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Montana Department of Fish, Wildlife, and Parks
Fish and Wildlife Commission
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Submitted via email: fwpwild@mt.gov, dtemple@mt.gov, to all Commissioners' emails, and partially online at https://fwp.mt.gov/aboutfwp/commission/august-2024-meeting

Dear Commissioners and Director Temple,

On behalf of our thousands of members and supporters, WildEarth Guardians appreciates the chance to comment on the Montana Fish, Wildlife, and Parks Department's (MFWP) proposed season and quota changes for gray wolves. We urge the Fish and Wildlife Commission (Commission) to manage gray wolves in a manner that emphasizes science and coexistence over misinformation and the anti-wolf, hatred-driven political agenda that has embroiled the state.

WildEarth Guardians (Guardians) is a regional non-profit organization whose mission is to protect and restore the wildlife, wild places, wild rivers, and health of the American West. Guardians has offices across the west, including in Montana. For over thirty years, Guardians has worked to restore and protect imperiled native carnivores, including gray wolves. Guardians also works to protect wolf habitat in Montana and across the West, promote coexistence and fight lethal wolf "management," educate the public about the importance of wolves to maintaining healthy ecosystems, and advocate for protecting these iconic animals under state and federal law.

I. Introduction

Wolves have an inherent right to exist and should not be hunted or trapped. Wolves are a keystone species in the West; when they are allowed to live and roam freely throughout their native range, and we do the work to coexist with them on shared landscapes, all benefit. Instead of managing wolves through a coexistence lens, Montana's wildlife management and policy is "driven by a small minority who hate predators,"[1] as it aims to kill off much of the state's wolf population. This hatred-driven agenda threatens the longevity of our wolf population while undermining public sentiment and science. Recent research shows that the current population size in the Northern Rockies is below the size predicted to be necessary to avoid long-term risk of extinction, highlighting concerns with genetic health of Montana's wolf population on top of all the other issues with Montana's wolf management in recent years. Below, we explain the myriad benefits brought by a thriving wolf population for Montana's wild places, citizens, visitors, economy, and other wildlife, demonstrating why the state should manage the wolf population for coexistence over killing.

[1] Chris Servheen and Doug Smith, 2024 ("Servheen and Smith, 2024"). Will two of the world's greatest wildlife conservation success stories be unwritten? *Yellowstonian.* Available at https://yellowstonian.org/the-worlds-greatest-wildlife-conservation/.

II. The proposed anti-wolf regulations are not aligned with MFWP's mission because they are tailored for a tiny percent of Montanans.

MFWP is charged with "steward[ing] the fish, wildlife, parks, and recreational resources for the *public*, now and into the future." Wolf hunters and trappers are a far, far cry from "the public." In Montana from 2022-2023, approximately 0.62% of Montana residents actively hunted wolves and approximately 0.022% of Montana residents actively trapped wolves.[2] The Montana Gray Wolf Program 2023 Annual Report ("2023 Report") does not contain data on how many people actively hunted or trapped wolves in 2023, but assuming numbers of wolf trappers and hunters stays nearly the same from year to year, that 0.022% segment of the state population that traps wolves was responsible for killing up to 11% of the state's wolf population last year (125 wolves). Total, the 0.64% of the state population that hunts and traps wolves killed up to 26% of the state population.[3] MFWP and the Commission should stop focusing on managing for a tiny portion of the state population and instead consider the interests of the other 99+% of the public who do not engage in wolf hunting or trapping. The 2023 Report states that MFWP is "acknowledging the diversity of values" among Montanans, but nothing could be further from the truth.[4]

III. If the Commission keeps WMU 313 as a single unit, the kill quota should be one, only because zero is not currently an option.

No Yellowstone wolves should be shot or trapped, but since current anti-wolf legislation prohibits a no-kill buffer around the Park, the Commission should limit the kill quota to one wolf if it keeps the current WMU 313 intact, or one in each unit if it splits WMU 313 back into two by reinstating WMU 316. Since 2021, the wolf killing allowed in the area north of Yellowstone National Park (YNP) has had detrimental impacts on Yellowstone's wolves, and thus both scientific research and Montana's economy. Thirteen Yellowstone wolves—or roughly ten percent of the YNP's population—died from confirmed or suspected human caused mortality during the 2023-24 season.[5] Ten were killed legally (8 in Montana), one illegally, and two died of suspected gunshot wounds. Yellowstone's biologists estimate that 85% of wolves killed recreationally over the years in the WMU 313 area are from packs primarily living in the YNP; including last year, when the six-wolf quota was met entirely with the lives of YNP wolves.

Wolves are highly social animals whose pack stability and resilience are dependent on individual wolves, thus the death of a single wolf can have negative implications, including impacts to pack persistence and reproduction.[6] Last year, as a result of people killing thirteen YNP wolves, three out of the eleven packs in YNP dissolved, disrupting wolves' natural social dynamics.

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[2] Chris Servheen and Doug Smith, 2024. Will two of the world's greatest wildlife conservation success stories be unwritten? *Yellowstonian.* Available at https://yellowstonian.org/the-worlds-greatest-wildlife-conservation/

[3] Montana Fish, Wildlife, and Parks, Montana Gray Wolf Program 2023 Annual Report ("2023 Report"), p. 15 (44% of wolves "harvested" last season were taken by trappers).

[4] 2023 Report, p. 14.

[5] Cameron Sholly, Yellowstone National Park Letter to Montana Fish and Wildlife Commission ("Sholly Letter, 2024), June 26, 2024. Available at https://wyofile.com/wp-content/uploads/2024/07/2024-6-26-WolfHuntCommentLetter.pdf

[6] Cassidy, K. A., Borg, B. L., Klauder, K. J., Sorum, M. S., Thomas-, R., Dewey, S. R., Stephenson, J. A., Stahler, D. R., Gable, T. D., Bump, J. K., Homkes, A. T., Windels, S. K., & Smith, D. W. (2023). Human- caused mortality triggers pack instability in gray wolves. Frontiers in Ecology and the Environment, 1–7; see also Sholly Letter, 2024 ("[H]arvest of Yellowstone wolves has been shown to negatively impact pack persistence and pup production.").

Pack dissolution and the death of YNP wolves also harms the local economy and small, local businesses. Yellowstone wolves "are exceedingly valuable to a great number of people across Montana, the country, and the world."[7] People travel here from all over the world for the opportunity to see a wolf, as Yellowstone is "the best place in the world to view and study free-ranging wolves."[8] Wolf watching alone generated at least $82 million in the Greater Yellowstone Ecosystem area in 2022.[9] When wolf killing adjacent to YNP eliminates entire packs, prevents the formation of packs, or leads to pack dissolution, this decreases wolf watching opportunities because these are the same wolves that wildlife watching business rely on seeing. Further, hunting Yellowstone wolves can change the behavior of surviving wolves, leading to avoidance of people, for example, which then also hurts local businesses. In short, the wolf killing practices north of Yellowstone must change to support wolves, wolf watchers, and local businesses.

IV. The total kill quota of 334 should be much lower, reflecting the fact that healthy and abundant wolf populations are foundational for Montana's ecosystems.

While we do not agree with a recreational kill quota of anything above zero, we recognize the legislative constraints on the Commission and recommend a quota of 126 instead of 334. This will both satisfy legislative requirements and keep a more abundant wolf population than that which has been proposed, benefitting wolves, ecosystems and other wildlife, and Montana's human population. First, when formulating the total kill quota, MFWP should use 900 wolves as the population estimate since that is the most conservative estimate generated by the fatally flawed iPOM model which MFWP continues to use. Second, applying the literature showing that population reductions as low as 14% can half or reverse wolf population growth, we propose a quota of 126.

Wolves provide vast ecological services through their top-down regulatory effects on ecosystems. Killing of hundreds of wolves every year has far ranging impacts on other wildlife and the ecosystems as a whole. We urge the Commission to conserve wolves so that they can positively impact our ecosystems to their full potential. Wolves, like other apex predators, encourage biodiversity, and their role as apex predators demands special consideration in management.[10] In some situations, such as the famously studied recovery of wolves in Yellowstone National Park, ecologists measured astounding trophic cascades caused by wolf presence; the wolves influenced every level of the food web, increasing species diversity from beavers to birds.[11] Carnivores like wolves impact prey and meso-carnivores (i.e., smaller carnivores such as foxes) both by consuming

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[7] Sholly Letter, 2024.
[8] Sholly Letter, 2024.
[9] Wild Livelihoods Coalition and RRC Association, Tourism in the Greater Yellowstone Ecocystem: Wildlife Watching's Growing Importance, 2022. Available at https://www.wildlivelihoods.com/_files/ugd/94fbf7_a919d0f15de14164835500f2aca90bb2.pdf.
[10] Kareiva, P., Attwood, S.K., Bean, K., Felix, D., Marvier, M., Miketa, M.L., Tate-Pulliam, E. 2022. A new era of wolf management demands better data and a more inclusive process. Conservation Science and Practice. Available at https://doi.org/10.1111/csp2.12821.
[11] *See, e.g.,* Berger, K.M., Gese, E.M., Berger, J. 2008. Indirect effects and traditional trophic cascades: A test involving wolves, coyotes, and pronghorn. *Ecology*. 89(3):818–28. Available at https://doi.org/10.1890/07-0193.1; Beschta, R.L. 2003. Cottonwoods, elk and wolves in the Lamar Valley of Yellowstone National Park. *Ecological Applications*. 13(5):1295–1309. Available at https://doi.org/10.1890/02-5175; Ripple, W.J., Beschta, R.L., Fortin, J.K., Robbins, C.T. 2014. Trophic cascades from wolves to grizzly bears in Yellowstone. *Journal of Animal Ecology*. 83(1):223–33. Available at https://doi.org/10.1111/1365-2656.12123.

them (density-mediated influences) and influencing their behavior.[12] When wolves suppress meso-carnivore populations, they protect meso-carnivores' prey, including imperiled songbirds and small mammals.[13] Wolves can also prevent prey from over-grazing or over-browsing vegetation, helping rejuvenate riparian vegetation and waterways.[14] Wolves also create carrion that benefits scavengers, including grizzly bears, and even soil health.[15]

Further, contrary to the frequently-cited argument that wolves are harming elk and deer herds, their predation actually promotes healthy herds, as ungulates' and wolves' places in shared ecosystems work together to keep both populations healthy (discussed further below). Wolves preferentially select weak, old, and diseased individuals to prey on.[16] When wolves keep deer and elk populations in check, wolves prevent die-offs from starvation and other stochastic events and may help reduce chronic wasting disease, which spread to Montana deer herds in 2017.[17]

V. MFWP must stop using iPOM to estimate the wolf population, and until it does so, it should rely on the lowest end of the estimate range generated.

This section primarily details the myriad fatal errors with the iPOM model that MFWP uses to estimate wolf abundance. Until MFWP begins using a different model that provides accurate estimates, it should at the very least use the lowest end of the population estimate range generated by iPOM (900 wolves) when setting policies like the annual kill quota, as discussed above.[18]

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[12] Haswell, P., Kusak, J., Hayward, M.W. 2016. Large carnivore impacts are context-dependent. *Food Webs.* 12:3- 13. Available at 10.1016/j.fooweb.2016.02.005.

[13] See note 10.

[14] See, e.g., Ripple, W.J., Beschta, R.L., Fortin, J.K., Robbins, C.T. 2014. Trophic cascades from wolves to grizzly bears in Yellowstone. *Journal of Animal Ecology.* 83(1):223–33. https://doi.org/10.1111/1365-2656.12123.

[15] Wilmers C.C., Getz W.M. (2005). Gray wolves as climate change buffers in Yellowstone. PLoS Biol 3(4): e92. Wolves modulate soil nutrient heterogeneity and foliar nitrogen by configuring the distribution of ungulate carcasses https://doi.org/10.1371/journal.pbio.0030092; Bump, J.K. et al. (2009). Wolves modulate soil nutrient heterogeneity and foliar nitrogen by configuring the distribution of ungulate carcasses. Ecology, 90(11), 3159-3167. https://doi.org/10.1890/09-0292.1; Christine Peterson, 25 years after returning to Yellowstone, wolves have helped stabilize the ecosystem, National Geographic (July 10, 2020), available at https://www.nationalgeographic.com/animals/article/yellowstone-wolves-reintroduction-helped-stabilize-ecosystem.

[16] Wright, G.J., Peterson, R.O., Smith, D.W., Lemke, T.O. (2006) Selection of northern Yellowstone elk by gray wolves and hunters. *Journal of Wildlife Management,* 70:1070-1078; Hoy, S.R., Vucetich, J.A., Peterson, R.O. (2022) The role of wolves in regulating chronic non-communicable disease, osteoarthritis, in prey populations. *Frontiers in Ecology and Evolution,* 10:1-9.

[17] See Brandell, E.E., Cross, P.C., Smith, D.W., Rogers, W., Galloway, N.L., MacNulty, D.R., Stahler, D.R., Treanor, J., Hudson, P.J. (2022) Examination of the interaction between age-specific predation and chronic disease in the Greater Yellowstone Ecosytem. *Journal of Animal Ecology.* 91(7) 1373-1384; Uehlinger, F.D., Jonston, A.C., Bollinger, T.K. (2016). Systematic review of management strategies to control chronic wasting disease in wild deer populations in North America. *BMC Vet Res* 12, 173; Wild, M.A. et al. (2011). The role of predation in disease control: a comparison of selective and nonselective removal on prion disease dynamics in deer. Journal of wildlife diseases, 47(1), 78–93. https://doi.org/10.7589/0090- 3558-47.1.78; Jim Robbins, Using Wolves as First Responders Against a Deadly Brain Disease, New York Times (Nov. 12, 2020), available at https://www.nytimes.com/2020/11/12/science/wolves-chronic-wasting-disease.html. Vucetich, J. A. (2012). Appendix: The influence of anthropogenic mortality on wolf population dynamics with special reference to Creel & Rotella (2010) and Gude et al. (2011) in the Final peer review of four documents amending and clarifying the Wyoming gray wolf management plan. FWS-R6-ES-2011-0039; 92220-1113-0000-C6.

[18] 2023 Report, p. 17.

Contrary to MFWP's assertions that iPOM is good for estimating "sparsely distributed and elusive carnivore populations," several experts have raised concerns that iPOM is an unreliable abundance estimator that should not be used as a basis for setting policy. Even MFWP has stated that the iPOM model contains "compounding errors," "uncertainty," and relies on "relatively coarse data inputs."[19] Doug Smith and Diane Boyd explained that iPOM is "not known to be a good abundance estimator," calling for a "better population estimate" out of concern that the "approximate nature of the iPOM estimate [means that] no one knows what proportion of wolves are killed each year." In short, they explained that iPOM merely informs "where wolves live and not how many we have."[20] Dr. Scott Creel's critique of iPOM details numerous methodological constraints, data limitations, and assumption violations with the model.[21]

More recently, Crabtree et al (2023)[22] provided empirical evidence that the iPOM methodology leads to a 150% overestimation bias in its wolf population estimates. This bias stems from a critical assumption violation related to wolf pack occupancy stability during fall surveys, exacerbated by the use of large grid cells that include unoccupied areas. The inherent problem in utilizing occupancy modeling to estimate the area occupied by wolves is that any wolf sighting within a large cell leads to the inclusion of the entire 600km^2 cell area in the total area occupied by wolf packs.[23] These packs are 'assumed' to be spatially and numerically stable during the survey period, and the iPOM methods compound this issue by relying on hunter surveys, which 'confirm' observations as those of territorial pack members (not lone wolves). The issue with relying on such an assumption and hunter observations is that the survey occurs during the fall, a period marked by spatial and numerical instability in packs due to a natural decrease in territorial behavior, dispersal of young wolves, and hunter-induced mortality, causing wolf packs to fragment. Additionally, Crabtree et al. identify structural deficiencies, such as the lack of hierarchical integration and sensitivity to estimation errors, that further compromise the accuracy of iPOM's abundance estimates.

Crabtree et al. also note, in agreement with Creel, that the reliance on opportunistic sampling and non-independent submodels raises reliability concerns. They identify that iPOM's 'confidence interval' is skewed and employs an incorrect approach to convey precision (variance), significantly underestimating the actual confidence interval by neglecting several components of variation in their models. Given iPOM's sensitivity to spatial models, doubts arise about its capability to detect changes in wolf abundance effectively. Crabtree et al. recommend exploring alternative methods, emphasizing the adoption of hierarchical modeling and urging a collaborative, transparent, and

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[19] MFWP, Public Scoping Notice: Proposed Development of a New Montana Wolf Management Plan and Associated Environmental Impact Statement, March 22, 2023, available at https://fwp.mt.gov/binaries/content/assets/fwp/aboutfwp/public-comments/wolf-scoping/final-wolf-eis-scoping notice.pdf.

[20] Douglas Smith and Diane Boyd, Wolf Management in Montana. Missoulian. June 22, 2023, available at https://missoulian.com/opinion/column/douglas-smith-and-diane-boyd-wolf-management-inmontana/article_9a4d9c8e-0f7a-11ee-b12b-db69d5c3f3bd.html.

[21] Creel, S. (2022). Methods to estimate population sizes of wolves in Idaho and Montana. Comment on "Endangered and Threatened Wildlife and Plants; 90-Day Finding for Two Petitions to List the Gray Wolf in the Western United States". Federal Register. 2021; 86:51857.

[22] Crabtree R.L., Koch, D.C., Lele, S.R. (2023) Misleading overestimation bias in methods to estimate wolf abundance that use spatial models. CABI. doi:10.31220/agriRxiv.2023.00215.

[23] A recent study by Wisconsin Department of Natural Resources staff also found significant overestimation bias for wolves in Wisconsin using smaller grid cell sizes. Stauffer, G.E., Roberts, N.M., Macfarland, D.M., Van Deelen, T.R. (2021). Scaling occupancy estimates up to abundance for wolves. *Journal of Wildlife Management*, 85(7), 1410-1422. Available at https://doi.org/10.1002/jwmg.22105.

rigorously reviewed approach to ensure accurate population inference in crucial decision-making processes.

These expert analyses of iPOM provide quantitative evidence of substantial and systematic overestimation (never underestimation) bias in the resulting population estimates, in addition to the numerous methodological errors and assumption violations that make the model unreliable. The identified deficiencies in iPOM necessitate a reevaluation of its methodology to ensure more accurate and credible outcomes.

VI. Killing wolves does not benefit ungulates, whose populations are healthy across the state.

The 2023 Report states that "FWP has developed and implemented wolf harvest strategies that . . . reduce wolf impacts on low or declining ungulate populations and ungulate hunting opportunities." These "wolf harvest strategies" presumably refer to the seasonal hunting and trapping seasons, but the claims that recreational wolf killing benefits the ungulate populations are without factual or evidentiary basis. Ungulate populations in Montana are generally robust, including in areas with wolves. See, e.g., Smith and Boyd (2023) ("elk have maintained healthy populations across the state and are even overabundant in some game management units.").[24] Many hunting districts are "at" or "over" objective for elk, even in regions of the state that are known to be occupied by wolves; and according to MFWP, only 12% of elk hunting districts are "below" management objectives.[25]

Even if MFWP could show that ungulate populations were struggling or declining below healthy capacities, predator removal as a management tool to increase ungulate population size is not proven. A meta-analysis to determine the overall effect of predator removal on ungulate populations found low and variable effectiveness of predator removal for ungulate populations.[26] Additionally, prey mortality from wolves has been found to be primarily compensatory and has relatively week additive effects (i.e., wolves eat deer that would have died from other causes) on prey population growth.[27] We urge MFWP to stop spreading misinformation and rely on facts, evidence, and science regarding the interactions between wolf and ungulate populations.

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[24] Douglas Smith and Diane Boyd, Wolf Management Plan Should Be informed by Science. Bozeman Daily Chronicle (June 17, 2023). Available at https://www.bozemandailychronicle.com/opinions/guest_columnists/guest-column-wolf-management-plan-should-be-informed-by-science/article_7d372e5c-0a44-11ee-9449-47d1fcd3318a.html.

[25] Available at https://fwp.mt.gov/binaries/content/assets/fwp/conservation/elk/2023-montana-elk-counts.pdf.

[26] Clark, T. J., & Hebblewhite, M. (2020) Predator control may not increase ungulate populations in the future: A formal meta-analysis. Journal of Applied Ecology, 58(4), 812–824.

[27] Vucetich, J. A., Smith, D. W. & Stahler, D. R. (2005) Influence of harvest, climate and wolf predation on Yellowstone elk, 1961-2004. *Oikos*, 111, 259-270; Christianson, D., & Creel, S. (2014). Ecosystem scale declines in elk recruitment and population growth with wolf colonization: a before-after-control-impact approach. *PloS One*, 9(7), e102330; Griffin, K. A., M. Hebblewhite, H. S. Robinson, P. Zager, S. M. Barber-Meyer, D. Christianson, et al. (2011). Neonatal mortality of elk driven by climate, predator phenology and predator community composition. *Journal of Animal Ecology* 80: 1246–1257; Brodie, J., Johnson, H., Mitchell, M., Zager, P., Proffitt, K., Hebblewhite, M., White, P. J. (2013). Relative influence of human harvest, carnivores, and weather on adult female elk survival across western North America. *Journal of Applied Ecology*, 50(2), 295-305.

VII. Wolf trapping and snaring leads to violations of the ESA and it has no place in wildlife management.

We are vehemently against trapping in any form because it tortures animals indiscriminately and has no place in wildlife management of any kind. Our recommendations, which if adopted would still satisfy legislative obligations on the Commission, are: eliminate the use of snares set for wolves on public land; require 24-hour trap checks; prohibit the use of bait; reduce the trapping season to January 1 to February 15 at the longest, limiting further based on weather conditions and/or presence of grizzly bears; update the public with any known trapping of lynx, grizzly or wolverine; increase trapping setbacks to 500' on all public roads and trails; and require signage of trapping on public lands.

Traps and snares regularly capture non-target animals. As Doug Smith and Chris Servheen recently explained, "leg-hold traps and neck snares are indiscriminate, [so] many non-target wildlife species—particularly carnivores—will also be captured when bait is used with traps and neck snares. Non-target captures using wolf traps and neck snares with bait include many carnivores including bobcats, fishers, lynx, black bears, grizzly bears, mountain lions, wolverines," and even elk, deer, and moose.[28] A major oversight in the proposed regulations is the ridiculous instruction to trappers to "avoid placing sets that might attract" wolverines (draft regulations, p. 17) and lynx (draft regulations, p. 13). Unless MFWP is prohibiting baiting, any trap or snare set with bait might attract wolverines, lynx, and bears, and this instruction provides no cover for MFWP to say it has done its due diligence. So long as baited traps and snares are set in the habitat of these animals, they will be at risk of incidental capture. In that vein, we also urge the Commission to limit wolf trapping and snaring to places and times where grizzly bears are likely to be in their dens, which is January 1 to February 15th in the western 2/3 of the state, where grizzlies are likely to be found.

Another concern is that this year's proposed regulations eliminated the language from last year's regulations that a "non-target capture of one lynx or one grizzly bear shall initiate a Commission review with potential for rapid in-season adjustments to trapping regulations." The proposed change is based on the reasoning that last year, two lynx were caught in bobcat traps, and FWP wasn't sure if the commission needed to meet about it because the language requiring a Commission review for non-target capture of a lynx was in the wolf section of the regulations.[29] But instead of just moving the language, the language was eliminated altogether—although you wouldn't know it if you took FWP's supporting 'reasoning' at its word, as it states that the language was added earlier in the regulations. But that language is *different*, and now merely requires MFWP to *notify* the commission upon a non-target capture of a federally-protected grizzly, lynx, or wolverine. The Commission may convene if it "feels the situation warrants it." The taking of a federally protected species warrants a Commission review, period—it should not be an option.

In sum, traps and snares, especially when baited, are a danger to other wildlife, including federally protected wildlife, as well as companion animals. Recreational trapping and snaring have absolutely no place in wildlife management, and should be limited to the greatest extent possible under current laws.

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[28] Smith and Servheen (2024).

[29] 2024 Trapping and Hunting Regulation Changes: Proposed Changes, p. 2 and 4.

VIII. Livestock

Livestock "protection" is an oft-recited narrative used to support Montana's wolf killing agenda, and yet it is not supported by evidence or facts. Although FWP seems confused about this, first stating on page v of the 2023 Report that hunting and trapping for wolves did *not* reduce livestock predation by wolves over approximately the past decade,[30] then stating on page 14 that MFWP has "developed and implemented wolf harvest strategies that…reduce wolf-livestock conflicts," the evidence clearly shows that recreational wolf killing does not reduce the already tiny amount of livestock predation by wolves.

First, wolves kill a tiny, tiny fraction of livestock in Montana, and the wolf killing in response to that predation is wildly disproportionate. Last year, wolves killed 32 livestock, out of several million, and almost one wolf was killed (31) for every livestock animal killed (32) by wolves last year. MFWP asserts that the wolf population is 1,096 wolves; the 2023 cattle inventory in the state was 2,160,000 and sheep was 190,000.[31] So, wolves killed 32 animals out of 2,350,000, or 0.0014%, of Montana's livestock inventory. And in response, managers killed 2.8% of the state's estimated wolf population—proportionately 2,000 times greater to the wolf population than to the livestock. Killing wolves in response to the very, very few livestock conflicts that occur across the state—whether by managers or via wolf hunting and trapping—is not the answer; non-lethal coexistence is.

Non-lethal measures are more effective than lethal for reducing and preventing conflict. A growing body of research, including some out of Montana, shows that non-lethal conflict prevention measures are effective for addressing wolf-livestock conflict; indeed, the 2023 Report includes a robust section on the many non-lethal coexistence projects occurring throughout the state. On the other hand, research has shown that killing wolves to reduce conflict is ineffective at best, and counterproductive[32] at worst: "the most common result of systematic reviews on the outcomes of removal of carnivores on future livestock predation is no effect."[33] Several studies have proven that a proactive non-lethal approach to reduce conflict leads to better conflict mitigation, including adjusting calving timing and location, range riding, the use of fladry and turbo fladry, livestock guardian animals, electrified fencing, enclosures, and low stress livestock handling.[34]

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[30] "Stabilization of population size [over approximately the past decade] may be related to the onset of wolf hunting and trapping seasons, *whereas reduced livestock depredation in recent years* is likely related to more aggressive depredation control actions." 2023 Report, p. v. It is important to note here that we do not agree that aggressive lethal responses to predation are effective for reducing predation long-term (see FN 30-32).

[31] For cattle statistics, see https://www.nass.usda.gov/Statistics_by_State/Montana/Publications/Charts_and_Graphs/2022-MT-Cattle-info.pdf; for sheep statistics, see https://www.nass.usda.gov/Statistics_by_State/Montana/Publications/Charts_and_Graphs/2022-MT-Sheep-info.pdf.

[32] Bruns, A., Waltert, M., Khorozyan, I. (2020). The effectiveness of livestock protection measures against wolves (Canis lupus) and implications for their co-existence with humans. *Global Ecology and Conservation*, 21, e00868; Eklund, A., López-Bao, J. V., Tourani, M., Chapron, G., & Frank, J. (2017) Limited evidence on the effectiveness of interventions to reduce livestock predation by large carnivores. *Scientific Reports*, 7(1), 2097; Khorozyan, I., & Waltert, M. (2019). How long do anti-predator interventions remain effective? Patterns, thresholds and uncertainty. *Royal Society Open Science*, 6(190826); Lennox, R. J., Gallagher, A. J., Ritchie, E. G., Cooke, S. J. (2018). Evaluating the efficacy of predator removal in a conflict-prone world. *Biological Conservation*, 224, 277–289. https://doi.org/10.1016/j.biocon.2018.05.003.

[33] Elbroch, L.M., Treves, A. 2023. Perspective: Why might removing carnivores maintain or increase risks for domestic animals? *Biological Conservation* 283, available at https://doi.org/10.1016/j.biocon.2023.110106.

[34] Davidson-Nelson, S. J., Gehring, T. M. (2010). Testing fladry as a nonlethal management tool for wolves and coyotes in Michigan. *Human–Wildlife Interactions*, 4, 87–94; Gehring, T. M., VerCauteren, K. C., Provost, M. L., Cellar, A. C. (2010). Utility of livestock-protection dogs for deterring wildlife from cattle farms. *Wildlife Research*, 37(8), 715–721;

IX. Conclusion

In sum, we urge the Commission to conserve the wolf population for future generations, managing for coexistence instead of killing. The Commission can start on this path by significantly reducing the upcoming season's kill quota to 126, greatly limiting the times and places where trapping and snaring occur, prohibiting baiting, and correcting the false narratives about ungulates and livestock that are used to uphold the anti-wolf agenda.

Thank you,

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