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Submitted via electronic portal

RE: Custer Gallatin National Forest Draft Revised Forest Plan and DEIS

Thank you for the opportunity to comment and contribute to the Draft Revised Forest Plan and DEIS for the Custer Gallatin National Forest. The National Wildlife Federation (NWF) is keenly interested in the future management of the Greater Yellowstone Ecosystem to support a broad array of wildlife for future generations.

NWF is among America's oldest and largest conservation organizations. Since 1936, we have advocated for the conservation values that are woven into the fabric of our nation's collective heritage. Our mission is uniting all Americans to ensure wildlife thrive in a rapidly changing world.

This letter is organized into several sections, reflecting different areas of programmatic focus: (1) beaver restoration to ensure watershed and riparian health; (2) other wildlife issues/wildlife conflict resolution; and (3) Gallatin Forest Partnership.

I. Beaver Restoration to Ensure Watershed and Riparian Health

The National Wildlife Federation (NWF) applauds the Custer-Gallatin National Forest (CG NF) Draft Revised Forest Plan for including recognition of beaver restoration as part of its watershed and aquatics strategy; however, there are several areas of this document that could be improved to more fully comply with the 2012 National Forest Planning Rule's requirements for climate resiliency and ecological integrity, as well as to reflect current scientific research and practical experience. Accordingly, NWF recommends modification of the CG NF Draft Revised

Forest Plan to strengthen the attention given to the ecological and economical value[1] that beavers have on the CG NF ecosystem, as well as downstream users. Specifically, the Revised Forest Plan should more explicitly facilitate and prioritize restoration of beavers to unoccupied but suitable habitat.

The North American beaver (*Castor canadensis*) has immense influence over its environment—contributing to the ecological integrity, including connectivity, structure, and function of riparian zones and watersheds. Beavers' extensive instream structures create and enhance habitats for native fish, birds, amphibians and mammals—while at the same time mediating the impacts of climate change on mountain snowpack and runoff. Resulting from these influences, beavers are referred to as "ecosystems engineers" and considered to be a "keystone species."[2]

After European settlement of North America, beavers were nearly extirpated from their relatively ubiquitous distribution across the continent by the fur trade. While populations have recovered throughout North America, they remain absent in much of their historically occupied territory.[3] In the absence of these keystone species, overall ecological integrity changes dramatically and ecosystem services are deeply impoverished: water runs off faster, streams become narrower and more channelized, and the water table drops—reducing the availability of water for fish, birds, amphibians and other wildlife.[4] The impact has been aptly characterized as "an aquatic Dust Bowl."[5] NWF's focus on encouraging beaver restoration and reintroduction is grounded in these profound positive impacts of beavers on ecological integrity on our National Forests.

Restoring beavers—and the function of their activity through a variety of mimicry techniques—is an increasingly widespread restoration practice, especially in the American West. Ultimately,

[1] For example of economic value, see ECONorthwest, The Economic Value of Beaver Ecosystem Services: Escalante River Basin, Utah, 49-51, Tables 22-24 (2011), https://www.pdx.edu/sustainability/sites/www.pdx.edu.sustainability/files/ECONorthwest_Publication_Escalante Beaver-Values_2011-10.pdf.

[2] *Id*. at 297. A keystone species is one that greatly influences the species composition and physical appearance of ecosystems (Paine 1969) and whose effects on ecosystem structure and function are both large overall and disproportionately large relative to its abundance (Power et al. 1996). An ecosystem engineer is a species that directly or indirectly controls resource availability by causing "physical state changes in biotic or abiotic materials" (Jones et al. 1997:1946). The beaver is a definitive example of both a keystone species and an ecosystem engineer.

[3] Baker, B. W. and E. P. Hill, Beaver (Castor canadensis). Wild Mammals of North America: Biology, Management, and Conservation. Second Edition. The Johns Hopkins University Press, 288-89 (2003), https://www.aphis.usda.gov/wildlife_damage/beaver_damage/downloads/Baker%20and%20Hill%20Beaver%20Chapter.pdf.

[4] See generally, U.S. Fish & Wildlife Service, The Beaver Restoration Guidebook 2.0, Working with Beaver to Restore Streams, Wetlands, and Floodplains, (2018), https://www.fws.gov/oregonfwo/Documents/2018BRGv.2.01.pdf.

[5] Ben Goldfarb, Eager: The Surprising, Secret Life Of Beavers And Why They Matter, Chelsea Green Publishing, 10 (2018).

these mimicry dams can lure beavers back to suitable habitat.[6] Both non-government groups as well as government agencies have successfully employed this practice. The Big Hole Watershed Committee has installed over 300 beaver mimicry structures on California Creek to return the creek to a perennial system.[7] The U.S. Forest Service has also embraced this approach in many locations, citing benefits to fisheries, water quality and climate resilience. We encourage the CG NF to also embrace this approach and reflect this in the planning documents.

In addition to areas of the Draft Revised Forest Plan that NWF supports, we request that the CG NF affirmatively adopt substantive plan components that prioritize and set specific goals for restoring beavers and beaver habitat, as outlined below. The beneficial and self-sustaining contributions of beavers should be an essential element of climate adaptation and watershed restoration and management in the CG NF Forest Plan and should be included as the "coarse filter" component to ensure ecological conditions within the CG NF that recover and maintain viable populations of wildlife species. We request that the CG NF analyze and include the following recommendations in the CG NF Revised Forest Plan.

A. Background on Regulatory Requirements

The 2012 Planning Rule requires an explicit focus on maintaining ecological integrity through restoration of natural resources and making National Forests more resilient, particularly in response to the impacts attributed to climate change. Specifically, the 2012 Planning Rule states: "[A] planning rule must . . . Emphasize restoration of natural resources to make our NFS lands more resilient to climate change, protect water resources, and improve forest health . . . ."[8]

Ecological integrity is defined as the quality or condition of an ecosystem when its dominant ecological characteristics (for example, composition, structure, function, connectivity, and species composition and diversity) occur within the natural range of variation and can withstand and recover from most perturbations imposed by natural environmental dynamics or human influences.[9]

The Federal Advisory Committee on the 2012 Planning Rule put forth a series of questions for the Forest Service to consider, determining whether revised forest plans meet the requirements and intent of the 2012 Planning Rule.[10] Regarding ecological integrity, the question is how well the plan provides for the maintenance and restoration of the ecological

[6] Peterson , Christine. "Beaver Mimicry Projects Could Be Key to Restoring Wetlands." The Nature Conservancy, (2019), www.nature.org/en-us/about-us/where-we-work/united-states/idaho/stories-in-idaho/beaver-mimicry-projects-could-be-key-to-restoring-wetlands/.

[7] Big Hole Watershed Committee. (2018). California Creek Restoration. Retrieved from http://www.bhwc.org/projects/california-creek-restoration/

[8] National Forest System Land Management Planning (hereafter, "2012 Planning Rule"), 77 Fed. Reg. 21162-01, 21164, https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5362536.pdf.

[9] 36 C.F.R. § 219.19.

[10] National Advisory Committee for Implementation of the National Forest 2012 Planning Rule, Programmatic Overview of Implementation of the Rule – Measuring Success, (April 18, 2016), https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd545142.pdf

integrity of terrestrial and aquatic ecosystems and watersheds in the plan area, including structure, function, composition, and connectivity.

The 2012 Planning Rule further says the plan must provide for social, economic, and ecological sustainability within Forest Service authority. This includes plan components applicable to the plan area, such as standards or guidelines, to maintain or restore the ecological integrity of terrestrial and aquatic ecosystems and watersheds in the plan area.[11]

The plan components must aim to "maintain or restore structure, function, composition and connectivity." Key attributes of composition may be based on the presence and activity of a species, such as beaver, that provides essential structural or functional roles in the ecosystem (focal species).[12]

In addition to the 2012 Planning Rule, Forest Service guidance documents require managers to respond to climate change by taking proactive management actions to increase ecosystem adaptation and resiliency. The *Forest Service Strategic Framework for Responding to Climate Change* establishes a primary goal to increase ecosystem adaptation to climate change by "[e]nhanc[ing] the capacity of forests and grasslands to adapt to the environmental stresses of climate change and maintain ecosystem services."[13] A principal strategy to achieve this goal is through "facilitated adaption" which takes "[a]nticipatory actions intended to prevent serious disruptions due to changing climate [which] may include . . . assisted migration of species to suitable habitat . . . or construction of new water storage facilities."[14] The Forest Service Manual also promotes ecological integrity and climate change resilience through collaborative, science-informed development, revision, or amendment of land management plans.[15] Between these three governing documents, it is abundantly clear that the Forest Service has a responsibility to manage National Forest lands so they are adaptive and resilient and have the ecological integrity necessary to ensure survival and essential ecosystems services.

B. The Role of Beavers

Overall, emphasizing beavers and beaver habitat in the CG NF Revised Plan serves to help the CG NF meet its regulatory requirements by promoting and enhancing ecological integrity and increasing the climate resiliency of habitats. The extensive, positive ecological impacts of beavers, supported by a growing body of literature, create complex and diverse environments

[11] 36 C.F.R. § 219.8(a)(1).
[12] Zachary Wurtzeback and Courtney Schultz, Measuring Ecological Integrity: History, Practical Applications, and Research Opportunities, BioScience, Vol. 66 Issue 6, 2 (June 2016), https://www.nationalforests.org/assets/pdfs/NelsonPeter-Handout-1.pdf.
[13] *Id*. at 9.
[14] U.S. Department of Agriculture, Forest Service strategic framework for responding to climate change: Version 1.0, USDA - Forest Service Climate Change Advisor's Office, 4 (2008), https://www.fs.fed.us/climatechange/documents/strategic-framework-climate-change-1-0.pdf.
[15] United States Forest Service, Forest Service Manual: 1900 Planning, 1921.02-1921.03 (2015), https://www.fs.fed.us/dirindexhome/fsm/1900/wo_1920.doc.

that are more resilient to disturbance and better able to adapt to impacts of climate change. The contributions of beavers will aid the CG NF in meeting its obligations regarding ecological integrity and responding to climate change under the 2012 Planning Rule and Forest Service guidance documents.[16]

i. Ecological Integrity

By restoring beavers to suitable unoccupied habitat, ecological integrity will be restored to CG NF's riparian areas and watersheds. Some of the benefits include: "higher water tables; reconnected and expanded floodplains; more hyporheic exchange; more diversity and richness in the populations of plants, birds, fish, amphibians, reptiles, and mammals; and overall increased complexity of the riverine ecosystems."[17] Ultimately, the ecosystem engineering of beavers will result in higher levels of species diversity.[18]

Studies on beaver reintroduction conducted within the CG NF have documented two decades of positive habitat changes attributable to the activity of this "ecosystem engineer" in the Absaroka-Beartooth Wilderness.[19] Ultimately, 24 years of data following beaver reintroduction in the Absaroka-Beartooth show that beaver habitat can contribute to channel recovery and floodplain function, among many other benefits.[20] The success of beaver reintroduction within the Absaroka-Beartooth Wilderness should serve as motivation for beaver restoration throughout the rest of the CG NF. This will further increase ecological integrity and help CG NF manage for the protection of at-risk species.

ii. Climate Change

As previously mentioned, beavers are a valuable tool for addressing the impacts of climate change on ecosystems. Beaver dams help offset climate change impacts on watersheds by:

1) reducing peak streamflows and "spread[ing] flows over longer time periods";
2) improving drought resilience and water storage through increased water retention throughout the watershed, recharge of groundwater, and rehydration of degraded riparian ecosystems;

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[16] See, e.g., Ben Goldfarb, Beavers, Rebooted, 6393 Science 360 (2018), http://science.sciencemag.org/content/360/6393/1058.full; see also U.S. EPA, Wetland Protection and Beaver Habitat Restoration as Climate Adaptation Tools in New Mexico, (2016), https://www.epa.gov/sites/production/files/2016-12/documents/nm_wetlands_and_beaver_12_16_16_final.pdf; see also Suzanne Fouty, Climate Change and Beaver Activity How Restoring Nature's Engineers can Alleviate Problems, (2008)

[17] U.S. Fish & Wildlife Service, The Beaver Restoration Guidebook 2.0, Working with Beaver to Restore Streams, Wetlands, and Floodplains, vii (2018), https://www.fws.gov/oregonfwo/Documents/2018BRGv.2.01.pdf.

[18] *Id*. at 4-5.

[19] See Scrafford, M.A., et al., Beaver Habitat Selection for 24 Yr Since Reintroduction North of Yellowstone National Park, Rangeland Ecology & Management, (2017), http://doi.org/10.1016/j.rama.2017.12.001.

[20] *Id*.

3) stabilizing water temperatures through "ex[and[ing] the presence of riparian plant communities and reduc[ing] sediment levels" and storing "groundwater that returns to streams," which contributes to water temperature stability; and
4) improving water quality through "sediment reduction and retention of water within a watershed as part of surface water or groundwater."[21]

Resulting from climate change, snowmelt is occurring at higher rates in the northern Rockies. Beaver dams are able to attenuate flood peaks by retaining water behind dams and in the subsurface, and can "reduce the magnitude of moderate flood events" and "help dissipate the energy of large flood events . . . ."[22] Another important factor to the ecological health and resiliency of the Northern Rockies and Montana's economy as climate change's impacts are increasingly felt is the beavers' potential role in helping to augment late summer flows of streams. Although the scientific literature on hydrologic impacts of beaver structures is limited, case studies documenting enhanced flows date back to 1938.[23] One reference described how beaver ponds, which "store about six acre-feet and are built about one hundred meters apart in appropriate habitat" can "bank significant amounts of water, thus evening seasonal stream flows [citations omitted]."[24]

Due to these numerous benefits, the interagency Climate Change Adaptation and Beaver Management Team has determined that the Forest Service should increase recognition of beavers in planning revisions because of the "climate change related benefits of expansion of beaver populations" and management units should "use beaver management practices and assessment tools in adapting to a changing climate . . . ."[25] Lolo National Forest's Watershed Vulnerability Assessment identified beaver restoration as a strategy to address climate change impacts on water supply[26]. Specifically, the Assessment cited beaver reintroduction as a

[21] U.S. Fish and Wildlife Service, Report of the Climate Change Adaptation and Beaver Management Team to the Joint Implementation Working Group Implementing the National Fish, Wildlife, and Plant Climate Change Adaptation Strategy, 2-3 (2014) https://www.fws.gov/oregonfwo/ToolsForLandowners/RiverScience/Documents/BeaverClimateReportJIWG.pdf.
[22] U.S. Fish & Wildlife Service, The Beaver Restoration Guidebook 2.0, Working with Beaver to Restore Streams, Wetlands, and Floodplains, 5, 36, 103 (2018), https://www.fws.gov/oregonfwo/Documents/2018BRGv.2.01.pdf.
[23] See Frederic Stabler (1985), Increasing Summer Flow in Small Streams Through Management of Riparian Areas and Adjacent Vegetation: A Synthesis, BLM, available at: https://www.fs.fed.us/rm/pubs_rm/rm_gtr120/rm_gtr120_206_210.pdf.
[24] Baldwin, Jeff. "Problematizing Beaver Habitat Identification Models for Reintroduction Application in the Western United States." Yearbook of the Association of Pacific Coast Geographers, vol. 75, 2013, 105. JSTOR, JSTOR, www.jstor.org/stable/24043391.
[25] U.S. Fish and Wildlife Service, Report of the Climate Change Adaptation and Beaver Management Team to the Joint Implementation Working Group Implementing the National Fish, Wildlife, and Plant Climate Change Adaptation Strategy, 1, 6 (2014), https://www.fws.gov/oregonfwo/ToolsForLandowners/RiverScience/Documents/BeaverClimateReportJIWG.pdf.
[26] Alisa Wade, Christine Brick, Scott Spaulding, Traci Sylte and Joan Louie, Watershed Climate Change Vulnerability Assessment: Lolo National Forest, U.S. Dept. Agriculture, Forest Service, Northern Region and Lolo National Forest, Pub. No. R1-16-05, (2016), https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd506291.pdf.

method to improve base flows, increase habitat diversity as a tool for bull trout conservation, and to further increase resiliency of ecosystems.[27]

In addition to mitigating climate change's impacts on water, beavers also help to mitigate climate change impacts of wildland fires and heatwaves. Specifically for heatwaves, beavers are able to maintain refugia as their "deep persistent pools . . . buffer aquatic species like trout from extreme drought and effects of wildfire."[28] The expanded riparian area and wetlands due to beavers lower stream temperatures and the accompanied increase in vegetation also "offers shade that helps to lower stream and pond temperatures."[29] These pools and ponds resulting from beavers may even help to act as firebreaks.[30] This is because "the mosaic of aspen and willow stands, meadows, ponds, and wetlands they maintain amid the flammable spruce forests" help to keep "fires smaller than they would be in homogeneous landscapes."[31]

Expansion of riparian areas and wetlands by beavers can increase humidity of drainages and, importantly, offer firefighters dispersed water storage while fighting wildland fires.[32] After a fire occurs, beaver dams "help sequester sediment [and wildfire debris], very locally decrease seasonal stream temperatures, and enhance riparian revegetation."[33] Summer temperatures in Montana are projected to increase resulting in greater frequencies of wildland fires and extreme heat events.[34] As such, beaver restoration is a vital tool for CG NF managers that should be used to enhance the CG NF's resilience to wildland fire and extreme heat events.

iii. At Risk Species

Three native trout species' historic ranges exist within the CG NF: westslope cutthroat trout, Yellowstone cutthroat trout, and the Arctic grayling. All three are Montana Species of Concern;

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[27] *Id.* at 65-66.
[28] Morelli T.L., C. Daly, S.Z. Dobrowski, D.M. Dulen, J.L. Ebersole, S.T. Jackson, Managing Climate Change Refugia for Climate Adaptation. PLOS ONE, 5 (2016), https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0159909&type=printable.
[29] U.S. Fish & Wildlife Service, The Beaver Restoration Guidebook 2.0, Working with Beaver to Restore Streams, Wetlands, and Floodplains, 9 (2018), https://www.fws.gov/oregonfwo/Documents/2018BRGv.2.01.pdf.
[30] See Living on Earth, 'Beaver Believers' say dam-building creatures can make the American West lush again, September 22, 2018, https://www.pri.org/stories/2018-09-22/beaver-believers-say-dam-building-creatures-canmake-american-west-lush-again.
[31] Yvonne Baskin, Work of Nature: How the Diversity of Life Sustains Us, Island Press, 168 (1997), https://asknature.org/strategy/habitat-mosaics-stop-fires/#.W7rHTJNKjPA.
[32] Ralph Maughan, Beaver Restoration Would Reduce Wildfires, The Wildlife News, (2013), http://www.thewildlifenews.com/2013/10/25/beaver-restoration-would-reduce-wildfires/.
[33] Jeff Baldwin, Potential Mitigation of and Adaptation to Climate-Driven Changes in California's Highlands Through Increased Beaver Populations, California Fish and Game, 231 (2015), https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=113244&inline.
[34] Montana Climate Assessment, 2017 Montana Climate Assessment: Stakeholder Driven, Science Informed, Montana Institute on Ecosystems, 232 (2017), http://live-mcasite.pantheonsite.io/sites/default/files/thumbnails/image/2017-Montana-Climate-Assessment-lr.pdf.

a designation given to "native taxa that are at-risk due to declining population trends, threats to their habitats, restricted distribution, and/or other factors."[35]

The westslope cutthroat trout historically ranged from the upper Missouri River basin to the western side of the continental divide in Montana. This range has been greatly reduced by hybridization with other trout species and by habitat loss and degradation. Cold water is essential to westslope survival; spawning and rearing must occur in cold and nutrient poor streams. The species thrives most in complex streams containing pool habitats and cover. Deep, slow moving pools, large enough to not fill with anchor ice, are needed for overwinter survival of adults.[36] The westslope cutthroat has the second highest rank for a Montana Species of Concern (S2, with S1 being the highest risk). This ranking is reserved for populations "at risk because of very limited and/or potentially declining population numbers, range and/or habitat, making it vulnerable to global extinction or extirpation in the state."[37] Two primary reasons for decline of the westslope cutthroat trout are habitat loss and competition from nonnative species. Warming temperatures have greatly factored into habitat loss as result of poor grazing practices, logging, mining, agriculture, residential development. Dewatering of streams for irrigation has created a loss of hundreds of stream miles essential to spawning. Coupled with competition from rainbow, brook, and brown trout, the westslope cutthroat has had much of its historic range reduced.[38]

The Yellowstone cutthroat trout is very similar ecologically to the westslope cutthroat, faces similar threats, and is a "S2" Montana species of concern. Their historic range found them as far downstream as the Tongue River, but today, native, pure Yellowstone cutthroats are found only in headwater streams of the Yellowstone River. Yellowstone cutthroats need cold and clear streams and prefer temperatures from 4-15 degrees Celsius. Much of the Yellowstone cutthroat's habitat has been lost due to dewatering from irrigation and competition from nonnative trout species as well as hybridization with other trout species.[39]

The Arctic grayling found in Montana are the only population of these glacial-relic species native to the lower 48 states in North America. Previously, a population existed in Michigan, but went extinct from habitat degradation and over fishing. These salmonids require especially cool, clear water and do not coexist well with other trout species except for those that they evolved with (cutthroat trout). The major threats to grayling are similar to cutthroats and include: water quality and quantity, competition with introduced species, predation, and

[35] Montana Natural Heritage Program and Montana Fish Wildlife and Parks. (2019). Special Status Codes. Retrieved from http://fieldguide.mt.gov/statusCodes.aspx#soc
[36] Montana Natural Heritage Program and Montana Fish Wildlife and Parks. (2019). Westslope Cutthroat Trout. Retrieved from http://fieldguide.mt.gov/speciesDetail.aspx?elcode=AFCHA02088
[37] Montana Natural Heritage Program and Montana Fish Wildlife and Parks. (2019). Species of Concern Report. Retrieved from http://mtnhp.org/SpeciesOfConcern/?AorP=a&OpenFolders=S&Species=Fish
[38] Montana Natural Heritage Program and Montana Fish Wildlife and Parks. (2019). Westslope Cutthroat Trout. Retrieved from http://fieldguide.mt.gov/speciesDetail.aspx?elcode=AFCHA02088
[39] Montana Natural Heritage Program and Montana Fish Wildlife and Parks. (2019). Yellowstone Cutthroat Trout. Retrieved from http://fieldguide.mt.gov/speciesDetail.aspx?elcode=AFCHA02087

habitat degradation.[40] Water quantity for this species is greatly affected by irrigation withdrawal and drought. Resulting from these threats, the Arctic grayling has the highest risk ranking (S1) for Montana species of concern. The grayling is at an "extremely high risk of extirpation in the state due to very limited and/or rapidly declining population numbers, range and/or habitat."[41]

Beavers' positive impacts on ecosystems have the capacity to increase and improve potential habitat for threatened, native species.[42] The National Marine Fisheries Service's recovery plan for coho salmon in Northern California and Southern Oregon includes a goal of increasing beaver abundance to ultimately increase channel complexity to benefit salmon populations. The plan states that "a beaver conservation plan could significantly enhance coho habitat in watersheds."[43] The plan also mentions beavers as a solution for climate related issues in riparian and aquatic ecosystems and highlights that beaver restoration is far less expensive than other climate change mitigation tactics.[44] Many of the benefits of beavers mentioned in the recovery plan are the same benefits mentioned in earlier sections of this comment.
The US Fish and Wildlife Service lists and goes into great depth on many of the potential positive impacts of beavers on fish species in *The Beaver Restoration Guidebook*. These impacts include: increased fish productivity/abundance, increased habitat, increased rearing and overwintering habitat, enhanced growth rates, and cold water refuge during warm summer months and low flows.[45]

Many studies have shown a positive relationship between beaver activity and fish productivity and abundance. This increase in fish productivity and abundance occurs from enhanced biological production resulting from beaver activity that increases the abundance of aquatic invertebrates in beaver ponds and ultimately leads to enhanced growth of fish feeding in the ponds (this has been observed in several trout species.[46]) Beavers can also help reduce interspecific competition between native trout species and non-native species such as brown trout by creating a natural fish barrier. A Utah study demonstrated that Bonneville cutthroat were better able to navigate beaver dams and reach upstream reaches than non-native brown

[40] Montana Natural Heritage Program and Montana Fish Wildlife and Parks. (2019). Arctic Grayling. Retrieved from http://fieldguide.mt.gov/speciesDetail.aspx?elcode=AFCHA07010
[41] Montana Natural Heritage Program and Montana Fish Wildlife and Parks. (2019). Species of Concern Report. Retrieved from http://mtnhp.org/SpeciesOfConcern/?AorP=a&OpenFolders=S&Species=Fish
[42] Weber, N., Bouwes, N., Pollock, M. M., Volk, C., Wheaton, J. M., Wathen, G., ... & Jordan, C. E. (2017). Alteration of stream temperature by natural and artificial beaver dams. *PloS one*, *12*(5), e0176313.
[43] 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. Arcata, CA.
[44] *Id.*
[45] Pollock, M.M., G.M. Lewallen, K. Woodruff, C.E. Jordan and J.M. Castro (Editors) 2018. The Beaver Restoration Guidebook: Working with Beaver to Restore Streams, Wetlands, and Floodplains. Version 2.01. United States Fish and Wildlife Service, Portland, Oregon. 189 pp. Online at:
http://www.fws.gov/oregonfwo/ToolsForLandowners/RiverScience/Beaver.as
[46] Kemp, P. S., Worthington, T. A., Langford, T. E., Tree, A. R., & Gaywood, M. J. (2012). Qualitative and quantitative effects of reintroduced beavers on stream fish. *Fish and Fisheries*, *13*(2), 158-181.

trout.[47] However, brook trout are also successful in navigating beaver dams.[48] In streams with brook trout and cutthroat trout, it is unlikely that beaver dams would provide a significant advantage for native species.

As previously stated, beavers create diverse heterogeneric habitats that benefit many organisms, including trout. Beaver ponds provide overwintering habitat for fish in shallow, ice covered streams by stabilizing water temperatures and reducing ice cover.[49] Beaver ponds specifically are key winter habitats for cutthroat trout.[50] The water retention properties of beaver dams also greatly benefit trout during low flows and drought.[51] Specifically, beavers are able to maintain refugia as their "deep persistent pools . . . buffer aquatic species like trout from extreme drought and effects of wildfire."[52] The expanded riparian area and wetlands resulting from beavers lower stream temperatures and the accompanied increase in vegetation also "offers shade that helps to lower stream and pond temperatures."[53] The negative impacts of drought on Bonneville cutthroat populations in Wyoming were found to be mitigated in tributaries with higher beaver activity and lower cattle grazing.[54]

All three of the native trout species of concern have had their ranges and populations greatly reduced over the past century. As water temperatures continue to rise due to climate change, these threatened salmonids will face further habitat degradation that could continue to decrease their numbers. However, "beaver reintroduction and management may provide a low-cost (and sustainable) strategy for improving salmonid habitat."[55] The 2012 Planning Rule states that "the responsible official shall identify and evaluate the existing information relevant to the plan area for the following: . . . (5) Threatened, endangered, proposed and candidate species, and potential species of conservation concern present in the plan area;"[56] As such, it is

[47] Lokteff, R. L., Roper, B. B., & Wheaton, J. M. (2013). Do beaver dams impede the movement of trout?. *Transactions of the American Fisheries Society*, *142*(4), 1114-1125.
[48] *Id.*
[49] Lindstrom, J. W., & Hubert, W. A. (2004). Ice processes affect habitat use and movements of adult cutthroat trout and brook trout in a Wyoming foothills stream. *North American Journal of Fisheries Management*, *24*(4), 1341-1352.
[50] Rasmussen, D.I. (1941) Beaver-trout relationship in the Rocky Mountain region. Transactions of the North American Wildlife Conference 5, 256–263
[51] Kemp, P. S., Worthington, T. A., Langford, T. E., Tree, A. R., & Gaywood, M. J. (2012). Qualitative and quantitative effects of reintroduced beavers on stream fish. *Fish and Fisheries*, *13*(2), 158-181.
[52] Morelli T.L., C. Daly, S.Z. Dobrowski, D.M. Dulen, J.L. Ebersole, S.T. Jackson, Managing Climate Change Refugia for Climate Adaptation. PLOS ONE, 5 (2016), https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0159909&type=printable.
[53] U.S. Fish & Wildlife Service, The Beaver Restoration Guidebook 2.0, Working with Beaver to Restore Streams, Wetlands, and Floodplains, 9 (2018), https://www.fws.gov/oregonfwo/Documents/2018BRGv.2.01.pdf.
[54] White, S. M., & Rahel, F. J. (2008). Complementation of habitats for Bonneville cutthroat trout in watersheds influenced by beavers, livestock, and drought. *Transactions of the American Fisheries Society*, *137*(3), 881-894.
[55] Andonaegui, C. (2000) Salmon, Steelhead and Bull Trout Habitat Limiting Factors Water Resource Inventory Area48. Washington State Conservation Commission, Olympia, Washington.
[56] National Forest System Land Management Planning, 77 Fed. Reg. 21162-01, 21164, https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5362536.pdf.

incumbent upon CG NF to prioritize beaver restoration as means for conservation of westslope cutthroat trout, Yellowstone cutthroat trout, and the Arctic grayling, all three of which are Montana Species of Concern.

As discussed above, the CG NF is required to manage the Forest to increase ecological integrity and resiliency to climate change. Expanding beaver presence is an ecological characteristic that will help achieve this outcome. Therefore, in addition to the current language, we recommend that the CG NF Revised Plan specifically identify beaver presence and activity (dams/impoundments/wetlands) as an ecological characteristic for the entire CG NF, as well as in specific geographic areas of the CG NF, and that the CG NF Revised Plan more explicitly prioritize beaver restoration throughout unoccupied but suitable habitat.

C. Desired Conditions and Guidelines

i. Watershed and Aquatics Desired Condition 09

While we encourage additional focus on the ecological value of beavers and beaver activity on the CG NF, we appreciate the attention given to beavers in Watershed and Aquatics Desired Condition 09: "Beavers play an important ecological role within suitable habitat by increasing water residence time and spatial extent of water on the landscape, and aquatic and riparian habitat complexity." However, we recommend adding specificity to Desired Condition 09 to allow for progress toward their achievement to be determined, as required by the applicable regulation.

Adding specificity to the Desired Condition 09 would be more consistent with other desired conditions under the Watershed section of the Plan, and better meet regulatory requirements of Desired Conditions 36 C.F.R. 219.7(e)(1)(i) requires desired conditions to be "described in terms that are specific enough to allow progress toward their achievement to be determined . . . ."[57] Further, it describes desired conditions as a "description of specific . . . ecological characteristics . . . toward which management of the land and resources should be directed."[58]

Other listed desired conditions in the Watershed and Aquatics section of the CG NF Plan provide adequate specificity to meet the regulatory standard. For example, Desired Condition 05 calls for maintaining a sediment regime that is "within the range of conditions of the reference watersheds, as defined by agency monitoring" and provides key elements of the sediment regime that "include the timing, volume, rate, and character of sediment input, storage, and transport."[59] This directs land management toward maintaining sediment regimes within the variation of a reference watershed that is selected by the agency and provides measurable, key elements and ecological characteristics that can help determine if the regime is within the range of desired conditions. Conversely, as currently written, Desired Condition 09

[57] 36 C.F.R. 219.7(e)(1)(i) (emphasis added).
[58] *Id.*
[59] *See* CG NF Draft Revised Forest Plan, Desired Condition 05, page 22

fails to direct or limit management activates and only states that beavers play an important ecological role.

Therefore, additional language is necessary to round-out Desired Condition 09 and comply with 36 C.F.R. 219.7(e)(1)(i). NWF recommends the following italicized additions:

> Beavers play an important ecological role within suitable habitat by increasing water residence time and spatial extent of water on the landscape, and aquatic and riparian habitat complexity. *Due to these benefits, beaver habitation is encouraged and present forestwide in suitable areas and existing beaver complexes are enhanced or maintained.*

This additional language would result in a more direct type of management that retains and encourages expanded beaver presence in suitable habitat throughout the CG NF as opposed to more passive management techniques of simply retaining beaver presence.

ii. Watershed and Aquatics Guideline 03

We support the overall direction of Watershed and Aquatics Guideline 03, "To protect the ecological functions that beavers provide management actions to reduce beaver threats to infrastructure should use techniques that sustain beavers (such as, using pipes to reduce water levels, notching dams to restore streamflow)." With the restoration of beavers on the landscape, occasional conflict with human-built structures or activities is likely to occur; therefore, a guideline (such as 03) addressing how land managers are to resolve conflict to sustain and protect ecological integrity is necessary. Due to the value of beavers and beaver habitat on the ecosystem, management options should prioritize non-lethal techniques. Therefore, the attention given to non-lethal conflict resolution management that sustains beavers in Guideline 03 should be extended to include language regarding other non-lethal techniques and other human developments.

We suggest that the following italicized language be included as part of Watershed and Aquatics Guideline 03:

> To protect the ecological functions that beavers provide, management actions to reduce beaver threats to infrastructure *and other human developments* should use *non-lethal* techniques that sustain beavers (such as, using pipes to reduce water levels, notching dams to restore streamflow, *pond levelers, beaver deceivers, fencing, and other non-lethal strategies including, including live-trapping and relocation*). *Lethal removal will only be considered after non-lethal strategy options have been exhausted.*

iii. Management Strategies and Approaches Listed in Appendix A

We appreciate and support the possible management strategy and approach in Appendix A, and we encourage the CG NF planning team to move and incorporate, where appropriate, this directive into the actual planning document.

- To support watershed quality and resiliency, beavers and their dams/complexes (including wetlands and riparian areas) could be enhanced or maintained. Introductions of beavers, in coordination with appropriate partners could be pursued. Where beavers are not socially or ecologically tolerable beaver dam analogue structures could be installed to increase aquatic habitat or restore watersheds[60]

This directive could be used in conjunction with Watershed and Aquatics Desired Condition 09 to create a more specific desired condition that emphasizes ecological resiliency and integrity as well as the introduction of beavers to suitable habitats. This directive also addresses beaver-human conflicts by suggesting that beaver mimicry structures could be used to achieve similar benefits of beaver dams. As stated previously, beaver mimicry is being used throughout the West as a widespread restoration practice that can benefit fisheries, water quality, and climate resilience. While this directive in Appendix A contains positive language, NWF does not feel that the Appendices are an appropriate place for such commendable language that promotes beavers and their benefits to ecosystems. As such, NWF suggests that this directive is either moved into the Desired Conditions of 2.3.5 Watersheds and Aquatics or 2.3.6 Riparian Management Zones of the Forest Plan. This directive could also be combined with Desired Condition 09 (Appendix A directive is in italics with further NWF recommendations in bold) to create:

> *To support watershed quality and resiliency, beavers and their dams/complexes (including wetlands and riparian areas) could be enhanced or maintained.* Beavers play an important role within suitable habitat by increasing water residence time and spatial extent of water on the landscape, and aquatic and riparian habitat complexity. *Introductions of beavers, in coordination with appropriate partners, should be pursued. Where beavers are not socially or ecologically tolerable beaver dam analogue structures should be installed to increase aquatic habitat or restore watersheds.*

iv. Other Recommended Desired Conditions, Guidelines, and Objectives

In addition to the above recommendations of the CG NF existing desired conditions and guidelines, NWF recommends that CG NF add language from or include the following desired conditions and guidelines.

- Desired Conditions:
    - *2.3.5 Watershed and Aquatics:*
        - NWF recommends adopting language used in the Rio Grande National Forest Draft Revised Land Management Plan: "*Physical channel characteristics are in dynamic equilibrium and are commensurate with the natural ranges of discharge and sediment load provided to a stream. Streams have the most probable form and the expected native riparian vegetation composition within the valley landforms they occupy; they function correctly without management intervention. Historically*

[60] *See* CG NF Draft Revised Forest Plan, Appendix A, page 5.

disturbed and degraded stream channels recover through floodplain development and establishment of riparian vegetation, and demonstrate stable channel geomorphic characteristics. Beaver reintroduction, and the persistence of beaver habitat, can contribute to channel recovery and floodplain function. Roads, trails, and impervious surfaces minimally affect hydrologic processes within watersheds. (Forestwide)"[61]

- *2.3.6 Riparian Management Zones:*
  - NWF recommends adopting language used in the Rio Grande National Forest Draft Revised Land Management Plan: *"Riparian areas and wetlands are healthy, fully functioning ecosystems. Vegetation consists of desirable native species and age classes. Populations of riparian vegetation are diverse, vigorous, and self-perpetuating. Invasive species, including plants and animals, in riparian and wetland ecosystems are rare. There is sufficient vegetative cover to provide bank stability, trap and retain sediment, regulate temperature, and contribute to floodplain function. Riparian ecosystem composition, structure, and function can generally be restored and enhanced by beaver habitat. (Forestwide)"*[62]
- *2.4.2 General Contribution to Society and Economic Sustainability:*
  - As previously discussed, beavers provide important ecosystem services that strengthen the resiliency of watersheds from the impacts of climate change, such as drought. Resulting from the benefits of climate resiliency on people, NWF suggests the following: "*Water quality and quantity is sustained through maintenance or enhancement of ecosystem biodiversity and function, including through increased beaver activity, and watersheds are resilient to natural disturbance processes and changing climates."*

- Guidelines:
  - *2.3.5 Watersheds and Aquatics:*
    - An additional guideline should be added to encourage restoration and reintroduction of beavers to unoccupied but suitable habitat. NWF recommends the following: "*To maintain ecological integrity and enhance climate resiliency, restoration of beavers to currently unoccupied but suitable habitat (either through translocation or natural recolonization) is facilitated in cooperation with national, state, and local partners."*
    - A guideline should be included to help shape regulation of beaver trapping in restoration areas. NWF suggests the following: *"Pursue collaboration with state wildlife management agencies to ensure that trapping in minimized in beaver restoration areas."*

[61] U.S. Department of Agriculture, Rio Grande National Forest: Draft Revised Land Management Plan, U.S. Forest Service, 15 (2017), https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd560186.pdf.
[62] U.S. Department of Agriculture, Rio Grande National Forest: Draft Revised Land Management Plan, U.S. Forest Service, 14 (2017), https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd560186.pdf.

        - A further guideline should be implemented to provide an assessment of beaver restoration. NWF recommends: *"Conduct a beaver restoration assessment in watershed drainages throughout the plan area."*
    - *2.3.6 Riparian Management Zones:*
        - An additional guideline should be added to ensure activities in riparian management zones protect beaver habitat. NWF recommends adopting language similar to the Helena-Lewis and Clark National Forest Draft Revised Forest Management Plan with one addition (in bold): *"Activities in riparian management zones should protect key riparian processes, including maintenance of stream bank stability, input of organic matter, temperature regimes, water quality, and beaver habitat."*
    - *2.3.12 Fires and Fuels:*
        - An additional guideline should be added to encourage use of beaver habitat as a natural fire mitigation tactic. NWF recommends the following: *"To reduce the negative impacts of fire on wildlife, restoration of beavers and persistence of beaver habitat should be employed to create natural firebreaks, increased humidity of drainages, and offer firefighters dispersed water storage reservoirs while fighting wildland fires."*
    - *2.4.2 General Contributions to Society and Economic Sustainability:*
        - To accompany the suggested desired condition for *2.4.2*, NWF recommends the following: *"Encourage and restore beavers in watersheds to improve water quality, flows, and resiliency to climate change impacts."*
- Objectives:
    - *2.3.5 Watersheds and Aquatics:*
        - To help meet Desired Condition 09 and the above recommended desired conditions, an objective specifying how management should be directed is necessary. This objective will act to complement Watershed Objective 01 and 03. NWF recommends "*Over the next decade, occupied beaver habitat in priority watersheds will be expanded by 50%."*
    - *2.3.7 Conservation Watershed Network:*
        - Based on the best available science, beaver activity can positively contribute towards conservation of native salmonids (westslope and Yellowstone cutthroat trout as well as Arctic grayling). To help meet Desired Condition 01 and the above recommended desired conditions, an objective specifying how management of beavers for native salmonid conservation should be directed is necessary. NWF recommends language from the Helena-Lewis and Clark National Forest Draft Revised Plan with one addition (in bold): *"Improve the habitat quality and hydrologic function of at least 20 miles of aquatic habitat during the life of the plan with a focus on streams with listed species, species of conservation concern. Activities include, but are not limited to, berm removal, large woody debris placement, road decommissioning or*

stormproofing, riparian planting, channel reconstruction, and beaver restoration and reintroduction, where possible."

D. Monitoring

We recommend that beavers be included as a focal species in the Monitoring Plan for the CG NF, as an indicator for the ecological integrity objective discussed above as well as for broader riparian and watershed restoration and health desired conditions and goals. Focal species are to be "selected on the basis of their functional role in ecosystems."[63] Further criteria for selecting focal species noted in the 2012 Planning Rule and discussed by the Committee of Scientists include "the species' functional roles in the ecosystem and sensitivity to changing conditions, management activities, particular threats, or desired ecological conditions."[64] Thus, under the requirements of the 2012 Planning Rule, beavers as both a "keystone species and an ecosystem engineer" should be selected as a focal species in the CG NF Final Plan.[65]

By increasing wetlands and riparian areas, beavers provide habitat for both terrestrial and aquatic plants and animals.[66] Consequently, the overall condition of riparian areas and aquatic ecosystems can be shown through the correlation between beaver presence and vegetation. As a focal species, the presence of beavers in areas of the CG NF will help in determining whether the habitat provides for native species diversity and for determining the overall ecological integrity.

The role of beavers as keystone species and ecosystem engineers is well-supported by science, which is why management teams throughout the country are encouraging and adopting beavers as focal species in their plans. As discussed above, the interagency Climate Change Adaptation and Beaver Management Team recommends that the Forest Service give expanded recognition of beavers as focal species under the 2012 Rule due to the role that beavers may play in climate adaptation and ecosystem restoration.[67] At the time of the Climate Change

[63] 36 C.F.R. § 219.19.

[64] 2012 Planning Rule, 77 Fed. Reg. 21162-01, 21164, https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5362536.pdf; Shultz et al., Wildlife Conservation Planning Under the United States Forest Service's 2012 Planning Rule, Wildlife Conservation Planning, 3 (2012), http://www.cas.umt.edu/facultydatabase/FILES_Faculty/1126/Wildlife%202012%20NFMA%20Rule%20JWM.pdf (citing Mills et. al. 1993; Caro and O'Doherty 1999; Jones et al. 1994; Soule et al. 2005).

[65] U.S. Fish & Wildlife Service, The Beaver Restoration Guidebook 2.0, Working with Beaver to Restore Streams, Wetlands, and Floodplains, 22 (2018), https://www.fws.gov/oregonfwo/Documents/2018BRGv.2.01.pdf; Baker, B. W. and E. P. Hill, Beaver (Castor canadensis). Wild Mammals of North America: Biology, Management, and Conservation. Second Edition. The Johns Hopkins University Press, 297 (2003), https://www.aphis.usda.gov/wildlife_damage/beaver_damage/downloads/Baker%20and%20Hill%20Beaver%20Chapter.pdf.

[66] U.S. Fish & Wildlife Service, The Beaver Restoration Guidebook 2.0, Working with Beaver to Restore Streams, Wetlands, and Floodplains, 5-6 (2018), https://www.fws.gov/oregonfwo/Documents/2018BRGv.2.01.pdf.

[67] U.S. Fish and Wildlife Service, Report of the Climate Change Adaptation and Beaver Management Team to the Joint Implementation Working Group Implementing the National Fish, Wildlife, and Plant Climate Change Adaptation Strategy, 6 (2014), https://www.fws.gov/oregonfwo/ToolsForLandowners/RiverScience/Documents/BeaverClimateReportJIWG.pdf.

Adaptation and Beaver Management Team's recommendation in 2014, six National Forests already recognized beavers as Management Indicator Species due to their important role in the ecosystem.[68]

Recently, the Rio Grande National Forest Draft Plan included beavers as a proposed focal species because beavers are "complementary" to other goals and desired conditions including gathering "information on trends in sedimentation, streamflow, riparian cover, and stream temperature [which] are all particularly relevant for the management and conservation of many aquatic and riparian species of conservation concern . . . ."[69] After the RG NF consulted with beaver and riparian system experts at Utah State University, the Forest decided to monitor beaver activity over time in their Hydrologic Unit Code-12 watersheds. RG NF cited this as "a cost-effective strategy that allows the Forest to track beaver presence and range expansion, identify potential areas where beaver introduction may be appropriate, and provide opportunities for citizen science and outreach."[70] Included in the Rio Grande National Forest Draft Plan for monitoring ecosystems is a set of adaptive management questions that the CG NF should consider, such as: "Where other aquatic ecosystem indicators suggest potential restoration needs, are beavers absent, and if so, would beaver relocation be beneficial?"[71] The RG NF identifies beavers an indicators that answer the following two monitoring questions:

- MQ1: What is the status and trend of the aquatic ecosystem conditions, including those needed to sustain fish populations?
- MQ5: What is the status and trend of riparian and wetland vegetation and conditions across the Forest?[72]

The RG NF Draft Plan provides an example of beavers serving as a focal species for monitoring watershed health, water resources and aquatic ecosystems.[73] We encourage the CG NF to incorporate and expand upon this approach.

II. Other Resource Management Issues/Wildlife Conflict Resolution

As one of the last remaining intact temperate zone ecosystems on the planet, the GYE hosts important habitat for a variety of important and iconic wildlife species. The CGNF encompasses much of the Montana portion of the GYE. With large amounts of wild, secure land, the CGNF hosts crucial core habitat for a wide variety of native species and provides critical wildlife connectivity to other ecosystems in the Northern Rockies.

A. Grizzly Bears

[68] *Id.*
[69] U.S. Department of Agriculture, Rio Grande National Forest: Draft Revised Land Management Plan, U.S. Forest Service, 94 (2017), https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd560186.pdf.
[70] *Id.* at 97
[71] *Id.* at 97, 99.
[72] *Id.* at 97 (table 13).
[73] *Id.*

For over 30 years, NWF has been heavily involved in grizzly bear issues in the GYE. In particular, NWF worked to expand suitable habitat by working with Forest Service grazing permittees to retire allotments facing chronic conflicts with bears. Over the past twenty years, this has proven to be an extremely effective means in reducing grizzly bear depredations and has resulted in a significantly expanded bear population. NWF is pleased the Custer Gallatin continues to strive to further protect and expand bear populations in the GYE, however, we offer the following comments aimed to improved grizzly bear connectivity and reduce future conflicts.

In general, the draft forest plan could be improved by including more plan components that provide actionable and measurable components towards achieving the lofty goals outlined in the desired conditions. NWF is encouraged by the progress made around connectivity, through application of rigorous modeling and proposed designation of key linkage areas. While this aspect of the draft plan is promising, it does not go far enough to ensure habitat connectivity for dispersing species like grizzly bears and migrating species like elk, deer, and pronghorn.

Recommendations:
FW-DC-WL-02: *Habitat conditions contribute to species recovery needs such that population trends of listed species are stable or increasing across their range. Lands within critical habitats designated by the U.S. Fish and Wildlife Service provide the physical and biological features identified as essential to the conservation and recovery of listed species.*

We support this desired condition but believe the geographic scope of habitat protections for grizzly bears in the draft plan is inconsistent with this desired condition. It is logical that achieving this desired condition requires addressing the effects of forest activities on species across their distribution on the forest. To ensure species specific plan components are compatible with this desired condition, we suggest extending grizzly bear habitat protections to reflect current grizzly distribution (see grizzly bear section for more detail). NWF recommends incorporating standards and guidelines that provide certainty around progress toward desired conditions.

Connectivity between the GYE and NCDE populations is key to restoring the meta-population structure that historically characterized grizzly bear presence within the intermountain west. Genetic isolation poses a threat to self-sustainability of the GYE grizzly bear population over the long-term and management that restores and supports a meta-population structure will be important to the future of grizzly bears in the United States. The grizzly bear management plans for both western Montana and southwestern Montana articulate connectivity between the NCDE and GYE grizzly bear populations as a long-term management goal.

The National Forest Management Act (NFMA) 16 U.S.C. § 1604(g)(3)(B) requires the Forest Service to manage for diverse plant and animal communities and maintain viable populations. Ultimately, grizzly bear viability will depend on a meta-population structure with functional connectivity between recovery areas. Section 7 of the ESA also requires that the Forest Service

consider effects of forest plan components on the viability of GYE grizzly bears within a broader context, given the viability of lower 48 grizzlies depends on connectivity between populations that are currently isolated.

Standards and guidelines that ensure secure habitat for grizzly bears are only applicable to the grizzly bear recovery zone/Primary Conservation Area (PCA) in the draft plan, and therefore fail to account for current grizzly bear distribution. The recovery zone is only roughly half of currently occupied grizzly bear habitat in the GYE. The 2016 *Conservation Strategy for the Grizzly Bear in the Greater Yellowstone Ecosystem* requires managing for a stable population of grizzly bears. To manage for a stable population, there needs to be habitat protections, that at a minimum, reflect the area in which population health is monitored (the Demographic Monitoring Area) and should reflect current grizzly bear distribution.

NWF is encouraged by the attempts in the draft plan to establish plan components to support connectivity for a variety of species, including wide ranging habitat generalists like grizzly bears. We also recognize the efforts to include connectivity related plan components specific to grizzly bears, however, we do not believe these plan components do enough to ensure functional connectivity, and especially given habitat standards are limited in scope to the recovery zone/PCA.

B. **Wildlife / Livestock Conflict**:

Conflicts with livestock are increasingly a source of mortality for grizzly bears as they expand their range into different landscape contexts where livestock are more prevalent. This will continue to be a challenge as bears move out of the GYE and will be a challenge that requiring an adaptive management approach if the NCDE and GYE populations are ever connected. There are a variety of proactive conflict reduction measures allotment permittees can take to prevent conflicts and in turn prevent losses of both livestock and grizzly bears. However, recent research has shown that bear density is in itself an important factor related to probability of depredation, further emphasizing the need to create conditions that 1) allow GYE bears to move beyond the GYE and 2) do not add more opportunities for conflict (in the form of restocking vacant allotments) to the landscape, unless restocking these allotments is alleviating an even great conflict elsewhere.

FW-GO-GRAZ-02 (Alternative D, page 76 draft plan): *When evaluating vacant livestock allotments, the Forest Service may emphasize allotment closure for accelerated ecological enhancement in areas of greatest conservation concern. This includes, but not limited to proposed or established research natural areas or special areas, at risk species habitat, under-represented reference areas, native species restoration areas, key linkage areas, conservation watershed networks, areas with opportunities for reduced risk of disease transmission between domestic and wild animals, or retention for forage reserves (grassbanks) or opportunities to enhance management or improve resources through combination with adjacent allotment(s). The Forest Service may de-emphasize use demand as a consideration in these types of conservation areas.*

NWF supports the plan component proposed in alternative D and recommends revising to add areas important for wildlife connectivity (not limited to key linkage zones) and areas of high grizzly bear density and thus higher probability of conflict to the list of factors considered in evaluating allotment closure.

FW-STD-GRAZ-02/03 (alternatives B&C(02), alternative B,C&E (03), pages 76-77 draft plan): We support these restrictions on sheep or goat stocking in the geographic areas with stocking in some areas contingent on disease risk mitigation. However, we strongly recommend these contingencies include potential risk for conflicts with grizzly bears, especially in the Bridger/Bangtail/Crazy Geographic area, given the potential of these corridors for grizzly bear dispersal to the NCDE. If risk of conflict is determined to be low, sheep and goat stocking for the purposes of weed control should only be allowed if robust predator/livestock conflict prevention measures will be applied. These conflict prevention measures could be captured in the draft plan in the form of standards. Given the role of livestock conflicts in grizzly bear mortality, we recommend the Forest Service establish a goal to work with livestock permittees on identifying and incorporating proactive conflict prevention measures in allotment management plans.

Given active livestock allotments within the recovery zone are below the 1998 baseline (DEIS, page 383) and restocking of vacant allotments is possible in the future, we request the Forest Service include a suitability analysis of all vacant livestock allotments within the PCA and allotments outside the PCA that are either a) are not meeting forest standards b) have a history of chronic conflict with grizzly bears. While we understand grazing suitability is not required with the 2012 planning rule, it does not preclude the Forest from making these determinations during the planning process.

C. Bison

In general, NWF supports forest direction that actively provides for bison habitat and promotes access to year-round forage and presence on National Forest System lands as included in Alternatives B and C, in addition to direction supporting a year-round self-sustaining bison population on the national forest as supported in Alternative D. We do not support Alternative E which does not seek to facilitate bison habitat improvement projects and aims to minimize impacts to livestock operations at the expense of supporting native bison within tolerance areas. The Forest has an obligation to do more in terms of recognizing and prioritizing the conservation and restoration of bison as a native, at-risk wildlife species than what Alternatives A and E, and to a lesser extent B and C, provide alone. We believe the Forest can sufficiently meet their obligation to provide habitat and necessary ecological conditions for bison by incorporating the following recommendations for specific plan components in the new Forest Plan.

Recommendations:

The Desired Conditions (FW-DC-WLBI – 01, 02, 03), Goal (FW-GO-WLBI – 01), and Guidelines (FW-GDL-WLBI-01, 02) common to Alternatives B, C, and D to provide for bison habitat and promote use on forest service lands. An Objective (i.e. FW-OBJ-WLBI- 01) for habitat improvement projects "within, or for the purpose of creating or connecting, suitable bison habitat" at a minimum of every three years (*Alternatives B, C, D*).

Plan components from Alternative D including the Desired Condition FW-DC-WLBI-04 that "Bison are present year-round with sufficient numbers and adequate distribution to provide a self-sustaining population on the Custer Gallatin National Forest", and the Guideline FW-GDL-WLBI-03 "To facilitate bison expansion into unoccupied, suitable habitat, management actions should not impede bison movement."

The inclusion of a Goal that the Forest Service work with state, federal, tribal, and NGO partners to identify suitable habitat and corridor areas for bison to use throughout current tolerance zones to help guide habitat improvement projects.

The inclusion of one or more guidelines to allow for the phase out of grazing allotments if there is a willing permittee both within and adjacent to current tolerance areas, acquisition of private lands/conservation easement opportunities as those opportunities arise, and collaboration with other jurisdictions and agencies to facilitate safe highway crossings for bison (and other wildlife).

III. Gallatin Forest Partnership

The National Wildlife Federation supports the proposal set forth by the Gallatin Forest Partnership (GFP) for the Gallatin and Madison Ranges. Through cooperation and compromise, the GFP has crafted a plan that hikers, hunters, mountain bike clubs, and other stakeholders have agreed upon. The plan would safeguard important wildlife habitat; increase, connect, and protect the wild character of backcountry areas, and maintain a variety of recreation opportunities in the region.

Montana is blessed to have large, wild, and intact landscapes like the Gallatin and Madison Ranges. This common-sense, widely supported plan represents an opportunity for the Forest Service to protect and enhance one of America's most iconic landscapes, both game and non-game species, recreation opportunities, and Montana's outdoor economy. By working together, we can preserve this landscape for future generations. We thank the Forest Service for considering aspects of the agreement in Alternative C of the draft plan. We do recommend improvements in alternative C relative to balancing recreation and wildlife conservation.

We recommend the Forest fully incorporate the GFP into the final Forest Plan by including the changes detailed in the Partnership's public comments.

IV. Conclusion

We appreciate this opportunity to provide our comments and recommendations for the revision of the Custer Gallatin National Forest Draft Plan and DEIS. We look forward to cooperating with the Forest Service, various agencies, and community stakeholders to ensure the Custer Gallatin National Forest is properly managed for the long-term public interest as well as for the benefit of Montana's land, water, and wildlife. We hope to continue working with you as the Forest Plan revision process moves toward completion.

Sincerely,

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Uniting all Americans to ensure wildlife thrive in a rapidly changing world