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February 2, 2024

RE: Scoping comments on proposed amendment to Northwest Forest Plan (NWFP)

Dear Regional Forester:

Please accept these scoping comments for the proposed Northwest Forest Plan amendment. I provide them from the perspective of a retired Forest Service hydrologist/soils specialist/fluvial geomorphologist on the Wallowa-Whitman National Forest for almost 16 years, in addition to having worked or done research on several other National Forests in the west (Apache-Sitgreaves, Beaverhead-Deerlodge, Eldorado, Gila, and Modoc) with a focus on stream-riparian areas. While these national forests are not in the NWFP revision area, knowledge gained from examination of a diversity of stream-riparian areas and landscapes is transferable to these forests.

I am also the co-author and science lead on the Feb 27, 2023 letter to President Biden asking for an executive order protecting beavers on federally managed public lands (FMPLs) as an emergency climate change and biodiversity loss measure. A copy was sent to Secretary of Agriculture Tom Vilsack. [This letter](#), submitted by Western Watersheds Project was signed by 250 scientists, conservations groups and economists from around the country, indicating the recognition of the critical importance of healthy stream-riparian areas and abundant wetlands on our FMPLs when it comes to addressing these crises. I will tier to this letter. The focus of my comments will be on need to place water resources as a focus topic and the role that beavers play in their rapid, regional scale restoration.

Copies of most references provided in the footnotes can be found in either [Reference Folder 1](#) or [Reference Folder 2](#) (trapping studies) or a link is provided to the paper. The exceptions are the NOAA/NMFS reports.

The Organic Act of 1897 established the forest reservations, now known as National Forests, for the following purpose:

OBJECT OF FOREST RESERVATIONS.

*2. Public forest reservations are established to protect and improve the forests for the purpose of securing a permanent supply of timber for the people and **insuring conditions favorable to continuous water flow.***¹

Currently, water resources and the need to insure “*conditions favorable to continuous water flow*” is missing from the NOI focus topics listed below as a preliminary driver for this revision.

- Improving fire resistance and resilience across the NWFP planning area,

¹ Organic Act of 1897 p. 5 <https://www.publiclandsforthepeople.org/wp-content/uploads/2015/05/ORGANIC-ACT-OF-1897.pdf>

- Strengthening the capacity of NWFP ecosystems to adapt to the ongoing effects of climate change,
- Improving conservation and recruitment of mature and old-growth forest conditions, ensuring adequate habitat for species dependent upon mature and old growth ecosystems and supporting regional biodiversity,
- Incorporating Indigenous Knowledge into planning, project design, and implementation to achieve forest management goals and meet the agency's general trust responsibilities, and
- Providing a predictable supply of timber and non-timber products, and other economic opportunities to support the long-term sustainability of communities located proximate to National Forest System lands and economically connected to forest resources.

This oversight needs to be rectified. It is not sufficient to simply refer to the Aquatic Conservation Strategy and say “protect riparian areas and water” in the NOI. If the NWFP revision is to actually 1) improve fire resistance and resilience, 2) strengthen the capacity of ecosystems to adapt to ongoing effect of climate change, 2) support regional biodiversity, and 4) meet the agency’s general trust responsibilities to tribal nations, salmon, and a broad array of human and wild communities, then rapid restoration of stream-riparian and wetland ecosystems at the regional scale must be added to the list of interrelated topics. Only then will the Forest Service begin to give water-related challenges the appropriate attention and set itself on a path of fulfilling the intent of the 1897 Organic Act and its trust obligations.

Three changes can help rectify the current omission of water as a central focus and driver of national forest policies and set the essential stream-riparian-wetland ecosystems on a path of accelerated recovery. Because the three steps are interrelated, my questions are at the end.

1. **Water Resources:** Add “Insuring conditions favorable to continuous flow...” to the list of focus topics
2. **Beaver Protections:** Close National Forests to beaver trapping and hunting by the public to allow for their increased survival and expansion in numbers, distributions, and dam complexes.
3. **Livestock Management:** Change livestock grazing management in ways that significantly decrease impacts to stream and riparian areas and allow for expansion of riparian vegetation.

A fourth step will just be mentioned. The artificial division between federal land management agencies as managers of habitat and resources, and state wildlife agencies as managers of wildlife, must be eliminated. There is no ecological basis for this distinction. This artificial division has frequently resulted in agencies neutralizing the other’s restoration efforts wasting dollars and time.

1. WATER RESOURCES: Insuring conditions favorable to continuous flow...

The Organic Act intended timber supply and continuous water flow to be co-equal. As “*Providing a predictable supply of timber and non-timber products, and other economic opportunities to support the long-term sustainability of communities located proximate to National Forest System lands and economically connected to forest resources*” is specifically listed in the focus topics, water resources must also be added.

- I suggest the following language for a sixth topic: *Insure conditions favorable to continuous water flow and rapid restoration of the health and diversity of stream-riparian ecosystems in order to support the long-term sustainability of communities located proximate to and downstream of National Forest System lands and economically connected to forest resources.*

To date, the Forest Service has placed water resources and stream-riparian health far below timber and livestock grazing, even though livestock grazing is not mentioned in the Act. Discussions around restoring wetlands, important natural firebreaks once part of the stream-riparian systems, have been non-existent. As forests, ecosystems, and species and communities die without water, rapid restoration of the thousands of miles of degraded stream-riparian systems and recreation of abundant wetlands should be the agency first priority as a focus topic. In restoring these systems, the Forest Service will take enormous steps towards addressing its moral and legal obligations to tribal nations and the salmon to restore salmon runs back to their once abundance. Without such a focus and results, talk about trust obligations is just talk.

2. BEAVER PROTECTIONS: Close national forests to beaver trapping and hunting

National Forests need to be closed to beaver trapping and hunting by the public in order to allow for their increased survival and expansion in numbers, distributions, and dam complexes. California was closed in 2019 to beaver trapping as part of a larger trapping ban and Oregon has had two past state-wide closures to address water resource concerns. The first Oregon closure was 1899 to 1917 at which point portions of the state were reopened. National forests in these newly-reopened areas remained closed. The second closure was from 1932 -1950. When in 1951 portions of the state were again opened to public beaver trapping and hunting, national forests remained closed at least through 1959 (*Figure 1*). The protection of beavers on national forests from their inception to at least 1959 was due to a clear understanding of the water resources value they brought to national forests and thus to the larger community.²

These protections need to be reinstated. Robust populations and abundant and ubiquitous beaver dams complexes are required if accelerated, landscape and regional scale restoration is to occur in a way that truly addresses the seriousness of climate change and biodiversity losses. Therefore, it is imperative that expansion of beavers, a keystone species, be incorporated as a priority into all National Forest Plans. Management decisions must also be designed to restore the health of stream-riparian areas and ecosystem function and create abundant wetlands in measurable ways and rapidly.

Protecting beavers on national forests is a low-cost, highly efficient nature-based solution. Protections would go a long ways towards meeting the Organic Act's water direction as beavers begin to restore stream-riparian ecosystems and create vast new wetlands. As spell out in the letter to President Biden and presented below, rapid beaver-driven restoration of wetlands and stream ecosystems would provide an array of valuable benefits that directly address national challenges highlighted in the November 2022 *Opportunities to Accelerate Nature-Based Solutions* (p. 13, Table 1).

- **Temporarily store large volumes of surface and groundwater.** This storage would help 1) maintain stream base flows once supplied by deep but now dwindling and less predictable snowpacks, 2) reduce flood magnitudes downstream by altering the volume and timing of floodwaters, and 3) increase water security for municipal and agricultural users by dampening extremes in flows.
- **Improve water quality.** Improvement would be the result of wetlands and ponds 1) trapping sediment and nutrients eroding from uplands, and 2) decreasing stream temperatures through increased groundwater inputs and deeper water depths. Reductions in temperatures and nutrient inputs would help decrease potential for algae blooms.

² Gilliam (1942). History of beaver planting in Oregon with recommendations for planting in the future. Bachelor of Science thesis. School of Forestry, Oregon State University. 31p.; Kebbe (1960). Oregon's beaver story. *Oregon State Game Commission Bulletin*. February 1960.

- **Increase the size and abundance of natural firebreaks.** These firebreaks 1) become refuges for wildlife and livestock during wildfire events, 2) provide post-fire habitat, 3) trap post-fire sediment eroding from hillslopes, helping to protect water quality and fisheries, and 4) alter fire patterns and severity in the surrounding area.
- **Improve and expand wildlife habitat.** Protecting beavers leads to greater diversity, abundance, and distribution of wetlands and riparian woody and herbaceous vegetation such as willows, dogwood, sedges, and rushes needed by beavers and other riparian-dependent species, such as migratory birds.
- **Improve and expand fish habitat.** Beavers and their natural infrastructure create colder stream temperatures, clearer waters, greater channel complexity, beaver ponds, greater vegetation and insect life – all of which are critical for salmon and other cold-water dependent aquatic species.
- **Create new wetlands** capable of storing large amount of carbon, adding to the carbon capture and storage contribution of our national forests. Newly-created wetlands become net carbon sinks once a minimum of 55% vegetation cover is achieved as above and below ground biomass expands, a change that usually occurs within two to five years.³ These newly created wetlands:
 - Store 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.⁴ The amount of stored carbon varies depending on the site conditions.
 - Store carbon for longer residence times (> 1,000 years) than upland forest soils (100s of years).⁵ This is an important contribution given the long-term challenge of climate change.
 - Store 195 to 478 metric tons of carbon per hectare-meter of soil depending on their type and location.⁶

The value of new wetlands cannot be overstated.⁷ The Intergovernmental Panel on Climate Change and the International Energy Agency identified *carbon capture and storage* as likely to play a vital role in efforts to address climate change.⁸ The Forest Service's own Climate Adaptation Library (*Appendix A*) is absolutely clear on the significance of beavers to water, fish and wildlife, riparian areas, wetlands, and groundwater-dependent ecosystem. Protecting beavers on national forests allows them to build and maintain wetlands and complex stream-riparian ecosystems, adding to the amount of carbon sequestered in addition to in our Mature and Old Growth forests. These wetlands therefore, brings added value to our national forests, in addition to meeting general trust obligations and the intent of the Organic Act.

Continued removal of beavers via trapping and hunting from national forests prevents the Forest Service from meeting the water intent of the Organic Act, its trust responsibility, and its goals of creating a more fire-resilient landscape and supporting regional biodiversity. Trapping and hunting beavers results in huge

³Valach 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).

⁴Wohl (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*.

⁵Valach et al (2021).

⁶Nahlik and Fennessy (2016).; <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator#>:

⁷Zhu et al (2022). Conservation of carbon resources and values on public lands: A case study from the National Wildlife Refuge System. *PLoS One* 17 (1). 17 p.; Nahlik and Fennessy (2016). Carbon Storage in US wetlands. *Nature Communications*, 9p.

⁸Clean Air Task Force (2022). <https://www.catf.us/resource/carbon-capture-provisions-in-the-inflation-reduction-act-of-2022/>

ecological, social, and economic losses to our communities as evident by the benefits gained if beaver populations and their dam complexes were robust and abundant.⁹ Yet despite [abundant studies](#) showing the wide ecosystems services that beavers and their beaver dam complexes provide and the urgency of the climate change and biodiversity loss crises, the Oregon and Washington state wildlife agencies have failed to act. As I am most familiar with Oregon, I will share information related to Oregon.

The Oregon Story

Less than 200 people in Oregon trap and hunt beavers on our public lands according to Oregon Department of Fish and Wildlife (ODFW). State-approved trapping/hunting under the furbearer regulations occurs November 15 to March 15. This is the breeding and pregnancy season of beavers and there are no take limits. Trapping and hunting of beavers is indiscriminate as you cannot identify sex or age given that they spend most of their time in the water except when foraging. A review of the 2022 Oregon Beaver Management Work Group (BMWG) recommendations reveals that the original intent of the BMWG was to examine the question of a trapping/hunting closure on federally managed public lands in the context of climate changes and biodiversity losses. When the effort begins, the mission is watered-down and broad. The recommendations that emerge are a restatement of actions largely already ongoing. None will result in increased numbers and distributions of beavers on national forests (*Appendix B*).

A follow-up to the BMWG recommendations is ODFW's *3-Year Action Plan for Beaver-Modified Landscapes - August 2022-2025* (2023). The Plan also fails to take steps that lead to increases in numbers and distributions of beavers and dam complexes on national forests. In the 10 Beaver Emphasis Areas (BEAs) selected for study, according to an ODFW presentation at the 2023 State of the Beaver conference, all BEAs remain open to beaver trapping and hunting. ODFW continues to maintain that habitat is the sole problem, laying the full responsibility on the Forest Service and BLM for poor management of FMPLs. This position is held even in BEAs that have abundant habitat and source populations but limited distributions.

The North Fork Burnt River watershed example

The North Fork Burnt River (NFBR) watershed on the Wallowa-Whitman National Forest, in eastern Oregon, is an excellent case in point and an area I know well. In 2018 the watershed was modeled by the Utah State University scientists for existing and historic beaver dam potential using the Beaver Restoration Assessment Tool (BRAT).¹⁰ The BRAT analysis found that under existing conditions, the watershed could potentially support 7,019 beaver dams. Even if only 10% were built and persisted, this would be 700 dams. At the time the model was being run, volunteers working with the local watershed council which included myself as a newly retired Forest Service specialist, walked the streams and counted dams to compare with BRAT results. The combination of field work and Google Earth found 53 dams in 2018. In 2023, the Forest Service did another field assessment of beaver dams and found 47 dams. Having established with the BRAT model and field work that beaver habitat exists, and knowing that there has been a source population of beavers in the watershed for over 30 years, this leaves chronic beaver trapping and hunting

⁹ Niemi et al (2020). Economic Benefits of Beaver-Created and Maintained Habitat and Resulting Ecosystem Services. Appendix F in "*Petition to Initiate Rulemaking to Amend OAR 635-050-0070 to Permanently Close Commercial and Recreational Beaver Trapping and Hunting on Federally-Managed Public Lands and the Waters that Flows Through These Lands*", brought before the Oregon Fish and Wildlife Commission on September 24, 2020.

¹⁰ Macfarlane WW, Meier MD, Hafen C, Albonico MT, and Wheaton JM (2019). North Fork Brunt River Beaver Restoration Assessment Tool: Building Realistic Expectations for Partnering with Beaver in Restoration and Conservation. Logan, UT. 80 Pages. https://www.dfw.state.or.us/agency/commission/binders/19/06_Jun/Beaver%20Petition%20Bibliography/Macfarlane%20et%20al_2019b_NFB_R_BRAT.pdf

as a key cause of the failure of beavers and their dam complexes to increase to even 700 dams. The area is easily accessed during the winter months and open to beaver trapping and hunting.

The above information, though provided to ODFW and the WWNF Forest Service agency personnel, has been dismissed, with some Forest Service personnel supporting ODFW's position that trapping has no effect. This assessment runs counter to studies that demonstrate that numbers of active beaver colonies increase during closures and decrease when areas are open to trapping.¹¹ These studies were provided to ODFW and WWNF staff while no studies have been provided to support ODFW's position. Requests for trapping and hunting closure on our FMPLs by citizens, scientists, conservation groups, and economists to ODFW and the OFW commission in 2020 and 2022 failed as did an attempt to get a state-wide closure on FMPLs via legislative action in 2021 under HB 2834. The refusal of ODFW to close FMPLs to beaver trapping and hunting has negative economic, ecological and social consequences. ODFW's own documents, along with those of NOAA, are clear on the importance of beavers to salmon.¹²

In lieu of robust and abundant beaver colonies and beaver dams complexes, the Forest Service has responded with a proliferation of beaver dam analogs (BDA), various low-tech process-based (LTPB) and Stage 0 restoration efforts to try and improve conditions. Unfortunately, the millions of dollars being spent on these human-driven restoration efforts have limited value because many are occurring in areas where beavers continue to be chronically removed via trapping and hunting. This prevents beavers from 1) enhancing our efforts or 2) doing a better and cheaper job allowing tax-payer dollars to be spent elsewhere. Unlike beavers, which repair dams when issues arise, our human restoration efforts rarely come with maintenance dollars, further limiting their long-term value. Thus, the ongoing removal continues to compromise salmon habitat and recovery and the creation of fire resilient landscapes and water storage zones that can help minimize impacts of climate change. To maximize the expenditure of dollars by the agency and its partners and to meet its public trust obligations, closing national forests to beaver trapping and hunting is an absolute necessity. The Forest Service must act and cease to be silent or, at best, passive when it comes to continued state-approved beaver trapping and hunting as a recreational activity on national forests.

The Oregon and Washington state wildlife agencies have refused to act. It is time for the federal government to exercise its constitutional and statutory authority (and responsibility) to manage the land, fish, and wildlife under its care, as granted by Congress and upheld in various Supreme Court decisions ([authority](#)) and close national forests to beaver trapping and hunting. [Published studies](#) have shown that eliminating this mortality cause will result in increases in active colonies and desired habitat.

¹¹ Busher and Lyons (1999) Long-Term Population Dynamics of The North American Beaver *Castor Canadensis* on Quabbin Reservation, Massachusetts, and Sagehen Creek, California. In: Busher P.E., Dzięciołowski R.M. (eds) *Beaver Protection, Management, and Utilization in Europe and North America*. Springer, Boston, MA.; Gilliam (1942). History of beaver planting in Oregon with recommendations for planting in the future. Bachelor of Science thesis. School of Forestry, Oregon State University. 31p.; Kebbe (1960). Oregon's beaver story. *Oregon State Game Commission Bulletin*. February 1960. No. 2, Vol. 15: pp. 3-6; Parson (1975). Effect of a 4-year closure of the trapping season for beaver in eastern Warren County, New York. *New York Fish and Game Journal* Vol. 22, No. 1; Parson and Brown (1978). Effect of a Four-year closure of trapping season for beaver in Fulton County. *New York Fish and Game Journal*, Vol. 25, No. 1; Scrafford et al. (2018). Beaver habitat selection for 24 yr since reintroduction north of Yellowstone National Park. *Rangeland Ecology and Management* 73, no. 2: 266-273.

¹² ODFW (2005). The Importance of Beaver (*Castor Canadensis*) to Coho Habitat and Trend in Beaver Abundance in the Oregon Coast Coho ESU. National Marine Fisheries Service (2009). Middle Columbia River Steelhead Distinct Population Segment ESA Recovery Plan; National Marine Fisheries Service Northwest Region and Oregon Department of Fish and Wildlife (2011). Recovery Plan for Upper Willamette River Chinook salmon and steelhead; Anlauf et al (2009). The status and trend of physical habitat and rearing potential in coho bearing streams in the Oregon coastal coho evolutionarily significant unit. Report OPSW-ODFW-2009-5; National Marine Fisheries Service, Northwest Region (2013). ESA Recovery Plan for Lower Columbia River Coho Salmon, Lower Columbia River Chinook Salmon, Columbia River Chum Salmon, and Lower Columbia River Steelhead; National Marine Fisheries Service (2014). Final Recovery Plan for the Southern Oregon/Northern California Coast Evolutionarily Significant Unit of Coho Salmon (*Oncorhynchus kisutch*); National Marine Fisheries Service. (2016). Recovery Plan for Oregon Coast Coho Salmon Evolutionarily Significant Unit. Pollock et al. (2004). The Importance of beaver ponds to Coho salmon production in the Stillaguamish River Basin, Washington, USA. *North American Journal of Fisheries Management* 24: pp. 749-760.

LIVESTOCK GRAZING MANAGEMENT

While beaver trapping/hunting is definitely a major factor limiting restoration of stream-riparian ecosystems and the creation of wetlands, there are places where domestic and wild ungulates are also having a large impact by excessively browsing riparian woody vegetation¹³, and in the case of livestock trampling, stream banks. Given that the Forest Service is limited to managing livestock on national forests, livestock grazing is the focus of my comments.

The NWFP has largely ignored the impact of livestock grazing in stream-riparian areas and as such the ability of the Forest Service to meet its focus points and trust obligations. The current pasture system approach to grazing has failed to lead to stream-riparian ecosystem recovery because these are the areas where cattle concentrate their use regardless of pasture size. While a small percentage of the landscape, these areas are also critical for many species and communities, all of whom are bound by the need for the habitat and quality water and stream flows that these areas produce when healthy.¹⁴

The current grazing allotment system moves livestock into a pasture and allows them to choose locations. Given their preference for stream-riparian areas, more intensive, on-the-ground management is required to remove pressure from riparian vegetation and stream banks. This change in use will improve conditions for beavers who will in turn improve conditions for a wide host of communities, including livestock. One critical area of improvement will be the expansion of wetlands as water tables rise. These wetlands will provide safety zones during wildfire for livestock and wildlife, and habitat post wildfire. They will also provide water quality protections and flood mitigations by filtering sediment eroding off recently burned hillslopes and temporarily storing increased runoff from these areas.¹⁵

The large fires of 2020 and 2021 in Oregon resulted not only in huge impacts and losses to human communities but tremendous losses of wildlife and livestock as fires swept across the landscape and natural wetland fire breaks were mostly absent, except where beaver ponds and wetlands existed. Thus, making our landscapes more fire resilient is of vital importance. Robust populations and beavers and dam complexes are a key component of this resiliency as the dams and habitat hold water on national forests longer and keep areas greener.

Other changes in livestock management are also needed to decrease ongoing conflicts between livestock and wolves. Current management practices repeatedly place livestock and wolves in conflict to the detriment of both. We have seen that wolves are key to recovering stream-riparian areas as reflected in changes seen in Yellowstone National Park as wolves alter how elk and deer use these.¹⁶ Therefore, to meet the Forest Service's general trust obligations as it applies to water-related resources and community

¹³ Beschta and Ripple (2018). Can large carnivores change streams via a trophic cascade? *Ecohydrology*. 2019; 12:e2048; Fesenmyer K.A., Dauwalter D.C., Evans C. and T.Allai (2018) Livestock management, beaver, and climate influences on riparian vegetation in a semiarid landscape. *PLoS ONE* 13(12); Busher and Lyons (1999) Long-Term Population Dynamics of The North American Beaver *Castor Canadensis* on Quabbin Reservation, Massachusetts, and Sagehen Creek, California. In: Busher P.E., Dzięciółowski R.M. (eds) *Beaver Protection, Management, and Utilization in Europe and North America*; Scrafford et al (2018). Beaver habitat selection for 24 yr since reintroduction north of Yellowstone National Park. *Rangeland Ecology and Management* 73, no. 2: 266-273; Swanson et al (2015). Practical Grazing Management to Maintain or Restore Riparian Functions and Values on Rangelands. *Journal of Rangeland Applications*. Vol. 2, pp. 1-28. https://naes.agnt.unr.edu/PMS/Pubs/61_2015_18.pdf

¹⁴ Sedell et al (2000). Water and the Forest Service. FS-660. Washington, DC. USDA-Forest Service, Washington Office. 40p. <https://www.fs.usda.gov/research/treesearch/45417>; Furniss et al (2010). Water, climate change, and forests: watershed stewardship for a changing climate. Gen. Tech. Rep. PNW-GTR-812. Portland, OR: U.S. Department of Agriculture, Forest Service, PNW Research Station. 75 p. <https://www.fs.usda.gov/research/treesearch/35295>

¹⁵ Fairfax and Whittle (2020). Smokey the Beaver: beaver-dammed riparian corridors stay green during wildfire throughout the western USA. *Ecological Applications*. 18p.

¹⁶ Beschta and Ripple (2018). Can large carnivores change streams via a trophic cascade? *Ecohydrology*. 2019; 12:e2048

water and habitat needs, the agency need to altered current practices in ways that reduce conflicts of livestock with wolves. One way is to use techniques as “rekindling the herd instinct” and frequent riding to monitor livestock health, keep them together, and prevent concentration of us in the riparian areas. Current allotments need to be examined for their appropriateness given climate change, available forage, and water resource importance. Vacant allotments need to be permanently closed as they will provide climate change reference areas that can be managed to maximize benefits to fish and wildlife and water resources needed for human and wild communities.

Livestock grazing on national forests was never part of the intent of the Organic Act. As the above discussion shows, however, livestock grazing negatively influences conditions of many streams on national forests, and therefore the ability of the Forest Service to provide conditions favorable to continuous water flow, especially with climate change. Without changes in management that allow for the recovery and expansion of riparian vegetation and remove pressure from stream banks, the Forest Service will not be able to meet the requirement of the Organic Act, many of the goals in the current list of focus topics, or its public trust obligations.

QUESTIONS

Based on the above information, how will the Forest Service in the NWFP process and final Amendment address the following questions:

1. Will the Forest Service add the additional focal point - *recovery of the form and function of healthy stream-riparian zones, wetland creation, and insuring conditions favorable to continuous water flow* – to NOI and all future NWFP revision documents so that both aspects of the OA are equally represented? If not why not, given that 1000s of miles of streams on national forests remain in degraded conditions after 30 years of the current NWFP?
2. How will the Forest Service provide for the water needs of its wild and human communities given climate change without making rapid and regional scale restoration of stream-riparian areas and abundant wetland creation a major focal point of the revision?
3. Given the above information, how will the NWFP revision address continued beaver trapping and hunting which limits the ability of the Forest Service to restore stream/riparian ecosystems and create needed wetlands rapidly and at the regional scale, and meet its general and specific trust obligations?
4. How is the Forest Service going to remedy the past failure of the agency and agency specialists to acknowledge ongoing beaver trapping and hunting as an action impeding stream-riparian recovery, and the creation of wetlands, natural wildfire breaks, and carbon capture and sequestration zones, as well as improvements to water quality, water security, fish and wildlife habitat in their public documents and management plans?

The public remains largely unaware that beaver trapping occurs on national forests. Current Forest Service documents, especially documents shared with the public related to restoration efforts such as BDAs, LTPB restoration or Stage 0, either do not mention ongoing beaver trapping/hunting or only reference trapping as a historical event. This failure to share information with the public on the role of beaver trapping/hunting on impeding the restoration of healthy stream ecosystems at the same time spending millions of public dollars on restoration efforts needs to be rectified.

5. Livestock grazing is not part of the Organic Act and has large negative impacts on the ability of the Forest Service to *restore the form and function of healthy stream-riparian zones, wetland creation, and insure conditions favorable to continuous water flow* due to their concentrated use of stream-riparian areas. What changes in livestock management will be incorporated into the revision such that regional, rapid, and measurable recovery takes place in these areas? What parameters will be used as measures of success?

I recommend using changes in the following stream parameters as measures of success: stream temperatures given the extensive baseline data sets the agency has, depth and abundance of stream bank undercuts in meadows, and the width and diversity of riparian vegetation. Currently, some streams on national forests exceed the state temperature standards by 15-20 °F for weeks as is the case in the North Fork Burnt River on the Wallowa-Whitman National Forest which has had temperatures in the 80s. The agency cannot in good faith consider this acceptable.

Summary. When recovery of stream-riparian health and wetland creation (water resources) is put front and center in the revision plan, beavers are protected, and livestock grazing management are altered in ways that lead to increased riparian vegetation, more stable stream banks, and expansion of wetlands and complex and resilient stream ecosystems. The result is that the agency will be able to meet all or portions of the existing five interrelated topics and its general trust obligations to the tribes, salmon, and broader wild and human communities. If it fails to do this, then the revised NWFP will not be able to meet the current five focus areas. It is for these reasons that recovery of stream-riparian zones, wetland creation, and insuring conditions favorable to continuous water flow be added to the focus topic list.

Thank you for the opportunity to provide scoping comments on the proposed amendments to the Northwest Forest Plan. I look forward to participating in the ongoing plan amendment process.

Sincerely,



Suzanne Fouty, PhD
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Retired USDA Forest Service

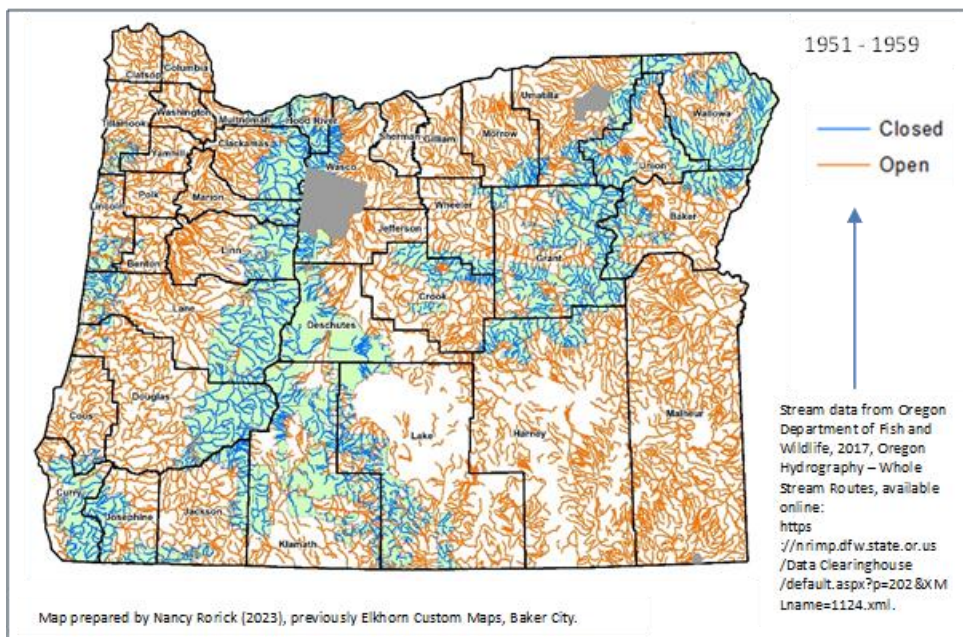
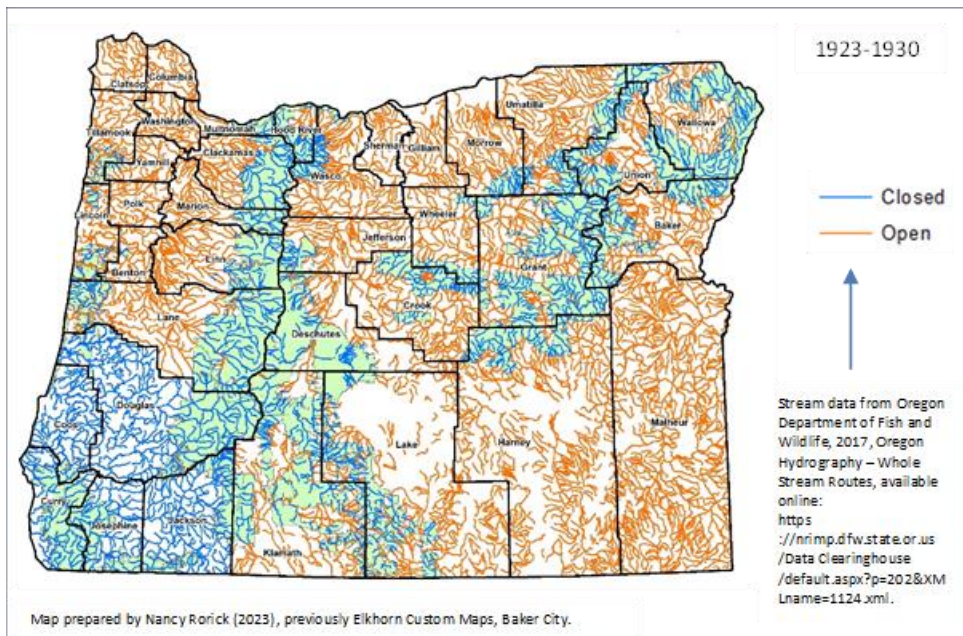


Figure 1. Location of areas reopened post closures to beaver trapping in Oregon based on information provided by Gilliam (1942) and Kebbe (1960). Gray areas represent tribal lands.

APPENDIX A

Climate Adaptation Library references to beavers and various resource areas

(developed by USFS, NPS and other organizations)

<http://adaptationpartners.org/library.php>

Mentions how beavers can help many resources

Resource Area: Fish

Sensitivity: Lower low flows will increase pre-spawn mortality for summer run and stream-type salmon and steelhead.

Strategy: Increase in-stream flows with dry-season water conservation to reduce withdrawals.

Tactics:

- Consider alternative water supplies for federal lands to retain in-stream flows.
- Coordinate with downstream partners on water conservation education.
- Increase efficiency of irrigation techniques.
- Investigate and quantify connectivity between groundwater and streamflows, including adequate food source.
- Reduce summer withdrawals on federal lands.
- **Restore beaver habitat and populations.**

Sensitivity: Lower low flows will reduce fish habitat quality.

Strategy: Decrease fragmentation of stream network so fish can access appropriate habitats.

Tactics:

- Identify stream crossings that impede fish movements and prioritize culvert replacement.
- Maintain minimum streamflows (buy and lease water rights, install modern flow structures, monitor water use).
- Rebuild stream bottoms by increasing floodplain connectivity, riparian vegetation, and water tables; decrease road connectivity.
- **Restore beaver habitat and populations.**
- Use stream simulation design (e.g., bottomless arches, bridges), adjusting designs to provide low-flow thalweg.

Sensitivity: Shifts in flow regimes will occur with changing climate.

Strategy: Increase water residence time and store water on landscape.

Tactics:

- Identify where reservoir management can improve species conservation.
- Improve efficiencies in regulated water use; conserve water.

- Improve grazing management to reduce negative effects on streams and water quality.
- Manage the road network to reduce negative effects on streams.
- Promote and reintroduce beavers.
- Protect springs.
- Restore fluvial processes.
- Thin forests to reduce evapotranspiration.

Resource Area: Riparian Areas, Wetlands, and Groundwater-Dependent Ecosystems

Sensitivity: Hydrologic regime shifts with climate change will include lower summer flows and higher, more frequent winter peak flows.

Strategy: Increase upland water storage by managing for beaver populations.

Tactics:

- Accommodate and maintain larger beaver populations.
- Trap and relocate beavers that create dams that flood trails.
- Use riparian shrub planting and protection and riparian aspen restoration and management.
- Use valley form analysis to assess potential sites for beaver colonies and channel migrations.

Resource Area: Water Resources and Infrastructure

Sensitivity: Changes in type and amount of precipitation will lead to changes in timing of water availability.

Strategy: Manage for highly-functioning riparian areas that can absorb and slowly release the flow of water off the landscape.

Tactics:

- Design new infrastructure and rebuild existing infrastructure to accommodate flooding; place or relocate infrastructure outside of riparian areas; design stream crossings to minimize restriction of flow above bankfull; minimize impervious surfaces.
- Implement active stream channel and riparian area restoration (e.g., natural channel design, log structures, reconnecting floodplains), or passive restoration (e.g., appropriate management of beaver populations, reduction or removal of activities that are detrimental to riparian function).
- Preserve riparian area functionality through terms and conditions of permitted activities, and utilize best management practices for federal actions.

Sensitivity: Climate change will cause altered flow regime, including earlier snowmelt and lower summer base flows.

Strategy: Restore function of watersheds, floodplains, riparian areas, wetlands, and groundwater-dependent ecosystems; restore water quality, quantity, and timing.

Tactics:

- Conduct vegetation management (e.g., mechanical treatments, prescribed fire, and wildland fire use) to develop appropriate vegetation density and composition for optimal water balance and healthy watersheds (e.g., aspen/conifer and water yield).
- Implement transportation system improvements (e.g., general best management practices, travel management implementation, culvert/bridge design with stream simulation, road relocation, permeable fill to encourage subsurface flow).
- Improve water diversion and delivery systems for livestock and other uses.
- Improve water diversions, delivery systems, and livestock distribution; divert only what is needed from the natural system and minimize effects on spring sources (e.g., use shut-off valves and splitters, locate troughs away from water sources, and locate head boxes away from spring sources).
- Promote and increase beaver populations where appropriate.
- Promote appropriate livestock grazing management and proper use standards.

Sensitivity: Increased drought will lead to lower base flows, greater tree mortality, reduced rangeland productivity, loss of habitat, reduced soil moisture, wetland loss, and riparian area reduction or loss.

Strategy: Store water.

Tactics:

- Conduct meadow restoration and promote beaver dams.
- Manage proposals for major reservoir construction and additions.
- Manage special-use dams on high-elevation mountain lakes.

Sensitivity: Lower summer flows and lower groundwater recharge will cause higher demand and competition for water by municipalities and agriculture.

Strategy: Restore function of watersheds by connecting floodplains, supporting groundwater-dependent ecosystems, reducing drainage efficiency, and maximizing valley storage.

Tactics:

- Add wood to streams and increase beaver populations.
- Consider the effects of climate change during project analysis.
- Improve livestock management to reduce water use (e.g., use a shut-off valve on stock ponds).
- Reduce surface fuels and stand densities in low-elevations forests.
- Restore meadows.

Resource Area: Wildlife

Sensitivity: Decreased streamflow will reduce riparian vegetation and affect food supply and habitat structure for riparian obligate species.

Strategy: Reduce the effects of decreased streamflow in riparian areas by storing more water on the landscape.

Tactics:

- Increase beaver populations with translocation and trapping to create more wetland habitat.
- Inventory current and potential habitat.
- Restore riparian habitat by planting willows, managing grazing, and raising water level.
- Use snow fences and reflective tarps to retain snow in critical areas.

Sensitivity: Increased duration and periodicity of drought and reduced soil moisture will stress vegetation and aquatic wildlife species.

Strategy: Restore and enhance water resource function and distribution at the appropriate watershed level; prioritize watersheds based on condition and a variety of resource values, including wildlife.

Tactics:

- Increase water storage by managing for beaver populations using a comprehensive beaver strategy, and by reducing cattle effects on small water sources.
- Protect headwaters, spring heads, and riparian areas.
- Provide enhanced water distribution with appropriate wildlife-use designs and balance water use with wildlife needs.
- Reduce biomass (thinning and other vegetation treatments) to reduce evapotranspiration and mortality resulting from water stress for groundwater-fed systems ; maintain shade for non-groundwater-fed systems.

Sensitivity: Increased flooding will alter riparian habitats.

Strategy: Increase upland water storage by managing for beaver populations.

Tactics:

- Accommodate and maintain larger beaver populations.
- Trap and relocate beavers that create dams that flood trails.

Sensitivity: Increased temperatures and shifting hydrologic regimes will stress amphibians (e.g., yellow-legged frogs, Columbian spotted frogs, boreal toad).

Strategy: Maintain integrity and quality of remaining habitats or habitats that may become suitable as temperatures increase.

Tactics:

- Manage for other related stressors; maintain healthy forests, rangelands, and riparian habitat.
- Minimize diversion of water through range improvement.
- Restore beavers and aspen; provide woody browse; consider restoring willow.

Sensitivity: Reduced snowpack, reduced summer precipitation, and changing groundwater recharge and discharge will result in shifting plant species composition and reduced habitat quality in riparian areas, groundwater-dependent ecosystems, wetlands, and wet meadows.

Strategy: Mitigate changes in hydrologic regimes in order to retain species composition and ecosystem function.

Tactics:

- Conduct monitoring to understand changes in resource conditions.
- Create a viable native seed bank.
- Create side channels into floodplains and conduct stream restoration.
- Mitigate road effects by eliminating unnecessary roads and effects on wetlands.
- **Re-establish beaver populations.**
- Redesign road drainage to improve for water retention; reduce runoff and increase infiltration.

Sensitivity: Shifting hydrologic regimes will result in changes in wetland habitat quantity and quality.

Strategy: Identify, retain, and restore riparian/wetland habitat for wildlife.

Tactics:

- Maintain and restore alpine wetlands for amphibian habitat.
- Maintain and restore aspen habitat: remove conifer encroachment; manage grazing in sensitive areas to maintain wildlife habitat.
- **Maintain and restore streamside and habitats: manage grazing, recreation and other potential stressors in sensitive areas to maintain wildlife habitat; maintain riparian vegetation to provide wildlife habitat and stream shading; reintroduce beaver.**

Strategy: Maintain connectivity and habitat quality to promote resilience of wetland habitats.

Tactics:

- Actively restore, protect, and maintain functional wetlands.
- Manage grazing to promote functional riparian habitats.
- **Reintroduce beaver; expand or restore habitat where appropriate.**

Sensitivity: Vegetation and wildlife will be stressed with altered timing and amount of precipitation, drought, and earlier snowmelt.

Strategy: Improve riparian habitats, wetlands, and water-table retention.

Tactics

- Improve management of existing seep and spring-water developments; design proposed developments to minimize ecological damage.
- Maintain vegetative cover sufficient to retain snowpack within watersheds.
- **Restore and maintain healthy beaver populations.**

APPENDIX B

BEAVER MANAGEMENT WORK GROUP (BMWG) RECOMMENDATIONS and ADDITIONAL ISSUES RAISED WITHOUT RECOMMENDATIONS ¹⁷

COMMISSION DIRECTIVE

“...Analyze and provide recommendations on beaver management in the context of climate change, habitat, benefits to fish and other species, and water flow, retention and temperature, in close collaboration with the Commission on this issue and use the newly-formed beaver management workgroup as a key part of the public engagement on this issue.” –November 2020 OFW Commission Meeting

MISSION

“The Beaver Management Work Group will develop recommendations to the Oregon Department of Fish and Wildlife Commission to consider regarding ODFW policies, practices, and programs relating to beaver management on federally managed public lands in Oregon.”

IV. OBJECTIVES.

The BMWG outlines the following objectives for the recommendations:

- Maximize beaver modified floodplain landscapes and ecosystem benefits on federally managed public lands.
- Improve the scale and breadth of data collection to provide for informed management responsiveness.
- Refine the targeting of management practices through monitoring and research to continue to increase their ability to identify and address limiting factors.
- Communicate benefits and opportunities, as well as appropriate regulatory and policy parameters to the public.

VI. RECOMMENDATIONS

The BMWG recommends that ODFW expand its management focus on beavers and beaver habitats to maximize the beneficial impacts of beaver modified floodplain landscapes on federal lands.... To

¹⁷ Recommendations for Beaver Management on Federal Lands from the Oregon Fish and Wildlife Commission Beaver Management Work Group to the Oregon Fish and Wildlife Commission. *Prepared by Kearns & West For the Oregon Fish and Wildlife Commission, May 2022.*

accomplish this, the BMWG recommends the following strategies below to accompany direct management actions.

BMWG recommends that ODFW:

1. Increase internal collaboration to accomplish shared goals.
2. Develop criteria for identifying priority areas through engaging additional external scientific expertise and coordinating with federal partners.
3. Take the lead in working with state and federal land managers to develop standardized data collection methods and metrics to ensure collaboration on monitoring with partnering agencies and organizations.
4. Identify appropriate timeframes, for example, every 3-5 years, to conduct a periodic review at a watershed scale that is ecologically meaningful and to refine management actions to increase beaver modified floodplain landscapes on federally managed public land.
5. Engage with multiple project scale beaver work groups that currently exist across the state to help achieve the objectives outlined in this report.
6. Improve harvest reporting criteria for data collection on beaver populations.
7. Improve and strengthen stream and habitat surveys and reporting structures to specifically and consistently document beaver activities in a way that allows valid assessment of management changes using consistent and standardized survey protocols.
8. Work with federal partners to collaboratively assess the impacts of the various scales of existing closures on federally managed lands in light of other concurrent conditions and management actions.
9. Identify and assess limiting factors to inform management actions.
10. Update the “Living with Wildlife: American Beaver” document with accurate and up-to-date information including clarifying the classification of beaver on federal land to read, “Beaver is classified as a furbearer and is only classified as a predatory animal on private lands.” NOTE: this recommendation no longer applies as beavers are now designated as a furbearer on both private and public lands as per 2023 HB 3464.
11. Continue to work with others to engage in educational campaigns to publicize the benefits of beaver modified floodplains, the potential negative impacts of beavers on landowners, the

connection of beaver with watershed health, and clarification of regulations and classifications regarding beaver hunting and trapping on federally managed public land.

12. Increase these efforts, particularly in coordination with adjacent landowners/land managers to federally managed public lands.

In addition, the BMWG recommends:

13. Continued investment to increase capacity, resources, and infrastructure within ODFW, particularly regarding the implementation of the recommendations contained in this report.
14. Creation of a standing Advisory Group, with membership approved by the Commission, to help guide the implementation of these recommendations and the creation of a Beaver Modified Floodplain Landscape Management Plan.
15. That ODFW and FS, BLM, USFWS, NOAA Fisheries, and other appropriate federal agencies as well as relevant county/local governments collaborate to develop a road map for implementing these recommendations on federally managed public lands.

VII. ADDITIONAL ISSUES RAISED WITHOUT RECOMMENDATIONS

The following are issues raised in work group meetings that did not have full work group support to move forward as consensus recommendations:

1. Trapping closures/limitations addressed either more or less than currently outlined in the report.
2. Disagreement about available data connecting negative impacts of trapping to Oregon's beaver population.
3. Conflicting or lack of scientific data and research showing that reducing beaver hunting and trapping in Oregon would increase beaver populations and/or the number of beaver modified floodplains in Oregon.
4. Lack of data to show trapping/hunting as a major contributor to beaver mortality as opposed to natural predation and disease.
5. The broad range of limiting factors or contributors to mortality of beaver has not been adequately discussed, identified, or represented.

6. Whether hunting and trapping of beavers on federally managed public land for fur and recreation adequately considers the inherent value of beaver and/or concerns for animal welfare.
7. Humane treatment of animals and animal welfare considerations should inform beaver management.
8. Which ODFW division/program is most appropriate to manage beaver.
9. The appropriate category and/or special status of beaver.
10. Greater coordination with private landowners to better understand beaver population dynamics that impact beaver modified floodplain landscapes on federally managed public lands.
11. Coordination with private animal damage control operators to report lethal removal reporting and to identify potential areas where translocation could be used to reduce conflict.
12. The damaging effects beavers can cause on the landscape were not adequately addressed.