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Comments: 28 Silver Lake Way,

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December 31, 2021

Aaron Coogan, District Ranger
USDA Forest Service
Humboldt-Toiyabe National Forest
Bridgeport Ranger District
Bridgeport, CA

Regarding: Revised Notice of Proposed Action, Bridgeport Southwest Rangeland Project

Dear Ranger Coogan,

The following comments on the revised NOPA (rNOPA) for the Bridgeport Southwest Rangeland Project (BSRP) represent my perspective as a private citizen although my experience in the project area derives from more than three decades as a USFS research scientist (Pacific Southwest Research Station). My areas of technical expertise include alpine plants; mountain meadows; subalpine forests including whitebark and limber pines; geomorphological processes and landforms; and montane mammals, in particular, American pika.

This is the third public comment period to which I have responded. Please find my prior letters and attachments dated June 4, 2018 and July 31, 2019.

My continuing position is that the proposed actions for the BSRP, including the original NOPA and amendments, are sufficiently likely to cause significant, long-lasting, and extensive resource degradation as to require completion of an Environmental Impact Statement. I oppose the current project as an Environmental Assessment and I oppose the proposed specific amendment to the Toiyabe Land and Resource Management Plan (TLRMP) as unjustified.

The following comments address the proposed specific amendment (Dec 6, 2021) to the TLRMP "that would allow the new location of the water troughs to be located within the 0.6-mile exclusion buffer prescribed in the Bi-state Sage-grouse Amendment. The proposed project-specific plan amendment would add the following to Bi-state Sage Grouse Amendment standard RI-S-06, 'This standard does not apply to the Bridgeport Southwest Rangeland Management Project.'"

Overall Comments

[Note that all pubs authored by Millar and colleagues are downloadable at the links given in the References section below]

1. Perceived Conflicts of Interest (COI). There are elements in the rNOPA that give the perception of inappropriate favoritism by the Bridgeport Ranger District (BRD) to the single-user grazing permittee. I highlight two issues here:

The first apparent COI relates to the dates of the public comment period. The dates chosen for the 30-day comment period (Dec 6-Jan 5) fall at the busiest time of year for almost everyone, given the year-end and major holidays. Many people are traveling and unable to read email or respond to detailed proposals such as the rNOPA in this time frame. Further, many people who were subscribed to the project email list did not receive the current notice until it was circulating on informal, non-USFS channels, thus reducing their time to prepare comments. In addition, although there was clarity in the notice about a 30-day comment period, the reader had to dig into the online files to find the actual deadline date. The public has received no notification on the status of the BSRP since summer 2019. The sudden appearance and timing of the current rNOPA and comment period cannot help but appear as a COI favoring the permittee in that the smallest number of comments are likely to be received. If, in fact, the BRD is innocent of a COI in regard to timing, federal ethical standards require avoidance of perceived COI as well as a real COI. I object to the dates selected for public comment as a perceived COI favoring the permittee.

The second COI issue is the specific action of the proposed amendment to the TLRMP, that is, to remove the Bi-state Sage Grouse Amendment standard RI-S-06. This standard was formalized after scientific assessment as a critical conservation action for the bi-state population segment to protect and restore sage grouse in our region. Peremptorily attempting to remove this conservation standard reeks of favoritism to the permittee. Consider the analogy of a local resident seeking an exemption with the California Highway Patrol to the legal speed limit because he wanted to drive from Bridgeport to Lee Vining at 90 mph. The USFS should not exempt a formal management standard just because it is convenient to a single user's desired use of federal land. Justification for exempting the BRD from this standard is not given. This is especially egregious in that the greater Bodie Hills region, including leks within the BSRP, support the single core healthy population center of sage grouse not just for the bi-state region but for the species as a whole (Coates et al., 2021 and see the first two presentations from the USGS Dec 2021 Bi-state Sage Grouse Science Symposium: <https://youtu.be/B8DKSq081Ts>). I oppose the proposed action to remove Standard RI-S-06 from the TLRMP as unjustified and an apparent COI favoring the permittee.

2. Lack of Demonstrated Ability by HTNF/BRD to Enforce Conservation Standards. In my experience for more than 35 years as a research ecologist working in lands administered by the Humboldt Toiyabe National Forest (HTNF), I have encountered many situations where excessive domestic livestock grazing use created, and continues to create, resource damage, especially in sensitive upland ecosystems. Damage is obvious to upland springs, riparian corridors, lacustrine margins, mountain meadows, aspen woodlands, and alpine plateaus, including areas within Wilderness, Research Natural Areas, Special Interest Areas (cultural areas), and general forest lands. These resources are in theory protected by an encyclopedic volume of monitoring and management standards. Nonetheless, enforcement on the ground is lacking and resource degradation occurs at disturbing levels throughout the HTNF, including areas on the BRD. Clearly the existence of written standards in the TLRMP is not adequate protection. Confidence that these standards will be applied to protect resources in the future, as in the present context of the BSRP, can only be earned from demonstrated effective enforcement actions in the past. The long lists of management standards in the current rNOPA, declaring that healthy resource conditions in the rNOPA can be maintained, mean nothing if history is the witness. I am unconvinced that the TLRMP and SNFPA standards and guidelines; proposed occupancy rates; and grazing management strategies such as herding, fencing, limiting cattle use in, and prohibiting reentry into a pasture, can be effectively implemented. I oppose the proposed amendment in the rNOPA on the basis of lack of confidence that the BRD can enforce compliance of conservation standards and regulations.

I offer the following as examples (with photo attachments) of resource degradation from livestock grazing I have observed on the HTNF. These and other situations, including comments below, erode my confidence in the ability of the HTNF, including the BRD, to enforce range conservation standards and management practices:

a) Bridgeport Ranger District

Buckeye Canyon. I first visited Buckeye Canyon in the late 1970s, at which time I observed severely trampled meadows, riparian areas, wetlands, and aspen forests canyon-long as a result of cattle grazing. Grazing impacts have continued, as I have observed over the years, most recently visited in 2019.

Molybdenite and Burt Canyons. Similarly I have been visiting these canyons for work and recreation since the early 1980s. I continue to observe resource degradation from livestock grazing. Damage to the meadows, riparian area, willow shrublands is apparent throughout the canyon bottomlands. These observations led me to include these sites in a study that investigated (and documented deleterious) impacts from livestock grazing to American pika habitat and population health (Millar 2011).

In 1991 my husband, also a biologist, wrote to then District Ranger Kathy Lucich summarizing our observations of excessive resource impacts to meadows and wetlands in Buckeye Canyon, and asking about enforcement of range standards. Ranger Lucich did not reply. In September, 1999, having observed repeat impacts in Buckeye Canyon and similar impacts in Burt Canyon, my husband wrote Ranger Lucich again with our observations, asking for explanation of management practices and enforcement of conservation standards. In that letter, he copied our US senator, and promptly got a reply from Ranger Lucich saying she would look into the matter. Impacts continued, however, in these canyons, giving us no confidence that the existence of range standards in the TLRMP are enforced on the ground.

Sweetwater Canyon, Belfort, Frying Pan Canyon, Mt. Wheeler, Mt. Patterson, and Lobdell Lake areas; Sweetwater Mountains, CA & NV. Similarly, observations of excessive impacts from livestock grazing to American pika health and habitat led me to include Sweetwater Mountains sites in the grazing impacts study (Millar 2011). Photos in Attachment 1, Part 1.

Cory Peak, Wassuk Range, NV, BLM lands. Recognizing that this area is not part of the BRD or HTNF, my observations at this location are less about grazing impacts and more about cattle accessing subalpine/alpine zones generally. In regard to the BRSP, comments had been made by the BRD range conservationist that cattle could not or would not be able to access upland regions of the Dunderberg unit, and thus resource concerns were not significant at those elevations. My observations in the Wassuk Range, Toiyabe Range, and Toquima Range (below), however, contradict this assumption. The high elevations of the Dunderberg unit are not only readily accessible to cattle (no environmental impediments to access) but meadows and shrublands attractive to cattle exist in the uplands. I have no confidence that cattle would voluntarily stay in the lowlands of the Dunderberg unit. Photos in Attachment 1, Part 2.

b) Austin/Tonopah Ranger Districts, HTNF, NV

Pine Creek Canyons (south and southernmost canyon), Moore Creek Canyon, Pasco Canyon, Meadow Creek Canyon, and the Mt Jefferson alpine plateau; Toquima Range, NV. I have visited the Pine Creek Canyons and the Mt Jefferson plateau annually, and other sites intermittently, to monitor pines and pikas since 2005 and as recently as autumn 2021. Resource damage from cattle (and other ungulate) grazing is extensive and excessive to springs, meadows, (the single) tarn, riparian areas, aspen and willow shrublands, and alpine uplands. These occur in a significant cultural area (Alta Toquima Vista), Wilderness and a Research Natural Area, the latter designated to protect the unusual and diverse alpine flora of the Mt Jefferson plateau. Not only are cattle grazing but large herds of feral horses and re-introduced bighorn sheep forage on the alpine plateau, creating significant, extensive, and cumulative damage to the alpine flora. Despite the land-use conservation designations, and existence of HTNF grazing regulations, resource damage continues to occur. An added element to HTNF lack of enforcement is that much of the damage in the Toquima Range uplands is by trespass cattle that are not removed. See Attachment 2, Part 1.

Cattle grazing on the Mt Jefferson Plateau, a large alpine tableland above 11,000' with a unique flora, is another documentation that cattle can and do reach and graze alpine areas on their own volition. Access to the plateau is

via steep, rocky terrain, much more difficult than in the Dunderberg unit, yet cattle are able to reach the plateau. This is another contradiction to the BRD assumption that cattle would not access the high elevations of the Dunderberg unit. See Attachment 2, Part 1.

Greenmonster and Clear Creek Canyons, Monitor Range, NV. I have worked in the Monitor Range over the past 10 years. Photos from wetlands, springs, and meadows impacted by cattle are in Attachment 2, Part 2.

c) Mountain City-Ruby-Jarbridge Ranger District, HTNF, NV

Wiseman Creek, Winchell Creek, and Schoer Creek, East Humboldt Range. Along the Winchell Lake Trail, riparian areas and willow-montane shrubs of these creeks are impacted by excess cattle grazing. Attachment 2, Part 3.

Specific Comments to the rNOPA

3. Page 5, SNFPA S&G 105: "Prevent disturbance to streambanks and natural lake and pond shorelines caused by resource activities (for example, livestock, off-highway vehicles, and dispersed recreation) from exceeding 20 percent of stream reach or 20 percent of natural lake and pond shorelines."

Illegal traffic off the Kavanaugh Jeep Trail, which runs through the upper Dunderberg unit of the BSRP to Kavanaugh Crest, has damaged fragile subalpine and alpine ecosystems. This results from vehicles driving off designated routes and illegal lakeshore camping. There appears to be no enforcement of these violations or attempts to mitigate these impacts. I have written about resource degradation from illegal vehicle use to the District in past years and received no reply, nor seen any effort to correct increasing resource damage.

The shoreline condition of the lake below Dunderberg Peak (locally, Silverpine Lake, centered at 38.077438°, -119.261016°) is relevant to S&G 105. The Jeep Trail passes along the east shore and the lake has become increasingly popular for camping, with increasing impacts. Vehicles drive directly to and on the shoreline, passing a wimpy USFS sign that ineffectively attempts to prohibit access, and park/camp directly along the shore, including on meadows and adjacent to the inlet stream. I estimate 69% of the shoreline < 100' from water is currently impacted from recreational use. In that S&G 105 is already in violation, addition of cattle, which would certainly use the meadows adjacent to the lake and along the inlet/outlet streams, is unwarranted. See Attachment 3, Part 1.

In addition to camping and driving on the shoreline of Silverpine Lake, the lake bottom directly below the shore is driven on illegally when the lake level declines, which is common in dry years and late in the warm season. Vehicle traffic is disrupting the millennial-old patterned ground, exceptional for the Sierra Nevada (see comment 6, below), that has developed on the sill of the lake around the shore. This past year, when the water level was quite low, 100% of the lake's circumference was driven on, with tracks left in the exposed mud and patterned ground. The track patterns give evidence of drivers spinning their vehicles ("sport") in addition to directly driving across and around. These impacts occur commonly during our increasingly dry years, and in 2021 100% of the lake-bottom shoreline was affected. With this existing violation of S&G 105, the addition of cattle, which would destroy the patterned ground as they access the water and compound the impacts from driving and camping along the shoreline, is unacceptable. See Attachment 3, Part 1.

4. Page 4, TLRMP: "Key desired conditions for the Dunderberg and Cameron Canyon allotments from the LRMP, as amended, are: 1. Rangelands will be in satisfactory condition (1986 LRMP p., IV-4). 2. Riparian areas and meadows will be in late seral condition (2004 SNFPA, p. 42)," Page 14, Design elements: "Evaluate potential Impacts to new TEPS or other rare plant species as identified during implementation," and Page 16, Identification of Issues: "Cattle grazing could impact meadows. The allotments include several meadows, mainly associated with streams and springs, that provide unique and important ecological functions such as high plant productivity,

habitat diversity, flood modulation, runoff filtration, nutrient sequestration, and streambank protection. Livestock, and particularly cattle, tend to congregate on meadows for ready access to forage and water. Cattle grazing could affect meadows in various negative and positive ways that this analysis addresses. Improperly managed grazing could adversely affect meadow plant communities, soil and hydrologic regimes, and habitat values. Sustained overuse could irreparably damage these vital areas."

In addition to vehicle impacts to meadows and riparian areas around Silverpine Lake, illegal vehicle use off the designated route of Kavanaugh Jeep Trail has caused damage to the large wetland meadow near the end of the road on Kavanaugh Plateau. This meadow is in late seral condition, has high plant cover, and supports high diversity of graminoid species (Millar and Westfall 2021). The meadow lies directly north of the Jeep Trail, and vehicles drive off the road and through the flat meadow. Truck and ATV tracks have disrupted meadow vegetation and increased the amount of bare dirt (mud). I have written the BRD about these violations and impacts to the meadow, and received no reply; the illegal use continues (latest observations in October 2021). The meadow, which supports desired cattle browse and is readily accessible to animals, would no doubt be heavily used by livestock. In that there are already violations and exceedances of standards meant to protect late-seral meadows that are not being addressed by the BRD, addition of cattle would be untenable and cause further violations of key desired conditions. See Attachment 3, Part 2.

5. Page 16-17, Identification of Issues: "TERRESTRIAL WILDLIFE Cattle grazing could affect special-status wildlife species. The allotments support, or include potential habitat for, several wildlife species that are either protected under various laws and regulations or pose management concerns for the agency or the public. These include the endangered Sierra Nevada bighorn sheep, the proposed threatened bi-state greater sage-grouse, as well as several Forest Service sensitive species. The pika also occurs within the project area and will be considered as a species of concern for this project [*italics added*]. Cattle grazing could potentially have positive and negative effects on special-status wildlife species that this analysis addresses. Properly managed grazing could help maintain the native communities that include and support these species. Potential adverse effects could result from habitat alteration, dietary competition, disease transmission, and avoidance of cattle and associated human disturbance."

Regarding the species of concern, American pika, in my two former comment letters as well as in detailed discussions invited by former BRD biologist, Anne Orlando, I provided maps of areas used by pikas in the BSRP units, and documentation of potential impacts to habitat and condition. I will not repeat those comments and maps in detail here, and ask instead that you review my former comments and attachments from your files. Here I summarize the salient points: i) pika habitat occurs scattered throughout the Dunderberg (including Jordan Basin) units. See Millar et al. 2018, Appendix 3, for sites, and additional sites/maps in the BSRP that I gave to Orlando; ii) pikas depend on herbaceous vegetation adjacent to their primary talus habitat for daily sustenance during summer and to support vegetation that they harvest for winter caches, which provide food for survival through winter, iii) cattle grazing on pastures in pika habitat impacts pika forage and forces pikas to use sparse, low-nutrient-quality species that grow within rocky talus (Millar 2011).

For the purposes of the rNOPA, I add the following new information on pikas in the Dunderberg unit (Millar and Westfall 2021). The large, flat plateau of the Kavanaugh Plateau, east of Kavanaugh Crest and bounded on the south by the Kavanaugh Jeep Trail (centered on 38.080951°, -119.270553°) supports unique pika habitat. On this gently sloping slope is a complex, unique patterned-ground ecosystem (see also comment 6, below), dominated by periglacial soil circles that are each rimmed by rock rings (readily visible on Google Earth). The configuration of environmental features of this ecosystem provides pika habitat very different from typical conditions for the species (talus slopes), and exceptional in quality. Due to the geomorphology of the soil circles, soil is deep and rich, and supports a high diversity of plants (44 species) with high plant cover (80%) - see Millar and Westfall 2021, Table 8. This compares to 9% cover and mean of 12 plant species that occur in the forefields of typical pika taluses surrounding the Kavanaugh patterned-ground ecosystem. Given the dense packing of soil circles (which are used by pikas for forage areas) and the rock rings (which provide rocky habitat in which pikas

live) twice as many pikas are able to live per unit area in the patterned-ground ecosystem than in adjacent talus slopes (Millar and Westfall 2021).

Given the high plant cover of the soil circles, gentle slope gradient, easy access, and adjacency to the wetland meadow (comment #4 above), cattle in the Dunderberg unit would likely find the patterned-ground ecosystem and use it for grazing. The soil of the soil circles is fragile and easily disturbed. Trampling would damage the ancient soils, impacting the otherwise stable high-diversity plant communities of the patterned-ground ecosystem, break up the millennial-old patterned-ground geomorphology, and disrupt the vegetation on which pika depend. Further, cattle feces would change nutrition of soils in this unique environment, with unknown effects on plant diversity and cover. I believe addition of cattle would negatively impact the unique pika population as well as the unique geomorphic features.

The apparent lack of understanding of BRD staff about the values, significance, and implications of patterned-ground ecosystems (comment #6 below), as well as the general ignorance of recreationists in this area, mean this landscape is off-the-radar for resource protection. I oppose addition of cattle grazing in the Kavanaugh Plateau area for the high likelihood of deleterious impacts to pikas and pika habitat of the unique patterned-ground ecosystem on Kavanaugh Plateau.

6. Page 18, ISSUES CONSIDERED BUT NOT CARRIED INTO IN-DEPTH ANALYSIS: "Soil, Water, and Watershed Resources: Cattle grazing could affect periglacial patterned ground around alpine lakes. Patterned-ground formations are associated with permafrost-dominated regions. While this process occurs within the allotments, it is at isolated, high-elevation locations, above steeper, rockier slopes than cattle would preferentially travel. Vegetation in these areas is sparse, growing only in the interspaces between rocks and gravel, providing little forage for cattle. As a result, these areas would receive minimal cattle use."

Unfortunately HTFN staff members who reviewed prior public comments on the BRSP apparently do not understand patterned ground (PG) in the Dunderberg unit or its significance. While the statement in the rNOPA above is correct that "Patterned-ground formations are associated with permafrost-dominated regions," the rest of the paragraph is incorrect. As I have described in comments above, a complex PG ecosystem lies on the gently sloping Kavanaugh Plateau (Millar and Westfall 2021), readily accessible to livestock and within easy access from the lowlands to the site. Contrary to the rNOPA statement that "vegetation in these areas is sparse," high density of vegetation occurs in soil circles that are integral elements of the PG formations. Graminoids and other herbaceous vegetation of diverse plant taxa grow in these areas (Millar and Westfall 2021), and would attract cattle for grazing, especially as the PG ecosystem lies directly adjacent to the large, flat grassy wetland described in comments above. Cattle grazing in the PG ecosystem would disrupt not only the PG formations per se (more on the significance of that below), but disrupt the unique vegetation of the soil circles and disrupt the unique habitat of pikas. Pikas appear to have been using this PG ecosystem for at least 10,000 yrs, and the PG habitat supports a density of pikas twice the level of the surrounding typical talus habitat (Millar and Westfall 2021).

As to the significance of patterned ground as a geologic feature, the BRD should take efforts to protect the unique occurrences in the Dunderberg unit, including those at Silverpine Lake (described in comments above and photos in Attachment 3 Part 1, slides 8, 9) as well as on the Kavanaugh Plateau. Patterned ground formations develop as a cumulative result of multiple millennia of repeat freeze-thaw conditions - in the current situations likely dating to the late Pleistocene -- and require for their formation unique combinations of lithologic and climatic conditions. Patterned ground formations are of high scientific interest, have a vast literature, and serve as model systems revealing self-organization processes that remain poorly understood generally (summarized in Kessler and Werner 2003). PG formations are most common at polar latitudes and in some cold, alpine mountain ranges. The occurrence of patterned ground in the warm, low-temperate, Mediterranean Sierra Nevada is unexpected and very rare. While other PG formations can be found scattered in the high Sierra Nevada, the situations in the Dunderberg unit (Silverpine Lake and Kavanaugh Plateau) are unique in their fully

developed condition, suggesting not only great antiquity, but unique and stable conditions that allowed such formation.

Patterned ground is of significance not only for scientific purposes but for the beauty and symmetry of these rare features, widely appreciated by those who encounter them (Perkins 2003). Usually one interested in viewing these must travel to high latitudes; their presence in readily accessible locations in the Sierra Nevada on the BRD makes them especially valued.

The PG features around Silverpine Lake are, as I have described above, already significantly impacted by illegal vehicle traffic off the Kavanaugh Jeep Trail. Cattle would further disrupt them, both at Silverpine Lake and the PG ecosystem on Kavanaugh Plateau. These unique geologic features should be the subject of protection under the TLRMP. I request that PG in the Dunderberg unit be highlighted as an element for environmental assessment, as it supports high density, diverse vegetation and high-quality pika habitat that would attract cattle. Cattle would further impact these unique ecosystems beyond the existing impacts from illegal vehicle use.

7. Page 14, "Table 5, Design elements incorporated into the proposed action and alternatives, Rare Plants: Reduce impacts to whitebark pine."

My research over the past decades has included projects on whitebark pine, including in the BSRP units, where I have studied and monitored forests extending from lower elevations (upright trees/forests) through the krummholz (shrub form) zone to treeline. At this point, I do not feel whitebark pine is at great risk in the BSRP, but deserves continued monitoring and attention to protect recruitment. While there have been periods of outbreaks from native bark beetles (Millar et al. 2012) in eastern Sierra whitebark pine populations, mortality in the past decade has been severe only in a few, localized areas, such as around June Mtn ski area. A wave of bark beetle mortality seems to be on the rise again in Mono County in the past few years, and I have observed many small patches of dead whitebark pine in the BSRP unit; these may expand if drought continues. The exotic fungal disease, caused by white pine blister rust, has not been documented east of the Sierran crest in our region. Wildfire is increasingly a threat to high-elevation forests, and whitebark pine stands south of Lee Vining burned as a crown fire killing trees from low elevations to treeline in the Walker Fire (Millar and Delany 2019). Wildfire could readily occur in the dense subalpine forests of the BSRP lower elevations. Most recently we have studied treeline response to climate change in the krummholz zone, including sites in the Dunderberg unit. From this we conclude there is considerable ongoing recruitment of whitebark pine, virtually no mortality in the krummholz zone of pine from infectious causes, and considerable resilience to warming temperatures (Millar et al. 2020). Thoughtful resource management strategies by the BRD should be aimed to maintain the health and sustainability of the whitebark pine in the region

Attachments

Note to BRD/HTNF staff who review these letters. Please ensure that three attachments are included with my comment letter. In prior BSRP comment periods, I learned that my attachments did not stay appended with my letter, and staff who reviewed the letter did not have knowledge of, or access to, my attachments. Please consider the following as integral to my letter.

Attachment 1: Examples of livestock grazing impacts on the Bridgeport Ranger District, HTNF, and Cory Peak uplands, BLM.

Attachment 2: Examples of livestock grazing impacts on other Ranger Districts of the HTNF.

Attachment 3: Impacts to lakeshore of Silverpine Lake and Kavanaugh Plateau wetland meadow, Dunderberg unit.

References

- Burdick, J., Swanson, S., Tsocanos, S. and Mccue, S., 2021. Lentic Meadows and Riparian Functions Impaired After Horse and Cattle Grazing. *The Journal of Wildlife Management*, 85(6), pp.1121-1131.
- Coates, P.S., Ricca, M.A., Prochazka, B.G., O'Neil, S.T., Severson, J.P., Mathews, S.R., Espinosa, S., Gardner, S., Lisius, S. and Delehanty, D.J., 2019. Population and habitat analyses for greater sage-grouse (*Centrocercus urophasianus*) in the bi-state distinct population segment-2018 update (No. 2019-1149). US Geological Survey.
- Kessler, M.A. and Werner, B.T., 2003. Self-organization of sorted patterned ground. *Science*, 299(5605), pp.380-383.
- Millar, C.I., 2011. Influence of domestic livestock grazing on American pika (*Ochotona princeps*) haypiling behavior in the eastern Sierra Nevada and Great Basin. *Western North American Naturalist*, 71(3), pp.425-430. Download at: <https://www.fs.usda.gov/treearch/pubs/62581>
- Millar, C.I. and Delany, D.L., 2019. Interaction between mountain pine beetle-caused tree mortality and fire behavior in subalpine whitebark pine forests, eastern Sierra Nevada, CA; Retrospective observations. *Forest Ecology and Management*, 447, pp.195-202. Download at: <https://www.fs.usda.gov/treearch/pubs/58097>
- Millar, C.I. and Westfall, R.D., 2021. A complex patterned-ground ecosystem in the Sierra Nevada, California, USA supports unusual habitat for American pika. *Arctic, Antarctic, and Alpine Research*, 53(1), pp.148-176. Download at: <https://www.fs.usda.gov/treearch/pubs/62581>
- Millar, C.I., Delany, D.L. and Westfall, R.D., 2020. From treeline to species line: Thermal patterns and growth relationships across the krummholz zone of whitebark pine, Sierra Nevada, California, USA. *Arctic, Antarctic, and Alpine Research*, 52(1), pp.390-407. Download at: <https://www.fs.usda.gov/treearch/pubs/62581>
- Millar, C.I., Westfall, R.D., Delany, D.L., Bokach, M.J., Flint, A.L. and Flint, L.E., 2012. Forest mortality in high-elevation whitebark pine (*Pinus albicaulis*) forests of eastern California, USA; influence of environmental context, bark beetles, climatic water deficit, and warming. *Canadian Journal of Forest Research*, 42(4), pp.749-765. Download at: <https://www.fs.usda.gov/treearch/pubs/41655>
- Millar, C.I., Delany, D.L., Hersey, K.A., Jeffress, M.R., Smith, A.T., Van Gunst, K.J. and Westfall, R.D., 2018. Distribution, climatic relationships, and status of American pikas (*Ochotona princeps*) in the Great Basin, USA. *Arctic, Antarctic, and Alpine Research*, 50(1), p.e1436296. Download at: <https://www.fs.usda.gov/treearch/pubs/56091>
- Millar, C.I., Delany, D.L. and Westfall, R.D., 2020. From treeline to species line: Thermal patterns and growth relationships across the krummholz zone of whitebark pine, Sierra Nevada, California, USA. *Arctic, Antarctic, and Alpine Research*, 52(1), pp.390-407. Download at: <https://www.fs.usda.gov/treearch/pubs/60751>
- Perkins, S., 2003. Patterns from nowhere: Natural forces bring order to untouched ground. *Science news*, 163(20), pp.314-316.

Thank you for accepting and reviewing my comments.

Sincerely,

/s/ Constance I. Millar