



footloosemontana.org

Montana Department of Natural Resources and Conservation (DNRC)
1539 Eleventh Ave
Helena, MT 59601

August 3, 2023

Re: Montana Drought Management Plan/Building Resilience

Submitted via: DNRCDroughtPlan@mt.gov

To Whom It May Concern:

We appreciate the opportunity to comment on the proposed Montana Drought Management Plan to build resilience for our citizens, natural resources, and wildlife. Footloose Montana is a nonprofit organization dedicated to the protection of all wildlife with a special focus on ending recreational trapping on Montana’s public lands. Our organization represents thousands of supporters, primarily within Montana but increasingly nationwide, reflecting a great interest by a growing segment of the American public to protect wild animals, especially under the current and increasing threat of climate change, and intensifying wildfires and droughts.

Beavers are a keystone species and ecosystem engineer. As such, beavers create complex, disturbance-resistant landscapes, and ecosystems. “These beaver-modified patches of the landscape enhance biodiversity, improve water quality, reduce damage from wildfire, drought, and flood, and more. These ecosystem services provide on the order of \$69,000 per square kilometer, per year of benefits.”¹ Another recent study estimated that beavers provide services worth \$1.6 to as much as 133 million to humans through the various ways in which they modify the environment. When researchers categorized beavers’ benefits into regulating, provisioning, and cultural, they found that, “for every hectare –

¹ See <https://emilyfairfaxscience.com/research/beavers-climate/>. Also, Jordan and Fairfax. (2022), Beaver: the North American freshwater climate action plan. WIRES Water. doi: <https://doi.org/10.1002/wat2.1592>

or about 2.5 football fields – per year, beavers provide the following services: regulating services, such as diminishing flood intensity (valued at \$124 ha/yr); filtering water for \$108; and capturing greenhouse gases for \$75. These benefits are all actualized by slowing the waterflow. In the provisioning category, beaver dams also slow down water and allow it to drain into groundwater reservoirs. This groundwater recharge process provides fresh drinking water valued at \$77 and rich habitats for \$133. Lastly, the habitats created by beavers provide opportunities for humans to bird watch and recreate, which are forms of cultural value, estimated at \$167.”²

How many humans would need to be hired (and paid) to provide these benefits?

Ensuring the presence of beavers is the most effective and most economic way of mitigating the detrimental consequences of climate change that the proposed Montana Drought Management Plan seeks to address. As emphasized by the Montana Beaver Action Plan (2021), the integration of beaver habitat into stream restoration is a key goal because it facilitates self-sustaining natural processes that promote landscape-wide drought and wildfire resilience.” But rather than contemplating beaver dam analogues, beavers are the actual, sophisticated dam engineers, and they do it for free. If there are areas where beavers are present, but their dams are not welcomed, solutions such as the ‘beaver deceivers’ exist, which can be implemented easily and cost-effectively (e.g., see <https://beaverdeceivers.com/>).

And while the role of beavers as the most crucial actors of nature-based solutions is undisputed, the Montana Drought Management Plan lacks addressing the issue of the historic and ongoing, unlimited (!) trapping of beavers in Montana.

Historical ecological damage caused by trapping beavers:

Commercial trappers killed hundreds of millions of beavers in order to supply enough animal pelts to satisfy the Euro-centric dictates of fashion and human vanity. Historically, beavers were found in nearly all aquatic habitats and estimated at 60-400 million individuals.³ *Castor canadensis* maintained vast networks of rich wetland habitat and complex rivers that generated much of the early wealth of what would become the United States. Tragically, by 1900, commercial trappers had exterminated beavers in much of their U.S. range and their total numbers in the United States were reduced to fewer than 100,000 animals. Heroic restoration efforts during the 1900s included the live capture of beavers to transport them across states and even parachuting them from aircraft into remote regions where they could repopulate without being hunted or trapped. Restoration efforts were financially supported

² Yale Environment Review referencing: Thompson, S., Vehkaoja, M., Pellikka, J., Nummi, P. (2020) Ecosystem services provided by beavers *Castor* spp. *Mammal Review*. 51(2021) 25-39: <https://doi.org/10.1111/mam.12220>

³ Naiman et al. (1988). Alteration of North American Streams by Beaver. *BioSciences*, Vol. 38, No. 11, pp. 753-762, citing Seton (1929)

through the Federal Aid in Wildlife Restoration Act, passed in 1937. However, by the mid-1950s, the trapping of beavers resumed.⁴

Because of this historical damage done by trappers, the vast wetlands and complex river systems the beavers had created and maintained, and the abundant biodiversity they sustained, the complexity and quality of ecosystems decreased rapidly as dams began to fail without getting repaired, channels incised, widened and lost complexity, and water tables dropped. Riparian vegetation shifted to dryland species and gigatons of greenhouse gases, such as carbon dioxide, were released into the atmosphere.⁵

As summarized by Emily Fairfax, Professor of Environmental Science at Stanford University, “The take home message here is that beavers were a dominant ecological, geologic, and hydrologic force on this continent for millions of years, and their absence has thrown things out of balance.”

Thus, it must be emphasized that the result of these historic changes is that today’s stream ecosystems, and the human and wild animal communities that depend on them, are more vulnerable to changing climate conditions.⁶ This vulnerability is rapidly increasing as climate change accelerates and the risk of system failure grows. The ongoing trapping of beavers significantly contributes to this increased vulnerability by removing beavers from the landscape.

The damage caused by trapping of beavers continues:

Our state wildlife agency, the Montana Department of Fish, Wildlife and Parks (FWP) continues to promote the recreational (!) trapping of beavers and offers an unlimited (!) trapping of beavers for recreation. In addition to their exploitation as a furbearer, beavers are also trapped as “nuisance” animals, mainly on behalf of farmers and ranchers but also in order to protect roads from flooding, infrastructure, and economic development in more urban areas. Today, beavers are killed through shooting, trapping and snaring.

Between 2013 and 2018, trappers in Montana reportedly killed a total of 272,420 wild animals, including **26,323 beavers**, 1734 gray wolves, 568 otters, and nearly 103,000 coyotes. At least 500,000 beavers are killed every year across the United States (White et al. 2015). According to the US Fur

⁴ White, Bryant, Thomas Decker, Michael J. O’Brien, John F. Organ, and Nathan M. Roberts. “Trapping and Furbearer Management in North American Wildlife Conservation.” *International Journal of Environmental Studies*, Vol. 72 no. 5 (September 2015): 756–769.

⁵ Western Watershed Project (2023). Letter on beavers to President Biden.

⁶ Fouty (2018). Euro-American beaver trapping and its long-term impact on drainage network form and function, water abundance, delivery, and system stability [Chapter 7] In: Johnson et al (tech. eds.), *Riparian research and management: Past, present, future: Volume 1*. Gen. Tech. Rep. RMRS-GTR-377. Fort Collins, CO: USDA Forest Service, Rocky Mountain Research Station.

Harvest Data collected by the Association of Fish, and Wildlife Agencies (AFWA), 177,288 beavers were killed in traps for their fur during the 2014–15 trapping season nationwide, with 5,435 beavers reported trapped in Montana.

Beavers often experience pain and panic once caught in a trap. As semi-aquatic animals, they suffer greatly and often struggle violently for up to 20 minutes before drowning. Death by drowning—induced hypoxia—is not considered an acceptable method of euthanasia by veterinary and laboratory researchers.⁷

We see the following problems with the proposed Montana Drought Management Plan not acknowledging:

1. The detrimental impact that historic and current trapping had, and continues to have, on beavers, their populations, the habitat they create and maintain, and the biodiversity they sustain.
2. The futility and waste of spending resources— (taxpayers’) money and time on public lands creating beaver habitat, restoring wetlands, and engaging in projects to preserve floodplains and wetlands, restoring river and floodplain connectivity to improve stream flow, riparian function and bolster drought (and flood) resilience, only to allow beavers to be killed by trappers.
3. The ignorance and unwillingness of FWP to protect beavers and allow them to help address climate change impacts and biodiversity loss.

Protecting beavers from trapping would immediately implement a nature-based climate solution:

In order to receive the benefits from beavers, the animals and their populations, their dams, and their distributions need to rapidly expand. Protecting beavers by closing public lands to beaver trapping will improve their survival rates and is, in fact, the only mortality factor we can control.

In response to protection, beavers and their dams would begin expanding in numbers, setting in motion processes that would help restore thousands of miles of degraded streams in Montana and create new, nature-based carbon capture and storage (CCS) zones in the form of stream-corridor wetlands. These newly created wetlands become net carbon sinks once a minimum of 55% vegetation cover is achieved.⁸

⁷ Heister (2022). *Beyond the North American Model of Wildlife Conservation: From Lethal to Compassionate Conservation*. Palgrave Macmillan Animal Ethics Series. <https://doi.org/10.1007/978-3-031-14149-2>

⁸ Valach et al (2021). Productive wetlands restored for carbon sequestration quickly become net CO2 sinks with site-level factors driving uptake variability. PLoS ONE 16(3)

The value of new wetlands cannot be overstated and include the capacity of storing 3-10 times more carbon than the same volume of soil in a virgin forest, 6-14 times more than a secondary forest, and 7-35 times more than a grassland due to deep and extensive root networks.⁹ Overall, wetlands store large amounts of surface and groundwater, are essential for improving water quality, serve as natural firebreaks, improve and expand habitat for wildlife including fish species.

There is no Montana Drought Management without ending the trapping of beavers:

Through implementing the proposed Montana Drought Management Plan along with an end of trapping of beavers, the DNRC would show determination for implementing effective strategies to mitigate the detrimental consequences of climate change. Such a combined, common-sense, and cost-effective move would also inspire public engagement in helping with restoring habitat, saving water and overall efforts to mitigate drought and wildfires. Overall, it would send a clear message that Montana is serious about implementing wholistic, nature-based climate solutions to address climate change and biodiversity loss.

If the goal is to manage drought in Montana and build resilient ecosystems, we strongly encourage you to request FWP to immediately end trapping of beavers on public land.

Sincerely,

Anja Heister, PhD for the Board of Footloose Montana

PO Box 8884
Missoula, MT 59807
406-282-1482
info@footloosemontana.org

⁹ Wohl (2013). Landscape-scale carbon storage associated with beaver dams. *Geophysical Research Letters*, Vol. 40, 1-6; Buringh (1984). Organic Carbon in Soils of the World (chapter 3) in *The Role of Terrestrial Vegetation in the Global Carbon Cycle: Measurement by Remote Sensing*. pp. 91-109.