
NEVADA DEPARTMENT OF WILDLIFE

2010 - 2011 BIG GAME STATUS

MOUNTAIN LION

Western Region Areas: 1, 2, 3, 4, 5, 18, 19, 20, and 29
Report by: Carl Lackey

Harvest Results

Referencing all available reports for this report period, March 1st, 2010 through February 28, 2011, biologists recorded 79 mountain lion mortalities for the Western Region (Table 1). This included 50 animals taken under valid sport tags and 22 by USDA - Wildlife Services. Total recorded mortalities were above ten-year averages. Sport harvest increased by 51% and Wildlife Service's harvest increased by 83% relative to the 2009 season (Table 4).

Table 1. Western Region mountain lion harvest limits and mortalities by type for 2010-2011.

Unit	Harvest Limit	Harvest Type			
		Sport	Depredation	Other	Total
011-015	Regional 103	4	10	2	16
021-022		4	0	1	5
031,32,34,35		5	3	1	9
041-045		13	0	0	13
051		9	1	0	10
181-184		7	0	0	7
192,194-196		2	0	0	2
201-206		5	7	1	13
291		1	1	2	4
Totals		103	50	22	7

Table 2. Western Region mountain lion sport harvest by unit for 2010-11 and the previous 5 years.

Unit	2005-06	2006-07	2007-08	2008-09	2009-10	Previous 5 yrs Average	2010-11
011-015	5	12	19	6	6	9.6	4
021-022	4	1	1	0	1	1.4	4
031,32,34,35	3	4	5	3	2	3.4	5
041-045	5	9	5	7	5	6.2	13
051	6	5	11	8	4	6.8	9
181-184	0	1	2	4	4	2.2	7
192,194-196	5	11	5	6	7	6.8	2
201-206	6	8	8	4	3	5.8	5
291	2	0	1	0	1	0.8	1
Totals	36	51	57	38	33	43	50

The sport harvest consisted of 26 male lions and 24 females, with average ages of 3.9 and 5.0 years, respectively (Table 3). Approximately 46% (23 of 50) of sport hunters hired professional guides. More female than male lions were taken by these hunters (62% females) and they averaged 4.8 years old. Comparatively, non-guided hunters tagged slightly more male lions (52%) that averaged 3.8 years. Nevada residents took 33 of the lions through sport harvest while non-resident hunters killed 17. Time spent by hunters actively hunting lions was measured by the number of days hunted. The average for the 2010-11 season was 3.0 days/hunter. Hunting with hounds was typically the method most often employed by lion

hunters. Some hunters hoped to fill their lion tag while hunting some other type of big game or small game. This type of incidental harvest was infrequent and accounted for only three lions during this reporting period. Typically most of the cougars killed under authority of a sport tag are taken from fall to late winter when climatic conditions favor hound hunting, but in 2010 western Nevada experienced a wetter and colder spring than normal with snow fall as late as June at the lower elevations. This combined with an unusually high amount of snow in early October provided sport hunters with the opportunity to track cougars for an extended period. Therefore, the fact that seven cougars were taken between March 1 and October 31 was unusual but not surprising. Since its inception the year-round season has had little effect on total overall sport harvest.

Table 3. Western Region mountain lion sport harvest - 10 year sex and age comparisons.

Season/Year	Harvest			Average Age		
	# Males	# Females	Ratio Male:Female	Males	Females	All Lions
2001-2002	27	18	1m:0.6f	3.8	3.5	3.8
2002-2003	20	20	1m:1.0f	4.2	2.8	3.7
2003-2004	18	30	1m:1.6f	4.1	3.5	4.0
2004-2005	22	11	1m:0.5f	4.5	3.2	4.1
2005-2006	15	21	1m:1.4f	3.7	2.6	3.1
2006-2007	25	26	1m:1.0f	3.7	3.3	3.5
2007-2008	33	24	1m:0.7f	3.8	3.1	3.4
2008-2009	24	14	1m:0.6f	3.4	3.7	3.5
2009-2010	19	14	1m:0.7f	4.4	3.4	3.9
2010-2011	26	24	1m:0.9f	3.9	5.0	4.5

Note: two mortalities (unknown sex) in 2008

The United States Department of Agriculture's Wildlife Service's personnel killed 22 lions with a sex ratio of 9 males, 11 females and 2 of unknown sex. The average age of these lions was 3.2 years. Fourteen of the 22 lions killed by Wildlife Services were depredating lions responsible for killing a total of 40 sheep with a reported value of \$8,150.00. Six of these were taken on a ranch along the East Walker River in Area 20. This ranch known for depredation issues has had 21 lions removed in the last 11 years. The other 8 lions taken by Wildlife Services in 2010 were killed for predation management projects in northern Washoe County.

All salvageable lion hides from around the state were skinned, dried and then sold at the Nevada Trapper's Association's annual fur sale in Fallon. A total of 28 hides were sold this year bringing an average price of \$238 with a high of \$600.

Population Trend

Population structure and trends were based on harvest data and reports from guides and hunters. Major shifts in sex ratios or age cohorts were absent suggesting the lion population in western Nevada is stable (Table 3).

NDOW is currently working with the University of Nevada, Reno on a cougar research project in the Western Region. To date, 25 lions have been fitted with radio-telemetry collars. DNA samples have been taken from harvested lions throughout the state and are being fingerprinted as a portion of the ongoing study to establish a map representing genetic flow of mountain lions in Nevada.

Management Conclusions

Although there are some yearly fluctuations within harvest categories, the average ages and ratio of males/females killed has not changed significantly over past years. When evaluating harvest rates for the last ten years compared to the previous ten-year period (1991-2000), the averages have increased

somewhat but remain within the yearly fluctuations expected. For example, the sport harvest in the 2009-2010 season was about the same as the average from 1991-2000. The same holds true for the total harvest category (Table 4). And even though the change in total harvest from the 1991-2000 period to the 2001-2010 period represents an increase of 31%, total harvest figures for 4 out of the last 10 years are about the same as the 1991-2000 average. Data indicate regulations and harvest limits are compatible with the lion resource and its capability to support sport harvest.

Table 4. Ten-year Western Region mountain lion harvest trend-all known mortalities.

Season Year	Season Length	Harvest Limits	Harvest Type			
			Sport	Depredation	Other	Total
2001-2002	365	100	39	6	2	47
2002-2003	212	114	40	5	3	48
2003-2004	365	114	48	15	3	66
2004-2005		114	33	6	8	47
2005-2006		114	36	10	6	52
2006-2007		114	51	6	8	65
2007-2008		114	57	27	6	90
2008-2009		114	38	12	2	52
2009-2010		103	33	12	2	47
2010-2011		103	50	22	7	79
10 year avg.	NA	NA	42.5	12.1	4.7	59.3
Previous 10 year avg. (1991-2001)	218	77	33.2	8.7	3.1	45.0

Eastern Region: Areas 6, 7, 8, 9, 10, 11, 12, 13, 14, and 15
Report by: Scott Roberts

Harvest Results

The Eastern Region maximum allowable sport harvest for the 2010-11 season was 143 lions. Four of those lions were allocated to Game Management Unit 091 (Pilot Peak) which exists as an interstate cooperative hunt with the State of Utah and the remaining 139 were allocated to the rest of the Eastern Region hunt units. No area closures took place in 2010-11.

The Eastern Region sport harvest for mountain lions for the 2010-11 season totaled 71 animals (Table 1). Included in this number were 3 lions that were taken as part of a Nevada Wildlife Heritage Project. The project was the first of its kind in the state that allowed an individual to receive payment for lion removal using his and his family's lion tags. Because the lions were legally tagged and retained by the hunters, the lions were considered sport harvest. The sport harvest for the previous year (2009-10) was 74. Guided hunters made up 37% of the region's annual sport harvest. The 2010-11 sport harvest composition was 49 males and 22 females for a ratio of 2.2 males:female. The sport harvest ratio for the 2009-10 season was 1.2. The average sport harvest for the previous 5 years (2005-2009) was 60 lions. Average sport harvest reported during those same 5 years averaged 37 males and 23 females for a ratio of 1.6 males:female.

The total documented mountain lion harvest for the Eastern Region in 2010-11, including all known causes of take was 87 lions. The annual harvest was comprised of 57 males, 29 females, and 1 lion of unknown sex being removed from the population.

Table 1. Eastern Region sport harvest by area groups for 2010-11 and previous 5 years.

Area Group	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
66	2	0	3	1	1	4
061-068	10	4	6	13	19	13
65	0	2	3	2	1	1
071-081	17	11	8	3	6	10
91	1	1	0	0	0	0
101,105,106,107	3	1	6	0	1	3
102,103,104,108	5	7	1	6	13	18
111, 112	8	7	8	7	9	4
113,114,115	4	5	3	6	8	4
121	5	7	1	3	6	2
131-134	0	0	2	0	3	1
141	0	1	1	2	0	0
142-145	2	7	7	4	6	3
151,152,154,155	2	3	6	7	1	8
Eastern Region Total	59	56	55	54	74	71

Depredation and Other Harvest

Depredation issues in 2010-11 resulted in the removal of 13 lions compared to 18 in 2009-10 (Table 2). Two of these lions were removed by USDA Wildlife Services at the request of NDOW for the protection of Rocky Mountain Bighorn Sheep in Unit 114. Depredation harvest for the last 10 seasons has averaged 10 lions per year (Table 4).

The Other Harvest for the 2010-11 season was comprised of 1 instance of self defense by a chukar hunter, 1 road kill, and 1 lion shot by the Eureka County Sherriff Department as a public safety concern. Other Harvest for the last 10 seasons has averaged 4 lions per year (Table 4).

Table 2. All Eastern Region mountain lion mortalities by type / distribution for 2010-2011.

Management Area Groups	Maximum Allowable Sport Harvest	Sport Harvest	Depredation Harvest	Other Harvest	Total Harvest
066	Regional	4	0	0	4
061-068	139	13	1	1	15
065		1	0	0	1
071-081		10	1	0	11
091	4	0	0	0	0
101,105,106,107	Regional	3	1	1	5
102,103,104,108	139	18	1	0	19
111, 112		4	0	0	4
113,114,115		4	3	0	7
121		2	1	0	3
131-134		1	2	0	3
141		0	0	0	0
142-145		3	2	1	6
151,152,154,155		8	1	0	9
Totals:	143	71	13	3	87

Population Trend

Mountain lion habitat remains in good condition throughout the Eastern Region with an ample prey base and minimal overall loss of habitat due to development activities. Range fires over the last 12 summers have converted tens of thousands of acres of deer habitat to vegetation dominated by grasses and annuals in the Eastern Region. Some deer summer ranges, and more importantly, some critical deer winter ranges burned. The future status and trend of deer herds in the burned areas will have the most significant impact on lion productivity and survivability. The protection of intact deer winter ranges and the rehabilitation of degraded areas will be paramount in maintaining both deer and lion populations. Documented mortality in the form of harvest and accidental loss has not exceeded the reproductive/recruitment capabilities of the mountain lion resource.

Lion harvest has been under close scrutiny by some sportsmen over the last few years. There is some concern over the quantity and quality of lions within the Eastern Region. A review of statistics within the region indicates that although some members of the sporting public may witness a locally reduced population (e.g., they are seeing fewer lions in their favorite canyon or hunting location), regionally the population is holding up well. Population is not directly proportional to harvest as many factors can influence harvest pressure and effort. For example; factors such as weather conditions, level of interest, economics, etc. can have an affect annual lion harvest. Age and sex structure is a good measure of lion populations. Over-harvest will result in obvious age structure changes. (e.g., the number of mature males harvested will drop while the number of adult females and sub-adult males in the harvest will increase).

The average age of lions taken by sport hunters in the Eastern Region was 3.6 which is a slight drop from the ten-year-average age of 4.0 years. One possible explanation for this slight drop in average age was the fact that many of the incidental harvest and Heritage project lions were ≤ 1 years-old. The average age of all recorded lion mortalities was 3.6 and includes sport harvest, depredation harvest, and other mortalities (Table 3). The overall sex ratio for all known mortalities was 2.0 males: female compared to 1.2 males: female last year. Based on population estimates, sex and age ratios in the harvest, long-term harvest data analysis, and recorded mortality, the overall Eastern Region mountain lion population trend is considered to be stable (Tables 3 and 4).

Table 3. Eastern Region sport harvest - sex and age comparisons since 1999.

Season Year	# Males Harvested	# Females Harvested	Average Age Males	Average Age Females	Average Age All Lions
1999-2000	40	21	3.9	3.9	3.9
2000-01	53	47	4.4	4.5	4.5
2001-02	60	38	4.3	4.1	4.3
2002-03	44	22	4.3	4.9	4.5
2003-04	61	54	4.6	4.2	4.4
2004-05	37	22	4.3	3.9	4.1
2005-06	37	22	3.8	3.7	3.8
2006-07	38	18	4.2	3.4	3.9
2007-08	31	24	3.8	3.8	3.8
2008-09	38	16	4	4.1	4.1
2009-10	40	34	3.8	3.8	3.8
2010-11	49	22	3.7	3.2	3.6

Management Conclusions

Hunter interest and participation remained high in the Eastern Region. The majority of lions were taken in December, January and February, with 76% of the total lions being harvested during these peak months. There was a considerable amount of variability in snow and tracking conditions in the Eastern Region



during the 2010-11 season. The maximum allowable sport harvest objective for the Eastern Region was 143. Sport hunters took 71 lions including 3 lions taken on the Heritage Project contract. No area closures took place in 2010-11 and a potential harvest of 72 lions was still available to hunters in the Eastern Region.

Mountain lion population trends are stable within the Eastern Region. Although some of the more accessible and popular lion hunting areas may hold depressed populations, there are sufficient base populations of lions to allow for adequate reproduction and population maintenance. The dispersal of lions from adjacent mountain ranges with little or no harvest mortality moderates the effects of harvest in more heavily hunted areas. The base populations of prey species on which mountain lions depend most heavily (deer) are currently at levels expected to continue to sustain lion populations. Body condition was rated from good to excellent on 92% of the sport harvested lions in the Eastern Region during the 2010-11 season. This and other indices demonstrate both healthy individuals and a healthy overall population.

Table 4. Ten year Eastern Region mountain lion harvest trend - all known mortalities.

Season Year	Season Length	Maximum Allowable Sport Harvest	Sport Harvest	Depredation Harvest	Other Harvest	Total Harvest
2001-02	365	150	98	7	3	108
2002-03	212	167	66	6	3	75
2003-04	365	167	115	9	0	124
2004-05	365	167	59	10	7	76
2005-06	365	167	59	6	5	70
2006-07	365	167	56	12	6	74
2007-08	365	167	55	10	0	65
2008-09	365	167	54	11	3	68
2009-10	365	143	74	18	6	98
2010-11	365	143	71	13	3	87
Averages	350	161	71	10	4	85

Southern Region: Areas 16, 17, 21, 22, 23, 24, 25, 26 and 27
Report by: Mike Scott

Harvest Results

The 2010-2011 mountain lion season ran from March 1, 2010 through February 28, 2011 in all areas of the Southern Region, with the exception of Area 28, which remains closed to mountain lion hunting. The harvest limits in all areas were combined to form a regional maximum harvest limit of 60 lions. Table 1 displays a comparison of harvest for the last ten years. Table 2 displays the regional lion harvest for the 2010 -2011 season.

Table 1: Comparison of Southern Region Harvest by area groups for the last ten years

Area Group	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
161-164	1	0	6	0	4	5	6	3	11	8
171-173	9	5	7	3	7	10	10	8	4	4
211-212	0	0	0	0	0	2	1	0	0	0
221-223	5	4	7	5	4	1	6	6	3	6
231	7	6	4	0	5	1	1	6	2	4
241-245	3	3	2	2	3	4	5	4	4	7
251-253	0	0	0	0	0	0	1	3	1	1

Area Group	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
261-268	1	2	3	3	0	2	4	2	0	1
271-272	0	0	0	0	0	2	0	0	0	0
Totals	26	20	29	13	23	27	34	32	25	31

Table 2: All Southern Region Mountain Lion Mortalities by Type/ Distribution for 2009-2010

Management Area Groups	Harvest Limit	Sport Harvest	Depredation Harvest	Other Harvest	Total Harvest
161-164	<i>Regional</i>	8	0	0	8
171-173		4	0	0	4
211-212		0	0	0	0
221-223		6	0	0	6
231		3	1	0	4
241-245		3	4	0	7
251-253		0	0	1	1
261-268		1	0	0	1
271-272		0	0	0	0
Totals:		60	25	5	1

Regional sport harvest for the 2010-2011 season consisted of 25 lions which equals the 25 sport harvest lions taken during the 2008-2009 and 2009-2010 seasons. Four lions were removed from the Delamar Mountains by Wildlife Services to protect bighorn sheep. One young lion was shot at a residence in Area 23. Regional depredation complaints have averaged 3 per year (range 0 to 9) during the last 10 seasons (2001-2011).

Population Trend

The 2010-2011 Southern Region mountain lion sport harvest consisted of 13 males and 12 females for a male to female ratio of 1.1. The 5-year average male to female ratio is 1.0. The average age of lions taken during the 2010-2011 season was 5.2 years for males (compared to 5.0 in 2009-2010) and 3.8 years for females (compared to 4.5 in 2009-2010). The number of lions taken (31) in 2010-2011 was higher than the long term (10-year) average of 25 lions annually. The increase can be explained by the one depredation lion being taken, four lions harvested for the NDOW predator project on the Delamar Range and one lion dying from trauma within the Nellis Test Range. The Southern Region combined harvest was well below the 2010-2011 harvest limit of 60.

Table 3: Southern Region Sport Harvest - Sex and Age Comparisons since 1997.

Season/Year	Harvest		Average Age		
	# Males	# Females	Males	Females	All Lions
1997-1998	27	20	4.2	4.1	4.1
1998-1999	19	15	4.6	4.9	4.7
1999-2000	20	15	4.5	4.2	4.4
2000-2001	23	17	5.4	4.8	5.1
2001-2002	13	13	4.7	2.8	3.8
2002-2003	12	8	4.6	4.5	4.6
2003-2004	18	11	4.2	4.9	4.4
2004-2005	6	7	5.9	3.6	4.7
2005-2006	15	8	4.7	3.4	4.3
2006-2007	14	16	4.1	4.0	4.05
2007-2008	18	14	4.8	4.6	4.7
2008-2009	11	14	3.2	3.3	3.24
2009-2010	13	12	5.0	4.5	4.8
2010-2011	13	12	5.2	3.8	4.6

Table 4: Ten Year Southern Region Mountain Lion Harvest Trend - All known mortalities.

Season Year	Season Length	Harvest Limits	Harvest Type			
			Sport	Depredation	Other	Total
2001-2002	365	67	26	9	0	35
2002-2003	212	68	20	1	0	21
2003-2004	365	68	29	8	3	37
2004-2005	365	68	13	0	0	13
2005-2006	365	68	21	2	0	23
2006-2007	365	68	27	2	1	30
2007-2008	365	68	32	0	2	34
2008-2009	365	68	25	3	4	32
2009-2010	365	60	25	0	0	25
2010-2011	365	60	25	5	1	31
Averages:	350	66	24	3	1	28

Management Conclusions

The sport harvest of mountain lions equaled the previous years' sport harvest of 25 lions. Five other lions were taken in the southern region during the reporting period, and one died of natural causes. Total combined harvest was below the regional harvest limit. Above average precipitation was received throughout the Southern Region during 2010, which should result in increased availability of prey species. The western portion of the Southern Region (Areas 16 & 17) accounted for 40% of the Southern Region lion harvest compared to 60% in 2009-2010. Body condition was rated from good to excellent on 92% of the sport harvested lions in the Southern Region during the 2010-11 season. Average age of males and females indicate a healthy population and most hunters report seeing multiple lion tracks during their hunts. These and other indices demonstrate both healthy individuals and a healthy overall population.