

Mountain Lion Recommendations for 2025

Changes for the 2025 Season

- The harvest limit in the Pine Ridge has increased from four with a sublimit of two females in 2024 to twelve with a sublimit of six females for 2025.
- The harvest limit in the Niobrara Unit has increased from two with a sublimit of one female in 2024 to four with a sublimit of two females for 2025.
- The Niobrara Unit is expanded east to NE Hwy 281.
- A Wildcat Hills Unit has been created and a harvest of three mountain lions with a sublimit of two females is recommended.

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.

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 under the Game Law. In 2010, statute explicitly stated how and when a person could kill a mountain lion in defense of people or livestock. In 2012, statute provided authority for the Commission to issue permits and create regulations for mountain lion harvest seasons. The Commission approved regulations for mountain lion harvest seasons during 2014, 2019, 2020, 2021, 2022, 2023, and 2024.

Distribution

In Nebraska, mountain lion populations with resident females, males, and multiple instances of reproduction have been documented in three areas: the Pine Ridge, Niobrara River Valley, and

Wildcat Hills (Figure 1). In addition, one instance of reproduction was documented in the northeast Missouri river bluffs during 2021. 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.

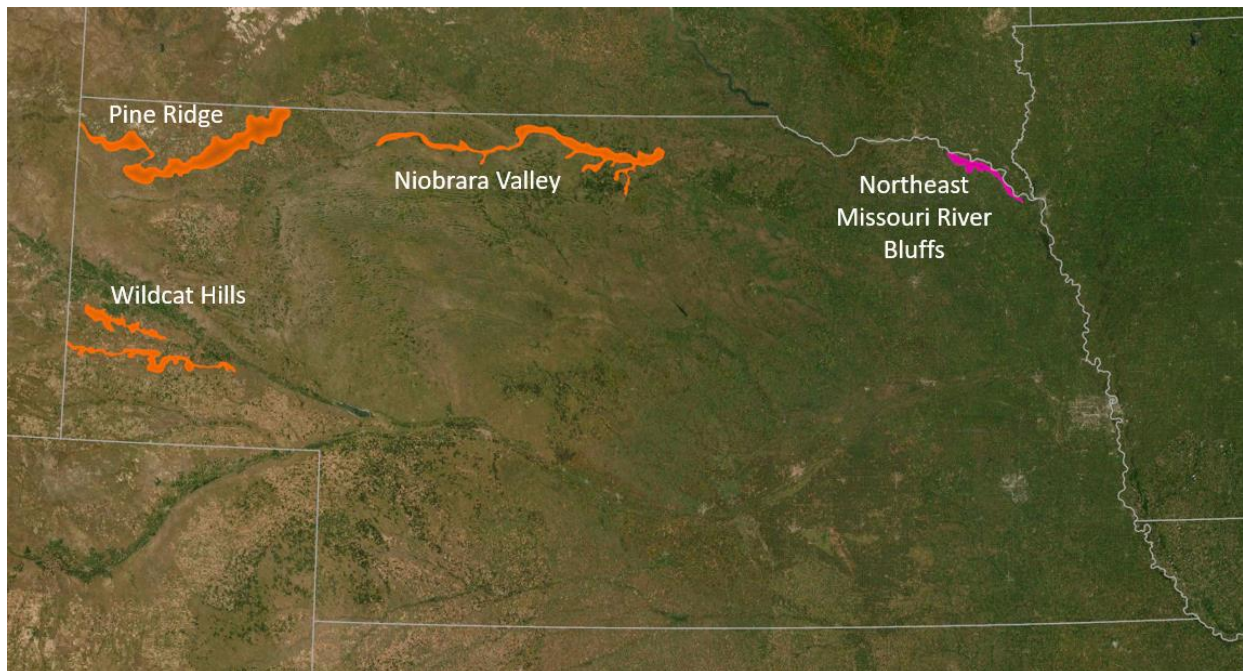


Figure 1. Three areas of suitable habitat in Nebraska with documented resident mountain lion populations are shown in orange. One instance of reproduction was documented in the northeast Missouri River bluffs (shown in pink).

Suitable Habitat

The Commission created a map of suitable habitat in 2010 (Figure 2) 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 will be occupied by mountain lions over time.

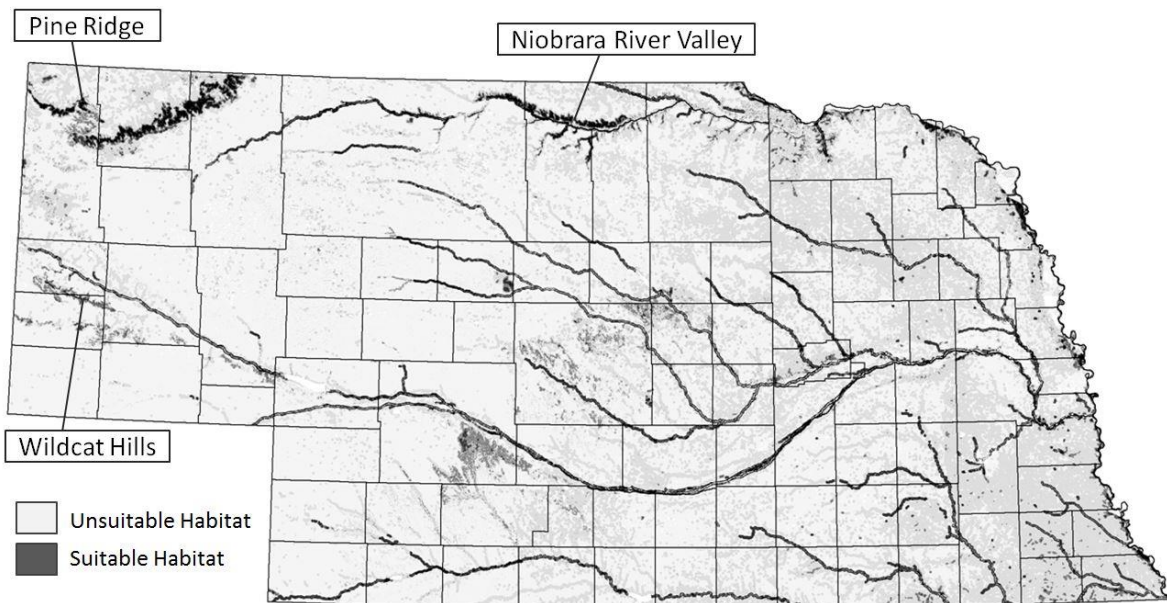


Figure 2. 2010 estimate of suitable (dark gray) and unsuitable (light gray) habitat for mountain lions in Nebraska.

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 2010-2023 have produced population estimates ranging from 22 to 70 total animals (Figure 3), including adults, sub-adults, and kittens. The most recent genetic surveys took place in the Pine Ridge during May and June 2023. Population estimates from 2023 indicate approximately 70 total animals (adults and kittens) were present in the Pine Ridge at the time of the survey, up from an estimate of 33 in 2021. In addition to the population in the Pine Ridge, there are also resident populations in the Niobrara Valley and Wildcat Hills. One instance of reproduction has been documented in northeast Nebraska but it will not be considered an established population unless additional resident females and instances of reproduction are confirmed. A few additional dispersing animals typically wander elsewhere in the state at any given point in time.

Pine Ridge

Genetic surveys utilizing scat detector dogs, and subsequent genetic analyses of the samples collected, have been completed periodically in the Pine Ridge (2010, 2012, 2014, 2015, 2017,

2019, 2021, and 2023). 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 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, 2019, 2021, and 2023 surveys, 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. Marked individuals detected by genetic samples (scat) during the surveys were considered recaptured. Both methods estimated the Pine Ridge mountain lion population at 59 total animals (adults, subadults and kittens) in 2017. Estimates from the 2019 survey were 29 for the mark-recapture method and 39 for the Capwire method. The midpoint of 34 was used for the 2019 point-estimate. Estimates from the 2021 survey were 33 for the mark-recapture method and 27 for the Capwire method. The mark-recapture estimate of 33 was considered the most reasonable point estimate to use when taking the tighter confidence intervals and GPS collar information into account. The Capwire estimate did not produce reliable results from the 2023 survey data, the mark-recapture estimate for 2023 was 70 total animals.

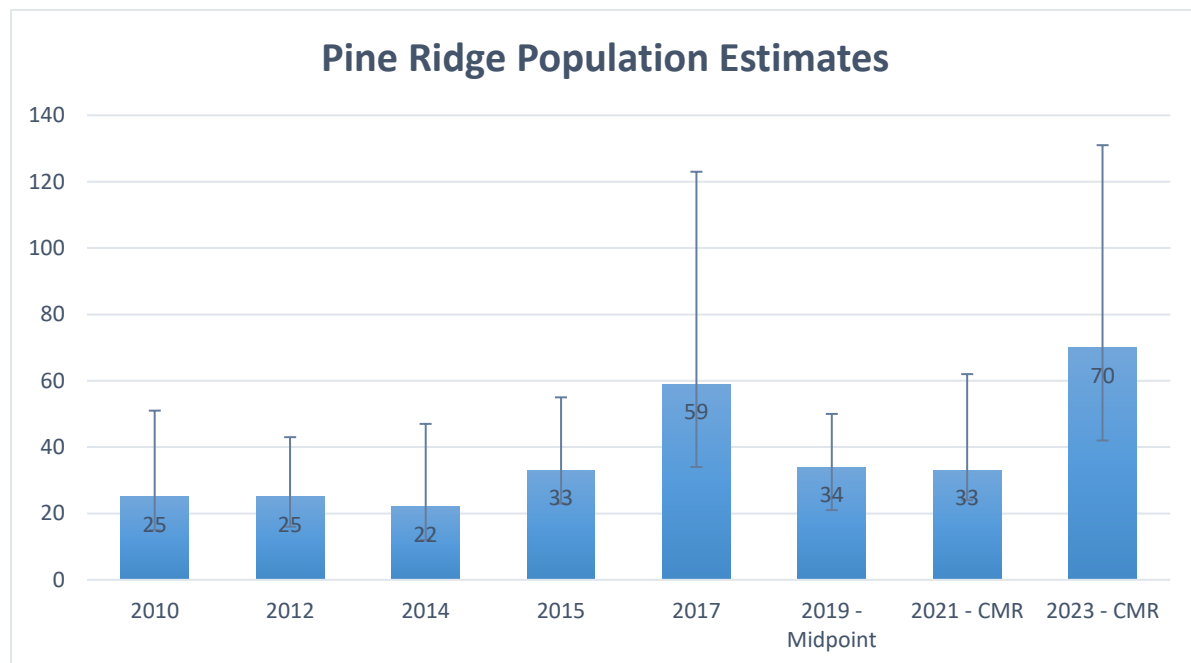


Figure 3. Population estimates for the mountain lion population in the Nebraska Pine Ridge, 2010-2023 (May and June).

Niobrara

The Niobrara Valley contains high quality mountain lion habitat (Figure 2) and abundant prey resources (white-tailed and mule deer, elk, raccoons, porcupines, turkeys, etc.). Mountain lions have recolonized suitable habitat in the Niobrara Valley over the past two decades. Since the first confirmed presence documented by long-time Commission employee Dick Turpin in 2001, mountain lion presence has increased and eventually resulted in a resident established population. This population likely formed in the early 2010s with genetic evidence showing resident reproduction by 2013.

The Niobrara Valley was closed to mountain lion harvest as the population formed and became established. This population appears to have grown quickly in recent years with resident females expanding into most available suitable habitat. Genetic surveys utilizing scat detector dogs were conducted in the Niobrara Valley during 2012 and 2014 and are presently being conducted in 2024. Results of the first two surveys were not sufficient to produce a population estimate at the time; however, they did result in the confirmation of multiple females and provided the first evidence that this was a resident reproducing population. Results from the 2024 surveys are expected by late fall and will provide additional information on present population size.

Resident reproduction has now been documented over nearly 100 miles of river valley and adjacent stream canyons. Population estimates for this area will be created using the information gathered during the 2024 surveys. 27 individual mountain lions were documented in the Niobrara Valley during 2023 and seven instances of reproduction (kittens/adult females that had nursed).

The Niobrara Valley has proven to be connected to western mountain lion populations including several instances of marked (collared or ear-tagged) animals immigrating from the Pine Ridge or Wildcat Hills populations. Known mortalities in the Niobrara River Valley have been low with an average of two per year during 2021-2023. There have been four mortalities in the Niobrara Valley so far during 2024. Documented connectivity to nearby populations, relatively low known mortalities, demographics of known individuals, area of occupied habitat, and instances of known reproduction indicate this population is likely increasing and would be resilient to moderate harvest.

Wildcat Hills

The Wildcat Hills contain high quality mountain lion habitat (Figure 2) and diverse prey resources (white-tailed and mule deer, elk, bighorn sheep, raccoons, porcupines, turkeys, etc.). Mountain lions have recolonized suitable habitat here over the past two decades. Since the first modern confirmation in 1996, mountain lion presence has increased and eventually resulted in a resident established population. This population likely formed in the early 2010s with evidence of reproduction by 2013.

The Wildcat Hills was closed to mountain lion harvest as the population formed and became established. This population appears to have grown quickly in recent years with resident females expanding into most available suitable habitat. Genetic surveys utilizing scat detector dogs were conducted in the Wildcat Hills during 2015 and are presently being conducted in 2024. Results of the first survey were not sufficient to produce a population estimate at the time. Results from the 2024 surveys are expected by late fall and will provide additional information on present population size.

Population estimates for this area will be created using the information gathered during the 2024 surveys. 24 individual mountain lions were documented in the Wildcat Hills during 2023 and seven instances of reproduction (kittens/adult females that had nursed).

The Wildcat Hills has proven to be connected to western mountain lion populations, particularly through nearby suitable habitat in Wyoming. Known mortalities have been low with an average of less than two per year during 2021-2023. There have been six mortalities in the Wildcat Hills so far during 2024. Documented connectivity to nearby populations, relatively low known mortalities in previous years, demographics of known individuals, area of occupied habitat, and instances of known reproduction indicate this population likely has been increasing and would be resilient to moderate harvest.

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. Nebraska State Constitution Article XV-25 states that public hunting shall be a preferred means of managing and controlling wildlife.

The first regulated harvest season for mountain lions in Nebraska was held in 2014. Five mountain lions were harvested during the inaugural season: 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. Five mountain lions were harvested during the 2019 season: three males and two females. Seven mountain lions were harvested during the 2020 season: five males and two females. Four mountain lions were harvested during the 2021 season: three males and one female. Four mountain lions were harvested during the 2022 season: three males and one female. Two mountain lions were harvested during the 2023 season; both were females. Four mountain lions were harvested during the 2024 season; three in the Pine Ridge (2 females, 1 male), and one female was harvested in the first regulated harvest season held in the Niobrara River Valley.

Proposed 2025 Mountain Lion Harvest

Pine Ridge

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 (2023) for the Pine Ridge population is 70 total mountain lions, including adults, subadults, and kittens. This estimate is much higher than the 2021 estimate of 33. This estimate is above staff goals to hold the mountain lion population at densities of 4-7/100km².

Input collected during public meetings held in the Pine Ridge in 2017 and 2018, indicated that the population/density level at that time (59 animals and ~8.8 mountain lions/100km² of suitable habitat) was above what many landowners were willing to accept. In addition, local hunters and landowners were concerned that deer populations were recovering more slowly, or in some locales declining, due to predation by mountain lions. Input provided at the Big Game meetings in 2024 reiterated a generally low tolerance for mountain lions in the Pine Ridge.

The estimated population size and documented connectivity to the larger Black Hills population are consistent with a population that would be resilient to harvest. There are presently 6 females with working collars in the Pine Ridge, and documentation of additional females and kittens, which provides confidence that the population remains resilient to harvest. Staff recommend that a harvest season for mountain lions be held in the Pine Ridge during 2025.

Niobrara

Information for the mountain lion population in the Niobrara Valley is consistent with a population that is expanding in distribution and abundance. The population is connected to western populations in Nebraska, and beyond, through dispersal and immigration. 27 mountain lions were documented in the Niobrara Valley during 2023 and seven instances of reproduction.

Input from Big Game meetings held in Valentine in 2022 and Bassett in 2023 provided a high level of support for regulated hunting to begin in the Niobrara Valley. Public tolerance for mountain lions has been relatively high as the population increased; however, locals have expressed concern over impacts on deer and elk populations as well as concern over livestock depredation. Tolerance in the Pine Ridge decreased rapidly as the population increased and more landowners encountered mountain lions or depredation issues. Staff believe the harvest season in the Niobrara Valley benefits acceptance of mountain lions in this area. This population is resilient to harvest, and staff recommend that a harvest season be held for mountain lions in the Niobrara Valley during 2025.

Wildcat Hills

Information for the mountain lion population in the Wildcat Hills is consistent with a population that has been expanding in distribution and abundance. The population is connected to western populations in Nebraska, Wyoming, and Colorado, through dispersal and immigration. 24 mountain lions were documented in the Wildcat Hills during 2023 and seven instances of reproduction.

Input from the Big Game meeting held at Wildcat Hills SRA in 2024 provide support for regulated hunting to begin in this area. Public tolerance for mountain lions has been relatively high as the population increased; however, locals have expressed growing concern over impacts on bighorn sheep, deer, and elk populations as well as concern over livestock depredation. Staff believe the harvest season in the Wildcat Hills benefits acceptance of mountain lions in this area. This population is resilient to harvest, and staff recommend that a harvest season be held for mountain lions in the Wildcat Hills during 2025.

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

A harvest season that allows the harvest of up to twelve (12) mountain lions in the Pine Ridge, with a sub-limit of six (6) 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) Increased harvest is necessary to bring the population density within staff targets at levels landowners are willing to accept.
- 4) Mountain lions were documented causing significant depredation of livestock in the Pine Ridge during 2017–2023, none documented previously.

The proposed season is designed to provide harvest opportunity, and allow the population to remain resilient and healthy, while reducing abundance. Staff recommend maintaining the density of mountain lions at 4–7 mountain lions/100km² of suitable habitat over the next few years. The most recent density estimate using the 2023 population estimate is ~10.5/100km² – higher than staff targets.

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 twelve (12) lions is appropriate to meet the management objective and corresponds to a maximum harvest rate of 17% of the most recent population estimate. This harvest limit is warranted to reduce the population to within density targets, while allowing the population to remain resilient and healthy in accordance with our Nebraska Mountain Lion Management Plan.

The mean number of non-harvest known mortalities in the Pine Ridge over the last three years (2021–2023) is nine per year. The maximum total impact of the recommended harvest including a typical normal number of known mortalities would be 30%. Depending on the demographics of the mortalities this could reduce the population to within management goals.

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.

Niobrara Harvest Objective: To provide a harvest opportunity for mountain lions that will allow the population to remain resilient and healthy, while keeping the population stable or slowing growth.

A harvest season that allows the harvest of up to four (4) mountain lions in the Niobrara Unit, with a sub-limit of two (2) females, is recommended for the following reasons:

- 1) The Niobrara Valley 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) Harvest is necessary to stabilize the population or slow growth and maintain the population at levels landowners are willing to accept.

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 four lions with a sublimit of two females is appropriate to meet the management objective and corresponds to a likely maximum harvest rate of 15% of the number of mountain lions detected in 2023. This harvest limit is warranted to prevent the population from quickly increasing to densities that may reduce tolerance, while allowing the population to remain resilient and healthy in accordance with our Nebraska Mountain Lion Management Plan.

The mean number of known mortalities in the Niobrara over the last three years (2021–2023) is two per year. The likely maximum total impact of the recommended harvest including a typical number of known mortalities would be 22%. Depending on the demographics of the mortalities this could slow or halt population growth.

Wildcat Hills Harvest Objective: To provide a harvest opportunity for mountain lions that will allow the population to remain resilient and healthy, while slightly reducing the population.

A harvest season that allows the harvest of up to three (3) mountain lions in the Wildcat Hills Unit, with a sub-limit of two (2) females, is recommended for the following reasons:

- 1) The Wildcat Hills 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) Harvest is necessary to slightly reduce and maintain the population at levels landowners are willing to accept.

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 three lions with a sublimit of two females is appropriate to meet the management objective and corresponds to a likely maximum harvest rate of 13% of the number of mountain lions detected in 2023. This harvest limit is warranted to prevent the population from remaining at densities that may reduce tolerance, while allowing the population to remain resilient and healthy in accordance with our Nebraska Mountain Lion Management Plan.

The mean number of known mortalities in the Wildcat Hills over the last three years (2021–2023) is 1.7 per year. The likely maximum total impact of the recommended harvest including a typical number of known mortalities would be 20% of the number detected in 2023. Depending on the demographics of the mortalities, these harvest limits will likely slightly reduce the population considering known mortalities (6) so far during 2024, and the suitable habitat patch size.

Harvest Design

The 2025 harvest season design is modelled after the previous season in the Pine Ridge and Niobrara Valley. The Pine Ridge Unit has the same boundaries as the Pine Ridge firearm deer unit (Figure 4). The Niobrara Unit has been expanded east to NE Hwy 281 due to consistent evidence of resident mountain lions in this area. The new Wildcat Hills Unit has the same boundaries as Elk Unit #4.

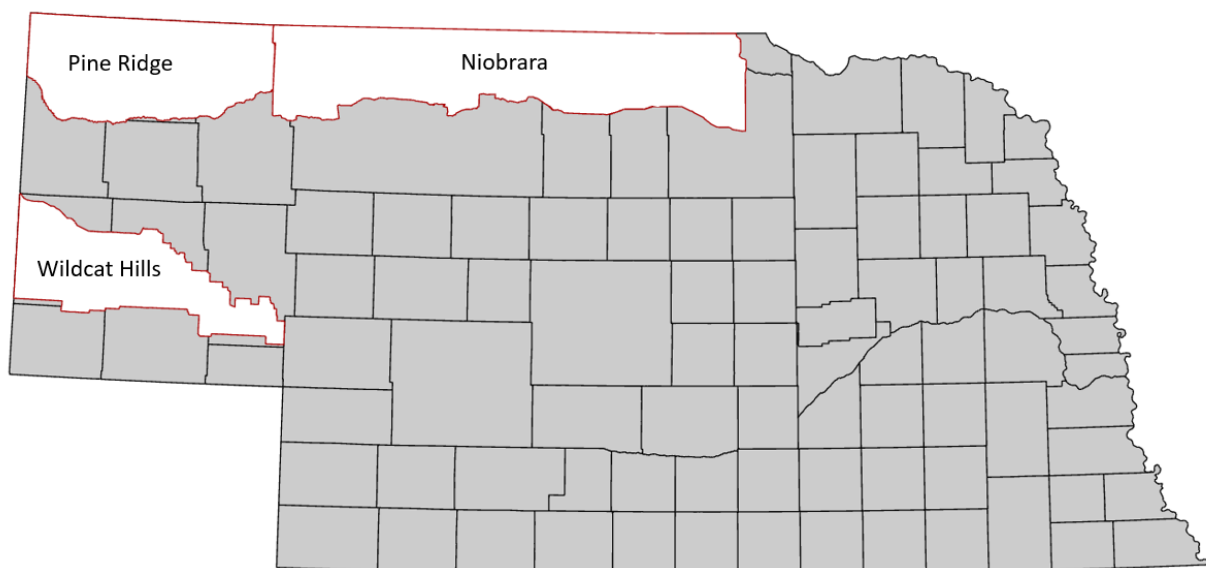


Figure 4. The Pine Ridge Unit has the same boundaries as the Pine Ridge firearm deer unit. The Niobrara Unit has expanded east to NE Hwy 281. The Wildcat Hills Unit is a new unit based on the boundaries of Elk Unit #4.

The units will have two possible harvest seasons: 1) Season 1, which is designed to maximize opportunity by allowing a large number of hunters (80/lion in the limit for the unit) 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 in that unit. The harvest limit for the Auxiliary Season would be the remainder of the harvest limit from Season 1 in that Unit. 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 would be issued via lottery. Hunters would be allowed to hunt with the aid of dogs during an auxiliary season.

Season 1 Design:

- Season Dates: January 2 through the end of February 2025, except the season will immediately close if either the annual harvest limit or female sub-limit is reached prior to the end of February.
- 80 permits issued via lottery to residents for each mountain lion in the harvest limit of that unit.
- Hunting with the aid of dogs is not allowed during Season 1.

Auxiliary Season Design:

- If the harvest limit is not reached during Season 1, an auxiliary season will be held in that unit.
- Season Dates: March 15 through March 31, 2025, except the season shall immediately close if either the annual harvest limit or female sub-limit is reached prior to the end of March.
- Harvest limits: The harvest limit for the Auxiliary Season is the remainder of the harvest limit from Season 1 in that 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 in that unit. Successful hunters from Season 1 will not be eligible for an Auxiliary Season permit.
- Hunting with the aid of dogs is 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: Sunrise to 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 unfrozen mountain lion 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. Once notified of harvest, the Commission may make arrangements for a later check. Mountain lions must be checked in the management unit where they were harvested.
- 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 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.
- 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.
- Separate a mountain lion carcass into portions smaller than the head, and quarters with proof of gender naturally attached, before successfully completing the check station process. Quarters shall mean four (4) legs with femur or scapula naturally attached and loins.
- Obtain more than one mountain lion permit per calendar year.

Summary

Mountain lions have returned to Nebraska through natural expansion from adjacent states. Population information for units has been derived from genetic information, the GPS collaring project, trail cameras, known mortalities, and other sources. In accordance with the Nebraska Mountain Lion Management Plan, the Pine Ridge, Niobrara Valley, and Wildcat Hills have been identified as populations that would be resilient to harvest, and harvest units were created for these areas.

A hunting season has been proposed for all units. The objective for the Pine Ridge is to provide a harvest opportunity for mountain lions that will allow the population to remain resilient and healthy, while reducing the population size. The objective for the Niobrara Unit is to provide a harvest opportunity for mountain lions that will allow the population to remain resilient and healthy, while keeping the population stable or slowing growth. The objective for the Wildcat Hills Unit is to provide a harvest opportunity for mountain lions that will allow the population to remain resilient and healthy, while slightly reducing the population. The harvest limits and sub-limits for female mountain lions provide assurance that all populations will remain resilient and healthy, and not be eliminated because of the harvest seasons.

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 taking place in May and June 2024 in the Niobrara Valley and Wildcat Hills, along with monitoring of collared individuals, and tracking of all known mortalities, will allow for the effect of the season to be assessed, and provide information to inform future harvest decisions.

The Commission recognizes these populations are connected by immigration and emigration to mountain lion populations in Nebraska, South Dakota, Colorado, 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.