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

Species: Mountain Lion
Region: 3
Hunting District: LMUs: 314, 317, 318, 319, 320, 331, 339, 350
Year: 2025

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

- For LMU 314 decrease the FEMALE quota from 4 to **2** **AND** the MALE quota from 7 to **4**
- For LMU 317 decrease the FEMALE quota from 4 to **2** **AND** the MALE quota from 3 to **2**
- For LMU 318 decrease the FEMALE quota from 4 to **3** **AND** the MALE quota from 6 to **5**.
- For LMU 319 decrease the FEMALE quota from 2 to **1** **AND** the MALE quota from 3 to **2.**
- For LMU 320 decrease the FEMALE quota from 4 to **2.**
- For LMU 331 decrease the FEMALE quota from 2 to **1.**
- For LMU 339 decrease the FEMALE quota from 5 to **4**.
- For LMU 350 decrease the MALE quota from 3 to **2.**

In 2024 the Fish & Wildlife Commission approved the proposal to implement Male and Female quotas in all Region 3 LMU's, thus doing away with female subquotas. Additional background information:

- LMU 314: from 2012-2021 the female subquota was 2 with a total quota of 6; in 2022 the total quota was changed to 5 with an unchanged female subquota; in 2023 the female subquota was increased to 4 with a total quota of 11. In 2024, a female quota of 4 was adopted with a male quota of 7.
- LMU 317: from 2012-2022 the female subquota was 2 with a total quota of 4; in 2023 the female subquota was increased to 4 with a total quota of 7. In 2024 a female quota of 4 was adopted with a male quota of 3.
- LMU 318: from 2014-2023 the female sub/quota was 2 with a total quota of 6; in 2024 the female quota was increased to 4 and a male quota of 6 was established (i.e. a total of 10 lions could be legally harvested in LMU 318).
- LMU 319: since 2014 there has been a female sub/quota of 2 with a total quota of 4 lions (2014-2021) and 5 lions (2022-present).
- LMU 331: from 2002 through 2021 this district was managed as a total quota with a female subquota. During this time total quotas ranged from 2 to 7 cats with female subquotas of 0 to 3 females. In 2023 season structure was altered to include a separate male and female quota of 1 male and 2 females**.**
- LMU 339: from 2014-2023 the female quota was 2; in LY2024 the female quota was increased to 5.
- LMU 350: last year the F&WL Commission approved a Female quota of 2 and Male quota of 3 lions. Prior to this there had been a total quota of 3-4 lions with a female subquota of 1 since 2012.

2. **Why is the proposed change necessary?**

The proposed quota adjustments are necessary to stabilize regional lion populations and maintain stable chase and harvest opportunities. A growing divergence between harvest numbers and quotas, particularly since 2021, indicates that lion populations cannot sustain current harvest pressures (Fig. 1 and 2). Regionally, there has been a significant reduction in the proportion of harvested males that are

6 years old or greater. Since 2020 only 3% of males have been aged ≥6 years old (90% CI: -.4% to 2.8%), compared to the long-term average back to 1995 of 10% (90% CI: 6.5% to 16.2%). A similar reduction in the proportion of females harvested at ≥6 years old has occurred. In the past 5 years 12% of females have been aged ≥6 years old (90% CI: 9.4% to 21.7%), compared to the long-term average of 19% (90% CI: 13.4% to 32.2%). A decline in the proportion of ≥6 years-olds in the harvest has been associated with a corresponding decline in lion survival rates, suggesting current harvest levels have been impacting populations. Based on these harvest trends it appears harvest pressure has resulted in declining regional mountain lion abundance since 2021, if not earlier.

Harvest mortality rates will be amplified if high quotas and harvest are maintained on a declining population. Research on harvested lion populations demonstrate high hunting mortality is largely additive, with little potential for compensation from reproduction or recruitment. While local mountain lion populations have been shown to be resilient to harvest pressure, this is largely predicated on immigration from source populations. If regional harvest pressure has created widespread sinks, then this resilience will likely be impaired. Quota reductions are being proposed to maintain stable chase and harvest opportunity in measure with the lion population in these LMUs.

Specifically:

- LMU 314: In 2023, 2 male and 2 female lions were harvested. In 2024, 1 female and 5 males were harvested. Although snow conditions were less ideal in 2023, snow conditions were good during much of the 2024 season. The number of lions encountered per day by hunters that harvested a lion in HD 314 has followed a general downward trend since 2009. This, combined with fact that increased quotas were not met in the past two years suggests that the current quotas are likely not sustainable long-term.
- LMU 317: In 2023, 2 male and 2 female lions were harvested. In 2024, 0 females and 3 males were harvested. Although snow conditions were less ideal in 2023, snow conditions were good during much of the 2024 season. The number of lions encountered per day by hunters that harvested a lion in HD 317 has followed a general downward trend since 2012. This, combined with fact that increased quotas were not met in the past two years suggests that the current quotas are likely not sustainable long-term.
- LMU 318: although the female quota of 4 filled in LY2024, the former quota of 2 females was not filled in the previous 2 years, indicating that there may have been additional females available in LY2024, but the quota of 4 may not be sustainable long-term. The male quota of 6 did not fill in LY2024 (only 3 were harvested).
- LMU 319: only 1 lion out of a total quota of 5 was harvested during LY2024. This winter, lions were captured and collared in LMU 319 as part of MT's lion population study in the SW Ecoregion. Movement data and tracking efforts strongly suggest that the resident population of lions in LMU 319 cannot sustain a 5-lion harvest.
- LMU 320: Between the 2023 and 2024 lion chase seasons, the number of lions and lion tracks encountered per-day-hunted by those hunters that harvested a lion within LMUs 320 and 322 decreased from 1.2 to 0.7 (42%) (Figure 3). The reduction lowered the lion encounter rate to the 1996–2024 average. With that level of reduction achieved, the management goal should shift to moderating population reduction or stabilizing the population. Currently, this could be most effectively achieved by reducing the female harvest quota within LMU 320 from the current 30-year high point to the 30-year median. Additionally, the number of dependent juvenile lions encountered per 100 adults, by hunters that harvested a lion, was 0.0 for the first time since 2010 (Figure 4). Given the current encounter rate and apparent low reproductive output during the last year, continued harvest of up to four female lions from LMU 320 is likely to reduce the population to very low abundance with three years. Currently,

up to two annual female harvests is expected to moderate population decline or stabilize the population. As of the most recent trend surveys, the associated elk and mule deer populations are within population management objective ranges. Associated moose license quotas are currently set at all time highs and hunter harvest rates equal 100% most years. In 2024, the associate antelope population was 11% above the 1968-2024 average.

- LMU 331: in LMU 331, and adjacent LMUs, female harvest has been consistently high relative to the long-term record in recent years. Concurrently, age of harvested females (as determined by cementum annuli) has declined, with an absence of females ≥6 years-old in the harvest. The proportion of lions ≥6yo in the harvest can provide an index to lion survival and the current age of harvested females suggests declining female survival. This past season the female quota in LMU 331 was not filled (1 female harvested) despite having a restrictive male quota, which was anticipated increase pressure on females. Houndsmen and women have suggested that lion numbers in LMU 331 were unusually low this year based on the number of tracks encountered. In addition, the mountain lion monitoring project was conducting sampling of mountain lions in LMU 331. This included intensive efforts to find and biopsy dart mountain lions as well as capture and radio-collar individuals. Discussions with the field crew indicate that aside from the 4 females collared in LMU 331, likely only one other female was sampled. While it is reasonable to assume not all individuals were detected, it appears all collared individuals were treed more than once. This suggests that detection rates were high and thus it is unlikely that a large number of undocumented lions persist in LMU 331. Taken together, the available information suggests there is currently a limited number of female mountain lions and harvest of 2 females per year could negatively impact the stability of the population. This has the potential to create a population sink in LMU 331 with consequences for this district and the larger metapopulation.
- LMU 339: during LY2024, the female quota of 5 did not fill (only 4 were harvested). The former female subquota of 2 filled consistently over time, in less than 60 days, regardless of snow conditions. Given the LY2024 quota of 5 did not fill, lowering this quota to somewhere between 2 and 5 is reasonable.
- LMU 350: during LY2024 four females were removed from this LMU (quota was set at 2). The removal of this many females will likely impact the near-term sustainability of harvest at the 5-lion level.

3. 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).

Since the mid-1990's (i.e. prior to any formal FWP lion conservation strategy), Region 3 has practiced lion management that maintains populations at sustainable levels while providing for maximum recreational opportunity. We've accomplished this by using harvest trend as a surrogate for the collective regionwide lion population and employing a consistent population management objective over several years. When an apparent population level response is detected in the harvest, a change in population management objective is recommended (Figures 1 and 2).

In 2019, FWP adopted the Montana Mountain Lion Monitoring and Management Strategy. This strategy divided the state into 4 ecoregions for which population objectives are set. Region 3 covers portions of the West-Central (LMUs 318, 339, 350, 380 and 391) and Southwest Ecoregions (LMUs 301, 302, 304, 305, 309, 312, 313, 314, 315, 317, 319, 320, 321, 322, 331 and 340).

Figure 1 shows the harvest and quota trends from 1995 through 2024, in those LMUs within Region 3, that occur in the West-Central Ecoregion and the major management trigger points. From 1995-2000, we managed the population in these LMUs for maximum recreational opportunity, incrementally increasing quotas until total harvest began to diverge significantly from total quota, suggesting we had achieved the maximum harvest that the population could withstand before declining (Management Trigger #1). In response, we adjusted our management objective to allow the population to rebound, employing more conservative quotas from 2001 -2009. After keeping the female harvest at a minimum for several years, we began to see consistent yet apparently sustainable overruns of the total quota, suggesting that the population had rebounded (Management Trigger #2). In response, we adjusted our management objective to once again allow for maximum recreational opportunity, which we employed from 2010-2020. In 2021, trend data suggested that once again our management had found the upper level of harvest on the lion population, as evidenced by total harvest and female harvest diverging significantly from total quota and female quota, respectively, and a significant drop in the male harvest. While regionwide management objective should have shifted to reduce harvest to stabilize the likely declining lion population, as occurred in 2000, statewide influence resulted in increased quotas and harvest potential. Using lion harvest as a surrogate for population in these LMUs, one can argue that the regionwide lion population decreased by 20% from 2015 to 2024. Reductions of greater than 20% may have occurred at finer spatial scales.

Figure 2 shows the harvest and quota trends from 1995 through 2024 in those LMUs within Region 3 that occur in the Southwest Ecoregion and the major management trigger points. It tells a similar story as the Region 3 LMUs in the West-Central Ecoregion. A growing divergence between total- and female harvest from total- and female quotas, respectively, suggested a shift in management in 2002 from maximizing recreational opportunity to allowing the lion population to rebound (Management Trigger #1). After 11 years of more conservative quotas and harvest, management objective again switched to maximizing recreational opportunity at sustainable population levels in 2013 (Management Trigger #2). Although there was significant divergence between the total- and female quotas and total- and female harvest, respectively, both the female and total harvest remained stable from 2013-2021, suggesting this level of harvest was sustainable given the lion population size during that time. In 2021 the male lion harvest dropped 37% from the previous year and has not rebounded since, despite quotas being increased. Based on 30 years of harvest trend data, it appears that 70-75 lions harvested annually from this set of LMUs (up to 20 of them female) is the ceiling for this population. Quotas should be set accordingly lest we see a significant and unsustainable decline in the lion population. Currently we are seeing a 20-30% divergence in number of lions harvested versus quotas.

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

LMU 314: Lion hunting occurs across a matrix of both public and private lands in HD 314. Although a substantial portion of the winter lion habitat occurs on private lands, many hunters have obtained access to private lands.

LMU 317: Lion hunting occurs on both public and private lands. Many hunters have obtained access to private lands in LMU 317.

LMU 318: This LMU is highly accessible via roads, leaving little to no portion of the district as a reservoir for lions. The mild winter conditions in LY2023 resulted in only one female being harvested. The previous year (LY2022) the season closed by meeting the total quota (all males).

These two factors likely resulted in additional females being available for harvest during LY2024, but under normal snow conditions and with separate male and female quotas, the female quota of 4 may not be sustainable over time.

LMU 319: Within LMU 319 there is a large swath of big game winter range on Mt Haggin WMA that is closed during the winter season and was assumed to be a reservoir for lions. However, searching of this area by houndsmen and women on contract with the MT Lion Population study this winter has turned up very little evidence of lion movement in this area, dispelling the reservoir concept.

LMU 331: Access in LMU is very good with serviceable roads following almost all major drainages. Recently obtained GPS data on collared mountain lions has shown that winter use follows a band of habitat along the Pioneer front/foothills. This band of habitat is bisected by roaded drainages at regular intervals. This creates a situation where resident mountain lions regularly cross multiple access roads in their winter movements, increasing their vulnerability to harvest. This could have also given the impression of higher densities of mountain lions in the past, because tracks found in different drainages may have been assumed to represent different individuals. GPS data suggests this assumption would be unwarranted.

LMU 339: This LMU has suitable yet disparate access and much of the private land has allowed limited access for lion hunting. Lion harvest is well distributed across most of the habitat in the LMU.

LMU 350: there is suitable yet disparate access to public land across this LMU. However, many houndsmen and women have secured access to much of the private land in the LMU.

5. 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).

This proposal was discussed at the annual Region 3 lion management meeting in Three Forks on March 10th. Twenty-six houndsmen and women, several Region 3 game wardens, all Region 3 area wildlife biologists, the Region 3 wildlife manager and regional supervisor, several FWP Helena wildlife staff, and Region 3 Fish and Wildlife Commissioner Brooke were in attendance.

Submitted by: Helena biologist Lindsey Parsons, Livingston biologist Michael Yarnall, Sheridan biologist Dean Waltee, Dillon biologist Jesse Newby, Butte biologist Vanna Boccadori
Date: 14 April 2025

Approved: _____
Regional Supervisor / Date

Disapproved / Modified by: _____
Name / Date

Reason for Modification: The commission has previously provided the department with direction (in June 2023) on managing mountain lions to attain a reduction in within the West-Central Ecoregion that is intended to occur over six years. The department will recommend adjustments to specific lion management units consistent with the best biological information we have to maintain the reduction directed by the commission. Assessments within Region 4 indicate that lion management unit 413 can return to a greater quota that had been previously established and maintained publicly acceptable mountain lion abundance and harvest opportunities. Because that lion management unit is within the same ecoregion, an increase in harvest in that area will have the effect of maintaining the population trajectory as directed by the commission while allowing for a reduction in lion management units in Region 3.

The department is modifying this regional recommendation to meet the commission direction, and the following adjustments will be recommended to the commission:

- In LMU 320, reduce the female quota from 4 to 2 (the male quota remains unchanged at 3),
- In LMU 331, reduce the female quota from 2 to 1 (the male quota remains unchanged at 1),
- In LMU 350, reduce the male quota from 3 to 2 (the female remains unchanged at 2), and
- In LMU 413, increase the male quota from 3 to 5 and the female quota from 2 to 5 (this last bullet point is not addressed in this justification, but it is recommended and explained in the justification provided by Region 4.

April 22, 2025 – Brian Wakeling (BFW), Game Management Bureau Chief

Figure 1. Lion quota and harvest trends for Region 3 LMU's located in the **West-Central ecoregion**, 1995-2024. Management triggers denote apparent population level responses to management objectives and the point at which management objectives should be adjusted to sustain lion populations and maximize recreational opportunity.

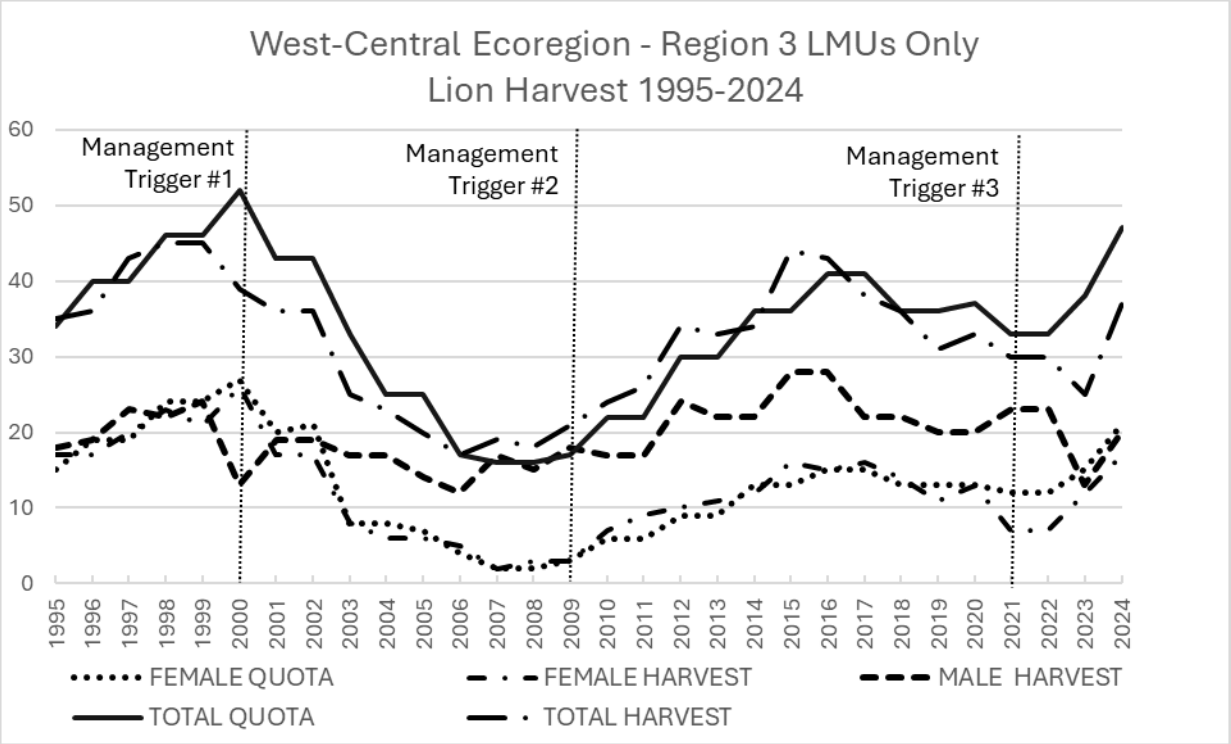

Figure 2. Lion quota and harvest trends for Region 3 LMU's located in the **Southwest ecoregion**, 1995-2024. Management triggers denote apparent population level responses to population management objectives and the point at which management objectives should be adjusted to sustain lion populations and maximize recreational opportunity.

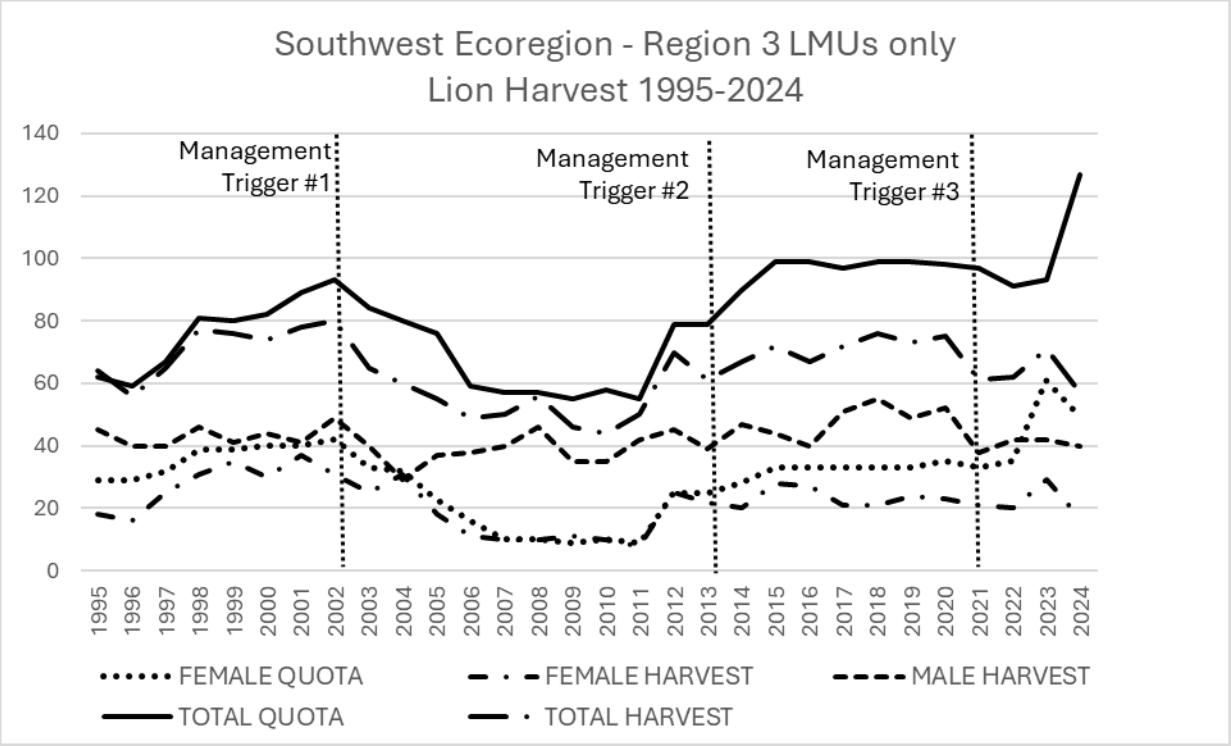
Southwest Ecoregion - Region 3 LMUs only
Lion Harvest 1995-2024
Management Trigger #1
Management Trigger #2
Management Trigger #3
140
120
100
80
60
40
20
0
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
FEMALE QUOTA
FEMALE HARVEST
MALE HARVEST
TOTAL QUOTA
TOTAL HARVEST

Figure 3. The mountain lion encounter rate reported by lion hunters that harvested a lion for Lion Management Units 320 and 322, 1996–2024.

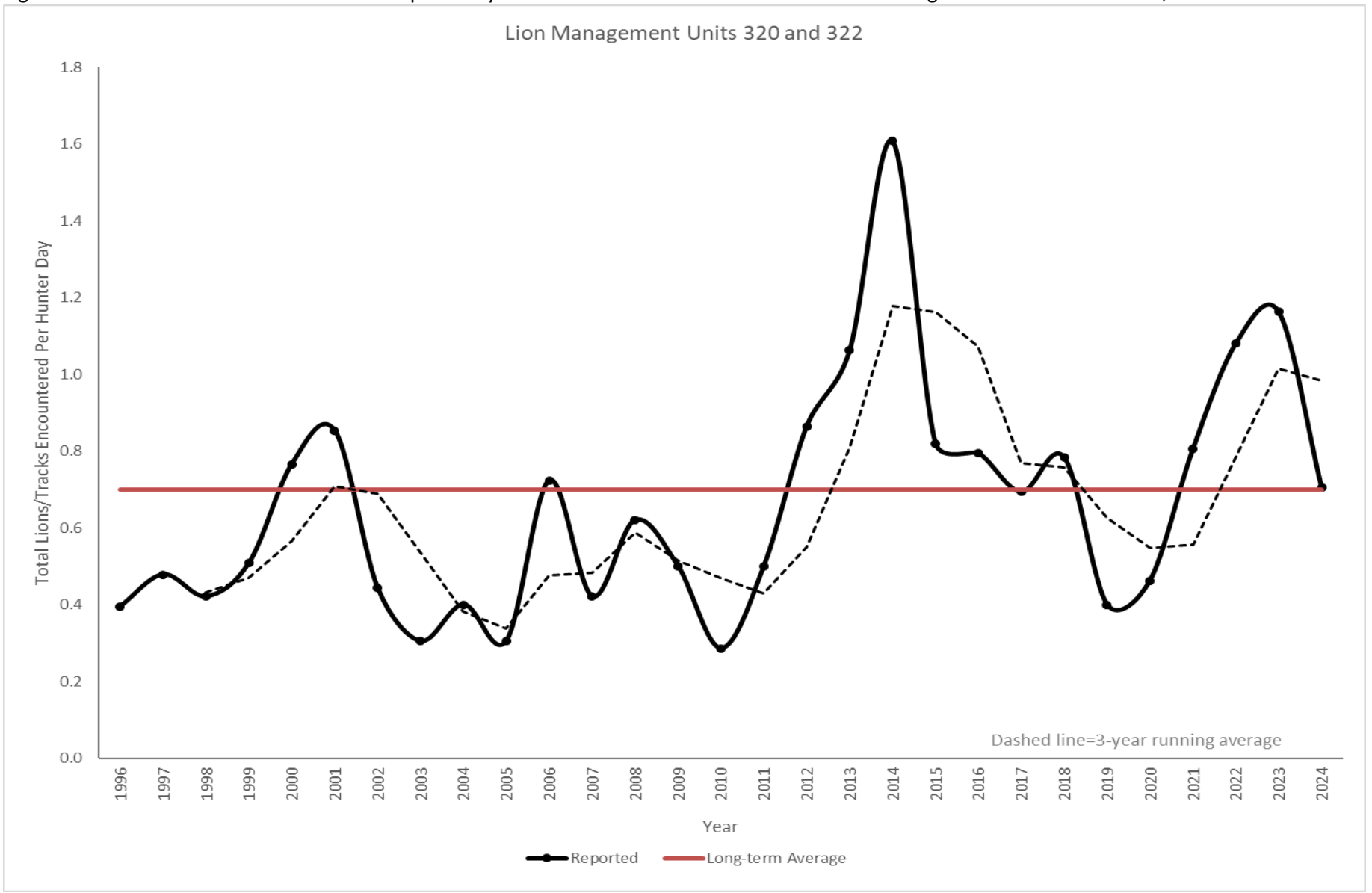

Figure 4. The ratio of dependent lions encountered per 100 adult lions by hunters that harvested a lion from Lion Management Units 320 and 322, 2008–2024.