THE HUMANE SOCIETY
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Date July 25, 2024

Fish and Wildlife Commission
Montana Department of Fish, Wildlife and Parks
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Dear Chair Robinson, Vice Chair Tabor, and members of the Fish and Wildlife Commission,

On behalf of the Humane Society of the United States and our supporters in Montana, I am writing regarding the proposals for the Fall 2024 - Winter 2025 Furbearer and Wolf Trapping - Hunting Seasons and Quotas. According to the proposal and information sheet, Montana Fish, Wildlife and Parks (FWP) is making their recommendation to increase the statewide wolf quota from 313 wolves to 334 wolves with the continued goal of reducing the state's wolf population. This goes against the best available science and will continue to harm Montana's economy. Rather than killing more wolves, FWP should be working to conserve this species as much as possible under current state statute.

FWP's unwillingness to maintain a resilient and sustainable wolf population signals to the federal government and to courts that Montana cannot be trusted to manage wolves without federal oversight. This is underscored by the recent changes to Montana's wolf management over the past few years, including allowing organizations like the Foundation for Wildlife Management to "reimburse" the killing of wolves through what essentially amounts to a bounty. The state's determination to significantly reduce the wolf population is eerily similar to the path that resulted in listing of species under the Endangered Species Act in the first place.

Finally, there are no scientific or economic justifications for killing wolves. For the reasons described herein, we strongly urge the commission to reject any increase in wolf killing and eliminate the killing of wolves in WMU 313 to protect highly valuable Yellowstone National Park wolves. We also urge the commission to reduce the trap check time for wolf traps from 48 hours to 24 hours, and reduce the notice for closing WMU 313, a region, and/or the state to wolf trophy hunting and trapping upon reaching a quota from 24 hours to 12 hours.

1. Trophy hunting and trapping seasons are highly detrimental to wolves

The best available science does not support killing wolves and demonstrates that trophy hunting and trapping wolves can result in death and disruption beyond the individual killed.[1] Killing single adult wolves can result in the loss of *entire packs*, by causing the loss of dependent offspring and disrupting the pack's social structure.[2] Such seasons can decrease social tolerance for wolves, increase wolf poaching, and exacerbate conflicts with livestock.[3] Furthermore, wolves do not need to be "managed" through trophy hunting and trapping or predator control schemes, as their populations are generally controlled by prey and habitat availability as well as their territorial nature and social structure.[4]

Studies show that killing wolves can be especially devastating, because their complex pack structure makes them particularly susceptible to social disruption.[5] The human-caused death of individual adult wolves harms family group cohesion and has a disproportionately large influence on population dynamics.[6] Wolves exposed to heavy hunting also experience increased stress and reproductive hormone imbalance.[7] The human-caused loss of breeding females has been shown to cause complete dissolution of social groups and abandonment of territory.[8] The human-caused loss of adults also diminishes pup survival and, consequently, the survival of the pack.[9] For example, through monitoring wolves across five national parks, Cassidy et al. (2023) found that human-caused mortality lowered a pack's ability to persist by 71% when compared with wolves who faced no human persecution.[10] If a pack leader was killed by a human, the fate of the pack's ability to persist to the end of the biological years decreased by 73%, and reduced the pack's ability to reproduce the following year by 49%.[11] Cassidy et al. (2023) write:

> The pack-level measures we examined show that even the loss of a single wolf, especially a leader, can have detrimental effects on the pack. This aligns with the findings of Brainerd et al. (2008) and Borg et al. (2015) on pack persistence and mortalities. In addition, pack instability not only could possibly lead to disruptions to wolf pack kin structure (Rutledge et al. 2010) or even population-level perturbation, as it does for other species (Lerch et al. 2018).[12]

Cassidy et al. (2023) also found that human-caused wolf mortalities unfortunately occur during precarious times of the year for wolves such as when females are pregnant, and that losses generally include losses of more than one pack member—factors that harm packs' structures and abilities to persist.

In addition to harming pack persistence and reproduction, a recent study demonstrates that human-caused mortality can also reduce the distance, duration, and success of dispersal for wolves.[13] Citing others, Morales-Gonzalez et al. (2022) describe dispersal as central to population dynamics and persistence, as it allows critical gene flow and the colonization of suitable habitat. Yet, after conducting a systematic review of literature related to wolf dispersal, they conclude, "[H]uman-caused mortality reduces distance, duration and success of dispersal events. Dispersers are particularly vulnerable to human-caused mortality, and its additivity to natural mortality evidences these negative effects."[14]

Numerous studies have detailed the effects of decreasing wildlife populations through trophy hunting, trapping, and predator control on population genetics.[15] Frank et al. (2021) state that removing fit adults, "[C]an reshape sociospatial structure, genetic composition, fitness, and potentially affect evolution."[16] This is particularly concerning, because, as Ausband (2022) states, "A lack of genetic diversity can result in lower reproduction and survival and ultimately increase the probability of extinction."[17]

Furthermore, current science demonstrates that *effective population size*—that is the number of individuals who are participating in the genetic health of the population—is just a fraction of the number of individuals counted (or population census).[18] This is most alarming, as Montana works to dramatically reduce its wolf populations. According to vonHoldt et al. (2024), "Anthropogenic effects that reduce population size and impact life history events central to individual-level fitness (e.g., reproduction, dispersal) are well known to degrade genomic variation and adaptive potential."[19]

In fact, vonHoldt et al. (2024) found that the effective population size for wolves in the northern Rocky Mountains and western Great Lakes has remained at just 5.2 - 9.3% of the census size since the early 2000s. They also found that northern Rocky Mountain wolves have lower genetic diversity than wolves in the Western Great Lakes region, and that their genetic diversity has declined over time with a corresponding increase in inbreeding levels. While vonHoldt et al. (2024) suggest that an *effective population size*—rather than the *population census*—for wolves should number at least 500 animals according to the 50/500 rule of conservation to ensure long-term viability, they estimated the effective population sizes were a mere 201 to 335 animals for the northern Rocky Mountains in 2021.[20]

Furthermore, according to vonHoldt et al. (2024):

> Given the difficulty states have faced in meeting their goals of significant population reduction (e.g., Idaho's goal of 500 wolves with an estimated 1270 census size, Idaho Fish and Game Gray wolf management plan draft January 2023), the effective population size estimates are then interpreted to be strongly influenced by the number of breeding wolves and gene flow, less from census size. Current management actions that seek to reduce overall populations and permit hunting during the breeding season have the greatest potential to have negative consequences on effective population sizes.[21]

Notably, Frankham et al. (2014) state that even an effective population size of 500 is "too low for retaining evolutionary potential for fitness in perpetuity."[22] Instead, they suggest that an effective population of at least 1,000 is required to ensure long-term genetic viability.[23]

Maintaining and conserving for an effective population size is especially necessary for species like wolves, whose social structure and dynamics restrict reproduction.[24] Factors such as dispersal, vehicle collisions, poaching, disease, climate change, habitat availability, sex ratios, and other factors all influence the ratio between effective and census population sizes.[25] Low effective population sizes reduce the ability of a population to adapt and respond to challenges, and can increase their risk of long-term extinction.[26] In fact, vonHoldt et al. (2024) state, "We show that while gray wolves fall above minimum effective population sizes needed to avoid extinction due to inbreeding depression in the short term, they are below sizes predicted to avoid long-term risk of extinction."[27] Furthermore, "The potential for a population to respond to evolutionary challenges deteriorates as genomic variation dwindles, thereby limiting adaptive outcomes."[28]

The genetic consequences of hunting were documented in Minnesota wolves just one year after a trophy-hunting season was implemented in 2012.[29] The observed effects included a significant increase in structuring and differentiation among subpopulations, decreased dispersal and gene flow among subpopulations, and elevated mortality of dispersing wolves.[30] These results are corroborated by similar findings in a wolf population in Alaska.[31] It is clear that even low to moderate rates of legal wolf killing are not genetically neutral and invoke harmful population-wide genetic and demographic changes that can dramatically reduce population viability, elevate extinction risk, and require multiple generations for wolf populations to recover from.[32]

2. Trapping wolves harms non-target species, pets, and wolves themselves

The Humane Society of the United States remains opposed to trapping as it causes unimaginable suffering and distress to animals.[33] Animals exert themselves vigorously in restraining traps or snares, and experience physiological stress and/or pain, fear, shock, dehydration, and exposure to weather and other animals until they are killed.[34] They can sustain debilitating injuries such as broken limbs, broken teeth, dislocated shoulders, hemorrhage, claw removal, tendon or ligament lacerations, fractures, joint dislocation, and amputation of digits and/or limbs.[35] Wolves suffer greatly in traps, as Proulx et al. (2015) found during their investigation on wolf snaring affects wolves:

> Killing neck snares are inadequate for consistently and quickly rendering canids unconscious. Because of collateral blood circulation, it is almost impossible to stop blood flow to and from the brain by tightening a snare around the neck. Also, it is difficult to collapse the trachea due to its rigid cartilaginous rings and adjacent musculature. Furthermore, weather conditions impact the function of snares, and the animals' stride and posture when entering the loop affect capture location on the body. Also, in an attempt to escape, animals frequently chew the snare, and cut their mouths and break their teeth. If they do not escape, they then suffer a slow death with the snare embedded in their neck. Animals may develop a water or jelly head when not killed quickly, i.e., an extreme case of edema due to watery fluid collecting in the tissues of the cervical region. If they escape with the snare still closed on their neck, they may suffer for many days or weeks and eventually die with the snare cable cutting into their skin and muscles.[36]

Similarly, Gese et al. (2019) compared the usage of foothold traps to foot snares used to capture wolves (for research) and found that many injuries are impossible to see on live animals and can only be discovered postmortem.[37] They found that 61% of wolves who were captured in foothold traps sustained injuries to the feet and legs such as lacerations, punctures, and lost toes. Additionally, 26% of the wolves captured in foothold traps had injuries to their mouths such as cut lips and lost teeth, while 77% of the snared wolves had injuries to their mouths including gum, tongue, and lip injuries.[38] In other words, even under the best conditions in which traps are monitored by researchers, wolves suffer grave bodily harm while restrained in foothold traps or snares, but many of those injuries are not detectable on live animals.

Additionally, wolves injured by traps or snares may later die from injuries or reduced ability to hunt or forage for food. For example, in 2018, a federally-protected gray wolf with a snare wrapped around his muzzle was euthanized by authorities near Duluth, Minnesota. An eyewitness observed that the wire snare "…was wrapped tight around its nose, and embedded into the nose. It clearly could not open its mouth at all. It was very thin." A local wildlife rehabilitation center added, "He might have been able to lick up some snow and sniff roadkill, but he had not been able to eat. He had been starving, and was a skeleton of fur and bones."[39]

FWP must work to reduce the harms traps and snares cause to wolves, and indeed all animals, to the extent possible under state statute. At the very least, this must include reducing the wolf trap check time from 48 hours to 24 hours. This will lessen the injuries and suffering of trapped wolves as well as allow nontarget animals a better chance of survival.

3. Killing wolves will not reduce already rare conflicts with livestock

Science demonstrates that killing wolves does not prevent livestock losses. Livestock losses to wolves are already rare in Montana and in every area in which they live.[40] In calendar year 2023, USDA-Wildlife Services confirmed just 23 cattle, 8 sheep, and 1[41]￼ To put that into perspective, [42]￼ In response to these few conflicts, 31 wolves were killed in 2023 (27 by USDA Wildlife Services and 4 by private citizens).[43]￼

Many studies question the effectiveness of lethal predator control to resolve conflicts between wolves and livestock. For example, Treves et al. (2024) found that killing wolves did not reliably prevent livestock losses and could actually increase such losses. The authors state that "In every review thus far published on the effectiveness of lethal methods as a way to protect livestock from predators in general, authors from nearly 30 countries report occasional counter-productive effects resulting in higher livestock losses after predator-killing."

Additionally, killing wolves can exacerbate conflicts with livestock by disrupting the stable social structures that wolves rely on. For example, Elbroch and Treves (2023) conclude, "[L]ethal removal has negative impacts on communities, both through potential carnivore social disruption that may impact the safety of other people's livestock, as well as the cascading impacts of carnivore removal on ecosystem health."

Many studies have questioned the efficacy of killing native carnivores to reduce conflicts between the native carnivores and livestock.[44] Non-lethal methods to *prevent* conflicts are more effective, economical, and humane than killing wolves,[45] as demonstrated by producers throughout Montana including in the Tom Miner Basin. Studies show that the best remedies for protecting cattle, sheep and other domestic animals come from non-lethal measures.[46]

4. Killing wolves will not grow ungulate herds

Killing wolves and reducing the wolf population will not boost ungulate numbers. Elk and other ungulate hunting numbers in Montana continue to be consistently high and elk populations are reported to be at or above objective in many parts of the state.[47] Even if the population was struggling, research demonstrates that while native carnivores like wolves can accelerate declines in prey populations and modulate increases, predation alone does not cause these changes in populations.[48] Weather, disease, and habitat play a much greater role in determining deer and other ungulate population sizes.[49] Killing native carnivores like wolves fails to address the underlying environmental issues—such as habitat loss, drought, loss of migration corridors, human growth, oil and gas exploration and inadequate nutrition—that harm prey populations such as deer and elk.[50]

Further, a meta-analysis of predator-prey studies assessing the overall effect of predator removal on wild ungulate populations found that predator removal had low and variable effectiveness on increasing ungulate populations.[51] Another recent study analyzing four decades of efforts in Alaska to reduce abundance of large predators, including gray wolves, brown bears and black bears, found that there was no difference in average moose hunting success during periods of recent liberalized killing of predators relative to prior periods.[52]

The scientific consensus for the last several decades has generally found that coursing predators like wolves and coyotes balance prey populations and make them more robust,[53] including removing the sick and weak animals who would die of other natural causes anyway.[54] Predator-control schemes, including recreational hunting and trapping, are an unreliable way to increase the abundance of elk and other ungulates.[55] For example, Clark and Hebblewhite's (2021) meta-analysis found that predator-control experiments actually caused a decline in ungulate numbers, growth rates, survival, and recruitment.[56] Conversely, Trump et al. (2022) found that despite increasing numbers of grizzly bears, cougars, and wolves, elk hunters in Alberta killed more elk over time and their success rate increased.[57] Treves et al. (2024) in their review article found that killing wolves generally will not increase ungulate abundance[58]

Wolves are very good at identifying vulnerable prey, and tend to target individuals that are old, young, sick, or otherwise weakened.[59] They prefer to prey upon deer who are already in poor health or otherwise compromised.

Wolves and other native carnivores also play a critical role in suppressing and limiting the prevalence of disease in prey species, including chronic wasting disease (CWD), an epidemic plaguing cervids that continues to spread across North America, including Montana.[60] Wolf predation can limit or even prevent transmission of CWD and other diseases by reducing host densities and contact rates or by lowering the total number of infected individuals in a host population.[61]

Finally, studies show that even the mere risk of human hunters has a greater indirect effect on elk resource selection than does wolf predation risk, and Montana's elk have been found to prioritize selecting habitats that will reduce their risk of human hunters when faced with a choice between hunters and wolves.[62] In other words, human hunters are likely influencing their likelihood of seeing ungulates more negatively than wolves are. Marantz et al. (2016) found that white-tailed deer generally decreased their distance travelled, micro-range area (the area used by deer for each 2-day interval studied), and exploratory behavior during the hunting season.[63] The authors state that their results "indicate that deer recognize threats from humans on the landscape and adapt behavioral strategies by minimizing movement and exhibiting high residency times in well-established ranges, factors known to influence harvest susceptibility."[64] Additional research has also shown that deer reduce their movements and limit their use of space to smaller areas,[65] decrease their activity in and surrounding hunting locations,[66] and limit their daytime activity on days with higher hunting risk (e.g. weekends).[67]

5. Wolves are valuable and provide many ecological and economic benefits

The continued quota of six wolves in WMU 313, which borders Yellowstone National Park, is particularly concerning. Such a quota conflicts with the best available science and public values, has already harmed multiple decades of world-renowned wolf research,[68] and could damage Montana's billion-dollar wildlife-watching tourism economy and reputation. While we appreciate the amendment proposed by Commissioner Brooke, we strongly urge this commission to set the quota for WMU 313 at zero, or at the very least, reduce the quota as much as possible.

Researchers estimated that in 2021, "direct spending by Yellowstone National Park visitors who would not have visited the park without the presence of wolves is likely at least $82.7 million.[69] Notably, this value includes only direct spending and does not account for the "multiplier" effect within the 3-state economy of re-spending portions of this amount by workers and business owners."[70] However, studies show that killing wolves in areas adjacent to protected areas (such as Yellowstone National Park) significantly reduces wolf sightings in those protected areas.[71] Killing wolves, especially Yellowstone National Park wolves who venture into WMU 313, could therefore reduce the possibility of wolf sightings and harm Montana's economy. Yellowstone's wolves must be protected from exploitation by hunters and trappers by instituting a zero quota in WMU 313.

Additionally, wolves significantly and positively influence biological diversity and ecosystem function.[72] Ecologically functioning populations of wolves have been instrumental in restoring biological diversity in the Northern Rocky Mountains, including increasing the number of songbirds, pronghorn, lynx, and other species, while simultaneously improving the ecology of vital riparian systems.[73] By curbing deer over-browsing, wolves can reinvigorate the understory of plant communities, increasing flora and fauna biological diversity including bird life.[74] Wolf presence can also affect soil nutrients, soil microbes, and plant quality because decomposing prey carcasses enrich soils.[75] Meanwhile, elevated deer populations not only destroy forest ecosystems, but are also involved in numerous vehicle collisions and carry Lyme, a zoonotic disease.[76] Recent studies demonstrate that wolves can reduce deer-vehicle collisions saving millions in social costs.[77]

Once wolves had been restored to Yellowstone National Park and Banff National Park in sufficient numbers, researchers found that they mediated elk populations and curbed ungulate browsing of aspens through behavioral changes,[78] and that aspen recruitment increased for the first time in over a half century due to the presence of wolves.[79] Even when the elk population had decreased in Yellowstone prior to wolf recovery, elk browsing continued to negatively affect willow and plant communities.[80] With the return of wolves, changes in the trophic processes were immediate and noticeable: first elk browsing, then willow recovery, then beaver lodge density, then stream restoration (including reduced flooding, channeling, and bank erosion), and even increased songbird diversity.[81]

Wolves lose significant amounts of their kills to scavengers such as ravens, magpies, eagles, coyotes, and bears.[82] Wolves also increase biological diversity by checking the effects of mesopredators on numerous species,[83] to the benefit of species such as grizzly bears, pronghorn and lynx.[84] Wolves act as a buffer to the effects of climate change by creating more carrion for scavengers and making it available year round, to the advantage of bald and golden eagles, brown bears, ravens, magpies, and coyotes.[85]

In short, if wolves are present in ecologically functional populations, they can mediate ungulate populations, which then confers greater biological diversity and function to ecosystems. Additionally, wolves indirectly benefit numerically rare species in the face of the climate crisis. Wolves are a critical component to ecosystem health.

6. FWP must not rely on faulty population modeling estimators for its carnivores

Reducing the wolf population is contrary to the best available science and public values. There is strong scientific evidence that suggests Montana's wolf population is already smaller than FWP purports due to considerable issues with the agency's use of the "Integrated Patch Occupancy Modeling" ("iPOM") method to estimate population size and the substantial human-caused mortality taking place. In an unpublished scientific review, Creel (2022)[86] analyzes Montana and Idaho's population modelling methods, concluding, "important changes in the wolf populations of Idaho and Montana are likely to go undetected by the monitoring methods now in use."[87]

Likewise, Crabtree (2023, preprint) found that the iPOM method used by Montana had a severe overestimation bias and "resulted in estimated wolf abundance 2.5 times larger than true abundance."[88] It likewise criticizes iPOM's use of hunter observation of wolves during the fall, when pack structure varies spatially and numerically, as young wolves disperse, and packs are fragmented due to hunter mortality. Additionally, Crabtree (2023, preprint) concludes that, “Given iPOM’s current design, there is no ability to detect change let alone determine wolf population size.”[89]

Because Northern Rockies states fail to use reliable wolf-population estimating methodologies, it may be impossible to see the consequences of Montana wolf-killing policies before populations fall to critical levels. In fact, Crabtree (2023, preprint) states, “Given the sensitivity of how iPOM’s spatial models result in severe overestimation bias, we fail to see how iPOM could detect any change in abundance *except possibly at or near extirpation levels*.”[90]

It is scientifically irresponsible to base any management decision on inaccurate data, and it harms FWP’s reputation.

7. Conclusion

In conclusion, the Humane Society of the United strongly urges the Commission to set the quota in WMU 313 at zero and reduce and eliminate wolf trophy hunting and trapping to the extent allowable by law. We also urge the commission to reduce the trap check time for wolf traps from 48 hours to 24 hours, and reduce the notice for closing WMU 313, a region, and/or the state to wolf trophy hunting and trapping upon reaching a quota from 24 hours to 12 hours. Trophy hunting and trapping wolves conflicts with the best available science and will harm Montana’s eco-tourism economy and wildlife management reputation.

A copy of these comments was also submitted via the online survey.

Sincerely,

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[12] *Id.*, page 5.

[13] Morales-González et al., 2022.

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[26] *Id.*

[27] *Id.,* page 3.

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