

**MONTANA FISH, WILDLIFE & PARKS  
HUNTING SEASON / QUOTA CHANGE SUPPORTING INFORMATION**

**Species: Mountain Lion**

**Region: 4**

**Hunting District(s): LMU 405, 447 & 471 (Highwood Mountains)**

**Year: 2020**

- 1. Describe the proposed season / quotas changes and provide a summary of prior history (i.e., prior history of permits, season types, etc.). REMEMBER THIS STEP IS TO BE ACCOMPLISHED BY THE INITIAL ENTRY INTO THE DATABASE—SO FOLKS CAN START THIS NARRATIVE WITH #2 BELOW.**

Increase the male mountain lion quota in the LMU from 4 to 5. Female quota to remain at 3.

- 2. What is the objective of this proposed change? This could be a specific harvest amount or resulting population level or number of game damage complaints, etc.**

The objective is to allow for a small increase in mountain lion harvest in the Highwood Mountains Lion Management Unit. Harvest information and anecdotal evidence suggest the lion population in the LMU is continuing to grow and expand. Landowners and hunters continue to comment about the abundance of lions observed both (tracks and direct observations afield). Their observations coincide with early season closure dates, low mountain goat numbers, lower mule deer numbers and an over-objective elk population. Houndsmen have voiced that lions are doing well, and they would appreciate additional harvest opportunity. Increasing the lion harvest in the management unit will provide FWP an opportunity to address public need and collect additional data for better adaptive management over the long-term.

- 3. How will the success of this proposal be measured? This could be annual game or harvest surveys, game damage complaints, etc.**

Success or failure of this proposal will be measured by a small increase in harvest, hunter/public feedback, additional harvest data, and new population monitoring techniques.

Presently, biologists collect age, sex, harvest-effort and location data from successful hunters via mandatory reporting and check-in. In Region 4, a record of harvest and season closure dates is tracked and maintained as a method for describing 'absolute opportunity'. By assessing the average age of harvested male and female lions along with season closure dates, biologists can assess the health of the local population. For example, increasing diversity in age structure and early season closure dates suggest the population is stable or growing. On the contrary, declining diversity in age structure and difficulty reaching harvest quotas suggest the population is stable or declining (if snow conditions allow for harvest opportunities).

MFWP recently began implementing a new mountain lion monitoring and management strategy in 2019. In the next few years, additional region-specific demographic information will be available, and biologists will be able to compare their existing data to newly collected survey data to make better-informed decisions. The new technique is designed to provide systematically collected, robust data for better population modeling; which can then be used to more confidently prescribe harvest quotas.

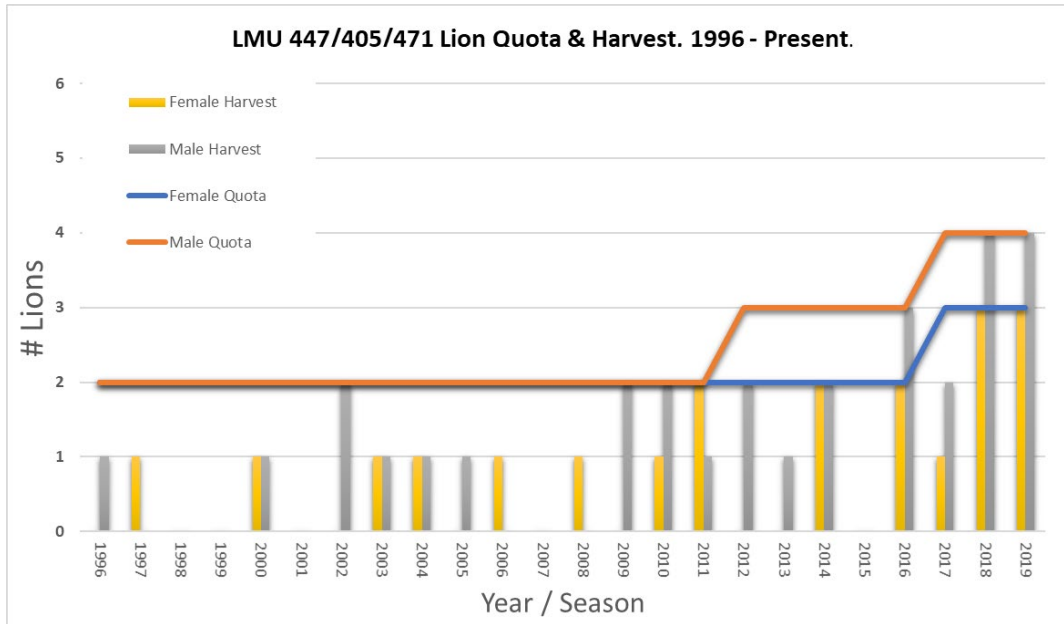
- 4. What is the current population's status in relation to the management objectives? (i.e., state management objectives from management plan if applicable; provide current and prior years of population survey, harvest, or other pertinent information).**

There presently is no population objective in the management unit nor is there a tried and true method for accurately estimating actual on-the-ground numbers. However, this information will become more attainable as the new management strategy is implemented. Presently, biologists use age data and season closure dates along with density estimates to change harvest limits and monitor the effects of harvest prescription. For example, increasing diversity in age structure and early season closure dates suggests the lion population is stable or growing. On the contrary, declining diversity in age structure and difficulty reaching harvest quotas suggests the

population is stable or declining. By using these principles biologists can quickly adjust harvest criteria to suit social and biological needs.

The first lion season in the LMU was implemented in 1996. From 1996 – 2008 hunter effort was considered low and relatively few lions were harvested. However, as lions became more prevalent and habitat occupied, harvest increased respectively (13 lions from 1996-2008; 37 lions from 2009-2019). In the last 10 years, livestock depredations complaints due to mountain lions have increased suggesting that lion numbers were/are increasing and increase in harvest is not only because of an increased interest in lion hunting.

The table and graphs below illustrate the history of management in the unit.



**LMU 447/405/471 Lion Quota and Harvest, 1996 - Present.**

Year	Quota		Total Quota	Harvest		Total	% Male	% Female	% Total	Season Closure
	M	F		M	F	Harvest	Filled	Filled	Filled	
1996	2	2	4	1	0	1	50%		25%	
1997	2	2	4	0	1	1		50%	25%	
1998	2	2	4	0	0	0				
1999	2	2	4	0	0	0				
2000	2	2	4	1	1	2	50%	50%	50%	
2001	2	2	4	0	0	0				
2002	2	2	4	2	0	2	100%		50%	M Closed 1/26/2003
2003	2	2	4	1	1	2	50%	50%	50%	
2004	2	2	4	1	1	2	50%	50%	50%	
2005	2	2	4	1	0	1	50%		25%	
2006	2	2	4	0	1	1		50%	25%	
2007	2	2	4	0	0	0	0%	0%	0%	
2008	2	2	4	0	1	1	0%	50%	25%	
2009	2	2	4	2	0	2	100%	0	75%	F closed 1/29/10
2010	2	2	4	2	1	3	100%	50%	75%	F closed 2/1/11
2011	2	2	4	1	2	3	50%	100%	75%	F closed 1/11/12
2012	3	2	5	2	0	2	67%	0%	40%	
2013	3	2	5	1	0	1	33%	0%	20%	
2014	3	2	5	2	2	4	67%	100%	80%	F closed 1/12/15
2015	3	2	5	0	0	0	0%	0%	0%	
2016	3	2	5	3	2	5	100%	100%	100%	M closed 1/4/17, F closed 1/14/17
2017	4	3	7	2	1	3	50%	33%	43%	
2018	4	3	7	4	3	7	100%	100%	100%	M closed 1/26/19, F closed 1/20/19
2019	4	3	7	4	3	7	100%	100%	100%	M closed 2/10/20, F closed 1/17/20
SUM				30	20	50				

**5. Provide information related to any weather/habitat factors, public or private land use or resident and nonresident hunting opportunity that have relevance to this change (i.e., habitat security, hunter access, vegetation surveys, weather index, snow conditions, and temperature / precipitation information).**

Habitat quality and availability suggest the LMU can comfortably support between 12 and 33 adult mountain lions. Across the western states lion density estimates range from 0-4+ lions per 100 square kilometers and recent efforts to describe habitat quality in the Highwoods has revealed that the forested portions of the LMU is considered excellent mountain lion habitat. Forest and woodland cover alone make up approximately 5% of the LMU. New survey and monitoring techniques will reduce variance in these density estimates over time.

Research suggests sex ratios are skewed towards females at the time of harvest. If we assume a 40:60, male: female sex ratio and a population of 12 individuals we get approximately 5 males and 7 females. If we assume there are 33 adult lions, the ratio is approximately 13 males and 20 females. Research suggests that harvesting greater than 20% of the adult females in the population will result in a declining population. Twenty percent (20%) of 7 to 20 is 1 to 4 females, respectively. Assuming other vital rates are normal, at 12 lions total, harvesting less than 1.4 adult females should allow for the population to grow by at least three lions a year; and this rate is greater with additional lions to begin with. In recent years, hunters have likely noticed an increasing lion population and have responded with increased hunter effort. Since the carrying capacity of the LMU is likely higher than 12 lions and both adult and subadult lions immigrate and emigrate to fill vacant habitat, the current harvest quotas are thought to be appropriate.

Lions in the HD447 are likely responding to changing elk, mule deer, white-tailed deer and mountain goat population dynamics. The large/ possibly growing elk population has likely modified the ungulate-ungulate and predator-prey dynamics in the LMU which results in conditions favoring predators like mountain lions. More elk calves being born provide more food for lions during the summer. Few wolves and black bears in the range

reduce competition in favor of mountain lions. Anecdotal evidence suggests some of the recent declines in mountain goat populations may be attributed to mountain lions. Older lions may become prey specialists when multiple prey species and unique dynamics are present. In the last few years, hunters have checked in some old lions.

**6. Briefly describe the contacts you have made with individual sportsmen or landowners, public groups or organizations regarding this proposal and indicate their comments (both pro and con).**

The proposal to increase the male lion quota has been discussed with a few landowners and houndsmen. Regional staff have been visiting with more hunters since more lions have been harvested in recent years. Conversations with houndsmen suggest more lions are being detected in the field; several houndsmen have requested MFWP increase the quota. Vocal landowners have expressed concern as well, some threatening to call the commission if quotas are not increased. Area game wardens Keith Knighton and Trenton Farmer have each heard similar comments and support the change.

Submitted by: Jake Doggett, Great Falls Area Wildlife Biologist

Date: 3/29/2020

Approved: \_\_\_\_\_  
Regional Supervisor / Date

Disapproved / Modified by: \_\_\_\_\_  
Name / Date

Reason for Modification: