February 19, 2021

State Director
Montana Wildlife Services
P.O. Box 1938
Billings, MT 59103

Submitted via Regulations.gov

RE: Public Comments on the Pre-Decisional Environmental Assessment for Predator Damage and Conflict Management in Montana (Docket No. APHIS-2021-0002)

Dear Montana Wildlife Services State Director:

Thank you for the opportunity to submit comments on the Pre-Decisional Environmental Assessment ("EA") for the U.S. Department of Agriculture ("USDA"), Animal and Plant Health Inspection Service ("APHIS"), Wildlife Services' ("Wildlife Services" and "WS-Montana") Predator Damage and Conflict Management ("PDM") in Montana. These comments are submitted on behalf of WildEarth Guardians, the Animal Welfare Institute, the Center for Biological Diversity, Western Watersheds Project, Project Coyote, the Mountain Lion Foundation, Predator Defense, and the Animal Legal Defense Fund. Our members and staff have significant aesthetic, recreational, scientific, educational, and other interests in the conservation and proper management of Montana's wildlife.

WildEarth Guardians is a non-profit organization with over 275,000 members and supporters dedicated to protecting and restoring the wildlife, wild places, wild rivers, and health of the American West. Our members, staff and board members have significant aesthetic, recreational, scientific, inspirational, educational, and other interests in the conservation and proper management of Montana's wildlife resources.

Animal Welfare Institute, established in 1951, is a nonprofit charitable organization headquartered in Washington, DC. The organization is dedicated to reducing animal suffering caused by people. It seeks better treatment of animals in the wild, in the laboratory, on the farm, at home, and in commerce. This is accomplished through public education, research,

collaborations with like-minded organizations, media relations, outreach to agencies, litigation, engaging its members and supporters, and advocating for stronger laws both domestically and internationally.

The Center for Biological Diversity is a nonprofit 501(c)(3) organization that works through science, law, and media to protect wildlife, including animals targeted by Wildlife Services. The Center believes that the welfare of human beings is deeply linked to nature — to the existence in the world of a vast diversity of wild animals and plants. Because diversity has intrinsic value, and because its loss impoverishes society, the organization works to secure a future for all species, great and small, hovering on the brink of extinction. We want those who come after us to inherit a world where the wild is still alive.

Western Watersheds Project ("WWP") is a non-profit 501c3 membership organization dedicated to protecting and conserving the public lands and natural resources of watersheds in the American West. WWP has over 12,000 members and supporters, including members who live in Montana. WWP is active in seeking to protect and improve the riparian areas, water quality, fisheries, wildlife, and other natural resources and ecological values of western watersheds. To do so, WWP actively participates in agency decision-making concerning Wildlife Service's wildlife killing programs.

Project Coyote is a national non-profit organization based in Northern California whose mission is to promote compassionate conservation and coexistence between people and wildlife through education, science and advocacy. Representatives, advisory board members and supporters include scientists, educators, ranchers and citizen leaders who work together to change laws and policies to protect native carnivores from abuse and mismanagement, advocating coexistence instead of killing. The organization seeks to change negative attitudes toward coyotes, wolves and other misunderstood predators by replacing ignorance and fear with understanding, respect and appreciation.

The Mountain Lion Foundation is a national nonprofit organization with a mission to ensure that America's lion survives and flourishes in the wild. The organization furthers this mission by engaging an advisory board of top scientists; promoting greater public awareness through outreach, education, and public events; advocating for federal and state policy changes to protect mountain lions and their habitats; and encouraging human/wildlife coexistence in all states with resident mountain lion populations.

Predator Defense is a nonprofit organization with a mission to protect native predators and end America's war on wildlife.

The Animal Legal Defense Fund is a non-profit 501(c)(3) organization with a mission of protecting the lives and advancing the interests of animals through the legal system. As a membership organization, we work on behalf of our more than 300,000 members and supporters across the country, including in Montana. The Animal Legal Defense Fund achieves its mission by filing lawsuits, administrative comments, and rulemaking petitions to increase legal protections for animals; by supporting strong animal protection regulation and legislation; and by

fighting against practices that are harmful to animals, the environment, and the humans who care about them.

We incorporate by reference all previous comments and attachments we have submitted on Wildlife Services' proposals to conduct PDM activities in Montana.

I. INTRODUCTION

Wildlife plays an essential role in the environment of the American West. The return of native carnivores to the landscape after decades of government-sponsored eradication campaigns has begun to restore a vital balance to Montana's natural ecosystems. Their presence aids in enhancing the abundant richness of wildlife and wild ecosystems that make Montana the unique and important landscape that it is. Many members of the public understand the critical role wildlife plays in Montana and have supported wildlife conservation for decades. In a 2019 survey that asked 11,000 Montanans how that state could best approach protecting its outdoor heritage, respondents indicated that protecting fish and wildlife was the most important priority.[1] Yet, WS-Montana destroys thousands of wild animals across the state each year, largely at the behest of the livestock industry. Unfortunately, we fear that WS-Montana's EA presents yet another example of agency capture.

On a broader note, Wildlife Services has lost the trust of much of the American public and many wildlife scientists over its use of controversial animal damage control activities to primarily benefit agribusiness interests. Nationally, the Wildlife Services program has been marked by secrecy, controversy, public opposition, deficient environmental reviews, and the annual killing of millions of animals. By its own reporting, the program killed over 1.3 million native animals nationwide in 2019.[2] More specifically, at least 6,600 native animals were killed with another 208 burrows or dens destroyed in Montana alone in 2019.[3]

We appreciate Wildlife Services' recent, substantial increase in the use of non-lethal methods to address livestock-predator conflicts.[4] Within the agency, WS-Montana has been at the forefront of those efforts for years. *See, e.g.*, Young et al. (2018).[5] However, Wildlife

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[1] *See* https://montanaheritageproject.com/support-for-conservation-funding-high-among-montanans/ (last visited Feb. 14, 2021).

[2] *See* U.S. Dep't of Agriculture, Animal & Plant Health Inspection Service, Wildlife Services, Program Data Report G (2019), *available at* https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/pdr/?file=PDR-G_Report&p=2019:INDEX: (last visited February 14, 2021) (noting a total of 2,240,802 native animals were killed/euthanized and 40,710 were removed/destroyed nationwide in 2019, including 982,064 invasive animals).

[3] *See* U.S. Dep't of Agriculture, Animal & Plant Health Inspection Service, Wildlife Services, Program Data Report G – Filtered by State: Montana (2019) *available at* https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/pdr/?file=PDR-A_Report&p=2019:INDEX: (last visited February 14, 2021).

[4] *See* FY20 Federal Allocation to USDA APHIS Wildlife Services for Nonlethal Livestock Protection: Annual Accomplishments Report (Jan. 2020).

[5] Young, J.K., Steuber, J., Few, A., Baca, A., Strong, Z., 2018. When strange bedfellows go all in: a template for implementing non-lethal strategies aimed at reducing carnivore predation of livestock. Animal Conservation 1-3, doi:10.11/acv.12453.

Services continues to spend millions of dollars each year on lethal control measures that serve concentrated private interests and special interest groups. In Montana alone, the agency had a budget of $3 million in 2019,[6] a large portion of which was spent on lethal predator control. The absence of any binding regulatory framework to govern its activities, a scathing *New York Times* editorial,[7] and coverage of growing backlash against the program,[8] particularly over the use of dangerous and indiscriminate sodium cyanide "bombs,"[9] demonstrate that the program continues to conflict with American values that are markedly shifting towards non-lethal strategies for managing conflicts with wildlife. The agency largely remains rooted in the past, entrenched in a culture of killing native carnivores at the expense of ecosystem health and sustainability.[10]

Wildlife Services' heavy reliance on lethal control measures also contradicts its mission to "provide Federal leadership and expertise to resolve wildlife conflicts *to allow people and wildlife to coexist*."[11] The EA reveals the agency's institutionalized belief that wildlife does not deserve to roam free throughout their western homelands, but instead should be subject to aggressive lethal "management." The EA fails to justify its anachronistic and ineffective carnivore killing practices through meaningful and objective analysis. Instead, it demonstrates a deep bias in favor of lethal control of native carnivores, merely glossing over or inaccurately critiquing the extensive number of peer reviewed studies showing that there are many viable, preferable alternatives to lethal control, and that the environmental impacts of this highly controversial program are much greater than previously known. Even the science cited in the EA shows that the PDM program's killing methods are inappropriate and ineffective. In fact, there is an emerging, worldwide scientific consensus that non-lethal methods are more effective at

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[6] *See* U.S. Dep't of Agriculture, Animal & Plant Health Inspection Service, Wildlife Services, Program Data Report A – Filtered by State: Montana (FY 2019), *available at* https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/pdr/?file=PDR-A_Report&p=2019:INDEX: (last visited Feb 10, 2021) (noting a total budget of $3,007.503 in federal funds for fiscal year 2019 in Montana).

[7] Editorial Bd., *America's Misnamed Agency*, N.Y. TIMES (July 17, 2016). http://www.nytimes.com/2013/07/18/opinion/agricultures-misnamed-agency.html?smid=pl-share.

[8] Jimmy Tobias, *Should the government kill wild animals?* PACIFIC STANDARD (June 24, 2019), *available at* https://theweek.com/articles/852116/should-government-kill-wild-animals.

[9] Todd Wilkinson, *Dog's Death Spotlights Use of Cyanide 'Bombs' to Kill Predators: One of the weapons the U.S. government uses to poison predators killed a pet Labrador in Idaho, sparking new calls to ban the devices,* NATIONAL GEOGRAPHIC (April 20, 2017), *available at* https://www.nationalgeographic.com/news/2017/04/wildlife-watch-wildlife-services-cyanide-idaho-predator-control/; *see also,* Madeline Carlisle, *Trump Administration Authorizes 'Cyanide Bombs' to Kill Predators Again, Months After Backlash* (Dec. 5, 2019), *available at* https://time.com/5744950/trump-cyanide-bombs/.

[10] *See, e.g.*, Christopher Ketcham, *The Rogue Agency: A USDA Program that Tortures Dogs and Kills Endangered Species*, HARPER'S MAGAZINE (Mar. 2016), *available at* http://harpers.org/archive/2016/03/the-rogue-agency/; Emerson Urry, *'Secret' Federal Agency Admits Killing 3.2 Million Wild Animals in U.S. Last Year Alone*, ENVIRONEWS (June 27, 2016) http://www.environews.tv/062716-feds-admit-they-killed-at-least-1-6-million-wild-animals-last-year-alone-in-u-s/; Ben Goldfarb, *Wildlife Services and its Eternal War on Predators*, HIGH COUNTRY NEWS (Jan. 25, 2016), *available at* http://www.hcn.org/issues/48.1/wildlife-services-forever-war-on-predators.

[11] U.S. Dep't of Agriculture, Animal & Plant Health Inspection Service, Wildlife Damage, https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage (last visited Feb. 16, 2020) (emphasis added).

preventing damage to livestock.[12] These studies indicate that lethal removal strategies are not only catastrophic to ecosystems, but also highly ineffective at preventing and deterring depredations and counter to the best available science.

The EA is deficient for multiple reasons. It fails to accurately describe the baseline conditions of the area to be affected by the proposed action, fails to analyze an appropriate range of alternatives and fails to fairly analyze the alternatives it does consider. Moreover, the EA does not take a sufficiently hard look at numerous issues, or adequately consider the best available science and evaluate the impacts of cumulative and similar actions, as required by law. The document falls short of providing research from the last decade that justifies killing carnivores as an effective solution to conflict with livestock or humans. The document also fails to adequately consider impacts to threatened and endangered species and non-target animals, and special areas containing unique resources and habitats. We request that a full EIS be completed for the PDM program due to significant environmental impacts and controversy surrounding the proposed activities, and that the other legal inadequacies identified in this comment be addressed in the final decision document.

II. LEGAL BACKGROUND

The National Environmental Policy Act ("NEPA"), 42 U.S.C. § 4321, *et seq.*, is the "basic charter for protection of the environment." 40 C.F.R. § 1500.1(a); *Dept. of Transp. v. Pub Citizen*, 541 U.S. 752, 756 (2004). In enacting NEPA, Congress declared a national policy of "creat[ing] and maintain[ing] conditions under which man and nature can exist in productive harmony." *Or. Natural Desert Ass'n v. Bureau of Land Mgmt.*, 531 F.3d 1114, 1120 (9th Cir. 2008) (quoting 42 U.S.C. § 4331(a)). NEPA was adopted to "promote efforts which will prevent or eliminate damage to the environment and biosphere" in order to "fulfill the responsibility of each generation as trustee of the environment for succeeding generations." 42 U.S.C. §§ 4321, 4331(b)(1). NEPA is intended to "ensure that [federal agencies] . . . will have detailed information concerning significant environmental impacts" and "guarantee[] that the relevant information will be made available to the larger [public] audience." *Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1212 (9th Cir. 1998).

[12] Khorozyan, I. and M. Waltert (2019). How long do anti-predator interventions remain effective? Patterns, thresholds and uncertainty. Royal Society Open Science 6(9); Khorozyan, I. and M. Waltert (2020). Not all interventions are equally effective against bears: patterns and recommendations for global bear conservation and management. Scientific Reports in press; Lennox, R. J., A. J. Gallagher, E. G. Ritchie and S. J. Cooke (2018). Evaluating the efficacy of predator removal in a conflict-prone world. Biological Conservation 224: 277-289; Miller, J., K. Stoner, M. Cejtin, T. Meyer, A. Middleton and O. Schmitz (2016). Effectiveness of Contemporary Techniques for Reducing Livestock Depredations by Large Carnivores. Wildlife Society Bulletin 40: 806-815; Moreira-Arce, D., C. S. Ugarte, F. Zorondo-Rodríguez and J. A. Simonetti (2018). Management Tools to Reduce Carnivore-Livestock Conflicts: Current Gap and Future Challenges. Rangeland Ecology & Management; Treves, A., M. Krofel and J. McManus (2016). Predator control should not be a shot in the dark. Frontiers in Ecology and the Environment 14: 380-388; Treves, A., M. Krofel, O. Ohrens and L. M. Van Eeden (2019). Predator control needs a standard of unbiased randomized experiments with cross-over design. Frontiers in Ecology and Evolution 7 402-413; van Eeden, L. M., et al. (2018). Carnivore conservation needs evidence-based livestock protection. PLOS Biology: 10.1371; van Eeden, L. M., et al. (2018). Managing conflict between large carnivores and livestock. Conservation Biology doi: 10.1111/cobi.12959.

Under NEPA, before a federal agency takes a major federal action that significantly affects the quality of the environment, the agency must prepare an environmental impact statement. *Kern v. U.S. Bureau of Land Mgmt.*, 284 F.3d 1062, 1067 (9th Cir. 2002) (quoting 43 U.S.C. § 4332(2)(C)); 40 C.F.R. §1502.9. "An EIS is a thorough analysis of the potential environmental impact that 'provide[s] full and fair discussion of significant environmental impacts and . . . inform[s] decisionmakers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment.'" *Klamath-Siskiyou Wildlands Ctr. v. Bureau of Land Mgmt.*, 387 F.3d 989, 993 (9th Cir. 2004) (citing 40 C.F.R. § 1502.1). An EIS is NEPA's "chief tool" and is "designed as an 'action-forcing device to [e]nsure that the policies and goals defined in the Act are infused into the ongoing programs and actions of the Federal Government.'" *Or. Natural Desert Ass'n*, 531 F.3d at 1121 (quoting 40 C.F.R. § 1502.1).

An EIS must discuss the following issues: (i) the environmental impact of the proposed action; (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented; (iii) alternatives to the proposed action; (iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity; and (v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented. 42 U.S.C. § 4322. An EIS must identify and analyze the direct, indirect, and cumulative effects of the proposed action.

Indirect effects include "growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems." 40 C.F.R. § 1508.8(b). Cumulative effects are defined as "the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions." *Id.* § 1508.7. This analysis requires more than "general statements about possible effects and some risk" or simply conclusory statements regarding the impacts of a project. *Klamath Siskiyou Wildlands Center*, 387 F.3d at 995 (citation omitted); *Oregon Natural Resources Council v. Bureau of Land Mgmt.*, 470 F.3d 818, 822-23 (9th Cir. 2006). An EIS must consider the environmental impacts (and appropriate mitigation measures) not only for its proposed action, but also for a set of reasonable alternatives.

On July 16, 2020, the Council on Environmental Quality ("CEQ") issued an Update to the Regulations Implementing the Procedural Provisions of the National Environmental Policy Act. *See* 85 Fed. Reg. 43,304 (July 16, 2020). Notably, the EA states: "[f]or this EA, WS will proceed under the 1978 NEPA regulations and existing APHIS procedures because this EA was initiated prior to the September 14, 2020 NEPA revisions."[13] Thus, the revised regulations are not applicable to this decision document.

III. THE EA'S ANALYSIS OF NEED FOR WILDLIFE SERVICES PDM IS FLAWED

NEPA requires a statement specifying "the underlying purpose and need to which the agency is responding in proposing the alternatives included in the proposed action." 40 C.F.R. §

[13] EA at 45.

1502.13. The EA's statement of need for the proposed action is insufficient. The EA attempts to justify the importance of WS-Montana's PDM activities by stating that it supports many unspecified entities who "tolerate some damage and loss until the damage reaches a threshold where the damage becomes an economic, physical, or emotional burden."[14] However, the EA fails to document exactly how many entities the program actually assists, nor does it define a measurable "threshold" for damage that would elicit a lethal response. It instead leaves the definition of threshold to be subjectively defined on a case-by-case basis, creating inconsistent policy and responses to calls for assistance.[15] Furthermore, without citing evidence, WS-Montana states that "increasing numbers of people moving into rural areas or living in urban areas are often anxious over wildlife encounters—especially with predators."[16] However, the EA provides no documentation that this anxiety has led to increased conflict or justifies the need for lethal removal.

Moreover, the EA states that WS-Montana "commonly provides technical assistance, including advice, training, and educational materials to improve coexistence between people and wildlife and reduce the potential for conflicts."[17] However, there is little available evidence of these public trainings or who is being trained by these programs. The agency's 2019 technical assistance program data report does not provide any of these details.[18] Also, there are no education materials readily available on the WS-Montana website. It contains only a non-functioning (as of the submission date of these comments) link to one conflict-prevention workshop held in 2018, and another non-functioning link to a document about black-footed ferret recovery.[19] We appreciate that WS-Montana has held workshops to inform livestock producers about the availability and effectiveness of non-lethal conflict-mitigation measures.[20] The agency should provide information to the public about what was learned and shared during those workshops, and any plans for future, similar events, on its webpage.

WS-Montana fails to detail to whom it provides services in sufficient detail. The EA states that the program is meant to "manage predator damage, threats of damage, and risks to human/pet health and/or safety by responding to all requests for assistance, including technical assistance and/or direct operational assistance, regardless of the source of the request."[21] However, the EA lacks specific information describing for whom WS-Montana's PDM services

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[14] EA at 59.
[15] EA at 59.
[16] EA at 59.
[17] EA at 59.
[18] U.S. Dep't of Agriculture, Animal & Plant Health Inspection Service, Wildlife Services, Program Data Report D – Filtered by State: Montana (2019), *available at* https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/pdr/?file=PDR-D_Report&p=2019:INDEX: (last visited February 14, 2021).
[19] *See* U.S. Dep't of Agriculture, Animal & Plant Health Inspection Service, Wildlife Services, Informational Notebook: Montana Wildlife Services, *available at* https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/SA_Reports/SA_Informational+Notebook/CT_Montana_info. (last visited Feb. 19, 2021).
[20] *See, e.g.*, https://wildlife.org/nonlethal-management-of-predator-damage-covered-at-workshop/; https://www.nrcs.usda.gov/wps/portal/nrcs/mt/newsroom/events/b027d264-628e-4e23-bc49-1b044ce0e3a2/.
[21] EA at 14.

have been rendered in the past, nor does the document describe with particularity who will primarily benefit from its PDM activities in the future. WS-Montana's use of blanket statements to describe who will primarily benefit from its PDM services fails to inform the public of the true nature of the program's proposed activities.

The EA claims that predator damage in the state is a significant issue. However, this claim cannot be verified, because the EA does not reveal the number of unique requests for PDM assistance that WS-Montana receives annually.[22] It is not clear why the EA does not share the number of requests received; the agency appears to record that information: "WS-Montana personnel record their requests for assistance in the WS MIS database."[23] Instead, the EA reports that WS-Montana conducted about 8,900 *responses* (or "work tasks") per year between FY 2013 and FY 2017.[24] But that does not indicate how many *requests* the agency received. As the EA explains, numerous work tasks can emanate from one entity.[25] WS-Montana cites Connolly (1992) to suggest that the need for PDM activities is even greater than reflected by the number of requests the agency receives.[26] But these inadequacies make it nearly impossible to ascertain the actual need, or number of requests received, for predator control in the state. For accurate reporting, WS-Montana must share the number of requests for assistance it receives and the number of entities making those requests.

The EA goes on to describe the threats posed by predators to public safety, but fails to describe the significant risks and other negative impacts created by its PDM activities, by methods such as traps, snares, and chemical toxicants.[27] For example, the EA fails to describe how WS-Montana ensures the protection of children from environmental health and safety risks resulting from its PDM actions and fails to address the significant and severe health risks associated with traps, snares, and chemical toxicants, as this comment addresses in detail.

The EA also claims that PDM is needed to protect livestock owners and agribusiness from economic loss.[28] Yet the EA does not adequately address the fact that losses from predators are miniscule in relation to other causes of death. For example, out of 46,000 sheep and lambs that died in Montana in 2019,[29] only 21 (0.046%) were confirmed to have been killed by wolves.[30] Similarly, out of the 88,000 cattle that died in Montana in 2015,[31] only 46 (0.052%)

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[22] EA at 68.
[23] EA at 68.
[24] EA at 68.
[25] EA at 68.
[26] EA at 68.
[27] EA at 75.
[28] EA at 60.
[29] United States Department of Agriculture, National Agricultural Statistics Service, Montana Field Office, Montana Sheep & Lamb Losses – 2019 (Feb. 14, 2020) (latest data available), p. 2, *available at* https://www.nass.usda.gov/Statistics_by_State/Montana/Publications/News_Releases/2020/MT-Sheep-Predator-Loss-02142020.pdf.
[30] *See* Montana Livestock Loss Board, 2019 Livestock Loss Statistics, *available at* http://liv.mt.gov/Attached-Agency-Boards/Livestock-Loss-Board/Livestock-Loss-Statistics-2019.
[31] *See* United States Department of Agriculture, Animal and Plant Health Inspection Service, Veterinary Services, National Animal Health Monitoring System. 2017. Death Loss in U.S. Cattle and Calves Due to

were confirmed to have been killed by wolves.[32]

WS-Montana also fails to acknowledge that there are numerous compensation programs in place, such that many or most losses do not in fact cause economic hardship.[33] It fails to acknowledge that any economic hardship that would occur to public lands ranchers in particular is balanced out by the significant public subsidies that federal public lands ranching receives, such as the current AUM rate of $1.35,[34] which is significantly below market rate on private lands.

For these reasons, the EA fails to adequately describe the purpose and need for WS-Montana's PDM program. The purpose and need statement must be adequately revised.

IV. NEPA MANDATES THAT WS-MONTANA PREPARE AN ENVIRONMENTAL IMPACT STATEMENT FOR ITS PDM PROGRAM

The agency must prepare an EIS for this action because an EA is legally insufficient. NEPA is intended to "ensure that [federal agencies] . . . will have detailed information concerning significant environmental impacts" and "guarantee[] that the relevant information will be made available to the larger [public] audience." *Blue Mountains Biodiversity Project*, 161 F.3d at 1212. There are two specific mechanisms whereby federal agencies must evaluate the environmental and related impacts of a particular federal action—an EA and an EIS. *See* 42 U.S.C. § 4332(2)(C); 40 C.F.R. §§ 1501.1 et seq. These procedural mechanisms are designed to inject environmental considerations "in the agency decision making process itself," and to "'help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment.'" *Dep't of Transp. v. Pub. Citizen*, 541 U.S. 752, 768-69 (2004) (quoting 40 C.F.R. § 1500.1(c)).

Pursuant to NEPA, an EIS must be prepared for every "major Federal action[] significantly affecting the quality of the human environment." 42 U.S.C. § 4332(2)(C); *see also* 40 C.F.R. § 1508.27. "A determination that significant effects on the human environment will in fact occur is not essential" for an EIS to be required; rather, "[i]f substantial questions are raised whether a project *may* have a significant effect upon the human environment, an EIS must be prepared." *Sierra Club v. U.S. Forest Serv.*, 843 F.2d 1190, 1193 (9th Cir. 1988) (emphasis added); *Greenpeace Action v. Franklin*, 14 F.3d 1324, 1332 (9th Cir. 1992); *Ocean Advocates v. U.S. Army Corps of Engineers*, 402 F.3d 846, 864-65 (9th Cir. 2005); *W. Watersheds Project ("WWP") v. USDA APHIS Wildlife Services*, 320 F. Supp. 3d 1137 (D. Idaho 2018).

Predator and Nonpredator Causes, 2015 (latest data available), *available at*: https://www.aphis.usda.gov/animal_health/nahms/general/downloads/cattle_calves_deathloss_2015.pdf.

[32] *See* Montana Livestock Loss Board, 2015 Livestock Loss Statistics, *available at* http://liv.mt.gov/Attached-Agency-Boards/Livestock-Loss-Board/Livestock-Loss-Statistics-2015.

[33] *See, e.g.*, Wolf Livestock Loss Demonstration Project Grant Program. U.S. Fish and Wildlife Service, https://www.fws.gov/endangered/grants/; Livestock Indemnity Program. United States Department of Agriculture, https://www.fsa.usda.gov/programs-and-services/disaster-assistance-program/livestock-indemnity/index.

[34] *See* https://www.blm.gov/press-release/blm-and-forest-service-announce-2021-grazing-fees#:~:text=GRAND%20JUNCTION%2C%20Colo.,by%20the%20USDA%20Forest%20Service.

Under NEPA's implementing regulations, "significance" requires consideration of both context and intensity. 40 C.F.R. § 1508.27. "Context" refers to the scope of the activity, including the affected region, interests, and locality, which varies with the setting of the action, and includes both short and long-term effects. 40 C.F.R. 1508.27(a). "Intensity" refers to the severity of impact, as determined by consideration of ten factors. 40 C.F.R. § 1508.27(b); *see also Blue Mtns. Biodiversity Project*, 161 F.3d at 1212. WS-Montana failed to adequately evaluate both the "context" and "intensity" of the proposal.

First, as to "context," WS-Montana must prepare an EIS due to the breadth and scope of the project. This action will affect thousands of wild animals living on millions of acres of public and private lands. Many of the affected species occur statewide, and removal of those animals could occur "wherever those species occur and overlap with human presence, resources, or activities."[35] Indeed, "[t]he analyses in this EA are intended to apply to any action that may occur in any locale and at any time within Montana."[36]

It is important to note that, by the agency's own admission, its PDM program is intentionally designed to have more than insignificant environmental effects. As the EA states, the goal of WS-Montana's predator control activities is to "manage predator damage, threats of damage, and risks to human/pet health and/or safety by responding to *all* requests for assistance, including technical assistance and/or direct operational assistance," by both public and private entities, anywhere in the state.[37] As such, the purpose of the WS-Montana PDM program—annually removing thousands of native predators and other wildlife from the environment in hopes of altering the environment for other domestic and wild species—is, by design, intended to significantly affect the environment.[38]

The sheer number of native animals killed by WS-Montana on an annual basis, combined with the immensely broad geographic scope of those wildlife killing activities, demonstrates the environmental significance of the WS-Montana PDM program. As indicated in the EA, WS-Montana killed an average of 6,376 coyotes, 52 gray wolves, 146 red foxes, 9 black bears, 14 mountain lions, 8 badgers, 5 raccoons, 12 skunks, and 121 ravens *each year* from fiscal years ("FY") 2013 to 2017.[39] WS-Montana conducts its PDM program on approximately 12 percent of Montana's land area, or about 11,400,000 acres.[40]

The EA also, however, shows that environmental effects are not evenly distributed, as WS-Montana has a much higher quantity and density of cooperator agreements in some areas of the state than others.[41] For example, the agency has a significantly higher number and concentration of agreements in the east-central counties of Custer, Prairie and McCone and in the

[35] EA at 47.
[36] EA at 47.
[37] EA at 14 (emphasis added); *see also* EA at 47.
[38] *See, e.g.*, EA § 1.11, at 59-88.
[39] EA at 184, Table 3.1.
[40] EA at 71, 327.
[41] EA at 126, Fig. 2.2.

southwestern counties of Gallatin and Broadwater than in many north-central and northwestern counties.[42]

Nevertheless, WS-Montana does not analyze any site-specific impacts of its predator control actions. It claims that, because it "cannot predict the specific locations or times" when conflicts may occur, the agency must rely on its Decision Model to make site-specific decisions for individual actions.[43] Based on the comparatively large number of agreements it has in certain counties, however, WS-Montana can reasonably anticipate its management activities to disproportionately impact those areas of the state. Accordingly, it must prepare an EIS to analyze the significance of those reasonably foreseeable site-specific impacts. *See* 40 C.F.R. § 1508.27(a) ("[I]n the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole."); § 1508.8(b) ("Effects include: . . . [i]ndirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable."). *See also* Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, 46 Fed. Reg. 18026, 18031 (March 23, 1981) ("The EIS must . . . make a good faith effort to explain the effects that are not known but are 'reasonably forseeable.' . . . The agency cannot ignore these uncertain, but probable, effects of its decisions."); *Kern*, 284 F.3d at 1073-74 (holding that agency could not rely on a "promise of a later site-specific analysis" to substitute for an adequate effects analysis).

The EA also ignores the environmental significance of WS-Montana's proposal to local wildlife populations and ecosystems by pointing to statewide predator population estimates, most of which are uncorroborated by any actual monitoring data or only marginally supported by decades-old data. *See WWP*, 320 F. Supp. 3d at 1147 (rejecting Wildlife Services' attempt to minimize the significance of its actions by presuming that it kills a relatively small number of predators relative to estimated statewide populations).

Second, with respect to "intensity," multiple NEPA "significance" factors are triggered by the proposed action, indicating that the environmental impacts of WS-Montana's proposal may, both individually and cumulatively, have significant environmental impacts, thus requiring WS-Montana to prepare an EIS. *See* 42 U.S.C. § 4332(2)(C); *see also Sierra Club*, 843 F.2d at 1193 ("If substantial questions are raised whether a project may have a significant effect upon the human environment, an EIS must be prepared.") (internal quotations omitted).

Triggering just "one of these [significance] factors may be sufficient to require preparation of an EIS in appropriate circumstances." *Ocean Advocates*, 402 F.3d at 864-65; s*ee also Bark v. U.S. Forest Service*, 958 F.3d 865, 871 (9th Cir. 2020) ("When one factor alone raises 'substantial questions' about whether an agency action will have a significant environmental effect, an EIS is warranted."); *Humane Soc'y of the U.S. v. Johanns*, 520 F. Supp. 2d 8, 20 (D.D.C. 2007) (explaining that "courts have found that the presence of one or more of [the CEQ significance] factors should result in an agency decision to prepare an EIS") (citations omitted); *Fund For Animals v. Norton*, 281 F. Supp. 2d 209, 218 (D.D.C. 2003) (same).

The following significance factors are triggered here:

[42] EA at 126, Fig. 2.2
[43] EA at 47.

A. 40 C.F.R. § 1508.27(b)(2): the degree to which the proposed action affects public health or safety

WS-Montana's PDM program may have significant negative effects on public safety. *See* 40 C.F.R. § 1508.27(b)(2). As part of its proposed actions, WS-Montana intends to deploy poisonous gas discharge systems in Montana, including the use of M-44 sodium cyanide devices ("M-44s"), as well as the continued use of lead shot.[44] There is no question that exposure to sodium cyanide and lead presents a risk to public health and safety. The agency's additive contribution to sodium cyanide[45] and lead in Montana's environment threatens a cumulatively significant impact. WS-Montana uses other methods that create a public safety risk as well, including the use of aerial gunning, snares, steel-jawed leghold traps, and body-crushing traps, in addition to other chemical toxicants besides M-44s, including chemical fumigants and drugs used in immobilization and euthanasia.

The EA's discussion of the public health and safety risks associated with Wildlife Services' use of poisonous devices is inadequate. It fails to even mention the numerous instances where members of the public and their companion animals have been harmed, and inadvertently killed, by M-44s. The fact that non-target canines are attracted to these devices is not adequately addressed. Instead, the EA inappropriately concludes the risk to human and pet safety from continuing to use these devices is minimal.[46]

Wildlife Services cannot summarily conclude the risk of these devices is insignificant while wholly ignoring the growing body of empirical evidence that shows otherwise. Indeed, over the past couple decades there have been dozens of reported instances of human and pet exposure to sodium cyanide as a result of contact with M-44s, involving at least 26 Wildlife Services employees and 18 members of the public.[47]Additionally, from 2010 to 2016, more than 415 dogs were killed by M-44s.[48]

The Humane Society of the United States ("HSUS") obtained the following data on M-44 exposure to people and pets from a Freedom of Information Act ("FOIA") request to the EPA and other sources. This list is not exhaustive, but rather highlights the impacts that the EA fails to consider:

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[44] EA at 96, 110.
[45] The Montana Department of Agriculture is also a registered user of sodium cyanide (No. 35978-2).
[46] EA at 335.
[47] *See* USDA, Human Health and Ecological Risk Assessment for the Use of Wildlife Damage Management Methods by USDA-APHIS-Wildlife Services, Ch. VII: The Use of Sodium Cyanide in Wildlife Damage Management (Oct. 2019), p. 22, *available at*: https://www.aphis.usda.gov/wildlife_damage/nepa/risk_assessment/7-sodium-cyanide-amended-peer-reviewed.pdf; *see also* Tom Knudson, *The Killing Agency: Wildlife Services' Brutal Methods Leave a Trail of Animal Death*, THE SACRAMENTO BEE (Apr. 29, 2012), *available at*: https://law.lclark.edu/live/files/18173-the-killing-agency-wildlife-services-brutal.
[48] Kadaba, D. (2017). The big picture: Cyanide killers. USDA's Wildlife Services kills thousands of animals a year with exploding cyanide capsule, *available at*: http://therevelator.org/big-picture-cyanide-killers/.

- In 1994, in Oregon, Amanda Wood Kingsley was exposed to sodium cyanide after her dog triggered an M-44 on her private property. Ms. Wood suffered secondary poisoning after she gave her dog mouth-to-mouth resuscitation.

- In 1998, in Texas, Bill Guerra Addington was exposed to an M-44. He documented his encounter: "I noticed what appeared to be a rusted rod sticking out of the ground about 15 ft from the watering tank . . . . I bent over to pull the rod out of the ground. After I grabbed the top and moved the 'metal rod' back and forth to remove it from the ground, it exploded in my hand . . . . I looked at my hand and saw it was all cut up and burned, and there was yellow powder all over it. The yellow powder was even burnt into the burns and cuts on my hand. My hand was bleeding and was starting to swell from the explosion trauma . . . I was puzzled why a 'coyote getter' would be on our private land . . . . The pain was really bad for about 2 hours. My hand healed slowly. I had a yellow palm for five or six months."

- On March 3, 1999, while irrigating his farm in Crawford, Colorado along with his three-year-old daughter and his dog, Paul Wright witnessed his dog's death after the dog triggered an M-44 illegally placed on Mr. Wright's private property. A lawsuit was filed February 2000 in federal court and the matter settled in 2001 for $10,000.

- In December of 1999, a private landowner tried to remove an M-44 placed on property that he was leasing and accidentally triggered the device.

- In November of 2002, a woman accidentally triggered an M-44 device placed on her property. She experienced increased respiratory rate and eye irritation but was able to drive herself to the hospital.

- On March 12, 2002, a Wildlife Services specialist transported set M-44s in his truck. He reached for bait, triggering one. The cyanide caused his eyes to burn and he had a bad taste in his mouth. He drove to a stock tank to fill an eye flush bottle which "increased exposure time." He went to an emergency room for treatment.

- On May 3, 2003, Dennis Slaugh, while recreating on federal public land in Utah, triggered an M-44. He thought he was brushing off an old survey stake. The device fired onto his chest, and according to a letter written by his wife to Rep. Peter DeFazio, the powder hit his face and went into his eye. He reports being severely disabled ever since this encounter with cyanide. A blood test found cyanide poisoning. The EPA wrote: "He stated he was unable to work since the incident because of difficulty breathing, vomiting, and weakness." According to his wife, he suffered for many years and had his life cut short because of the incident.

- On February 21, 2006, U.S. Fish and Wildlife Service ("FWS") biologist Sam Pollock was secondarily poisoned from handling his dog, Jenna, who was lethally asphyxiated by an M-44 illegally set by Wildlife Services to kill coyotes on U.S. Bureau of Land Management land in Utah. Pollock became ill with a headache and faintness, and noticed a metallic taste in his mouth.

- In April 2006, Sharyn and Tony Aguiar's two-year-old German shepherd was killed at a rock quarry in Utah. In a June 21, 2006 internal memorandum to colleagues, then-Utah State Director of Wildlife Services Michael J. Bodenchuk, wrote: "After investigation of the M-44 device in this case followed all applicable laws, regulations and policies and no negligence occurred on our part. It is unfortunate that a dog was killed in this area. I have concerns about the government settling cases with dog owners because it is all too easy for someone to intentionally take a dog into an area posted with signs with the intention of getting the dog killed. I recommend against settling this claim."

- On December 23, 2006 a coyote hunter, who had been "calling" coyotes in Utah, sat down near a device that he had not detected. Moments later, his dog pulled the M-44 and died.

- On May 17, 2007, a Texas man spraying mosquitoes in an oil field "kicked or stepped" on an M-44 and cyanide was "ejected into his eyes" and he suffered "irritation" and "burning" and was admitted to a hospital. In his Brazoria County Sheriff report, Officer Shanks reports that the victim drove himself to a small business where a woman found him disoriented and asking for help. Officer Shank was ordered to "go home immediately and take a shower"; he writes: "I informed everyone on the scene who came into contact with the victim to shower immediately also."

- On February 16, 2011, a border patrol agent in Texas kicked an M-44 and then pulled it with his gloved hand, which discharged the device. The agent then read a "nearby M-44 individual device warning sign" and called an ambulance and went to the hospital.

- On March 11, 2017, in Casper, Wyoming, two dogs on a family hike died after exposure to sodium cyanide placed for coyotes on unmarked public lands.

- On March 13, 2017, in Pocatello, Idaho, 14-year-old Canyon Mansfield walked up a hill from his house. He found an M-44 and thought it was a sprinkler. He pulled it and it asphyxiated his dog, Casey. Canyon and the sheriff's deputy who came to investigate were both hospitalized for cyanide exposure. This incident received considerable public attention both nationally and internationally. Canyon was seriously ill following his exposure to cyanide.

Incidents of this nature have seriously undermined public confidence in Wildlife Services for years. Wildlife Services has failed to provide an adequate explanation of why similar events are not reasonably foreseeable in Montana.

The EA also fails to acknowledge the fact that Wildlife Services has received criticism from other governmental agencies, including in a series of audits, the most recent in 2018.[49] This

[49] APHIS Wildlife Services—Wildlife Damage Management (Audit Report 33601-0002-41). Final Action for Verification- Wildlife Services- Wildlife Damage Management (2018), *available at* https://www.oversight.gov/sites/default/files/oig-reports/33026-0001-41.pdf.

audit, which was conducted by the USDA's Office of Inspector General ("OIG"), revealed Wildlife Services' inability to track how its program funds are being spent, pointing to holes in the program's oversight. In 2004, 2005 and 2006, the OIG released audits revealing that APHIS was not in compliance with the Bioterrorism Preparedness and Response Act. In the 2005 audit, the OIG found that APHIS had not secured "dangerous biological materials" including "agents and toxins on the Commerce Control List."[50] In the 2006 audit, the OIG found that APHIS was not complying with regulations concerning the security of toxins, that it had not secured access from unauthorized persons, that individuals using toxicants did not have adequate training, and that inventories had not been maintained to prevent the illegal possession (theft), transfer, or sale of these toxicants.[51] These findings raise substantial questions about the impacts of Wildlife Services' PDM activities and demand the preparation of an EIS.

Lastly, this EA also improperly downplays the risks associated with adding lead to the environment through the use of lead ammunition. Nationally, APHIS-WS programs use approximately 11,249 pounds of lead ammunition, or approximately 5.6 tons per year.[52] WS-Montana uses an average of nearly 900 pounds of leaded ammunition per year.[53] Importantly, the use of lead shot is concentrated in certain areas and not evenly spread across all of Montana. The localized impacts of the use of lead shot should therefore be evaluated in greater detail. The U.S. Fish & Wildlife Service has recognized this risk, stating "we recommend discussing in detail that lead bullets fragment in shot animals, that many raptors/eagles can feed off of one single carcass, and that a very, very small amount of lead (tiny fragment) can kill an eagle." *Pls. Summary Judgment Memorandum*, Case 1:17-cv-00206-BLW (ECF No. 18-1, filed Jan. 26, 2018).

Thus, accurate baseline data is necessary to properly examine the potentially significant impact on the *local* level (i.e., specific ecosystems), especially the cumulative impact when combined with lead from other sources. Using hundreds of pounds of lead ammunition each year, especially when just a tiny fraction of that could kill non-target wildlife, raises a substantial question about whether WS-Montana's PDM program may have a significant impact. *See Sierra Club*, 843 F.2d at 1193. As a result, an EIS must be prepared to more thoroughly evaluate that issue.

Regarding WS-Montana's aerial gunning operations, OIG's 2004 audit showed that Wildlife Services' aircraft were not secured and could potentially be used in terrorist attacks.[54] In November 2007, Wildlife Services itself admitted that it had experienced a "wake of accidents"[55] that involved its aerial gunning program, which caused ten fatalities and 28 injuries to federal

[50] USDA Office of Inspector General Semiannual Report to Congress (Aug. 2005), p. 3, *available at* https://www.usda.gov/sites/default/files/SarcFirstHalf05.pdf.
[51] USDA Office of Inspector General Semiannual Report to Congress (May 2006), pp. 1-11, *available at* https://www.usda.gov/sites/default/files/sarcfirsthalf06.pdf.
[52] EA at 327.
[53] EA at 327.
[54] USDA Office of Inspector General Semiannual Report to Congress (Feb. 2005), p. 1, *available at* https://www.usda.gov/sites/default/files/sarc2ndfy04.pdf.
[55] Job-Related Mortality of Wildlife Workers in the United States, 1937-2000." D. Blake Sasse Wildlife Society Bulletin (1973-2006) Vol. 31, No. 4 (Winter, 2003), pp. 1015-1020.

employees and contractors. This clearly indicates a threat to human safety that must be evaluated in an EIS.

Lastly, the use of snares, leghold traps, and body-crushing traps creates a safety hazard for humans and companion animals, particularly for those who recreate on public lands where these devices are placed. An EIS is required to fully assess the risks that these devices pose to human and companion animal health and safety.

B. 40 C.F.R. § 1508.27(b)(3): unique characteristics of the geographic area such as proximity to historical or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas

Impacts may be significant when they occur in areas with unique characteristics, such as those "in close proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas." 40 C.F.R. § 1508.27(b)(3). Where there is a high probability that Wildlife Services will conduct operations in such areas, an EIS should be prepared. *See WWP*, 320 F. Supp. 3d at 1150 (holding Wildlife Services' plans to kill predators in a congressionally designated Wilderness Area, Wilderness Study Area, and Area of Critical Concern required an EIS).

The EA explains that there are a wide range of unique land types within the area in which WS-Montana's PDM activities occur. Those include Wilderness Areas ("WAs"), Wilderness Study Areas ("WSAs"), National Conservation Lands, National Historic Sites, Wild and Scenic Rivers, Areas of Critical Environmental Concern, and Recreation Management Areas .[56] According to the EA, "[a]ll of these land types currently have special designations because of their *unique characteristics* and may require special considerations for conducting PDM."[57] The EA collectively refers to them as "Special Management Areas" or "SMAs."[58] The EA identifies hundreds of SMAs across the state.[59]

The EA explains that, because there are grazing allotments within many of the SMAs, PDM to protect livestock will occur in those areas.[60] Predator control in SMAs "could also occur on occasion for the protection of threatened and endangered species."[61] According to the EA, "the potential exists that WS-Montana may be requested to work almost anywhere in the state, including WAs and WSAs."[62] It further indicates that, even in these unique areas, few limitations exist on the types of lethal measures WS-Montana can use. For example, "[t]he BLM has not imposed any restrictions on most PDM methods in SMAs in the State."[63] The likelihood that WS-Montana will use a wide variety of measures to kill predators within these unique

[56] EA at 348.
[57] EA at 348 (emphasis added).
[58] EA at 348.
[59] EA at 350-51, Table 3.20.
[60] EA at 348-49.
[61] EA at 349.
[62] EA at 349.
[63] EA at 349.

geographic areas is significant and requires the preparation of an EIS. *See* 40 C.F.R. § 1508.27(b)(3); *WWP*, 320 F. Supp. 3d at 1150.

The EA claims that PDM "has a minimal effect on SMAs."[64] However, it provides no quantitative data or analysis to support that claim, such as the number of SMAs or livestock allotments in which PDM occurs, or the number of wild animals killed within or in "proximity to" those areas. 40 C.F.R. § 1508.27(b)(3). On the contrary, data from other sections of the EA call this claim into question. For example, Table 2.2 indicates that, between 2013 and 2017, 28 percent (72) of the 260 gray wolves and 6 percent (1,916) of the 31,933 coyotes killed by WS-Montana occurred on federal and state public lands.[65] Similarly, Figures 1.1 and 2.2 indicate that some counties where WS-Montana has the highest concentration of cooperative agreements to conduct PDM (such as Custer, Prairie, and McCone) are also counties where the highest portion of WS-Montana's PDM activities occur on federal public lands.[66]

It seems likely that much of the killing that occurs in these areas happens within or in close proximity to SMAs; yet, the EA does not provide any analysis of the expected impacts on these important areas. The EA also does not adequately examine the impacts to federally designated critical habitat for threatened or endangered species or other specially protected areas such as Wild & Scenic River corridors that will likely be affected by the WS-Montana PDM program. Overall, this factor weighs heavily in favor of preparing an EIS. 40 C.F.R. § 1508.27(b)(3); *WWP*, 320 F. Supp. 3d at 1150 (holding that Wildlife Services' plans to kill predators in congressionally designated Wilderness and WSAs further warranted an EIS).

C. 40 C.F.R. §§ 1508.27(b)(4) and (b)(5): the degree to which the effects on the quality of the human environment are likely to be highly controversial, and to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks

WS-Montana's predator control program is highly controversial and involves uncertain effects and unknown risks. A proposal is highly controversial, mandating preparation of an EIS, when: (1) "substantial questions are raised as to whether a project . . . may cause significant degradation of some human environmental factor;" or (2) there is "a substantial dispute [about] the size, nature, or effect of the major Federal action." *Nat'l Parks & Conservation Ass'n. v. Babbitt*, 241 F.3d 722, 736 (9th Cir. 2001) (abrogated on other grounds); *see also Center for Biological Diversity v. National Highway Traffic Safety Admin.*, 538 F.3d 1172, 1222 (9th Cir. 2008) (explaining that "controversial" means "a substantial dispute about the size, nature, or effect of the major Federal action rather than the existence of opposition to a use") (internal quotations omitted). "A substantial dispute exists when evidence, raised prior to the preparation of an EIS or FONSI, casts serious doubt upon the reasonableness of an agency's conclusions." *Nat'l Parks & Conservation Ass'n*, 702 F.3d at 1181.

Furthermore, where "the environmental effects of a proposed action are highly uncertain or involve unique or unknown risks, an agency must prepare an EIS." *Ocean*

[64] *See, e.g.*, EA at 352.
[65] EA at 131, Table 2.2.
[66] EA at 72, Fig. 1.1 and 126, Fig. 2.2.

Advocates, 361 F.3d at 1129 (citing 40 C.F.R. § 1508.27(b)(5)). "Preparation of an EIS is mandated where uncertainty may be resolved by further collection of data . . . or where the collection of such data may prevent speculation on potential . . . effects. The purpose of an EIS is to obviate the need for speculation by ensuring that available data are gathered and analyzed prior to the implementation of the proposed action." *Nat'l Parks & Conservation Ass'n.*, 241 F.3d at 732 (internal citations omitted). An agency's "lack of knowledge does not excuse the preparation of an EIS; rather it requires the [agency] to do the necessary work to obtain it." *Id*. at 733.

Courts have invalidated Wildlife Services' prior EAs for its PDM programs in other states, holding the preparation of a full EIS was necessary because the agency's proposed actions—the same actions proposed here—gave rise to highly controversial and uncertain environmental effects. For instance, in *Wildlands v. Woodruff*, 151 F. Supp. 3d 1153 (W.D. Wash. 2015), the court applied these factors in finding that Wildlife Services' proposed wolf killing in the State of Washington was highly controversial and the intended effects highly uncertain, because there was significant disagreement among experts about whether wolf control actually reduces livestock depredations. *Id.* at 1165. Similarly, in *WWP*, 320 F. Supp. 3d at 1147-48, the court rejected Wildlife Services' attempts to downplay the potential significance of its PDM program in Idaho at the local level by asserting its activities are dispersed throughout the state and by relying on statewide population estimates and the overall annual take of predators statewide. Also unconvincing, as the court explained, were "the agency's attempts to explain away scientific challenges to the effectiveness of predator removal." *Id*. at 1148.

The same is true here. WS-Montana fails to squarely address why the large body of scientific literature and research which shows the functional ineffectiveness of lethal control methods in preventing future losses of livestock does not amount to a serious controversy indicating the need for an EIS. WS-Montana has failed to show that its predator control activities do not lead to higher livestock losses and the scattering of predators around the landscape after breaking up social networks with lethal control methods. Research reveals that the evidence for lethal control is: (a) weak and (b) there are as many or more studies finding counterproductive increases in livestock losses as there are either finding no effects or finding the desired effects of lower livestock losses. Moreover, the few outdated studies that show the desired effects have been shown to have fatal flaws in research design, so their conclusions cannot be relied upon.[67] This research creates a substantial dispute about the effectiveness of WS-Montana's PDM activities and "casts serious doubt upon the reasonableness of [the] agency's conclusions," requiring the preparation of an EIS. *Nat'l Parks & Conservation Ass'n*, 702 F.3d at 1181; 40 C.F.R. §§ 1508.27(4), (5).

And while a growing body of science points to many undesirable, indirect ecological consequences of removing predators from native ecosystems (i.e., "trophic cascades"), the EA, at a minimum, shows the cascading effects of the PDM program involve a great deal of scientific uncertainty, further indicating the need for an EIS. *See* 40 C.F.R. § 1508.27(b)(5). For example, the EA explains, "[i]t is extremely difficult to establish complex causal links between the indirect effects of top predators cascading over several trophic levels, and is still the subject of modern

[67] *See* Treves, A., Krofel, M., McManus, J., 2016. Predator control should not be a shot in the dark. Frontiers in Ecology and the Environment 14, 380-388.

studies."[68] In addition, the agency's dismissal of trophic-cascades studies as largely irrelevant because the agency's actions "do not result in long-term extirpation or eradication of any native wildlife species," was already rejected by at least one district court.[69] *See WWP*, 320 F. Supp. 3d at 1147-48.

The cascading effects of large carnivores on other species and their ecosystems can be felt when it occurs at very local scales (e.g., the centers of single wolf pack territories in Wisconsin saw recolonization by threatened and endangered understory plants because deer were too afraid of the wolves to linger and over-browse in such areas).[70] Therefore, one need only reduce the functional effect of large carnivores in their own range to remove the potential ecological benefits and cause a cascade of effects.[71] WS-Montana's position that "long-term extirpation or eradication" would be required to damage the ecosystem is simply false.[72] As such, this factor weighs in favor of preparation of an EIS.

Additionally, WS-Montana's actions involve unknown risks: the EA does not identify specifically where PDM will occur. While the science that WS-Montana cites to support its activities does not flatly contradict the assumption that carnivore control will achieve desired objectives, it shows there is significant uncertainty about whether carnivore control works. Furthermore, the very nature of placing a trap leads to uncertain results: Will WS-Montana trap the target animal? Will it catch a non-target species? Will WS-Montana accidentally trap a federally listed species? Will the animal die? Will the animal be alive when the trap is checked? Will the animal be severely injured? All of these basic questions show that WS-Montana's actions have uncertain outcomes, and this uncertainty requires the preparation of an EIS. Similarly, there exist unknown risks, including potential for human death or injury as the result of an aerial operations accident or through being caught in a steel-jawed leghold trap, snare, or body-crushing trap.

D. 40 C.F.R. § 1508.27(b)(6): the degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration

As described above, WS-Montana's PDM activities affect unique, specially protected, and ecologically critical areas. The agency is proposing to continue conducting wildlife killing activities in SMAs, including WAs and WSAs. Though the EA attempts to downplay the potential significance of this PDM program,[73] PDM activities would apparently take place over thousands of acres of SMAs in Montana, which is significant by any measure. As such, this proposal may establish a precedent for future actions with significant environmental effects, which further points to the need for an EIS. *See* 40 C.F.R. § 1508.27(b)(6).

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[68] EA at 455.
[69] EA at 358.
[70] Callen, R., Nibbelink, N.P., Rooney, T.P., Wiedenhoeft, J.E., Wydeven, A., 2013. Recolonizing wolves trigger a trophic cascade in Wisconsin (USA). Journal of Ecology, https://doi.org/10.1111/1365-2745.12095.
[71] *Id.*
[72] EA at 291.
[73] EA at 205-206.

E. 40 C.F.R. § 1508.27(b)(7): whether the action is related to other actions with individually insignificant but cumulatively significant impacts

WS-Montana's PDM activities are likely to have cumulatively significant environmental effects. A project will have a "significant" impact "if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts." 40 C.F.R. § 1508.27(b)(7). If several actions have a cumulative environmental effect, "this consequence must be considered in an EIS." *N. Plains Resources Council v. Surface Transportation Bd.*, 668 F.3d 1067, 1076 (9th Cir. 2011); *Blue Mountains Biodiversity Project*, 161 F.3d at 1214.

Table 3.18 summarizes the cumulative impact of WS-Montana's lethal PDM activities with other sources of lethal "take" of predator species throughout the state.[74] Combined, they meet or exceed the "annual maximum sustainable harvest" of wolves in Montana, and grizzly bears in the Cabinet Yaak Ecosystem ("CYE").[75] As noted below, WS-Montana has also failed to analyze and evaluate how Wildlife Services' activities in Idaho, Montana, and Wyoming – in conjunction with other threats in the region – cumulatively impact the single subpopulation of grizzly bears in the Greater Yellowstone Ecosystem ("GYE") (as well as other recovery zones and subpopulations). Nor, as noted below, has WS-Montana evaluated the cumulative effects to lynx and wolverine. WS-Montana's operations also contribute substantially to the deaths of nearly half the statewide coyote population each year.[76] The cumulative impacts of killing such high proportions of these predators are significant, both for the species themselves, and for ecosystems they inhabit (as discussed further in Section VII.A). As a result, an EIS must be prepared.

F. 40 C.F.R. § 1508.27(b)(9): the degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973

There are substantial questions about whether WS-Montana's PDM activities may adversely affect grizzly bears and Canada lynx, both of which are listed as threatened under the Endangered Species Act ("ESA"). *See* 50 C.F.R. § 17.11(h). Indeed, the EA acknowledges, "WS-Montana has determined that grizzly bears and Canada lynx were likely to be adversely affected" by some aspects of its PDM operations.[77] As such, an EIS is required. *See* 40 C.F.R. § 1508.27(b)(9).

i. Grizzly bears

Grizzly bears are one of the slowest reproducing land mammals in North America.[78] Females typically do not start reproducing until they are at least four years old, reproduce only

[74] EA at 267, Table 3.18.
[75] EA at 267, Table 3.18.
[76] EA at 267, Table 3.18.
[77] EA at 273.
[78] *See* http://igbconline.org/all-about-grizzlies/.

once every three years, and produce an average of only two cubs per litter.[79] As a result, it can take ten years or more for a single female to replace herself in the population.[80] Because of this, "sustainable mortality"—or the level of annual human-caused mortality that grizzly bear populations can sustain without leading to population decline—is very low.[81] The FWS 1993 Grizzly Bear Recovery Plan identifies the sustainable mortality for grizzly bears to be only six percent.[82] However, to account for unknown human-caused mortality, and to allow room for population growth and recovery, the 1993 Recovery Plan sets the known human-caused mortality level at four percent of the minimum population estimate.[83] Further, it requires that "no more than 30 percent of this known human-caused mortality can be females."[84] In other words, only 1.2 percent (.04 x 0.3 = 0.012) of mortalities can be female bears. Thus, for example, if the grizzly population were 1,000 animals, humans could only kill 40 before exceeding the human-caused mortality limit; and of those 40, only 12 could be female. This illustrates how, at such low mortality thresholds, the deaths of even a small number of grizzly bears, especially if they are females, is significant.

WS-Montana claims it has a negligible impact on grizzly populations because it only killed four grizzlies during calendar years ("CY") 2013-2017.[85] However, several factors call this claim into question. First, the EA does not indicate how many bears captured by WS-Montana and transferred to Montana Fish, Wildlife and Parks ("FWP") were later killed by FWP. WS-Montana's lethal grizzly bear-related PDM activities involve more than just directly killing bears. They also involve capturing and transferring custody of grizzly bears to FWP, which then decides whether to relocate or euthanize those bears.[86] In that way, WS-Montana's capture and transfer activities can also contribute to grizzly bear deaths. During CYs 2013-17, WS-Montana captured and transferred 35 grizzly bears to FWP.[87] During that same time period, FWP euthanized 43 grizzlies.[88] The EA does not indicate how many of the 35 grizzly bears transferred to FWP were among the 43 killed. However, the more transferred grizzlies killed, the more significant WS-Montana's adverse effect on grizzly bears becomes.

Second, the EA does not indicate how many of the bears either directly killed by WS-Montana, or euthanized by FWP after being captured and transferred by WS-Montana, were females. As indicated above, even a small number of female mortalities can have a significant impact on the population. This also means that, even if the total mortality threshold of 4 percent was not exceeded, the female mortality threshold of 1.2 percent could have been exceeded if the proportion of females killed was greater than 30 percent. Without that information, the EA is not accurately portraying the adverse effects WS-Montana may be having on the species.

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[79] EA at 243; 83 Fed. Reg. 30502, 30506 (June 30, 2017).
[80] *See* FWS, Grizzly Bear Recovery Plan (Sept. 10, 1993), p. 4.
[81] *Id.* at p. 20.
[82] *Id.*
[83] *Id.*
[84] *Id.*
[85] EA at 249.
[86] EA at 249.
[87] EA at 249, Table 3.13
[88] EA at 249, Table 3.13.

Third, in analyzing population impacts, the EA relies on estimates of overall grizzly bear population sizes.[89] However, the 1993 Grizzly Bear Recovery Plan bases mortality limits on estimated minimum, not overall, population sizes: "[T]o facilitate recovery and to account for the unknown, unreported, human-caused mortality that occurs, the known human-caused mortality level should be no more than 4 percent of the *minimum* population estimate, and no more than 30 percent of this known human-cause mortality can be females."[90] For example, Table 3.15 calculates mortality thresholds for CYs 2013-17 based on "estimated population" sizes for NCDE grizzlies of 939, 960, 982, 1,005, and 1,028, respectively.[91] The minimum estimated population estimates of the NCDE population for those years, however, are substantially lower. For example, the minimum population estimate for 2017 was 892.[92] Based on that lower estimate, the total mortality estimate as a percentage of the population in that year would be 4.4 percent, not the 3.8 percent indicated in Table 3.15—thus potentially exceeding the overall mortality limits set by the 1993 Recovery Plan. More troubling, because the EA does not distinguish between male and female bear removals, it is impossible to know by how much the 1.2 percent female mortality threshold may have been exceeded.

Fourth, the EA improperly assumes that cumulative mortality within the Northern Continental Divide Ecosystem ("NCDE") population will remain the same while the NCDE population will continue to grow, and as a result, "it is likely the projected maximum annual mortality would fall quickly below the 4% threshold."[93] In FY 2019, WS-Montana killed one grizzly and captured 16 others.[94] This represents the highest total number of grizzlies killed and captured in a single year. Meanwhile, from CY 2017 to CY 2018, the NCDE grizzly population grew by only one bear, from 1,028 in 2017[95] to 1,029 in 2018.[96] These trends suggest that it is inaccurate to assume that the proportion of cumulative mortalities to population size will decrease in the future.

Fifth, WS-Montana estimates that, in the future, it could kill an alarming maximum of 21 grizzly bears annually (10 NCDE bears, 10 GYE bears, and 1 CY bear).[97] That would be 19 more bears than the agency has ever killed in a single year in recent decades.[98] At that level of

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[89] *See, e.g.*, EA at 252-53, Tables 3.14a and 314.b; 254-55, Table 3.15.
[90] *See* 1993 Recovery Plan, p. 20 (emphasis added).
[91] EA at 254-55, Table 3.15.
[92] *See* FWS, Grizzly Bear Recovery Program: 2018 Annual Report, p. 5, *available at* https://www.fws.gov/mountain-prairie/es/grizzlybear.php.
[93] EA at 254.
[94] U.S. Dep't of Agriculture, Animal & Plant Health Inspection Service, Wildlife Services, Program Data Report G – Filtered by State: Montana (2019), *available at*: https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/pdr/?file=PDR-D_Report&p=2019:INDEX: (last visited February 16, 2021).
[95] EA at 254.
[96] *See* FWS, Grizzly Bear Recovery Program: 2018 Annual Report, p. 5, *available at* https://www.fws.gov/mountain-prairie/es/grizzlybear.php.
[97] EA at 249, Table 3.13.
[98] U.S. Dep't of Agriculture, Animal & Plant Health Inspection Service, Wildlife Services, Program Data Report G – Filtered by State: Montana, *available at*: https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/pdr/?file=PDR-D_Report&p=2019:INDEX: (last visited Feb. 17).

lethal removal, grizzly mortality caused directly by WS-Montana as a percentage of cumulative mortality in CY 2017 would skyrocket from 12.5 percent (2 out of 16) to 62 percent (23 out of 37).[99] If the number of bears WS-Montana might additionally capture and transfer to FWP to be euthanized were included, the percentage—and WS-Montana's adverse impact—would be even greater. Similarly, "[i]f WS-Montana were to take the annual maximum of 10 grizzly bears inside the DMA of the NCDE, the projected cumulative take would be approximately 5.6% of the currently population"—well above the 4 percent threshold (and likely also well above the 1.2 percent female threshold).

Finally, the EA only analyzes grizzly bear captures and removals that occur within the Demographic Monitoring Areas (DMAs) for the GYE, NCDE, and CY populations.[100] Even though grizzly bear "conflicts and mortalities are expected to be higher" outside the DMAs, "the EA does not account for PDM activities affecting grizzlies in those areas," because "grizzly bear mortalities are not considered [outside the DMAs] when determining whether recovery goals have been met."[101] This is a problem for two reasons. First, bears located in Montana's "High Divide" region between the NCDE and GYE DMAs are critical to facilitating much-needed demographic and genetic connectivity between the two populations. *See* Peck et al. (2017).[102] Even small numbers of bears killed or otherwise adversely affected in this region could significantly hinder conservation of the species.

Second, the EA must analyze adverse effects on Montana's grizzly bears as a *species*, not just individuals within particular boundaries such as DMAs. The EA acknowledges that it does not analyze the entire statewide population of grizzly bears: "Grizzly bear numbers and population trends are not estimated on a statewide level . . . because we do not have estimates for numbers of grizzly bears outside of the GYE and NCDE DMAs and the CYE recovery zone plus 10 mile buffer."[103] However, NEPA requires the agency to analyze the degree to which the action may adversely affect "an endangered or threatened *species*," not just the portion of the species existing within arbitrary designations. 40 C.F.R. § 1508.27(b)(9) (emphasis added).

The lack of information about how many transferred bears (including females) are killed, the improper reliance on estimates of total, rather than minimum, populations, the annual maximum number of grizzlies WS-Montana could kill, and other concerns described above raise substantial questions about whether WS-Montana's PDM activities may adversely affect grizzly bears. As a result, an EIS must be prepared. *See* 40 C.F.R. § 1508.27(9); *Sierra Club*, 843 at 1193.

These concerns also reveal that WS-Montana's impacts on the grizzly population are highly uncertain, but that that uncertainty could be resolved by the further collection of data, in which case an EIS is also necessary. *See, e.g.*, *Native Ecosystems Council v. U.S.*, 428 F.3d 1233,

[99] EA at 249, Table 3.13.
[100] EA at 247.
[101] EA at 244.
[102] Peck, C.P., van Manen, F.T., Costello, C.M., Haroldson, M.A., Landenburger, L.A., Roberts, L.L., Bjornlie, D.D., and Mace, R.D., Potential paths for male-mediated gene flow to and from an isolated grizzly bear population. Ecosphere 8(10):e01969.
[103] EA at 247.

1240 (9th Cir. 2005) (mandating an EIS "where uncertainty may be resolved by further collection of data, or where the collection of such data may prevent speculation on potential . . . effects.") (internal quotations omitted).

WS-Montana claims that, in many cases, it does not have this information. For example, the EA explains that "the decision to relocate or euthanize is made 24 or more hours after custody [of grizzly bears] has been transferred," and "[i]n many cases . . . [WS-Montana] is unaware of the fate of that animal."[104] However, WS-Montana does not explain why it could not have obtained that information while preparing the EA. *See Nat'l Parks & Conservation Ass'n*, 242 F.3d at 733 (holding an agency's "lack of knowledge does not excuse the preparation of an EIS; rather, it requires the [agency] to do the necessary work to obtain it"). WS-Montana must obtain the necessary information to adequately assess the impacts of its PDM activities on grizzly bears in an EIS.

ii. Canada Lynx

There are also substantial questions about whether WS-Montana's PDM activities may significantly impact Canada lynx and/or their critical habitat. There are perhaps 200-300 lynx in Montana.[105] About one third of the 39,000 square miles designated as lynx "critical habitat" in the contiguous U.S. occur in Montana.[106] Critical habitat means those areas "essential to the conservation of the species" and which "may require special management considerations or protection." 16 U.S.C. § 1532(5)(A).

Lynx are imperiled by a multitude of threats associated with climate change, including loss of boreal spruce-fir forest habitat, contraction of snow conditions that favor lynx over other snowshoe hare predators, reduced snowshoe hare populations and densities, changes in the frequency, pattern, and intensity of wildfires and other forest disturbance events, reduced gene flow between Canadian and U.S. lynx populations, and increased exposure to novel diseases and parasites.[107] Experts predict that the only area in the lower 48 states has a high likelihood of still supporting a lynx population by 2100 is northwestern Montana.[108]

Given Montana's unique importance to lynx conservation, it is crucial that lynx not be adversely affected by WS-Montana's PDM activities. But there is reason for concern. WS-Montana has killed at least three bobcats—one intentionally and two unintentionally—in neck snares and leghold traps since FY 2013.[109] This is a problem because bobcats and lynx are morphologically similar and share significant range overlap, leaving lynx vulnerable to being

[104] EA at 248-49.
[105] *See* FWS, Species Status Assessment for the Canada Lynx (*Lynx* Canadensis): Contiguous United States Distinct Population Segment (Oct. 2017) ("Lynx Status Assessment"), p. 8.
[106] *See* 79 Fed. Reg. 54782, 54824 (Sept. 12, 2014).
[107] *See* Lynx Status Assessment, pp. 68-69.
[108] *See* Lynx Status Assessment, p. 5.
[109] EA at 263, Table 3.17; *see also* U.S. Dep't of Agriculture, Animal & Plant Health Inspection Service, Wildlife Services, Program Data Report G (2018), *available at*: https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/pdr/?file=PDR-G_Report&p=2018:INDEX: (last visited Feb. 17).

unintentionally caught and killed in traps and snares set for bobcats. Lynx could also be killed in traps, snares, and by M-44s set for coyotes and other species.

In 2013, conservation organizations sued FWP to address concerns about the non-target trapping of lynx in Montana.[110] In 2015, the parties involved reached a settlement agreement, pursuant to which FWP has enacted a number of restrictions on trapping within certain areas of occupied lynx habitat—called "Lynx Protection Zones"—in southwestern and northwestern Montana. They include a prohibition of the use of Conibear traps, leghold traps, and all snares unless they meet certain size, placement, and design criteria, and the requirement that trappers targeting bobcats visually check their traps at least once every 48 hours.[111]

Despite their importance, WS-Montana appears to abide by very few of these protective measures. The EA says that the agency trains its staff on identifying lynx and lynx sign, does not use certain attractants within lynx habitat, and uses pan-tension devices on leghold traps and snares in lynx habitat.[112] Yet, it does not appear to have adopted the many other restrictions governing recreational trapping within lynx habitat. WS-Montana should adhere to these restrictions in order to protect lynx and to comply with WS Directive 2.210(3), which requires WS-Montana to adhere to applicable state laws "that do not directly and substantively conflict with and frustrate WS' Federal statutory authorities."[113] Restricting the use of traps to protect a threatened species does not conflict with WS-Montana's statutory authorities; to the contrary, it would further the agency's statutory obligations to conserve and avoid jeopardizing or taking any species protected by the ESA.[114]

The EA's measures to protect Canada lynx are inadequate, both to protect resident lynx in Montana as well as the vulnerable lynx population in Wyoming and even Colorado, which depend on Montana's lynx for their long-term persistence. Montana provides significant core and linkage habitat for lynx, which enables lynx in northwestern Wyoming—and potentially even as far south as Colorado—to stay connected with the Canadian population "by dispersal corridors (habitat 'stepping stones') between northwest Montana and the Greater Yellowstone Area."[115] Such "connectivity and interchange with lynx populations in Canada is thought to be essential to the maintenance and persistence of lynx populations in the contiguous United States."[116]

Altogether, WS-Montana's protective measures for lynx are inadequate. Even a single lynx killed or injured by WS may harm the species' long-term persistence in the face of climate

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[110] *See* https://missoulian.com/news/local/montana-fish-wildlife-and-parks-sued-over-trapping-in-lynx-habitat/article_3bb83122-9297-11e2-8e2e-0019bb2963f4.html.
[111] *See* FWP Furbearer Trapping Regulations, p. 5. While WS-Montana does not appear to have used Conibear traps in the last several years (*see* U.S. Dep't of Agriculture, Animal & Plant Health Inspection Service, Wildlife Services, Program Data Report G – Filtered by State: Montana (2014-2019), *available at* https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/sa_reports/sa_pdrs/PDR-Home-2019), the EA indicates that "body-gripping traps" (also known as "Conibear" traps) remain a lethal control measure available for WS-Montana to use. *See* EA at 432.
[112] EA at 150.
[113] *See* WS Directive 2.210(3).
[114] *See* 16 U.S.C. § 1536(a); 16 U.S.C. § 1538(a).
[115] 78 Fed. Reg. 59429, 59434 (Sept. 26, 2013).
[116] *Id.* at 59434 (internal citations omitted).

change and other threats. These concerns raise substantial questions about whether the agency's predator control activities could substantially affect this threatened species. *See* 40 C.F.R. § 1508.27(9); *Sierra Club*, 843 at 1193. As a result, an EIS must be prepared.

G. 40 C.F.R. § 1508.27(b)(10): whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment

As described above, the EA's proposed PDM activities may result in incidental take of species listed under the ESA, 16 U.S.C. §§ 1531 *et seq*. It is not apparent that WS-Montana has complied with the ESA to address such take. Congress passed the ESA in 1973 to "provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, [and] to provide a program for the conservation of such endangered species and threatened species . . . ." 16 U.S.C. § 1531(b). Under Section 7 of the ESA, Congress charged every federal agency with the duty to conserve imperiled species, which the ESA explicitly elevates over the primary missions of federal agencies. 16 U.S.C. § 1536(a). In furtherance of this duty, the ESA requires every federal agency to obtain review and clearance for activities that may affect listed species or their habitat from FWS or the National Marine Fisheries Service ("NMFS"). If an activity authorized, funded, or carried out by a federal agency may affect a listed species or its designated critical habitat, that activity cannot go forward until consultation with FWS or NMFS to ensure that it will not jeopardize the species or result in the destruction or adverse modification of designated critical habitat. 16 U.S.C. § 1536(a)(2); 50 C.F.R. § 402.14(a).

Furthermore, the listing of a species under the ESA triggers prohibitions under Section 9 of the Act, 16 U.S.C. § 1538, including the prohibition on the "take" of species, which means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." 16 U.S.C. § 1532(18). The prohibitions in Section 9 of the ESA encompass "incidental take," or take that is not a direct goal of the proposed action. During Section 7 consultation, if USFWS or NMFS concludes that take will not jeopardize the species, then the agency may issue an Incidental Take Statement that specifies the impacts of the incidental take on the species, mitigation measures, reporting requirements, and any other terms and conditions with which the action agency must comply. 16 U.S.C. § 1536(b)(4)(C).

Several lethal methods identified in the EA are indiscriminate and have the potential to kill or injure non-target species, including listed threatened and endangered species that occur in Montana. These indiscriminate methods include leghold traps, snares, and M-44s. Also of concern is the use of lead ammunition, which has a high risk of poisoning non-target animals. As mentioned above, M-44s have caused the deaths of two grizzly bears,[117] and WS-Montana's data demonstrates that between FY 13 and FY 18, two bobcats were unintentionally captured (and one killed) by neck snares and leghold traps in Montana.[118] This is particularly concerning

[117] Eisler, R., Cyanide Hazards to Fish, Wildlife, and Invertebrates: a synoptic review, 85 Biological Report 6 (1991); Keefover-Ring, W., Report to President Barack Obama and Congress 53 (2009), *available at* http://pdf.wildearthguardians.org/support_docs/report-war-on-wildlife-june-09-lo.pdf.
[118] *See* U.S. Dep't of Agriculture, Animal & Plant Health Inspection Service, Wildlife Services Program Data Report G – Filtered by State: Montana (2013-2108), *available at*

because bobcats and Canada lynx, a threatened species, are physically similar and share overlapping ranges in Montana. Moreover, in 2019 alone, a grizzly bear, four black bears, four mountain lions, two badgers, and two white-tailed deer, among other species, were unintentionally caught—and many of them killed—in traps and snares set by WS-Montana.[119] On the whole, there is a significant risk that certain methods WS-Montana is proposing in the EA will result in incidental take, which threatens to violate the ESA. Thus, an EIS is required to evaluate this risk further.

V. THE EA LACKS ADEQUATE BASELINE DATA TO SUPPORT A CREDIBLE ANALYSIS OF ENVIRONMENTAL EFFECTS TO LOCAL ECOSYSTEMS AND LOCAL POPULATIONS OF TARGETED SPECIES

NEPA requires an accurate description of baseline conditions of the area to be affected by the preferred action using complete, high-quality information, accurate scientific analysis, and expert agency comments. *See* 40 C.F.R. §§ 1500.1(b), 1502.15, 1502.24. There is "no way to determine what effect [an action] will have on the environment, and consequently, no way to comply with NEPA" without "establishing the baseline conditions." *Half Moon Bay Fishermen's Mktg. Ass'n v. Carlucci*, 857 F.2d 505, 510 (9th Cir. 1988). The environmental baseline is the foundation of the agency's NEPA analysis, because it is against this information that environmental impacts are measured and evaluated; therefore, it is critical that the baseline be accurate and complete. *Ctr. for Biol. Diversity v. BLM*, 422 F.Supp.2d 1115, 1163 (N.D. Cal. 2006). Where an agency relies on incomplete or inaccurate data for affected resource conditions, its assumptions concerning the environmental consequences of its proposed actions are arbitrary and capricious. *See, e.g.*, *Or. Natural Desert Ass'n*, 840 F.3d at 569-70.

As discussed *supra*, the EA improperly relies on statewide estimates of predator species such as bears, mountain lions, and coyotes, even when PDM work takes place in concentrated locations. As such, the EA improperly dilutes the impacts on local ecosystems of predator removal by relying on statewide population data even in instances when, for example, the EA explicitly indicates that the removal is more concentrated in certain locations within the state.[120] This failure to acknowledge Montana's geographic diversity is fatal to conducting a significant analysis of the impact of PDM. The EA needs to not only analyze better baseline data, but do so on a more specific level that adequately considers the geographic differences and varying amounts of wildlife killing it conducts in each region of the state.

Courts have already rejected broad scale agency analyses, including in the very same context advanced here. *See, e.g.*, *WWP*, 320 F. Supp. 3d at 1147-48; *see also Cascadia Wildlands v. BLM*, 2019 WL 4467008, at *7 (Sept. 18, 2019) ("An agency cannot minimize an activity's environmental impact by adopting a broad scale analysis and marginalizing the

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https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/pdr/?file=PDR-G_Report&p=2018:INDEX: (last visited Feb. 17).

[119] *See* U.S. Dep't of Agriculture, Animal & Plant Health Inspection Service, Wildlife Services, Program Data Report G – Filtered by State: Montana (2019), *available at* https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/pdr/?file=PDR-G_Report&p=2019:INDEX: (last visited Feb. 17).

[120] EA at 126, Fig. 2.2.

activity's site-specific impact.") (citing *Pac. Coast Fed'n of Fishermen's Ass'n v. Nat'l Marine Fisheries Serv*., 265 F.3d 1028, 1036 (9th Cir. 2001); *Oregon Natural Resource Council v. Brong*, 492 F.3d 1120, 1130 (9th Cir. 2007) (holding that the agency improperly diluted the effects of its proposed actions by averaging snag retention over too wide an area).

But that is exactly what the EA does. The EA does not estimate baseline predator populations in local areas where it actually conducts predator control, instead relying on broad averaging to minimize the effects of its actions. The coyote provides a striking example of why this approach is flawed. WS-Montana kills on average about 6,300 coyotes each year statewide,[121] but claims that this number is insignificant when compared with the total coyote population in the state, which it estimates to be around 58,800. However, this approach ignores that the agency's actions are not spread uniformly across the state; they occur in specific areas. Without understanding the number of coyotes that inhabit those areas, WS-Montana risks extirpating coyotes locally, destabilizing the coyote population in ways known to exacerbate predation problems.

This risk is particularly pronounced because Wildlife Services does not consider the effects of its actions when combined with other "take" by private individuals that may occur in the same geographic areas. Indeed, Wildlife Services even admits that its approach may kill off local coyote populations. For example, the EA indicates that M-44s remain set until it appears that all coyotes or foxes in the area have been killed: the devices are finally "removed from an area if after 30 days there has been *no sign* that the target animal has visited the area."[122] Also, the EA acknowledges that "WS-Montana coyote take may cause a temporary decrease in localized populations where more frequent PDM is performed, but other coyotes will re-occupy these areas; thus, there will be no long-term effects in these locations, and no effect on the statewide population."[123] Without judging the effects of its localized actions against baseline predator populations at the scale at which they actually occur, Wildlife Services' effects analysis is inaccurate and incomplete.

VI. THE ALTERNATIVES ANALYSIS IS FLAWED

An agency's duty to consider alternatives to the proposed action has been described as the "heart" of the NEPA process. 40 C.F.R. § 1502.14. Agencies are required to "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." 42 U.S.C. § 4332(2)(E); *see also* 42 U.S.C. § 4332(2)(C)(iii). Wildlife Services must "use the NEPA process to identify and assess the reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of the human environment." 40 C.F.R. § 1500.1(e). It is essential that NEPA documents contain "detailed and careful" analysis of the relative merits and demerits of the proposed action and proposed alternatives, a requirement which courts have characterized as the "linchpin" of the NEPA process. *Natural Resources Defense Council, Inc. v. Callaway*, 524 F.2d 79, 92 (2d Cir. 1975) (quoting *Monroe Cnty Conservation Soc'y, Inc. v. Volpe*, 472 F.2d 693, 697-98 (2d Cir. 1972)). All reasonable

[121] EA at 452, Appendix E, Table E.1.
[122] EA at 343 (emphasis added).
[123] EA at 192.

alternatives must receive a "rigorous exploration and objective evaluation . . . particularly those that might enhance environmental quality or avoid some or all of the adverse environmental effects." 40 C.F.R. § 1500.8(a)(4).

The purpose of NEPA's alternatives requirement is to ensure agencies do not undertake projects "without intense consideration of other more ecologically sound courses of action, including shelving the entire project, or of accomplishing the same result by entirely different means." *Envtl. Defense Fund, Inc. v. U.S. Army Corps of Engrs.*, 492 F.2d 1123, 1135 (5th Cir. 1974). The discussion of alternatives is intended to provide a "clear basis for choice among options by the decisionmaker and the public." 40 C.F.R. § 1502.14. This requirement is critical to serving NEPA's primary purposes of ensuring fully informed decisions and providing for meaningful public participation in environmental analyses and decision-making. *See* 40 C.F.R. § 1500.1(b), (c); *Friends of Yosemite Valley v. Kempthorne*, 520 F.3d 1024, 1039 (9th Cir. 2008) (the NEPA analysis must identify multiple viable alternatives, so that an agency can make "a real, informed choice" from the spectrum of reasonable options).

Federal courts have consistently held that an agency's failure to consider a reasonable alternative is fatal to an agency's NEPA analysis. *See, e.g.*, *Muckleshoot Indian Tribe v. U.S. Forest Serv*., 177 F.3d 800, 814 (9th Cir. 1999) ("A 'viable but unexamined alternative renders [the] environmental impact statement inadequate.'") (quoting *Citizens for a Better Henderson v. Hodel*, 768 F.2d 1051, 1057 (9th Cir. 1985)); *WWP*, 719 F.3d at 1049-53 ("The existence of a viable but unexamined alternative renders an [EA] inadequate."). If the action agency rejects an alternative from consideration, it must explain why a particular option is not feasible and was therefore eliminated from further consideration. 40 C.F.R. § 1502.14(a). The courts will scrutinize this explanation to ensure that the reasons given are adequately supported by the record. *See Muckleshoot Indian Tribe*, 177 F.3d at 813-15; *Idaho Conserv. League v. Mumma*, 956 F.2d 1508, 1522 (9th Cir. 1992) (while agencies can use criteria to determine which options to fully evaluate, those criteria are subject to judicial review); *Citizens for a Better Henderson*, 768 F.2d at 1057.

A. The Discussion of the Proposed Alternatives Is Flawed

The EA provides an inadequate set of alternatives: (1) continue the current PDM program (no action/proposed action); (2) provide PDM technical assistance and only non-lethal preventive and corrective operational assistance; (3) provide non-lethal PDM assistance before applying lethal assistance; (4) provide PDM lethal assistance only to protect human or pet health or safety, eradicate feral swine, and/or protect threatened or endangered species; and (5) conduct no WS-Montana PDM activities.[124]

First, the EA fails to describe its current program in adequate detail, making it impossible for the public to understand or evaluate the full scope of the action or its impacts. It only provides extremely broad, region-wide generalizations. For example, it states it will conduct PDM on private, federal, state, tribal and county and municipal lands and properties in Montana, including rural, urban, suburban, natural, and commercial areas.[125] These generalizations are not

[124] EA at 115-38.
[125] EA at 14.

particularly helpful or accurate, as the EA states on numerous occasions that WS-Montana must retain flexibility to respond to unplanned actions in unknown areas.

Likewise, the EA claims that WS-Montana personnel can determine for each PDM issue what method or combination of methods is most appropriate and effective using the APHIS-WS Decision Model. The Decision Model, however, is only referenced in an extraordinarily vague way and no detail whatsoever is given as to how success is evaluated, how often, or what the results have been in the past. In fact, a similar EA prepared by WS-Washington states, "the Decision Model is not a written documented process for each incident, but rather a mental problem-solving process."[126] How can WS-Montana and the public evaluate the efficacy of the Decision Model if it is not even something that is ever written down or assessed outside of an employee's head? Furthermore, the EA provides no detail on how often WS-Montana is likely to employ various methods in the future other than to state that it anticipates PDM levels to remain the same.

Next, the descriptions and analyses of alternatives 2-5 are inadequate, with the EA treating them like little more than straw men. While the inclusion of Alternatives 3 and 4 shows a slight departure from the overwhelming assumption that WS-Montana-initiated lethal PDM is still necessary, the alternatives still fail to adequately analyze the use of non-lethal methods. Instead, the EA merely pays lip-service to the idea of WS-Montana not using lethal removal. In each analysis of the alternatives, the EA repeats an iteration of the supposition that without WS-Montana performing a continuation of current management, lethal removal by private entities is sure to increase, and will increase in a less precise manner. This flawed assumption that lethal PDM "would likely" occur by other actors, regardless of whether the WS-Montana acted is used to erroneously conclude that alternatives 2-5 would be ineffective.

WS-Montana fails to analyze the more probable outcome that the non-lethal management programs would work. It ignores research and reports showing that non-lethal methods are effective,[127] as discussed in greater detail in Section VII.B. Again, the EA ignores studies indicating that non-lethal programs are more effective than lethal control, and that lethal control can increase predation. Additionally, the EA fails to analyze the fact that the current program of providing lethal control could incentivize ranchers to not take actions to prevent predation. It fails to analyze the phenomena that ranchers may even allow livestock to be killed on purpose in order to have carnivores killed, as admitted by one ranch hand.[128] It also fails to address equitable management of carnivores for the public. These omissions represent a deep, institutional bias towards lethal control and a failure of the EA to analyze an appropriate range of alternatives.

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[126] USDA APHIS Wildlife Services-Washington, Pre-Decision Environmental Assessment Mammal Damage Management in Washington (Jan. 2021), p. 89.
[127] *See, e.g.*, Gehring et al., 2011; Davidson-Nelson & Gehring, 2010; Gehring et al., 2010.
[128] *See* J. Dougherty, Last Chance for the Lobo. High Ctry. News (2007), *available at* http://www.hcn.org/issues/361/17419.

B. The EA Inadequately Considers and Improperly Dismisses Multiple Reasonable Alternatives

Section 2.5 of the EA identifies various reasonable alternatives and, after a cursory analysis of each, summarily dismisses them.[129] This section also fails to identify and discuss multiple reasonable alternatives that WS-Montana should have considered. Specifically, we request that WS-Montana provide further evaluation of the alternatives identified in Sections 2.5.3 (only non-lethal PDM) and 2.5.12 (only non-lead ammunition).[130] In addition, we request the evaluation of at least three additional alternatives that were not considered in the EA, as discussed further below.

First, the EA must more fully consider the alternative identified in Section 2.5.3: use of "only non-lethal technical assistance and non-lethal operational assistance."[131] The EA's discussion of this alternative is inadequate. WS summarily rejects this alternative by reasoning, "[i]f the requester had taken all reasonable non-lethal actions and the problem still persists," then WS-Montana should be able to provide lethal assistance.[132] However, it is likely rare, if ever, that a requestor has attempted all reasonable non-lethal methods before contacting WS-Montana. For example, according to the EA, only 3.1 percent of cattle producers in Montana use exclusion fencing[133]—a tool that has repeatedly proven effective to protect cattle. *See, e.g.*, Young et al. (2018).[134] Similarly, only 4.4 percent of cattle producers and 6.5 percent of sheep producers use "fright/harassment tactics"[135]—despite the wide range and availability of such measures. *See, e.g.*, Shivik (2006).[136] Many requestors may not even be aware of these tools. WS-Montana could play an important role in educating, advising, and assisting these landowners about the availability and effectiveness of such methods. WS-Montana has demonstrated leadership within Wildlife Services in its use of non-lethal measures, such as fladry, electric fencing, and range riders.[137] As discussed in more detail in Section VII.B, these measures work.[138] WS-Montana should consider the extensive scientific literature on the importance of robust populations of native carnivores to the functioning of healthy ecosystems.

Additionally, WS-Montana should consider the scientific literature, also discussed in Section VII.C, demonstrating a global scientific consensus that lethal predator control is unlikely

[129] EA at 155-70.
[130] EA at 157, 160
[131] EA at 157.
[132] EA at 157.
[133] EA at 67, Table 1.7.
[134] Young, J.K., Steuber, J., Few, A., Baca, A., Strong, Z., 2018. When strange bedfellows go all in: a template for implementing non-lethal strategies aimed at reducing carnivore predation of livestock. Animal Conservation 1-3, doi:10.11/acv.12453.
[135] EA at 67, Table 1.7.
[136] Shivik, J.A., Tools for the Edge: What's New for Conserving Carnivores. 2006. Bioscience Vol. 56, No. 3, 253-59.
[137] *See* Few, A.P., Sherry, J.A., Talmo, R., Steuber, J.E., and Baca, A., Holding Space: In Montana, Unlikely Allies Find Common Ground. The Wildlife Professional (May/June 2019), *available at* https://www.nrdc.org/sites/default/files/media-uploads/holding-space_4.pdf.
[138] *See* FY20 Federal Allocation to USDA APHIS Wildlife Services for Nonlethal Livestock Protection. "Annual Accomplishments Report." January 2020.

to prevent future losses of livestock. The scientific literature also shows there is a high probability that lethal control measures will exacerbate the situation by inducing increases in livestock losses after removal of wolves, mountain lions, bears, or coyotes.

We ask for a detailed consideration of an alternative that would replace lethal PDM with only effective, non-lethal strategies to resolves human-wildlife conflicts, except as necessary to address an immediate risk to human health or safety. This type of program was adopted by WS-California and Humboldt County in May 2020, and we request that WS-Montana address why the terms of this agreement are not viable for implementation in Montana.[139]

Second, the EA must more fully consider Section 2.5.12: use of non-lead ammunition. The EA's discussion of this alternative is also inadequate. WS dismisses this alternative because it claims, without support, that "it is not readily available for the wide variety of firearm types used in Montana and elsewhere, in the appropriate calibers," and because it is more expensive.[140] These claims are refuted by Thomas (2012), which states:

> Lead-free bullets are made in 36 calibers and 51 rifle cartridge designations. . . . There is no major difference in the retail price of equivalent lead-free and lead-core ammunition for most popular calibers. Lead-free ammunition has set bench-mark standards for accuracy, lethality, and safety. Given the demonstrated wide product availability, comparable prices, and the effectiveness of high-quality lead-free ammunition, it is possible to phase out the use of lead hunting ammunition world-wide . . . .[141]

WS-Montana does not identify the firearm types for which lead-free ammunition is unavailable, or explain which lead-free ammunition options are "more expensive," or how much more expensive they are. It does not provide any comparisons or analysis. Yet, the use of lead ammunition is a serious concern. As discussed above, lead ammunition also poses serious risks to human, wildlife, and environmental health. The use of lead ammunition is a reasonable alternative that WS-Montana must evaluate in detail.

In addition, the EA must consider at least four additional reasonable alternatives: (1) one or more alternatives that restrict certain methods used in PDM activities; (2) an alternative prohibiting lethal wildlife PDM operations on all public lands; (3) an alternative prohibiting lethal wildlife PDM operations on wilderness and wilderness study areas; and (4) one or more alternatives prohibiting the lethal control of apex predators. Failure to evaluate these reasonable alternatives renders the EA legally deficient under NEPA.

First, regarding alternatives that restrict certain methods used in integrated wildlife damage management activities, we ask that WS-Montana consider one or more alternatives that

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[139] *See* Amendment 1 to the Cooperative Service Agreement (CSA) between Humboldt County (Cooperator) and United States Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) Wildlife Services (WS) (May 5, 2020) (attached).
[140] EA at 162.
[141] Thomas, V.G., Lead-Free Hunting Rifle Ammunition: Product Availability, Price, Effectiveness, and Role in Global Wildlife Conservation (Jan. 4, 2013).

would prohibit one or more of the following six methods from being used in field operations: (1) foot and neck snares; (2) padded and unpadded steel-jawed leghold traps; (3) body-crushing traps such as Conibear, quick-kill, and snap traps; (4) chemicals used in denning operations; (5) aerial gunning; and (6) M-44s. These methods represent the cruelest and most indiscriminate lethal methods currently used by WS-Montana, as discussed in detail in Section VII.C.

Second, we ask that WS-Montana consider an alternative that would prevent the agency from conducting lethal wildlife damage management operations on all public lands. The use of lethal methods on public lands creates a high likelihood of conflict with outdoor recreationists, including hikers, mountain bikers, wildlife watchers, and their companion animals. As discussed above, many lethal methods pose a serious risk of harming humans, especially young children, as well as companion animals, and many recreationists would be distressed to witness wildlife caught in a trap or snare. The EA points out that a relatively small percentage of the agency's PDM occurs on public lands—e.g., "only 1.4% of coyote take by M-44s has occurred on public lands."[142] Thus, it would be reasonable for the agency to consider in more detail ending PDM activities on public lands altogether.

Third, we ask for consideration of an alternative that would prevent WS-Montana from conducting lethal PDM operations in wilderness and wilderness study areas. For a complete discussion of our concerns on this issue, please see Section IX. The EA indicates that there is a "low likelihood and duration of work in WAs and WSAs."[143] Thus, as with other public lands, it would be reasonable for the agency to provide a detailed analysis of ending PDM activities in these areas altogether.

Finally, we ask for consideration of an alternative that would require the exclusive use of nonlethal methods for damage management operations targeting apex predators, including coyotes, mountain lions, grizzly bears, black bears, and wolves. As discussed in detail in Section VII.A, when evaluating this alternative, WS-Montana should consider the extensive body of scientific literature on the importance of robust populations of native carnivores to the functioning of healthy ecosystems. Additionally, WS-Montana should consider the significant body of scientific, peer-reviewed literature, discussed directly below, demonstrating that lethal predator control is unlikely to prevent future losses of livestock, and may in fact exacerbate the situation.

VII. THE EA FAILS TO TAKE THE REQUISITE HARD LOOK AT NUMEROUS ISSUES.

NEPA requires WS-Montana to take a "hard look" at all of the consequences of its proposed actions. The statute's twin objectives are to ensure that agencies: (1) "consider every significant aspect of the environmental impact of a proposed action;" and (2) "inform the public that [they have] indeed considered environmental concerns in [their] decision making process." *Earth Island Institute v. U.S. Forest Serv.*, 442 F.3d 1147, 1153–54 (9th Cir. 2006) (abrogated on other grounds) (citing *Kern*, 284 F.3d at 1066); *see also Baltimore Gas and Elec. Co. v. Natural Res. Def. Council*, 462 U.S. 87, 100 (1983) (NEPA's focus is on ensuring that agencies take a

[142] EA at 166.
[143] EA at 167.

"hard look" at potential environmental impacts and environmentally enhancing alternatives "as part of the agency's process of deciding whether to pursue a particular federal action").

CEQ regulations clearly state that NEPA procedures must ensure that environmental information is "of high quality" because "[a]ccurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA." 40 C.F.R. § 1500.1(b). Likewise, agencies and programs of the federal government "shall insure the professional integrity, including scientific integrity, of the discussions and analyses" in environmental review documents. *Id.* at § 1502.24. Where scientific uncertainty is present, an agency must openly analyze the reputable opinions contrary to its proposed action. *Sierra Club v. Bosworth*, 199 F. Supp. 2d 971, 980 (N.D. Cal. 2002).

In order to satisfy the "hard look" mandate, NEPA requires agencies to disclose and analyze all foreseeable impacts from their proposed actions, both "direct" and "indirect" as well as "cumulative." 40 C.F.R. §§ 1502.16; 1508.7, 1508.8. An agency must engage in a "reasoned evaluation of the relevant factors" to ensure that its ultimate decision is truly informed. *Greenpeace Action,* 14 F.3d at 1332. An agency's failure to use the most up-to-date information and tools available, or the inclusion of erroneous information, undermines the public's confidence in the environmental review document and renders it legally defective. *Tribal Village of Akutan v. Hodel*, 869 F.2d 1185, 1192 n. 1 (9th Cir. 1989). Without accurate, up-to-date information, there is no way for the public or the agency to adequately assess the pros and cons of a proposed action. This EA fails to comply with these obligations for numerous reasons.

A. The Ecological Impacts of Reduced Carnivore Populations Is Not Evaluated in Sufficient Detail

WS-Montana must consider the impacts of its PDM activities on biodiversity and ecosystems in sufficient detail. WS-Montana cannot overlook the fact that its program has significant impacts to ecosystem integrity. For example, the agency's current PDM activities raise significant concerns about the potential for trophic cascades and mesopredator release. WS-Montana must carefully assess the impacts of its PDM activities in light of the numerous credible studies pertaining to trophic cascades and other potential consequences of killing predators, including those studies that disfavor lethal carnivore control on these grounds.[144] This issue warrants an in-depth analysis, even if WS-Montana "does not strive to eliminate or remove native predators from any area on a long-term basis."[145] As discussed in more detail below, diverse ecosystem effects can occur well before the eradication of a species at both local and regional scales.

In FY 2019, WS-Montana killed/euthanized or removed/destroyed more than 6,600 native animals, which included over 6,100 coyotes.[146] In addition, it reported that it

[144] *See* Carter, N. H., et al. (2019). Integrated spatial analysis for human-wildlife coexistence in the American West. Environmental Research Letters (highlighting the need for greater consideration of full ecological impact of predator removal).
[145] EA at 290.
[146] *See* U.S. Dep't of Agriculture, Animal & Plant Health Inspection Service, Wildlife Services, Program Data Report G – Filtered by State: Montana (2019), *available at*

unintentionally killed six animals, though interviews have indicated that "[t]he field guys do not report even a fraction of the non-target animals they catch."[147] The removal of so many animals from the environment – especially carnivores – certainly alters native ecosystems directly, indirectly, and cumulatively.[148]

Many of the species targeted by WS-Montana play critical roles in ecosystems, and their removals result in a cascade of unintended consequences. The loss of top carnivores in particular is well documented to cause a wide range of "unanticipated impacts" that are often profound, altering "processes as diverse as the dynamics of disease, wildfire, carbon sequestration, invasive species, and biogeochemical cycles."[149]

An overview of ecological principles illustrates this. "Predators" are animals that prey on other animals.[150] "Apex" predators such as coyotes, wolves and mountain lions have few or no predators of their own, other than humans, and occupy the top of the food chain.[151] Apex predators create a trophic cascade of beneficial effects that flow through and sustain ecosystems and the web of life.[152] For example, coyotes help to control disease transmission by keeping rodent populations in check, consume carrion, remove sick animals from the gene pool, disperse seeds, protect ground-nesting birds from smaller carnivores, and increase the biological diversity of plant and wildlife communities.[153]

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https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/pdr/?file=PDR-G_Report&p=2019:INDEX: (last visited Feb. 17).

[147] T. Knudson, *Neck Snare is a 'Non-forgiving and Nonselective' Killer, Former Trapper Says*, SACRAMENTO BEE (Apr. 30, 2012 at 12:00 AM) http://www.sacbee.com/news/investigations/wildlife-investigation/article2574607.html.

[148] John Winnie Jr., Scott Creel; Montana State University. "*The many effects of carnivores on their prey and their implications for trophic cascades, and ecosystem structure and functi*on," Food Webs, Volume 12, September 2017, Pages 88-94.

[149] B.J. Bergstrom et al., *License to Kill: Reforming Federal Wildlife Control to Restore Biodiversity and Ecosystem Function*, 7 CONSERV. LETTERS 131–42 (2013); J.A. Estes et al., *Trophic Downgrading of Planet Earth*, 333 SCIENCE 301–06 (2011).

[150] A.S. LEOPOLD ET AL., CARNIVORE AND RODENT CONTROL IN THE UNITED STATES 9 (1964) ("The assertion that native birds and mammals are in general need of protection from native carnivores is supported weakly, if at all, by the enormous amount of wildlife research on the subject conducted in the past two or three decades.").

[151] L. R. Prugh et al., *The Rise of the Mesopredator*, 59 BIOSCIENCE 779–91 (2009).

[152] J.A. Estes et al., *Trophic Downgrading of Planet Earth*, 333 SCIENCE 301–06 (2011); W. J. Ripple, R. L. Beschta, *Trophic Cascades in Yellowstone: The First 15 Years After Wolf Reintroduction*, 145 BIOL. CONSERV. 205–13 (2012); W. J. Ripple, R. L. Beschta, J. K. Fortin, and C. T. Robbins, *Trophic Cascades From Wolves to Grizzly Bears in Yellowstone*, 83 J. ANIM. ECOL. 223–33 (2014).

[153] S. E. Henke and F. C. Bryant, *Effects of Coyote Removal on the Faunal Community in Western Texas*, 63 Journal of Wildlife Management 1066 (1999); K. R. Crooks and M. E. Soule, *Mesopredator Release and Avifaunal Extinctions in a Fragmented System*, 400 Nature 563 (1999); E. T. Mezquida, et al., *Sage-Grouse and Indirect Interactions: Potential Implications of Coyote Control on Sage-Grouse Populations*, 108 Condor 747 (2006), *available at* http://repository.uwyo.edu/cgi/viewcontent.cgi?article=1003&context=zoology_facpub; N. M. Waser et al., *Coyotes, Deer, and Wildflowers: Diverse Evidence Points to a Trophic Cascade*, 101 Naturwissenschaften 427 (2014).

Additionally, wolves in Yellowstone and Grand Teton National Parks have been found to benefit a host of species, including aspen, songbirds, beavers, bison, fish, pronghorn, foxes, and grizzly bears.[154] By reducing numbers and inducing elk to move, wolves have reduced browsing on aspen and other streamside vegetation, which has benefitted beavers, songbirds and fish populations. Studies have also shown how wolves and coyotes interact, and how wolves can aid pronghorn populations because "wolves suppress[ ] coyotes and consequently fawn depredation."[155] Wolves also benefit scavengers by leaving carrion derived from predation; hence, wolf removal leads to reduced abundance of carrion for scavengers in specific areas.[156] For instance, the extirpation of wolves works to the detriment of grizzly bears, which are listed as a threatened species and which, in addition to acting as apex predators, can steal wolf kills. A 2013 study showed that wolves benefit grizzly bears in Yellowstone through another trophic mechanism as well; specifically, wolf predation on elk has led to less elk browsing of berry-producing shrubs, providing grizzlies with access to larger quantities of fruit.[157] Predation by wolves and other carnivores could also help to slow the spread of Chronic Wasting Disease, an always-fatal disease that strikes deer, elk, and other ungulates, which arrived in Montana in 2017.[158]

Mountain lions also play important roles in maintaining ecosystem health, diversity and integrity. For example, mountain lions contribute a disproportionate amount of carrion to the landscape, supporting at least 39 species of birds and mammals.[159] Additionally, recent research found that mountain lions act as ecosystem engineers, providing habitat to at least 215 different species of beetles, including the federally endangered American burying beetle (*Nicrophorus*

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[154] B.J. Bergstrom et al., *License to Kill: Reforming Federal Wildlife Control to Restore Biodiversity and Ecosystem Function*, 7 CONSERV. LETTERS 131–42 (2013); J.A. Estes et al., *Trophic Downgrading of Planet Earth*, 333 SCIENCE 301–06 (2011); W. J. Ripple, R. L. Beschta, *Trophic Cascades in Yellowstone: The First 15 Years After Wolf Reintroduction*, 145 BIOL. CONSERV. 205–13 (2012).

[155] B.J. Bergstrom et al., *License to Kill: Reforming Federal Wildlife Control to Restore Biodiversity and Ecosystem Function*, 7 CONSERV. LETTERS 131–42 (2013); L. R. Prugh et al., *The Rise of the Mesopredator*, 59 BIOSCIENCE 779–91 (2009); K.M. Berger and E.M. Gese, *Does Interference Competition with Wolves Limit the Distribution and Abundance of Coyotes*? 76 J. ANIM. ECOL. 1075–85 (2007); D.W. Smith, R.O. Peterson, D.B. Houston, *Yellowstone After Wolves*, 53 BIOSCIENCE 330 (2003); R.L. Beschta and W.J. Ripple, *Riparian Vegetation Recovery in Yellowstone: The First Two Decades After Wolf Reintroduction*, 198 BIOL. CONSERV. 93–103 (2016); D.G. Flagel, G.E. Belovsky, and D.E. Beyer, *Natural and Experimental Tests of Trophic Cascades: Gray Wolves and White-tailed Deer in a Great Lakes Forest*, 180 OECOLOGIA. 1183–94 (2016).

[156] W.J. Ripple and R.L. Beschta, *Trophic Cascades in Yellowstone: The First 15 Years After Wolf Reintroduction*, 145 BIOL. CONSERV. 205–13 (2012); C.C. Wilmers, R.L. Crabtree, D.W. Smith, K.M. Murphy, and W.M. Getz, *Trophic Facilitation by Introduced Top Predators: Grey Wolf Subsidies to Scavengers in Yellowstone National Park*, 72 J. ANIM. ECOL. 909–16 (2003); C.C. Wilmers, D.R. Stahler, R.L. Crabtree, D.W. Smith, and W.M. Getz, *Resource Dispersion and Consumer Dominance: Scavenging at Wolf- and Hunter-Killed Carcasses in Greater Yellowstone, USA*, 6 ECOL. LETTERS 996–1003 (2003).

[157] W.J. Ripple, A.J. Wirsing, C.C. Wilmers, and M. Letnic, *Widespread Mesopredator Effects After Wolf Extirpation*, 160 BIOL. CONSERV. 70–79 (2013).

[158] *See* Wilkinson, T., *Deadly CWD Reaches Outskirts of Bozeman* (Dec. 9, 2020), *available at* https://mountainjournal.org/chronic-wasting-disease--confirmed-in-popular-montana-valleys#:~:text=CWD%20was%20first%20confirmed%20in,elk%20and%20two%20moose%20statewide

[159] Elbroch, L.M., C. O'Malley, M. Peziol and H.B. Quigley. 2017. *Vertebrate diversity benefiting from carrion provided by pumas and other subordinate, apex felids*. Biological Conservation 215: 123-131.

americanus).[160] Furthermore, in addition to helping regulate herbivore numbers through predation, the mere presence of mountain lions and wolves on the landscape can help to reduce over-browsing of plants and shrubs by herbivores, such as deer, elk and moose and maintain ecosystem integrity.[161]

The removal of apex predators may have other unexpected outcomes; for example, it can cause the "release" of mid-sized or "mesopredators" like foxes, raccoons, and skunks that are not at the top of the food chain in the presence of coyotes.[162] Increased abundance of mesopredators in turn can negatively affect populations and diversity of other species, including ground-nesting birds, rodents, lagomorphs, and others.[163] In some cases, declines in these species results in reduced prey for other carnivores and contribute to their decline and extirpation.

WS-Montana says that it "does not dispute the significance of the ecological role played by predators."[164] However, its conclusion that its PDM activities "do not affect predator populations," and therefore will not cause trophic cascades,[165] is based on a woefully inadequate analysis of whether killing predators will cause or contribute to such impacts on the environment.

The EA contains very little analysis of whether WS-Montana's predator control efforts could result in trophic cascades. While Appendix F of the EA includes a nearly 50-page discussion of scientific literature pertaining to trophic cascades and related topics (such as mesopredator release),[166] it does not analyze whether WS-Montana's PDM activities could cause or contribute to such impacts. Instead, the EA explains that Appendix F is merely meant to serve as an overview of relevant principles:

> [T]his appendix simply briefly summarizes the scientific literature relevant to the broader questions related to trophic cascades and related factors subsumed within that possible ecological relationship. *It is not intended to be an impact analysis* related to WS-Montana IPDM actions, but rather provides the context for the impact analysis in Section 3.8.[167]

Thus, the agency's analysis of the potential for WS-Montana's predator control activities

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[160] Barry, J.M., L.M. Elbroch, M.E. Aiello-Lammens, R.J. Sarno, L. Seelye, A. Kusler, H.B. Quigley and M.M. Grigione. 2019. *Pumas as ecosystem engineers: ungulate carcasses support beetle assemblages in the Greater Yellowstone Ecosystem.* Oecologia 189: 577-586.
[161] Beschta, R.L. and W.J. Ripple. 2012. *The role of large predators in maintaining riparian plant communities and river morphology*. Geomorphology 157-158: 88-98.
[162] L. R. Prugh et al., *The Rise of the Mesopredator*, 59 BIOSCIENCE 779–91 (2009); K. Crooks and M. Soulé, *Mesopredator Release and Avifaunal Extinctions in a Fragmented System*, 400 NATURE 563–66 (1999) (noting that although coyotes are mesopredators when wolves are present, they can act as apex carnivores where wolves have been extirpated).
[163] Ripple, William J., et al. "Widespread mesopredator effects after wolf extirpation." *Biological Conservation* 160 (2013): 70-79.
[164] EA at 287.
[165] EA at 287.
[166] EA at 453-500, Appendix F.
[167] EA at 453 (emphasis added).

to cause or contribute to trophic cascades is limited to its relatively brief discussion in Section 3.8.[168] That section, however, focuses not on analyzing the risks of trophic cascades, but on dismissing the need to do so. The EA claims that most studies reviewing the impacts of predator removal on biodiversity loss involve the "complete removal" of native predators.[169] Therefore, "[b]ecause APHIS-WS' actions do not result in long-term extirpation or eradication of any native wildlife species, the findings of most of these studies are not relevant."[170] The EA represents that "[t]he cumulative take of bears, wolves, mountain lions, and coyotes in Montana . . . is below that of the annual maximum sustainable harvest level for each species."[171] Thus, "[t]here is no potential for the elimination of apex predators or other native species, and the conditions to precipitate a trophic cascade are not produced."[172]

However, the EA mischaracterizes the scientific literature. The complete eradication of a predator species is not necessary to precipitate or facilitate a trophic cascade. As Ripple et al. (2016) explain, "[t]he process of 'mesopredator release' is commonly ascribed to a *decline* or disappearance of an apex predator population resulting in population increases of mid-sized predators."[173] Numerous studies suggest the occurrence of trophic cascades following decreases in apex predator populations. For example, Mezquida et al. (2006) concluded that a decrease (not eradication) of coyotes could adversely affect sage-grouse by allowing an increase in foxes, badgers, and ravens—mesospredators that prey on sage-grouse eggs and young.[174]

In another study, Flagel et al. (2015) documented the occurrence of a trophic cascade involving wolves, deer, and maple tree and forb species richness in Wisconsin.[175] They compared areas of "high wolf use" with areas of "low wolf use" (wolves were present, not eradicated, in the "low wolf use" areas). They found that, in areas of high wolf use, deer were 62 percent less dense, the duration of their visits was reduced by 82 percent, and the time they spent foraging declined by 43 percent. As a result, average maple sapling height and forb species richness increased 137 and 117 percent in areas of high versus low wolf use, respectively.

In Utah, an examination of Fremont cottonwood (*Populus fremontii*) recruitment in Zion National Park linked a decline in mountain lions to a trophic cascade in Zion Canyon.[176] As mountain lion numbers declined, deer numbers increased, which let to reduced cottonwood

[168] EA at 287-95.
[169] EA at 290.
[170] EA at 291.
[171] EA at 291.
[172] EA at 291.
[173] Ripple, J.W., Estes, J.A., Schmitz, J.O., Constant, V., Kaylor, M.J., Lenz, A., Motley, J.L., Self, K.E., Taylor, D.S., and Wolf, C., What is a Trophic Cascade? Trends in Ecology & Evolution (Nov. 2016), Vol. 31, No. 11 (emphasis added).
[174] Mezquida, E.T., Slater, S.J., and Benkman, C.W. Sage-grouse and indirect interactions: potential implications of coyote control on sage-grouse populations. The Condor (2006), 108: 747-759.
[175] Flagel, D.G., Belovsky, G.E., and Beyer Jr., D.E. Natural and experimental tests of trophic cascades: gray wolves and white-tailed deer in a Great Lakes forest. Oecologia (2015), DOI 10.1007/s00442-015-3515-z.
[176] Ripple, W.J. and R.L. Beschta. 2006. *Linking a cougar decline, trophic cascade and catastrophic regime shift in Zion National Park.* Biological Conservation 133: 397-408.

recruitment, increased bank erosion, and decreased riparian diversity. In contrast, riparian communities where mountain lion populations have remained undisturbed have remained intact.

Indeed, killing even a single predator or pack could be sufficient to harm the ecosystem in its home range. Callan et al. (2013) found that, within the home ranges of single wolf packs, deer do not relax and therefore deer foraging alone or in their small family groups do not linger for long periods in a single feeding patch.[177] Therefore, near the center of activity of those individual wolf packs, the researchers observed reduced herbivory and improved growth and reproduction of understory herbs. This example, and the studies above, illustrate the deleterious effects that can occur even as a result of the decline of an apex predator species, well before complete extirpation.

Likewise, WS-Montana's predator control activities that declines in the populations of the predator species it targets could result in trophic cascades. Between FY 2013 and FY 2017, the agency killed up to 12.2 percent of the statewide coyote population and 7.6 percent of the statewide wolf population.[178] Under maximum levels of projected lethal removal, WS-Montana would annually contribute to the cumulative deaths of more than half (up to 52.7 percent) of the statewide coyote population and nearly half (43.1 percent) of the statewide wolf population.[179] It would also contribute to levels of mortality of NCDE and CYE grizzly bears that would exceed the 4 percent human-cause mortality limits set by the 1993 Recovery Plan.[180] WS-Montana must analyze the potential that causing or contributing to such substantial declines in population levels could trigger trophic cascades.

WS-Montana also dismisses the potential for mesopredator release or other types of trophic cascades by asserting that the program's impacts to predators are "generally temporary" and occur only in "relatively small or isolated geographic areas."[181] But requiring "population-level impacts" is not the proper test for analysis under NEPA. NEPA does not excuse analysis of impacts that may be temporary or localized. Significant adverse ecosystem effects can occur at localized scales. *See, e.g.*, 40 C.F.R. § 1508.27(a) ("Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole.") Indeed, WS-Montana's predator killing program aims to reduce conflicts with livestock by removing predators at a local level. As such, WS-Montana must consider how the localized removal of apex predators could affect ecosystems at smaller scales.

The program's killing of coyotes provides an example of how localized impacts may occur. WS-Montana removed thousands of coyotes from the state's landscape in 2019. Specifically, the program killed 695 by firearms, 988 by fixed wing aircraft, 3,624 by helicopter,

[177] Callan, R., N.P. Nibbelink, T.P. Rooney, J.E. Wiedenhoeft, and A. Wydeven, *Recolonizing wolves trigger a trophic cascade in Wisconsin (USA).* Journal of Ecology, 2013: p. https://doi.org/10.1111/1365-2745.12095.
[178] EA at 267, Table 3.18
[179] EA at 267, Table 3.18.
[180] EA at 267, Table 3.18.
[181] EA at 291.

197 with M-44s, 607 with neck snares, and 76 with leghold traps.[182] Yet WS-Montana provides *no* spatial analysis of these killings in the EA. To take a hard look at the potential for trophic cascades from its predator killing program, WS-Montana must consider whether it removes predators in some areas of the state at disproportionately high levels—such as in some counties in southwestern and east-central Montana.[183] And if so, WS-Montana must analyze the potential for trophic cascades in those areas.

The scientific literature indicates that killing of wildlife has contributed to the localized extinction of many North American species, and has thereby fundamentally altered ecosystems.[184] There is a consensus emerging among ecologists that extirpated, depleted, and destabilized populations of large predators are negatively affecting the biodiversity and resilience of ecosystems.[185] The loss of top carnivores in particular is well documented to cause a wide range of "unanticipated impacts" that are often profound, altering "processes as diverse as the dynamics of disease, wildfire, carbon sequestration, invasive species, and biogeochemical cycles."[186]

Localized impacts on rodent populations from predator removal is one issue that WS-Montana must analyze. Studies have found that coyotes have a positive effect on rodent species diversity. For example, one study determined that Ord's kangaroo rat became the dominant species in areas without coyotes. As their numbers increased, so did their competitive advantage. This had an overall negative effect on species diversity and richness throughout the ecosystem. Coyotes kept kangaroo rat populations in check, which removed their competitive advantage and increased overall rodent species diversity.[187]

Yet, WS-Montana ignores the trophic cascade effects of coyote control in the EA. The EA claims that coyote populations will not be negatively affected if less than 60 percent of the population is removed annually, which could occur in perpetuity.[188] The EA also claims that harvest rates above 70 percent would not affect the statewide population, as long as that rate is

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[182] *See* U.S. Dep't of Agriculture, Animal & Plant Health Inspection Service, Wildlife Services, Program Data Report G – Filtered by State: Montana (2019) *available at* https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/pdr/?file=PDR-A_Report&p=2019:INDEX: (last visited February 14, 2021).

[183] EA at 126, Fig. 2.2.

[184] Ripple, William J., Thomas P. Rooney, and Robert L. Beschta. "Large predators, deer, and trophic cascades in boreal and temperate ecosystems." Trophic cascades: predators, prey, and the changing dynamics of nature (2010): 141-161.

[185] Bradley J. Bergstrom, Carnivore conservation: shifting the paradigm from control to coexistence, Journal of Mammalogy, Volume 98, Issue 1, 8 February 2017, Pages 1–6, https://doi.org/10.1093/jmammal/gyw185

[186] B.J. Bergstrom et al., *License to Kill: Reforming Federal Wildlife Control to Restore Biodiversity and Ecosystem Function*, 7 CONSERV. LETTERS 131–42 (2013); J.A. Estes et al., *Trophic Downgrading of Planet Earth*, 333 SCIENCE 301–06 (2011).

[187] S.F. Henke and F.C. Bryan, *Effects of Coyote Removal on the Faunal Community in Western Texas*, 63 J. WILDL. MANAGE. 1066–81 (1999).

[188] EA at 191-92.

not maintained long-term.[189] This is based on a population model that is nearly 20 years old.[190] It also ignores that the study suggesting coyote populations can withstand 60 percent annual removals without showing a reduction in population also admitted that such intensive removals altered coyote population structure. This analysis fails to consider the trophic cascade effects of predator control, such as the ecological impact of coyote-rodent control, the cascading impacts along the food chain, as well as dispersal of seeds, protection of ground-nesting birds from smaller carnivores, and increases in the biological diversity of plant and wildlife communities.

Moreover, the EA fails to consider the localized impact of removal or the establishment of an adequate baseline for local populations (discussed in further detail above), beyond the simple assertion that while local populations may experience a temporary decline, other coyotes will re-occupy the area.[191] Even if the state's population of coyotes may remain stable as a whole with removal rates of less than 60 percent, the EA fails to consider the impact on local ecosystems. If the majority of coyotes were removed from an isolated ecosystem (say, 80 percent of the total number of coyotes removed in the state are removed from one region) the local impact would be different than the impact to another region where far fewer coyotes were removed. The stability of the population in the state as a whole is not a sufficient baseline against which the real impact of removal of an apex predator from an ecosystem can be addressed.[192]

Similarly, the EA considers the black bear population in the state as a whole in its determination that the proposed action (removal of up to 50 black bears per year by WS-Montana) will not adversely impact the size or sustainability of the Montana black bear population.[193] The EA baldly asserts that "[i]mpacts to most local black bear populations would be negligible."[194] WS-Montana must take into consideration the variance in ecosystems across the state and consider the impact of maximum sustainable harvest levels across these ecosystems.

The EA makes similar sweeping assertions about the ecological impact of mountain lion removal.[195] Although WS-Montana typically took between 11 and 21 mountain lions per year from CY 2013-2017, this could increase to up to 50 lions taken each year in the future.[196] Despite this significant increase, the EA contains no meaningful analysis of the impact on local ecosystems, instead simply concluding that "[l]ocal populations of mountain lions may temporarily be affected" but that "[t]his is well below the thresholds for maximum sustainable harvest."[197]

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[189] EA at 192.
[190] EA at 192.
[191] EA at 199.
[192] The EA also fails to take any consideration into the behavior and pack structure of coyotes in its plans. Literature suggests that coyote populations are self-regulating if not killed indiscriminately, yet the EA, while recognizing social structures existing within coyote packs, ignores any discussion of self-regulation.
[193] EA at 233.
[194] EA at 233.
[195] EA at 224-25.
[196] EA at 225.
[197] EA at 225.

B. Evaluation of the Effectiveness of Predator Damage Management

The EA fails to include a sufficient analysis of the effectiveness of WS-Montana's use of lethal methods to manage predators, which violates NEPA. It states that WS-Montana's purpose is to implement PDM methods in the most effective manner, while minimizing impacts of PDM to ecosystems and non-target species.[198] However, by WS-Montana's own admission, "estimating levels of damage prevented can be complicated."[199] Indeed, the EA acknowledges that despite thousands of animals killed annually,[200] the "damage problem may return after a period of time" in the same location.[201]

This demonstrates that the program is not effective. In order to resolve wildlife-human conflict long-term, Wildlife Services needs to consistently and more extensively use non-lethal approaches in its PDM program, rather than delegating the majority of non-lethal management work to livestock producers. The EA inexplicably ignores extensive scientific research and reports demonstrating that lethal control is often ineffective and that non-lethal methods are highly effective at reducing predation. WS-Montana should consider the significant body of scientific literature, discussed in this comment, demonstrating that lethal predator control is unlikely to prevent future losses of livestock and can cause incidental take of numerous non-target species.[202] The scientific literature also shows there is a high probability that lethal control measures will exacerbate the situation by inducing increases in livestock losses after removal of mountain lions, bears, or coyotes.[203] For example, black bear management by Wildlife Services

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[198] EA at 88.
[199] EA at 88.
[200] *See* U.S. Dep't of Agriculture, Animal & Plant Health Inspection Service, Wildlife Services, Program Data Report G (2019), *available at* https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/pdr/?file=PDR-G_Report&p=2019:INDEX: (last visited February 17, 2021).
[201] EA at 89.
[202] A. Treves, M. Krofel, O. Ohrens, and L.M. Van Eeden, Predator control needs a standard of unbiased randomized experiments with cross-over design. Frontiers in Ecology and Evolution 7 (2019) 402-413.
[203] W.J. Ripple, et al., Status and ecological effects of the world's largest carnivores. Science 343 (2014) 1241484; Cooley, H.S. et al., 2009. Source populations in carnivore management: cougar demography and emigration in a lightly hunted population. Animal Conservation 12, 321-328; Cooley, H.S. et al., 2009. Does hunting regulate cougar populations? A test of the compensatory mortality hypothesis. Ecology 90, 2913-2921; K.A. Peebles, R.B. Wielgus, B.T. Maletzke, and M.E. Swanson, Effects of Remedial Sport Hunting on Cougar Complaints and Livestock Depredations, 8 PLoS One 1–8 (2013); C. Lambert et al., Cougar Population Dynamics and Viability in the Pacific Northwest, 70 J. Wildl. Manage. 246–54 (2006); R.B. Wielgus and K.A. Peebles, *Effects of Wolf Mortality on Livestock Depredations*, 9 PLOS ONE 1–16 (2014).; Santiago-Avila FJ, Cornman AM, Treves A (2018) Killing wolves to prevent predation on livestock may protect one farm but harm neighbors. PLOS ONE 13(1): e0189729. https://doi.org/10.1371/journal.pone.0189729. (Last visited 2/11/21); H.M. Bryan et al., Heavily Hunted Wolves Have Higher Stress and Reproductive Steroids than Wolves with Lower Hunting Pressure, 29 Funct. Ecol. 347–56 (2015); Bauer, S., Lisovski, S., Eikelenboom-Kil, R.J.F.M., Shariati, M., Nolet, B.A., 2018. Shooting may aggravate rather than alleviate conflicts between migratory geese and agriculture. Journal of Applied Ecology 55, 2653-2662; Beggs, R., Tulloch, A.I.T., Pierson, J., Blanchard, W., Crane, M., Lindemayer, D.L., 2019. Patch-scale culls of an overabundant bird defeated by immediate recolonization. Ecological Applications 29, e01846; Bradley, E.H., Robinson, H.S., Bangs, E.E., Kunkel, K., Jimenez, M.D., Gude, J.A., Grimm, T., 2015. Effects of Wolf Removal on Livestock Depredation Recurrence and Wolf Recovery in Montana,

was scientifically evaluated in the state of Wisconsin, the results of which found that live-capture and relocation was no more effective than technical support to landowners.[204] The studies listed below should be seriously considered when evaluating WS-Montana's PDM activities for efficacy:

1. 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.

2. Miller, J., Stoner, K., Cejtin, M., Meyer, T., Middleton, A., Schmitz, O., 2016. Effectiveness of Contemporary Techniques for Reducing Livestock Depredations by Large Carnivores. Wildlife Society Bulletin 40, 806-815.

3. van Eeden, L.M., Crowther, M.S., Dickman, C.R., Macdonald, D.W., Ripple, W.J., Ritchie, E.G., Newsome, T.M., 2018. Managing conflict between large carnivores and livestock. Conservation Biology doi: 10.1111/cobi.12959.

4. C.G. Radford, J.W. McNutt, T. Rogers, B. Maslen, and N.R. Jordan, Artificial eyespots on cattle reduce predation by large carnivores. Communications Biology Nature 3:430 (2020).

5. O. Ohrens, C. Bonacic, and A. Treves, Non-lethal defense of livestock against predators: Flashing lights deter puma attacks in Chile. Front. Ecol. Environ. 17 (2019) 32-38.

6. S.J. Davidson-Nelson, and T.M. Gehring, Testing fladry as a nonlethal management tool for wolves and coyotes in Michigan. Human–Wildlife Interactions 4 (2010) 87-94.

7. T.M. Gehring, K.C. Vercauteren, M.L. Provost, and A.C. Cellar, Utility of livestock-protection dogs for deterring wildlife from cattle farms. Wildl. Res. 37 (2010) 715–721.

8. T.M. Gehring, K.C. VerCauteren, and A.C. Cellar, Good fences make good neighbors: implementation of electric fencing for establishing effective livestock protection dogs. Human–Wildlife Interactions 4 (2010) 144-149.

Idaho, and Wyoming. J. of Wildlife Management 79, 1337–1346; Fernández-Gil, A., Naves, J., Ordiz, A.s., Quevedo, M., Revilla, E., Delibes, M., 2015. Conflict Misleads Large Carnivore Management and Conservation: Brown Bears and Wolves in Spain. PLos ONE DOI:10.1371/journal.pone.0151541, 1-13; Imbert, C., Caniglia, R., Fabbri, E., Milanesi, P., Randi, E., Serafini, M., Torretta, E., Meriggi, A., 2016. Why do wolves eat livestock? Factors influencing wolf diet in northern Italy. Biological Conservation 195, 156-168; Kompaniyets, L., Evans, M., 2017. Modeling the relationship between wolf control and cattle depredation. PLos ONE 12, e0187264; Poudyal, N., Baral, N., T., A.S., 2016. Wolf lethal control and depredations: counter-evidence from respecified models. PLos ONE 11, e0148743; Sacks, B.N., Blejwas, K.M., Jaeger, M.M., 1999. Relative vulnerability of coyotes to removal methods on a northern California ranch. Journal of Wildlife Management 63, 939-949.

[204] Z. Voyles, A. Treves, and D. Macfarland, Spatiotemporal Effects of Nuisance Black Bear Management Actions in Wisconsin. Ursus 26 (2015) 11-20.

9. Khorozyan, and M. Waltert, How long do anti-predator interventions remain effective? Patterns, thresholds and uncertainty. Royal Society Open Science 6 (2019).

Despite the wide variety of scientifically proven non-lethal methods available to WS-Montana, the EA does not fully consider the efficacy of these methods. In addition, WS-Montana must include a complete economic analysis of all alternatives considered, which it does not do for non-lethal methods. For example, in 2020 WS-Montana received $150,000 in federal funding to conduct non-lethal livestock protection activities, which was intended to decrease livestock depredations by large predators.[205] This funding can cover costs associated with field employee time. However, the EA did not consider this funding when evaluating non-lethal methods. It should have explained, for example, how the funding was spent, the costs associated with various nonlethal measures, and to what extent those measures were effective.

The EA relies heavily on Wagner and Conover (1999)[206] to support its claim that killing coyotes can effectively protect sheep.[207] The EA says the study "found that *total* lamb losses declined 25% on grazing allotments in which coyotes were removed during winter aerial PDM 5-6 months ahead of sheep grazing, whereas *total* lamb losses only declined 6% on allotments without aerial PDM." (Emphasis added.) However, in pastures where aerial gunning was used, the average number of confirmed lambs *killed by coyotes* only decreased by a statistically insignificant amount (from 2.9 to 2.7), and in other pastures, confirmed lambs *killed by coyotes* increased (from 5.4 to 7.3) as a result of killing more coyotes. *See* Wagner and Conover (1999). This suggests that killing coyotes to protect sheep may not only be ineffective, it could be counter-productive.

Further, Treves et al. (2016) call into question the scientific rigor of Wagner and Conover (1999) and criticize it as containing numerous design flaws. *See* Treves et al. (2016). Yet, the EA does not even mention Treves et al. (2016), much less analyze or discuss the concerns it raises. WS-Montana appears to ignore that this exact tension arose in a recent legal challenge to a predator control EA prepared by WS-Idaho. *See WWP*, 320 F. Supp. 3d at 1143-44. In that case, the Court found that neither the Draft EA nor the Final EA prepared by WS-Idaho gave Treves et al. (2016) the "the full attention [it] deserve[d]." *Id.* The Court observed that "serious disagreements" between the WS-Idaho EA and Treves et al. (2016) "demonstrate[d] the controversy necessary under NEPA to require an EIS." *Id.* As a result, the Court ordered that an EIS be prepared. *Id.*

Studies show that coyotes compensate powerfully for lethal controls through increased reproductive rates and that destabilizing packs by killing territorial adults exacerbates predation problems. But rather than addressing the science demonstrating these effects, Wildlife Services writes them off, citing a thirty-year-old GAO report from 1990 that claimed, without citation,

[205] FY20 Federal Allocation to USDA APHIS Wildlife Services for Nonlethal Livestock Protection. "Annual Accomplishments Report." January 2020.
[206] Wagner, K. and Conover, M., 1999. Effective of Preventive Coyote Hunting on Sheep Losses to Coyote Predation. USDA National Wildlife Research Center – Staff Publications. J. Wildl. Manage. 63(2): 1999.
[207] EA at 61-62, 94, 104, 193.

that based on then-available "research," "localized lethal controls have served their purpose in reducing predator damage."[208]

Given the similarity of social systems of wolves and coyotes (cooperatively breeding, pack-living, territorial canids), it seems reasonable to predict that killing one or a few coyotes in an area will leave vacancies and social instability that can invite a greater number of newcomers than the number of residents removed. This occurred with mountain lions as one resident male killed by trophy hunters was replaced by multiple younger newcomer males. As they jockeyed for social position for years, they apparently killed more livestock than the resident had killed for years previously.[209] Science is still in the early stages of understanding the instabilities created by lethal control, partly because the field has been excessively focused on indirect monitoring and a perspective that only populations matter whereas lethal control is all about individuals perceived to be problems and the local effects of killing them or deterring them with non-lethal methods.

The EA claims that its coyote-killing program only causes short-term population impacts, because of the resiliency of populations.[210] Specifically, the EA points to studies that show that when less than 60 percent of a coyote population was removed, all populations recover and when 60 percent to 90 percent of the population was removed, recovery occurred within 5 years.[211] But the EA also acknowledges that controls at the upper range affect the population structure of the coyote population. Indiscriminate lethal controls, like those carried out by WS-Montana—especially when it conducts so-called "preventive" control—keep the local coyote population in a state of constant destabilized social chaos and colonization. The program cannot claim to be effective in the long run if it involves killing thousands of coyotes annually and simply results in younger coyotes quickly colonizing the affected area. A successful program would, theoretically, mean that each year, fewer coyotes would need to be killed by WS-Montana. Instead, by its own reporting, WS-Montana has consistently killed more than 6,000 coyotes per year for each of the last several years—including a recent high of more than 8,000 in 2018.[212] This shows little functional effectiveness of this killing program, and raises inadequately addressed questions about the effects of the long-term social destabilization it has visited upon Montana's coyote population.

There does not appear to be any meaningful discussion of this issue in the EA. The EA's attempt to dismiss this issue because WS-Montana's program will not wholly eradicate apex

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[208] EA at 175.
[209] Cooley, H.S., Wielgus, R.B., Koehler, G.M., Maletzke, B.T., 2009. Source populations in carnivore management: cougar demography and emigration in a lightly hunted population. Animal Conservation 12, 321-328; Cooley, H.S., Wielgus, R.B., Robinson, H.S., Koehler, G.M., Maletzke, B.T., 2009. Does hunting regulate cougar populations? A test of the compensatory mortality hypothesis. Ecology 90, 2913-2921.
[210] EA at 188.
[211] EA at 190.
[212] U.S. Dep't of Agriculture, Animal & Plant Health Inspection Service, Wildlife Services, Program Data Report G – Filtered by State: Montana, *available at*: https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/pdr/?file=PDR-D_Report&p=2019:INDEX: (last visited Feb. 17).

predators from the landscape is insufficient. This must be corrected in a full EIS. This issue cuts to the heart of whether the lethal PDM program is achieving its stated goal of protecting domestic animals, or should be replaced by non-lethal methods except in the rarest extreme. The agency should fully evaluate all studies[213] relevant to this issue.

C. The EA Fails to Adequately Assess the Humaneness of Certain PDM Methods

The EA fails to take a hard look at the humaneness of certain methods used by WS-Montana technicians to conduct PDM activities. The primary lethal methods used by WS-Montana employees are ground shooting, aerial shooting, foot and neck snares, leghold traps, cage traps, decoy traps, and culvert traps, as well as chemical toxicants, including M-44s, DRC-1339, and gas cartridges containing sodium nitrate.[214] The EA largely fails to directly evaluate the humaneness of these methods and lacks adequate consideration of much of the relevant scientific literature, which is insufficient to satisfy the requirements of NEPA. This information

[213] Bauer, S., Lisovski, S., Eikelenboom-Kil , R.J.F.M., Shariati, M., Nolet, B.A., 2018. Shooting may aggravate rather than alleviate conflicts between migratory geese and agriculture. Journal of Applied Ecology 55, 2653-2662; Beggs, R., Tulloch, A.I.T., Pierson, J., Blanchard, W., Crane, M., Lindemayer, D.L., 2019. Patch-scale culls of an overabundant bird defeated by immediate recolonization. Ecological Applications 29, e01846; Bradley, E.H., Robinson, H.S., Bangs, E.E., Kunkel, K., Jimenez, M.D., Gude, J.A., Grimm, T., 2015. Effects of Wolf Removal on Livestock Depredation Recurrence and Wolf Recovery in Montana, Idaho, and Wyoming. Journal of Wildlife Management 79, 1337–1346; Bryan, H.M. et al., Heavily Hunted Wolves Have Higher Stress and Reproductive Steroids than Wolves with Lower Hunting Pressure, 29 Funct. Ecol. 347–56 (2015); Cooley, H.S., Wielgus, R.B., Koehler, G.M., Maletzke, B.T., 2009. Source populations in carnivore management: cougar demography and emigration in a lightly hunted population. Animal Conservation 12, 321-328; Fernández-Gil, A., Naves, J., Ordiz, A.s., Quevedo, M., Revilla, E., Delibes, M., 2015. Conflict Misleads Large Carnivore Management and Conservation: Brown Bears and Wolves in Spain. PLos ONE DOI:10.1371/journal.pone.0151541, 1-13; Imbert, C., Caniglia, R., Fabbri, E., Milanesi, P., Randi, E., Serafini, M., Torretta, E., Meriggi, A., 2016. Why do wolves eat livestock? Factors influencing wolf diet in northern Italy. Biological Conservation 195, 156-168; Kompaniyets, L., Evans, M., 2017. Modeling the relationship between wolf control and cattle depredation. PLos ONE 12, e0187264; Lambert, C. et al., Cougar Population Dynamics and Viability in the Pacific Northwest, 70 J. Wildl. Manage. 246–54 (2006); Peebles, K., Wielgus, R.B., Maletzke, B.T., Swanson, M.E., 2013. Effects of Remedial Sport Hunting on Cougar Complaints and Livestock Depredations. PLos ONE 8, e79713; Poudyal, N., Baral, N., T., A.S., 2016. Wolf lethal control and depredations: counter-evidence from respecified models. PLos ONE 11, e0148743; Sacks, B.N., Blejwas, K.M., Jaeger, M.M., 1999. Relative vulnerability of coyotes to removal methods on a northern California ranch. Journal of Wildlife Management 63, 939-949; Santiago-Avila, F.J., Cornman, A.M., Treves, A., 2018. Killing wolves to prevent predation on livestock may protect one farm but harm neighbors. PLos ONE 10.1371/journal.pone.0189729; Wielgus, R.B., Peebles, K., 2014. Effects of wolf mortality on livestock depredations. PLos ONE 9, e113505; Woodroffe, R., Frank, L.G., 2005. Lethal control of African lions (Panthera leo): local and regional population impacts. Animal Conservation 8, 91-98.

[214] EA at 309; *see also* U.S. Dep't of Agriculture, Animal & Plant Health Inspection Service, Wildlife Services, Program Data Report G – Filtered by State: Montana (2019) *available at* https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/pdr/?file=PDR-A_Report&p=2019:INDEX: (last visited February 19, 2021).

is essential for the public to be able to fully understand the impacts of the proposed action to both target and non-target animals. In particular, we are most concerned about the lack of a complete analysis on the inhumaneness of foot and neck snares, steel-jawed leghold traps, M-44s, chemicals used in denning operations, aerial gunning, and the use of Weevil-Cide® to target black-tailed prairie dogs. We are also concerned about the use of body-crushing traps, though these types of traps do not appear to be used with regularity by WS-Montana technicians. All these methods are particularly cruel and pose a danger to people, companion animals, and non-target species, including threatened and endangered species. Below is a discussion of our concerns about these methods.

i. Neck and Foot Snares

Neck and foot snares are used by WS-Montana, yet these methods are particularly inhumane. Regarding neck snares, in 2019, according to its own data, WS-Montana killed 656 target and non-target animals in neck snares, including coyotes, gray wolves, black bears, badgers, red foxes, mountain lions, white-tailed deer, porcupines, and striped skunks.[215] As all of these mortalities were categorized as "euthanized/killed," it is unclear if the neck snares were used in kill sets or to restrain the target animals prior to being killed, nor is it known if the neck snares used by WS-Montana are manual or mechanical neck snares. The EA must provide clarity on this point. Regardless of the intention of the snare set (i.e., killing or restraining) or the type of snare in use, the cruelty associated with neck snares is extreme. In kill sets, the snare continues to tighten as the animal struggles until strangulation occurs. In sets intended to restrain the snared animal, the captured animal is held by his or her neck until the technician arrives to kill the animal, unless the animal has died due to the extent of his or her struggles.

WS-Montana uses neck snares primarily to capture coyotes,[216] which is a brutally inhumane method for canids. In their analysis of manual and powered neck snares for use in trapping canid species in Canada, Proulx et al. (2015) documented significant welfare concerns associated with the use of neck snares.[217] They found that manual and powered killing neck snares did not consistently and quickly render canids unconscious, were non-selective, and did not routinely capture animals by the neck. Proulx et al. also found the following:

1. Laboratory researchers failed to achieve exact and ideal positioning of neck snares behind the jaw of the target animal suggesting that, in the field, such exact placement would be far more difficult; for manual killing neck snares, one study of 65 snared coyotes found

[215] U.S. Dep't of Agriculture, Animal & Plant Health Inspection Service, Wildlife Services, Program Data Report G – Filtered by State: Montana, *available at*: https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/pdr/?file=PDR-D_Report&p=2019:INDEX: (last visited Feb. 17).
[216] *Id.*
[217] Proulx, G., Rodtka, D., Barrett, M.W., Cattet, M., Dekkers, D., Moffatt, E., and Powell, R. 2015. Humaneness and Selectivity of Killing Neck Snares Used to Capture Canids in Canada: A Review. Canadian Wildlife Biology and Management, 4(1): 55-65.

that 59 percent were captured by the neck, 20 percent by the flank, and 10 percent by the foot, and nearly half of the animals were still alive the morning after being snared;[218]

2. In another study of various manual killing neck snares, between 5 and 32 percent of the snared animals were still alive when found 12 or more hours after capture;[219]

3. The amount of disturbance at a capture site is not indicative of time to death of the captured animal as "captured animals may remain conscious but physically inactive due to distress, shock, injury or pain;"

4. In a thorough evaluation of power killing neck snares, three models rendered 4 of 5 anaesthetized red foxes irreversibly unconscious within 10 minutes but when used on non-anaesthetized animals in a semi-natural environment it was difficult to capture foxes behind the jaw with the snares and to cause irreversible loss of consciousness within 300 seconds.[220]

Proulx et al. noted it is not the placement or operation of the neck snares that can result in suffering, but rather that the anatomy and physiology of canids can exacerbate the suffering associated with the use of neck snares. As reported by Proulx et al., laboratory tests with dogs show that canids have the ability to continue to circulate blood to the brain after bilateral ligation of the common carotid arteries because of the ability of other arteries (e.g., vertebral arteries) situated more deeply within the neck to compensate (Moss 1974; Clendenin and Conrad 1979a, b). Collateral circulation also occurs within the venous blood flow from the brain such that drainage can continue if the internal jugular veins are occluded (Andeweg 1996; Daoust and Nicholson 2004). Because of collateral blood circulation, it is difficult, if not impossible, to stop blood flow to and from the brain by tightening a snare on the neck.

More recently, in his book *Intolerable Cruelty: The Truth Behind Killing Neck Snares and Strychnine*,[221] Dr. Proulx reports that when a canid is snared, the thick musculature around the animal's neck allows the carotid artery to continue to supply blood to the brain, but the jugular vein is constricted, cutting off blood back down to the heart. A telltale sign is the grotesquely swollen heads of the snares' victims (which trappers refer to as "jellyheads"). Canids caught in neck snares take hours, if not days, to die.

Furthermore, the non-selectivity of neck snares resulting in non-target mammal and bird species was clearly reflected in data presented in Table 1 in Proulx et al. (2015), re-created in relevant part below:

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[218] Guthery, F. S., and S. L. Beasom. 1978. Effectiveness and selectivity of neck snares in predator control. Journal of Wildlife Management 42: 457-459.
[219] Phillips, R. L. 1996. Evaluation of 3 types of snares for capturing coyotes. Wildlife Society Bulletin 24: 107-110.
[220] Proulx, G., and M. W. Barrett. 1994. Ethical considerations in the selection of traps to harvest martens and fishers. Pages 192-196 in S. W. Buskirk, A. S. Harestad, M. G. Raphael, and R. A. Powell, editors, Martens, sables, and fishers: biology and conservation. Cornell University Press, Ithaca, New York, USA.
[221] Proulx, G. 2018. *Intolerable Cruelty: The Truth Behind Killing Neck Snares and Strychnine*. Alpha Wildlife Research and Management Limited.

Species Common Name	Number of Cases		
	Injured by Snare	Killed by Snare	Total Snared
American black bear	1	0	1
Bobcat	0	1	1
Canada lynx	0	8	8
Fisher	0	2	2
Mountain lion	0	4	4
Snowshoe hare	0	1	1
White-tailed deer	0	4	4
Wolverine	0	1	1
Bald eagle	4	75	79
Barred owl	0	2	2
Common raven	0	2	2
Golden eagle	2	25	27
Goshawk	0	3	3
Great horned owl	2	2	4
Red-tailed hawk	1	10	11
Rough-legged hawk	0	7	7
Total specimens	17	147	164

In 2019, neck snares set by WS-Montana caused the unintentional deaths of four species, including mountain lions, white-tailed deer, porcupines, and striped skunks.[222] The EA contains no meaningful analysis of this non-target take or what WS-Montana is doing to decrease the number of animals unintentionally caught in neck snares. The EA must take a hard look at the numerous concerns surrounding the inhumaneness of neck snares generally, the inhumaneness of the devices when used to capture canids specifically, and the high potential for non-target animals to be captured and killed by neck snares.

Regarding foot snares, the EA inadequately examines the inhumaneness of this method. WS-Montana uses this method to trap large carnivores, killing 12 animals in foot snares, including a grizzly bear, black bears, and mountain lions, in 2019.[223] In their assessment of the literature evaluating the welfare implications of snares, Rochlitz et al. (2010) concluded that "some pest control methods have such extreme effects on an animal's welfare that, regardless of the potential benefits, their use is never justified" and determined that "snaring is such a

[222] *See* U.S. Dep't of Agriculture, Animal & Plant Health Inspection Service, Wildlife Services, Program Data Report G – Filtered by State: Montana (2019) *available at* https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/pdr/?file=PDR-A_Report&p=2019:INDEX: (last visited February 19, 2021).
[223] *Id.*

method."[224] While Rochlitz et al.[225] did not distinguish between neck and foot snares, based on their review of the literature they determined that:

1. Snares do not operate humanely, either as restraining or as killing traps;

2. The mortality and morbidity of animals caught in snares is higher than with most other restraining traps, such as box traps;

3. Snares are inherently indiscriminate and commonly catch non-target, including protected, species;

4. Snares can cause severe injuries, pain, suffering, and death in trapped animals (target and non-target species);

5. Stopping of snares may not prevent injury or death in trapped animals (target and non-target species);

6. The free-running mechanism of a snare is easily disrupted and likely to fail, resulting in injury, pain, suffering, and death in trapped animals (target and non-target species);

7. Animals caught in snares are exposed to the elements, to thirst, hunger, further injury and attack by predators;

8. It is difficult to assess the severity of injury in an animal when the animal is caught in a snare;

9. Animals that escape, or that are released, may subsequently die from their injuries, or from exertional myopathy, over a period of days or weeks;

10. The monitoring of correct snare use is difficult, if not impossible; and

11. Neck snares are open to abuse because they are cheap and require minimum effort to set and maintain.

By neglecting to provide meaningful analysis on the majority of these concerns, the EA fails to satisfy NEPA's hard look requirement on the humaneness of foot snares. The EA must address the issues identified by Rochlitz et al. (2010), and should specifically discuss the potential for injuries as well as unintentional take of non-target species. Regarding non-target take, the EA states that breakaway devices "can improve the selectivity of cable restraints to reduce non-target species capture, however only when the non-target species is capable of

[224] Rochlitz, I., Pearce, G,P., and Broom, D.M. 2010. The Impact of Snares on Animal Welfare. Report for OneKind. University of Cambridge, Centre for Animal Welfare and Anthrozoology, Department of Veterinary Medicine.

[225] The analysis by Rochlitz et al. was focused on the use of snares in the United Kingdom, though most of the overall findings referenced below are applicable to snare use in the United States, others are not due to difference in state laws and regulations governing snare use and trap check times.

exerting a greater force to break the loop than the target species."[226] Because WS-Montana uses foot snares to target black bears, grizzly bears, and mountain lions, which are among the largest and strongest animals in the state, the use of breakaway devices is unlikely to substantially reduce non-target take because non-target species will generally not be capable of exerting greater force than black bears, grizzly bears, and mountain lions in order to escape the snare. The EA fails to address this issue. The EA also fails to state whether WS-Montana technicians actually use breakaway devices. Additionally, the EA does not address what measures are being taken, if any, to reduce the likelihood of incidental take of grizzly bears in Montana from foot snares specifically,[227] which may or may not be able to escape a breakaway snare set (if used by WS-Montana technicians) for a black bear or mountain lion, depending on age, condition, and other factors. This issue must be addressed.

Lastly, we have grave concerns about the trap check time that WS-Montana technicians use. The EA contains two statements regarding the frequency of trap checks: (1) "WS-Montana complies the MOU with MFWP regarding the frequency of trap checks"[228] and (2) "Methods used by WS-Montana may include lethal and non-lethal methods with trap check times recommended by MFWP or state regulations for predatory animals."[229] Regarding the first statement, we assume the MOU with MFWP refers to the document Regarding Cooperative Wildlife Damage Management Program for Grizzly Bears, Gray Wolves, Black Bears, and Mountain Lions in the State of Montana. The only discussion of trap check frequency in that document is contained in the section regarding gray wolves, which states: "traps or snares set for wolves will be checked every 24 hours when attempting to radio collar a wolf and for lethal wolf management March through November. Traps set for wolves must be checked at least every 48 hours from November through March."[230] The EA is entirely unclear as to whether this requirement applies only to PDM activities involving gray wolves, or if it applies to traps and snares set for all species covered under WS-Montana's PDM program. Furthermore, regarding the second statement regarding MFWP recommendations or state regulations regarding trap check frequency, unlike the vast majority of other states, Montana state law does not establish a trap check requirement. The only exceptions to this are trapping for wolves, and trapping that occurs within lynx protection zones, both of which require trappers to check their traps at least once every 48 hours.[231] In all other zones, MFWP recommends checking traps at least once every 48 hours.[232] It is imperative that WS-Montana make clear in the EA what trap check frequency it will employ by species, zone, etc. WS-Montana should commit to a 24-hour trap

[226] EA at 433.
[227] The Memorandum of Understanding entered into between Wildlife Services and Montana Fish, Wildlife & Parks Regarding the Cooperative Wildlife Damage Management Program for Grizzly Bears, Gray Wolves, Black Bears, and Mountain Lions in the State of Montana addresses the actions Wildlife Services will take to reduce unintentional take of grizzly bears using neck snares, but not foot snares, *see* Art. IV(A).
[228] EA at 308.
[229] *Id.* at 37, 432.
[230] MOU at Art. V(D).
[231] MFWP, Montana Trapping and Hunting Regulations 8 (2020).
[232] *Id*. at 15.

check frequency[233] to reduce the suffering of animals that are caught, as a 48-hour trap check frequency (if used) is unacceptable from a humaneness standpoint.

ii. Steel-Jawed Leghold Traps

The EA also fails to fully consider the humaneness of steel-jawed leghold traps, which WS-Montana used to trap 118 target and non-target animals, including coyotes, red foxes, mountain lions, gray wolves, black bears, a grizzly bear, badgers, and a white-tailed deer, in 2019.[234] The EA does not adequately evaluate the inhumaneness of this method in terms of pain and suffering from injuries as a result of being caught in the trap, or suffering and potential mortality due to predation or exposure, including for animals who are miscaught. Many trapped animals will violently fight the trap after being caught, often biting at the device, which results in broken teeth and gum damage in addition to the damage to the captured limb, including lacerations, strained and torn tendons and ligaments, extreme swelling, and broken bones.[235] In the summer heat, many animals cannot survive for long without water. In harsh winter conditions, animals can lose a limb and/or freeze to death after being caught in a trap. At other times of the year, prolonged constriction of a limb in a trap can cut off or severely restrict blood supply to the affected appendage, potentially causing the appendage to be lost due to gangrene. For these reasons, steel-jawed leghold traps have been condemned as inhumane by the World Veterinary Association, the National Animal Control Association of the United States, and the American Animal Hospital Association.

Iossa et al. (2007) provided an extensive review of the injury rates associated with multiple trap types, including padded, off-set, enclosed, and unpadded steel-jawed leghold traps.[236] Leghold traps resulted in minor injuries more than 50 percent of the time in the majority of studies reviewed, ranging from 8 percent minor injuries for Canada lynx captured in a padded leghold trap to 100 percent for a bobcat captured in a leg hold snare. For major injuries, the percentage of injuries ranged from 4 percent for red foxes captured in a padded leghold trap to 74 percent for raccoons captured in an unpadded leghold trap.

The types of injuries assessed in evaluating the "humaneness" of traps include: (1) mild trauma, such as claw loss, edematous swelling or hemorrhage, minor cutaneous laceration, minor subcutaneous soft tissue maceration or erosion, major cutaneous laceration, except on footpads or tongue, and minor periosteal abrasion; (2) moderate trauma, such as severance of minor tendon or ligament, amputation of 1 digit, permanent tooth fracture exposing pulp cavity, major subcutaneous soft tissue laceration or erosion, major laceration on footpads or tongues, severe

[233] *See, e.g.*, International Organization for Standardization 10990-4, Animal (mammal) traps – Part 4: Methods for testing killing-trap systems used on land or underwater § 7.5 (instructing that traps be checked "once within each 24 h period; at the same time of the day of at all possible").
[234] *See* U.S. Dep't of Agriculture, Animal & Plant Health Inspection Service, Wildlife Services, Program Data Report G – Filtered by State: Montana, *available at*: https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/pdr/?file=PDR-D_Report&p=2019:INDEX: (last visited Feb. 17).
[235] *See. e.g.*, Iossa, G., Soulsbury, C.D., and Harris, S. 2007. Mammal trapping: a review of animal welfare standards of killing and restraining traps. Animal Welfare 2007, 16: 335-352.
[236] *Id.*, *see* Tables 4 and 5.

joint hemorrhage, joint luxation at or below the carpus or tarsus, major periosteal abrasion, simple rib fracture, eye lacerations, and minor skeletal degeneration; (3) moderately severe trauma, including simple fracture at or below the carpus or tarsus, compression fracture, comminuted rib fracture, amputation of two digits, major skeletal degeneration, and limb ischemia; and (4) severe trauma, including amputation of three or more digits, any fracture or joint luxation on limb above the carpus or tarsus, any amputation above the digits, spinal cord injury, severe internal organ damage (internal bleeding), compound or comminuted fracture at or below the carpus or tarsus; severance of a major tendon or ligament, compound or rib fractures, ocular injury resulting in blindness of an eye, myocardial degeneration, and death.[237]

Such injuries, particularly those included in the moderate trauma, moderately severe trauma, and the severe trauma categories, should not be considered acceptable or humane. Any trap set that results in such trauma should not be utilized. In addition to identifiable injuries caused by the trap, when evaluating the impact of PDM activities on target and non-target species, it is critical to consider the potential for indirect mortality as a result of capture in a leghold trap or any restraining device. The EA states that traps "can be used for live-capture and release[.]"[238] In 2019, WS-Montana captured and freed/released/relocated seven gray wolves, one grizzly bear, three black bears, and one badger using leghold traps.[239] However, intentional live capture and release as well as unintentional capture and release of non-target species, can be harmful to the animal, which the EA does not address. Even if the animal is released with no apparent injuries or injuries deemed to be minor, the animal may still suffer adverse effects from restraint (including from restriction of blood flow or extended exposure to the elements) hours, days, or even weeks after capture.

This was demonstrated by Andreasen et al. (2018) in a study that examined cause-specific mortality in mountain lions unintentionally caught in leghold traps set for bobcats from 2009 through 2015 in their study site in Nevada.[240] The authors found that if female mountain lions were captured in leghold traps, it directly reduced their survival by causing injuries that made the animals more susceptible to other forms of mortality. The EA should evaluate such indirect mortality of non-target species. Of the 48 lions originally included in the study, 33 died during its seven-year duration. Of the 33 lions, seven died as a consequence of non-target trapping (five were caught in leghold traps and two in snares). Of the seven that died due to non-target trapping, five (four adult females and one juvenile) had been captured in leghold traps one or more times, and the other two had been captured in snares. Most of the injuries recorded ranged from no visible damage or slight edema, to more severe lacerations or broken toes. Of the four adult females, two died as a result of trap related injuries several weeks after capture, another died from starvation and was missing two digits on her front right paw, and the fourth

[237] *Id.*
[238] EA at 432.
[239] *See* U.S. Dep't of Agriculture, Animal & Plant Health Inspection Service, Wildlife Services, Program Data Report G – Filtered by State: Montana, *available at*: https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/pdr/?file=PDR-D_Report&p=2019:INDEX: (last visited Feb. 17).
[240] Andreasen, A.M., Stewart, K.M., Sedinger, J.S., Lackey, C.W., and Beckman, J.P. 2018 Survival of Cougars Caught in Non-Target Foothold Traps and Snares. The Journal of Wildlife Management. DOI: 10.1002/jwmg.21445.

died three weeks after she escaped from a trap. The fourth mortality was discovered as a result of a lion paw being found in a trap, suggesting the animal may have self-amputated the paw to escape from the trap. WS-Montana has failed to evaluate such indirect mortality of target and non-target species in the EA, which violates NEPA.

WS-Montana claims that it will use traps identified as "humane" through the Association of Fish and Wildlife Agencies' Best Management Practices ("BMP") testing process for all restraining, killing, and leghold traps used in its predator damage management operations.[241] The undersigned organizations question the veracity of AFWA's testing program, particularly because it relies on trappers for trap testing purposes and reporting on injury types and rates, and non-target captures, as well as because the actual injury/mortality data is not disclosed in the trap-specific BMP reports. Since the species-specific BMP trap reports do not contain the actual injury/mortality scoring information for each trap, WS-Montana should obtain and disclose that data so that the public can compare the "humaneness" of each species-specific BMP trap type. Such disclosure is necessary so that WS-Montana's claims of using BMP traps can be verified and to permit the public to provide substantive and informed comments as to whether such traps should be used given welfare concerns. Similarly, since BMP reports do not disclose the number, species, and type of injury sustained by non-target animals trapped during BMP testing or cite to the relevant species-specific trapping literature, WS-Montana must disclose that information so the public is aware of non-target take data and the scientific, peer-reviewed literature, if any, that substantiates the findings in BMP trap reports.

Currently there are 22 species-specific BMP reports.[242] Each report contains information about several recommended BMP traps that have been evaluated as "humane" including information about any trap accessories (e.g., swivels, springs, anchors) and trap set requirements used to achieve the "humane" rating. The EA must more thoroughly disclose which BMP traps, trap accessories, and trap set requirements it uses for each species that it traps. Regarding trap designs and trap accessories, that disclosure should include information on the type of jaw as well as the use of additional springs ("beefer kits"), swivels, chain length, and the type of anchors actually used by WS-Montana technicians. The EA's simple identification of different trap design and trap accessories is not useful to the public.[243] For padded traps, the EA should disclose how frequently rubber strips commonly damaged by trapped animals are replaced with new ones. Information on the maintenance routine for traps and snares used by WS-Montana technicians should be provided as trapping devices that are not working properly due to age, rust, non-working or missing parts, and lack of care may be even more cruel than fully functioning devices.

The EA does not adequately discuss the inhumanness associated with enclosed leghold traps (dog proof traps), which are generally used for trapping raccoons and opossums and are included as BMP traps for both species. Notably, such traps are particularly inhumane for raccoons, who experience excruciating pain when one of their front feet is caught due to the

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[241] *See* EA at 272-75.
[242] All BMP species-specific trap reports are available at: https://www.fishwildlife.org/afwa-inspires/furbearer-management. The 22 reports include separate reports for eastern and western coyotes and for gray, red, and Arctic fox.
[243] *See* EA at 299.

hyper-sensitivity of those limbs. While such traps, given their design, are intended to reduce bycatch of non-target species, feral cats and any species with a small paw able to reach into the trap and pull up could be captured in such traps. Even a human, including a young child, could be caught in such traps. Despite reducing the potential for non-target captures, enclosed leghold traps can result in injuries, amputations, and mortality, which the EA must address. The EA must also explain why Wildlife Services would choose to use enclosed foothold traps to capture species such as raccoons rather than more humane alternatives such as box and cage traps.

Hubert et al. (1996)[244] evaluated the injury rates associated with the EGG trap (one type of enclosed leghold trap) for capturing raccoons. They used a scoring system that assigned points to different types of documented injuries with the higher scores reserved for the more severe injuries.[245] A score >50 is considered serious damage while scores greater than 125 are reflective of severe damage. Of the 62 raccoons studied by Hubert et al., 23 experienced injury scores associated with the EGG trap of 50 or higher with 9 experiencing injury scores of 125 or greater. Of 62 raccoons captured in the EGG trap, there were 125 instances (affecting 82.3 percent of captured raccoons) of edematous swelling and/or hemorrhage, 47 (37.1 percent) cutaneous lacerations greater than or equal to 2 centimeters, and 19 (22.6 percent) instances of damage to the periosteum.

Regarding trap check frequency, we have the same concerns about humaneness and the inadequacy of the EA as we expressed above in the subsection on snares. We incorporate those concerns here regarding steel-jawed leghold traps. Based on these concerns, when using leghold traps, WS-Montana technicians should employ trap monitors. Wildlife Services' National Wildlife Research Center ("NWRC") has found that trap monitors save driving or hiking time, decrease fuel usage and reduce driving time over rough terrain, save Wildlife Services and its customers money, and prioritize checks of particular traps.[246] Considering the benefits of such devices, particularly in terms of reducing suffering by animals left in traps for long periods of time, these devices can and should be used in circumstances where they are reliable and Wildlife Services, in collaboration with NWRC and trap monitor device manufacturers, should be pioneering efforts to improve the design, functionality, and efficiency of these devices by testing them under field conditions.

From a humane perspective, the use of monitoring devices is very important because it can greatly decrease the amount of time a captured animal is restrained, minimizing pain, stress, and injury and allowing non-target animals to be released in a timely manner to increase the likelihood of post-release survival. This was demonstrated by Will et al. (2010) in their study of the use of a telemetry-based trap monitoring system on San Nicolas Island off the coast of

[244] Hubert, G.F. Jr., Hungerford, L.L., Proulx, G., Bluett, R.D., and Bowman, L. 1996. Wildlife Society Bulletin, 24(4): 699-708.
[245] *Id.* Table 1.
[246] U.S. Department of Agriculture, Animal and Plant Health Inspection Service, National Wildlife Research Center. 2007. Evaluation of Remote Trap Monitors, *available at* https://www.aphis.usda.gov/wildlife_damage/nwrc/publications/Tech_Notes/TN_%20Remote%20Trap%20Monitors.pdf.

California during a project to eradicate the island's feral cat population.[247] Given the size of the island and the presence of fewer than 600 island foxes, the trap monitoring system was essential to "remotely check trap status, decrease staff time spent checking traps, and decrease response time to captured animals to limit fox injuries and mortalities due to exposure."[248] The system allowed a field team of six people to conduct daily checks of nearly 250 traps with a response time of less than 60 minutes during daylight hours. Specifically, Will et al. reported:

> The average daytime response time for capture events was 43 minutes ± 31 minutes (n = 162), while the average overall response time was 5 hours ± 4 hours (n = 853). Foxes that were caught after working hours spent an average of 6 hours ± 3 hours (n = 691) in traps. While 4 foxes were in a trap for an unknown amount of time because of monitor failures, no animal was in a trap for more than 14 hours with a working monitor. There were 1,012 total non-target capture events with 74 injuries, for an injury rate of 7%. There were 9 monitor failures with 4 leading to injury or casualty.[249]

In another experiment where Global System for Mobile communication trap alarms were used when capturing otter, Néill et al. (2007) found that functioning alarms permitted trapped otters to be removed within 22 minutes of capture and reduced the injuries suffered by the animals from an average cumulative score of 77.7 to only 5.5 on the trap trauma scale developed by the International Organization for Standardization, ISO 10990-5.[250] This information must be evaluated in the EA.

Lastly, the EA erroneously concludes that leghold traps and other methods of take employed by WS-Montana are "highly selective for target animals."[251] Despite this conclusory statement, 2019 data from Wildlife Services shows that the use of leghold traps caused the unintentional take of a grizzly bear, black bears, badgers, and a white-tailed deer.[252] WS-Montana should explain why it is unwilling to eliminate these indiscriminate devices.

iii. M-44s

The EA fails to adequately address the inhumaneness and indiscriminate nature of M-44s. In 2019, WS-Montana reported killing 217 animals (197 coyotes and 20 red foxes) with M-

[247] Will, D., Hanson, C.C., Campbell, K.J., Garcelon, D.K., and Keitt, B.S. 2010. A Trap Monitoring System to Enhance Efficiency of Feral Cat Eradication and Minimize Adverse Effects on Non-Target Endemic Species on San Nicolas Island. Proceedings 24th Vertebrate Pest Conference (R. M. Timm and K. A. Fagerstone, Eds.), pp. 79-85.
[248] *Id.*
[249] *Id.*
[250] Néill, L.O., de Jongh, A., Ozolin, J., de Jong, T., and Rochford, J. 2007. Minimizing Leg-Hold Trapping Trauma for Otters With Mobile Phone Technology. Journal of Wildlife Management, 71(8):2776–2780.
[251] *See, e.g., id.* at 308.
[252] *See* U.S. Dep't of Agriculture, Animal & Plant Health Inspection Service, Wildlife Services, 2019 Program Data Report G – Filtered by State: Montana, *available at*: https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/pdr/?file=PDR-D_Report&p=2019:INDEX: (last visited Feb. 17).

44s.[253] When triggered, an M-44 shoots a sodium cyanide pellet into the animal's mouth which, when mixed with moisture from saliva, creates a hydrogen cyanide gas, a deadly vapor that is rapidly absorbed by the lungs, resulting in a relatively rapid death.[254] The EA also suggests that M-44s can result in a quick death for exposed animals[255] but, again, WS-Montana fails to disclose or evaluate the potential impact to animals of a sublethal dose either due to M-44 malfunction or if the animal were close to, but downwind from, an M-44 triggered by another animal. According to the USDA, chronic or sublethal exposure to hydrogen cyanide gas include:

> Symptoms of chronic toxicity in mammals may include uncontrolled body movement and increased urination (Towill et al. 1978). A common sublethal symptom in coyotes is vomiting (Blom and Connolly 2003). A WS biologist observed partial paralysis in coyotes exposed to a sublethal dose of NaCN, with speculation that a lack of oxygen to the body's tissues caused damage to the lower spinal cord or some part of the brain (Blom and Connolly 2003).[256]

While WS-Montana may believe that its use of M-44s results in rapid deaths of target species, the EA must evaluate the potential implications to the well-being of wildlife species as a result of exposure to a sublethal dose of the gas so that the public and the agency are aware of such impacts.

M-44s are also known to kill non-target species.[257] According to Wildlife Services' data, M-44s killed 217 non-target animals in 2018, including 130 gray fox, 63 raccoons, seven Virginia opossums, four red foxes, four striped skunks, four feral swine, three kit foxes, one swift fox, and one black bear.[258] The potential for non-target mortality could be much higher. For example, Shivik et al. (2014), in their study examining visitation rates to sites where M-44s had been installed, documented coyotes visiting the sites 34 times and investigating the devices 11 times while other species, including black bear, bobcat, domestic cat, domestic cow, crow, white-tailed deer, domestic dog, donkey, red fox, domestic horse, opossum, passerine birds,

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[253] *Id.*

[254] Goncharov, N. V., R. O. Jenkins, and A. S. Radilov. 2006. Toxicology of fluoroacetate: a review, with possible directions for therapy research. Journal of Applied Toxicology 26:148-161; Hooke, A. L., L. Allen, and L. K. P. Leung. 2006. Clinical signs and duration of cyanide toxicosis delivered by the M-44 ejector in wild dogs. Wildlife Research 33:181-185.

[255] EA at 304.

[256] U.S. Department of Agriculture. 2019. The use of sodium cyanide in wildlife damage management. Chapter VII in Human Health and Ecological Risk Assessment for the Use of Wildlife Damage Management Methods by USDA-APHIS-Wildlife Services, *available at* ttps://www.aphis.usda.gov/wildlife_damage/nepa/risk_assessment/RA7%20Sodium%20Cyanide%20-%2 0amended%20-%20Peer%20Reviewed.pdf.

[257] Kerley, G.I.H., Wilson, S.L. & Balfour, D. (Eds) 2018. Livestock Predation and its Management in South Africa: A Scientific Assessment. Centre for African Conservation Ecology, Nelson Mandela University, Port Elizabeth; Mudder, T,I., and Botz, M.M. 2004. Cyanide and society: a critical review. The European Journal of Mineral Processing and Environmental Protection, 4(1): 62-74.

[258] U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Program Data Reports, Program Data Report G, Animals Killed or Euthanized, *available at* https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/pdr/?file=PDR-G_Report&p=2018:INDEX: (last visited Feb. 17).

rabbit, raccoon, domestic sheep, skunk, squirrel, and turkey, visited the sites 1,597 times and investigated the devices on 55 occasions.[259] In a related study, the authors documented 39 instances where the M-44 devices were triggered, including 36 times by coyotes, twice by domestic dogs, and once by a red fox (all of which were target species). While they concluded that in their study the M-44 device appeared to be "very selective for coyotes," they did not rule out the possibility that other canid species like wolves, foxes, and domestic dogs could be affected by M-44s.[260]

The potential threat posed by M-44s to non-target species is particularly concerning here, where WS-Montana does not account for the impact of nearly half of the sodium cyanide capsules it uses. The EA indicates that, between FY 2013 and 2017, the agency used an average of 870 capsules to kill an average of 466.8 animals (448.4 coyotes, 17 foxes, and 1.4 known non-target animals).[261] Death is caused by a single capsule.[262] It is therefore unclear what happened to the remaining approximately 400 capsules, whether and how they were accounted for, whether they killed or injured any animals, and if so, what species they were. The EA fails to acknowledge or explain this lack of data.

Sacks et al. (1999) questioned the efficacy of using M-44s for killing coyotes documenting an M-44 susceptibility bias toward younger coyotes on their study site in Northern California while older coyotes demonstrated avoidance behavior.[263] The authors concluded that M-44s would not be effective in controlling coyote depredation because the coyotes responsible for most livestock killings are usually older, breeding animals. This result was similar to what Brand et al. (1995)[264] and Brand and Nel (1997)[265] in their studies of blackbacked jackals, where the older jackals demonstrated avoidance behavior toward the devices.

Furthermore, considering high profile examples of both human and domestic animals (i.e., dog) exposure to M-44 gas, as described above in a separate section, WS-Montana must disclose information about all such reported incidents, the cause of the exposure, the consequences of the exposure to the human and animal victims, and the specific actions taken by WS or required of its field technicians to avoid such incidents.

Based on these considerations, WS-Montana should follow the example of WS-Idaho and cease the use of M-44s across the state, on both public and private lands.

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[259] Shivik, J.A., Mastro, L., and Young, J.K. 2014. Animal Attendance at M-44 Sodium Cyanide Ejector Sites for Coyotes. Wildlife Society Bulletin, 38(1):217–220.
[260] *Id.*
[261] EA at 333.
[262] EA at 333.
[263] Sacks, B.N., Blejwas, K.M. & Jaeger, M.M. (1999). Relative vulnerability of coyotes to removal methods on a northern California ranch. Journal of Wildlife Management, 63, 939-949.
[264] Brand, D.J., Fairall, N. & Scott, W.M. 1995. The influence of regular removal of black-backed jackals on the efficiency of coyote getters. South African Journal of Wildlife Research, 25, 44-48.
[265] Brand, D.J. & Nel, J.A.J. 1997. Avoidance of cyanide guns by black-backed jackal. Applied Animal Behaviour Science, 55, 177-182.

iv. Denning

Denning, which involves the use of gas canisters containing sodium nitrate to kill animals in their dens, is an inhumane practice used by WS-Montana to target coyotes, red foxes, and skunks.[266] When gas canisters are used, they are ignited, placed inside the active den, and then the den opening is covered with soil. When heated to 1,000 degrees, sodium nitrate explodes and produces toxic fumes of nitrous oxide and sodium oxide.[267] The resulting gas that is released, carbon monoxide, converts the hemoglobin in blood to methemoglobin, which is unable to carry oxygen,[268] effectively suffocating the animals inhabiting the den. This method often causes the deaths of entire animal families, including young. Furthermore, it is likely that this method results in the deaths of considerably more animals than WS-Montana reports. Since Wildlife Services technicians do not excavate burrows/dens to determine the number and species of animals killed using gas canisters, it is unclear how many animals are actually killed by this method. The number of deaths reported are merely estimates based on consideration of the species, time of year, average litter size, and anticipated number of young in the burrows/dens.[269] The actual death toll could be significantly higher based on variations in litter size, and may include non-target species.

WS-Montana largely dismisses the potential for non-target animals to be killed in denning operations. The agency claims that its technicians will conduct pretreatment site surveys before using gas canisters at den sites to determine if non-target species are present in dens and burrows,[270] but it discloses no post-treatment data reflecting any examination of den sites (i.e., excavation of the den site to determine the full suite of species killed or harmed by the operation). Absent such data, it is inaccurate to suggest that gassing den sites is humane or that the risks to non-target species are minimal. Notably, EPA labels for large and small gas cartridges warn against harm to a variety of non-target species.[271] The EA should evaluate these issues, as well as the potential impacts of a sub-lethal dose of carbon monoxide to target or non-target species in the event a canister is not set correctly or malfunctions.

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[266] EA at 304; *see also* U.S. Dep't of Agriculture, Animal & Plant Health Inspection Service, Wildlife Services, Program Data Report G – Filtered by State: Montana (2019) *available at* https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/pdr/?file=PDR-A_Report&p=2019:INDEX: (last visited February 14, 2021).

[267] Environmental Protection Agency - Office of Prevention - Pesticides - and Toxic Substances. 1991. RED Facts: Inorganic Nitrate/Nitrite (Sodium and Potassium Nitrates).

[268] *Id.*

[269] U.S. Dept. of Agriculture. 2019. The Use of Carbon Monoxide in Wildlife Damage Management. Chapter VIII in Human Health and Ecological Risk Assessment for the Use of Wildlife Damage Management Methods by USDA-APHIS-Wildlife Services, *available at* https://www.aphis.usda.gov/wildlife_damage/nepa/risk_assessment/RA8%20Gas%20Cartridge%20RA%20-%20Peer%20Reviewed.pdf.

[270] EA at 438.

[271] Keefover-Ring, W. 2009. War on Wildlife - The U.S. Department of Agriculture's "Wildlife Services" – a report to President Barack Obama and Congress. WildEarth Guardians, *available at* http://wg.convio.net/support_docs/report-war-on-wildlife-june-09-lo.pdf.

v. Aerial Gunning

Aerial gunning, which is one of the primary methods WS-Montana uses to kill coyotes, and which is also used to kill gray wolves and red foxes, [272] is inherently inhumane for several reasons. First, this method causes extreme stress due to noise from the aircraft and from gunfire, which can harm the hearing of multiple species. Second, this method forces animals to expend critical energy reserves to escape, which may affect survival and reproduction. Third, target animals are often are not killed by the first shot, which prolongs suffering and can allow maimed or "crippled"[273] animals to escape. Lastly, there is a significant likelihood that dependent young will be orphaned because these operations often coincide with the peak coyote birthing period.

WS-Montana dismisses the impact of noise on wildlife by citing a number of species-specific studies that examined the effect of aircraft (fixed wing and helicopter) overflights of wildlife,[274] but few of these studies involved an assessment of low-flying aircraft engaging in aerial predator control. It is imperative that such studies be conducted in different habitat types, at different altitudes, with real or mock gunfire, and accurate monitoring of noise levels, as well as involve third party observers to record wildlife reactions to fully assess the impact of aerial gunning on target and non-target species. Pepper et al. (2003),[275] in their study of the impacts of low flying aircraft on wildlife, found that aircraft noise, turbulence, and vibrations can adversely impact the hearing of multiple species, while the mere appearance of aircraft can cause a flight response forcing animals to expend critical energy reserves to escape the perceived threat. This energy loss, depending on the availability of food and seasonal timing of the impact, may affect survival or reproduction.[276] This should be evaluated in the EA.

WS-Montana fails to address the issue of how many passes are required to kill targeted animals in the EA. NEPA documents produced by Wildlife Services on predator damage management operations in other states have claimed that aerial gunning results in the death of most target animals after a single pass,[277] yet the agency offered no data or studies to verify that target species are killed in a single pass or even after two passes. There is no assessment as to variations depending on habitat type or shooter experience, nor is it clear how, while flying in an aircraft, WS technicians are sure that target animals are killed versus wounded. WS-Montana also fails to discuss the time it takes for an aircraft to prepare to conduct a second pass of a particular area or animal and how that correlates to the likelihood of finding and killing a wounded animal if the animal has found cover. It is difficult to ascertain whether a target has

[272] U.S. Dep't of Agriculture, Animal & Plant Health Inspection Service, Wildlife Services, 2019 Program Data Report G – Filtered by State: Montana, *available at*: https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/pdr/?file=PDR-D_Report&p=2019:INDEX: (last visited Feb. 17).
[273] EA at 328.
[274] EA at 360.
[275] Pepper, C. B., M. A. Nascarella, and R. J. Kendall. 2003. A review of the effects of aircraft noise on wildlife and humans, current control mechanisms, and the need for further study. Environmental Management 32:418-432.
[276] *Id.*
[277] *See, e.g.*, USDA-APHIS, Wildlife Services – Wyoming, Pre-Decisional Draft Environmental Assessment, Predator Damage and Conflict Management in Wyoming 181 (July 2020).

been killed or merely wounded by the first shot. Targeted animals not killed by one shot prolongs suffering and can allow maimed animals to escape. This should be taken into consideration in the EA, along with an assessment of factors that may affect how long it takes for animals to be killed and the likelihood they will be injured but escape, perhaps to die a protracted death. These factors include variations depending on habitat type, shooter experience, the time it takes for an aircraft to prepare to conduct a second pass of a particular area or animal, and the likelihood of finding and killing a wounded animal if the animal has found cover. Wildlife Services should also conduct studies focused on the impact on wildlife from the noise generated by low-flying aircraft in different habitat types and at different altitudes, with real or mock gunfire, using accurate monitoring or noise levels, and using third party observers to record wildlife reactions to these activities so that the impacts of aerial gunning on both target and non-target species may be fully assessed.

Lastly, dependent young will be orphaned because of aerial gunning operations, particularly given the timing of many of those operations, which often coincide with the peak coyote birthing period.[278] WS-Montana claims that technicians try to locate coyote dens in areas where aerial gunning occurs in order to kill the pups,[279] but the EA provides no data on the success of such den location searches, what proportion of estimated dens are found, or how many personnel or hours are utilized in such searches over the course of a year. Nor has the EA disclosed, discussed, or evaluated the potential fate of dependent young that are not found. These issues must all be evaluated when assessing the question of the humaneness of aerial gunning.

vi. Weevil-Cide® tablets

Since 2017, WS-Montana has used Weevil-Cide® to destroy 505 black-tailed prairie dog burrows,[280] yet the EA contains no discussion of this method at all, which violates NEPA. Weevil-Cide® is a pesticide[281] and is primarily used as a fumigant to kill a variety of insects in above-ground applications as well as burrowing animals. It is highly toxic to animals, and can be fatal to humans.[282] Its active ingredient is aluminum phosphide, and it is available as tablets and pellets, which are the formulations most commonly used to kill burrowing animals. Once placed in the burrow system, the tablets or pellets interact with atmospheric and/or soil moisture to create a highly toxic gas (phosphine).[283] According to Hygnstrom and Vercauteren (2000), if

[278] EA at 360.
[279] EA at 301.
[280] For example, in 2019, WS-Montana technicians applied Weevil-cide™ on 188 black-tailed prairie dog burrows. U.S. Dep't of Agriculture, Animal & Plant Health Inspection Service, Wildlife Services, Program Data Report G-2019, Filtered by State: Montana (2019), *available at* https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/pdr/?file=PDR-G_Report&p=2019:INDEX: (last visited Feb. 17).
[281] Gurjar, M., Baronia, A.K., Azim, A., and Sharma, K. 2011. Managing aluminum phosphide poisonings. Journal Emerging Trauma Shock. 4(3): 378–384.
[282] Dua, R., and Gill, K.D. 2001. Aluminum phosphide exposure: implications on rat brain lipid peroxidtation and antioxidant defence system. Pharmacology & Toxicology; 89, 315–319.
[283] Andelt, W.F., and Hopper, S.N. 2016. Managing Prairie Dogs. Colorado State University Extension. Natural Resources Series-Wildlife, Fact Sheet No. 6.506.

applied properly with all burrow entrances sealed, aluminum phosphide reduced black-tailed prairie dog burrow activity by 95-98 percent.[284]

The use of Weevil-Cide® is an inhumane method of killing black-tailed prairie dogs. Mason and Litten (2003) provide the following summary of the impact of phosphine on rodents:

> In poisoned rodents, it gives rise to similar signs of respiratory irritation and pain and other forms of discomfort. For example, in one study, rats exposed to phosphine gas showed 'clinical signs indicative of mild respiratory irritation' such as salivation, lacrimation, face-pawing and dyspnoea. A review by the Pesticide Safety Directorate also showed that rats and mice exposed to phosphine gas display face-washing movements suggestive of eye and respiratory irritation, shivering, piloerection, clinging to the walls of the cage, exophthalmos (protruding eyeballs), convulsions, and hind limb paralysis followed by full paralysis and death. Animals may not start being symptomatic until 30 min after exposure, and die usually within 2 h (the range being 50 min to 3 h, depending on dose)."[285]

Such protracted suffering is unacceptable. WS-Montana must fully analyze the adverse effects of Weevil-Cide®, and reasonable, humane alternatives to its use.

vii. Conibear and Other Body-Crushing Traps

The EA also fails to fully consider the humaneness of Conibear and other body-crushing traps, which WS-Montana uses to capture mammals such as raccoons, skunks, and badgers.[286] To satisfy NEPA's requirements, WS-Montana must disclose the specific types of body-gripping traps it uses and provide information about those traps, including the intended strike location, strike momentum, clamping force, expected percentage of accurate strikes (with data to support this), time to death, time to unconsciousness, injury/wounding scores, and non-target species capture rates), as well as an analysis of the welfare implications of the traps in use and the impacts on non-target species.

According to Iossa et al. (2007),[287] for a kill trap to satisfy humaneness criteria in North America, 70 percent of animals must be rendered unconscious within 70 seconds (for stoats), 120 seconds for marten, lynx, and fisher, and 180 seconds for all other species. As noted in Table 1 (see below) in Iossa et al. (2007), the majority of killing traps tested, including a variety of different models of Conibear traps, failed to satisfy the loss of consciousness standard for humaneness.

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[284] Hygnstrom, K. and VerCauteren, C. 2000. Cost-effectiveness of five burrow fumigants for managing black-tailed prairie dogs. International Biodetrioration & Biodegradation; 45 (3-4): 159-168; Witmer, G.W., and Fagerstone, K.A. 2003. The use of toxicants in black-tailed prairie dog management: an overview. Proceedings of the 10th Wildlife Damage Management Conference.
[285] *Id.* (internal citations omitted).
[286] EA at 432.
[287] Iossa, G., Soulsbury, C.D., and Harris, S. 2007. Mammal trapping: a review of animal welfare standards of killing and restraining traps. Animal Welfare, 16: 335-352.

Table 1 Accepted standards of animal welfare for killing traps.

Species	Trap model	Mis-strike	Time limits to unconsciousness					Reference
			Current technology	n	Criterion	Pass	Fail	
Canis latrans	King necksnare[1]	-	> 180 s	-	180 s		×	Garrett 1999; Proulx 1999a
	Mosher necksnare[1]	-	> 180 s	-	180 s		×	
*Canis lupus**	-	-	-	-	180 s	-	-	
*Castor canadensis**	Conibear 330™	-	> 180 s	6	180 s		×	Novak 1981a
	Modified Conibear 330™	-	< 180 s	6	180 s	×		
Lontra canadensis	-	-	-	-	180 s	-	-	
Lynx rufus	-	-	-	-	180 s	-	-	
Lynx canadensis	Conibear 330™	1	> 180 s	9	180 s		×	Proulx *et al* 1995
	Modified Conibear 330™	1	67.2 ± 4.0 s	9	180 s	×		
Martes americana	Conibear 120™	3	> 180 s	6	120 s		×	Barrett *et al* 1989; Proulx *et al* 1989a,b
	Conibear 120 Magnum™	2	68 ± 8.2 s	14	120 s		×	
	Conibear 160™	3	> 180 s	16	120 s	×		
	Sauvageau 2001-5™	-	> 180 s	14	120 s		×	
Martes pennanti	Bionic[2]	0	< 55 s	9	180 s	×		Proulx & Barrett 1993a,b; Proulx 1999b
	Conibear 220™	-	> 180 s	4	180 s		×	
	Modified Conibear 220™	0	> 180 s	4	180 s		×	
*Ondatra zibethicus**	Leprich spring trap	0	31.5 ± 16.3 s	12	180 s	×		Inglis *et al* 2001
	Conibear 110™	3	184.0 ± 31.7 s[3]	12	180 s		×	
*Procyon lotor**	Conibear 160™	-	> 180 s	5	180 s		×	Novak 1981a; Proulx & Drescher 1994; Sabean & Mills 1994
	Conibear 280™	0	> 180 s	6	180 s		×	
	Conibear 330™	5	> 180 s	5	180 s		×	
	Sauvageau 2001-8™	0	> 180 s	3	180 s		×	
Taxidea taxus	-	-	-	-	180 s	-	-	
Castor fiber	-	-	-	-	180 s	-	-	
Lutra lutra	-	-	-	-	180 s	-	-	
Lynx lynx	-	-	-	-	180 s	-	-	
Martes martes	-	-	-	-	120 s	-	-	
Martes zibellina	-	-	-	-	120 s	-	-	
Meles meles	-	-	-	-	180 s	-	-	
Mustela erminea[4]*	Fenn Mk IV	-	> 180 s	-	60 s		×	Warburton *et al* 2002; Poutu & Warburton 2003; Warburton & O'Connor 2004
	Fenn Mk VI	-	> 180 s	-	60 s		×	
	Victor Snapback[5]	1	37.3 ± 5.0 s	7	60 s		×	
	Waddington backcracker	4	113 s	8	60 s		×	
Nyctereutes procyonoides	-	-	-	-	180 s	-	-	

Mis-strike refers to the number of animals struck in a non-target body part; time limits to unconsciousness refer to loss of corneal and palpebral reflexes; n is the number of animals tested.

Most of the tests were conducted in North America under the criteria that ≥ 70% of animals should be unconscious in ≤ 60, 120 or 180 seconds (eg Proulx 1999a; review in Powell & Proulx 2003). This is therefore used to assess passes and failures. The line divides North American from European species.

* Species found in both continents; [1] the trap failed because of high number of mis-strikes; [2] not tested in the field: in a different experiment 2/10 animals escaped and 1/10 mis-strike; [3] time to loss of heartbeat; [4] see main text for stoat; [5] the trap failed because of high number of escapes.

The failure of kill traps to meet established welfare standards has been documented by other researchers. Proulx and Barrett (1988)[288] rejected the commercially available Conibear 120 as an effective trap to kill marten since it failed to render (greater than/equal to) 5/6 unanaesthetized marten struck in the head/neck region irreversibly unconscious within three minutes (based on Canada's General Standards Board (CGSB) performance criteria). Linscombe

[288] Proulx, G., and Barrett, M.W. 1988. On the development and implications of the Conibear 120 Magnum trap to harvest martin and mink. Northeast Fur Resources Technical Committee.

(1976),[289] when comparing the killing efficiency of the Victor No. 2 leghold and Conibear 220 traps, determined, as expected, that more trapped animals were found alive in the leghold trap but that the Conibear 220 trap does not consistently kill trapped animals with 9.7 percent of adult nutria and 10.7 percent of immature nutria found alive in the traps. For fisher, Proulx and Barrett (1993)[290] determined that the Conibear 220 trap, despite being mechanically improved compared to the standard Conibear trap, did not consistently render the species irreversibly unconscious in ≤5 minutes, thereby failing to satisfy the 3 minute standard. Proulx et al. (1995)[291] found that the Conibear 330 trap failed to consistently render trapped lynx irreversibly unconscious within three minutes for one animal struck in the shoulder and two of eight animals struck in the neck. This trap, when modified by adding two clamping bars, did satisfy the standard. Proulx (1999)[292] determined that the Conibear 120, 160, 220, 280, and 330 traps did not consistently satisfy the three minute standards for irreversible unconsciousness for multiple species while modified versions of some of these traps (e.g., Conibear 120 Magnum with pitchfork trigger, Conibear 120 Magnum with pan trigger, Conibear 330 with clamping bars) did satisfy the standard. In their assessment of the welfare implications and ethics of multiple trap types, including kill traps, Powell and Proulx (2003)[293] found that, absent modification, no standard or commercially available Conibear traps, or other types of killing traps, consistently killed animals within three minutes.

Proulx and Rodtka (2019)[294] determined, in their review of the relevant literature, that Conibear traps used for marten and mink failed to satisfy either the CGSB criteria or the Agreement on International Humane Trapping Standards (AIHTS) criteria (e.g., for martens the animals must be rendered unconscious and insensible within two minutes). For the standard, commercially available Conibear 120 trap, which is not certified as humane under Canadian standards[295] but is considered acceptable under the BMP trapping criteria, they determined that:

> Mechanical evaluations showed that the Conibear 120 trap does not have the potential to render animals unconscious in ≤3 min [15] and thus to meet AIHTS' 2-min time limit. This was further demonstrated in tests with wild animals in simulated natural environments where 2 out of 6 tested animals did not lose consciousness within 5 min (the time limit was 3 min but the research protocol allowed researchers to prolong it to 5

[289] Linscombe, G. 1976. An evaluation of the No. 2 Victor and 220 Conibear traps in coastal Louisiana. Louisiana Wildlife and Fisheries Commission.
[290] Proulx, G., and Barrett, M.W. 1993. Evaluation of mechanically improved Conibear 220™ traps to quickly kill fisher (*Martes pennanti*) in simulated natural environments. Journal of Wildlife Diseases, 29(2), 1993, pp. 317-323.
[291] Proulx, G., Kolenosky, A.J., Cole, P.J., and Drescher, R.K. 1995. A humane killing trap for lynx (*Felis lynx*): the Conibear 330™ with clamping bars. Journal of Wildlife Diseases, 31(1), 1995, pp. 57-61.
[292] Proulx, G. 1999. Review of current mammal trap technology in North America. Chapter 1 in Proulx, G. (editor) Mammal Trapping.
[293] Powell, R.A. and Proulx, G. 2003. Trapping and Marking Terrestrial Mammals for Research: Integrating Ethics, Performance Criteria, Techniques, and Common Sense. ILAR Journal, Vol. 44 (4): 259-276.
[294] Proulx, G., and Rodtka, D. 2019. Killing traps and snares in North America: the need for stricter checking time periods. Animals, 9, 570; doi:10.3390/ani9080570.
[295] As noted by Proulx and Rodtka, mechanically improved Conibear 120 trap models have now been developed and have been certified as humane by the Fur Institute of Canada.

> min to learn more about traps). This result suggests that, based on the normal approximation to the binomial distribution (one-tailed), the Conibear 120 trap would then be expected to humanely kill (by rendering animals unconscious in ≤3 min as per CGSB), with 95% confidence, >20% of all captured martens of a true population. The poor performance of the Conibear 120 trap to humanely kill martens was further determined on working traplines. At least 4 out of 13 martens captured in Conibear 120 traps were struck in non-lethal regions that would not result in a loss of consciousness in ≤3 min. Thus, on the basis of a one-tailed binomial test, the trap would, with 95% confidence, render <40% of captured martens unconscious in ≤3 min.[296] (citations omitted)

For mink, which have greater cervical musculature and stronger bones compared to the American marten, Proulx and Rodtka reported that:

> Mink … cannot be humanely killed, i.e., lose consciousness in ≤3 min as per CGSB, by the Conibear 120 trap. In fact, even the mechanically superior and stronger C120 Magnum failed to humanely kill mink captured by the neck. Furthermore, while the Conibear 120 trap is marketed with a two-prong trigger, its inability to properly strike mink in vital regions was reported nearly 50 years ago. The stronger C120 Magnum trap equipped with a pan trigger humanely killed mink double-struck in the neck and thorax. Because the two-prong trigger fails to ensure strikes in vital regions, and the Conibear 120 trap does not have the striking and clamping forces to produce a humane kill, many mink captured in this trap stay alive for many hours, and sometimes until the following day. Thousands of mink are trapped every year in North America, and many of those captured in the Conibear 120 trap must experience pain and suffering for periods of time exceeding AIHTs' time limit of 5 min. (citations omitted).

Warburton (1982)[297] examined two kill traps from New Zealand (the Banya and Kaki traps) and two from North America (the Conibear and Bigelow traps). The two North American traps proved to be the least humane as several common brushtail possums caught by the neck remained alive while others were trapped across the chest, abdomen, or rump. In another study from New Zealand, Warburton and Hall (1995)[298] assessed the impact momentum and clamping force of kill traps. Based on their preliminary tests, they found that:

> [m]ost kill-traps available in New Zealand generate an impact momentum of about 1 $kg.m.s^{-1}$, much lower than the impact threshold of about 7 $kg.m.s^{-1}$ required to kill a possum when no clamping force is added. It appears unlikely, therefore, that new traps based solely on impact to achieve a humane kill can be developed if the strike location and direction of impact are the same as those used by the simulator.

Furthermore, when the possums struck across the neck were examined, it was determined that death was caused by suffocation and/or cerebral anoxia due to the compression of the

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[296] *Id.* (emphasis added).
[297] Warburton, B. 1982. Evaluation of seven trap models as humane and catch-efficient possum traps. New Zealand Journal of Zoology, 9:3, 409-418.
[298] Warburton, B. and Hall, J.V. 1995. Impact momentum and clamping force thresholds for developing standards for possum kill traps. New Zealand Journal of Zoology, 22:1, 39-44.

trachea and jugular veins. Physical trauma in the form of vertebral or cranial fractures as only found when the impact momentum exceeded c. 5-6 $kg.m.s^{-1}$. Additionally, Warburton and Orchard (1996)[299] determined that the Conibear 160 trap and the BMI 160 trap failed to satisfy humane criteria for traps contained in the draft standards from the International Organization for Standardization because the Conibear 160 trap did not kill enough possums during pen trials, and the BMI 160 trap failed to achieve a sufficiently high number of correct strikes during field trials.

As indicated by Warburton (1982)[300] and other studies, the location where the trap strikes the animal is critical in determining how quickly the trapped animal dies and, in the field, animals do not consistently enter the trap in ways that assure a rapid loss of consciousness. Phillips (1996)[301] reported that misstrikes ranging from 8 to 14 percent and Pohlmeyer et al. 1995[302] reported misstrikes equaling between 13 and 15 percent. Warburton (2000)[303] found that possums trapped in the field were often found with their necks rotated in the trap and/or with a forelimb caught between the striking bar and the neck reducing the efficiency of the killing traps. When the neck is rotated, he determined that it is unlikely that both carotid arteries would be totally occluded preventing rapid, irreversible unconsciousness. Therefore, for a kill trap to operate effectively, the animal "must, as much as possible, be vertically aligned with no limbs obstructing the striking bar" – a circumstance that is difficult to consistently achieve in the wild.

Furthermore, the EA does not assess the likelihood of capture of non-target species. Trap selectivity is assessed by measuring the number of individuals of the target species captured relative to the number of non-target animals (Iossa et al. 2007).[304] As noted in Table 6 from Iossa et al. (see below), trap selectivity varies widely with trap type. For rotating jaw traps (or Conibear traps), in one study 43 percent of the devices set to trap American martens captured non-target species Canada jay's and Northern flying squirrels, all of whom were found dead in the traps. In a second study assessing the selectivity of Conibear traps, 30 percent of the trapped animals were non-target species the American crow, rat species, and domestic house cats.

[299] Warburton, B., and Orchard, I. 1996. Evaluation of five kill traps for effective capture and killing of Australian brushtail possums (*Trichosurus vulpecula*), New Zealand Journal of Zoology, 23:4, 307-314.
[300] Warburton, B. 1982. Evaluation of seven trap models as humane and catch-efficient possum traps. New Zealand Journal of Zoology, 9:3, 409-418.
[301] Phillips, R.L. 1996. Evaluation of 3 types of snares for capturing coyotes. Wildlife Society Bulletin, 24: 107-110.
[302] Pohlmeyer, K., Drommer, W., Kaup, F.J., Fehlberg, I., and Ott, N. 1995. Efficiency of instant killing traps used in hunting martens and foxes under huntsman-like conditions. Deutsche Tierarztliche Wochenschrift, 102: 133-137.
[303] Warburton, B., Gregory, N.G., and Morriss, G. 2000. Effect of jaw shape in kill-traps on time to loss of palpebral reflexes in brushtail possums. Journal of Wildlife Diseases, 36(1), 2000, pp. 92–96.
[304] Iossa, G., Soulsbury, C.D., and Harris, S. 2007. Mammal trapping: a review of animal welfare standards of killing and restraining traps. Animal Welfare, 16: 335-352.

Table 6 Selectivity (number of non-target animals relative to total captures), mortality and injury caused to non-target species in various types of traps.

Trap type	Target species	Non-target species	Selectivity	Mortality	Injury	Reference
Killing traps						
Drowning trap	*Ondatra zibethicus*	*Anas platyrhynchos, Rattus* spp, *Mustela erminea*	1.44-7.40%[1]	-	-	Crasson 1996
Spring trap in tunnels	*Mustela erminea, M. nivalis, M. vison*	*Alectoris rufus, Erinaceus europaeus, Oryctolagus cuniculus, Mustela putorius*	5%	100%[2]	-	Short & Reynolds 2001
Tunnel traps/snare	-	*Mustela putorius*	-	61%	39%	Birks & Kitchener 1999
Spring trap	*Trichosurus* spp	*Erinaceus europaeus, Mustela putorius, Rattus* spp	23%	50%	50%	Warburton & Orchard 1996
Leg-hold snare/coil spring trap	*Oryctolagus cuniculus, Vulpes vulpes*	*Lynx pardinus*	-	64%	22.5%	García-Perea 2000
Neck snare	*Canis latrans*	*Odocoileus hemionus, O. virginianus, Bos taurus*	21%	33-63%	-	Phillips 1996
Neck snare	*Lepus americanus*	*Martes americana*	50%	0%	0%	Proulx *et al* 1994a
Rotating jaw-trap	*Martes americana*	*Perisoreus canadensis, Glaucomys sabrinus*	43%	100%	-	Naylor & Novak 1994
Rotating jaw trap	*Martes americana*	*Corvus brachyrhynchos, Rattus* spp, *Felis catus*	30%	-	-	Proulx & Barrett 1993a
Restraining traps						
Box trap	*Felis silvestris, Lynx lynx*	*Meles meles, Ursus arctos*	64%	0%	0%	Potočnik *et al* 2002
Box trap	*Canis familiaris*	*Corvus brachyrhynchos, Felis catus, Procyon lotor, Mephitis mephitis*	93%	-	-	Way *et al* 2002
Box trap	*Martes pennanti*	*Martes americana, Gulo gulo, Vulpes vulpes*	94%	1%	-	Weir 1997
Leg-hold snare	*Panthera leo*	*Hyaena hyaena, Crocuta crocuta, Acinonyx jubatus*	32%	0%	17%	Frank *et al* 2003
Leg-hold snare	*Puma concolor*	*Odocoileus hemionus, Canis latrans, Bos taurus*	45%	17%	-	Logan *et al* 1999
Neck snare	*Vulpes vulpes*	*Canis familiaris, Felis catus, F. sylvestris, Meles meles, Martes martes, Lutra lutra, Lepus europaeus*	46%	-	-	Chadwick *et al* 1997

[1] The relative % of injured and dead animals is not known. [2] Mortality and injury combined.

The lack of selectivity with body-gripping traps is consistently noted in the published literature. Linscombe (1976)[305] documented 57 non-target mammals and 127 non-target birds were captured in No. 2 Victor and No. 220 Conibear traps with more non-target species, particularly birds, captured in the Conibear trap. In his study of multiple trap types in Arkansas, Sasse (2018)[306] found that non-target spotted skunks, a species of "greatest conservation concern in Arkansas and that may warrant protection under the Endangered Species Act,[307] were captured in body-gripping traps set for bobcats, raccoons, coyotes, and fox. Neither Linscombe nor Sasse indicated whether any of the non-target animals trapped in their studies were found alive. Nor did they provide any estimates of time to death or unconsciousness. Hill (1987)[308] found that trap mortality in non-target animals taken in No. 220 Conibear traps was "sufficiently high to make them unsuitable for conventional terrestrial trapping in the Southeastern United States, except for special situations such as for control of feral dogs, or predator populations on specific areas during rabies epizootics." No. 120 Conibear traps also captured non-target species but not in the numbers captured in the 220 traps. Davis et al. (2012),[309] in their study of body-gripping traps in the Cape Horn Archipelago that straddles the border of Chile and Argentina, determined that a number of non-target bird species (caracaras, kelp gulls, flightless streamer ducks) and mammal species (domestic cats, feral pigs) were captured when they used an open front configuration for their trap sets.

D. Impacts on Non-Target Species, Including Imperiled Species

The EA fails to adequately analyze the impacts of WS-Montana's predator control program on non-target species, including species protected by the ESA. Nationwide, Wildlife Services' non-selective lethal control methods have unintentionally killed many companion animals, vertebrates of 150 species,[310] and thousands of mammals of at least nine different taxa that are listed as threatened or endangered federally or in certain states.[311] Specifically, since

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[305] Linscombe, G. 1976. An evaluation of the No. 2 Victor and 220 Conibear traps in coastal Louisiana. Louisiana Wildlife and Fisheries Commission.

[306] Sasse, D.B. 2018. Incidental Captures of Plains Spotted Skunks (*Spilogale putorius interrupta*) By Arkansas Trappers, 2012-2017. Journal of the Arkansas Academy of Science, Vol. 72, Article 34.

[307] Prairie Gray Fox, Plains Spotted Skunk May Warrant Protection Under the Endangered Species Act; U.S. Fish and Wildlife Service to Review Species' Status. USFWS Press Release, December 2012; available at: https://www.fws.gov/midwest/news/606.html.

[308] Hill, E. P., 1987. Catch effectiveness and selectivity of several traps. Third Eastern Wildlife Damage Control Conference (1987). 23.

[309] Davis, E.F., Anderson, C.B., Valenzuela, A.E.J., Cobello, J.L., and Soto, N. 2012. American mink (*Neovision vison*) trapping in the Cape Horn Biosphere Reserve; enhancing current trap systems to control an invasive predator. Ann. Zool. Fennici, 49: 18-22.

[310] Knudson, T. The killing agency: Wildlife Services' brutal methods leave a trail of animal death—wildlife investigation. *The Sacramento Bee*, April 29, 2012; *see also* Tom Knudson, *Wildlife Services' Deadly Force Opens Pandora's Box of Environmental Problems*, SACRAMENTO BEE (Apr. 30, 2012), *available at* http://www.sacbee.com/news/investigations/wildlife-investigation/article2574608.html; B.J. Bergstrom et al., *License to Kill: Reforming Federal Wildlife Control to Restore Biodiversity and Ecosystem Function*, 7 CONSERV. LETTERS 131–42 (2013).

[311] Bergstrom, B.J., L.C. Arias, A.D. Davidson, A.W. Ferguson, L.A. Randa, and S.R. Sheffield. 2014. License to kill: reforming federal wildlife control to restore biodiversity and ecosystem function. *Conservation Letters* 7: 131-142.

2000, Wildlife Services has unintentionally injured or killed Mexican gray wolves, grizzly bears, kangaroo rats, wolverines, river otters, swift and kit foxes, gray wolves, eagles, falcons, a California condor, red-tailed hawks, great horned owls, armadillos, pronghorns, porcupines, long-tailed weasels, javelinas, marmots, snapping turtles, turkey vultures, great blue herons, ruddy ducks, sandhill cranes, and ringtail cats.[312] These killings undermine federal efforts to conserve and recover the affected species, which often need protection under state and/or federal laws in part due to Wildlife Services' historical practices.[313]

This data should be disclosed in full and analyzed. That WS-Montana may not have accidentally injured or killed a large number of these species in recent years does not excuse the failure to include this data in the EA. Further, as discussed above, even the unintentional killing of a single animal could adversely affect the conservation of the species. For example, in 2019, WS-Montana unintentionally captured a grizzly bear in a leghold trap.[314] While the animal was freed and released, it still constitutes a take, and it's unclear what injuries the animal may have sustained. This should be discussed in the EA.

We are concerned about the potential for non-target animals, including threatened and endangered species and companion animals, to be caught in steel-jawed leghold traps, body-gripping traps, and snares, which the EA does not adequately address. These concerns are discussed in greater detail above in Section VII.C. These devices are highly indiscriminate,[315] and the use of bait is very problematic because it lures not only the target species but non-target species as well, in addition to causing conflicts between animals and disrupting behavioral

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[312] Tom Knudson, *Suggestions in Changing Wildlife Services Range from New Practices to Outright Bans*, SACRAMENTO BEE (May 6, 2012 at 12:00 AM) http://www.sacbee.com/news/investigations/wildlife-investigation/article2574659.html.

[313] Over the past century, Wildlife Services played a leading role in the decimation of populations of a multitude of wildlife species, contributing to the endangerment of the bald eagle, California condor, Canada lynx, kit fox, swift fox, Utah prairie dog, Gunnison's prairie dog, grizzly bear, gray wolf, Mexican gray wolf, fisher, and others. 41 Fed. Reg. (July 12, 1976) (bald eagle); FWS, ANIMAL DAMAGE CONTROL "MAY AFFECT" DETERMINATIONS FOR FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES, BIOLOGICAL OPINION 44 (1997) (California condor); FWS, SPECIES ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM, Gunnison's prairie dog (2010); FWS, RECOVERY PLAN FOR UPLAND SPECIES OF THE SAN JOAQUIN VALLEY, CALIFORNIA (1998) (San Joaquin kit fox); FWS, UTAH PRAIRIE DOG (*CYNOMYS PARVIDENS*) REVISED RECOVERY PLAN (2012); FWS, GRIZZLY BEAR RECOVERY PLAN (1993); FWS, NORTHERN ROCKY MOUNTAIN WOLF RECOVERY PLAN (1987); FWS, SPECIES ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM, WEST COAST POPULATION OF FISHER (2012). By targeting carnivores, the Wildlife Services program acts as a subsidy for livestock producers in contravention of other federal expenditures; for example, the federal government spent more that $43 million since 1974 to recover the gray wolf. *See* B.J. Bergstrom et al., *License to Kill: Reforming Federal Wildlife Control to Restore Biodiversity and Ecosystem Function*, 7 CONSERV. LETTERS 131–42 (2013).

[314] U.S. Dep't of Agriculture, Animal & Plant Health Inspection Service, Wildlife Services, Program Data Report G – Filtered by State: Montana, *available at*: https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/pdr/?file=PDR-D_Report&p=2019:INDEX: (last visited Feb. 17).

[315] Virgós, Emilio, et al., A poor international standard for trap selectivity threatens carnivore conservation. Biodivers. Conserv. 25 (2016) 1409-1419.

ecology.[316] Even research conducted by USDA's National Wildlife Research Center shows the large number of non-target species that visit Wildlife Services' trap sites.[317]

The EA states that non-target species caught in these devices will be released, if possible.[318] Unfortunately, as discussed above in Section VII.C, many animals will experience injuries, or even death, from capture. In discounting impacts to non-target species, the EA fails to reconcile the abundant literature on the risks and trauma associated with trapping (e.g., lacerations, sprains, strains, amputations, broken bones, organ damage, hypo- and hyper-thermia, dehydration, and mortality) and how animals released in apparently good condition often die after release (e.g., reperfusion syndrome resulting in generalized organ damage).

As the EA acknowledges, and as also discussed above, there are two threatened species at particular risk from WS-Montana's predator control activities: Canada lynx and grizzly bears. The EA states, "WS-Montana has determined that grizzly bears and Canada lynx were likely to be adversely affected (LAA) by some aspects of IPDM."[319]

Regarding lynx, this species is at risk from indiscriminate methods used by WS-Montana to target both bobcats and coyotes, including foot and neck snares and steel-jawed leghold traps. In particular, bobcats and Canada lynx, a threatened species, are morphologically similar and have overlapping ranges in Montana. As discussed above, lynx may be trapped by WS-Montana notwithstanding any restrictions on fish, fresh meat, and anise olfactory attractants and certain visual lures because lynx can be attracted to urine and other enticing or curiosity-evoking scents that WS-Montana may still use. Any restrictions on pan-tension weights in the trapping and snaring of bears and mountain lions, in order to protect lynx, would not apply when WS-Montana targets coyotes and bobcats using traps and snares. As such, the best available science (including FWS's and the International Association of Fish and Wildlife Agencies' ("IAFWA") own guidance[320]) reveals lynx could be accidentally trapped and snared (as they have in the past), and the EA must adequately address and analyze this risk. Even a single lynx killed or injured by WS-Montana may affect the genetic diversity and survival of some of the few remaining subpopulations of lynx in Montana (the species' range and numbers have contracted in Montana since they were listed in 2000[321]) and harm the species' long-term persistence and

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[316] J.A. Shivik, and K.S. Gruver, Animal attendance at coyote trap sites in Texas. Wildl. Soc. Bull. 30 (2002) 502-57; J.K. Bump, et al., Bear-Baiting May Exacerbate Wolf-Hunting Dog Conflict. PLoS ONE 10.1371/journal.pone.0061708 (2013); L. Dunkley, and M.R.L. Cattet, A Comprehensive Review of the Ecological and Human Social Effects of Artificial Feeding and Baiting of Wildlife, Wildlife Damage Management, Internet Center for Canadian Cooperative Wildlife Health Centre: Newsletters & Publications, University of Nebraska, Lincoln, Nebraska, USA, 2003; J.L. Manning, and J.L. Baltzer, Impacts of black bear baiting on Acadian forest dynamics - An indirect edge effect? For. Ecol. Manage. 262 (2011) 838-844; Dunkley, L., & Cattet, M. R. L. (2003). A Comprehensive Review of the Ecological and Human Social Effects of Artificial Feeding and Baiting of Wildlife. *Canadian Cooperative Wildlife Health Centre: Newsletters & Publications., 21*, 1–68.

[317] Shivik, J.A., Gruver, K.S., 2002. Animal attendance at coyote trap sites in Texas. Wildlife Society Bulletin 30, 502-557.

[318] EA at 139; *see also* Wildlife Services Directive 2.450(6)(c).

[319] EA at 273.

[320] *See* FWS and IAFWA, How to Avoid Incidental Take of Lynx (Sept. 2003).

[321] *See* 65 Fed. Reg. 16052 (Mar. 24, 2000).

ability to recover in areas of Montana in the face of climate change and other threats.

Further, relying on "protective conditions" for lynx contained in a 2009 FWS biological opinion is improper. The 2009 biological opinion is outdated, does not incorporate and utilize the best available science on lynx (or threats to the species), improperly defines the "effects of the action" and "environmental baseline," fails to adequately consider and analyze the cumulative effects to lynx, and includes a flawed incidental take statement ("ITS") and related terms and conditions.[322] The amount of incidental take specified in the biological opinion's ITS has likely already been exceeded. The 2009 biological opinion also fails to incorporate important changes made to trapping practices in Montana within the lynx protection zones adopted by FWP. These changes should be incorporated into the biological opinion to minimize the risk of incidental take and bring the agency's predator control efforts in line with protective lynx measures adopted by Montana.

Further, in 2014, FWS designated revised critical habitat for lynx and revised the boundary of the Canada lynx distinct population segment to extend ESA protections to lynx wherever they occur in the contiguous United States. *See* 79 Fed. Reg. 54782, 54782 (Sept. 12, 2014). This action designated critical habitat for lynx that may be affected by WS-Montana's predator control activities.[323] It may have also generated new information relevant to the effects WS-Montana's PDM activities could have on lynx. As a result, WS-Montana and FWS must reinitiate consultation and develop a new biological opinion with updated protective measures. *See* 50 C.F.R. 402.16(a); *see also Cottonwood Environmental Law Center v. U.S. Forest Serv.*, 789 F.3d 1075, 1085-86 (9th Cir. 2015).

The EA also does not adequately consider various issues to reduce incidental take of protected grizzly bears, which are at risk from the indiscriminate methods WS-Montana uses to target coyotes, wolves, black bears, and mountain lions. As with lynx, the EA refers to "protective conditions" contained in a 2012 biological opinion completed by FWS that purportedly analyzes the impacts of WS-Montana's PDM program on grizzlies.[324] But, as with lynx, the 2012 biological opinion relied on by WS-Montana is outdated, does not incorporate and utilize the best available science on grizzly bears (or threats to the species), improperly defines the "effects of the action" and "environmental baseline," fails to adequately consider and analyze the cumulative effects to grizzly bears (including individual subpopulations), and includes a flawed ITS and related terms and conditions.[325] The amount of incidental take specified in the biological opinion's ITS has likely already been exceeded.

To comply with NEPA and the ESA, WS-Montana must also expand the scope of its cumulative effects analysis on grizzly bears beyond the artificial state political boundaries.

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[322] *See* FWS, USDA APHIS Wildlife Services, Endangered Species Act Section 7 Consultation, Biological Opinion on the Effects of the Statewide Montana Wildlife Services' Wildlife Damage Program on Canada Lynx (July 2009).
[323] EA at 273.
[324] EA at 148-49.
[325] *See* FWS, USDA APHIS Wildlife Services, Endangered Species Act Section 7 Consultation, Biological Opinion on the Effects of the Statewide Montana Wildlife Services' Wildlife Damage Program on Grizzly Bears (June 2012).

Focusing solely on WS-Montana's activities in Montana, for example, neglects to take into account similar, collective threats to grizzly bears and grizzly bear recovery also occurring in Idaho and Wyoming to the *same* subpopulation. Grizzly bears in the Greater Yellowstone region, for instance, are impacted by WS-Montana, WS-Idaho, and WS-Wyoming activities (both intentional and incidental take and removals), as well as by the synergistic effects of illegal take, self-defense and incidental take from hunters and trappers (including bear baiting), trains and highways, isolation, low-genetic diversity, small population size, climate change (including loss of important food sources and a related increased reliance on a meat-based diet), loss of habitat, increased roads and road-density, inadequate regulatory mechanisms, decrease in available prey, and other threats in the tri-state region. But nowhere in the EA or biological opinion does WS-Montana take a hard look at the collective or combined impacts to grizzly bears or grizzly bear recovery in the GYE region from these threats. The same is true for other grizzly bear subpopulations and recovery zones, including CYE, Selkirk, and NCDE. Another flaw is WS-Montana's reliance on population trend data as a metric to assess impacts to grizzly bears (including cumulative impacts) even though this data fails to address future threats or account for a lag effect between the data and its effects.

Further, the EA fails to analyze new information since 2012, including many relevant studies cited in these comments, that reveals the effects of the agency's PDM activities on grizzly bears and grizzly bear recovery in the lower 48 states (including reestablishing connectivity between subpopulations) goes beyond the extent previously considered by the agency. *See* 50 C.F.R. 402.16(a). WS-Montana and FWS must prepare a new biological opinion for this 2021 decision and/or reinitiate consultation and develop a new biological opinion with updated protective measures for grizzly bears.

The "protective measures" in the 2012 biological opinion are also insufficient to protect grizzly bears. For example, the EA indicates that neck snares (with the exception of certain snares used for coyotes) will only be used during the grizzly bear denning period (between December 1 and March 1). However, that timing would not protect bears who enter dens late, emerge early, or briefly leave a den during hibernation,[326] all of which are likely to increase as climate change decreases the periods during which bears are inactive. Similarly, the pledge to utilize scents at trap sites that are less attractive to grizzly bears, such as wolf urine,[327] is hardly a guarantee that a curious grizzly will not investigate a wolf scent, and become trapped. Also, bears would not be protected from the snares used for coyotes year-round. Death or injury of even a single grizzly bear in Montana could impair recovery—particularly if it is a female or a bear in a connectivity zone, as discussed above.

The protective conditions in place for wolverines are equally insufficient. As the EA acknowledges, wolverines were proposed for listing under the ESA recently, and are designated as a "species of concern" in Montana.[328] They are also a "Regional Forester Sensitive Species in the USFS Northern Region and a BLM Special Status Species."[329] First, applying the protective

[326] Linnell, J. D. C., J. E. Swenson, R. Andersen & B. Barnes. 2000. How vulnerable are denning bears to disturbance? Wildlife Society Bulletin, June, 2000.
[327] EA at 150.
[328] EA at 275.
[329] EA at 275.

measures only in wolverine habitat above 7,000 feet[330] ignores the fact that wolverines also use areas well below that elevation. Indeed, FWS has determined that average seasonal elevations occupied by wolverines in the Northern Rockies varies between about 5,000 and 8,500 feet. *See* 78 Fed. Reg. 7864, 7868 (Feb. 4, 2013).

Second, setting traps and snares away from animal carcasses and not using "musky or castor-based olfactory lures" will not protect wolverines. According to one FWS biologist, "[a]s scavengers and hunters always looking for their next meal, wolverines are naturally curious and likely to check out novel things."[331] In one instance in Wyoming, a wolverine was recorded investigating a carcass hung in a tree by researchers—as well as the area all around the tree, including the trail camera set up several feet away.[332] In the same way, a wolverine would be likely to investigate the entire area around a carcass or be drawn to a novel lure, and be at risk of being caught in a nearby trap or snare.

In the EA, WS-Montana concedes it has unintentionally captured several wolverines in recent decades, including in Montana, but downplays the impacts.[333] This is a mistake that must be corrected.

The total population of wolverines in the lower 48 is estimated to be roughly 250-300 individuals. *See* 79 Fed. Reg. 47522, 47534 (Aug. 13, 2014). The estimated *effective* population size (the number of individuals able to contribute to the next generation) is between 28 and 52 individuals. *Id.* at 47542. These numbers are well below the "50/500 rule" (the 50 number needed for short-term viability and 500 number need for long-term viability). *See* 78 Fed. Reg. 7864, 7884 (Feb. 4, 2014). And, due to climate change and the projected loss of habitat and habitat connectivity (needed for genetic exchange) over the next few decades, the situation for wolverines is only getting worse. This is particularly true in Montana. At such low numbers, wolverines are genetically and demographically dependent for long-term persistence on connectivity to wolverines in other states and in Canada. For any connectivity to occur, wolverines will have to traverse areas where their vulnerability to WS-Montana's lethal methods may be great. The best available science reveals such vulnerability will only increase in the face of climate change. Individual subpopulations of wolverines in Montana will continue to become smaller and more isolated in the coming decades. And, due to the low number of wolverines in the state and region (both total and effective population), the death or injury of even a *single* wolverine – including a dispersing wolverine - from a subpopulation can be the difference between having a source or sink population and bringing the species a step closer to extinction. In other words, no individual wolverine in the lower 48 is "incidental" to the species.

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[330] EA at 150.
[331] *See* FWS, Open Spaces, a Talk on the Wild Side: A Wolverine's 15 Minutes of Fame (March 27, 2018), *available at* https://www.fws.gov/news/blog/index.cfm/2018/3/27/A-Wolverines-15-Minutes-of-Fame.
[332] *Id*.
[333] EA at 276.

Studies indicate the importance of individuals to the wolverine population as a whole. For example, Squires et al. (2007)[334] estimated that four mountain ranges in western Montana collectively contained only about 13 wolverines and that the trapping and killing of even one wolverine (either intentionally or accidentally) from this isolated population could result in serious harm to the population.[335] And, the trapping and killing of two pregnant females was devastating to the local population.[336]

Based on data from the Glacier Wolverine Project (2002-2007), researchers determined that the population in the protected park where no trapping occurs "was stable to just very slightly increasing."[337] But, using the same data, they predicted "that the additional death of *one more* adult, particularly a breeding-age female, would have put the population on a downward trend. Two such deaths would have made for a much sharper rate of decline."[338]

In his book *The Wolverine Way,* Douglas Chadwick explains how this occurs:

> Wolverine females don't produce offspring until at least age three and then have two kits per litter every other year, on average . . . . So in a female's breeding life, which would end after around age ten, she'll have three litters and a total of six kits. The sex ratio is 50:50, so we've got three new males and three new females in the population. Half those kits will die before reaching maturity. Now we're down to 1.5 males and 1.5 females as the offspring. One of each has to survive and stick around to replace their parents in the population. That leaves half a male and half a female to disperse and carry genes somewhere else. You can see how a small change in the number of breeding females would make a big difference.[339]

Further, if a nursing mother "is taken in a trap anywhere within her wide hunting range, you'd have to subtract both that breeding-age female and her young starving back in the den from the population."[340] Likewise, should "the resident adult male be trapped instead during the course of his still wider and more frequent travels, a transient male could come in and kill the kits. If the newcomer doesn't kill them, the kits still grow up with less protection from other wolverines and less experience gained from traveling with a father after they separate from the mother. Both factors lower the offspring's chances of successfully reaching adulthood and either replacing numbers in the population or transporting genes to other homelands."[341]

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[334] Squires, J.R., Copeland, J.P., Ulizio, T.J., Schwartz, M.K., and Ruggiero, L.F., 2007. Sources and Patterns of Wolverine Mortality in Western Montana. Journal of Wildlife Management 71(7):2213-20.
[335] *Id.* at 2218.
[336] *Id.*
[337] Douglas H. Chadwick, *The Wolverine Way* 248 (Patagonia Books 2010) (internal quotations omitted).
[338] *Id*. (emphasis added).
[339] *Id.*
[340] *Id.* at 249.
[341] *Id.*

Inman et al. (2008)[342] note that Montana's decision to close part of Montana to wolverine trapping "could result in higher adult female survival, which is influential in population growth rate . . . Protection in [Wolverine Management Unit ("WMU")] 4 could also result in higher survival of young dispersing wolverines as they move through these mountain ranges. In essence, closing WMU 4 maximizes the chance that these areas are source areas rather than sinks."[343] Conversely, authorizing wolverine trapping or trapping for other species in wolverine habitat does just the opposite by increasing the chances that these areas are sinks rather than sources.

The take away from these (and other) studies is simple: the accidental or incidental take of even one wolverine (especially a female) can be significant to the subpopulation and ultimately the species' survival and recovery in the contiguous United States. WS-Montana must therefore take more proactive steps to ensure this does not occur. In addition, WS-Montana must carefully analyze the direct, indirect, and cumulative effects to wolverines (including individuals) and wolverine survival and recovery in the contiguous United States from its predator control work (and take into account similar cumulative threats to the species, subpopulations, and dispersing individuals by WS-Idaho and WS-Wyoming).

The effective (reproducing) population size of wolverines in the Northern Rockies has been estimated at between 28 and 52 individuals.[344] At such low numbers, wolverines are genetically and demographically dependent for long-term persistence on connectivity to wolverines in other states and in Canada. For any connectivity to occur, wolverines will have to traverse areas where their vulnerability to WS-Montana's lethal methods may be great. Due to the low number of wolverines in the state and region, the death or injury of even a single wolverine would be a step closer to extinction for this imperiled mammal. Yet, as the EA acknowledges, Wildlife Services has unintentionally captured several wolverines in recent decades, including in Montana.[345] This issue must be addressed in the EA.

The EA must also evaluate the impacts of predator control on swift foxes. Swift foxes inhabit just 44 percent of their historical range in the U.S. *See* Sovada et al. (2009).[346] That includes a small, unknown number of foxes in southeast Montana, and a separate, isolated population of foxes in northcentral Montana.[347] There are only a few hundred foxes total in the state.[348] They are vulnerable to incidental capture in traps and snares,[349] and to being killed by M-44s (*see* Young et al. 2016). Yet, the EA does not even mention swift foxes, the danger PDM

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[342] Inman, R.M., Packila, M.L., Inman, K.H., Spence, R.S., and McCauley, D. (DVM), 2008. Wildlife Conservation Society. Greater Yellowstone Wolverine Program Progress Report—November 2008, p. 10.
[343] *Id.*
[344] 78 Fed. Reg. 7864, 7884 (Feb. 4, 2014).
[345] EA at 276.
[346] Sovada, M.A., Woodward, R.O., and Igl, L.D., 2009. Historical range, current distribution, and conservation status of the Swift Fox, *Vlupes velox*, in North America. Canadian Field-Naturalist 123(4):346-67.
[347] *See* FWP, Draft Montana Swift Fox Conservation Strategy (2019), pp. 7-9.
[348] *Id.*
[349] U.S. Dep't of Agriculture, Animal & Plant Health Inspection Service, Wildlife Services, 2019 Program Data Report G, *available at*: https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/pdr/?file=PDR-D_Report&p=2019:INDEX: (last visited Feb. 17).

operations pose to them and their recovery, or the adverse effects that killing them unintentionally could have on the ecosystems they inhabit.

Long-tailed and short-tail weasels are also vulnerable to M-44s, traps and snares. These mustelids are rare and declining and the effects of WS's killing and injuring of them is not adequately analyzed.

The EA also lacks any analysis of WS-Montana's use of Weevil-Cide® to kill black-tailed prairie dogs. In addition to being inhumane, as discussed above, this fumigant poses a significant risk to non-target species. According to the applicator instructions for aluminum phosphide issued by the Environmental Protection Agency, "[t]his product is very highly toxic to wildlife. Non-target organisms exposed to phosphine gas will be killed."[350] Indeed, Wildlife Services has acknowledged that "[a] primary concern of the use of fumigants is nontarget species take" and reported that between FY11 and FY15, "WS annually averaged the known take of 54,096 target rodents and an estimated *2,333 vertebrate nontarget species* with aluminum phosphide in 9 states."[351] The agency does not know the actual numbers of non-target deaths because it does not excavate dens after treatment.[352] The clear risk posed by Weevil-Cide® to non-target species necessitates analysis of the effects of, and reasonable alternatives to, its use. Relatedly, WS-Montana also failed to analyze the impacts (direct, indirect, and cumulative) to black-footed ferret populations and black-footed ferret recovery from its predator control of prairie dogs (including how its predator control efforts impact existing and potential reintroduction sites needed for recovery).

Killing black-tailed prairie dogs and destroying their dens also affects other species. For example, prairie dog destruction causes a reduction in prey base. This may affect the broad range of avian and mammalian predators that prey on prairie dogs or are dependent upon prairie dog colonies for habitat, such as badgers, black-footed ferrets, coyotes, ferruginous hawks, golden eagles, prairie falcons, burrowing owls, prairie rattlesnakes, mountain plovers, and horned larks.[353] In addition to serving as a prey base for dependent and associated species,[354] prairie dogs provide vital ecosystem services that are compromised when they are killed en masse. These ecosystem services include: increased groundwater recharge and water penetration,[355] soil

[350] Environmental Protection Agency. 2016. Applicator's Manual PH_3 Aluminum Phosphide Fumigant Pellets / Tablets.
[351] U.S. Department of Agriculture. 2020. Human Health and Ecological Risk Assessment for the Use of Wildlife Damage Management Methods by USDA-APHIS-Wildlife Services. Chapter IX the Use of Aluminum Phosphide in Wildlife Damage Management. Peer Reviewed Final, pp. 1, 12 (emphasis added).
[352] *Id.* a 1.
[353] N.B. Kotliar, *The Prairie Dog as a Keystone Species*, *in* Conservation of the Black-tailed Prairie Dog: Saving North America's Western Grasslands 53 (J. Hoogland ed., 2006).
[354] *Id.*
[355] L. Martínez-Estévez, et al., *Prairie dog decline reduces the supply of ecosystem services and leads to desertification of semiarid grasslands*, 8 *PLOS ONE* 1–9 (2013); A. Outwater, Water: A Natural History (1996); J.K. Detling, *Mammalian herbivores: ecosystem-level effects in two grassland national parks*, 26 Wildlife Society Bulletin 438–448 (1998).

aeration,[356] carbon sequestration,[357] nutrient cycling,[358] increased nitrogen content of soil and plants,[359] creation of a diverse mosaic of grassland habitats,[360] prevention of desertification,[361] fire breaks,[362] and preservation of the black-footed ferret, a species listed as endangered under the Endangered Species Act.[363] Far from taking a "hard look" at the impacts of killing so many prairie dogs each year, the EA takes no look at all. The EA should meaningfully address this issue.

WS-Montana should also evaluate the implications of PDM operations on avian species protected under the Migratory Bird Treaty Act ("MBTA"), 16 U.S.C. §§ 703-712 (§709 omitted). The MBTA provides that it is unlawful to pursue, hunt, take, capture, kill, possess, sell, purchase, barter, import, export, or transport any migratory bird, or any part, nest, or egg or any such bird, unless authorized under a permit issued by the Secretary of the Interior. 50 C.F.R. § 10.13. Over 800 species are currently on the list of protected migratory birds.[364] This is an important issue, given the number of birds WS-Montana kills each year, as well as WS-Montana's use of lead ammunition, which negatively impacts many avian species, as discussed below.

Lastly, the EA does not adequately address the numerous risks associated with WS-Montana's use of lead ammunition. Numerous species, including threatened and endangered species, are all imperiled by lead ammunition and other lead equipment used and discarded by the agency. The EA improperly downplays the risks associated with adding lead to the environment through the use of lead ammunition, a risk the agency describes as "very low" or "negligible."[365] Importantly, the use of lead shot is concentrated in certain areas and not evenly

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[356] N.B. Kotliar, *The Prairie Dog as a Keystone Species*, *in* Conservation of the Black-tailed Prairie Dog: Saving North America's Western Grasslands 53 (J. Hoogland ed., 2006).
[357] L. Martínez-Estévez, et al., *Prairie dog decline reduces the supply of ecosystem services and leads to desertification of semiarid grasslands*, 8 *PLOS ONE* 1–9 (2013); A. Outwater, Water: A Natural History (1996); J.K. Detling, *Mammalian herbivores: ecosystem-level effects in two grassland national parks*, 26 Wildlife Society Bulletin 438–448 (1998).
[358] N.B. Kotliar, *The Prairie Dog as a Keystone Species*, *in* Conservation of the Black-tailed Prairie Dog: Saving North America's Western Grasslands 53 (J. Hoogland ed., 2006).
[359] Detling, *supra* note 18; E.A. Holland and J.K. Detling, *Plant response to herbivory and below ground nitrogen cycling*, 71 Ecology 1,040 (1990).
[360] C.N. Slobodchikoff, et al., Prairie Dogs: Communication and Community in an Animal Society (2009).
[361] E. Ponce-Guevara, et al., *Interactive effects of black-tailed prairie dogs and cattle on shrub encroachment in a desert grassland ecosystem*, 11 PLOS ONE e0154748 (2016), *available at* https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0154748.
[362] N.B. Kotliar, *The Prairie Dog as a Keystone Species*, *in* Conservation of the Black-tailed Prairie Dog: Saving North America's Western Grasslands 53 (J. Hoogland ed., 2006).
[363] U.S. Fish and Wildlife Service, Recovery plan for the black-footed ferret (*Mustela nigripes*) (2013), *available at* https://www.fws.gov/mountain-prairie/species/mammals/blackfootedferret/2013NovRevisedRecoveryPlan.pdf.
[364] U.S. Fish and Wildlife Service, Migratory Bird Treaty Act protected species (10.13 list). 2013, *available at* https://www.fws.gov/birds/management/managed-species/migratory-bird-treaty-act-protected-species.php.
[365] EA at 327, 328.

spread across all of Montana, which the EA acknowledges.[366] The localized impacts of the use of lead shot should therefore be evaluated in greater detail. Below we summarize the effects of lead on a variety of species.

Lead has highly negative effects on numerous avian species. Lead shot is lethal to predatory and scavenging raptors feeding on hunter-killed carcasses, documented in red-tailed hawks, northern goshawks, and great horned owls. Lead exposure and poisoning from ingesting spent lead shot has also been documented in many species of upland game birds such as chukar, grey partridge, ring-necked pheasant, wild turkey, scaled quail, northern bobwhite, American woodcock, ruffed grouse, and mourning dove.[367] A number of gruiformes have been shown to ingest lead shot, including greater sandhill cranes, American coots, clapper rails, king rails, Virginia rails, and sora.[368] Lead poisoning from ingested, spent lead ammunition has also been documented in several songbird species in the United States, including white-throated sparrow, dark-eyed junco, brown-headed cowbird, yellow-rumped warbler, brown thrasher, and blue-headed vireo.[369] Ravens are also susceptible, likely due to consumption of lead bullet fragments left behind in gut piles of hunted elk, deer and moose.[370] Craighead and Bedrosian documented

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[366] EA at 327.

[367] Campbell, H. 1950. Quail Picking Up Lead Shot. Journal of Wildlife Management 14:243-244. Damron, B.L., and H.R. Wilson. 1975. Lead Toxicity of Bobwhite Quail. Bulletin Environmental Contamination Toxicology 14:489-496. Best, T.L., et al. 1992a. Ingestion of Lead Pellets by Scaled Quail (Callieppla squamata) and Northern Bobwhite (Colinus virginianus) in southeastern New Mexico. Texas Journal of Science 44:99-107. Yamamoto, K., et al. 1993. The Prevalence and Retention of Lead Pellets in Japanese Quail. Archives of Environmental Contamination and Toxicology 24:478-482. Kendall, R.J., et al. 1996. An Ecological Risk Assessment of Lead Shot Exposure in Non-Waterfowl Avian Species: Upland Game Birds and Raptors. Environmental Toxicology and Chemistry 15:4-20. Akoshegyi, I. 1997. Lead Poisoning of Pheasants Caused by Lead Shots. Magyar Allatorvasok Lapja 119(6):328-336. Keel, M.K., et al. 2002. Northern Bobwhite and Lead Shot Deposition in an Upland Habitat. Archives of Environmental Contamination and Toxicology 43:318-322. Battaglia, A., et al. 2005. Heavy Metal Contamination in Little Owl (Athene noctua) and Common Buzzard (Buteo buteo) from Northern Italy. Ecotoxicology and Environmental Safety 60(1):61-66. Butler, D.A., et al. 2005. Lead Exposure in Ring-Necked Pheasants on Shooting Estates in Great Britain. Wildlife Society Bulletin 33(2):583-589. Fisher, I.J., D.J. Pain, and V.G. Thomas. 2006. A Review of Lead Poisoning From Ammunition Sources in Terrestrial Birds. Biological Conservation 131:421-432. Schulz, J.H., et al. 2006. Acute Lead Toxicosis in Mourning Doves. Journal of Wildlife Management 70:413-421.

[368] Jones, J. C. 1939. On the Occurrence of Lead Shot in Stomachs of North American Gruiformes. Journal of Wildlife Management 3:353-357. Kennedy, S., et al. 1979. Lead Poisoning in Sandhill Cranes. Journal of American Veterinary Medical Association 171:955-958. Fisher, I.J., et al. 2006. A Review of Lead Poisoning From Ammunition Sources in Terrestrial Birds. Biological Conservation 131:421-432. Windingstad, R.M., et al. 1984. Lead Poisoning of Sandhill Cranes (Grus Canadensis). Prairie Nat. 16, 21-24. Windingstad, R.M. 1988. Non Hunting Mortality in Sandhill Cranes. Journal of Wildlife Management 52(2):260-263. Franson, J.C. and S.G. Hereford. 1994. Lead Poisoning in a Mississippi Sandhill Crane. Wilson Bulletin 106:766-768.

[369] Lewis, L.A., et al. 2001. Lead Toxicosis and Trace Elements in Wild Birds and Mammals at a Firearms Training Facility. Arch. Environ. Contam. Toxicol. 41:208-214. Vyas, N.B., et al. 2001. Lead Shot Toxicity to Passerines. Environmental Pollution 111 (1):135-138. Vyas, N.B., et al. 2000. Lead Poisoning of Passerines at a Trap and Skeet Range. Environmental Pollution 107 (1):159-166.

[370] Craighead, D. and B. Bedrosian. 2008. Blood Lead Levels of Common Ravens with Access to Big-Game Offal. Journal of Wildlife Management 72(1):240-245. Craighead, D. and B. Bedrosian. 2009. A

that the blood lead levels of ravens around Grand Teton dropped, corresponding with increased use of non-lead ammunition by hunters on the National Elk Refuge and in Grand Teton National Park.[371]

Lead poisoning due to ingestion of spent shot or bullet fragments has had population-level effects for some bird species with low recruitment rates, depressed populations, or in recovery, such as the California condor, bald and golden eagles, trumpeter swan, sandhill crane, and spectacled eider.[372] Bald and golden eagles that ingest lead shot embedded in the tissues or the intestinal tract of waterfowl demonstrate acute and chronic symptoms of lead poisoning, and many studies have found high percentages of eagle populations across the United States that have elevated lead levels in their blood and organs.[373] Lead poisoning's effects on eagles included emaciation, evidence of bile stasis, myocardial degeneration and necrosis, and renal tubular nephrosis and necrosis.[374] In some areas of the country, approximately 15 to 20 percent of all bald eagle deaths are due to lead poisoning, usually from eating animals that were wounded with lead ammunition or from scavenging gut piles during and after the deer hunting season.[375] Lead shot from upland game hunting and lead bullet fragments from big game hunting

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Relationship Between Blood Lead Levels of Common Ravens and the Hunting Season in the Southern Yellowstone Ecosystem. *In* R. T. Watson, et al. (Eds.). Ingestion of Lead from Spent Ammunition: Implications for Wildlife and Humans. The Peregrine Fund, Boise, Idaho, USA.

[371] Craighead, D. and B. Bedrosian. 2009. A Relationship Between Blood Lead Levels of Common Ravens and the Hunting Season in the Southern Yellowstone Ecosystem. *In* R. T. Watson, et al. (Eds.). Ingestion of Lead from Spent Ammunition: Implications for Wildlife and Humans. The Peregrine Fund, Boise, Idaho, USA. Hatch, C. 2010. Lead in Ravens Drops with Copper Bullets. Jackson Hole News & Guide, February 24, 2010.

[372] Grand, J.B., et al. 1998. Effect of lead poisoning on spectacled eider survival rates. Journal of Wildlife Management 62:1103-1109. Hennes, S.K. 1985. Lead shot ingestion and lead residues in migrant bald eagles at the Lac Qui Parle Wildlife Management Area, Minnesota. Master's thesis. University of Minnesota. Church, M.E., et al. 2006. Ammunition is the principal source of lead accumulated by California condors re-introduced to the wild. Environmental Science and Technology 40(19):6143-6150; Pattee, O.H., et al. 1990. Lead hazards within the range of the California condor. The Condor 92:931-937.

[373] Hoffman, D. et al. 1981. Effects of lead shot ingestion on delta-aminolevulinic acid dehyratase activity, hemoglobin concentration, and serum chemistry in bald eagles. J. Wildl. Dis. 17:423-431. Miller, M. et al. 2001. Hemograms for and nutritional condition of migrant bald eagles tested for exposure to lead. J. Wildl. Dis. 37(3):481-488; Pattee, O.H., et al. 1981. Experimental lead shot poisoning in bald eagles. J. Wildl. Manage. 45:806-810; Coon, N.C., et al. 1969. Causes of bald eagle mortality, 1960-1965. Journal of Wildlife Diseases 6:72-76; Kaiser, et al. 1980. Ingestion of Lead Shot by Dunlin. The Murrelet 61(1):37; Harmata, A.R. and M. Restani. 1995. Environmental Contaminants and Cholinesterase in Blood of Vernal Migrant Bald and Golden Eagles in Montana. Intermountain Journal of Sciences 1(1):1-15.

[374] Franson, J.C. and R.E. Russell. 2014. Lead and Eagles: Demographic and Pathological Characteristics of Poisoning, and Exposure Levels Associated with Other Causes of Mortality. Ecotoxicology 23:1722–1731.

[375] Eisele, T. 2008. Outdoors: Time to Get the Lead Out of All Hunting, Fishing. Special to The Capital Times 3/12/2008. Strom, S.M., et al.. 2009. Lead Exposure in Wisconsin Birds. In R. T. Watson, M. Fuller, M. Pokras, and W. G. Hunt (Eds.). Ingestion of Lead from Spent Ammunition: Implications for Wildlife and Humans. The Peregrine Fund, Boise, Idaho, USA; J. L. Kramer, and P. T. Redig. 1997. Sixteen years of lead poisoning in eagles, 1980-1995: an epizootiologic view. Journal of Raptor Research,

and "varmint" shooting are also a significant cause of lead toxicity for bald and golden eagles.[376] Pattee and Hennes (1983) and other researchers have found that elevated lead levels in bald eagles corresponded well (89 percent) with late fall and winter waterfowl hunting seasons.[377] These findings are relevant to WS-Montana's operations because it conducts a significant amount of PDM using firearms, which, similar to hunting activities, contributes to lead in the environment. The EA must assess the literature cited herein and evaluate how WS-Montana's use of lead ammunition may contribute to lead toxicity in Montana's avian species.

Ingestion of lead by carrion scavenging mammals, such as coyotes, grizzly bears, black bears, wolves, wolverines and mountain lions feeding on so-called varmint carcasses, and gut piles and carcasses of big game during the hunting season, has rarely been studied. Large carnivores such as black bears, grizzly bears, wolves, and coyotes scavenge to varying degrees on ungulate offal piles abandoned by hunters. Mountain lions may periodically be exposed to lead at biologically significant levels because of the tendency to occasionally scavenge. Rogers et al. (2009) documented elevated lead blood levels in grizzly bears during hunting season, when they scavenge the remains of big game. Their preliminary data showed that 46 percent of tested bears in Yellowstone showed elevated blood lead levels.[378] The potential consequences for large mammalian scavengers are as yet unstudied. Long-lived species, however, are particularly susceptible to bioaccumulation of lead in bones, and repeated lead ingestion and accumulation in

32, 327-332; Clark, A.J. and A.M. Scheuhammer. 2003. Lead Poisoning in Upland-Foraging Birds of Prey in Canada. Ecotoxicology 12(1-4):23-30.

[376] Harmata, A.R. and M. Restani. 1995. Environmental Contaminants and Cholinesterase in Blood of Vernal Migrant Bald and Golden Eagles in Montana. Intermountain Journal of Sciences 1(1):1-15. Fisher, I.J., D.J. Pain, and V.G. Thomas. 2006. A Review of Lead Poisoning From Ammunition Sources in Terrestrial Birds. Biological Conservation 131:421-432. Hunt, W.G., et al. 2006. Bullet Fragments in Deer Remains: Implications for Lead Exposure in Scavengers. Wildlife Society Bulletin 34:168-171. Pauli, J.N. and S.W. Buskirk. 2007. Recreational Shooting of Prairie Dogs: A Portal for Lead Entering Wildlife Food Chains. Journal of Wildlife Management 71:103-108.

[377] O. H. Pattee and S. K. Hennes. 1983. Bald Eagles and waterfowl: the lead shot connection. Pages 230–237 in 48th North American Wildlife Conference 1983. The Wildlife Management Institute, Washington, DC, USA; *see also* Neumann, K. 2009. Bald Eagle Lead Poisoning in Winter. *In* R. T. Watson, M. Fuller, M. Pokras, and W. G. Hunt (Eds.). Ingestion of Lead from Spent Ammunition: Implications for Wildlife and Humans. The Peregrine Fund, Boise, Idaho, USA; Domenech, R. and H. Langner. 2009. Blood-Lead Levels of Fall Migrant Golden Eagles in West-Central Montana. Extended abstract *in* R. T. Watson, M. Fuller, M. Pokras, and W. G. Hunt (Eds.). Ingestion of Lead from Spent Ammunition: Implications for Wildlife and Humans. The Peregrine Fund, Boise, Idaho, USA; Bedrosian, B., and D. Craighead. 2009. Blood Lead Levels of Bald and Golden Eagles Sampled During and After Hunting Seasons in the Greater Yellowstone Ecosystem. Extended abstract *in* R. T. Watson, M. Fuller, M. Pokras, and W. G. Hunt (Eds.). Ingestion of Lead from Spent Ammunition: Implications for Wildlife and Humans. The Peregrine Fund, Boise, Idaho, USA; Franson, J.C. and R.E. Russell. 2014. Lead and Eagles: Demographic and Pathological Characteristics of Poisoning, and Exposure Levels Associated with Other Causes of Mortality. Ecotoxicology 23:1722–1731.

[378] Rogers, T., B. Bedrosian, D. Craighead, H. Quigley, and K. Foresman. 2009. Lead Ingestion by Scavenging Mammalian Carnivores in the Yellowstone Ecosystem. Extended abstract *in* R.T. Watson, M. Fuller, M. Pokras, and W.G. Hunt (Eds.). Ingestion of Lead from Spent Ammunition: Implications for Wildlife and Humans. The Peregrine Fund, Boise, Idaho, USA.

long-lived species can reduce bone mineralization, which could mean an increase in bone fragility.[379]

Overall, the EA fails to adequately consider the impact of WS-Montana's use of lead shot. Comments by the U.S. Fish and Wildlife Service on a similar EA stated that lead ammunition has serious impacts on scavenging raptors that should not be overlooked.[380] WS-Montana's rationale for continuing to use lead ammunition in many aspects of its PDM activities is both inadequate and inconsistent with the science documenting significant impacts on raptors and scavengers that ingest lead. Further, it is improper for the EA to rely upon on the analysis of the use of lead ammunition in the risk assessment prepared by APHIS-WS.[381] WS-Montana cannot "tier" to another document that has not undergone NEPA review. *See Kern,* 284 F.3d at 1073 ("[T]iering to a document that has not itself been subject to NEPA review is not permitted, for it circumvents the purpose of NEPA."). WS-Montana should not use lead shot, but if it elects to continue to do so, it must engage in a thorough analysis of the effects of that lead shot on wildlife and the environment. We request that WS-Montana adequately consider this important issue.

E. Recreation

The EA fails to provide a detailed analysis of the adverse impact wildlife killing has on recreation. Predator damage management activities can have far-reaching impacts on recreation, both directly and indirectly, and also carry varying impacts depending on the method used by Wildlife Services to kill animals.

The EA claims that the risk to the public of using devices such as traps, snares, and M-44s is very low, in part because their use is restricted in "public safety zones."[382] Public safety zones are one-quarter-mile buffer areas "around any residence or community, county, state or federal highway, or developed recreation site."[383] However, the EA acknowledges that these devices could still be used within the public safety zones—and M-44s could be used as close as 600 feet to the residence of a cooperator.[384]

As described above, the EA ignores the impact that the use of M-44s has had for the past decade on the public and their pets. It also fails to consider that rural residents and their children often access public land through non-traditional access points or through neighborhood

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[379] Gangoso, L., P. Alvarez-Lloret, A.A.B. Rodriguez-Navarro, R. Mateo, F. Hiraldo, and J.A. Donazar. 2009. Long-Term Effects of Lead Poisoning on Bone Mineralization in Vultures Exposed to Ammunition Sources. Environmental Pollution 157 569-574.

[380] The U.S. Fish & Wildlife Service has recognized this risk, stating "we recommend discussing in detail that lead bullets fragment in shot animals, that many raptors/eagles can feed off of one single carcass, and that a very, very small amount of lead (tiny fragment) can kill an eagle." Pls. Summary Judgment Memorandum, Case 1:17-cv-00206-BLW (ECF No. 18-1, filed Jan. 26, 2018).

[381] EA at 162 (citing U.S. Department of Agriculture, Human Health and Ecological Risk Assessment for the Use of Wildlife Damage Management Methods by USDA-APHIS-Wildlife Services. Chapter XII: Use of Lead in Wildlife Damage Management (Dec. 2017)).

[382] EA at 314, 344.

[383] EA at 314.

[384] EA at 314, 142; *see also* WS Directive 2.415, Attachment 1 § 26.

easements. Many of these homes are also unfenced with free roaming pets. The EA says that the agency will notify residence within 0.5 miles of any M-44 device,[385] but it does not provide how residences will be notified, how far in advance they will be notified, which residences will be notified, or how WS-Montana will confirm that notification has been received.

The EA also says that bilingual signs will be used near traps and M-44s, and, for M-44s, signs are placed "at all main access points to areas where M-44s are set."[386] However, this fails to provide clear notice or guidance for the public." The program must define "major access points" and delineate the size of the signs, their color, the height at which they are set, and more specifically where they are set. With Wildlife Services' history of poisoning accidents, the public cannot trust the program to place signs at their discretion. WS-Montana must explain how it is alerting residents of the danger and how it can justify continuing to use such a deadly poison near homes and where people recreate. WS-Montana must address the actual harm that M-44 use can cause to the recreating public and not just dismiss the risk as "very low" when so many accidents have occurred. The EA states at the outset that "the value of a human life is incalculable."[387] If this is the case, then it should apply to all situations within the EA.

WS-Montana must consider all possibilities for M-44 accidents because the program has already caused far too many of them. Since 2013, M-44s have been responsible for the deaths of 22 domestic animals, including dogs in Utah, Texas, and Idaho to name a few examples.[388] Most infamously, an M-44 even poisoned a child on public land in Pocatello, ID in 2017.[389] It is clear that use of this poison is inherently risky to the public and that the agency's past attempts at communicating these risks to recreationists have not been effective. This is also true for other indiscriminate killing methods such as trapping/snaring.

Additionally, the EA quickly and wrongly dismisses degradation of recreation caused by aerial PDM overflights.[390] It states that, in rare instances, people recreating in the vicinity of aerial shooting have been "startled."[391] As recently as August 2020, recreationists were forced to witness the agency, in the neighboring state of Wyoming, flying with a dead wolf "slung underneath" its helicopter; the wolf was just one of four killed during this spree of aerial shooting.[392] The EA disregards the real impact caused by aerial and other wildlife killing activities on recreationists who value carnivores. Wildlife Services has killed innumerable wolves, coyotes, bears, foxes, and mountain lions in Montana. This devastates local recreationists who enjoyed viewing, photographing, and watching these species in the wild. It

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[385] EA at 343.
[386] EA at 314, 335, 343.
[387] EA at 320.
[388] Philip Bump, *A Dog in Idaho Was Killed by a Cyanide Trap Laid by the US Government,* Washington Post (March 21, 2017), https://www.washingtonpost.com/news/politics/wp/2017/03/21/a-dog-in-idaho-was-killed-by-a-cyanide-trap-laid-by-the-u-s-government/.
[389] *Id.*
[390] *Id.*
[391] EA at 320.
[392] "Four wolves killed after recent cattle deaths in western Wyoming." Casper Star Tribune. August 26, 2020, *available at* https://trib.com/news/state-and-regional/four-wolves-killed-after-recent-cattle-deaths-in-western-wyoming/article_5a20f8f3-139e-5995-afd0-54fef8a423ac.html.

also inflicts trauma on recreationists who happen to stumble upon the agency's activities, such as aerial gunning or viewing a trapped or poisoned animal. These impacts are largely ignored in the EA. This is in error, and the psychological impact on humans who witness these activities, including post-traumatic stress disorder,[393] should be fully evaluated.

F. Cost-Benefit Analysis of WS–Montana's PDM Activities

The EA does not contain a cost-benefit analysis in violation of NEPA. This is unacceptable and fails to constitute a hard look. The economic analysis must be present in the NEPA document. NEPA's implementing regulations require an evaluation of economic impacts. *See* 40 C.F.R. §§ 1502.24, 1508.8 (the "effects" that a NEPA environmental review must evaluate include economic impacts). Further, there can be no hard look at the costs and benefits of an action unless all costs are disclosed. *Sierra Club v. Sigler*, 695 F.2d 957, 975-76 (5th Cir. 1983). A cost-benefit analysis should focus on the cost-benefit to the public as a whole and take into consideration the cost of the PDM program to the greater public, including the total and cumulative costs of providing services to the livestock industry, the livestock industry's contribution to climate change,[394] the loss of ecosystem services provided by animals killed by the program, and the loss of non-consumptive use revenue (i.e., money spent by eco-tourists and wildlife watchers) by killing wildlife. The EA should discuss the significant subsidy that ranchers whose cattle graze on public lands already receive, as detailed in the attached GAO report, assess the fairness of providing federal wildlife killing services as a further subsidy to the industry, and consider the fact that non-lethal management practices place less cost burden on those outside of the agricultural sector.

WS-Montana should also examine the numerous studies that support the intrinsic benefits of wildlife and the positive economic and environmental impacts of living wildlife populations, and conversely, the value of ecosystems services lost and non-consumptive use revenue (i.e., money spent by eco-tourists and wildlife watchers) lost by killing carnivores and other species. According to FWS, wildlife watching, including bird watching, generated $75.9 billion in expenditures in the United States in 2016.[395] In Montana, wildlife watching generated $4 billion in expenditures by residents and non-residents in 2011.[396]

Various studies support these numbers. Elbroch et al. (2017), for example, determined that a single bobcat in Yellowstone National Park was worth $308,105 based solely on their

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[393] Roberts, Andrea L., et al. "Race/ethnic differences in exposure to traumatic events, development of post-traumatic stress disorder, and treatment-seeking for post-traumatic stress disorder in the United States." *Psychological medicine* 41.1 (2011): 71.

[394] *See* Giampiero Grossi, Pietro Goglio, Andrea Vitali, Adrian G Williams, Livestock and climate change: impact of livestock on climate and mitigation strategies, *Animal Frontiers*, Volume 9, Issue 1, January 2019, Pages 69–76, https://doi.org/10.1093/af/vfy034.

[395] U.S. Department of the Interior, U.S. Fish and Wildlife Service, and U.S. Department of Commerce, U.S. Census Bureau. 2016 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation.

[396] U.S. Department of the Interior, U.S. Fish and Wildlife Service, and U.S. Department of Commerce, U.S. Census Bureau. 2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation—Montana at 4, 37, *available at* 2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (census.gov). The 2016 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation did not include state-specific data.

ecotourism value.[397] This economic valuation did not include consideration of the ecological value of bobcats. Duffield et al. (2008) estimated that "visitors coming from outside the [Northern Rockies], who are coming specifically to see or hear wolves in the park, spend $35.5 million annually." *See* Duffield et al. (2008).[398]

Coyotes are valuable even to ranchers because they reduce forage competition by consuming animals, such as jackrabbits, that compete with cattle for food. Coyotes prey heavily on jackrabbits.[399] By some estimates, jackrabbits are their primary prey in the western United States. It has been estimated that, excluding the insects, fruit and grass eaten, coyotes require 600 g of food daily, or 250 kg annually.[400] A black tailed jackrabbit weighs between 1.4 and 2.7 kg. Conservatively, that is about 90 rabbits per year. Eight jackrabbits are estimated to eat as much as one sheep, and 41 jackrabbits as much as one cow.[401] Thus, a single coyote could be saving forage for at least two cattle per year. Local markets estimate cattle as selling for between $800 and $2,300.[402] The EA should consider this financial impact, and similar impacts for sheep. While such comprehensive economic value assessment have not been done for most species, Gregr et al. (2020) provide evidence of the type of ecological and existence values that can be assigned to all wild animals, including the mammal and bird species killed by WS-Montana.[403]

Furthermore, every wild species has both an intrinsic and an ecological value associated with its role in the ecosystem. Whether they are predators or prey; detritivores, scavengers, or seed dispersers; whether they cache food, provide pollination services, control invasive species, transfer nutrients, consume insects or small mammals that may damage agricultural products or transmit disease (including to humans); all wild animals, in life and in death, provide critical ecological services or benefits to the ecosystems that they inhabit. Those services have an economic value. While humans may not have quantified such value for all species nationally or in specific states, this does not discount the fact that such value exists.

The EA must comprehensively assess the full value of wildlife that may be harassed, killed, removed, and destroyed by Wildlife Services, state, and/or county agents, and other

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[397] Elbroch, L.M., Robertson, L., Combs, K., and Fitzgerald, J. 2017. Contrasting bobcat values. Biodiversity Conservation. DOI 10.1007/s10531-017-1397-6.
[398] *See* Duffield et al., 2008. Wolf Recovery in Yellowstone: Park Visitor Attitudes, Expenditures, and Economic Impacts. The George Wright Forum, Vol. 25, No. 1, p. 17.
[399] Tesky, Julie L. 1995. Canis latrans. In: Fire Effects Information System. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer), *available at* www.fs.fed.us/database/feis/animals/mammal/cala/all.html.
[400] Gier, H. T. (1974), Ecology and Behavior of the Coyote (Canis latrans), pp. 247–262 in M. W. Fox (ed.) The Wild Canids: Their Systematics, Behavioral Ecology, and Evolution. New York: Van Nostrand Reinhold.
[401] Wildlife Damage Management, How much can a jackrabbit eat in a day? (Aug. 30, 2019), *available at* https://wildlife-damage-management.extension.org/how-much-can-a-jackrabbit-eat-in-a-day/.
[402] *See* https://www.billingslivestock.com/Cow_Sales/Links/CS_Market.html.
[403] Gregr, E.J., Christensen, V., Nichol, L., Martone, R.G., Markel, R.W., Watson, J.C., Harley, C.D.G., Pakhomov, E.A., Shurin, J.B., and Chan, K.M.A. 2020. Cascading social-ecological costs and benefits triggered by a recovering keystone predator. Science, 368, 1243–1247. Gregr et al. (2020) determined that sea otters in the eastern North Pacific Ocean had a net economic value of approximately 40.6 million USD, far in excess to their cost to the marine invertebrate fishing industry (5.5 million).

entities conducting predator control to address wildlife conflict incidents. Such an assessment must consider the use, existence, and ecological value of the potentially affected wildlife species in order to be complete, to fairly weigh any costs attributable to wildlife against their value, and to provide the public and decision-makers with such data to ensure that they can consider the economic impacts of the proposed action and any alternatives alongside other impact categories.

G. Effects Analysis

The EA's effects analysis is also wholly inadequate because it dismisses the potential for any significant effect on the environment without considering or disclosing the site-specific environmental impacts of its activities. Indeed, it says: "[t]he analyses in this EA are intended to apply to any action that may occur in any locale and at any time within Montana for which WS-Montana may be requested for assistance."[404] But the EA does not consider the impacts of WS-Montana's actions on specific locations where they might occur. Instead, it relies on annual work plans for that site-specific analysis, but it doesn't commit that any further NEPA analysis would occur with those work plans.[405] It also claims that site-specific analysis will occur through its Decision Model, which, contrary to the EA's claims, does not meet NEPA's standards for informing the public about the impacts of proposed agency actions before they occur.[406] WS-Montana cannot escape its obligation to provide quantified, detailed information about the effects of its activities by relying on the statewide generalizations in the EA. *See Kern*, 284 F.3d at 1075 (holding that agency could not rely on a "promise of a later site-specific analysis" to substitute for an adequate effects analysis). Without such information, its cumulative effects analysis is also fatally flawed.

VIII. FAILURE TO ANALYZE INDIRECT AND CUMULATIVE IMPACTS, AND CONNECTED AND SIMILAR ACTIONS

In addition to direct impacts, an EA must analyze indirect and cumulative impacts. Indirect effects include "growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems." 40 C.F.R. § 1508.8(b). Cumulative impacts result from incremental impacts of the action when "added to other, past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such actions." 40 C.F.R. § 1508.7; *see also Kern*, 284 F.3d at 1075-76. A federal agency must analyze multiple actions together in a single impact statement if they are "connected actions" or "cumulative actions." 40 C.F.R. § 1508.25; *see also Klamath-Siskiyou Wildlands Center*, 387 F.3d at 998–99 ("The purpose of this requirement is to prevent an agency from dividing a project into multiple actions, each of which individually has an insignificant environmental impact, but which collectively have a substantial impact." *Great Basin Mine Watch v. Hankins*, 456 F.3d 955, 969 (9th Cir. 2006). CEQ regulations instruct that "[s]ignificance cannot be avoided by terming an action temporary or by breaking it down into small component parts." 40 C.F.R. § 1508.27(b)(7); *see also Blue Mountains Biodiversity Project*, 161 F.3d at 1215. This requirement

[404] EA at 47.
[405] *See, e.g.*, EA at 36-37.
[406] EA at 47-48.

extends with equal force to both EAs and EISs. *See Te-Moak Tribe v. U.S. Dep't of the Interior*, 608 F.3d 592, 603 (9th Cir. 2010).

NEPA also demands that "[p]roposals or parts of proposals which are related to each other closely enough to be, in effect, a single course of action shall be evaluated in a single impact statement." 40 C.F.R. § 1502.4(a). Agencies use the criteria for scope to determine which proposals should be addressed in a particular environmental analysis. *See* 40 C.F.R. § 1502.4(a). Courts determining the relationships between proposals "apply an 'independent utility' test to determine whether multiple actions are so connected as to mandate consideration in a single EIS." *Great Basin Mine Watch*, 456 F.3d at 969. Actions are "connected" if they "automatically trigger other actions which may require environmental impact statements; cannot or will not proceed unless other actions are taken previously or simultaneously; or are interdependent parts of a larger action and depend on the larger action for their justification." 40 C.F.R. § 1508.25(a)(1)(i–iii). "Similar actions" are those that "when viewed with other reasonably foreseeable or proposed agency actions, have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography." 40 C.F.R. § 1508.25(a)(3). An agency should analyze similar actions together in the same environmental analysis when doing so is "the best way to assess adequately the[ir] combined impacts." *Id*.

There are various indirect and cumulative impacts that the EA does not address. The EA fails to adequately analyze the cumulative effect of WS-Montana's activities on the populations of different species when added to the impact that private hunters and trappers have on populations. Questions the EA should address include: (1) how many coyotes, mountain lions, bears, lynx, wolverine, bobcats, and other animals that may be directly or indirectly impacted by WS-Montana's PDM program are killed or injured by private hunters and trappers, either deliberately or accidentally; (2) what is the cumulative impact on the environment of all these losses; and (3) what is the impact of the demographic shift caused by continually killing coyotes and causing compensatory reproduction? Lists or tallies of impacts are not sufficient in a cumulative impacts analysis. For example, "[a] calculation of the total number of acres to be harvested in the watershed is a necessary component of a cumulative effects analysis, but it is not a sufficient description of the *actual environmental effects* that can be expected from logging those acres." *Klamath-Siskiyou*, 387 F.3d at 995 (emphasis added). Rather, the analysis must explain "how [] individual impacts might combine or synergistically interact with each other to affect the [] environment." *Id.* at 997.

Furthermore, as discussed in several sections in this comment, the EA does not consider the impacts of the PDM program on wildlife on a regional scale. Wildlife that are targeted or accidentally harmed by WS-Montana's activities do not have population boundaries that follow state lines. Rather, their populations and sub-populations occur at a regional scale. This is particularly true for rare species such as lynx, wolverine, wolves, grizzlies, and other forest carnivores.

The EA also failed to adequately evaluate the impacts of public lands grazing that the WS-Montana PDM program supports. If PDM activities are needed to support livestock producers, as the EA claims,[407] then the significant impacts of public livestock grazing are, at a

[407] EA at 59.

minimum, cumulative, and WS-Montana must analyze whether they are connected actions. After all, the PDM program to protect livestock on public lands would not proceed without public lands livestock grazing. They are interdependent parts of the larger action of raising livestock on public lands.

Therefore, the EA must analyze the profound impacts of livestock grazing in the subject areas on soil, vegetation, weeds, and wildlife. Numerous studies – attached – highlight the array of ecological impact from public lands grazing. They highlight how livestock grazing greatly increases weed transport and spread, destroys microbiotic soil crusts, and accelerates soil erosion (Belsky & Gelbard (2000)); lowers biodiversity, lowers population densities for a wide variety of taxa, and disrupts ecosystem functions including nutrient cycling and succession (Fleischner 2007); harms native plants and promotes alien plant growth (Kimbell & Schiffman (2003)); and reduces ground cover and herbaceous production (Carter et al. (2011)). Livestock grazing also requires a vast infrastructure of fences and water developments, with associated harmful impacts on wildlife, stream quality and quantity, and other resources. WS-Montana cannot ignore these serious impacts.

The EA should also discuss how lethal PDM is related to detrimental grazing by domestic and wild ungulates in riparian areas. Beschta & Ripple (2006) determined that overgrazing of streamside vegetation "adversely affect[s] the quality and extent of habitats for a wide range of aquatic/terrestrial biota" in areas where wolves have been removed. WS-Montana's actions to remove predators likely affect the way in which both domestic and wild animals graze the land, and this must be addressed.

The EA also improperly fails to consider the cumulative, connected, and related impacts of WS-Montana's programs to kill other species such as raptors, waterfowl, marmots, ground squirrels, prairie dogs, rabbits, turkey vultures, and pigeons.[408] The different animal-killing activities by WS are inextricably intertwined. Their omission from this analysis is improper segmentation. These programs are operated out of the same office, by the same personnel, under the same budget, using the same planes, the same trapping and snaring equipment and poisons, for many of the same requesters, and often on the very same outings.

Lastly, the EA must accurately and adequately assess the cumulative impacts of WS-Montana's PDM activities on wolves. The current analysis is inconsistent and flawed. For example, the EA suggests in one section that "WS-Montana would take no more than 80 gray wolves" per year,[409] while indicating in another section that the agency will take a maximum of 100 wolves annually.[410] The EA must explain which of these numbers is the accurate number, and how it was determined. Further, the EA indicates that the "projected maximum annual cumulative take" of wolves in Montana would be 401, equivalent to 43.1 percent of the

[408] *See* U.S. Dep't of Agriculture, Animal & Plant Health Inspection Service, Wildlife Services, Program Data Report G (2019), *available at* https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/pdr/?file=PDR-G_Report&p=2019:INDEX: (last visited Feb. 14, 2021).
[409] EA at 213.
[410] EA at 217, 220, Table 3.6.

population.[411] It is not clear, however, how the agency arrived at 401. If WS-Montana will kill up to 100 wolves each year, and the highest level of cumulative take by other sources in recent years was 338, then the projected maximum annual cumulative take should be 438 (100 + 338). That would constitute 47 percent of the state's estimated wolf population—even closer to the agency's high-end estimate (and even further above the low-end estimate) of 20-50 percent as the threshold for maximum sustainable harvest for wolves.[412] The EA must clarify and explain its calculations.

IX. WILDLIFE SERVICES' PROPOSAL TO CONDUCT WILDLIFE DAMAGE MANAGEMENT IN CONGRESSIONALLY DESIGNATED WILDERNESS AREAS CONTRAVENES THE WILDERNESS ACT AND FAILS TO CONSIDER IMPACTS TO SPECIAL AREAS

The EA fails to adequately consider the impacts of conducting its PDM activities on Montana's WAs, WSAs, Areas of Critical Environmental Concern and other protected areas. In addition, the EA fails to ensure that the public is informed about activities which might be conducted in these areas so that the public may evaluate whether proposed activities are consistent with the specific legislative mandates and management plans governing management of these areas. Without more site-specific analysis, Wildlife Services cannot ensure compliance with guiding legislation including but not limited to NEPA, the National Forest Management Act, the Federal Lands Policy and Management Act, and the Wilderness Act.

The Wilderness Act provides for a National Wilderness Preservation System to ensure that humans do not occupy or modify all lands within the country, leaving no lands designated for "preservation and protection of their natural condition." 16 U.S.C. § 1131(a). Wilderness Areas must be administered in a manner that will leave them "unimpaired for future use and enjoyment as wilderness," and that will provide for "the protection of these areas" and "the preservation of their wilderness character." *Id*. The definition of "wilderness" is an area where the community of life is "untrammeled" by humans and the land retains its primeval character and influence, and which is "protected and managed so as to preserve its natural conditions." 16 U.S.C. § 1131(c). These are areas affected primarily by the forces of nature that have outstanding opportunities for solitude or a primitive type of recreation. *Id*. Agencies administering Wilderness Areas are "responsible for preserving the wilderness character of the area." 16 U.S.C. § 1133(b); 36 C.F.R. § 293.2.

Nevertheless, the EA indicates that WS-Montana carries out some PDM activities in WAs.[413] Even though the EA acknowledges that "Congressional legislation for designation of each WA specifically addresses restricted and allowable actions," it does not explain how any predator control that alters the natural and untrammeled conditions of WAs by killing native predators is consistent with the specific statutory mandates governing each wilderness area in Montana.[414] Instead, it assumes that because "[t]he Wilderness Act does not prohibit [Wildlife

[411] EA at 217, 220, Table 3.6.
[412] EA at 267.
[413] EA at 348.
[414] EA at 352.

Damage Management] within designated wilderness," it allows it.[415] WS-Montana has not disclosed how the actions it plans to conduct and methods it plans to use are consistent (or not consistent) with the mandate to preserve natural, untrammeled, and undeveloped conditions imposed by the Act, or any additional mandates imposed by each WA's establishing legislation. Indeed, Wildlife Services does not rule out conducting "preventive" controls – which do not target specific offending predators and instead broadly target potentially-offending predators – in WAs. Such actions would not comply with the Wilderness Act, and Wildlife Services provides no basis for its conclusion that they are permissible in WAs.

Building on the erroneous premise that the Wilderness Act permits predator control, the EA next assumes that WS-Montana may carry out predator control in WAs without any additional NEPA analysis. The EA suggests that the agency plans to conduct activities in WAs while relying on annual work plans after the Forest Service or BLM completes a minimum requirements analysis using its "minimum resource decision guide" ("MRDG"). It also assumes that the actions will be authorized following completion of the MRDG and that outlining which actions will be undertaken in an annual work plan is adequate site-specific analysis. Again, this is not so. Wildlife Services cannot simply foist its responsibility to comply with NEPA when carrying out actions in Wilderness areas and other lands to be managed for their wilderness qualities on the Forest Service and BLM without additional NEPA analysis.

Not only is the EA here inadequate to support any such actions, an EA would not be adequate to support actions in WAs in any case, because any potential effects to WAs require an EIS. 40 C.F.R.§ 1508.27(b)(3); *see also WWP*, 320 F. Supp. 3d at 1150 (holding WS-Idaho's intention to conduct activities in WAs and/or WSAs was "yet another reason for requiring an EIS"). Moreover, the EA does not analyze whether actions in WAs are consistent with individual wilderness management mandates, consider site-specific information about predator populations or other environmental conditions, or describe projected actions in wilderness areas in any detail. Any action in WAs or WSAs would warrant an independent NEPA analysis given the deficiencies of the EA.[416]

The EA must consider how the PDM program will affect each individual WA Montana. The EA must disclose in detail environmental impacts, including but not limited to the effects of killing predators to benefit livestock on wilderness character. Moreover, the EA must analyze in detail how any activities proposed in WAs will comply with the statutory mandates, regulations, policy guidance, wilderness management plans, and land use plans governing each wilderness area in Montana. Any reliance on Annual Work Plans is insufficient to comply with NEPA's substantive requirements; the plans are completed without any public process and are insufficient to inform the public about impacts of WS-Montana's activities on wilderness character. The agency may not rely on future work plans to ensure its activities comply with legislative mandates, including NEPA. The importance of predators in WAs cannot be overstated. Both the Bureau of Land Management and Forest Service Manuals recognize the importance of predators

[415] EA at 58.

[416] *See, e.g.*, USDA APHIA Wildlife Services-Washington, Pre-Decision Environmental Assessment Mammal Damage Management in Washington (Jan. 2021), pp. 36-37 (indicating that WS-Washington would conduct specific NEPA analysis of any wildlife damage management operations occurring in special management areas).

and the importance of natural processes in determining wildlife populations. WS-Montana is required to more fully evaluate the impact of its PDM program on WAs.

WS-Montana is also required to more fully evaluate the impact of its PDM program on Wilderness Study Areas. BLM WSAs are governed by BLM Manual 6330, which restricts predator control activities and provides that they "should be carried out so as to minimize impacts to the wilderness characteristics of the WSA."[417] To comply with governing law, all impacts from Wildlife Services' activities must be compared to baseline levels of disturbance present in each WSA when it was designated, on all of the relevant resources the WSA was designated to protect. *See GYC v. Timchak*, No. CV-06-04-E-BLW, 2006 WL 3386731 (D. Idaho Nov. 21, 2006) (agency action authorizing heli-skiing in WSA violated Wyoming Wilderness Act, NEPA, and NFMA because agency did not compare authorized levels to levels when WSA was designated). If WS-Montana proceeds with PDM activities in WSAs without this analysis, then it will be violating laws including, but not limited to, NEPA, NFMA, FLPMA, and the Wilderness Act.

WS-Montana is also required to more fully evaluate the impact of its PDM program on Areas of Critical Environmental Concern ("ACEC"). ACECs are "areas within public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards." 43 U.S.C. § 1702(a). They are designated through land-use planning processes to protect values deemed "relevant" and "important." Relevant values may be a significant historic, cultural, or scenic value, a fish and wildlife resource, a natural process or system, or a natural hazard. *See* 43 C.F.R. § 1610.7-2(a)(1). Relevant values are also important where they are "of more than local significance and special worth, consequence, meaning, distinctiveness, or cause for concern." *Id.* at § 1610.7-2(a)(2). WS-Montana must explain how any PDM it conducts in ACECs will protect the relevant and important values. It must also explain how its PDM program is consistent with land-use plans and other mandates governing ACECs.

For similar reasons, WS-Montana has also failed to demonstrate compliance with NEPA and legislative mandates governing other special places, including but not limited to National Recreation Areas, National Conservation Areas, National Monuments, National Historic and Scenic Routes and Trails, and Wild and Scenic Rivers. WS-Montana must inform the public how its PDM program complies with the mandates governing management of these areas and how it will protect the special values for which they were established. WS-Montana may not rely on annual work plan meetings with land managers, which take place behind closed doors without public involvement, to comply with both NEPA's environmental analysis and public disclosure requirements.

[417] *See* BLM Manual 6330—Management of BLM Wilderness Study Areas (2012), § 1.6(D)(11)(g)(ii). Available at: https://www.blm.gov/sites/blm.gov/files/uploads/mediacenter_blmpolicymanual6330.pdf.

X. THE EA FAILS TO ADDRESS WHETHER WILDLIFE SERVICES' CURRENT PDM PROGRAM AND THE PROPOSED ACTION ARE CONSISTENT WITH GOVERNING FEDERAL LAND MANAGEMENT PLANS

All of Wildlife Services' activities on National Forest lands and BLM-managed lands must be consistent with applicable governing land use plans, as required by both the National Forest Management Act ("NFMA") and the Federal Lands and Policy Management Act ("FLPMA"). *See* 43 U.S.C. §§ 1712, 1732 (FLPMA); 16 U.S.C. § 1604(i) (NFMA); 43 C.F.R. §§ 1601.0-5, 1610.5-3(a), (b); 36 C.F.R. § 219.15(d). Other than explaining that WS-Montana does not conduct PDM in U.S. Forest Service specially designated areas (such as trailheads and campgrounds),[418] the EA does not address how its activities are consistent with specific directives of the relevant Forest Service Land and Resource Management Plans ("LRMPs") or BLM Resource Management Plans ("RMPs").

WS-Montana conducts predator control activities on public lands under the authority of a very general Memoranda of Understanding with the BLM and Forest Service. To provide site-specific authorization, the agency claims that it conducts annual meetings and prepares "Annual Work Plans" ("AWPs") with applicable BLM and Forest Service units. But these AWP meetings are not open to the public and do not involve any NEPA analysis. Consequently, Wildlife Services has failed to evaluate and publicly disclose how its activities meet the consistency provisions of NFMA and FLPMA.

XI. WS-MONTANA SHOULD NOT RELY ON OUTDATED AND FLAWED SCIENCE FOR ITS PDM EA

Outdated scientific research is abundant throughout the EA. While the validity of a study is not solely defined by its age, the fields of ecology and conservation biology have rapidly expanded and evolved over the past several decades. The EA contains numerous studies from as far back as the 1940s to 1980s. The EA dismisses several potentially significant impacts on the quality of the human environment without detailed analysis. Rather than relying on the best available science, the EA relies heavily on dated studies that simply agree with WS-Montana's proposed action. *See, e.g.*, Wagner and Conover (1999). The program must not only acknowledge the growing amount of credible conflicting evidence, but it must publicly explain why the studies it cites may be more relevant than contemporary peer-reviewed research.

For example, there is a growing amount of credible evidence that predator control does not work in its use to inflate game populations. The EA does not clearly indicate whether, or to what extent, WS-Montana conducts predator control for this reason. It does not analyze this issue at all, but does repeatedly say that if the agency is prohibited from using lethal PDM, that would prevent it from using lethal measures to respond to requests involving "game species."[419] The EA also states, without further explanation and without indicating WS-Montana's view, that

[418] EA at 349.
[419] *See, e.g.*, EA at 269, 278, 283, 294, 311, 325, 331, 346, 354.

"[s]ome individuals believe that IPDM is acceptable because it can help bolster certain species' populations such as game species (e.g., elk or mule deer) or sensitive/T/E species."[420]

To the extent WS-Montana conducts PDM to boost game populations, or perceives PDM activities as an effective tool to do so, the EA fails to consider modern evidence to the contrary. For example, it fails to review the positions of state fish and wildlife agencies and commissions, many of which, including those in New York, Illinois, Louisiana, Missouri, North Carolina, Pennsylvania, South Carolina, Vermont, West Virginia, and Wyoming, have concluded that reducing predator numbers will not enhance populations of ungulates, small game animals, and game birds.[421] Specifically, the Pennsylvania Game Commission found: "[T]he agency finally accepted the reality that predator control does not work . . . . To pretend that predator control can return small game hunting to the state is a false prophecy . . . . [Predators] don't compete with our hunters for game."[422] In a 2014 deer harvest report, the South Carolina Department of Natural Resources concluded that trying to control coyotes to manage deer predation was ineffective.[423] North Carolina researchers evaluated deer harvest numbers in South Carolina, North Carolina, Ohio, Florida, New Jersey, and New York and found that coyotes are not limiting deer numbers in those states, and that coyote removal programs do little to increase regional deer numbers.[424] The West Virginia Department of Natural Resources has found: "[p]redator control of coyotes because of wildlife predation is unwarranted and unnecessary."[425] Regarding game birds, the North Carolina Wildlife Resources Commission found that coyotes actually benefit game bird species because they suppress populations of smaller predators and because "most coyote diet studies document low to no prevalence of wild turkey or other game birds in diets."[426] These findings must be evaluated by WS-Montana.

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[420] EA at 357.

[421] *See, e.g.*, Illinois Dept. of Natural Resources, Illinois Digest of Hunting and Trapping Regulations: 2018-2019, *available at* https://www.dnr.illinois.gov/hunting/documents/hunttrapdigest.pdf; Travis Dufour, Living with Coyotes, Louisiana Dept. of Wildlife & Fisheries Wildlife, *available at* http://www.wlf.louisiana.gov/sites/default/files/pdf/publication/34726-living-coyotes-low-res/living_with_coyotes_low-res.pdf; Missouri Dept. of Conservation, Coyote, *available at* https://nature.mdc.mo.gov/discover-nature/field-guide/coyote; West Virginia Dept. of Natural Resources, Eastern Coyote Impacts Of The Eastern Coyote On Wildlife Populations, *available at* http://www.wvdnr.gov/hunting/CoyoteResearch.shtm; Dave Rippe, Predator Control and Wildlife, Wyoming Game and Fish Dept., Habitat Extension Bulletin: No. 57 (July 1995), *available at* https://wgfd.wyo.gov/WGFD/media/content/PDF/Habitat/Extension%20Bulletins/B57-Predator-Control-and-Wildlife.pdf.

[422] Jeff Mulhollem, *Pennyslvania Game Commissioners Reply to Unified Sportsmen of Pennsylvania on Predator Questions*, Outdoor News (July 22, 2016), *available at* https://www.outdoornews.com/2016/07/22/pennsylvania-game-commissioners-reply-to-unified-sportsmen-of-pennsylvania-on-predators-questions/.

[423] Charles Ruth, 2014 South Carolina Deer Harvest Report, South Carolina Dept. of Natural Resources, *available at* http://www.dnr.sc.gov/wildlife/deer/2014DeerHarvest.pdf.

[424] Eugenia V. Bragina et al., *Effects on white-tailed deer following eastern coyote colonization*, 83 J. of Wildlife Mgmt. 916 (2019).

[425] West Virginia Dept. of Natural Resources, Impacts of the Eastern Coyote on Wildlife Populations, *available at* http://wvdnr.gov/hunting/CoyoteResearch.shtm.

[426] North Carolina Wildlife Resources Commission, Coyote Management Plan 16 (2018).

XII. KILLING NATIVE WILDLIFE ON PUBLIC LANDS VIOLATES THE PUBLIC TRUST DOCTRINE

The U.S. Supreme Court long ago recognized that the public trust doctrine imposes on states a duty "to enact such laws as will best preserve the subject of the trust [e.g., wildlife] and secure its beneficial use in the future to the people of the state." *Geer v. Connecticut*, 161 U.S. 519, 534 (1896). In *Geer*, the Court noted that the state was obligated to exercise its power over wildlife "for the benefit of the people, and not as a prerogative for the advantage of the government as distinct from the people or for the benefit of private individuals as distinguished from the public good." *Id*. at 529; *see also Ctr. for Biological Diversity, Inc. v. FPL Group, Inc*., 83 Cal. Rptr. 3d 588, 599 (Cal. Ct. App. 2008) (holding "it is clear that the public trust doctrine encompasses the protection of undomesticated birds and wildlife."). Although *Geer* was overturned in part by *Hughes v. Oklahoma*, 441 U.S. 322 (1979) because the Court struck down the state's authority to regulate interstate commerce in wild fish, the *Hughes* court upheld the public trust duty to protect trust resources, and it lives on today.

The actions of Wildlife Services across the nation, including in Montana, turn the public trust doctrine on its head. Instead of protecting the wildlife trust, Wildlife Services kills millions of native animals each year at the behest of private individuals and industry. In the lodestar case of American public trust jurisprudence, *Illinois Central Railroad v. Illinois*, 146 U.S. 387 (1892), the U.S. Supreme Court made clear that the role of the public trust doctrine is to restrict a government's potential to hand a monopoly of natural resources to private industry. The Court declared the public trust permanent and encompassing resources in water, land, and in between, and clarified that the trustee's obligation is to protect such resources, for current and future generations, from substantial impairment whether by grant, contract, or conveyance in perpetuity. The reasoning in *Illinois Central* built on the declaration in *Martin v. Waddell*, 41 U.S. 367 (1842) that all elements of nature are held in trust for the public of the United States, both current and future. Similarly, in 1894, the Court in *Shively v. Bowlby*, 152 U.S. 1, clarified that the trust duty extended to public lands,[427] a sentiment reinforced more recently by the Supreme Court in *Kleppe v. New Mexico*, holding that the federal government's power to protect the public domain goes beyond merely lands to include "the power to protect *wildlife* on public lands," in addition to the States' "broad trustee" "powers over wild animals within their jurisdiction." 426 U.S. 529, 545 (1976) (emphasis added).

Under the well-established public trust doctrine, Wildlife Services is a governmental trustee. As such, it has an affirmative duty to protect wildlife trust resources as a public asset, for the benefit of current and future generations, especially against private entities like livestock owners seeking to destroy those assets. *See* Sax (1970); Treves et al. (2018).[428] In addition to the

[427] *See also United States v. Beebe*, 127 U.S. 338, 342 (1888) (noting that the "public domain is held by the Government as part of its trust" and thus, "[t]he Government is charged with a duty and clothed with the power to protect it . . . .").

[428] Sax, J.L., The Public Trust Doctrine in Natural Resources Law: Effective Judicial Intervention, 68 MICH. L. REV. 471 (1970); Treves, A., Artelle, K.A., Paquet, P.C. 2018. Differentiating between regulations and hunting as conservation interventions. Conservation Biology 33(2): 472–475.

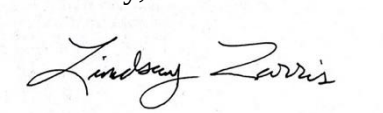
federal government, the state government also acts as trustee and as such has a similar duty to protect wildlife (the trust asset) for the public (the beneficiary). A Nebraska court explained this trust relationship in *United States v. Burlington Northern Railroad*, 710 F. Supp. 1286 (D. Neb. 1989), and held that "[i]n view of this trust position, and its accompanying obligations, it appears that the United States, much like the States . . . can maintain an action to recover damages to its public lands and the natural resources within them" which encompassed "destroyed wildlife" at issue in the case. The state and the federal government should exercise their trust powers in Montana to protect the wildlife resource for future generations.

Moreover, public attitudes have shifted dramatically in recent times; the majority of Americans now favor protecting native wildlife over speculative protections for private economic interests.[429] Simply put, the government fails its public trust obligations by killing native wildlife – a public trust resource – especially on publicly owned lands, for the perceived economic benefit of a handful of private livestock producers.

CONCLUSION

In sum, we request that WS-Montana develop a full EIS for its PDM activities in the state. Based upon the numerous flaws and lack of information detailed above, the EA provided for public comment does not include sufficient environmental analysis and fails to take the requisite hard look at numerous issues. WS-Montana must make itself accountable to the public and provide its constituents with the necessary information to show the program has taken a hard look at the environmental impacts of its actions. Thank you for considering our concerns.

Sincerely,



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[429] Treves, A., Chapron, G., López-Bao, J.V., Shoemaker, C., Goeckner, A., Bruskotter, J.T., 2017. Predators and the public trust. Biological Reviews 92, 248-270.

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