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

Species: Mountain Lion
Region: 5
Hunting Districts: 560
Year: 2019

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

   Increase the total mountain lion quota and female sub quota in HD560. The total quota was last changed in HD560 in 2010 (Table 1).

   Change From:
   General Lion License
   Harvest Quota: 7 Any Legal Lion. Female Sub quota = 3.
   Dec 01-Apr 14

   Change To:
   General Lion License
   Harvest Quota: 8 Any Legal Lion. Female Sub quota = 4.
   Dec 01-Apr 14

Figure 1. HD 560 Lion quotas and harvest, 1988-2019.

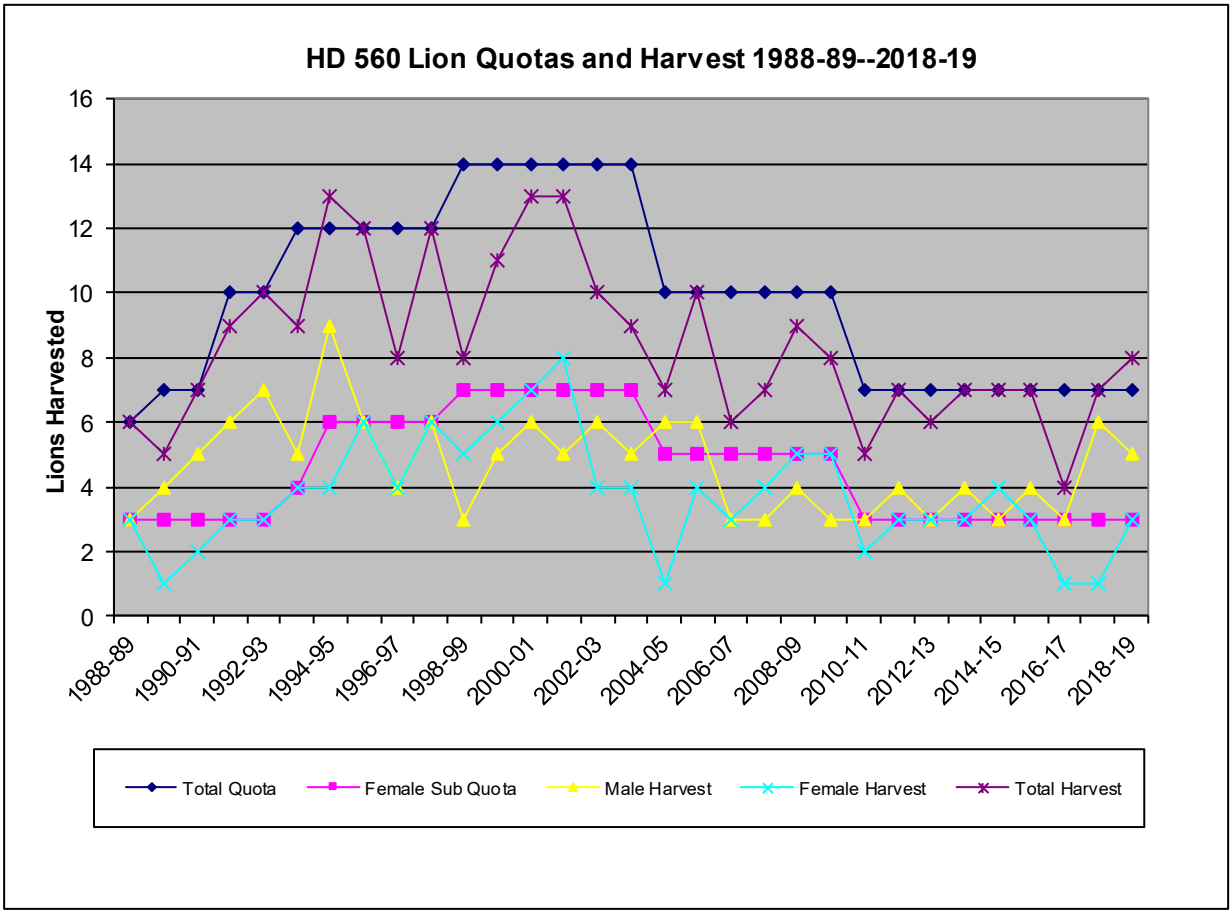
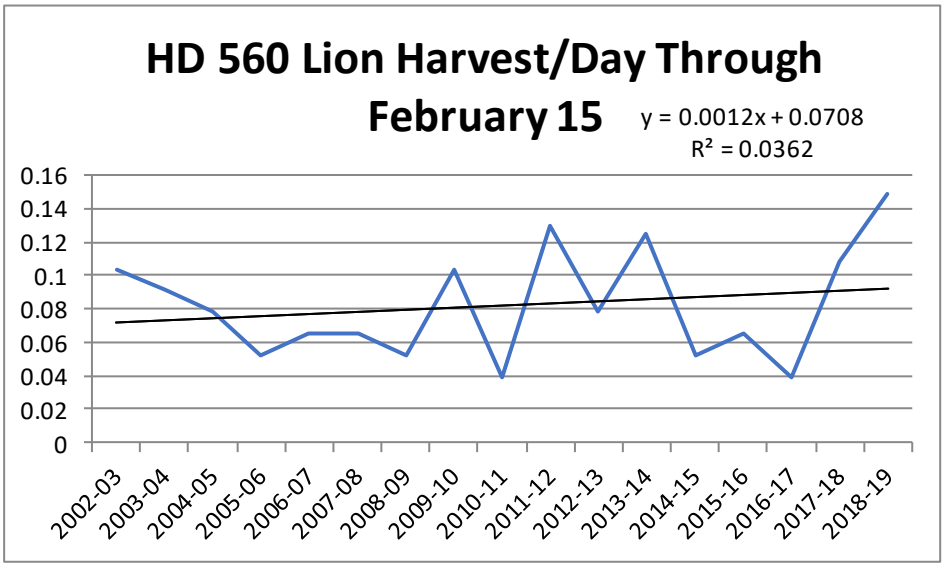


Table 1. Mountain lion quotas and harvest for HD 560, 1988-89 through 2018-19 season.

Year	Total Quota	Female Quota	Male Harv.	Fem. Harv.	Total Harvest
1988-89	6	3	3	3	6
1989-90	7	3	4	1	5
1990-91	7	3	5	2	7
1991-92	10	3	6	3	9
1992-93	10	3	7	3	10
1993-94	12	4	5	4	9
1994-95	12	6	9	4	13
1995-96	12	6	6	6	12
1996-97	12	6	4	4	8
1997-98	12	6	6	6	12
1998-99	14	7	3	5	8
1999-00	14	7	5	6	11
2000-01	14	7	6	7	13
2001-02	14	7	5	8	13
2002-03	14	7	6	4	10
2003-04	14	7	5	4	9
2004-05	10	5	6	1	7
2005-06	10	5	6	4	10
2006-07	10	5	3	3	6
2007-08	10	5	3	4	7
2008-09	10	5	4	5	9
2009-10	10	5	3	5	8
2010-11	7	3	3	2	5
2011-12	7	3	4	3	7
2012-13	7	3	3	3	6
2013-14	7	3	4	3	7
2014-15	7	3	3	4	7
2015-16	7	3	4	3	7
2016-17	7	3	3	1	4
2017-18	7	3	6	1	7
2018-19	7	3	5	3	8
Avg.	9.90	4.58	4.68	3.71	8.39

Figure 2. HD 560 Lion Harvest Rate (lions per day) 2002-2019.



The regional objective is to maintain healthy mountain lion populations in presently occupied habitat while allowing expansion into unoccupied habitat to the degree that lions do not conflict with domestic livestock or people. HD 560 is part of the south west eco region as defined in the new lion strategy.

Based on past harvest and harvest rates, lion populations in 560 appear to have peaked between 1996 and 2002. This period was followed by an apparent population decline from approximately 2003 to 2010 (Figure 1). These trends are similar to many lion districts across the state during that time span. In response to these perceived declines, the quota was dropped to 7 lions with a female sub quota of 3 for the 2010-11 season. That quota structure has remained in place up to this time. This has been the longest period of low lion quotas in 560. Throughout this history of population highs and lows, total lion harvest has averaged 8.4 lions annually. Male harvest has averaged 4.7 lions per year. While female harvest has averaged 3.71 lions per year.

From 1988-1992, female harvest averaged 2.4 lions per year. This level of harvest appeared to allow the population to increase. From 1996-2002 female harvest averaged 5.8 lions per year. This harvest level appeared to induce a subsequent population decline. Under the current quota, an average of 2.6 females have been harvested per year for the past nine seasons. Lion harvest per day (Figure 2) has been relatively stable during the past nine years. However, harvest rate peaked during the 2018-19 season and shows a weak increasing trend throughout this time period.

The mountain lion IPM (integrated population model) predicts a 5% annual growth rate for the south west ecoregion in the future, assuming harvest remains constant. Using lion density estimates from research projects in Montana we estimate the lion population in 560 to range from approximately 26 lions during population lows to approximately 63 lions during population highs. These research projects indicate that an annual harvest of 25% of adults and juveniles is sustainable. Assuming we are in the mid range of lion populations at this time, we likely have approximately 40-50 lions in 560. A harvest of 25% of this range equates to 10-12 lions harvested annually.

During the past four years, there has been an increase in lion sightings and complaints in and around the town of Big Timber. These complaints are more frequent in winter but are also occurring during the spring and summer. The local sheriff's office has noted an increase in lion sightings in town and have voiced concerns about public safety.

Based on the above factors, lion populations in 560 appear to be increasing. However, they remain below the historic highs reached during the late 1990's.

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.

Lion numbers in 560 appear to be gradually increasing. The objective of the change is to increase harvest accordingly in an effort to stabilize the population near current levels. Slowing population growth should also help to reduce some of the concern about lions being observed in and around the town of Big Timber and near residences in the Boulder River Valley.

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

Success will be evaluated using harvest, harvest rates, and nuisance complaints. We expect a small increase in harvest from this proposal. Lion harvest rate (lions/day) should remain mostly consistent if we are able to maintain lions near their current population levels. Nuisance complaints of lions in town or near human residences should remain at similar levels or decline. If we continue to see an increase in harvest rate, or nuisance complaints, that will indicate another quota increase is necessary to stabilize the 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).

The regional objective is to maintain healthy mountain lion populations in presently occupied habitat while allowing expansion into unoccupied habitat to the degree that lions do not conflict with domestic livestock or people. Based on the information provided above, lion numbers in 560 appear to be increasing. Lions are occupying available territories and lions are dispersing to new habitats. This population increase is bringing more lions in close proximity to Big Timber and nearby residences.

5. Provide information related to any weather/habitat factors that have relevance to this change (i.e., habitat security, hunter access, vegetation surveys, weather index, snow conditions, and temperature / precipitation information).

Snow condition survey information: The previous three winters produced above average snowfall and colder than average temperatures in district 560. The winter of 2018-19 started off mild with warmer than average temperatures and below average snowpack from November to the end of January. February brought heavy snow and record cold. Despite the lack of early tracking snow this winter, lion harvest remained high early in the season.

Describe access problems related to change, etc.: Most lion harvest occurs on National Forest Lands in 560. Access to these lands for lion hunters is good, although somewhat weather dependent. Landowners who are concerned about lion conflicts on their lands generally grant permission to lion hunters. No access related concerns or impacts are expected from this proposal.

Overwinter survival information (i.e. bad winter lost what % of population): Winter severity doesn't appear to be a factor in this population's trend. Whitetail, mule deer, and elk numbers are stable or increasing in 560 providing an abundant food source.

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).

I have received numerous comments from landowners, sportsmen, outfitters, trappers, and city officials over the past two years, all in favor of a lion quota increase. No comments have been received in opposition to this proposal from any of the parties listed above. This proposal was presented to the area wardens, they were supportive. No conflicts with landowners, sportsmen or other members of the public are anticipated.

Submitted by: **Justin Paugh**
Date: **3/25/2019**
Approved: _____
Regional Supervisor / Date

Disapproved / Modified by: _____
Name / Date
Reason for Modification: