Draft Objections September 2, 2020

Objection Reviewing Officer
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Subject: Custer Gallatin Plan Objection and Custer Gallatin Species of Conservation Concern Objection

Dear Objection Reviewing Officer,

Buffalo Field Campaign participated in public meetings and submitted substantive comments during public scoping and throughout the Custer Gallatin National Forest land management plan revision process requesting the Regional Forester list American bison as a species of conservation concern in the Northern Region, and the Forest Supervisor provide standards for securing American bison habitat in the Custer Gallatin planning area.

Buffalo Field Campaign files our objections to Custer Gallatin Forest Supervisor Mary C. Erickson's decision for failing to provide standards in the land management plan, and Northern Region Regional Forester Leanne M. Marten's decision for failing to make legal designations securing habitat for viable American bison herds on our National Forests.

In support of our objections to correct the Forest Service's final decisions, Buffalo Field Campaign submits the agency required sources referenced herein.

Northern Region Regional Forester Leanne M. Marten's decision to <u>not</u> list American bison as a species of conservation concern is objectionable on several grounds.

• A broad section of the American people submitted credible and relevant scientific evidence raising substantial concern about American bison's ability to persist as a viable, self-sustaining migratory species on our National Forests.

The National Forest planning rule identifies species of conservation concern:

> as a species . . . that is known to occur in the plan area and for which the regional forester has determined that the best available scientific information indicates substantial concern about the species' capability to persist over the long-term in the plan area.

36 CFR § 219.9(c), National Forest System Land Management Planning final rule and record of decision, 77 Fed. Reg. 21162, 21265 (Apr. 9, 2012).

Listing American bison as a species of conservation concern would impose a duty on the Custer Gallatin to provide secure habitat for a viable population on our National Forests.

> [P]rovide the ecological conditions necessary to maintain a viable population . . . within the planning area.

Regional Forester Leanne M. Marten, *Species of Conservation Concern, Custer Gallatin National Forest* (Feb. 7, 2019) (citing 36 CFR 219.9(b)(1)).

However, the record appears to show Regional Forester Marten made her decision for listing species of conservation concern on February 7, 2019 *before* the Custer Gallatin National Forest opened public comment on their draft land management plan.

"This constitutes the species of conservation concern list for the Custer Gallatin National Forest's draft revised forest plan and draft environmental impact statement (EIS)." Regional Forester Leanne M. Marten, *Species of Conservation Concern, Custer Gallatin National Forest* (Feb. 7, 2019).

While Regional Forester Marten states identifying species of conservation concern is a "dynamic process," for American bison, that dynamic process appears to have not considered the best available scientific information and evidence submitted during the public comment period solicited by Forest Supervisor Erickson on March 1, 2019. Forest Supervisor Mary C. Erickson, *Public Review of Draft Forest Plan and Draft Environmental Impact Statement for Custer Gallatin Forest Plan Revision* (March 1, 2019).

The record appears to show Regional Forester Marten's decision did not consider the best available scientific information and evidence submitted during the public comment period March 1 to June 5, 2019.

> The Custer Gallatin has provided the regional forester with public comments received on species of conservation concern. The regional forester considered comments received and reviewed the documentation, rationale, and best available scientific information. If necessary, changes were made to the list.

Custer Gallatin National Forest Land Management Plan, *Draft Record of Decision*, page 50 (July 2020).

However, the statement "the regional forester considered comments received and reviewed the documentation, rationale, and best available scientific information" is not reflected in the public record.

The belated publication of an unsigned letter and a Q & A sheet on the Regional Forester's web page at some point after the record of decision was published for public comment does not address our objections. Regional Forester, *Custer Gallatin NF Species of Conservation Concern* (June 30, 2020); *Questions and Answers – Species of Conservation Concern Identification in the Northern Region Version 3* (May 21, 2020).

It is not transparent how Regional Forester Marten's assessment and evaluation for listing American bison as a species of conservation concern considered all public comment, and the best available scientific information, and what her rationale is for not listing American bison.

Regional Forester Marten's consideration of all public comments received, review of the best available scientific information, and rationale is not transparent in the public record.

Regional Forester Marten's decision must conform to National Forest planning rules requiring consideration of all public comment, documenting "the use of the best available scientific information," and ensuring "the rationale for decisions is transparent to the public." 36 CFR § 219.3, National Forest System Land Management Planning final rule and record of decision, 77 Fed. Reg. 21162, 21192 (Apr. 9, 2012).

Regional Forester Marten's decision must be reversed, and her assessment and evaluation of the best available scientific information for listing American bison as a species of conservation concern publicly disclosed.

• Regional Forester Marten's evaluation of the best available scientific information and rationale for not listing American bison as a species of conservation concern is missing from the Forest Service's decision and analysis documents.

Only the generic criteria and process are disclosed; the assessment and evaluation for American bison is not. Regional Forester, *Animal Species of Conservation Concern Identification Process for the Custer Gallatin National Forest's Revised Forest Plan* (*Final Environmental Impact Statement*) (April 2020); Regional Forester, *Rationale (species evaluations) used to select animal and plant species as SCC for CGNF final plan and final environmental impact statement* (undated).

It is not transparent how Regional Forester Marten addressed the best available scientific information including the signatories' report, *American bison a species of conservation concern*, submitted March 5, 2018 by the Piikani Nation, Crow Creek Sioux Tribe, twenty-three businesses, fifty-nine nonprofit organizations, 2,221 individuals, and Buffalo Field Campaign.

The Northern Cheyenne Tribe (May 28, 2019) and the Rocky Mountain Tribal Leaders Council (May 31, 2019) also requested American bison be listed as a species of conservation concern.

The public comment record demonstrates a broad section of Tribes, groups, businesses, and individuals from around the country requested and submitted evidence in support of listing American bison as a species of conservation concern. *Public comments on the Custer Gallatin National Forest plan Draft Environmental Impact Statement* (June 2019) 637MB zip file online: https://www.buffalofieldcampaign.org/species-of-conservation-concern.

The responsible official's assessment, evaluation, and rationale for not listing American bison as a species of conservation concern must be transparent, and the final decision must conform to the National Forest planning rule.

> *Content of the assessment for plan development or revision*. In the assessment for plan development or revision, the responsible official shall identify and evaluate existing information relevant to the plan area for the following: Threatened,

> endangered, proposed and candidate species, and *potential species of conservation concern present in the plan area*.

36 CFR § 219.6(b)(5), National Forest System Land Management Planning final rule and record of decision, 77 Fed. Reg. 21162, 21263 (Apr. 9, 2012) (emphasis added).

• American bison meet all of the Forest Service's criteria for listing as a species of conservation concern in the Northern Region. Regional Forester, *Animal Species of Conservation Concern Identification Process for the Custer Gallatin National Forest's Revised Forest Plan (Final Environmental Impact Statement)* (April 2020).

"Although bison do not meet the criteria for species of conservation concern on the Forest, I appreciate how the plan recognizes that bison are of great importance to local, regional, and national visitors and the tribes." Regional Forester, *Custer Gallatin NF Species of Conservation Concern* (June 30, 2020).

The Regional Forester's conclusion is unsupported and contradicted by the best available scientific information.

Nature Serve's global ranking for bison is G2 at "risk because of very limited and/or potentially declining population numbers, range and/or habitat, making it vulnerable to global extinction," and state ranking for bison is S2 at "risk because of very limited and/or potentially declining population numbers, range and/or habitat, making it vulnerable to extirpation in the state" of Montana.

According to the Montana Natural Heritage Program, only 1% of American bison's breeding range in Montana remains to perpetuate self-sustaining populations of the migratory species in the wild. Montana Natural Heritage Program, *SOC Report Animal Species of Concern* (last updated April 16, 2020).

The Custer Gallatin is host to the 1% of breeding range remaining for the only intact and wild American bison population in the state of Montana.

"Agency planning policy requires that species identified by states as being at risk be considered as potential SCC [Species of Conservation Concern]." Martin Nie et al., *Fish and Wildlife Management on Federal Lands: Debunking State Supremacy*, 47 Environmental Law 797, 862 (2017) (citing Forest Service Handbook: Land Management Planning Handbook § 1909.12 (2013)).

Montana Fish, Wildlife & Parks, and the Montana Natural Heritage Program identify American bison as a species of concern.

> As of 2010, bison are listed by the Montana Natural Heritage Program (MNHP) and FWP as a "species of concern" (MNHP, 2010; FWP, 2010a). Species of concern "are native Montana animals that are considered to be 'at risk' due to declining population trends, threats to their habitat, and/or restricted distribution" (MNHP, 2010). FWP and MNHP have given bison an S2 state ranking and a G4 global ranking (MNHP, 2010: FWP, 2010a). An S2 status means the species is "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" (FWP and MNHP; 2010b). The G4 global ranking means that the species is "apparently

> secure, though it may be quite rare in parts of its range, and/or suspected to be declining" (FWP and MNHP, 2010b). The Montana Comprehensive Fish and Wildlife Conservation Strategy (CFWCS) lists bison as Tier 1, which are species in "greatest conservation need. Montana Fish, Wildlife & Parks has a clear obligation to use its resources to implement conservation actions that provide direct benefit to these species, communities, and focus areas" (FWP, 2005, pp.32).

S.M. Adams & A.R. Dood, *Background Information on Issues of Concern for Montana: Plains Bison Ecology, Management, and Conservation*, page 32 (Montana Fish, Wildlife & Parks, Bozeman, MT June 2011).

Montana Fish, Wildlife & Parks and the Montana Natural Heritage Program present the evidentiary factors – declining populations, threats to habitat, restricted distribution – supporting their designation of American bison as a species of concern. These are exactly the factors and best available scientific information the National Forest planning rule requires to demonstrate substantial concern about the long-term persistence of American bison, a native species, within the Custer Gallatin planning area.

The basis for Regional Forester Marten making a contrary decision has been closed to public scrutiny.

Cumulative stressors curtailing the natural range of migratory bison, fragmented habitat, government permitted actions disrupting connectivity to habitat, cattle grazing allotments, fencing schemes in migration corridors, and the uncertainty of rapid climate change, extended drought, and large-scale fires in shifting bison range into intolerant "management zones" combined with a substantial decrease in the Central bison herd, is strong evidence for designating American bison a species of conservation concern on our National Forests.

The record evidence of the Forest Service evaluating the agency's criteria and factors threatening the long-term persistence and diversity of genetically distinct and unique bison subpopulations in the Custer Gallatin planning area is missing and needs to be publicly disclosed.

The best available scientific information on American bison's distinct and unique population substructure is found in Natalie D. Halbert et al., *Genetic Population Substructure in Bison at Yellowstone National Park*, Journal of Heredity, Advance Access published (Feb. 8, 2012).

In another study, scientists "identified two independent and historically important lineages in Yellowstone bison" finding "Yellowstone bison represent nearly half – 10 of 22 modern plains bison haplotypes – of all the known haplotypes in plains bison . . ." David Forgacs et al., *Mitochondrial Genome Analysis Reveals Historical Lineages in Yellowstone Bison*, 11(11) PLoS ONE e0166081 pages 1, 6 (Nov. 23, 2016).

> Before new management standards and policies are defined for the Yellowstone bison population, additional studies involving population structure and genetic diversity based on both mtDNA and nuclear genetic diversity assessments need to be conducted.

David Forgacs et al., page 7 (Nov. 23, 2016).

The Forest Service must follow your own criteria and National Forest planning rules in evaluating and designating species of conservation concern.

American bison clearly meet your criteria and requirements under the National Forest planning rule to be designated a species of conservation concern. We request you do so.

• The Forest Service must show how it grappled with the best available scientific information and evidence of the risk of local extinction for genetically distinct and unique bison herds on the Custer Gallatin, and provide secure provisions for the only intact American bison population found on our National Forests.

Bison are near threatened with few populations functioning as wild in North America. Aune, Jørgensen & Gates, page 1 (2018).

Within their native range, bison are regionally extinct in 40 States, and possibly extinct in Texas. Aune, Jørgensen & Gates, pages 2–3, (2018).

According to the U.S. Fish & Wildlife Service, the total North American population of threatened wood bison (*Bison bison athabascae*) numbers 11,000 animals. 79 Fed. Reg. 26175, 26177 (May 7, 2014).

In comparison, the total North American population of plains bison functioning as wild numbers 11,248 to 13,123 and only 4 subpopulations have more than 1,000 individuals. Aune, Jørgensen & Gates 2018 at 1.

Despite being the trustee for 145 million acres of habitat in the Western Region, "no self-sustaining herds of wild plains bison exist on National Forest System lands." U.S. Forest Service, Region 2, Regional TES Species Program Leader Nancy Warren, *American Bison R2 Individual Species Recommendations*, (Apr. 29, 2011); U.S. Forest Service, *National and Regional Areas Summary* (Table 1) (Oct. 17, 2015).

The Custer Gallatin and National Forests in the Northern Region are a critical part of American bison's known range.

> Prehistoric bison distribution in the GYE can perhaps best be summarized simply by saying that bison appear to have been living everywhere in Greater Yellowstone where habitats were suitable.

Paul Schullery & Lee Whittlesey, *Greater Yellowstone Bison Distribution and Abundance in the Early Historical Period*, page 136 (2006).

Forest Supervisor Mary C. Erickson's decision to adopt Alternative F in combination with Regional Forester Marten's non-transparent decision <u>not</u> to list American bison as a species of conservation concern, raises substantial concern about the migratory species long-term ability to persist as a viable population on our National Forests.

Custer Gallatin Forest Supervisor Mary C. Erickson's preferred Alternative F is objectionable on several grounds.

"Vague, voluntary, speculative, and unenforceable measures found in plans are generally not considered a sufficient regulatory mechanism." Martin Nie & Emily Schembra, *The Important Role of Standards in National Forest Planning, Law, and Management*, 44 Environmental Law Review 10281, 10290 (April 2014) (footnote omitted).

• Alternative F does not secure provisions for a viable, self-sustaining American bison population on our National Forests.

Alternative F's "desired conditions" for American bison are unenforceable and entirely discretionary. Custer Gallatin National Forest, *2020 Land Management Plan*, *Desired Conditions*, FW-DC-WLBI-02, page 58 (July 2020).

Alternative F's "guidelines" for American bison may have served as constraints, but the insertion of a loophole and adoption of "management zones" impair ecological conditions for the migratory species. Custer Gallatin National Forest, *2020 Land Management Plan*, *Guidelines*, FW-GDL-WLBI-03, page 59 (July 2020).

Alternative F's "objective" for American bison may or may <u>not</u> benefit connectivity. Vague statements such as logging forests will open spaces for bison to move appear to be a bootstrap justification for Forest Service logging projects. Without more, such as scientific citation or evidence or on the ground examples, Alternative F's "objective" cannot be relied upon to restore connectivity for American bison. Custer Gallatin National Forest, *2020 Land Management Plan*, *Objectives*, FW-OBJ-WLBI-01, page 58 (July 2020).

Alternative F's "monitoring question" for American bison is unreliable for reviewing the effectiveness or <u>not</u> of plan components, and making course corrections to guide future management actions. Custer Gallatin National Forest, *2020 Land Management Plan*, page 195 (July 2020).

The final alternative must secure provisions for American bison and conform to National Forest planning rule requirements for diversity and persistence of native species. 36 CFR § 219.9, National Forest System Land Management Planning final rule and record of decision, 77 Fed. Reg. 21162, 21265 (Apr. 9, 2012).

• Alternative F does <u>not</u> "provide the ecological conditions to both maintain diversity of . . . and support the persistence" of American bison, a native migratory species, in the Custer Gallatin planning area as the National Forest planning rule requires.

"As your revised plan provides direction to maintain and restore the ecological conditions necessary to support long-term persistence of all native species using the complementary ecosystem and species-specific approach of the 2012 Planning Rule, I find the plan is sufficient to meet the sensitive species objectives of FSM 2670." Regional Forester, *Custer Gallatin NF Species of Conservation Concern* (June 30, 2020).

The Regional Forester's broad finding is in error for American bison because it is not based on the best available scientific information and a critical review of Alternative F's adverse ecological consequences for American bison.

The Regional Forester's finding is entirely dependent on the prerogative of the Custer Gallatin to make potential decisions and take possible actions at some indeterminate point in the future through:

> removal of unnecessary fences that could affect bison movement, mechanical thinning, or prescribed burning of dense forest or deadfall to improve travel corridors between suitable habitats, treatment to remove non-native plants in order to improve forage quality and quantity for bison, aspen/riparian/meadow enhancement, road closures, and livestock allotment management as described above.

Custer Gallatin National Forest, *Appendices for the 2020 Land Management Plan, Appendix A: Potential Management Approaches and Possible Actions*, page 41 (July 2020).

Potential decisions and possible actions the Custer Gallatin may take under Alternative F falls far short of providing the ecological conditions necessary for bison to somehow survive in the planning area.

Alternative F *undermines* the requisite ecological conditions for the long-term persistence of American bison in the Custer Gallatin planning area.

The only de facto standard found in Alternative F impairs the ecological conditions for American bison to naturally roam and migrate across substantial portions of their National Forest range and habitat in the Custer Gallatin planning area.

Alternative F does not remove Custer Gallatin permitted barriers in migration corridors – a damaging condition thwarting American bison's connectivity to habitat despite the National Forest planning rule requirement for restoring connectivity.

Alternative F has no programmatic effort to proactively close cattle grazing allotments in American bison's range and habitat in the Custer Gallatin planning area. The lack of a clear program directing closure permits the decades long condition of conflict to fester between the Montana Dept. of Livestock and American bison to the detriment of bison, a native species.

The final alternative must secure provisions and ecological conditions conforming to National Forest planning rule requirements providing for diversity and persistence of native species. 36 CFR § 219.9, National Forest System Land Management Planning final rule and record of decision, 77 Fed. Reg. 21162, 21265 (Apr. 9, 2012).

• Alternative F does not secure provisions for conserving habitat for genetically distinct and unique American bison subpopulations on our National Forests, including the Central bison herd which is jeopardized under state and federal management.

According to National Park Service biologists, the number of Central herd bison was reduced from 3,531 in 2006 to 847 in 2017. P.J. White et al., *Management of Yellowstone bison and brucellosis transmission risk – Implications for conservation and restoration*, 144 Biological Conservation 1322, 1329 (2011); Chris Geremia et al., *Status Report on the Yellowstone Bison Population*, page 1 (Sept. 2017).

The current estimate is 1,162 Central herd bison. Chris Geremia et al., *Status Report on the Yellowstone Bison Population*, page 1 (October 2019).

1,162 bison is far below the minimum census of 2000–3000 mature individuals needed to avoid inbreeding depression and maintain genetic variation for a wild population with distinct subpopulation structure. Philip W. Hedrick, *Conservation Genetics and North American Bison (Bison bison)*, 100(4) Journal of Heredity 411, 419 (2009); Natalie D. Halbert et al., *Genetic Population Substructure in Bison at Yellowstone National Park*, Journal of Heredity, Advance Access published (Feb. 8, 2012).

Populations of species are unlikely to persist in the face of rapid climate change and habitat loss unless they number around *5,000 adult individuals or more*.

> The bottom line is that both the evolutionary and demographic constraints on populations require sizes to be at least 5000 adult individuals. These seem to be large requirements, but a number of studies across taxonomic groups have made similar findings: the median MVP derived from PVA of 102 vertebrate species was 5816 individuals (Reed et al., 2003), and 4169 individuals from a meta-analysis of 212 species (Traill et al., 2007). The census-based MVP of 5500 reported by Thomas (1990) is also remarkably congruent; all similar to the recommended census N of 5000 individuals (Frankham, 1995). We note though that similarities are not strictly equivalent, and are a result of evaluation of some non-overlapping factors, *meaning minimum viable population size in many circumstances will be larger still*.

Lochran W. Traill et al., *Pragmatic population viability targets in a rapidly changing world*, 143 Biological Conservation 28, 30 (2010)(emphasis added).

State and federal management actions have led to an alarming reduction in the Central bison herd at the same time the responsible official has agreed to severely curtail the entire wild population's natural range on our National Forests for the foreseeable future:

> Clearly define a boundary line beyond which bison will not be tolerated.

Interagency Bison Management Plan Members, *Operating Procedures for the Interagency Bison Management Plan (IBMP)* page 2 (Dec. 31, 2019).

State and federal management actions are clearly a factor in the shift detected in the Central bison herd's range, an unexamined consequence of recurring government trapping, harassment from habitat, and Forest Service permitted measures obstructing bison's natural migrations and connectivity to habitat in their home range in the Custer Gallatin planning area.

Managers have <u>not</u> and are unlikely to examine the why and how of the "sharp decline" and shift in bison's range in response to state and federal management actions. Custer Gallatin National Forest, *Final EIS for the 2020 Land Management Plan Vol. 1 Chapters 1, 2, and 3 (part 1)* page 542 (July 9, 2020).

The records evidence shows the sudden shift in range coincided with mass government slaughter decimating the Central bison herd during the winters of 2006–2008, and the capture and release of cohorts from both the Northern and Central bison herds in this time frame. P.J. White et al.,

Management of Yellowstone bison and brucellosis transmission risk – Implications for conservation and restoration, 144 Biological Conservation 1322, 1327 (2011).

State and federal management is a harmful stressor driving the risk of local extinction for American bison on the Custer Gallatin, and there is no standard in the land management plan to reverse this trend.

The final alternative must include standards conserving habitat for the viability of American bison subpopulations and persistence of the population as a whole.

• There are no "standards" for American bison and their habitat, only "desired conditions" which impose no duty or requirement upon the Custer Gallatin National Forest.

For example, the Custer Gallatin's "desired condition" of "stable and increasing genetic diversity" for American bison will remain an unmet desire without binding standards that "increase resilience to stressors, adaptability to changing conditions" including rapid climate change, extended drought, and large-scale fires that can shift the migratory range of bison into intolerant "management zones" calling for their removal. Custer Gallatin National Forest, *2020 Land Management Plan*, *Desired Conditions*, FW-DC-WLBI-02, page 58 (July 2020).

Migratory bison are prohibited from occupying any National Forest range and habitat in Zone 3, an arbitrary standard agreed to by the responsible official.

> Clearly define a boundary line beyond which bison will not be tolerated.

Interagency Bison Management Plan Members, *Operating Procedures for the Interagency Bison Management Plan (IBMP)* page 2 (Dec. 31, 2019).

The lethal, arbitrary boundary the Custer Gallatin has agreed to excludes American bison from substantial portions of their National Forest range and habitat and cannot contribute to increasing the genetic diversity of distinct and unique bison herds in the Yellowstone ecosystem.

The final alternative must include standards constraining the Custer Gallatin, with a clearly defined duty to provide habitat for a viable population of American bison with "stable and increasing genetic diversity" on our National Forests.

> [T]he presence, abundance and distribution of wild bison on the Custer Gallatin National Forest is coordinated with the state of Montana through the identification of, and management emphasis on, bison tolerance zones. *The plan calls for deference to bison management within these zones* (FW-GDL-WLBI 01).

Custer Gallatin National Forest, *Appendices for the 2020 Land Management Plan*, page 41 (July 2020) (emphasis added).

The Forest Service must "stop the practice of reflexively acquiescing to state claims of wildlife authority" and follow your duty to provide for diversity and viability of native species including American bison. Martin Nie et al., *Fish and Wildlife Management on Federal Lands: Debunking State Supremacy*, 47 Environmental Law 797, 905 (2017).

• The Custer Gallatin's "guideline" to "not create a barrier to bison movement unless needed to achieve interagency targets for bison population size and distribution" *guts the National Forest planning rule requirement for connectivity*. Custer Gallatin National Forest, *2020 Land Management Plan*, *Guidelines*, FW-GDL-WLBI-03, page 59 (July 2020).

> *Connectivity*. Ecological conditions that exist at several spatial and temporal scales that provide landscape linkages that permit the exchange of flow, sediments, and nutrients; the daily and seasonal movements of animals within home ranges; the dispersal and genetic interchange between populations; and the long distance range shifts of species, such as in response to climate change.

36 CFR § 219.19 Definitions, National Forest System Land Management Planning final rule and record of decision, 77 Fed. Reg. 21162, 21270 (Apr. 9, 2012).

Forest Service management decisions restricting and impeding American bison's natural migrations are in conflict with National Forest planning rule requirements to use the best available scientific information, restore habitat connectivity, and provide for diversity and viability of distinct migratory herds on our National Forests.

> Conserving mass migrants means preserving animals' freedom of movement in response to the temporal aspects of forage across seasonal extremes. This requires understanding basic parameters of the migration (e.g. location, numbers, routes, distances traveled), ecological drivers, habitat needs and threats. When migrants are excluded from forage and water resources, their numbers plummet and migrations disappear.

Grant Harris et al., *Global decline in aggregated migrations of large terrestrial mammals*, 7 Endangered Species Research 55, 72 (May 2009).

American bison have already suffered the loss of 14 migration routes or corridors in the Yellowstone ecosystem. Joel Berger, *The Last Mile: How to Sustain Long-Distance Migration in Mammals*, 18(2) Conservation Biology 320, 322 (April 2004).

Migration is an essential life-history strategy for American bison allowing for adaptation in a rapidly changing environment and evolutionary resilience in a climate that is being disrupted on a global scale.

Bison's long-distance migrations, corridor use, and connectivity to habitats in their home range needs to be proactively managed so these phenomena do not become endangered within the Custer Gallatin planning area.

Reducing migrants through over-killing or removing range contributes to habitat loss, population declines, shortens the distances migrants can travel, and can destroy mass migration and drive migratory species to extinction. Grant Harris et al., *Global decline in aggregated migrations of large terrestrial mammals*, 7 Endangered Species Research 55, 68 (May 2009).

The final alternative must conform to National Forest planning rule requirements providing connectivity to habitat for American bison.

• The Custer Gallatin's "guideline" to "not create a barrier to bison movement unless needed to achieve interagency targets for bison population size and distribution" *also leaves in place all of the Forest Service permitted barriers obstructing American bison's natural migrations and connectivity to habitat the National Forest planning rule requires be restored*. Custer Gallatin National Forest, *2020 Land Management Plan*, *Guidelines*, FW-GDL-WLBI-03, page 59 (July 2020).

> A commitment to restore or maintain landscape connectivity to facilitate movement, migration, and dispersal is a significant addition to the planning rule.

Courtney A. Schultz et al., *Wildlife Conservation Planning Under the United States Forest Service's 2012 Planning Rule*, 77(3) The Journal of Wildlife Management 1, 5 (Jan. 23, 2013).

> Authorizations for occupancy and use made before this plan approval may proceed unchanged until time of reauthorization.

Custer Gallatin National Forest Land Management Plan, *Draft Record of Decision*, page 48 (July 2020).

The Custer Gallatin has approved erecting several barriers in migration corridors to thwart American bison's connectivity to habitat. However, the Custer Gallatin did <u>not</u> evaluate how agency permitted barriers obstruct achieving your "desired condition" in the land management plan for bison.

> The fence installation will be more or less perpendicular to the river with the goal of preventing bison from moving further downstream. Gallatin National Forest 2011 at 1 (approving 900 feet of jackleg fencing uphill from both sides of the Yellowstone River and associated gates and "cattle guards" on HWY 89 near Yankee Jim Canyon in Gardiner basin).
>
> The only identified effect to wildlife is to prevent bison from migrating further west, toward the Madison Valley, which is exactly the purpose of the fence. Custer Gallatin National Forest 2016 at page 3 (approving 30 feet of jackleg fencing, gate, and associated "Bison Cattle Guard" on HWY 287 in Hebgen basin).
>
> [T]he Holder is authorized to construct and maintain a bison corridor fence . . . . Gallatin National Forest 2009 at page 1 (approving 695 feet of electrified fencing, associated cattle guards, and gates).

The final alternative must address how the Custer Gallatin's fencing schemes meet National Forest Planning rule requirements for restoring connectivity.

> Connecting corridors between suitable habitats for bison would require areas with no barriers and minimal impediments to bison movement.

Custer Gallatin National Forest, *Final EIS for the 2020 Land Management Plan Vol. 1 Chapters 1, 2, and 3 (part 1)* page 544 (July 9, 2020).

The Custer Gallatin's fencing schemes disrupt landscape linkages and habitat connectivity that is essential for maintaining bison diversity and viability. Forest Service permitted barriers disrupt

habitat connectivity for American bison the National Forest planning rule requires be restored in the Custer Gallatin planning area.

The final alternative must eliminate Custer Gallatin permitted barriers to habitat connectivity, and provide a binding standard for conserving American bison migration corridors on our National Forests.

• The Custer Gallatin's "guideline" to "not create a barrier to bison movement unless needed to achieve interagency targets for bison population size and distribution" *opens the door to permitting trapping American bison on our National Forests.* Custer Gallatin National Forest, *2020 Land Management Plan*, *Guidelines*, FW-GDL-WLBI-03, page 59 (July 2020).

According to thefreedictionary.com, a barrier is any structure or object that impedes free movement.

Permitting American bison to be trapped on our National Forests would serve both state and federal goals of limiting the size and distribution of bison.

Alternative F does not bar the Custer Gallatin from permitting the trapping of American bison on our National Forests again.

The record evidence shows the Custer Gallatin twice permitted the Montana Livestock Dept. to trap bison over two 10-year periods in the Central bison herd's calving grounds on Horse Butte. Custer Gallatin National Forest, *Draft Terrestrial Wildlife Report*, page 122 (Nov. 29, 2016).

As a result, hundreds of Central herd bison were trapped and killed on critical winter range and spring calving grounds in the Custer Gallatin planning area. P.J. White et al., *Management of Yellowstone bison and brucellosis transmission risk – Implications for conservation and restoration*, 144 Biological Conservation 1322, 1327 (2011).

The final alternative must prohibit traps to capture migratory bison on our National Forests.

• Curtailing the range of American bison to intolerant "management zones" is the only de facto standard in the Custer Gallatin's preferred Alternative F. The standard is enforced by the Montana Dept. of Livestock to harm and exclude migratory bison from substantial portions of their native range and habitat on our National Forests.

The Forest Service's regulatory authority over wildlife species and their habitat on our National Forests must not be delegated to the States to the detriment of American bison.

Our reasoning is found in Montana Code Annotated § 81-2-120, a law passed in 1995 that has no provision for conserving the migratory species in the wild, and empowers the State Veterinarian with wide discretion to remove bison from our National Forests, and does so, with the approval of the responsible official.

The Forest Service must strengthen the regulatory mechanism available to the agency in the National Forest planning rule because Montana law has no regulatory requirement to conserve American bison on our National Forests.

National Forest habitat must first and foremost be managed for sustaining native species inhabiting the ecosystem long before Montana became a State or the Custer Gallatin became a National Forest.

• Ceding management of National Forest habitat to the Montana Dept. of Livestock ensures that American bison, a keystone and culturally significant species, will remain extinct in four out of five landscapes on the Custer Gallatin.

According to the Custer Gallatin, a culturally significant species like buffalo is one whose "existence and symbolic value are essential to the stability of a cultural group through time." Custer Gallatin National Forest, *2020 Land Management Plan*, page 207 (July 2020).

Under Alternative F, the cultural significance of American bison is reduced to one of five landscapes on the Custer Gallatin.

There is no stability in failing to address the risk of local extinction for American bison in the one remaining landscape contemplated in Alternative F.

> Named for an architectural term – the keystone is the topmost stone in an arch that holds the entire structure together . . . Without them, their ecosystem would change dramatically or could even cease to exist.

Amy McKeever, *Why some animals are more important to ecosystems than others*, National Geographic (May 19, 2020).

While the Custer Gallatin acknowledges some of bison's contributions as a "keystone species," the plan components do <u>not</u> incorporate the vital role bison fulfill in providing for plant and animal diversity and ecosystem resilience in the Custer Gallatin planning area.

The final alternative must include standards to reverse the risk of local extinction for American bison, a culturally significant species to Tribes, and a keystone species whose presence contributes to plant and animal diversity and ecosystem resilience the National Forest planning rule requires be maintained.

• Alternative F does <u>not</u> remove ongoing Forest Service permitted stressors in the one remaining landscape American bison are "permitted" to range on the Custer Gallatin, including cattle grazing allotments, fencing schemes to thwart bison connectivity to habitat, and contains no secure habitat standards for bison calving grounds on our National Forests.

The final alternative must remove Forest Service permitted stressors severely reducing the natural range of American bison, and secure habitat standards for the migratory species' calving grounds on our National Forests.

• There is no programmatic effort in Alternative F to close Custer Gallatin permitted cattle grazing allotments in the American bison's range – perpetuating the decades old conflict with the Montana Dept. of Livestock resulting in bison being killed or harassed from their habitat on our National Forests.

Contrary to previous statements made by the Forest Service, allotment closures in the bison's range have been primarily driven by economics.

> Closures were typically done after years of allotments being vacant and were based on allotment viability, logistics, and economics of operations, limited access, ownership changes from land exchanges, failing infrastructure, grizzly bear conservation, and other wildlife considerations.

Custer Gallatin National Forest, *Final EIS for the 2020 Land Management Plan Volume 1 Chapters 1, 2, and 3 (part 1)* page 186 (July 2020).

Similarly abandoned vacant allotments have yet to be closed in American bison's range but could be reopened under Alternative F.

> At present, 199 permittees are grazing livestock on 214 active grazing allotments. In addition, the Custer Gallatin National Forest has 19 vacant allotments. Approximately one-third (36 percent) of the Custer Gallatin National Forest consists of livestock grazing allotments (22 percent of the montane units and 93 percent of the pine savanna units).

Custer Gallatin National Forest, *Final EIS for the 2020 Land Management Plan Volume 2 Chapter 3 (part 2), Chapter 4, Glossary, and References* page 79 (July 2020).

> Cattle or other classes of livestock would not be re-stocked on these allotments without appropriate environmental analysis.

Custer Gallatin National Forest, *Final EIS for the 2020 Land Management Plan Volume 1 Chapters 1, 2, and 3 (part 1)* page 544 (July 2020).

> *Leaving vacant grazing allotments within or near bison management zones available for use by livestock would maintain a degree of risk that could weigh against future decisions about expanding bison management zones*.

Custer Gallatin National Forest, *Final EIS for the 2020 Land Management Plan Volume 1 Chapters 1, 2, and 3 (part 1)* page 556 (July 2020) (emphasis added).

Because state and federal managers impose spatial and temporal requirements on bison where the Custer Gallatin permits cattle in the bison's range – the final alternative must include a program to proactively close cattle grazing allotments – vacant or <u>not</u> – in American bison's range on our National Forests.

• The Custer Gallatin's "desired condition," "goal," and "objective" of reserving vacant cattle grazing allotments in the American bison's range as "grassbanks" for ranchers is another obstacle to closing them to benefit bison on our National Forests. Custer Gallatin National Forest, *2020 Land Management Plan*, *Desired Conditions, Goals, Objectives*, FW-DC-GRAZ-02, FW-GO-GRAZ-02, FW-OBJ-GRAZ-01, pages 72–73 (July 2020).

The final alternative must reflect the needs of native species who require "grassbanks" to survive disturbances on National Forest habitat and the ecosystem of which it is but one part. National Forest "grassbanks" must be prioritized for the diversity, persistence, and viability of native species.

The final alternative must remove the desired condition, goal, and objective reserving "grassbanks" for cattle ranchers.

• The Custer Gallatin's "objective" of performing three habitat improvement projects every three years to connect habitat may or may not substantively improve ecological conditions for American bison. Custer Gallatin National Forest, *2020 Land Management Plan*, *Objectives*, FW-OBJ-WLBI-01, page 58 (July 2020).

Without a track record and evidence of on the ground examples there is no way to determine how or if or to what extent habitat will be enhanced in a manner American bison use and benefit from over the long or short term.

The track record we do have evidence of shows that even when habitat is naturally improved for migratory bison, intolerant "management zones" adopted by the Custer Gallatin exclude the native species from habitat on our National Forests.

For example, American bison continue to be harassed in the Custer Gallatin planning area on the south side of the Madison River in burned lodgepole pine forest and removed from foraging on the green up of nutritious grasses that continue to attract migratory bison during the calving season.

The ecological benefits of migratory bison and fire in increasing plant and animal diversity and the resiliency of fire-adapted species on our National Forests is negated by intolerant "management zones" the Custer Gallatin has adopted as its' own.

> Fire is a primary ecological process that has created, maintained, and renewed vegetation on the Custer Gallatin National Forest.
>
> Shrub or grasslands are maintained or cycled by frequent fire.
>
> Fire also maintains the diversity of vegetation across grasslands, retards or prevents conifer encroachment in meadows and parks, regenerates aspen stands, and is responsible for maintaining the mixture of vegetation necessary on shrublands for wildlife habitat diversity for such species as elk, deer, antelope, sage grouse, and many non-game species.
>
> For much of the last century, wildfire burned less area than it should have relative to the historical condition. This was due to fire exclusion, forest and grazing management, and climate (Hessburg and Agee 2003, Hessburg et al. 2005, Westerling et al. 2006).
>
> The effects of warmer climate may have been more than counteracted by fire suppression activities in the last century, with the net result being an increase in the frequency of succession from grasslands to shrubland, especially shrublands dominated by mountain big sagebrush.
>
> Overall, fire suppression has resulted in an increase in conifer colonization into grassland, shrublands, and broadleaf woodlands such as green ash and aspen.

Custer Gallatin National Forest, *Final EIS for the 2020 Land Management Plan Volume 1 Chapters 1, 2, and 3 (part 1)* pages 179, 180, 181, 182 (July 2020).

Yet, the Custer Gallatin entirely missed developing plan components connecting the ecology of American bison and fire in restoring plant and animal diversity and ecosystem resiliency in the Custer Gallatin planning area.

> • Forest fires may also play a role in maintaining sedge-grasslands, important winter habitat for bison.
> • Intense bison grazing of recently burned habitat may reduce fuel loads and function as firebreaks.
> • The slaughter and near extinction of bison "may have shortened fire return intervals and increased fire severity during the early settlement period."
> • Bison grazing and fire patterns could provide a valuable tool for naturally managing northern mixed-grass prairie.

Julie L. Tesky, *Bos bison. In: Fire Effects Information System*, (U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, 1995).

Fire adapted species must be restored together.

The final alternative must reconsider how the Custer Gallatin can rely upon the ecology of bison and fire in providing for diversity of plant and animal communities, persistence of fire-adapted species, and ecosystems resiliency the National Forest planning rule requires be maintained.

• The single monitoring question identified for American bison in alternative F is an unreliable indicator for measuring and directing future adaptive management actions.

> **Monitoring Question**
> What management actions have occurred to improve / facilitate bison movements and avoidance of human/bison conflicts? * 36 CFR 219.12(a)(5) - ii
>
> **Implementation indicators Bison management actions**
> • Number and types, locations of actions that improve or facilitate opening corridors for bison movement
> • Number of bison/human conflicts
> • Number and location of educational outreach materials distributed and/or posted

Custer Gallatin National Forest, *2020 Land Management Plan*, page 195 (July 2020).

Alternative F's monitoring question and indicators are inadequate in several respects: 1) in collecting meaningful data, 2) in measuring progress toward any desired condition (in the absence of binding standards), and 3) in serving as a trigger driving review and adoption of management policies.

We do <u>not</u> see how the monitoring question or indicators in Alternative F reliably meet the purpose of the Forest Service's "adaptive management" framework for reviewing and evaluating the effectiveness or <u>not</u> of management actions.

While we acknowledge the U.S. Congress chronically underfunds monitoring, the questions must be relevant and meaningful to effectively serve as a feedback loop to the Custer Gallatin on whether its' land management plan is – in the absence of enforceable standards – undermining or achieving a desired condition, bypassing a guideline, obstructing a goal, etc.

We ask the Custer Gallatin to reconsider setting clear enforceable standards for obtaining more desirable conditions, defining a more worthy goal and effective objectives, and providing mandatory guidelines with relevant monitoring questions for native bison as outlined here:

Bison (WLBI)
Standard (FW-STD-WLBI)
01 Manage for viable, self-sustaining native bison populations in the planning area.

Desired Conditions (FW-DC-WLBI)
01 Native bison diversity is increasing.
02 Native bison have access to forage, security, and movement corridors to facilitate connectivity and natural distribution of the migratory species.
03 Educational materials, including signage at trailheads and campgrounds where native bison may occur, are available to help forest users understand bison behavior and avoid potential conflicts.

Goal (FW-GO-WLBI)
01 The Forest Service engages with state, Federal, Tribal, and willing partners to expand the science of bison ecology, provide for viable native bison populations on National Forest lands, and cooperatively develop strategies to manage bison diversity and their habitats to facilitate natural movement, linkage zones, and connectivity.

Objectives (FW-OBJ-WLBI)
01 Implement livestock grazing closures to proactively resolve conflicts in favor of native bison.
02 Develop a wildlife migration corridor program to enhance landscape linkages and connectivity to habitat for native bison.

Guidelines (FW-GDL-WLBI)
01 Management actions must permit native bison to access home ranges.
02 Management actions must maintain or restore landscape linkages and connectivity for native bison.
03 Management actions must favor native bison diversity and proactively close livestock grazing allotments to prevent conflict.
04 Management actions must <u>not</u> limit native bison in unoccupied habitat.

Monitoring Questions (MON-WLBI)
01 Are bison utilizing fire-burned habitat on National Forest lands?
02 Are bison contributing to plant and animal diversity on National Forest lands?
03 Are bison contributing to maintaining grasslands on National Forest lands?
04 Are livestock grazing allotments being proactively closed to prevent conflicts with native bison?
05 Are impediments to landscape linkages being removed to maintain or restore connectivity for native bison?

Potential Indicator (IND-WLBI)
• Numbers, location, and timing of native bison use of habitat on National Forest lands.
• Ecological responses to native bison in fire-burned habitat on National Forest lands.
• Ecological responses of plants and animals to native bison on National Forest lands.

Data Sources
• Montana Fish, Wildlife & Parks.
• Forest Service.
• Tribal biologists, traditional and ecological knowledge.
• Scientists.
• Local knowledge.

• Alternative F is lacking substantive standards for wildlife connectivity, diversity, and population viability.

Adopting standards for food storage and limiting recreation in key linkage areas for threatened grizzly bears is not enough. Custer Gallatin National Forest, *2020 Land Management Plan*, *Standards* FW-STD-WL-01, FW-STD-WL-02, page 54 (July 2020).

Without standards for wildlife connectivity, diversity, and population viability, alternative F cannot be the "environmentally preferred alternative" for the Custer Gallatin National Forest's land management plan.

> I find, based upon the laws and regulations guiding national forest management, that **alternative F is the environmentally preferred alternative**.

Custer Gallatin National Forest Land Management Plan, *Draft Record of Decision* page 34 (July 2020).

Alternative F does not meet the National Environmental Policy Act's standards as the environmentally preferable alternative.

Alternative F falls far short of the U.S. Congress's purpose to remedy man's profound impacts and influences on the natural environment and "to use all practicable means and measures . . . to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans." 42 U.S.C. § 4331(a).

Alternative F does not "fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;" nor does it "attain the widest range of beneficial uses of the environment without degradation . . . or other undesirable and unintended consequences;" in order to "preserve important historic, cultural, and natural aspects of our national heritage" including American bison. 42 U.S.C. § 4331(b)(1),(3),(4).

For all of the reasons and evidence submitted in our objections, nor can Alternative F be identified as causing the least damage that "best protects, preserves, and enhances" American bison on our National Forests.

> *Environmentally preferable alternative* is the alternative required by 40 CFR 1505.2(b) to be identified in a record of decision (ROD), that causes the least damage to the biological and physical environment and best protects, preserves, and enhances historical, cultural, and natural resources. The environmentally preferable alternative is identified upon consideration and weighing by the Responsible Official of long-term environmental impacts against short-term impacts in *evaluating what is the best protection of these resources*.

43 CFR § 46.30, Definitions (emphasis added).

Without standards for wildlife connectivity, diversity, and population viability, Alternative F cannot be relied upon as regulatory mechanism to fulfill your legal duties.

Vague, voluntary, and loophole-filled desired conditions, goals, and guidelines for American bison will remain unmet desired conditions, goals, and guidelines under Alternative F.

Vague, discretionary, and unenforceable desires, goals, and guidelines in Alternative F are not standards to direct fulfillment of duties the Forest Service is bound to by law.

The final alternative must include clear and binding standards conforming to National Forest planning rule requirements for wildlife connectivity, diversity, and population viability.

• Alternative F is an inadequate regulatory mechanism for American bison to adapt to rapid climate change, extended drought, large-scale fires, and other factors shifting bison range into intolerant "management zones" on our National Forests.

> In all alternatives, climate change is anticipated to increase the frequency of large wildfires and increased smoke impacts.
>
> [T]he majority of published science suggests that warming trends may strongly influence the frequency, intensity, and size of disturbances (such as fire and extensive insect outbreaks) in coming decades on areas of the Custer Gallatin National Forest. Changes in disturbance prompted by climate change are likely as important as incremental changes in temperature and precipitation for affecting ecosystem productivity and species composition. Recent research indicates that these risks may be particularly acute for forests of the northern Rocky Mountains.
>
> All habitat guilds for regional forester sensitive or at-risk species are expected to be impacted by warming trends.
>
> Increases in the severity of disturbances, combined with projected warming trends, may limit habitat for at-risk species over time.
>
> Because of the uncertainty in scale, direction, and rate of climate change, management of sensitive or at-risk plant species on the Custer Gallatin National

> Forest focuses on maintaining persistent populations throughout the species known range on the national forest.
>
> [T]here is sufficient indication from past climate records and future projections to prioritize development of effective strategies for coping with the consequences of more frequent, more severe, and longer drought (Halofsky et al. 2018a;b)
>
> [E]xtreme precipitation events (such as, lapses in precipitation and more intense storms) will increase in frequency, and warmer temperatures will exacerbate the impacts of drought on forests and rangelands in the future (Vose et al. 2016).
>
> [D]rought in rangelands could reduce forage and water available for livestock grazing and wildlife use. Reduced vegetative cover can lead to wind and water erosion. Drought often affects wildfire-related disturbance. In addition, droughts are predicted to accelerate the pace of invasion by some nonnative plant species into rangelands.
>
> [In Montane ecosystems:]
> • By 2100, annual mean monthly minimum temperatures are projected to increase 5 to 10 degrees Fahrenheit while the annual mean monthly maximum temperatures are projected to increase 7 to 12 degrees Fahrenheit.
> • Winter maximum temperature is projected to increase above freezing in the mid-21st century. Summer temperatures are projected to increase 5 degrees Fahrenheit by 2060 and 10 degrees by 2100.
>
> • Assume the forest will burn more, that snowpack will decline, and the river flows will be reduced and manage accordingly. Temperature changes will overwhelm precipitation increases, particularly at lower tree line.
>
> • Successful management of vegetation and ecosystems during this period of rapid environmental change will require "anticipatory" planning and management.
>
> [M]anagers and the public should expect climate change to drive profound and often surprising changes on ecosystem structure, function, and composition in the coming decades.

Custer Gallatin National Forest, *Final EIS for the 2020 Land Management Plan Volume 1 Chapters 1, 2, and 3 (part 1)* pages 63, 140, 169, 170, 173 (July 2020).

Can American bison adapt to rising temperatures forecasted under rapid climate change?

"It is unclear whether *Bison* can adapt body size to a 4°C warming within 10 generations by year 2100." Jeff M. Martin et al., *Bison body size and climate change*, 8 Ecology and Evolution 4564, 4570 (Feb. 25, 2018).

> Our data supported our hypothesis that global climate change drives body size of *Bison* spp., that is, as temperatures warmed, *Bison* became smaller. Generally, described as Bergmann's Rule (Bergmann 1847), endotherms increase in body size with increasing latitude (Huston & Wolverton 2011). It is likely that negative correlation between temperature and latitude is driving Bergmann's rule (i.e., body

> size) because even though we found that bison are larger at cooler temperatures, we were unable to correlate a significant effect of latitude over the geologic record ($p > .94$). The negative relationship between body mass and global temperature may reflect underlying relationships between body size and net primary production as well as heat loads (Speakman & Król 2010; Huston & Wolverton 2011; Figure 1).

Jeff M. Martin et al., pages 4569–4570 (Feb. 25, 2018).

> The IPCC Working Group 1 (2014) predicts 4°C rise in global temperatures by year 2100. While the absolute increase in 4°C is not unprecedented in the evolutionary history of Bison, the rate of temperature change is 30 times faster than the Bølling–Allerød period, the transition from the Last Glacial Maximum to Holocene climate conditions. The Last Glacial Maximum corresponds with a global temperature 6°C cooler than the 20th century, when Bison mass was 910 kg. If global temperature warms to +4°C as predicted for the 21st century, Bison body mass will likely decline from 665 kg to 357 kg (Figure 6), if body size declines at the long- term average. The greatest decline in body size of Bison apparently occurred between 12,500 and 9,250 years ago, when mass declined by 26% (906 kg to 670 kg) in approximately 3,000 years. If generation time of Bison is 3–10 years (Evans et al., 2012; Gingerich, 1993), the change in body size occurred in 325–1,080 generations producing an average rate of change of 0.2–0.7 kg per generation. It is unclear whether Bison can adapt body size to a 4°C warming within 10 generations by year 2100.

Jeff M. Martin et al., page 4570 (Feb. 25, 2018).

Bison must now do more in 10 generations what their ancestors did over 325 to 1,080 generations: somehow, shrink to half their size by the end of the century.

Instead of addressing the threat of rapid climate change, Alternative F magnifies the threat of management actions calling for suppressing the size of the migratory herds, and severely curtailing American bison's range in an already fragmented landscape.

Rapid climate change, extended drought, large-scale fires, and other factors could well drive further changes in bison's migrations bringing them into more conflict with state and federal managers.

Adopting intolerant "management zones" under Alternative F excludes bison from migrating across significant portions of their range on our National Forests and increases the risk of local extinction in the reserves established to protect them.

> Parks and preserves with geographically fixed administrative boundaries face the problem of not being able to "migrate" with the species they presently protect. As a result, cooperative management across administrative boundaries will be necessary to address the effects of climate change.
>
> Conservation reserve theory advocates the creation and preservation of habitat corridors to connect reserves and provide pathways for migration and dispersal (Hunter et al. 1988; Shafer 1990; Noss & Cooperrider 1994). As climate changes and the areas of potentially suitable habitat for individual taxa move across the landscape, however, corridors designed to facilitate the movement of organisms across the present landscape may no longer be optimal.

Patrick J. Bartlein et al., *Future Climate in the Yellowstone National Park Region and Its Potential Impact on Vegetation*, 11(3) Conservation Biology 782, 789 (June 1997).

For all of the reasons and evidence provided in our objections, your final decision must be relevant and responsive to threats today and on the horizon for American bison to persist on our National Forests for future generations.

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