the DAU. The 10-year average harvest has been 25 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).

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-9 shows the existence of areas where no lion hunting or very limited lion hunting occurs. One of these areas, Black Canyon National Park provides a large area along the southern border of the DAU.

**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).

**Literature Cited**

Anderson, A. E. 1983. A critical review of literature on puma. Colorado Division of Wildlife Special Report Number 54.

Anderson, C. R. 2003. Cougar ecology, management, and population genetics in Wyoming. Dept. of Zoology. Graduate School dissertation, University of Wyoming.

Lindzey, F. 1988. Mountain lion *in* Wild furbearer management and conservation in North America. Ontario Trappers Association.

Logan, K. A. and L. L. Sweanor. 2001. Desert puma: evolutionary ecology and conservation of an enduring carnivore. Island Press. Washington, DC.

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 and management statistics for DAU L-9, 1980-2003.

| GMUs: 41, 411, 42, 421, 52, 521, 53, 63 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 3-Yr AVG | 10-YR AVG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GMU 41 Harvest Quota | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | | |
| GMU 411 Harvest Quota | | | | | | | | 2 | 2 | 2 | 2 | 2 | 2 | | | | | | | | | | | | | |
| GMUs 411, 52, 521 Harvest Quota | | | | | | | | | | | | | | | 10 | 10 | 10 | 10 | 10 | | | | | | | |
| GMUs 411, 52 Harvest Quota | | 2 | 2 | 2 | 2 | 2 | 2 | | | | | | | | | | | | | 10 | 10 | 10 | 10 | 10 | | |
| GMU 42 Harvest Quota | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 6 | 8 | 8 | 8 | 10 | | |
| GMU 421 Harvest Quota | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 4 | 4 | 4 | 5 | 6 | 8 | 8 | 8 | 8 | 8 | | |
| GMU 521 Harvest Quota | | | | | | | | | | | | | | | | | | | 6 | 6 | 6 | 6 | 6 | 6 | | |
| GMUs 53, 63 Harvest Quota | | | | | | | | | | | 1 | 1 | 2 | 4 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | | |
| DAU Harvest Quota | 5 | 9 | 9 | 9 | 9 | 9 | 10 | 10 | 10 | 10 | 11 | 11 | 12 | 12 | 28 | 28 | 28 | 29 | 36 | 41 | 43 | 43 | 43 | 45 | 44 | |
| % of Quota Achievement | 0% | 11% | 11% | 44% | | | | | 30% | 0% | 18% | 9% | 42% | 92% | 46% | 46% | 79% | 110% | 61% | 54% | 47% | 70% | 86% | 76% | 67% | 69% |
| Hunter Harvest - Male | 0 | 0 | 0 | 2 | | | | | 3 | 0 | 2 | 1 | 4 | 10 | 8 | 9 | 12 | 13 | 8 | 14 | 15 | 21 | 17 | 15 | 18 | |
| Hunter Harvest - Female | 0 | 1 | 1 | 2 | | | | | 0 | 0 | 0 | 0 | 1 | 1 | 5 | 4 | 10 | 19 | 14 | 8 | 5 | 9 | 20 | 19 | 11 | |
| Total Hunter Harvest | 0 | 1 | 1 | 4 | | | | | 3 | 0 | 2 | 1 | 5 | 11 | 13 | 13 | 22 | 32 | 22 | 22 | 20 | 30 | 37 | 34 | 34 | 24.5 |
| % of Female in Harvest | 0% | 100% | 100% | 50% | Data Not Available by DAU | | | | 0% | 0% | 0% | 0% | 20% | 9% | 38% | 31% | 45% | 59% | 64% | 36% | 25% | 30% | 54% | 56% | 36% | 44% |
| # Hunters (From Surveys) | 1 | 5 | 7 | 12 | | | | | 12 | N/A | 25 | 6 | 17 | 28 | 27 | 39 | 51 | 51 | 76 | 37 | N/A BY DAU | | | | | |
| % Success | 0% | 20% | 14% | 33% | | | | | 25% | | 8% | 17% | 30% | 40% | 49% | 33% | 43% | 63% | 29% | 59% | | | | | 37% | |
| Control Kill - Male | | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | | 0 | |
| Control Kill - Female | | | Data unreliable 1980 - 1988 | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | |
| Total Control Kill | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 2 | 1 | 0 | 2 | |
| Other Mortality - Male | | | | | | | | | | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | |
| Other Mortality - Female | | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | | 0 | |
| Total Other Mortality | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| DAU Total Mortality - Male | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 2 | 4 | 11 | 8 | 9 | 12 | 14 | 8 | 14 | 15 | 22 | 17 | 15 | 18 | |
| DAU Total Mortality - Female | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 5 | 5 | 10 | 20 | 14 | 8 | 7 | 10 | 21 | 19 | 13 | |
| DAU Total Mortality | 0 | 1 | 1 | 4 | | | | | 3 | 0 | 3 | 2 | 5 | 12 | 13 | 14 | 22 | 34 | 22 | 22 | 22 | 32 | 38 | 34 | 31 | |
| % of Female in Total DAU Mortality | 0% | 100% | 100% | 50% | Data Not Available by DAU | | | | 0% | 0% | 0% | 0% | 20% | 8% | 38% | 36% | 45% | 59% | 64% | 36% | 32% | 31% | 55% | 56% | 39% | 45% |

Appendix B. Game damage claims and amounts for L-9, 1979-2003.

| DAU L-9 | GMUs: 41, 411, 42, 421, 52, 521, 53, 63 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 5-Yr AVG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sheep | # of Claims Paid | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 2 | 2 | 5 | | 5 | 3 | 3 | 1 | 2 | 2 | 1 | 0 | 0 | 1 |
| | # of Sheep | 0 | 0 | 17 | 0 | 13 | 0 | 0 | 0 | 23 | 2 | 0 | 0 | 15 | 9 | 37 | | 23 | 6 | 5 | 1 | 8 | 6 | 7 | 0 | 0 | 4 |
| | Amount Paid | 0 | 0 | 717 | 0 | 1250 | 0 | 0 | 0 | 2635 | 152 | 0 | 0 | 911 | 589 | 2695 | | 2082 | 570 | 434 | 92 | 672 | 504 | 602 | 0 | 0 | 356 |
| | Indexed Amount | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cattle | # of Claims Paid | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 0 | | 0 | 0 | 1 | 1 | 1 | 2 | 1 | 2 | 0 | 1 |
| | # of Cattle | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 1 | 0 | | 0 | 0 | 1 | 4 | 1 | 2 | 1 | 3 | 0 | 1 |
| | Amount Paid | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3270 | 500 | 0 | | 0 | 0 | 175 | 500 | 150 | 954 | 420 | 1150 | 0 | 535 |
| | Indexed Amount | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Stock | # of Claims Paid | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | | 2 | 1 | 2 | 0 | 2 | 3 | 1 | 0 | 0 | 1 |
| | # of Animals | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 304 | | 2 | 4 | 101 | 0 | 3 | 5 | 1 | 0 | 0 | 2 |
| | Amount Paid | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1160 | | 6000 | 450 | 3000 | 0 | 2810 | 22469 | 12500 | 0 | 0 | 7556 |
| | Indexed Amount | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | DAU - # of Claims | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 6 | 3 | 7 | 0 | 7 | 4 | 6 | 2 | 5 | 7 | 3 | 2 | 0 | 3 |
| | DAU - Amount Paid | 0 | 0 | 717 | 0 | 1250 | 0 | 0 | 0 | 2635 | 152 | 0 | 0 | 4181 | 1089 | 3855 | 0 | 8082 | 1020 | 3609 | 592 | 3632 | 23927 | 13522 | 1150 | 0 | 8446 |
| | DAU - Indexed Amount | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |