

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

**Species: Mountain Lion**  
**Region: 3**  
**Hunting District: 392**  
**Year: 2020-21**

- 1. Describe the proposed season / quotas changes and provide a summary of prior history (i.e., prior history of permits, season types, etc.).**

The proposal is to increase the total mountain lion quota from 3 to 4 in the district with the female subquota remaining at one. See Table 1 for past HD 392 mountain lion harvest related information.

- 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 proposal is to increase the HD's overall mountain lion quota with the goal of reducing the HD's mountain lion population to some extent.

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

Mountain lion harvest information will be monitored via mandatory checks and FWP's MRRE system. Future comments from houndsmen, landowners and hunters may help indicate what if any impact the quota changes have on the management zone's mountain lion population; although, the utility of lion sightings, houndsmen efforts, etc to actually detect a change in mountain lion populations is quite questionable (Robinson and Desimone 2011). Ages of harvested mountain lions will be monitored via pulled teeth to determine if the age structure of the mountain lion population particularly that of the male segment is being negatively impacted as a result of the quota increases. In addition, age information on harvested females can give use an idea of the percentage of adult females in the harvest which may provide an indication of harvest impacts on the overall population.

- 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 is currently no official population management objective for mountain lions in this management zone. The Department has developed mountain lion population estimates for all the different mountain lion management zones in the state using a resource selection function model (Robinson et al. 2013). However, these estimates have not been validated in the various districts across the entire state, so it's unknown how accurate they are in the different districts or eco-regions of the state – some recent research and management experiences at the local level indicate that at least in some cases the model may not be that accurate. In addition, the estimates for the Big Belt Mountains area were done prior to a major boundary changes in HD 2016, so those estimates are no longer valid given the current HD boundaries.

Another way to estimate the lion population for the new management zone area is to estimate the population size based on some crude density estimates. Looking at where mountain lions have been harvested in the past and overlaying potential mountain lion habitat based on vegetation and topography with mule deer and elk winter range information in the two hunting districts, it is estimated that there may be approximately 539 km<sup>2</sup> of potential winter mountain lion habitat in the management zone. Based on published mountain lion research done elsewhere in Montana and the western United States and Canada, it appears that a total independent mountain lion ( $\geq 1.5$  yrs) density of somewhere in the range of approximately 3.75 lions/100km<sup>2</sup> of winter lion habitat may not be unreasonable for this area given its generally rugged topography, which would yield a total estimated independent mountain lion population size of approximately 20 lions. At an estimated independent mountain lion population size of 20, a total quota of 4 lions would yield a harvest rate

of approximately 20.0 % of the independent population which is believed to be a sustainable harvest rate depending upon how accurate the population estimate is. Most lion populations typically have 2.5x – 3x as many sub-adult/adult females as sub-adult/adult males in the population. With that in mind, the estimated 20 independent mountain lions might be comprised roughly of 14 independent females and 6 independent males. If the current female sub-quota of 1 were filled this would be a 7.1 % harvest rate on the estimated number of independent females which is within an acceptable range of female harvest mortality again depending upon how accurate the population estimate is. Additional female mortality from other sources is quite likely.

Obviously, trying to extrapolate mountain lion densities to areas other than where the research was done must be approached with great caution. Mountain lion densities could be lower or higher than the numbers used above, which would of course impact population estimates. Unfortunately, not having any mountain lion population information, or having any mountain lion population research done in Montana east of the continental divide in habitats which may be similar to that found in the Big Belt Mountains, makes making biologically sound management decisions related to mountain lions rather difficult.

Harvest information for the zone is provided in Table 1.

**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).**

Lion habitat in the area is believed to be good overall with good prey numbers consisting of mule deer (numbers currently down to some degree at least in some areas), white-tailed deer and elk among big game species. Good prey numbers likely provide incentive for mountain lions to immigrate into the area which would help to maintain a healthy mountain lion population. The current HD 392 is mostly public (USFS) land with good motorized access to many watersheds. Weather conditions may negatively affect mountain lion harvest, however, weather conditions the last couple of years have afforded lion hunters ample opportunity to harvest any available mountain lions.

Overall (resident and nonresident) hunter opportunity will be increased, as the quota change proposal will result in a increase in both the total number of mountain lions and the number of female mountain lions allowed for harvest. Both the total quota and the female sub-quota are typically filled fairly quickly ('race' type situation) in the zone, if good snow conditions are present.

**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).**

FWP personnel from R3 met with a group of Region 3 houndsmen in early-March to visit about potential mountain lion changes in the Region. At that meeting a recommendation to raise the total quota from 3 to 5 and to raise the female subquota from one to two was discussed. Only one comment was received at the meeting regarding the proposal which was in opposition to that proposal. The individual was concerned about the number of females in the lion management zone. Comments received from other contacted local area houndsmen on the proposal ranged from support to concerns and/or opposition to that original proposal. A couple houndsmen felt like that if the quota was to be raised, that raising it by only one might be better. Many local hunters and landowners think there are too many lions in the area and blame mountain lions for lower than desired mule deer populations in at least some areas of the district. The original proposal was discussed with the local game wardens who were either supportive of the proposal or at least apparently okay with it (didn't provide comments/feedback). Based on comments/input received it was decided to only raise the total quota by one and to leave the female subquota at its current level of one.

**Literature Cited:**

Robinson et al. 2013. Linking resource selection and mortality modeling for population estimation of mountain lions in Montana. Final Report, Montana Department of Fish, Wildlife & Parks, Wildlife Division, Helena, MT, 81 pp.

Robinson, H.S. and R.M. DeSimone. 2011. The Garnet Range mountain lion study: Characteristics of a hunted population in west-central Montana. Final Report, Montana Department of Fish, Wildlife & Parks, Wildlife Bureau, Helena, MT. 102 pp.

Submitted by: **Adam Grove, Wildlife Biologist – Townsend**

Date: 3/9/20

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

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

Reason for Modification:

Table 1. Mountain lion harvest related information for HD 392 since 2016 boundary change.

		<b>Female</b>	<b>Female</b>	<b>Male</b>	<b>Total</b>		<b>Female</b>		<b>Season</b>	
<b>District</b>	<b>Lic. Year</b>	<b>SubQ</b>	<b>Harvest</b>	<b>Harvest</b>	<b>Quota</b>	<b>Total Harv</b>	<b>Closed</b>	<b>Days Open</b>	<b>Closed</b>	<b>Days Open</b>
<b>392</b>	2016	1	1	3	3	<b>4</b>	12/15/2016	15	12/15/2016	15
	2017	1	2	2	3	<b>4</b>	12/16/2017	16	12/16/2017	16
	2018	1	1	2	3	3	12/18/2018	18	12/18/2018	18
	2019	1	1	2	3	3	1/17/2020	48	1/17/2020	48
	<b>Ave</b>	<b>1.0</b>	<b>1.3</b>	<b>2.3</b>	<b>3.0</b>	<b>3.5</b>		<b>24</b>		<b>24</b>

Note: Red numbers indicate quota over-runs.