



Mountain Lion Recommendations



2018

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Recolonization

Mountain lions (*Puma concolor*) are native to Nebraska but were extirpated by the early 1900s due to unregulated hunting, trapping, poisoning and decimation of prey species. Prey populations recovered throughout the 20th century due to protection offered by game laws. Mountain lion populations recovered throughout the Mountain West over this period due to the elimination of bounties and management of mountain lions and their prey as big game species. These two factors allowed mountain lion populations to expand to the east and recolonize parts of South Dakota, North Dakota, and Nebraska.

Distribution

In Nebraska, mountain lion populations with resident females, males, and evidence of reproduction have been documented in three areas: the Pine Ridge, Niobrara River Valley, and Wildcat Hills (Figure 1). Mountain lions in Nebraska are part of a larger regional population where animals are continually mixing. Mountain lion populations in Nebraska are not genetically isolated; they are connected to populations in South Dakota, Wyoming and Colorado through immigration and emigration of individuals. The Commission is committed to maintaining a geographically comprehensive approach for mountain lion management. Commission staff work closely with biologists from South Dakota and Wyoming to share information regarding mountain lion management and research. Since mountain lions interact and move between states, it is important that management decisions fit within what is happening in the larger region.

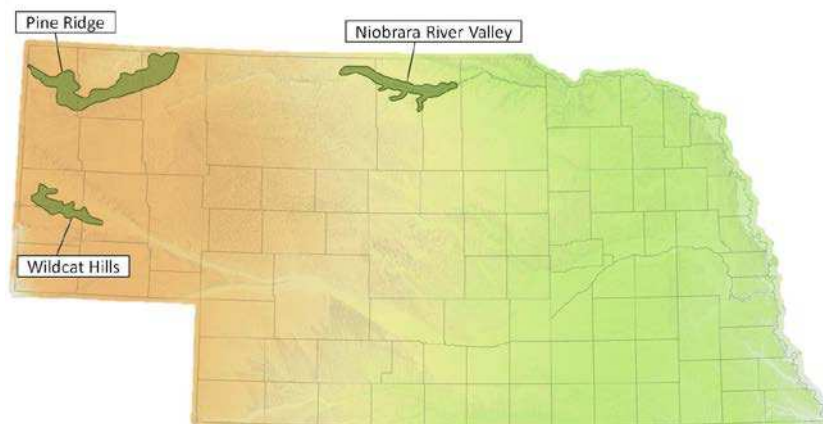


Figure 1. Three areas of suitable habitat in Nebraska with documented resident mountain lion populations.

Mountain Lion Population Estimates

The Commission has not created an estimate for the total number of mountain lions in Nebraska. Genetic surveys conducted in the Pine Ridge area during 2010-2017 have produced population estimates of 22-59 total animals, including adults, sub-adults, and kittens (Figure 2). In addition to the population in the Pine Ridge, there are also resident populations in the Niobrara Valley and Wildcat Hills; however, because of their recent establishment, there are presently no estimates for these populations. A few additional animals typically wander elsewhere in the state at any given point in time.

Genetic surveys utilizing scat detector dogs, and subsequent genetic analyses of the samples collected, have been conducted periodically in the Pine Ridge (2010, 2012, 2014, 2015 and 2017), Niobrara River Valley (2012 and 2014), and Wildcat Hills (2015) since 2010. Noninvasive genetic surveys, such as scat surveys, have proven to be an efficient and cost-effective method for surveying elusive carnivores including mountain lions. The Pine Ridge is the only area with sufficient data from these surveys to create estimates of the population size. The CAPWIRE package in Program R (Miller et al. 2005; Pennell et al. 2013) was used to estimate the size of the Pine Ridge mountain lion population. This model was specifically developed for estimating small populations of elusive species utilizing information gathered through collection of genetic samples (e.g., scat, hair, urine, and blood).

For the 2017 survey, the Pine Ridge population was also estimated using the Lincoln-Petersen mark-recapture method with the Chapman modification for small sample size. Study animals from GPS collaring research efforts that were known to be in the Pine Ridge during the time of the survey were considered marked, and those marked individuals detected by genetic samples (scat) during the 2017 genetic survey were considered recaptured. Both methods estimated the Pine Ridge mountain lion population at 59 total animals (adults, subadults and kittens).

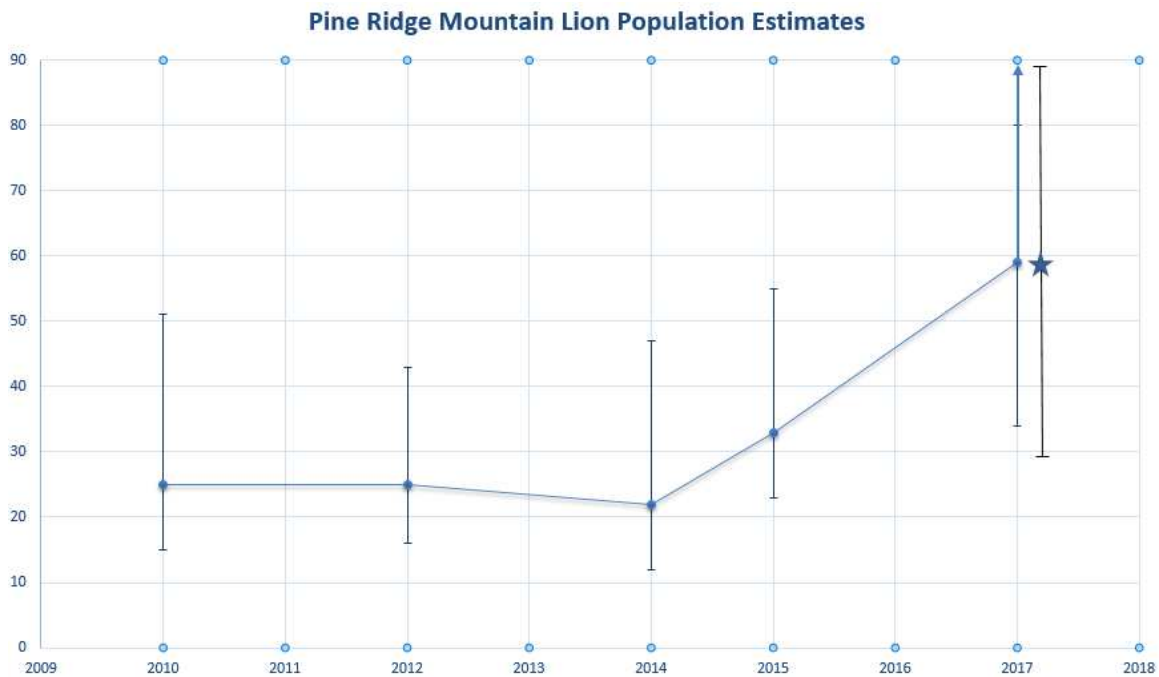


Figure 2. Population estimates for the mountain lion population in the Nebraska Pine Ridge, 2010-2017 (May and June). Circles are estimates derived from the CAPWIRE method, the star represents the estimate derived from the mark/recapture method, 2017.

Suitable Habitat

The Commission created a map of suitable habitat in 2010 (Figure 3) based on a GIS model developed by the North Dakota Game and Fish Department (North Dakota Game and Fish Department 2006). The model identifies areas of suitable mountain lion habitat using three primary landscape criteria: concealment and stalking cover (woody cover/forest/shrubs), topographic concealment and stalking cover (steep terrain/slopes), and proximity to water. Areas that are steep, forested, and have available water are considered most suitable. The model identified ~96% of Nebraska as unsuitable habitat for mountain lions and ~4% as suitable. The model identified the Pine Ridge as the largest non-riparian block of suitable habitat in the state. Riparian forests in many river valleys were identified as suitable habitat by the model, but it is unknown if these thin linear strips can be used as a home range for resident animals, or if they only serve as dispersal corridors.

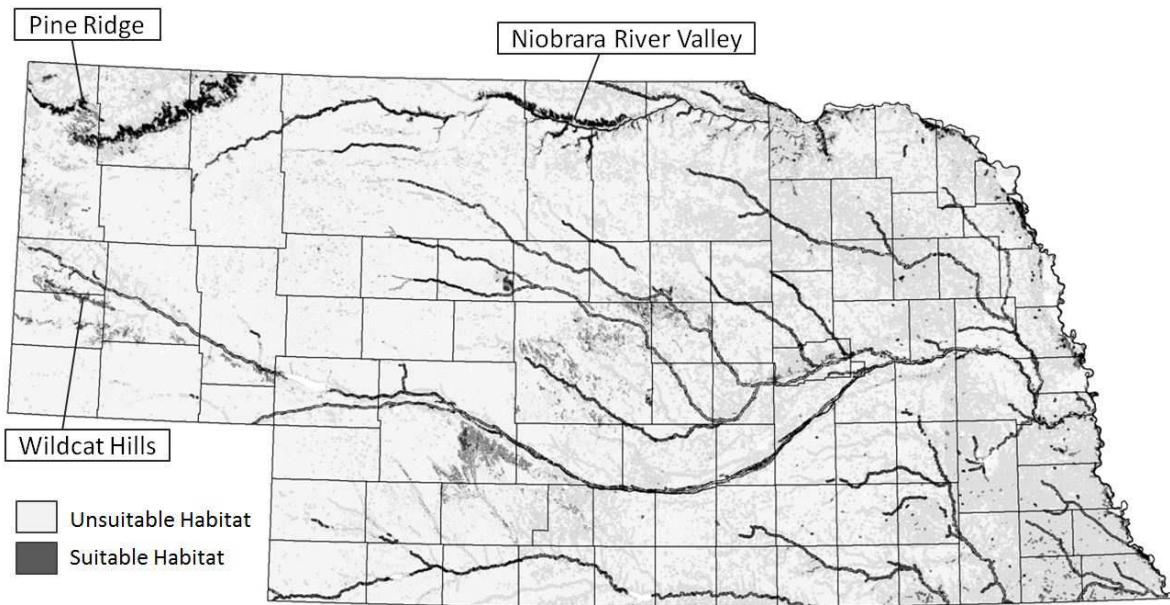


Figure 3. 2010 estimate of suitable (dark gray) and unsuitable (light gray) habitat for mountain lions in Nebraska.

Legal Status

Mountain lions were not a protected species in Nebraska when the first modern confirmations were made in 1991. In 1995, the Nebraska Legislature added mountain lions to the statutory list of game animals, thereby affording protection for mountain lions under the Game Law. In 2012, statute provided authority for the Commission to issue permits and create regulations for mountain lion harvest seasons and explicitly stated how and when a person could kill a mountain lion in defense of people or livestock. These laws also provided the Commission the ability to issue landowners permits to kill mountain lions that have depredated livestock. In 2013, the Commission approved regulations for a mountain lion harvest season during 2014.

Regulated Harvest

When the Nebraska Legislature classified the mountain lion as a game animal in 1995, it signaled to the Commission that hunting of the species could be allowed if the population was large enough to sustain a harvest. This is the same criteria used for any other species on the state's game animal list, from deer to bobcats to pheasants. State statute also identifies the Commission as the appropriate agency to set hunting seasons. The first regulated harvest season for mountain lions in Nebraska was held in 2014. Five mountain lions were harvested in total, three males and two females. No harvest season was held during 2015–2018, in part due to an unusual number of non-hunting mortalities that occurred during 2014.

Proposed Mountain Lion Harvest

The management goal identified in the Nebraska Mountain Lion Management Plan is to maintain resilient, healthy, and socially acceptable mountain lion populations that are in balance with available habitat and other wildlife species over the long term. The most recent population estimate (2017) for the Pine Ridge population is 59 total mountain lions, including adults, sub-adults and kittens. This represents a 34% annual increase over the 2015 Pine Ridge population point estimate of 33 total animals. Immigration into the Pine Ridge from the larger population in the nearby Black Hills may have contributed to the rate of increase. Based on the present population estimate and estimate of suitable habitat, the density of the Pine Ridge population is ~8.8 mountain lions/100km² of suitable habitat – which is higher than reported densities in most western states. This may be due to excellent habitat and availability of prey in the Pine Ridge combined with no harvest pressure other than the 2014 season.

Public input from people living in the Pine Ridge area indicates that the present population/density level is above what many landowners are willing to accept. In addition, local hunters and landowners are concerned that deer populations are recovering more slowly, or in some locales declining, due to predation by mountain lions.

The population size, growth rate, and connectivity to the larger Black Hills population are consistent with a population that would be resilient to harvest. Staff recommend that a harvest season for mountain lions be held in the Pine Ridge during 2019.

Harvest Objective: To provide a harvest opportunity for mountain lions that will allow the population to remain resilient and healthy, while halting growth or moderately reducing the population size.

A harvest season that allows the harvest of up to eight (8) mountain lions in the Pine Ridge, with a sublimit of four (4) females, is recommended for the following reasons:

- 1) The Pine Ridge population has been identified as a population that would be resilient to harvest
- 2) To provide harvest opportunities for this species in the state
- 3) Estimated density of mountain lions in the Pine Ridge is higher than reported densities in most western states and local landowners provided input that mountain

lion numbers are above a level that they consider acceptable (due to concerns regarding human safety, livestock depredation, and prey population numbers)

- 4) Mountain lions were documented causing significant depredation of livestock in the Pine Ridge during 2017 – none documented previously

The proposed harvest is designed to provide harvest opportunity, and allow the population to remain resilient and healthy, while halting growth or moderately reducing abundance in the short-term. Staff recommend reducing the density of mountain lions, from ~8.8 mountain lions/100km² of suitable habitat within the Nebraska Pine Ridge, to 5–7 mountain lions/100km² of suitable habitat over the next few years.

A harvest limit is recommended for controlling the harvest with the hunting season ending as soon as the limit is reached or the season closing date occurs, whichever happens first. A limit of eight (8) lions is appropriate to meet the management objective and corresponds to a maximum harvest rate of 14%. The mean number of non-harvest known mortalities in the Pine Ridge over the last five years (2013–2017) is 4.6/year. The total impact of the recommended harvest including a normal number of known mortalities would be 21%.

Staff recommends restricting the number of females allowed under the harvest limit to help provide resiliency to the population and so that future seasons remain feasible. Small mountain lion populations rely on immigration, particularly by males, and recruitment of female offspring from within the population of resident adult females. Since female mountain lions are more likely to stay in the area they were born and less likely to disperse long distances than males, harvest of females has a greater chance of affecting subsequent population productivity.

Harvest Design

The proposed Pine Ridge Unit will have the same boundaries as the Pine Ridge firearm deer unit (i.e., the area north of the Niobrara River and west of NE Hwy. 27; Figure 4). In order to distribute harvest throughout habitat available to the Pine Ridge mountain lion population, and to focus harvest onto private lands in Sioux and Sheridan Counties – where the majority of landowner input requesting reduced abundance occurred – the unit is divided into two sub-units (Figure 5):

The Pine Ridge North Sub-unit consists of the portion of the Pine Ridge Unit north of NE Hwy. 20. All state and public lands are closed to harvest.

The Pine Ridge South Sub-unit consists of the portion of the Pine Ridge Unit south of NE Hwy. 20.

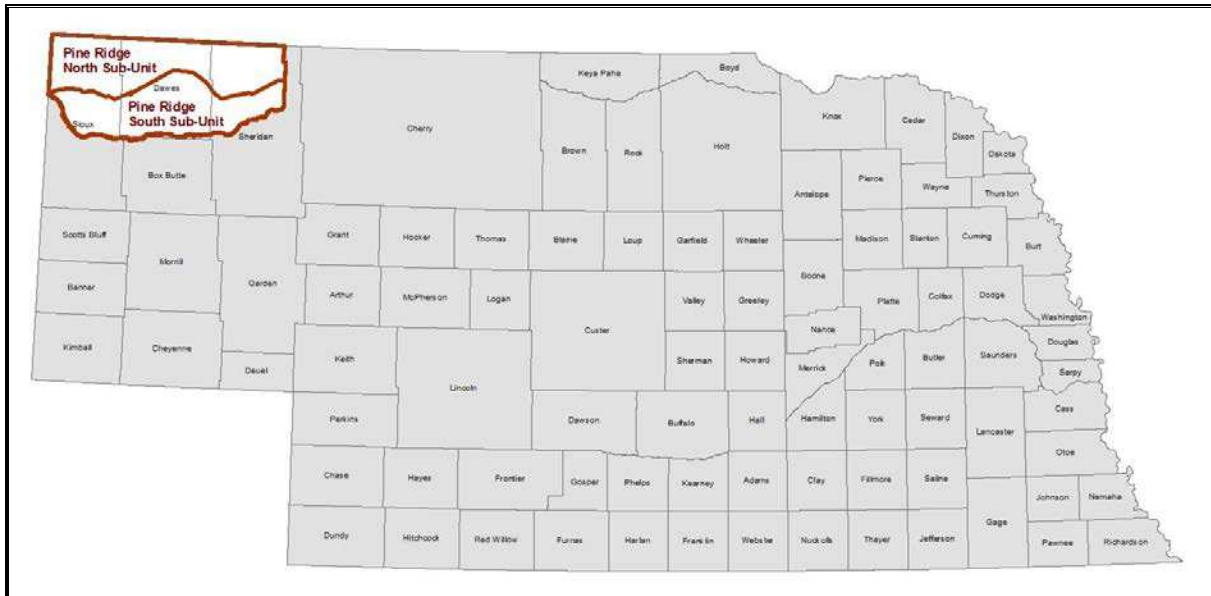


Figure 4. The proposed Pine Ridge Unit will have the same boundaries as the Pine Ridge firearm deer unit. The proposed unit would be divided into north and south sub-units.

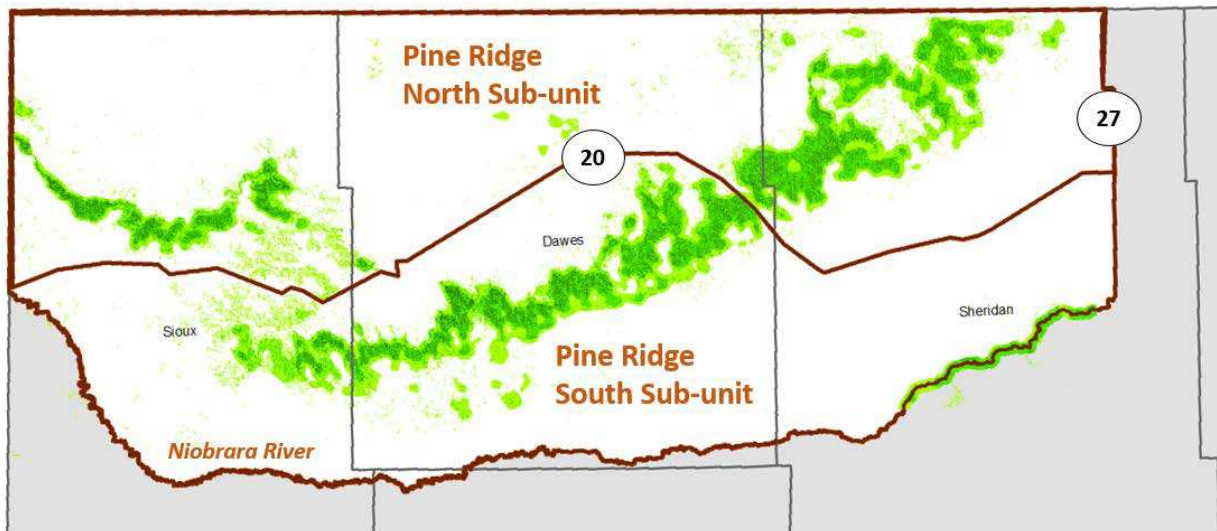


Figure 5. The proposed Pine Ridge Unit would be divided into north and south Sub-units by NE Hwy. 20. Suitable habitat is shown in green.

The two sub-units will have two possible harvest seasons: 1) Season 1, which is designed to maximize opportunity by allowing a large number of hunters (320 in each subunit) to hunt without the aid of dogs, and 2) a possible Auxiliary Season, which will take place only if the harvest limit is not met during Season 1. The harvest limit for the auxiliary season would be the remainder of the harvest limit from Season 1. Permittees from Season 1 would need to apply to convert their Season 1 permit to an Auxiliary Season permit. A number of permits equal to the number of mountain lions remaining in the harvest limit for that sub-unit would be issued via lottery. Hunters would be allowed to hunt with the aid of dogs during an auxiliary season.

Pine Ridge North and South Sub-unit Season 1 Design

- Season Dates: January 1 through February 28, 2019, except the season will immediately close if either the annual harvest limit or female sublimit is reached prior to Feb 28, 2019
- Harvest limits: Four (4) mountain lions, with a sublimit of two (2) females (for each sub-unit)
- 320 permits (for each sub-unit) issued via lottery to residents only
- Hunting with the aid of dogs is not allowed during Season 1

Pine Ridge North and South Sub-unit Auxiliary Season Design

- If the harvest limit from a sub-unit is not reached during season 1, an auxiliary season for that sub-unit will be held
- Season Dates: March 15 through March 31, 2019, except the season shall immediately close if either the annual harvest limit or female sublimit is reached prior to March 31, 2019
- Harvest limits: the harvest limit for the auxiliary season is the remainder of the harvest limit from season 1 for that sub-unit
- One Auxiliary Season permit will be issued via lottery (to a Season 1 permit holder that applies to convert their permit) for each mountain lion remaining in the harvest limit for that sub-unit. Successful hunters from Season 1 will not be eligible for an Auxiliary Season permit.
- Hunting with the aid of dogs would be allowed during an auxiliary season, if an auxiliary season is held

Additional Harvest Rules

- Permit Bag Limit: One mountain lion of either sex
- Shooting Hours: 30 minutes before sunrise to 30 minutes after sunset
- Checking: Any mountain lion harvested must be reported to the Commission within eight (8) hours of recovering the animal using a phone number or website specified by the Commission or in person at a district office during normal business hours. The entire unfrozen carcass must be presented to a Commission representative within 24 hours of the time it is killed to allow for inspection and attachment of an official harvest seal, unless the Commission has been notified and arrangements are made for a later check.
- Weapons Allowed: Firearms and archery equipment allowed for big game

It Shall Be Unlawful To

- Harvest or attempt to harvest a mountain lion with a spotted coat (kitten) or any mountain lion accompanying another mountain lion
- Hunt mountain lions without first confirming that the harvest limit, or female sublimit has not been met, and the season is open each day by checking the Commission-provided phone number or season status website
- Hunt mountain lions with the aid of dogs, traps, or bait, with the exception that dogs may be used during an auxiliary season if an auxiliary season is held
- Fail to check or report any mountain lion taken
- Falsely check or report the harvest of any mountain lion
- Obtain more than one (1) mountain lion permit per calendar year

Summary

Mountain lions have returned to Nebraska through natural expansion from adjacent states. Commission staff have estimated the size of the mountain lion population and area of suitable habitat in the Pine Ridge. In accordance with the Nebraska Mountain Lion Management Plan, the Pine Ridge population was identified as a population that would be resilient to harvest and a harvest unit with two sub-units was created for this area.

A hunting season has been proposed for the Pine Ridge with the objective of providing a harvest opportunity for mountain lions that will allow the population to remain resilient and healthy, while halting growth or moderately reducing the population size.

In order to distribute harvest and allow differing objectives, the Pine Ridge Unit would be divided into two sub-units via NE Hwy. 20. Two sub-unit seasons, each with a limit of four (4) mountain lions, and sub-limit of two (2) females, would begin on January 1, 2019. The harvest limit and sub-limit for female mountain lions provides assurance that this population will remain resilient and healthy, and not be eliminated because of the harvest season.

The number of permits issued, and use of dogs in a possible auxiliary season, will allow the harvest limit to be met while decreasing the likelihood of exceeding the harvest limit. Genetic surveys planned for the Pine Ridge in May and June of 2019 will allow for the effect of the season to be assessed after the harvest, and provide information to inform future harvest decisions.

The Commission recognizes the Pine Ridge population is connected by immigration and emigration to mountain lion populations in South Dakota and Wyoming. We will continue to use sound science and the guidance of our Mountain Lion Management Plan to manage mountain lions in Nebraska over the long-term.

NEBRASKA ADMINISTRATIVE CODE

Last Approved Date: **August 12, 2013**

Title 163 - Nebraska Game and Parks Commission

Chapter 4 - Wildlife Regulations

037 Mountain Lions

The following regulations are prescribed by the Game and Parks Commission, State of Nebraska in accordance with Neb. Rev. Stat. §§ 37-301, 37-304, 37-308, 37-308.01, 37-314, 37-228, 37-404, 37-405, 37-411, 37-426, 37-452, 37-473, 37-613. For purposes of these regulations, unless context otherwise requires, the definitions found in Chapter 37, sections 202 through 247 of the Game Law, are used. These regulations are effective following enactment by the Commission, approval by the Attorney General and Governor, and when five days have elapsed since filing with the Secretary of State.

037.01 Management Unit Boundaries: Federal and state sanctuaries and refuges are closed, unless otherwise authorized.

037.01A **Keya Paha** **Pine Ridge**

~~Keya Paha County and those parts of Boyd, Brown, Cherry, Holt, and Rock counties east of U.S. Hwy. 83, north of U.S. Hwy. 20, and west of U.S. Hwy. 281. Those parts of Box Butte, Dawes, Sheridan, and Sioux counties north of the Niobrara River and west of NE Hwy. 27.~~

~~037.01B~~ 037.01A1 **Pine Ridge** **North Sub-unit**

Those parts of ~~Box Butte~~, Dawes, Sheridan, and Sioux counties north of NE Hwy. 20 ~~the Niobrara River~~ and west of NE Hwy. 27. **All state and federal public lands are closed.**

~~037.01C~~ 037.01A2 **Prairie** **Pine Ridge South Sub-unit**

~~Those parts of Nebraska not included in the Keya Paha, Pine Ridge, or Upper Platte units. Those parts of Box Butte, Dawes, Sheridan, and Sioux counties north of the Niobrara River, south of NE Hwy. 20, and west of NE Hwy. 27.~~

~~037.01D~~ **Upper Platte**

~~Banner, Cheyenne, and Kimball counties and those parts of Deuel, Garden, Morrill, and Scotts Bluff counties south and west of a line commencing at the junction of U.S. Hwy. 26 with the Nebraska-Wyoming state line, thence east on U.S. Hwy. 26 to State Link 62A, thence east on State Link 62A to U.S. Hwy. 385, thence south on U.S. Hwy. 385 to U.S. Hwy. 26, thence east on U.S. Hwy. 26 to~~

NE Hwy. 27, thence south on NE Hwy. 27 to U.S. Hwy. 30, thence west on U.S. Hwy. 30 to U.S. Hwy. 385, thence south on U.S. Hwy. 385 to the Nebraska-Colorado state line.

037.02 Open Seasons:

037.02A ~~Keya Paha: Closed.~~ Pine Ridge North Sub-unit (037.01A1)

Season 1: January 1 through February 28, 2019, except the season shall immediately close if either the annual harvest limit or female sub-limit (037.03A) is reached.

037.02B Pine Ridge ~~South Sub-unit (037.01A2):~~

Season 1: January 1 through February 28, 2014 2019, except the season shall immediately close if either the annual harvest quota limit or female sub-quota sub-limit (037.03B) is reached prior to February 28.

Season 2: February 15 through March 31, 2014, except the season shall immediately close if either the annual harvest quota or female sub-quota (037.03B) is reached prior to March 31.

037.02C ~~Prairie: January 1 through December 31, 2014.~~ Pine Ridge North Sub-unit (037.01A1)

Auxiliary Season: The auxiliary season will open March 15 through March 31, 2019, if the annual harvest limit or female sub-limit (037.03A) was not reached during Season 1 (037.02A), except the season shall immediately close if either the annual harvest limit or female sub-limit (037.03A) is reached prior to March 31.

037.02D ~~Upper Platte: Closed.~~ Pine Ridge South Sub-unit (037.01A2)

Auxiliary Season: The auxiliary season will open March 15 through March 31, 2019, if the annual harvest limit or female sub-limit (037.03B) was not reached during Season 1 (037.02B), except the season shall immediately close if either the annual harvest limit or female sub-limit (037.03B) is reached prior to March 31.

037.03 Annual Harvest ~~Quotas~~ Limits:

037.03A ~~Keya Paha: Zero (0).~~ Pine Ridge North Sub-unit (037.01A1):

Four (4) mountain lions, with a sub-limit of two (2) females.

037.03B Pine Ridge ~~South Sub-unit (037.01A2):~~

Season 1: Two (2) Four (4) mountain lions, with a sub-quota limit of one (1) female two (2) females.

Season 2: Two (2) mountain lions, with a sub-quota of one (1) female.

~~037.03C Prairie: Unlimited quota.~~

~~037.03D Upper Platte: Zero (0).~~

037.04 Permits:

037.04A ~~Keya Paha: Zero (0).~~ Pine Ridge North Sub-unit (037.01A1):

Season 1: The Commission shall issue three hundred and twenty (320) permits by lottery. No person shall be issued more than one (1) permit per calendar year. Permits shall be issued to Nebraska residents only.

037.04B Pine Ridge ~~South Sub-unit (037.01A2):~~

Season 1: The Commission shall issue ~~one (1)~~ three hundred twenty (320) permits by lottery. ~~to a resident and one (1) permit by auction to a resident or nonresident. Any permittee who does not harvest a mountain lion during Season 1 may hunt during Season 2. If a permittee does not harvest a mountain lion during Season 1 or Season 2 their permit will remain valid during the open seasons of the next year in which a season is authorized in the Pine Ridge Unit.~~ No person shall be issued more than one (1) permit per calendar year. Permits shall be issued to Nebraska residents only.

~~Season 2: The Commission shall issue one hundred (100) permits by lottery. No person shall be issued more than one (1) permit per calendar year. Permits shall be issued to Nebraska residents only.~~

037.04C ~~Prairie: No limit.~~ Pine Ridge North Sub-unit Auxiliary Season:

If the annual harvest limit or female sub-limit (037.03A) have not been met by the end of the Pine Ridge North Sub-unit (037.01A1) Season 1 (037.02A), unsuccessful permittees may apply to convert their permit to a Pine Ridge North Auxiliary Season (037.02C) permit. A number of auxiliary permits equal to the number of animals remaining in the harvest limit for the sub-unit will be issued by lottery. No person shall be issued more than one (1) permit per calendar year. Permits shall be issued to Nebraska residents only.

037.04D ~~Upper Platte: Zero (0).~~ Pine Ridge South Sub-unit Auxiliary Season:

If the annual harvest limit or female sub-limit (037.03B) have not been met by the end of the Pine Ridge North Sub-unit (037.01A2) Season 1 (037.02B), unsuccessful permittees may apply to convert their permit to a Pine Ridge South Auxiliary Season (037.02D) permit. A number of auxiliary permits equal to the number of animals remaining in the harvest limit for the sub-unit will be issued by lottery.

037.05 Permit Bag Limit: One (1) mountain lion of either sex.

037.06 Shooting Hours: 30 minutes before sunrise to 30 minutes after sunset.

037.07 Application Periods:

037.07A ~~Keya Paha, Pine Ridge and Upper Platte Units~~: Applications for lottery permits shall be accepted from 1:00 p.m. CST on the Tuesday following Labor Day through September ~~30~~ 28 prior to each open season. Mail applications must be received in the Commission's Lincoln headquarters office by 5 p.m. CST, and internet applications must be received by 11:59 p.m. CST. All valid applications accompanied by the required fee (Administration Regulations, Chapter 1, Section 006) shall be considered equally in a random drawing. It shall be unlawful to submit more than one application per calendar year for a mountain lion permit. If more than one such application is submitted by or for any person, all of that person's applications shall be excluded from the drawing and the accompanying fees shall be forfeited.

~~037.07B Prairie Unit: Applications for permits shall be accepted from 1:00 p.m. CST on December 16, 2013, through December 31, 2014.~~

037.08 Checking: Any mountain lion harvested must be reported to the Commission within eight (8) hours of recovering the animal using a phone number or website specified by the Commission or in person at a district office during normal business hours. The entire unfrozen carcass must be presented to a Commission representative within 24 hours of the time it is killed to allow for inspection and attachment of an official harvest seal, unless the Commission has been notified and arrangements are made for a later check. The permittee shall furnish the Commission with the date and location of kill prior to the attachment of the harvest seal. The harvest seal must remain attached to the mountain lion until the pelt is tanned, mounted or otherwise preserved. The Commission ~~shall~~ may collect ~~two~~ premolar teeth to allow determination of age and a tissue sample from each mountain lion harvested.

037.09 Weapons Allowed: Firearms and archery equipment as specified in 001.01B2.

037.10 It shall be unlawful to:

037.10A harvest or attempt to harvest a mountain lion with a spotted coat (kitten) or any mountain lion accompanying another mountain lion.

037.10B hunt mountain lions ~~in a unit with a limited harvest quota~~ without first confirming that ~~the harvest limit or female sub-limit has not been met, and the season is open each day by checking the Commission-provided toll-free number or season status website.~~

037.10C hunt mountain lions with the aid of dogs, traps or bait, with the exception that dogs may be used during an auxiliary season (037.02C, 037.02D), if an auxiliary season is held. Season 1 in the Pine Ridge Unit and during January 1 through March 31 in the Prairie Unit.

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037.10D fail to check or report any mountain lion taken as prescribed in 037.08.

037.10E falsely check or report the harvest of any mountain lion.

037.10F harvest a mountain lion within 24 hours of obtaining a mountain lion permit

037.10G 037.10F obtain more than one mountain lion permit per calendar year.